Department of Planning, Housing and Infrastructure

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HumeLink

State Significant Infrastructure Assessment Report (SSI 36656827)

October 2024

Acknowledgement of Country

The Department of Planning, Housing and Infrastructure acknowledges that it stands on Aboriginal land. We acknowledge the Traditional Custodians of the land and show our respect for Elders past, present and emerging through thoughtful and collaborative approaches to our work, seeking to demonstrate our ongoing commitment to providing places in which Aboriginal people are included socially, culturally and economically.

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Preface

This assessment report provides a record of the Department of Planning, Housing and Infrastructure's (the Department) assessment and evaluation of the critical State significant infrastructure (CSSI) application for the HumeLink project located between the towns of Wagga Wagga, Maragle and Bannaby, lodged by Transgrid. The report includes:

- an explanation of why the project is declared CSSI and who the approval authority is;
- an assessment of the project against government policy and statutory requirements, including mandatory considerations;
- a demonstration of how matters raised by the community and other stakeholders have been considered;
- an explanation of any changes made to the project during the assessment process;
- an assessment of the likely environmental, social and economic impacts of the project;
- an evaluation which weighs up the likely impacts and benefits of the project, having regard to the proposed mitigations, offsets, community views and expert advice; and provides a view on whether the impacts are on balance, acceptable; and
- a recommendation to the decision-maker, along with the reasons for the recommendation, to assist them in making an informed decision about whether development approval for the project should be granted and any conditions that should be imposed.

Executive Summary

This report details the Department of Planning, Housing and Infrastructure's (the Department) assessment of the critical State significant infrastructure (CSSI) application SSI 36656827 for the HumeLink project. This report will be provided to the Minister for Planning and Public Spaces (the Minister) for their consideration when deciding whether to approve the carrying out of the CSSI.

Project

Transgrid is seeking approval to develop HumeLink (the project), which involves the construction and operation of around 365 kilometres (km) of new 500 kilovolt (kV) transmission lines and associated infrastructure between the towns of Wagga Wagga, Bannaby and Maragle. The project would transfer renewable energy generated by Snowy 2.0 and other wind and solar projects in southern NSW to the National Electricity Market (NEM). Connection to the NEM would be via existing but modified substations at Wagga Wagga and Bannaby, the Maragle substation currently under construction and a new 500/330 kV substation at Gregadoo.

The project has a capital investment value of $4.8 billion and is expected to generate 1,600 construction jobs and 5 operational jobs. If approved, construction of the project is proposed to commence in late 2024 and be completed by 2026.

Strategic context

The NSW energy system and broader NEM is undergoing a complex and accelerating transition period with 15,000 MW (63%) of Australia's traditional coal-fired generators set to retire by 2040 and the development of renewable energy sources, like wind, solar and pumped hydro, experiencing rapid growth. As the energy network introduces a greater mix of renewables, the NEM requires additional investment in transmission infrastructure to link these new sources of generation to the energy market.

The project would support the delivery of clean energy from wind and solar projects in southern NSW, and provide an important connection to the approved Snowy 2.0 project, connecting an additional 2,200 MW of on-demand energy to the grid.

Statutory context

The project is CSSI under Section 5.13 of the EP&A Act because it forms part of the Snowy 2.0 and Transmission Project, which is listed as CSSI under section 9 of Schedule 5 *of State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Consequently, the Minister is the approval authority.

Engagement

The Department publicly exhibited the EIS from 30 August 2023 until 10 October 2023 (42 days) and received 112 unique submissions from the public (99 objecting, 11 comments and 2 in support) and 12 submissions from special interest groups (9 objecting and 3 comments).

Key concerns raised related to landscape and visual amenity and potential bushfire hazards associated with fire risks, potential impact to emergency response and firefighting. Many submissions also criticised project location and design (including being above ground), biodiversity impacts, as well as social and economic impacts such as impacts to local businesses, tourism and property devaluation.

The Department received advice from 18 government agencies and submissions from four host Councils. The Department engaged with local Councils and relevant government agencies on key issues and they each recommended the implementation of mitigation and management measures. The Department visited the project area and surrounds from 7 to 9 August 2024.

Assessment

Energy Transition

The Department considers that the HumeLink project would play an important role in:

- enhancing the capacity of the NEM;
- transporting renewable energy from Snowy 2.0 to energy consumers;
- facilitating the transition to lower carbon emissions energy systems as coal fired generators retire; and
- lower prices for residents of NSW and the broader NEM by establishing the ability to transfer power between regions and encourage more efficient investment in lower cost generation sources.

Consequently, the Department considers that the project is critical for energy security and reliability in NSW and in supporting the transition of the energy system.

Consideration of Alternatives

The Department recognises that using underground transmission lines may be feasible in some locations for some types of projects. However, the Department considers this option would not meet some of the key project objectives and would not allow the timely transmission of renewable energy from Snowy 2.0 to energy consumers.

Biodiversity

The Department acknowledges that the construction of 365 km of transmission lines would inevitably result in impacts to biodiversity. Importantly, Transgrid has designed the project to avoid and minimise impacts on high quality vegetation and habitat as far as practicable, particularly through co-locating sections of the transmission line with existing infrastructure and relocating other sections to avoid key biodiversity features.

Transgrid has also adopted a range of mitigation measures to reduce biodiversity impacts, including partial vegetation clearing methods beneath the transmission lines instead of full clearing, whereby tall vegetation is removed while understorey is retained. The final design of the transmission line alignment would also be based on further reductions in impacts, wherever practicable.

The project would impact approximately 926 hectares (ha) of native vegetation, of which approximately 613 ha would be fully cleared, and 313 ha would be partially impacted. Importantly, a large proportion of the total vegetation impacts would occur on disturbed, derived grassland or on vegetation that is of low quality. To regulate these impacts, the Department has recommended conditions requiring Transgrid:

- undertake additional biodiversity surveys to guide further avoidance and mitigation of impacts to species assumed to be present within the project area;
- prepare and implement a Biodiversity Management Plan that details measures to avoid, minimise, monitor and report on impacts to biodiversity values;
- prepare and implement a Biodiversity Offset Package to confirm how the residual biodiversity impacts of the project would be offset; and
- provide a bank guarantee of $502.3 million as security to ensure offsets are implemented.

Overall, the Department considers that subject to the recommended conditions the project would not significantly impact the biodiversity values of the locality.

Landscape Character and Visual Amenity

The Department acknowledges that the project would have a visual impact on surrounding properties as well as impact the landscape character of the surrounding area. Seventy-nine properties located within 2 km of the project were assessed by Transgrid as potentially experiencing moderate or greater visual amenity impacts during operation. Four of these properties are not hosting project infrastructure (i.e. non-easement affected).

Transgrid has committed to managing these visual impacts by implementing appropriate mitigation measures in consultation with the owners of potentially impacted properties. The Department identified 22 additional properties warranting mitigation and has recommended conditions requiring

Transgrid implement measures (such as landscaping and vegetation screening) to reduce visual impacts. The Department has also recommended a condition requiring Transgrid provide measures to minimise the impacts of the nearest towers on properties close to the project corridor. This could include increasing setbacks or the strategic placement of towers having consideration of other existing towers in the vicinity.

With these measures, the Department considers that the project would not fundamentally change the broader landscape character of the area or result in any significant visual impacts on surrounding non-easement affected properties.

Traffic and Transport

The potential traffic and transport impacts would be largely restricted to the construction period, while traffic generation during operation would be minimal, having a negligible impact on roads.

There are 143 roads, intersections and site access points identified as potentially requiring upgrades to ensure safe access to construction sites and to allow the movement of over-dimensional vehicles. The Department has recommended conditions requiring Transgrid implement all necessary road upgrades in accordance with the relevant standard and timing requirements, and to regularly maintain all roads along the transport route and repair any damage to the road network caused by project-related traffic.

Subject to the recommended conditions, the Department and the relevant roads authority considers that the project would not result in unacceptable impacts on the capacity, efficiency or safety of the road network and any outstanding issues, including intersection design and road crossings, can be resolved following approval with the implementation of the recommended conditions.

Noise and vibration

The Department acknowledges that large scale infrastructure construction projects of this nature have the potential to impact the noise amenity of a large number of people during construction. Construction noise would be greatest during site establishment, which would last between four to 12 weeks at each construction compound and worker accommodation facility. During this period, receivers located near these facilities would potentially experience high construction noise levels. The Department has recommended conditions requiring Transgrid implement noise mitigation measures aimed at achieving compliance with relevant construction noise criteria prior to commencing site establishment works.

Following the establishment of construction compounds and accommodation facilities, the operation of these facilities over the 2.5-year construction period would generate more sustained noise impacts for nearby receivers, including during the night. Construction compounds would

operate during construction hours and at other times in accordance with an out of hours protocol. These facilities would be required to implement noise mitigation measures to comply with relevant construction noise criteria and sleep disturbance criteria at nearby receivers.

The Department considers that the operation of the Memorial Avenue construction compound in Batlow would be particularly problematic due to the large number of sensitive receivers located nearby, including a hospital, schools, local swimming pool and residences. The Department has therefore recommended conditions further limiting operation of the Memorial Avenue construction compound to protect the amenity of these receivers.

Helicopters may be used for stringing transmission lines and utilise nearby construction compounds for take-off and landing. The Department has recommended conditions limiting operation of helicopters to restricted hours to protect the amenity of these receivers, unless otherwise allowed through an Environment Protection Licence.

During operation, up to 78 residences located near the transmission line may experience corona discharge (cracking/buzzing sound from transmission lines) noise during adverse weather conditions. The Department has recommended conditions requiring Transgrid undertake monitoring to confirm the operational noise impacts of the project and to implement noise mitigation measures at receivers experiencing corona discharge noise levels that exceed the operational noise criteria. As such, the Department considers operational noise impacts can be suitably managed.

Evaluation

The HumeLink project is critical for energy security and reliability in NSW as it would enhance the capacity of the NEM, transmit renewable energy from Snowy 2.0 and other renewable energy generators to energy consumers, and would play an essential role in supporting the transition from a long-standing reliance on coal-fired power stations to a reliance on renewable energy.

It would also deliver significant economic benefits to NSW including a capital investment of $4.8 billion and creation of up to 1,600 construction jobs.

Overall, the Department considers that the project has been designed in a way that avoids and minimises social and environmental impacts as far as practicable. The Department has carefully considered issues raised in public submissions including key concerns related to the proposed transmission lines being above ground, the visual amenity, landscape character and bushfire risk. The Department has worked closely with key government agencies to ensure a robust assessment of the impacts of the project and to prepare a comprehensive framework of recommended conditions of approval, requiring a range of controls and measures to minimise the impacts of the project.

On balance, the Department considers that the HumeLink project provides benefits to energy security and reliability that outweighs its costs, and the project is in the public interest and approvable, subject to strict conditions.

Contents

1 Introduction

Transgrid is seeking approval to develop HumeLink (the project) which includes the construction and operation of around 365 kilometres (km) of new 500 kilovolt (kV) transmission lines and associated infrastructure between the towns of Wagga Wagga, Bannaby and Maragle. The project spans the Snowy Valleys, Wagga Wagga City, Cootamundra-Gundagai Regional, Yass Valley, Upper Lachlan Shire and Goulburn-Mulwaree local government areas (LGAs).

The project is Critical state significant infrastructure (CSSI) because new transmission lines are required to deliver the power from a mix of renewable energy sources and it forms part of the Snowy 2.0 and Transmission Project, which involves adding a new 2,000 megawatt (MW) underground pumped hydroelectric power station to the existing Snowy Mountains Hydro-Electric Scheme in the Kosciuszko National Park (National Park) with associated transmission infrastructure.

Snowy Hydro Limited (Snowy Hydro) is responsible for, and has commenced works on, the electricity generating components of Snowy 2.0, while Transgrid is delivering the transmission infrastructure that comprises the Snowy 2.0 Transmission Connection Project and this HumeLink project.

The project is the subject of the current infrastructure application from Transgrid and this Assessment Report. The project is shown in **Figure 1**.

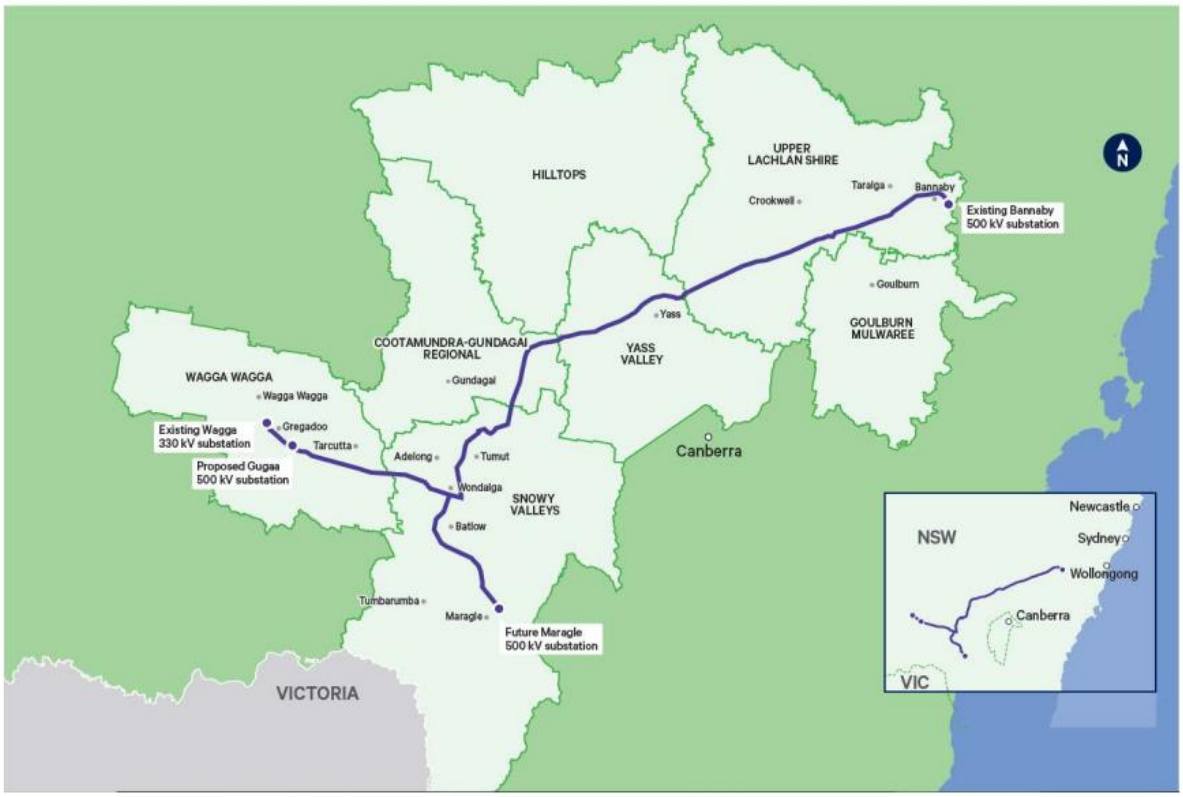

Figure 1 | Regional context map

2 Project

2.1 Project overview

The HumeLink project (the project) involves:

- development of around 365 km of new double circuit 500 kV transmission lines and associated infrastructure between Wagga Wagga, Bannaby and Maragle;
- development of a new 500/330 kV substation at Gregadoo (Gugaa 500 kV substation);
- demolition and rebuild of around 2 km of Line 51 as a double circuit 330 kV transmission line connecting to the existing Wagga 330 kV substation;
- augmentation of the Wagga 330/132 kV substation and Bannaby 500/330 kV substation; and
- ancillary infrastructure such as site offices, workforce accommodation camps, internal roads, and grid connections to the transmission network.

The key aspects of the project are provided in detail in the Project Description chapter of the EIS and subsequent amendment report and are outlined in **Table 1** and shown in **Figure 2**.

Table 1 | Key aspects of the project

Aspect	Description
Project area	• Construction corridor area: 8,835 hectares • Operational area footprint: 3,176 hectares
Transmission lines	• 365 km of new double circuit 500 kV transmission lines • Demolition and rebuild of 2 km of double circuit 330 kV transmission lines • Easement width: 70 to 110 m (up to 130 m where the new 500 kV transmission line would run parallel to the relocated section of Line 51) • Tower height: 50 to 76 m, with an average height of 60 m • Typical spacing between towers: 300 to 600 m
Substations	• Development of the Gugaa 500 kV substation • Augmentation of the Wagga 330 kV substation and Bannaby 500 kV substation • Connection to the future Maragle 500/330 kV substation, which was approved under the Snowy 2.0 Transmission Connection Project • Four telecommunications connection upgrades to existing substations at Rye Park, Gadara, Gullen Range and Crookwell

Aspect	Description
Ancillary infrastructure	• Minor storage and laydown areas along the project footprint • Establishment of new and/or upgraded temporary and permanent access tracks • Helipads and helicopter facilities • Utility connections and/or relocations • Brake and winch sites • Construction facilities as described below
Construction facilities	• 11 potential construction compounds located at Bannaby, Batlow, Buddong, Ellerslie, Gadara, Gregadoo, Green Hills, Nurenmerenmong, Red Hill, Woodhouselee and Yass • Five combined potential worker accommodation facilities and construction compounds accommodating up to 1,840 workers at Adjungbilly, Crookwell, Green Hills, Tarcutta and Yass
Access routes	• The daily construction route to and from construction areas within the project area comprises Hume Highway, Sturt Highway, Snowy Mountains Highway, Batlow Road, Barton Highway, Crookwell, Goulburn Road, Burley Griffin Way and Gocup Road, and several regional and local roads within the LGAs of Wagga Wagga City, Snowy Valleys, Yass Valley, Cootamundra, Gundagai Regional, Goulburn Mulwaree and Upper Lachlan Shire • Non-standard or oversized loads would be transported from the Port of Newcastle
Road upgrades	Several road and intersection upgrades would be required to ensure safe access to construction sites, access points and to accommodate OSOM movements
Construction	• Around 2.5 years • Construction hours would generally be Monday to Friday 7am to 6pm, and Saturday 8am to 1pm, with some out of hours work proposed **Enabling Works** – limited early stage subject to a risk assessment including: • site establishment and operation of construction compounds, including excavations, surface preparation, access roads, and utility connections • establishment of worker accommodation facilities • minor adjustments to existing access tracks and road improvement • utility relocations and adjustments
Operation	The operational life of the project is not limited
Decommissioning and rehabilitation	The project includes progressively rehabilitating all construction works and decommissioning

Aspect	Description
Employment	Up to 1,600 construction jobs (200 at enabling) and 5 operational jobs
Capital investment value	$4.8 billion

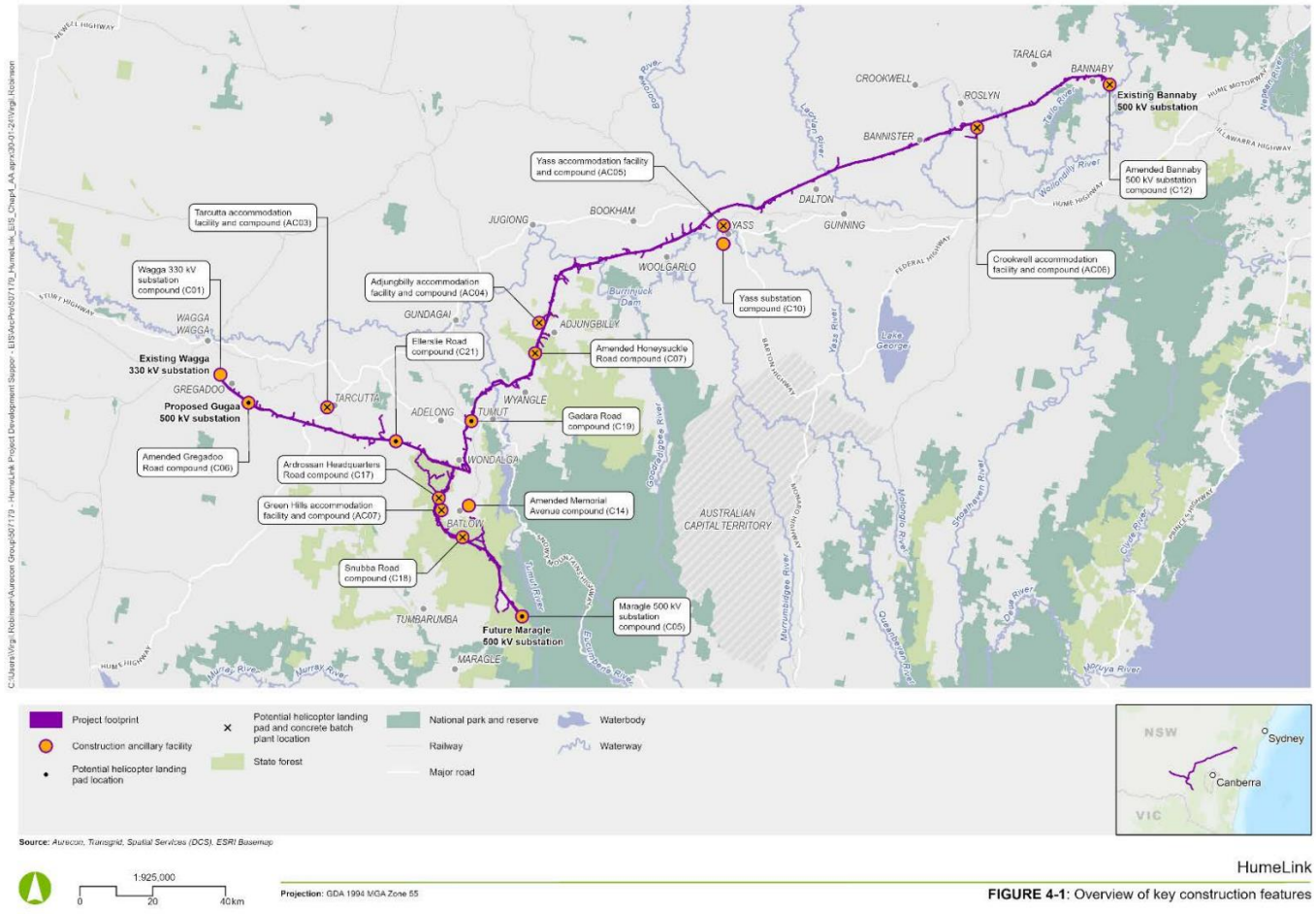

Figure 2 | Site layout

2.2 Project design

2.2.1 Options analysis

The project has undergone a process of route optioneering from feasibility to early design development. Transgrid has assessed options considering the costs and benefits of supplying electricity to consumers (including construction, ongoing operation, market benefits, and expected reliability) and potential impacts on landowners, the community, and the environment.

Transgrid progressively refined the study corridor based on technical assessments and feedback gathered during consultation with landowners and project stakeholders. Decisions were publicly documented and communicated via information on Transgrid's website, community sessions, mail out of project updates and face-to-face meetings.

Alternatives considered include options to underground the transmission lines. A detailed feasibility review for this option concluded that undergrounding the transmission lines would result in unacceptable delays and significantly increased costs, which consumers would bear and is discussed further in **Section 6.3**.

Transgrid amended the project following the exhibition of the EIS, as described in **Section 5.2**, selecting an alternate corridor option west of Batlow and through the Green Hills State Forest as the preferred route between Wondalga and the future Maragle 500 kV substation, as shown in **Figure 3**. The amended route would avoid private property impacts to landowners east of Batlow, reduce impacts to native vegetation and visual amenity, and provide opportunities to utilise previously disturbed forestry tracks to reduce earthworks and allow for more efficient access.

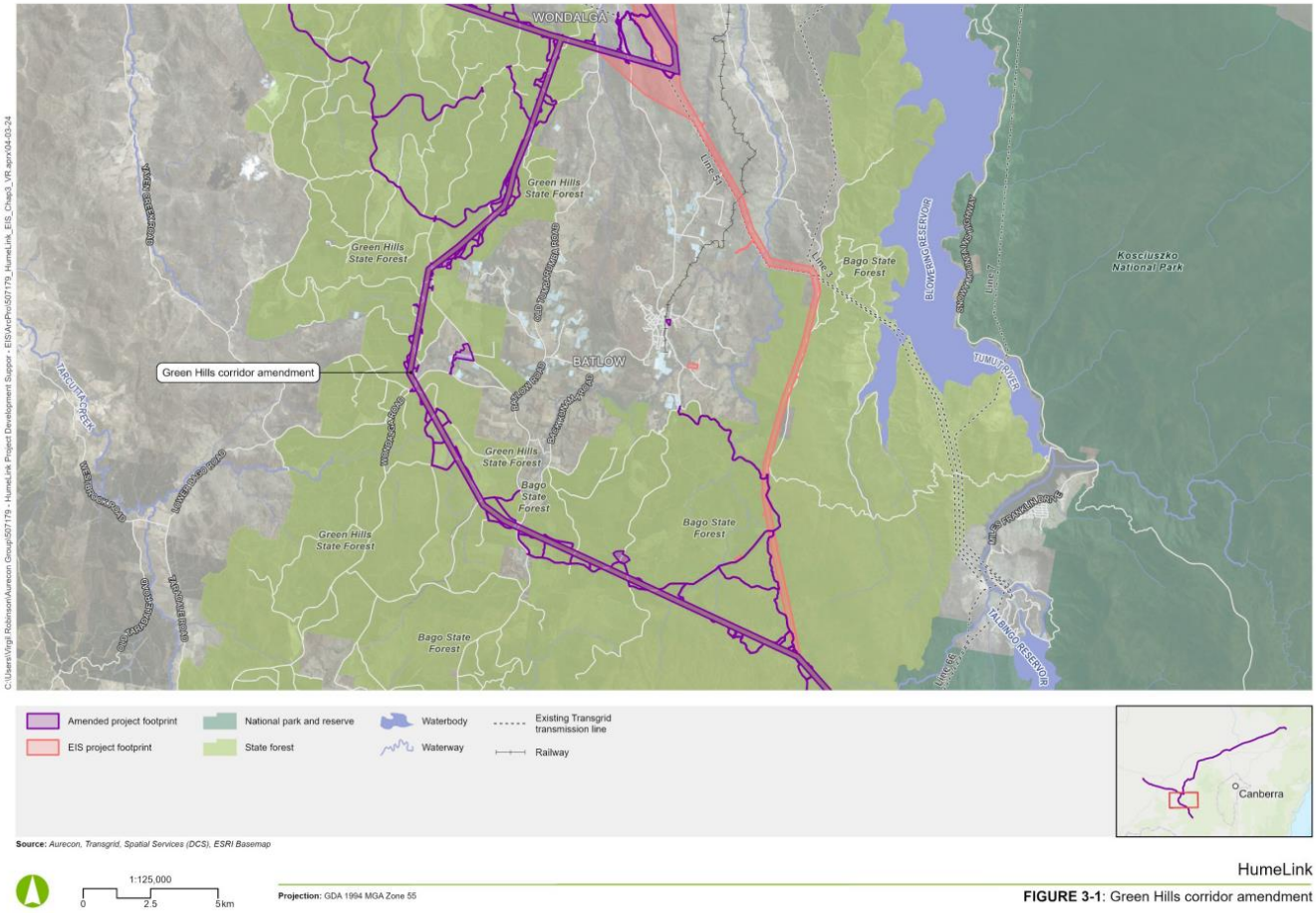

Figure 3 | Green Hills Corridor Amendment

2.2.2 Indicative transmission line and refinement

There is a well-established process of assessing the nature and scale of potential impacts before determination, while also allowing for further assessment and reduction of impacts post-determination. While there is only an indicative transmission line footprint within a defined 70 to 100 m wide easement (up to 130 m where the new 500 kV transmission line would run parallel to the relocated section of Line 51 near Wagga substation), the Department is confident that the exact location of the transmission line could be sited without materially changing the key environmental impacts of the project (i.e., visual, noise, biodiversity, and heritage). Detailed design of the final transmission line alignment within the easement would be based on further minimising environmental impacts, wherever practicable.

3 Strategic context

3.1 Renewable energy context

The NSW energy system and broader National Electricity Market (NEM) is undergoing a complex and accelerating transition period with 15,000 MW of coal-fired generation set to retire by 2040 and the development of renewable energy sources, like wind, solar and pumped hydro, experiencing rapid growth. As the energy network introduces a greater mix of renewables, the NEM requires additional investment in transmission infrastructure to link these new sources of generation to the energy market.

The project is a critical component of the Electricity Infrastructure Roadmap, which is the NSW Government's 20-year plan to ensure sufficient electricity transfer capacity is available to support the transition of the NEM.

The project would support the delivery of clean energy from wind and solar projects in southern NSW, and provide an important connection to the approved Snowy 2.0 project, connecting an additional 2,200 MW of on-demand energy to the grid. Several Commonwealth and State policies and strategies underpin the renewable energy context in NSW as summarised in **Table 2**.

Table 2 | Energy Context

Policy/year	Comments
Australia's Long Term Emissions Reduction Plan (2021) and Nationally Determined Contribution (2022)	Sets a pathway to net zero emissions by 2050 and affirms Australia's commitment to meeting its revised 2030 target (43% below 2005 levels). The plan identifies the expansion of electricity transmission networks and associated enabling infrastructure as critical in achieving these targets.
NSW Climate Change (Net Zero Future) Act 2023	Legislates a whole-of-government climate action to deliver net zero by 2050.
Australian Energy Market Operator's (AEMO) 2024 Integrated System Plan (ISP)	Identifies that investment is urgently needed to install more than 10,000 km of new transmission lines to ensure energy security and reliability, and that this additional transmission plays an essential role in the NEM transition to renewable energy.
NSW: Climate Change Policy Framework (2016) Transmission Infrastructure Strategy (2018) Electricity Strategy (2019) Electricity Infrastructure Roadmap (2020) Net Zero Plan Stage 1: 2020 2030 (2020) and Implementation update (2022)	Relevant aspects of these policy documents include: • aim to achieve net zero emissions in NSW by 2050 and reduce emissions by 70% below 2005 levels by 2035; • note that all coal fired power plants in NSW are scheduled for closure within the next twenty years; • set out how the NSW government will deliver on this objective and fast-track emissions reduction; • identify REZs across NSW, aimed at encouraging investment in electricity infrastructure and unlocking additional generation capacity in order to ensure secure and reliable energy in NSW; • note the need to expand transmission infrastructure into REZs to open new parts of the grid for renewable energy projects; and • unlock regional investment and new energy generation infrastructure.

The project's alignment with existing Commonwealth and State policies and strategies is considered in **Section** 6.2.

3.2 Project area and surrounds

3.2.1 Land use

The project is located within the Wagga Wagga City, Snowy Valleys, Cootamundra-Gundagai Regional, Upper Lachlan Shire, Yass Valley and Goulburn-Mulwaree local government areas (LGAs). Land use is primarily agriculture, with other land uses including softwood and native forestry, as well as the natural environment.

The nearest regional population centres to the project are Wagga Wagga, Adelong, Tumut, Yass, Bowning, Dalton, Crookwell, Taralga, Batlow and Tumbarumba. Land tenure in the region is predominantly freehold, with some areas of NSW government and Crown land, including road reserves, rail corridors, travelling stock reserves, and State Forest.

The project traverses primarily rural areas, with a range of land uses, including existing transmission line easements, agriculture, forestry, and renewable power generation. The existing Wagga 330 kV and Bannaby 500 kV substations and several existing high voltage transmission lines are located within and surrounding the project area.

The majority of the project area and surrounds are zoned RU1 Primary Production under the relevant Local Environmental Plans (LEP). The key agricultural uses within and surrounding the project area are livestock, cropping and horticultural enterprises, with some forestry. Parts of the project area are mapped as Biophysical Strategic Agricultural Land (BSAL).

While the project is located near the Tarlo River National Park, Minjary National Park, Mudjarn Nature Reserve, Bango Nature Reserve, Back Arm Nature Reserve and Kosciuszko National Park, it does not directly impact any national parks, nature reserves, wilderness areas, Aboriginal areas or state conservation areas. State Forests impacted by the project include Green Hills State Forest, Red Hill State Forest and Bago State Forest.

As described in **Section 2.2.1**, Transgrid has amended the project by selecting an alternate corridor route option west of Batlow and through the Green Hills State Forest.

3.2.2 Natural environment

Due to the scale of the project, there is a wide variety of landscapes across the project area generally consisting:

- undulating rural valleys and hills;
- mountainous areas with high altitude located within the Australian Alps;
- gently undulating rural and native forestry areas; and
- high tablelands with ridge lines and rugged hilly landscapes.

The project is located across the Murrumbidgee River, Lachlan River and the Wollondilly River catchments. It crosses the Tumut River, Murrumbidgee River, Lachlan River, Wollondilly River and Tarlo River, in addition to several creeks and other watercourses. The Murrumbidgee River basin would have been a focus of Aboriginal occupation within the region, with the river supporting woodland and forest habitats housing a wide range of resources to support the Aboriginal population.

The project is located within the catchment of Blowering Dam, Burrinjuck Dam, and Wyangala Dam, which provide water supply for towns, industry, irrigators, stock and domestic users, as well as flood mitigation and recreation.

Much of the landscape surrounding the project footprint has been historically cleared and is subject to high levels of fragmentation. Key landscape features include the nearby Tarlo River National Park, Minjary National Park, Mudjarn Nature Reserve, Bango Nature Reserve, Back Arm Nature Reserve, Kosciuszko National Park, and the project intersects the Green Hills, Red Hill and Bago State Forests.

4 Statutory context

4.1 Critical State Significant Infrastructure

The project is CSSI under Section 5.13 of the EP&A Act because it forms part of the Snowy 2.0 and Transmission Project, which is listed as CSSI under section 9 of Schedule 5 of *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Consequently, the Minister for Planning and Public Spaces (the Minister) is the approval authority. Under section 2.15 of the Planning Systems SEPP, the project may be carried out without development consent under Part 4 of the EP&A Act.

4.2 Administrative and procedural requirements

Under the EP&A Act and the *Environmental Planning and Assessment Regulation 2021* (EP&A Regulation), there are several administrative and procedural requirements that must be met before the Minister may determine the application, including Transgrid applying to the Minister for approval, preparing an EIS and responding to submissions, and the Department exhibiting the EIS and making key documents available on the NSW Planning Portal. The Department is satisfied that all requirements have been met and that the Minister may now determine the application.

4.3 Amended application

Transgrid has sought to amend its application (see **Section 5.3**) in accordance with clause 179(2) of the EP&A Regulation.

The Director, Energy Assessments accepted Transgrid's amended application for the following reasons:

- the project amendments have reduced the landscape and visual impacts of the project;
- the amended application directly responds to the key issues raised;
- Transgrid assessed the impacts of the amended project (see **Appendix A**); and
- the Department made the additional information available online and sent it to the relevant agencies.

4.4 Application of the Biodiversity Conservation Act 2016

The EIS was accompanied by a biodiversity development assessment report (BDAR) in accordance with section 7.9 of the *Biodiversity Conservation Act 2016* (BC Act). The Minister must consider the likely impact of the project on biodiversity values as assessed under the BDAR in accordance with section 7.14 of the BC Act.

The Department has considered the findings of the BDAR (including revisions) and the advice from the Biodiversity, Conservation and Science Group (BCS), in its assessment (see **Section 6.4**).

4.5 Exempt approvals

Under section 5.23 of the EP&A Act, the following approvals are not required for CSSI projects:

- a permit under section 201, 205 or 219 of the *Fisheries Management Act 1994*;
- various approvals for State Conservation Areas and heritage under the *National Parks and Wildlife Act 1974* and *Heritage Act 1977*;
- a bushfire safety authority under section 100B of the *Rural Fires Act 1997*; and
- various water-related approvals under sections 89 to 91 of the Water Management Act 2000.

However, the assessment of these matters has been integrated with the assessment of all other matters under the EP&A Act. The Department has considered all the relevant matters associated with these in its assessment (see **Section 6**), consulted with the agencies responsible for administering these (see **Section 5.5.4**), and included conditions in the recommended project approval (see **Appendix G**) to ensure Transgrid minimises the biodiversity, heritage, bushfire and water impacts of the project.

4.6 Environmental planning instruments

Although environmental planning instruments do not apply to CSSI projects under section 5.22 of the EP&A Act, the Department has assessed the project against the provisions of several instruments and concluded that the land is suitable for the project, and that the project is not a potentially hazardous or offensive development under the *State Environmental Planning Policy (Resilience and Hazards) 2021*.

4.7 Mandatory matters for consideration

When deciding whether or not to approve the carrying out of the project under section 5.19 of the EP&A Act, the Minister is required to consider the reports, advice and recommendations contained in this report, which includes the EIS, public submissions, agency advice, the Department's whole-of-government assessment, and the recommended conditions of approval. The Department has considered these matters in its assessment, as summarised in **Section 6** of this report.

4.8 Other NSW approvals

Under section 5.23 of the EP&A Act, a number of other approvals are integrated into the SSI approval process, and consequently are not required to be separately obtained for the project. These include approvals and permits relating to heritage under the EP&A Act, *Heritage Act 1977* and NP&W Act, and certain water approvals under the *Water Management Act 2000*.

Under section 5.24 of the EP&A Act, a number of further approvals are required, but must be substantially consistent with any planning approval for the project. These include:

- approvals for works on public roads under the *Roads Act 1993* (Roads Act). This only applies to classified roads and Crown roads for this project, as Transgrid is an Authorised Network Operator under the *Electricity Supply Act 1995*. Consequently, Transgrid would generally not require consent from the relevant Councils for works in unclassified (local) roads for the project (clause 5(1) of Schedule 2 of the Roads Act). The Department has consulted with the agencies responsible for these approvals in its assessment of the project; and
- an environment protection licence (EPL) under the Protection of the *Environment Operations Act 1997* (POEO Act). It is noted that an EPL may be required for the project, specifically for crushing, grinding or separating material (to be used for tower foundations) under Clause 16 of Schedule 1 of the POEO Act, and helicopter-related activities under Clause 20 of Schedule 1 of the POEO Act.

4.9 Objects of the EP&A Act

The Department has assessed the project against the objects in section 1.3 of the EP&A Act, including incorporating ecologically sustainable development principles and promoting the social and economic welfare of the community and a better environment (see **Appendix I**).

4.10 Commonwealth matters

On 13 April 2022, the project was declared (EPBC 2021/9102) to be a controlled action in accordance with the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to likely significant impacts to listed threatened species and communities (sections 18 and 18A) and listed migratory species (sections 20 and 20A).

The assessment process under the EP&A Act has been accredited under a bilateral agreement with the Australian Government. Accordingly, the NSW Government has undertaken the assessment on behalf of the Australian Government and has assessed matters of national environmental significance (see **Section 6.4** and **Appendix J**). The Department consulted with the Australian Government Department of Climate Change, Energy, the Environment and Water (AG DCCEEW) in accordance with the bilateral agreement, provided draft copies and incorporated comments from AG DCCEEW into this assessment report and the recommended conditions of approval.

5 Engagement

5.1 Department's engagement

The Department publicly exhibited the EIS from 30 August 2023 until 10 October 2023 (42 days) and advertised the exhibition in several local and national newspapers. The Department visited the project area and surrounds from 7 to 9 August 2024.

The Department consulted with relevant Councils and government agencies throughout the assessment.

5.2 Transgrid's engagement

Transgrid's engagement with the local community included a dedicated website, interactive mapping tool, phone number and email address, stakeholder briefings, community information sessions, landowner webinars, and face-to-face meetings with easement affected landowners.

Transgrid also established three Community Consultative Groups (CCGs) to facilitate community consultation and participation in the project. Each CCG included community members and representatives from local councils, community groups, industries and local businesses.

Transgrid also consulted with the Department, relevant Commonwealth and State government agencies, local councils, Aboriginal stakeholders and developers of renewable generation projects during the assessment process, and potentially impacted neighbours and associated landowners to inform the project amendment detailed below.

5.3 Amended application

Following consideration of submissions on the project, and further consultation with affected landowners, Transgrid amended its application particularly concerning functional improvements to design, location and construction methodology. Project amendments and refinements are detailed in the Amendment Report (**Appendix E**), and include:

- moving the transmission line corridor alignment between Wondalga and the future Maragle 500 kV substation through the Green Hills State Forest, west of Batlow;
- changes to the number and location of construction ancillary facilities including worker accommodation facilities and construction compounds;
- nomination of additional access tracks between the transmission line corridor and the existing road network, to support the construction and operation of the project;
- additional telecommunication connections to existing substations; and
- several additional project refinements including:
    - transmission line and substation design refinements at Gregadoo;
    - identification of areas where controlled blasting may be required;
    - use of approved water sources; and
    - use of helicopters and drones.

The Department provided the Amendment Report to government agencies and Councils for comment.

5.4 Summary of submissions

During the exhibition of the EIS, the Department received 112 unique public submissions (99 objecting, 11 comments and 2 in support) and 11 submissions from special interest groups (9 objecting and 2 comments). A summary of the proximity of unique submissions is provided in **Table**

3, and the issues raised in the submissions are summarised in **Section 5.5**. All submissions are publicly available on the NSW Planning Portal (see **Appendix C**).

The Department received supplementary submissions from the public following the end of the submissions period. These comments did not raise any issues in addition to those discussed below and have been considered in the assessment process.

The majority (88%) of the public submissions received during the public exhibition objected to the project. As shown in **Table 3**, most submissions (50%) came from people living less than 5 km from the project.

Table 3 | Summary of submitter distances

Submitter	Objection	Support	Comment	Total
<5 km	51	1	5	57
5-15 km	21	0	1	22
15-50 km	8	1	0	9
>50 km	14	0	4	18
Other state	5	0	1	6
TOTAL	99	2	11	112

5.5 Summary of public submissions

5.5.1 Submissions in objection

Key matters raised in submissions are summarised in **Figure 4**.

Submissions objecting to the project primarily raised concerns about project location and design (including transmission infrastructure being above ground), landscape and visual amenity. Many submissions were also concerned with potential bushfire hazards associated with fire risks, potential impact to emergency response procedure and firefighting, biodiversity impacts, as well as social and economic impacts such as impacts to local businesses, tourism and property devaluation. **Section 6** provides a summary of the Department's consideration of these matters.

Other issues raised in submissions included impacts to agriculture and biosecurity risks, potential health issues from electric and magnetic field (EMF) radiation and stress, noise, aviation and general hazards, impacts to water and soil such as erosion, and heritage. Some submitters also criticised Transgrid's consultation efforts and mitigation measures proposed in the EIS.

5.5.2 Submissions in support and comments

Submissions in support raised appropriate controls to manage project impacts. Submissions commenting on the project generally emphasised the same concerns as the submissions objecting to the project.

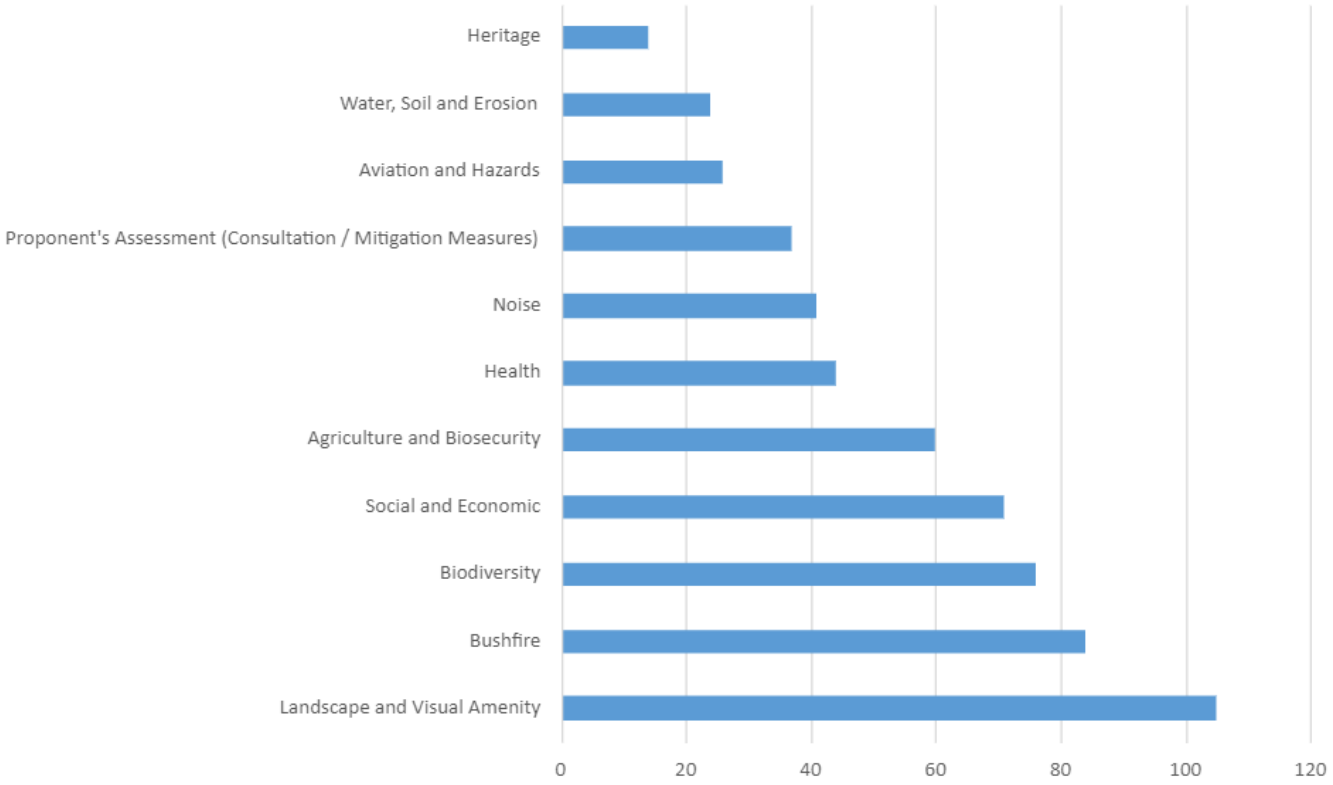

Figure 4 | Key matters raised in public submissions

5.5.3 Special interest groups and organisations

Eleven submissions on the project were from special interest groups, with matters raised summarised in **Table 4**.

Table 4 | Summary of matters raised in special interest groups and organisation submissions

Position	Groups	Key Issues
Object (9)	Business Snowy Valleys Softwood Working Group HumeLink Alliance Incorporated Kyeamba Valley Landcare Group National Parks Association of NSW	• Inadequacies and inaccuracies in the EIS, including lack of transparency with the process. • EIS underestimates economic and cumulative impacts to regional businesses. Raised concerns over impacts to local agriculture, tourism and forestry.

Position	Groups	Key Issues
	Harissa Pty Ltd IAL Moloney Reiland Angus Big Springs Rural Fire Service Brigade	• Concerns over biodiversity impacts, including size of project footprint, proximity to national parks and nature reserves, and deforestation of native forests. • Concerns over water quality and erosion, biosecurity risks such as disruptions to aerial agricultural applications, and increased risks of bushfires and associated hazards. • Recommended investigating feasibility of underground transmission lines, to avoid above ground impacts including landscape and visual, EMF, health, noise and other impacts. • Impacts to the forestry industry.
Comments (2)	Energy Grid Alliance	• Inadequacies of the EIS. • Economic viability of the project. • Biodiversity impacts, particularly due to project size / surface area and proximity to national parks and nature reserves. • Questioned approach to project and infrastructure design, and recommended: – holistic, single-project approach to transmission infrastructure in the State; – inquiry into the feasibility of underground transmission infrastructure for renewable energy; – redesigning project to reduce impacts; and – engineering resilience into design to combat natural hazards. • Proposed protection and resilience of the electricity transmission system to safeguard against disruptions caused by natural and man-made disasters and threats.
	Orchid Society of Canberra - Conservation Group	• Potential impacts to orchid species including critically rare and/or endangered species. • Raised concerns over orchid survey inadequacies.

5.5.4 Summary of agency advice and Council submissions

The Department received advice from 18 government agencies and submissions from four host Councils, one adjoining Council and one regional council organisation. Wagga Wagga City Council and Canberra Region Joint Organisation objected to the project. Other councils provided comments.

A summary and overview of the key comments made by councils and advice from public authorities is provided in **Table 5**, with full copies available on the NSW Planning Portal (see **Appendix C**).

Where clarification was requested, those matters were addressed through the assessment process, and Transgrid provided additional information in its Submissions Report, Amendment Report, and additional information requests. Where relevant, this is summarised in the relevant assessment section.

Table 5 | Summary of Council submissions and government agency advice

Agency	Advice summary
Agencies	
Forestry Corporation of NSW	• Advised that Transgrid would need to provide compensation for up to 700 ha of State Forest that the project would impact. • Recommended the avoidance of areas not impacted by the 2019-2020 bushfires. • Advised that access to state forests must be ensured for management purposes.
Biodiversity, Conservation and Science Group within NSW DCCEEW (BCS)	• Expressed concerns about impacts to Serious and Irreversible Impact (SAII) entities. • Requested further information and a revision of the BDAR, providing recommendations on survey methodology, further targeted surveys, and further avoidance, impact minimisation and mitigation measures. • Provided feedback regarding partial impacts, consideration of indirect and prescribed impacts, assumed presence and adequacy of species polygon development. • Recommended a revision of the approach to the flood risk assessment, requesting an assessment of impacts of flooding on the development, the community and public safety.
Heritage NSW – Aboriginal Cultural Heritage (ACH)	• Advised that further investigations may be required and requested additional information regarding consultation undertaken, including consideration of feedback from Registered Aboriginal Parties (RAP's). • Requested further detail on the Archaeological Sensitivity Model.

Agency	Advice summary
	• Sought clarification on the potential archaeological deposit (PAD) & Archaeological investigation. • Proposed changes to mitigation measures contained in the EIS and ACHAR.
Heritage Council of NSW	• Requested additional information regarding the location of state heritage register (SHR) listed items, specifically the Hillas Farm Homestead and Outbuildings relative to project footprint.
DCCEEW Water Group	• Requested more detail on water take and aquifer interference. • Noted that a Water Access Licence (WAL) would be required should groundwater be intercepted. • Requested the preparation and implementation of a Soil and Water Management plan in consultation with DPE Water. • Requested an assessment of the aquifer interference activities against the minimal impact considerations of the NSW Aquifer Interference Policy and include relevant management and mitigation requirements.
Transport for NSW	• Requested to be consulted during detailed design. • Requested minor revisions to mitigation measures within the EIS and TTMP. • Advised that all site access intersections to the classified road network, particularly for the construction compounds and worker accommodation facilities, must be assessed in accordance with *Austroads guide to Road Design,* and be upgraded to provide a sealed Basic Right Turn (BAR)/Basic Left Turn (BAL) intersection treatment as a minimum.
Australian Rail Track Corporation (ARTC)	• Advised that the Proponent would need to enter a licence agreement with ARTC for construction and tenure of infrastructure over the rail corridor. • Does not object to the location of the proposed transmission line as long as it is located more than 80 metres from the rail bridge near the Hume Highway at Yass. Transgrid ha committed to this setback distance unless otherwise agreed.
NSW Rural Fire Service (RFS)	• Provided advice regarding identification and management of APZ areas, vegetation management, construction design of transmission infrastructure to withstand bush fires, access design and construction, and water supply.
The Department of Primary Industries – Fisheries	• Generally agreed with conclusions of the aquatic ecology assessment, noting construction would largely avoid direct impacts to streams within the project footprint. • Provided recommendations regarding watercourse crossings, threatened species and stockpiling of felled timber.

Agency	Advice summary
The Department of Primary Industries – Agriculture	• Advised that mitigation measures in the EIS and Agricultural Impact Assessment are appropriate. • Supports consultation with landowners during the preparation of management plans and siting of project infrastructure.
Regional NSW – Minerals Exploration and Geoscience (MEG)	• Identified 17 exploration licences (EL) held by 12 companies that intersect the project footprint. • Recommended continued engagement with mineral title holders throughout the planning and construction phases.
Civil Aviation Safety Authority (CASA)	• Supported implementation of the advice provided in the Aviation Impact Assessment (AIA) prepared for the project and provides further recommendations for the AIA. • Advised that CASA has no objections to the project.
Crown Lands	• Potential impacts on Crown Lands (CLs), including CLs subject to Aboriginal Land Claims; impacts on Crown Roads and Crown Waterways; impacts on Travelling Stock Reserves. Concurrence with NSW Aboriginal Land Council is required. • Recommendations regarding authorisations required under the *Crown Land Management Act 2016*.
NSW EPA	• Advised that the project would not require an Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act) unless the project exceeds relevant criteria to become a scheduled activity which would be confirmed in detailed design.
Councils and Council organisations	
Snowy Valleys Council (host)	• Expressed concerns about workforce accommodation. • Raised concerns about visual amenity, potential hazards and environmental impacts associated with overhead transmission lines. • Raised concerns about the economic viability and benefits of the project, particularly to host landowners. • Advised that Council's current priorities are affected by the project and include supporting the growth of the forestry and timber processing industry, adding value to the agricultural sector, and expanding tourism. Council is also attempting to secure supply of skilled workers for region's core industries and to attract new residents to the region. This is addressed in the Department's assessment of other issues in **Section 6.8.**

Agency	Advice summary
Upper Lachlan Shire Council (host)	• Requested the upgrade, maintenance and repair of local roads within the Upper Lachlan LGA, to accommodate project construction traffic, and provided recommendations for the project Traffic and Transport Management Plan. • Requested a site map of proposed construction compounds, access ways and parking areas, and a commitment to restore these areas upon completion of construction. • Requested specific tailored visual impact measures to houses within the Upper Lachlan LGA, workforce accommodation, and the establishment of a Community Enhancement Fund.
Wagga Wagga City Council (host)	• Requested consultation with the Proponent regarding project works that have the potential to block entry points to the Gregadoo Waste Management Centre. This has been considered in **Section 6.6** below. Requested clarification on potential works outside of the easement corridor, construction works activities, and distance to Council operations (i.e. Tip Shop).
Yass Valley Council (host)	• Opposes overhead transmission lines in favour of underground power lines, to protect the interest of landowners, volunteer fire fighters and the environment. • Requested that Proponent undertake appropriate landscaping to mitigate visual impacts during construction and operations. • Requested that Proponent invest in new accommodation for workers in Yass Valley due to lack of short-term accommodation. • Other concerns raised were regarding potential structural impacts to roads, restoration following construction activities, and consultation opportunities with residents of Yass.
Goulburn Mulwaree Council (adjoining)	• Acknowledged and is satisfied with the traffic management measures proposed by the Proponent. • Supports the use of the alternate route across Pejar Dam as detailed in the EIS.
Canberra Region Joint Organisation	• Lodged submission outside the exhibition period, opposing the current proposal. • Requested the Proponent undertake landscaping to mitigate reduction of vegetation and visual impacts in a few specific areas and viewpoints. Also requested specific tailored measures for dwellings in Yass Valley impacted by visual impacts. • Requested investment in new accommodation for workers in Yass Valley, and the establishment of a Community Enhancement Fund. • Requested update, maintenance and repair to local roads in Yass Valley.

Agency	Advice summary
	• Requested detail of the layout of proposed construction compounds, access ways and parking areas, and a commitment to restore these areas upon completion of construction.
Utility organisations and providers	
NSW Telco Authority	• Raised concerns about impacts from the project on microwave links and land mobile radio coverage from Public Safety Network PSN sites. • Recommended the assessment of impacts to all government microwave links traversing the area. • Confirmed that these concerns have been resolved as part of the RTS process.
APA Group	• Requested consideration of APA's infrastructure 'high pressure gas transmission pipelines' in the EIS. • Provided advice regarding pipeline easement safety and management measures. • Requested the Proponent enter into a Co-User Agreement with APA and operate in accordance with APA's proposed conditions of approval, due to the project crossing APA's pipeline easement.

The following agencies raised no concerns or provided no comment:

- AirServices Australia;
- Fire and Rescue NSW;
- The Department of Defence; and
- Water NSW.

5.6 Response to submissions and amendment report

Following the public exhibition period, the Department asked Transgrid to respond to the issues raised in submissions and the advice received from government agencies.

Transgrid provided a Submissions Report to the Department on 16 May 2024 (see **Appendix D**).

The Department published the submissions report, amendment report and additional information during the Department's assessment (**Appendix D**, **Appendix E,** and **Appendix F**).

The Department published the submissions report and amendment report on the NSW Planning Portal and referred them to relevant government agencies and Councils for comment. The Department continued to consult with government agencies and Council throughout the assessment process and requested additional information from Transgrid to address residual comments.

Transgrid provided a range of additional information throughout the Department's assessment, with the latest information provided in October 2024.

6 Assessment

6.1 Overview

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues for the project, including energy security and reliability, consideration of alternatives, biodiversity, visual and noise amenity and traffic and transport (see sections 6.1 to 6.7). The Department has also considered the full range of other potential impacts associated with the project and has included a summary of its assessment of these matters in section 6.8.

The Department acknowledges that Transgrid amended its design to reduce potential impacts, including revising sections of the transmission line alignment to reduce the visual impacts for residences along the transmission line easement and avoid areas of high biodiversity value.

6.2 Energy transition

The project is consistent with a range of national and state policies, which identify the need for additional transmission capacity to connect proposed renewable energy generation projects in NSW to the NEM, and to support energy security and reliability, including the:

- NSW Government's *Transmission Infrastructure Strategy* – which highlights the need for prioritising increasing transmission capacity;
- Net Zero Plan Stage 1: 2020 2030 (2020) and Implementation update (2022) – which identifies opportunities to use new, reliable pumped hydro electricity generation to hep NSW reach its goal of net zero emissions by 2050;
- NSW Government's *Electricity Strategy and Electricity Infrastructure Roadmap* – which support transmission upgrades; and
- *2024 ISP* – which identifies that there will be a demand for 83 GW of utility-scale wind and solar in the National Electricity Market (NEM) by 2034-35, and 127 GW by 2049-50 and that additional transmission is urgently required to enable the NEM to transition to renewable energy.

The Department considers that the project could play an important role in:

- enhancing the capacity of the NEM;

- support the delivery of clean energy from wind and solar projects from southern NSW to major load centres;
- transporting renewable energy from Snowy 2.0 to energy consumers;
- facilitating the transition to lower carbon emissions energy system as coal fired generators retire; and
- lower prices for residents of NSW and the broader NEM by establishing the ability to transfer power between regions and encourage more efficient investment in lower cost generation sources.

Consequently, the Department considers that the project is critical for energy security and reliability in NSW and in supporting the transition of the energy system.

6.3 Consideration of alternatives

A number of public submissions raised concerns regarding the impacts of installing transmission lines aboveground, suggesting the transmission lines should instead be installed underground. These concerns included impacts on biodiversity values, visual amenity, disruptions to agricultural land uses, ignition risk from overhead transmission lines and impacts to aerial firefighting capabilities.

Two NSW parliamentary committee inquiries were held into the feasibility of undergrounding transmission infrastructure for renewable energy projects. The first inquiry concluded on 31 August 2023 and found that constructing HumeLink as an overhead transmission line "*is the correct approach given the applicable regulatory environment on costs*", and the delay associated with putting HumeLink underground. The committee noted that community groups considered that the costing presented by Transgrid was inflated. However, the committee concluded that although the additional cost of undergrounding was contested, "*the evidence was nonetheless clear that it would be more expensive – at least double the cost"*. The committee also concluded that the *"current regulatory framework dictates that electricity consumers pay for the cost of transmission projects"*. Further it concluded that the *"evidence is clear that an undergrounding proposal would not be approved by the regulator and could only occur with a sizeable financial contribution from state or federal governments and significant planning"*.

The second inquiry tabled a report to the Parliament of NSW in March 2024. The report concluded that *"the available evidence does seem to support the fact that undergrounding electricity transmission infrastructure is more costly".*

The report also made a number of recommendations about regulatory tests for transmission incorporating environmental elements and that regulatory reform be considered to ensure that the

cost of transmission infrastructure is not borne by the consumer. The NSW Government response noted that work was underway on both these areas.

The report also recommended that the NSW Government commission an independent assessment into the costs and benefits of undergrounding transmission infrastructure technology. This recommendation was not supported by the NSW Government. Rather, the NSW Government committed to consider ways to better support the use of undergrounding transmission and opportunities for a hybrid approach on a project-by-project basis.

In its EIS and Submissions Report, Transgrid noted that the option to install the transmission lines underground was assessed in an underground feasibility study. Transgrid identified the following impacts associated with undergrounding the transmission lines:

- increasing the cost of the project, with undergrounding about three times more expensive than the overhead option;
- a significant delay in completion of the project by up to five years;
- extensive vegetation clearing and high waste volumes associated with trenching and excavation;
- restrictions to agricultural practices over the transmission line trenches;
- underground diminished efficiency of energy transmission; and
- difficulties undertaking monitoring and maintenance during operation of the project.

Transgrid also noted that that the risk of a bushfire being ignited by high voltage overhead transmission lines would be minimised through proactive and regular inspections and management of assets and easements, with vegetation managed to ensure safe clearances are achieved during operation. The Department notes that evidence provided to NSW Parliament found that overhead 500 kV transmission lines were unlikely to act as an ignition source.

The Department recognises that using underground transmission lines may be feasible in some locations. However, the Department considers this option is significantly constrained in meeting national and state Government objectives and the project's objectives, as the project is urgently required to support energy security and reliability in NSW and facilitate the energy transition. Transgrid has sought to minimise impacts where possible through project amendments including minor transmission line corridor changes, and the Department has recommended conditions to minimise and manage impacts to aerial operations and landscape character and visual amenity.

6.4 Biodiversity

The project has the potential to impact biodiversity values during construction of the transmission line through native vegetation clearing and direct and indirect impacts to listed threatened flora and

fauna species and vegetation communities. There is also the potential for impacts during operation, including from loss of connectivity.

Biodiversity has been a key focus of the Department's assessment with many of the public submissions on the project raising concerns over biodiversity impacts, particularly in relation to the size of the project's footprint and proximity to national parks and nature reserves.

The majority of the project area is cleared agricultural land, however with a project of this scale, impacts to areas of native vegetation are inevitable. This includes areas of Bago State Forest as well as large areas of intact remnant woodland, riparian vegetation and native grassland. The alignment avoids impacts within national parks in the region, including the Tarlo River National Park, Minjary National Park, Mudjarn Nature Reserve, Bango Nature Reserve, Back Arm Nature Reserve and Kosciuszko National Park.

6.4.1 Biodiversity assessment process

Transgrid engaged Niche Environment and Heritage to prepare a BDAR as part of the EIS. A revised BDAR was submitted to address advice from BCS and comments in public submissions, and to reflect changes to the amended project. Further information was also provided by Transgrid during the Department's assessment responding to matters raised during ongoing engagement between the Department, Transgrid and BCS on technical aspects of the BDAR. This includes revisions to the impact areas and assumptions underpinning the revised BDAR.

The assessment of biodiversity impacts for this project has been complex, with the scale and nature of the project presenting a number of technical challenges in the application of the Biodiversity Assessment Method (BAM). BCS, Transgrid and the Department have worked closely to ensure that the assessment is based on appropriately conservative assumptions and that a robust, outcomes-based framework is established through conditions to enable determination of the project.

Assessment approach

Due to the scale of the project, the final layout and design is yet to be confirmed. The assessment of biodiversity impacts has been prepared based on an indicative maximum disturbance footprint within a defined construction corridor to guide the likely maximum quantum and nature of potential impacts. Transgrid has also conservatively assumed the presence of a number of species within the disturbance footprint where surveys were unable to be completed due to access restrictions and survey timing.

The potential biodiversity impacts of the project would be refined as part of a detailed design process, with the aim of further avoiding and minimising biodiversity impacts through a process of further targeted surveys, infrastructure micro-siting and access track design.

To support the impact refinement process, Transgrid has committed to undertaking further targeted biodiversity surveys for entities identified as at risk of serious and irreversible impact, Matters of National Environmental Significance (MNES), and high credit liability species. These species have been assumed present in the BDAR and further surveys may result in a reduction in liability. The methodology for these surveys would be prepared in consultation with BCS and detailed in a Supplementary Biodiversity Strategy.

Once targeted surveys are complete and project design is finalised, Transgrid would review its assessment of impacts on these species in consultation with BCS to confirm the overall credit liability of the project and identify whether any additional and appropriate measures are required to minimise potential serious and irreversible impacts.

BCS has agreed to the proposed process for confirming and refining impacts on the basis that this work is undertaken in consultation with BCS. The Department has recommended suitable conditions confirming this.

The Department accepts that the assessed disturbance area is conservative and represents the maximum extent of disturbance for the project. The Department and BCS consider that the framework established through conditions is suitable for confirming the biodiversity impacts of the project and considers that these impacts are likely to reduce as a result of this process.

Residual issues

BCS has raised technical concerns regarding the development of species polygons (i.e. the mapped area of a species within subject land) for owls, the Superb Parrot, Gang-gang Cockatoo, and raptor species. Key to BCS's concern is that the species polygons for these species were developed based on an expert report that deviated significantly from Threatened Biodiversity Data Collection (TBDC) guidance. BCS consider that polygons developed for these species are likely to be adequate for calculating a worst case offset liability, however are not adequate to guide further avoidance and mitigation or on ground mitigation and survey. BCS has recommended that further targeted survey be undertaken in accordance with the BAM in all areas of potential habitat so that adequate avoidance can be achieved.

BCS and Transgrid have agreed that a suitable methodology for refining these polygons based on further survey would be developed in consultation with BCS as part of the Supplementary Biodiversity Strategy, prior to impacting the relevant biodiversity value.

The Department notes that under the BAM, the presence of a species may be determined in a number of ways, including assuming the species is present, conducting threatened species surveys or obtaining an expert report. Where an assessor assumes a species is present, an expert report may be used to determine the location and area of habitat for the species polygon.

In this case, Transgrid engaged Dr Steven Debus, an ornithologist who has written several books and papers on raptors and owls, and is a recognised 'expert' for the purpose of the BAM, to guide the mapping of suitable species polygons by Transgrid's accredited assessor.

The species polygons developed under the guidance of the expert rely substantially on habitat mapping rather than a survey-based approach as recommended by the TBDC. The TBDC approach requires an assessor to identify individual nest trees and apply suitable buffers of up to 500 metres depending on the species. The reliance on habitat mapping was primarily due to the sheer scale of the project footprint and the difficulty of identifying all nest trees within such a large footprint, and within the required buffer distances for these species, which may extend well outside the project area. BCS has noted that while the species polygons have not been developed in accordance with the BAM/TBDC, the impact areas are generally appropriate for the species.

The Department notes that the TBDC survey approach would require substantial survey effort and may not be successful in identifying all nest trees within and surrounding the project area, meaning that regardless of whether further survey is undertaken, there would need to be robust pre-clearance procedures and mitigation measures established through the Biodiversity Management Plan to deal with unexpected finds during construction.

Noting these points, the Department accepts that the species polygons for owls, Superb parrot, Gang-gang cockatoo, and raptor species have been developed in a manner permitted by BAM and are therefore considered acceptable for the purpose of calculating the maximum credit liability for these species.

The Department also acknowledges that the surveys required to achieve strict adherence to BAM would be difficult to achieve for this project. If Transgrid proposes further avoidance as part of the detailed design process, as it has committed to, the Department agrees that it would be necessary to undertake further targeted survey for these species to inform the design process. A suitable method for these surveys would need to be developed in consultation with BCS. The method would be presented as part of the Supplementary Biodiversity Strategy. In addition, the Biodiversity Management Plan would need to include protocols for unexpected and incidental finds of threatened species, including nest trees for these species.

6.4.2 Avoidance and mitigation

Transgrid has designed the project to avoid and minimise potential biodiversity impacts through a process of:

- **route selection / project design,** including locating infrastructure within areas of low or no biodiversity values, avoiding areas of higher quality vegetation where possible, minimising the

number of waterway crossings and targeting narrow waterway crossing points, and utilising double circuit design;

- **co-location** of infrastructure with existing transmission lines or in areas of existing disturbance;
- **re-location** of the transmission line alignment to avoid intact native vegetation within Bago State Forest and impacts to native riparian vegetation;
- **partial clearing** measures to retain vegetation within the easement where possible;
- **utilising existing access tracks** where possible to minimise vegetation clearing;
- **exclusion zones** established to avoid impacts to threatened species associated with McPhersons Plain within Bago State Forest;
- commitment to **micro-siting** of infrastructure in the detailed design phase to further avoid and minimise impacts to areas of high biodiversity value.

6.4.3 Native vegetation impacts

The project has an indicative disturbance footprint of approximately 1,846 ha. Around half of the disturbance footprint is native vegetation.

The disturbance footprint is made up of three zones of vegetation clearing (see **Figure 5**):

- total clearing zone (TCZ) – full clearing zone to provide for construction of transmission line structures, ancillary facilities and access roads (see **Figure 6**);
- easement clearing zone (ECZ) – partial clearing zone involving removal of tall growing vegetation that exceeds clearance requirements for the transmission line. Groundcover and understorey vegetation would not be cleared but may be impacted during clearing of the mid-storey and upper storey vegetation (see **Figure 7** and **Figure 8**); and
- hazard tree zone (HTZ) – partial clearing zone requiring selective removal, trimming or lopping of high risk trees within or adjacent to the easement where there is risk of a tree falling on transmission line infrastructure (see **Figure 7**).

The project would directly impact approximately 926 ha of native vegetation, including approximately 613 ha that would be fully cleared within the TCZ, 270 ha that would be partially cleared within the ECZ and 43 ha that would be selectively removed or trimmed within the HTZ.

Although around half the native vegetation impacted by the project is *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 and Riverina Bioregions* (Box Gum Woodland), which is listed

as critically endangered under the BC Act and EPBC Act, the majority of the Box Gum Woodland within the disturbance footprint (80%) is in a low to very low condition.

Transgrid has committed to refining these impacts as part of the detailed design process with the aim of further avoiding native vegetation impacts.

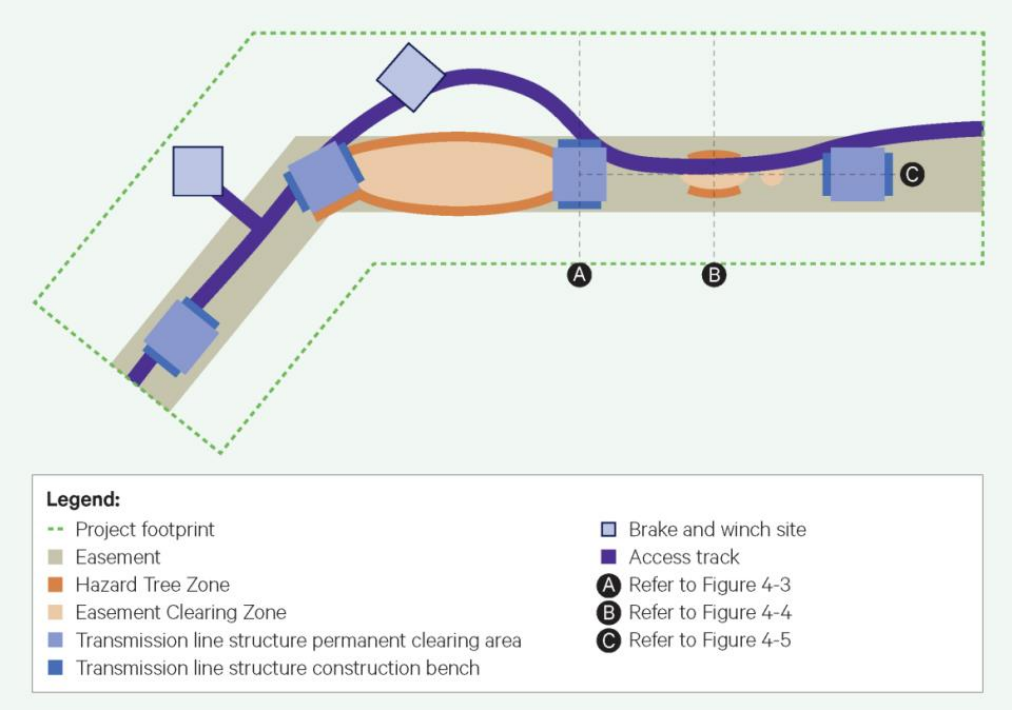

Figure 5 | Indicative vegetation clearing zones within the project footprint

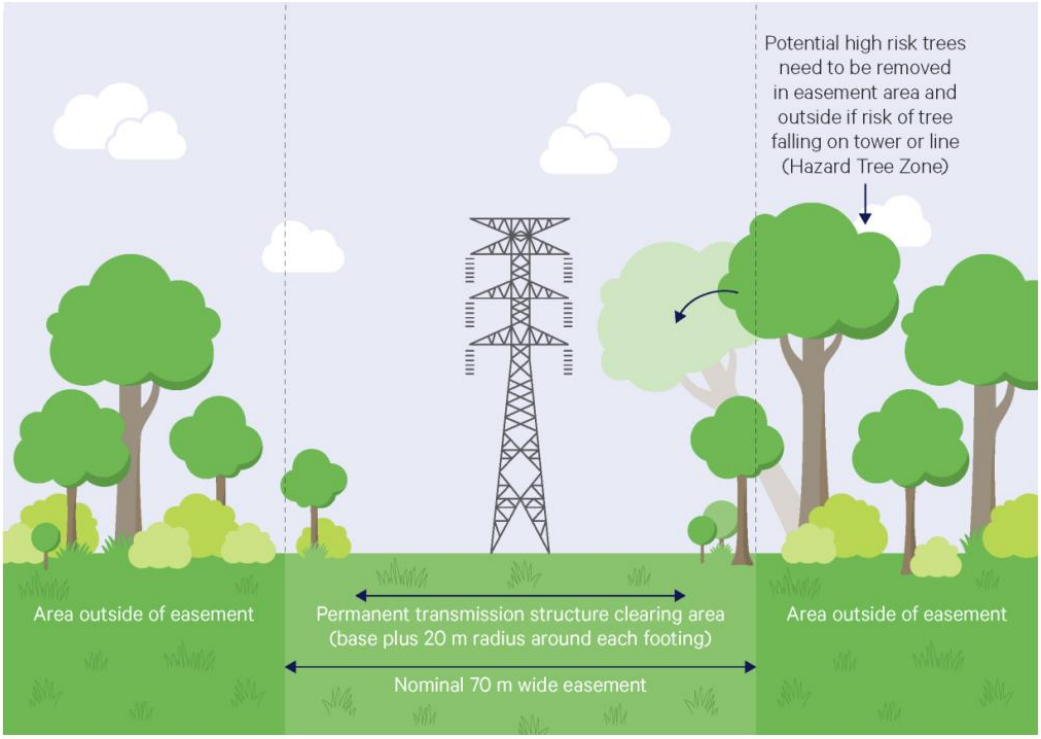

Figure 4-3 Indicative vegetation clearing around a typical transmission line structure

Figure 6 | Indicative total clearing zone (TCZ) around transmission line structures

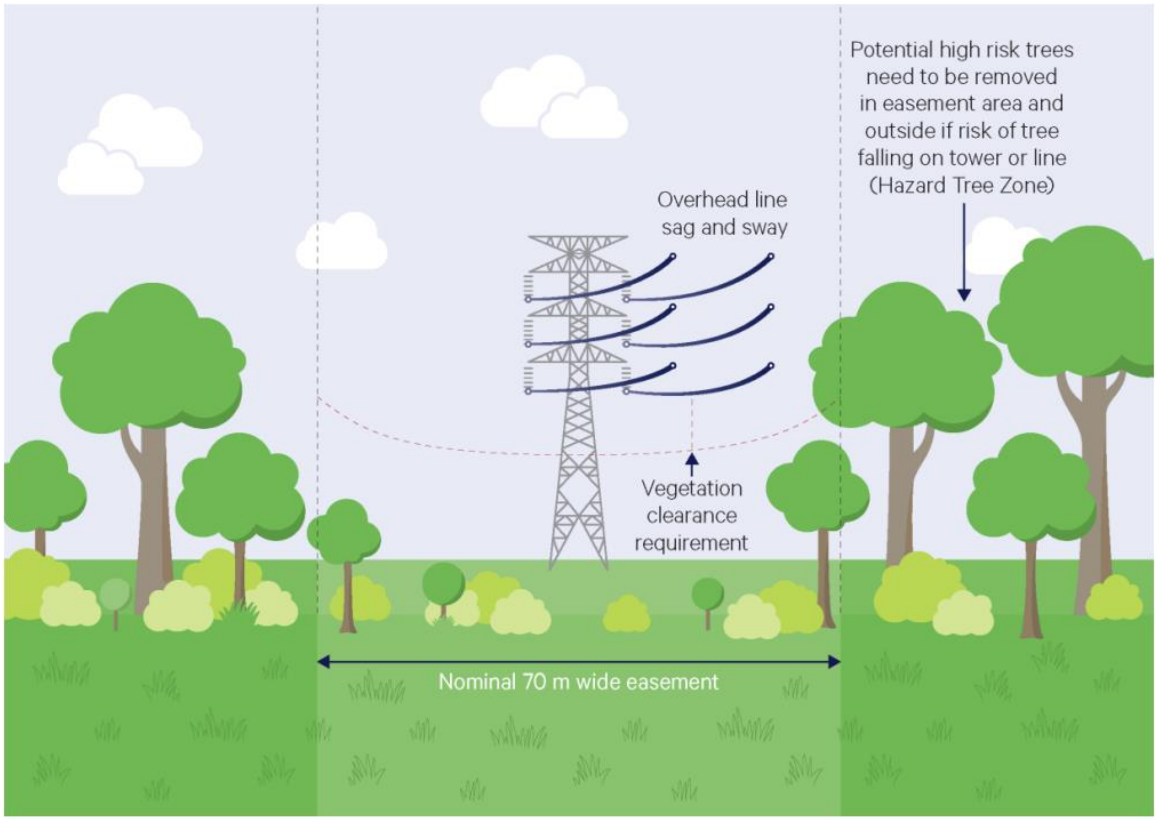

Figure 4-4 Indicative vegetation clearing within the easement

Figure 7 | Indicative easement clearing zone (ECZ) and hazard tree zone (HTZ)

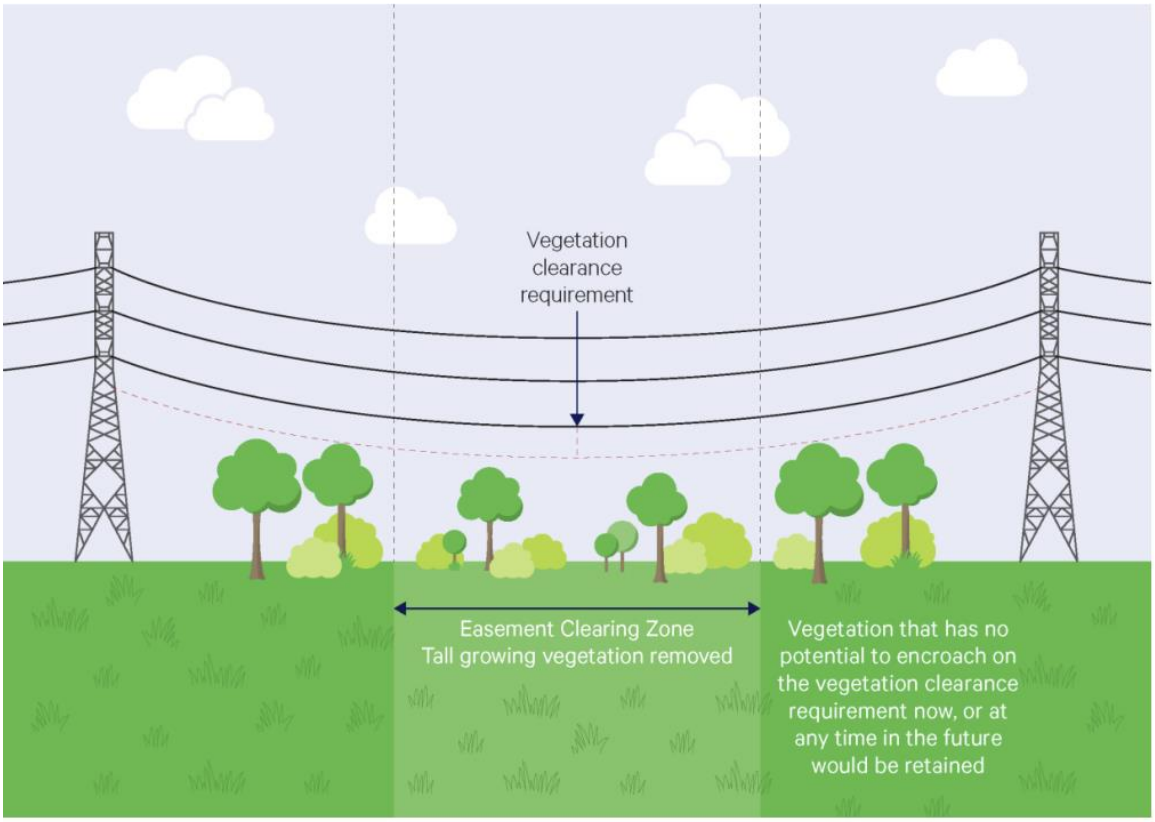

Figure 4-5 Indicative vegetation clearing mid-span

Figure 8 | Indicative mid-span easement clearing zone (ECZ)

BCS raised concerns that Transgrid had not adequately accounted for potential biodiversity loss within the ECZ from vehicles and machinery accessing the area to undertake clearing works. Transgrid maintained that assuming a partial impact was appropriate because biodiversity impacts along single-use access tracks would be temporary and limited to trampling of vegetation. BCS disagreed, noting that the BAM requires proponents consider the loss of biodiversity values associated with initial clearing, whether permanent or temporary. For this reason, BCS maintained there should be an element of total clearing for machinery access within the ECZ, particularly in heavily forested vegetation.

Notwithstanding Transgrid's position, it amended its partial impact footprint to include single-use access tracks to access areas of vegetation in the ECZ. Despite this allowance, BCS maintained that further consideration was required. The Department agreed that further allowance for total clearing along single-use access tracks within forested portions of the ECZ was reasonable and requested Transgrid amend the credit liability calculations for the project to provide for total loss of biodiversity value in these areas and has committed to reduce clearing impacts throughout the full ECZ.

Table H-1 in **Appendix H** provides a summary of the native vegetation types that would be impacted by the project, as well as the ecosystem credit liability under the NSW Biodiversity Offset Scheme.

6.4.4 Threatened flora impacts

The project has the potential to impact flora species listed under the BC Act and EPBC Act through direct loss from vegetation clearing, and from indirect impacts.

Targeted surveys recorded the presence of 21 threatened flora species within the project disturbance footprint. Suitable habitat for a further 25 threatened flora species was also identified in the disturbance footprint and have therefore been assumed to be present. Assuming presence has generated a worst-case credit liability for these species that is likely to be reduced following further targeted surveys that would be completed as part of the Supplementary Biodiversity Strategy.

Table H-2 in **Appendix H** details the impacts and species credit liability for threatened flora species potentially impacted by the project.

6.4.5 Threatened fauna impacts

The project has the potential to impact fauna species through direct habitat loss from vegetation clearing, and indirectly due to inadvertent consequences of construction and operation. Prescribed impacts may also occur due to fragmentation caused by the clearing of the easement, resulting in biodiversity connectivity impacts.

Direct habitat loss

Thirty threatened fauna species (including four frogs, two insects, three reptiles, 12 birds and nine mammals) and two endangered fauna populations listed under the BC Act have the potential to be impacted by the project. Fourteen of these species were recorded in the project area, with the remaining 16 conservatively assumed to be present. Eleven of the species impacted by the project are listed as critically endangered or endangered under the BC Act and/or EPBC Act.

Table H-3 in **Appendix H** details the direct impacts and species credit liability for threatened fauna species.

Indirect and prescribed impacts

The project has the potential to result in indirect impacts to biodiversity, particularly during construction, resulting from impacts on adjacent habitat or vegetation (edge effects), transport of weeds and pathogens, trampling of threatened flora species and increases in pest animal populations and predation of native fauna.

There is also the potential for prescribed impacts that are not related to native vegetation clearing and habitat loss. The prescribed impacts relevant to the project include potential impacts to rocky or man-made habitat structures, impacts to non-native vegetation offering habitat for threatened species, reduced habitat connectivity, including injury or mortality from transmission line collision, entanglement, or electrocution, impacts to water resources and vehicle strikes.

There is no policy on how to calculate or quantitatively assess these prescribed impacts and there is no identified requirement to provide biodiversity offset credits, however under the BAM, a proponent can propose offsets or other measures that benefit threatened entities and their habitat where indirect or prescribed impacts cannot be avoided, minimised or mitigated.

Transgrid has sought to quantify impacts associated with edge effects and connectivity loss and has presented a credit liability calculation for these impacts. A range of mitigation strategies have also been proposed, including preparation of a connectivity strategy for potentially affected species to maintain connectivity corridors in areas that facilitate fauna movement.

Following implementation of further avoidance and mitigation through the detailed design process, Transgrid would confirm the residual indirect or prescribed impacts and associated offset liability as part of the Supplementary Biodiversity Strategy (refer to **Section 6.4.1**).

BCS raised residual concerns regarding the significance of connectivity loss for the project, the identification of important habitat corridors in the BDAR and the lack of credits proposed for the Yellow-bellied Glider (Bago population). Transgrid increased the credits offered for a range of species potentially affected by connectivity impacts, including the Yellow-bellied Glider (Bago population). The Department is satisfied that the credits offered are reasonable. BCS has

recommended that the connectivity strategy and Supplementary Biodiversity Strategy be prepared in consultation with BCS to ensure corridor connectivity impacts are minimised and appropriate mitigation measures are adopted. The Department's recommended conditions support this approach.

6.4.6 Serious and irreversible impacts

BCS considers there to be a high risk of serious or irreversible impacts to three SAII entities known or assumed to be present in the disturbance footprint, including:

- Box Gum Woodland, listed on the basis of Principle 1 (in a rapid rate of decline) and Principle 2 (a very small population size) and considered at high risk due to the extent of predicted impacts (470.48 ha);
- Sooty Owl, listed on the basis of Principle 4 (unlikely to respond to measures to improve its habitat and vegetation integrity) and considered at high risk due to the proximity of known records and extent of assumed presence (68.81 ha); and
- Rice Flower *(Pimelea bracteata*), listed on the basis of Principle 1 (in a rapid rate of decline) and considered at high risk due to the extent of impacts to known habitat (4.76 ha).

Transgrid has committed to further avoid and minimise impacts to SAII entities to the greatest extent practicable during finalisation of the project design. To achieve this, Transgrid would undertake supplementary surveys to identify if species are present and reduce the area of potential impact and prioritise avoidance within areas of intact and/or higher condition remnants. A range of mitigation measures would also be implemented during construction with the aim of avoiding / minimising the risk of serious and irreversible impacts, including pre-clearance surveys, biodiversity exclusion zones, sedimentation and erosion controls, vegetation clearing methods and biosecurity and hygiene protocols.

Following consultation with BCS, Transgrid has also committed to funding additional mitigation measures for the three entities considered at high risk. These measures specifically target the SAII principles relevant to these entities and have a collective value of $7,063,800. The actions include:

- for **Box Gum Woodland**, preparation, establishment and funding of a Local Area Management Plan that aims to establish ecological connectivity between Bango and Burrinjuck Nature Reserves by restoring patches of remnant woodland along a 31 – 47 km corridor between the two reserves. The proposal provides a framework and funding for the reconstruction of at least 457 ha of Box Gum Woodland, to an equal or higher condition than the Box Gum Woodland being impacted, within a landscape-scale ecological connectivity project;
- for **Sooty Owl**, implementing Active Restoration Management Actions at a Biodiversity Stewardship Site to reinstate Sooty Owl breeding habitat and small prey habitat such as

artificial nest hollows, supplementary planting and coarse woody debris installation. The project would include funding of a PhD student to design and monitor the efficacy of the program; and

- for ***Pimelea bracteata***, a genetic research program to determine the suitability of the species for translocation, the design of a translocation plan to maximise genetic diversity and, depending on the outcomes of the research, in situ management of a population or translocation of an ex-situ population with monitoring over a period of three years.

The Department's assessment of potential serious and irreversible impacts has been informed by advice from BCS, as well as information presented in the BDAR by Transgrid's accredited assessor. The Department has also carefully considered the five assessment provisions in sections 9.1.1 and 9.1.2 of BAM 2020, and the *Guidance to assist a decision-maker to determine a serious and irreversible impact* (NSW DPIE - EES, 2019).

Under clause 6.7 of the *Biodiversity Conservation Regulation 2017* (BC Regulation), an impact is to be regarded as serious and irreversible if it is "*likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct*" on the basis of four principles. The Department's assessment has therefore focused on the impacts of the project on the relevant principles for which the entities have been listed at risk.

Box Gum Woodland

The project would directly impact up to a total of 470.48 ha of Box Gum Woodland. A further 8 ha of the community is estimated to be indirectly impacted by edge effects. Of the area that is likely to be directly impacted, the majority (80% or 378 ha) is in low to very low condition and 13% (59.3 ha) is in high to very high condition. This reflects Transgrid's approach of avoiding areas of higher quality vegetation where possible.

Noting that Box Gum Woodland has been listed as a SAII entity on the basis of Principle 1 (in a rapid rate of decline) and Principle 2 (a very small population size), the current extent of the community in NSW is relevant to the assessment of potential serious and irreversible impacts. In 2006, the Threatened Species Scientific Committee estimated that the extent of Box Gum Woodland in NSW was 250,729 ha, and the Committee's more recent 2020 advice also refers to that figure. Given this, less than 0.2% of this community's estimated extent of occurrence in NSW would be directly impacted by the project.

The Department understands that many ecologists consider that the numbers derived from 2006 are out-of-date and likely to substantially underestimate the actual extent of Box Gum Woodland, as listed in NSW. A recent estimate by Dr Colin Driscoll, based on NSW State-wide Vegetation Type Mapping (SVTM) released in 2023, estimates that *"there is approximately 1,788,703 ha of extant Box-Gum Woodland CEEC within the SVTM in woodland form"* (Driscoll, 2024). Dr Driscoll also estimated

that there is approximately 5,315,040 ha of derived native grassland form, which results in a total of 7,103,743 ha of Box Gum Woodland in NSW.

As Box Gum Woodland is listed on the basis of 'population size' and 'rate of decline', it is particularly relevant to consider the project's potential impacts on Box Gum Woodland against the total area remaining in NSW. While the Department considers the estimates of total area based on the recent SVTM are likely to be more appropriate for the NSW listing, it has also considered the 2006 figure for comparative purposes. Using Dr Driscoll's estimate and the estimate from the 2006 Final Determination, the project would represent an impact of 0.007% or 0.19% of the total remaining area in NSW, respectively.

Notwithstanding the views of BCS and the conclusions of the BDAR, the Department acknowledges that while the project would contribute to a further decline in population size of this community, an impact in the order of 0.007% to 0.19% of the total remaining area in NSW is unlikely to contribute significantly to the extinction of Box Gum Woodland, and therefore unlikely to be a serious and irreversible impact as defined by the BC Regulation.

Transgrid has also proposed a Local Area Management Plan and associated restoration works of at least 457 ha of Box Gum Woodland and the Department considers this proposal to be well targeted and would further minimise the risk of impacts to Box Gum Woodland.

Sooty Owl

The project has been assumed to impact 68.81 ha of potential habitat for Sooty Owl. The species was not recorded within the project area however is known to be present in the region.

The species has a large distribution along eastern NSW, however the project is located at the edge of the species range and away from the main distribution of the species in NSW and is more than twice as abundant in north-eastern NSW as in southern-eastern NSW. The majority of potential habitat for this species is within conservation reserves and state forests.

The species is highly dependent on hollows for breeding, therefore the removal of hollow bearing trees represents a threat to this species.

The project alignment is likely to intersect with the home range of several breeding pairs, although this has not been able to be confirmed during surveys to date. No individuals were recorded during surveys and there are limited records within 20 km of the alignment. Any breeding pairs that would be impacted by the project would be part of a larger population that extends into surrounding areas.

The Department acknowledges that the project would likely impact the home ranges of some individuals, and potentially remove breeding habitat, however these impacts are located near the edge of the species' range in NSW and the Department considers they would be unlikely to threaten

the species with extinction, and therefore unlikely to be a serious and irreversible impact as defined by the BC Regulation.

Transgrid has committed to undertake additional targeted surveys to delineate the extent of habitats and roost locations and, where active roosts are recorded, consider measures to avoid or minimise impacts during detailed design such as increasing transmission line structure height, micro-siting and /or avoiding areas of intact and higher condition habitat.

Transgrid has also committed to reinstate Sooty Owl breeding habitat and small prey habitat such as artificial nest hollows, supplementary planting and coarse woody debris installation at a Biodiversity Stewardship Site. The Department considers that this is consistent with the recovery plan for large forest owls and contributes to knowledge about the species by conducting further research.

Rice Flower (*Pimelea bracteata*)

The project would impact 0.27 ha of known habitat of *Pimelea bracteata* and 4.49 ha of assumed presence habitat where surveys have not been undertaken, all of which is in high to very high condition. Targeted surveys recorded approximately 1,500 plants within the broader project area (i.e. construction corridor), with only one known individual located within the disturbance footprint (within the ECZ).

Pimelea bracteata is a critically endangered shrub that has a very restricted distribution. The majority of populations are located in the northern area of Kosciuszko National Park, Scabby Range Nature Reserve, neighbouring State Forests and freehold land. It occurs in wetlands and along waterways and stream edges in high altitude treeless subalpine valleys. The species has recently been subject to substantial dieback throughout most of its range, predominantly from Phytophthora infection (a plant pathogen), with this predicted to continue over the coming years, threatening the species with extinction. The extent of occurrence was estimated to be 4,161 km^2 and area of occupancy to be 116 km^2.

Given the extent of assumed presence within the project disturbance footprint, it is not possible to quantify the number of individuals that would potentially be impacted by the project, however the impact area of habitat equates to 0.04% of the area of occupancy for the species and less than 0.01% of the extent of occurrence for the species. Noting that this species grows along stream edges, the actual direct impacts of the project are likely to be less than has been assumed, and micro-siting is likely to be effective in avoiding impacts should further individuals be identified in targeted surveys.

Although the area of potential impact may not be significant in comparison to the area of occupancy, there is an existing impact on the species from the Phytophthora infection dieback

causing decline over the past 6 years. Any direct impacts on the species habitat could therefore potentially increase the rate of decline, however, the risk of extinction and the potential serious and irreversible impacts are more likely to be related to the significance of existing threats, and are less likely to be related to this proposal.

Transgrid has committed to undertake further targeted surveys within areas of assumed presence, avoid and minimise impacts through micro-siting, establish exclusion zones in retained vegetation to identify threatened flora habitats as no-go zones during construction and implement further mitigation (including pre clearance surveys, biosecurity protocols to minimise the risk of disease and weed spread).

As previously noted, Transgrid has committed to funding additional measures involving a genetic research and translocation program for this species. This measure has been developed in consultation with the Royal Botanic Gardens and BCS and the Department considers that the proposed program would be a beneficial contribution that could assist in the recovery of the species.

The Department considers this to be a suitable additional measure to further minimise the risk of serious and irreversible impacts to *Pimelea bracteata*.

The Department is satisfied that with the implementation of the avoidance and mitigation measures proposed by Transgrid, the project's impacts would be unlikely to contribute significantly to the risk of extinction, and unlikely to constitute a serious and irreversible impact.

Other SAII entities

Transgrid's assessment of serious and irreversible impacts considered a further:

- three threatened ecological communities known to occur within the project area;
- four orchid species that are either known to occur or have a high likelihood of occurring; and
- 14 threatened species that Transgrid and BCS consider less likely to occur but were conservatively assumed to be present due to a lack of adequate survey.

The Department notes that assuming presence for SAII entity threatened species ensures a worst-case scenario for assessing biodiversity impacts and calculating offset liability for the development.

Threatened ecological communities

The project would result in limited impacts to three SAII entity threatened ecological communities known to occur within the project area. Potential impacts to each of these communities was assessed and found unlikely to contribute to a serious and irreversible impact for each of these communities due to the limited extent of impacts within each of these communities. The Department

agrees that the project would not contribute significantly to the risk of extinction to these communities.

Orchid Species

BCS noted the potential for a high risk of serious and irreversible impacts to several SAII entity orchid species (Bago Leek-orchid, Brandy Marys Leek-orchid, Kelton's Leek orchid and Blue-tongued Greenhood) located at McPhersons Plain. BCS advised, however, that this risk would be reduced by adopting a suitable exclusion zone, including no ground disturbance within a buffer of 50 m to the Alpine bog habitat of these species and 30 m to known locations of these orchids at McPhersons Plain.

Transgrid has agreed to adopt the exclusion zones recommended by BCS, noting that some clearing of taller vegetation may be required within these zones. Transgrid has committed to carefully manage these works to avoid impacts to orchid species through the use of hand tools and avoiding ground disturbance. These measures were accepted by BCS.

The Department has recommended conditions requiring Transgrid comply with the exclusion zones recommended by BCS and develop specific measures for avoiding impacts to these species as part of the Biodiversity Management Plan. With these measures in place, the Department considers it is unlikely that the project would result in extinction of these species.

In addition, the Department considers a precautionary approach is warranted and has recommended a condition requiring Transgrid to undertake additional surveys prior to any impacts in areas of assumed presence of these species.

Assumed present species

Three assumed present fauna species (Large Eared Pied Bat, Yellow-spotted Tree Frog and Smoky Mouse) and one assumed present flora species (*Solanum armourense*) were considered to have a moderate likelihood of occurring within the project area.

Potential impacts to each of these species was assessed and found unlikely to contribute to a serious and irreversible impact due to:

- the limited extent of impacts to potential habitat (for Smokey Mouse and *Solanum armourense);*
- the low likelihood of impacts to potential breeding habitat and limited extent of impacts on potential foraging habitat (for Yellow-spotted Tree Frog); and
- the location of impacts away from potential breeding habitat and the lack of observations of the species within the project area despite targeted survey (for Large Eared Pied Bat).

The Department agrees that even if these species were present within the project area as assumed, the potential for serious and irreversible impacts would be low due to the limited extent of impact to key habitats for these species.

The remaining assumed present species (nine flora species and one fauna species) were considered to have a low likelihood of occurring in the project area. Based on Transgrid's SAII assessment, the Department agrees that it is unlikely that these species would be present in the areas of assumed presence.

Conclusion

The Department considers that a serious and irreversible impact to these entities is unlikely due to a range of factors, including the low likelihood of occurrence of many of the species, the limited extent of impact to potential habitat and the condition of that habitat, the low likelihood of impacts to potential breeding habitat and the range of avoidance and mitigation measures proposed.

BCS has reviewed the SAII assessment and, while noting some differences in opinion on technical aspects of the assessment, did not raise any concerns regarding the conclusions of the assessment. The Department is therefore satisfied that the project would not contribute significantly to the risk of extinction of any of these entities, and would not constitute a serious and irreversible impact.

However, given the extent of assumed presence, the Department considers a precautionary approach is warranted to assist in guiding further avoidance during the detailed design process.

Transgrid has committed to undertake further targeted surveys post-approval to confirm the presence or absence of these species and facilitate a reduction of the credit liability where absence in confirmed. If found to be present, Transgrid would update the Biodiversity Management Plan.

BCS supports the approach proposed by Transgrid to confirm the presence or absence of these entities through further targeted survey.

The Department has recommended conditions confirming the process for additional survey and impact verification through a Supplementary Biodiversity Strategy and Biodiversity Assessment Verification Report, which must be prepared in consultation with BCS.

6.4.7 Impacts on Commonwealth listed species and communities

Transgrid identified and addressed all threatened species and communities included in the Commonwealth Referral Decision (EPBC 2021/9121) (Referral Decision).

Assessments of significance were undertaken for threatened species and communities identified as likely to be impacted by the project, including one threatened ecological community, 12 threatened flora species, 22 threatened fauna species and six migratory species listed under the EPBC Act.

Assessments of significance concluded that there would likely be significant impact on one threatened ecological community (Box Gum Woodland) and four threatened fauna species (Yass Daisy, Hoary Sunray, *Pimelea bracteata* and Swamp Everlasting) and two threatened fauna species (Koala and Pink-tailed Legless Lizard).

The assessment of significant impacts for many of these species is based on the extent of assumed presence within the project area. Subject to the outcomes of additional survey and once further avoidance measures are undertaken as part of detailed design, the risk of a significant impact to all of these species is expected to be reduced.

Transgrid has proposed offsetting of EPBC listed species and communities under the NSW Biodiversity Offset Scheme, as outlined in **Section 6.4.8**.

The Department considered Commonwealth matters in consultation with BCS and AG DCCEEW, including consideration of Transgrid's assessments of significance and the relevant approved conservation advice, recovery plans and threat abatement plans. A summary of this assessment is provided in **Appendix J**.

6.4.8 Biodiversity offsets

Under the BC Act, the impacts of the project on native vegetation and species would generate 15,128 ecosystem credits and 232,233 species credits.

Table 6 summarises the estimated biodiversity credit liability requirements under the *NSW Biodiversity Offset Scheme* for the project.

Table 6 | Native vegetation and threatened species biodiversity offset liability

Impact	Total area (ha)	Credit liability
Native vegetation – direct impacts	926.44	14,631
Native vegetation – indirect impacts (edge effects)	17.77	497
Total ecosystem credits		**15,128**
Threatened flora – direct impacts		144,597
Threatened fauna – direct impacts		85,798
Threatened fauna – prescribed impacts (habitat connectivity)		1,838
Total species credits		**232,233**

Transgrid is required to offset the biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme, and the Department has recommended conditions requiring Transgrid develop a Biodiversity Offset Package in consultation with BCS and the Biodiversity Conservation Trust prior to carrying out any development that could impact biodiversity values.

Transgrid has advised that the focus of its biodiversity offset package would be to firstly reduce the project's assumed presence offset liability by undertaking additional survey in accordance with the proposed Supplementary Biodiversity Strategy (refer to **Section 6.4.1**). This combined with additional avoidance and mitigation implemented through the detailed design process would enable the project's credit liability to be re-calculated to confirm the final number and class of biodiversity credits required to be offset.

This approach provides an incentive to Transgrid to avoid and minimise impacts on biodiversity values through the detailed design process.

Transgrid has advised that the residual offset liability would be met through a combination of:

- establishing Biodiversity Stewardship Sites on third party owned land, of which Transgrid has commenced negotiations for four sites;
- use of credits from existing Transgrid Biodiversity Stewardship Sites; and/or
- credits purchased from the market or via additional sites yet to be identified.

The Department is satisfied that with further avoidance measures during detailed design and the conservatism for assumed presence of some species, the number and class of credits required to be offset is likely to be lower than the calculations presented above.

Subject to the recommended conditions, the Department and BCS are satisfied that the project could be undertaken in a manner that improves, or at least maintains, the biodiversity values of the locality over the medium to long term.

Transgrid has secured funding of $502.3 million for biodiversity offsets, which would be used to implement the Biodiversity Offset Package. If Transgrid failed to meet its requirements in the Biodiversity Offset Package, these funds would be used to make an equivalent payment to the Environment Agency Head.

6.4.9 Recommended conditions

The Department has recommended conditions requiring Transgrid to:

- minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees, within the project footprint and protect native vegetation and key fauna habitat outside the disturbance footprint in accordance with limits in the recommended conditions;
- prepare a Supplementary Biodiversity Strategy which would detail methods for additional targeted surveys required for assumed present species, with reference to the Biodiversity Assessment Method;
- prepare a Biodiversity Assessment Verification Report which would include:

  - the findings of additional targeted surveys undertaken for the Supplementary Biodiversity Strategy;
  - a review of measures to avoid or mitigate impacts following completion of targeted surveys and finalisation of the project design;
  - recommendations for any credit liability reduction resulting from this review.
- prepare and implement a Biodiversity Management Plan which would include a description of the measures to:
  - implement clearing and operational management protocols;
  - avoid and minimise impacts on potential SAII entities and provide minimisation measures for these entities;
  - minimise the potential indirect impacts on threatened flora and fauna species;
  - implement a connectivity strategy and hollow and nest strategy;
  - monitor and verify areas of partial clearance;
  - measures to rehabilitate and restore temporary disturbance areas and maximise the salvage of resources within the approved disturbance area for beneficial reuse (such as fauna habitat enhancement); and
  - control weeds, erosion and feral pests.
- provide a detailed program to monitor and report on the effectiveness of these measures;
- prepare and implement a Biodiversity Offset Package;
- provide financial security to ensure offsets are implemented.

6.4.10 Conclusion

The Department acknowledges that biodiversity impacts are unavoidable when constructing 365 km of transmission lines. In designing the project, Transgrid has sought to avoid and minimise impacts on high quality vegetation and habitat as far as practicable. This has been achieved through a process of route selection to locate infrastructure in areas of low or no biodiversity values and co-locating infrastructure with existing transmission lines or in areas of existing disturbance. Transgrid has also adopted other mitigation measures to reduce biodiversity impacts, including partial vegetation clearing beneath the transmission lines and a commitment to further avoidance and mitigation of biodiversity impacts through the detailed design phase, where practicable.

The project would directly impact approximately 926 ha of native vegetation, including approximately 613 ha that would be fully cleared, and 313 ha that would be partially impacted. The

majority of these impacts occur within disturbed, derived grassland or on vegetation that is of low quality. Additional biodiversity impacts are expected as a result of indirect edge effects and loss of habitat connectivity.

The Department considers that the biodiversity assessment process has been comprehensive for this project and that it has taken a conservative approach to identifying a potential worst-case impact scenario. This has been achieved by assuming presence for a range of species and quantifying potential indirect and prescribed impacts associated with edge effects and habitat connectivity loss.

The Department has recommended a comprehensive suite of conditions to limit impacts on biodiversity values and to guide further avoidance and minimisation of these impacts. Transgrid would be required to offset the residual biodiversity impacts of the project in accordance with a Biodiversity Offset Package, including provision of a bank guarantee of $502.3 million as security to ensure offsets are implemented. In addition, Transgrid has committed to implement specific mitigation measures intended to minimise the risk of serious and irreversible impacts.

BCS has worked closely with Transgrid to establish a framework for further refining the residual biodiversity impacts of the project through the detailed design phase. The Department's recommended conditions reflect this agreed framework. The Department considers that subject to the recommended conditions, the project would not significantly impact the biodiversity values of the locality.

6.5 Landscape character and visual amenity

Transgrid commissioned a Landscape and Visual Impact Assessment (LVIA) as part of its EIS and provided further assessment of receivers during the Department's assessment. The Department also visited the project area to assess the landscape character and potential visual impacts.

The project area spans across a mosaic of landscapes ranging from undulating rural hills, rural valleys, foothills and ridgelines, forested pine plantations and native upland forests. Just over half of the alignment is co-located with existing 330 kV infrastructure (see **Figure 9**).

Transmission towers would vary in height between 50 m to 76 m for 500 kV towers and between 24 m to 50 m for 330 kV towers. Towers would typically be constructed at 300 to 600 m intervals.

Transgrid assessed the visual impact at both:

- **non-easement affected receivers** - private residences on properties not hosting project infrastructure; and
- **easement affected receivers** - private residences on properties that are hosting project infrastructure.

The Department notes that properties where land or easements would be acquired for the project (i.e. easement affected) would be compensated in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. As such, the Department has focused the assessment of visual impacts to private residences on properties not hosting project infrastructure (i.e.. non-easement affected receivers).

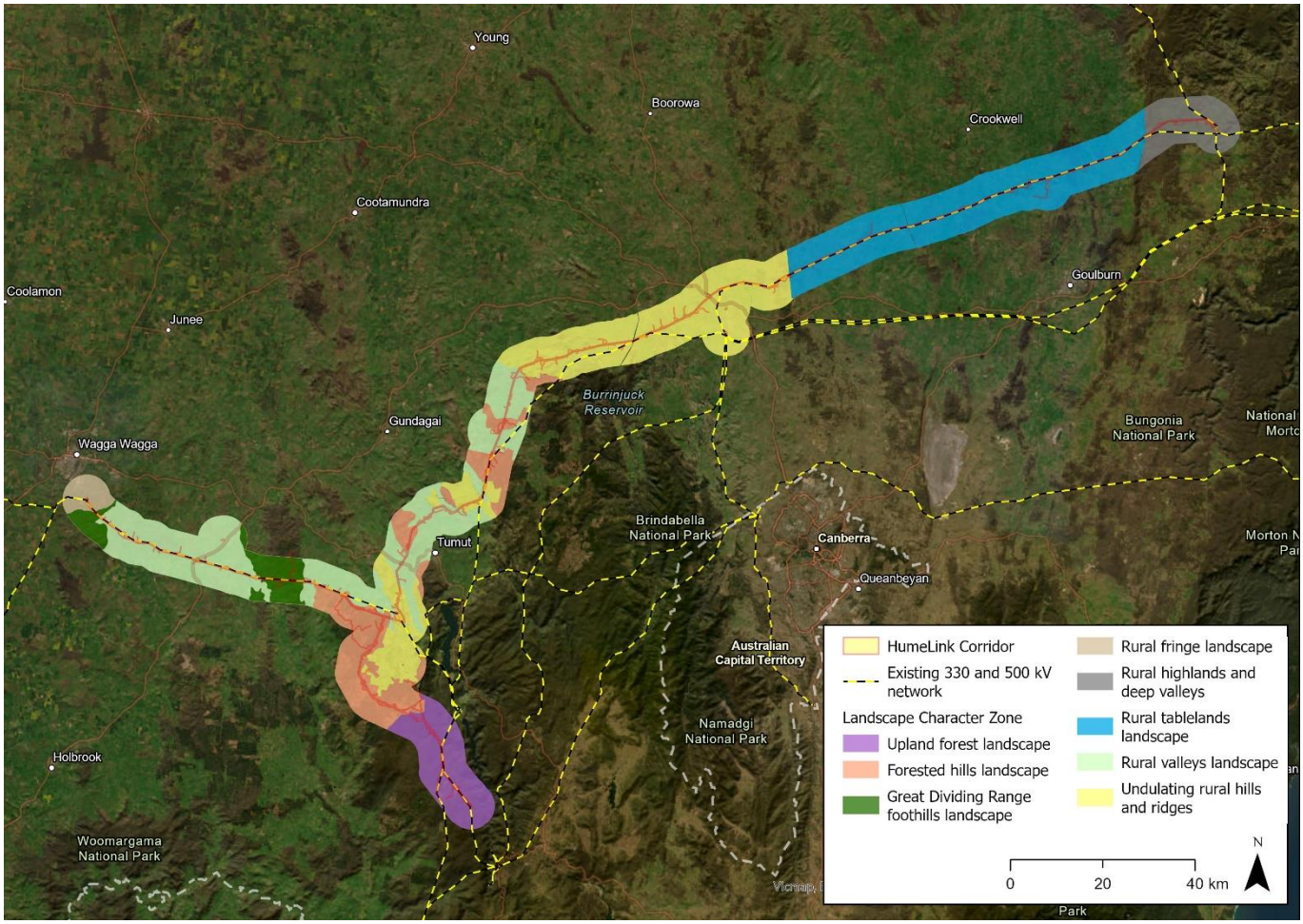

Figure 9 | Landscape character zones

6.5.1 Avoidance and mitigation

The majority of community objections expressed concerns about visual impacts and suggested installing the transmission lines underground. The Department acknowledges that undergrounding the transmission lines would reduce visual impact. However, as discussed in **Section 6.3**, this option has other environmental impacts and would prevent other project objectives from being met.

Notwithstanding, in response to community feedback, Transgrid amended the application, realigning the 500 kV corridor between Maragle and Wondalga. The amendment places the alignment in the Green Hills State Forest, west of Batlow. This increases the minimum distance

between the town and the easement from 4.5 km to 7 km, increasing the distance from the Kosciuszko National Park and traversing more pine plantation forests.

Transgrid's LVIA predicted that up to four private receivers not hosting project infrastructure (i.e. non-easement affected) would experience a moderate or greater visual impact from the overall project.

Transgrid proposes to address the residual visual impacts to non-easement affected properties by:

- providing vegetation screening at receivers where there is a visual impact rating of moderate to high, in consultation with the affected landowner;
- utilising a pre-dulled steel finish for transmission line structures to minimise potential glare and reflection impacts;
- retaining vegetation that provides screening of the project to the furthest extent possible; and
- utilising shielded fittings at ancillary infrastructure to minimise off-site lighting impacts.

6.5.2 Impact assessment

The Department's assessment of predicted visual impacts on non-easement affected properties, as well as public viewpoints surrounding the project, is discussed below.

Views from private properties

Transgrid considered the visibility of the project for all private properties within 2 km of the project, identifying 79 with the potential for moderate or greater impacts. Of these properties, only four (A33, C35, K23 and R24) are non-easement affected.

Transgrid has committed to implementing visual mitigation measures, in consultation with the landowners, at all easement and non-easement affected properties with a moderate or higher visual impact rating.

The Department's assessment of impacts to private properties is informed by the LVIA and supplemented by a site visit. As discussed in **section 6.5.1**, the Department's assessment focussed on the project's potential visual impacts to non-easement affected properties, summarised in **Table 7** below. The Department's assessment has identified 18 additional non-easement affected properties where visual mitigation is warranted. Accordingly, the Department has recommended conditions requiring Transgrid implement mitigation measures (such as landscaping and vegetation screening) to reduce visual impacts in consultation with 22 non-easement affected properties.

The Department has also recommended a condition requiring Transgrid provide reasonable and feasible measures to minimise the visual impacts of the nearest towers on properties A29, K23, Q20, R12, R24 and S12. This is due to the very close proximity of the corridor to these properties.

Measures could include increasing setbacks, the strategic placement of towers considering other existing towers in the vicinity of the property. V23 (Hillas Homestead) in Bannaby is also included in the recommended condition despite being an easement affected property due to its State Heritage Register listing.

There would be some minor impacts from certain construction activities, such as the operation of site compounds and accommodation camps, but these impacts would be temporary, and the sites would be rehabilitated following construction.

Key public viewpoints

Transgrid selected 39 representative viewpoints, mainly from local roads and highways, to represent views towards the project from the surrounding landscape. These viewpoints represent areas such as lookouts, road corridors, scenic routes, and locations in sensitive recreational and natural areas. Of the 39 viewpoints, visual impact was assessed as moderate at five locations, moderate-low at 16 locations and low to negligible at all other locations. Transgrid's assessment identified no significant impacts to fixed vantage points such as campgrounds or lookouts.

Five viewpoints were assessed as experiencing moderate visual impacts during operation, four of which are on the road network (VP2, VP11, VP12, VP21). Views along the road corridor would be short duration due to travelling at speed and partially screened by existing vegetation and topography.

No significant visual impacts were identified for scenic routes, except for a moderate-low impact at one location (Batlow Road). The Department considers that these views of the project would be fleeting and additional mitigation measures are not warranted at this location.

One other viewpoint at Greendale Church (VP22) would experience a moderate visual impact. It is noted however that transmission infrastructure is already part of the visual landscape at this location, with existing transmission infrastructure visible in front of and adjacent to the project. Additionally, views towards the project would be partially screened by existing vegetation.

In summary, the Department considers that visual impacts at public viewpoints would not be significant.

Table 7 | Visual impact assessment - View from key non-easement affected properties

Property ID	Distance to easement (m)	Theoretical towers visible	Transgrid Impact Rating	Department assessment notes	Recommended mitigation
A24	524	10-17	Low	Views to existing transmission line Vegetation screens views towards the project	Not required
A28	475	10-17	Low	Views to existing transmission line Vegetation screens views towards the project	Not required
A29	105	10-17	Low	Very close proximity to project. Dense existing hedge surrounds the dwelling No committed tower locations by Transgrid	Additional measures required Vegetation screening on request
A33	390	10-17	Moderate	Views to existing transmission line Lack of vegetation screening	Vegetation screening on request
A67	331	7-9	Moderate-Low	Close proximity to project Views to existing transmission line Topography, existing vegetation and buildings would screen some views towards the project	Vegetation screening on request
A68	676	7-9	Moderate-Low	Views to existing transmission line Vegetation screening views towards the project	Not required
B2	753	10-17	Moderate-Low	Elevated position with east facing primary view Views to existing transmission line approximately 1 km distance Gugaa substation 2.4 km east	Not required
C35	491	7-9	Moderate	Views to existing transmission line, project would be closer Vegetation screens views towards the project	Vegetation screening on request

Property ID	Distance to easement (m)	Theoretical towers visible	Transgrid Impact Rating	Department assessment notes	Recommended mitigation
D35	524	7-9	Low	Dense existing vegetation screens views towards the project	Not required
E27	670	1-4	Moderate-Low	No existing transmission line in vicinity of the project Multiple structures would be visible elevated on hillside Some intervening vegetation	Vegetation screening on request
H17	716	7-9	Moderate-Low	Views towards the project would be partially screened by existing vegetation Property benefits from distance to the project	Not required
H19	266	7-9	Moderate-Low	Dense existing vegetation screens views towards the project	Not required
H56	744	7-9	Moderate-Low	Views towards project partially screened by buildings and existing vegetation	Vegetation screening on request
K23	190	4-6	High-Moderate	Very close proximity to project Vegetation screens views towards the project No existing views to transmission infrastructure	Additional measures required Vegetation screening on request
K40	590*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request
K44	530*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request
K45	540*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request
K46	500*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request

Property ID	Distance to easement (m)	Theoretical towers visible	Transgrid Impact Rating	Department assessment notes	Recommended mitigation
K47	500*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request
K48	420*	4-6	<Moderate*	Close proximity to project	Vegetation screening on request
O18	649	7-9	Moderate-Low	Elevated position with north facing primary view towards project No existing transmission views to transmission infrastructure to the north Limited vegetation screening	Vegetation screening on request
O45	271	4-6	Low	Close proximity to project Views to existing transmission lines surrounding the property Vegetation screens views towards the project	Vegetation screening on request
O52	447	7-9	Moderate-Low	Views to existing transmission line much closer to dwelling	Not required
O53	653	7-9	Low	Views to existing transmission line much closer to dwelling, scattered trees on neighbouring projects may provide some screening	Not required
O58	683	7-9	Low	Low - Dense existing vegetation screens views towards the project	Not required
O64	621	7-9	Moderate-Low	Views to existing transmission line much closer to dwelling Vegetation screens views towards the project	Not required

Property ID	Distance to easement (m)	Theoretical towers visible	Transgrid Impact Rating	Department assessment notes	Recommended mitigation
O65	526	7-9	Moderate-Low	Views to existing transmission line much closer to dwelling Vegetation screens views towards the project	Not required
Q15	460	7-9	Low	Views towards existing transmission infrastructure Vegetation screens views towards the project	Not required
Q20	372	4-6	Moderate-low	Views towards existing transmission infrastructure Primary view towards the project Vegetation screens views towards the project	Vegetation screening on request
Q87	676	1-4	Low	Views towards existing transmission infrastructure Vegetation screens views towards the project	Not required
R12	25	7-9	Moderate	Greendale Uniting Church Very close proximity to project Views to existing transmission infrastructure further setback Very limited vegetation screening	Additional measures required Vegetation screening on request
R24	325	7-9	Moderate	Views to existing transmission line Vegetation screens views towards the project	Additional measures required Vegetation screening on request
S12	326	4-6	Moderate-Low	Views to existing transmission line Vegetation screens views towards the project	Additional measures required Vegetation screening on request
S30	319	7-9	Low	Views to existing transmission line Vegetation screens views towards the project	Not required

Property ID	Distance to easement (m)	Theoretical towers visible	Transgrid Impact Rating	Department assessment notes	Recommended mitigation
T14	209	7-9	Moderate-Low	Very close proximity to project Potential cumulative impacts with Crookwell 3 Wind Farm Dense existing vegetation screens views towards the project	Vegetation screening on request
T15	392	7-9	Moderate-Low	Views to existing transmission line Vegetation screens views towards the project	Vegetation screening on request
T16	394	7-9	Moderate-Low	Views to existing transmission line Vegetation screens views towards the project	Vegetation screening on request

*Information not provided by Transgrid, with information inferred by the Department based on available information

Night-time amenity impacts

Night-time visual amenity impacts associated with the construction of the project would result in a moderate to high-moderate impact to landscape character. The Department has recommended conditions requiring Transgrid to minimise the off-site visual impacts of lighting associated with the project.

Night-time visual impacts would not occur during operation, as temporary ancillary facilities would be removed following completion of construction, and no lighting of the transmission lines and structures is proposed during operation.

Landscape Impacts

The project area extends across eight landscape zones as characterised by Transgrid (see **Figure 9**), where visual impacts of the project would range from low to moderate during operation. Impacts within these landscape zones are discussed in more detail below:

- Rural Fringe landscape: a semi-rural landscape character with some light industrial activities and existing electrical infrastructure present, with generally flat to undulating terrain. The landscape would experience a low character impact.
- Great Dividing Range landscape: elevated and highly undulating with deep valleys and ridges which are visually important to the visual setting of Wagga Wagga. Large areas of mature vegetation present, with existing electrical infrastructure, residences and roads in low-lying areas. The landscape would experience a moderate character impact.
- Rural valleys landscape: low-lying, flat to gently undulating agricultural land primarily used for grazing. Local roads, small towns and rural properties also present. The landscape would experience a moderate-low character impact.
- Forested hills landscape: undulating landforms with large areas of managed pine plantations generally managed for forestry purposes with few residences in the area. Some areas of native vegetation and existing electrical infrastructure present in the landscape. The landscape would experience a moderate-low to low character impact.
- Undulating rural hills landscape: elevated and gently undulating terrain, comprising largely cleared agricultural land, with several small historic towns including Batlow, Jerrawa and Dalton and existing electrical infrastructure. The landscape would experience a moderate character impact in the vicinity of Wondalga, Batlow and Tumut, with other areas in this landscape experiencing a moderate-low to negligible impact.

- Upland forest landscape: elevated and highly undulating terrain in the northern part of the Australian Alps, largely covered by forest including large sections of native forest. The landscape would experience a moderate character impact.
- Rural tablelands landscape: cleared agricultural land primarily used for grazing, with a network of roads, rural properties and small towns, with gently to steeply undulating terrain. The landscape would experience a low character impact.
- Rural highlands landscape: rolling hills, wide sheltered valleys and ridgelines, with areas of steep forest country and historic buildings with existing electricity infrastructure present. The landscape would experience a moderate-low character impact.

The Department is satisfied that with the implementation of mitigation measures proposed by Transgrid, the project's impacts to landscape character would not be significant. Thus, no additional mitigation measures are required.

Recommended conditions

The Department has recommended conditions requiring Transgrid:

- implement appropriate visual impact mitigation measures, such as landscaping and/or vegetation screening at properties A33, A67, C35, E27, H19, H56, K23, K40, K44, K45, K46, K47, O18, O45, Q20, R12, R24, S12, T14, T15 and T16, upon receiving a written request from the owners of these residences;
- provide additional visual impact measures at properties A29, K23, Q20, R12, R24, S12 and V23 during detailed design;
- ensure that external lighting is minimised and complies with the relevant Australian Standards;
- prohibit any signage or advertising on the site, unless it is for safety purposes; and
- ensure ancillary facilities, accommodation camps and earthwork material sites are rehabilitated.

6.5.3 Conclusion

The Department considers that the project would not fundamentally change the broader landscape characteristics of the area or result in any significant visual impacts on the surrounding non-easement affected properties subject to Transgrid's commitments in the EIS and the Department's recommended conditions. The Department's recommended conditions require Transgrid to implement mitigation measures, including landscape and vegetation screening, to minimise impacts for properties identified by the Department as likely experiencing a greater level of visual impact than predicted by Transgrid.

6.6 Traffic and transport

Construction of the project involves the delivery of plant, equipment and materials, including the movement of over-dimensional and heavy vehicles, which has the potential to impact on the local and regional road network.

Public submissions raised the potential traffic impacts of the project, including increased vehicle movements, access to property, road safety and impacts to road conditions.

Transgrid commissioned Aurecon to undertake a Traffic Impact Assessment (TIA) to assess project-related traffic impacts accompanying the EIS. In response to submissions received, Transgrid amended the project as described in **Section 5.3**, and supplemented its Amendment Report with a revised Traffic and Transport Impact Assessment to assess the traffic impacts of these amendments.

6.6.1 Transport route and site access

Transgrid has identified the primary access routes to the project area, as shown in **Figure 10**, with National and State roads, including Hume Highway, Sturt Highway, Snowy Mountains Highway, Batlow Road, Barton Highway, Crookwell-Goulburn Road, Burley Griffin Way and Gocup Road. Local roads throughout the Wagga Wagga City, Snowy Valleys, Hilltops, Yass Valley, Cootamundra-Gundagai Regional, Goulburn Mulwaree and Upper Lachlan Shire LGAs would also be used to provide access.

Although the recommended conditions of approval require all vehicles related to the development to travel to the project area via the nominated transport route, this does not preclude Transgrid from requesting approval for vehicles to access the project area via secondary access routes.

6.6.2 Traffic volumes

The transport assessment identified the indicative vehicle movements across the traffic study area during construction, including the vehicle type and number required to transport all infrastructure components to the project area. The estimated typical and peak daily vehicle movements (i.e. vehicles per day in both directions of travel) generated from each traffic-generating site during construction are shown in **Table 8**. These movements would be distributed on the construction routes shown in **Figure 10**.

Operational traffic volumes for substation inspection and maintenance would be limited, involving only light vehicles. A maximum of 16 light vehicle trips per day at each substation is anticipated. Operational traffic volumes for transmission line maintenance and inspection would be limited to five light vehicles and one heavy vehicle per day.

While the additional traffic movements would bring a noticeable change to the local road environment, all roads would still operate within capacity. All roads would continue to operate at the existing level of service at near free-flowing conditions, due to existing low traffic volumes and the substantial capacity of the road network. Access to local facilities, including the Gregadoo Waste Management Centre, is not anticipated to be impacted due to the project.

The Department, and the relevant roads authority, consider that all roads would still operate within capacity subject to the implementation of road upgrades (see **section 6.6.4**).

Table 8 | Vehicle movements during construction

Vehicle source	Daily movements		Peak hour movements	
	Light vehicles	Heavy vehicles	Light vehicles	Heavy vehicles
Wagga 330 kV substation compound	120	140	10	15
Maragle 500 kV substation compound	195	285	10	10
Gregadoo Road compound (for Gugaa substation)	230	340	10	15
Honeysuckle Road compound	190	160	20	5
Yass substation compound	20	130	5	15
Bannaby 500 kV substation compound	130	120	15	5
Memorial Avenue compound	40	45	5	5
Ardrossan Headquarters Road compound	110	175	10	10
Snubba Road compound	100	155	10	10
Gadara Road compound	140	175	20	5
Ellerslie Road compound	100	150	10	10
Tarcutta accommodation facility and compound	200	440	20	20
Adjungbilly accommodation facility and compound	305	160	70	15
Yass accommodation facility and compound	420	310	60	10
Crookwell accommodation facility and compound	210	160	70	15
Green Hills accommodation facility and compound	190	535	20	15

6.6.3 Over-dimensional vehicles

Over-dimensional vehicles would be required to transport oversized equipment, including transporting transformers from the nominated ports to substations.

The proposed over-dimensional vehicle routes for the project are shown in **Figure 11**. In summary, OSOM vehicles would travel from the Port of Newcastle, the Port of Melbourne or Port Kembla to substations via a number of restricted routes.

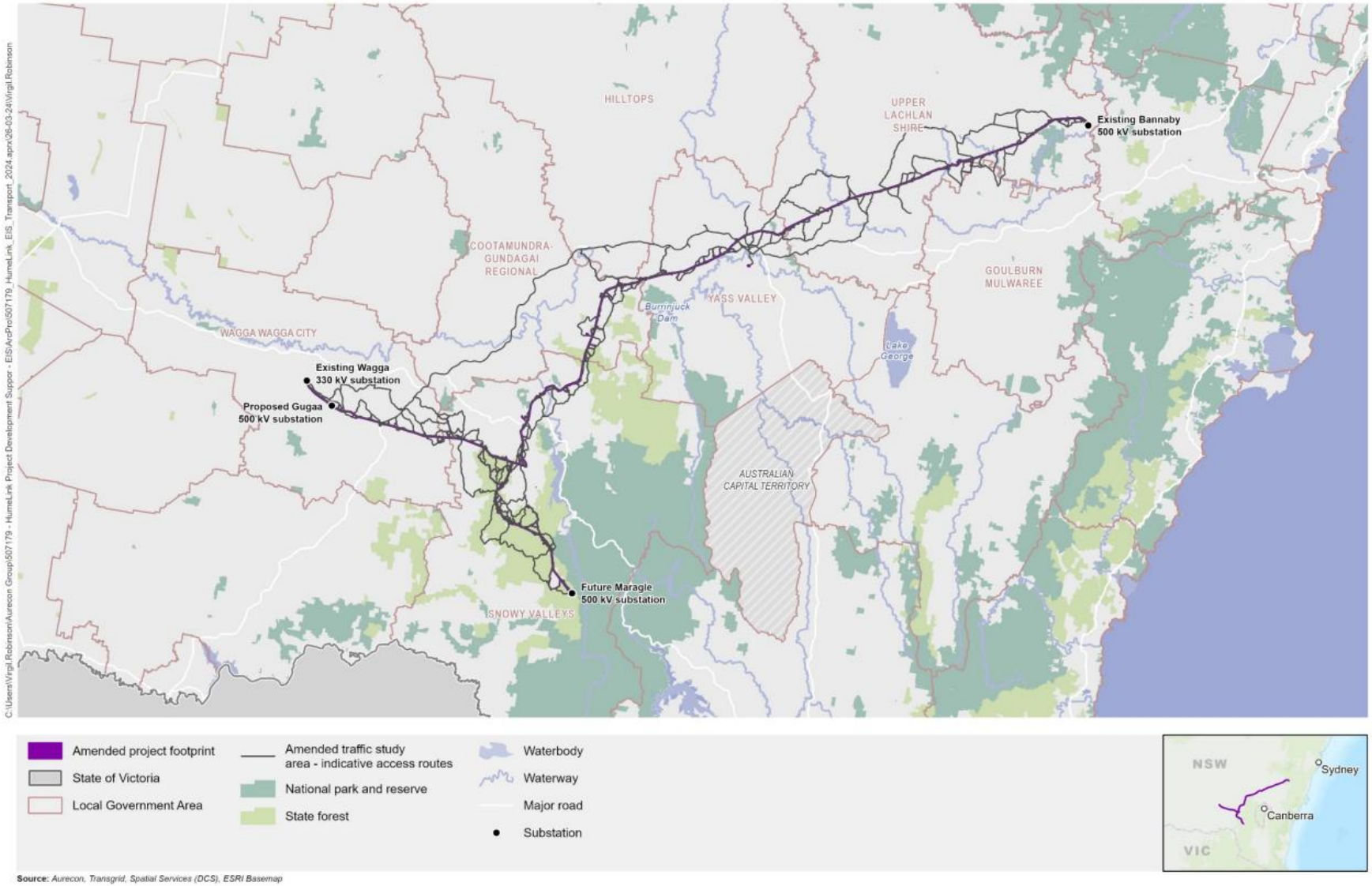

Figure 10 | Indicative access routes

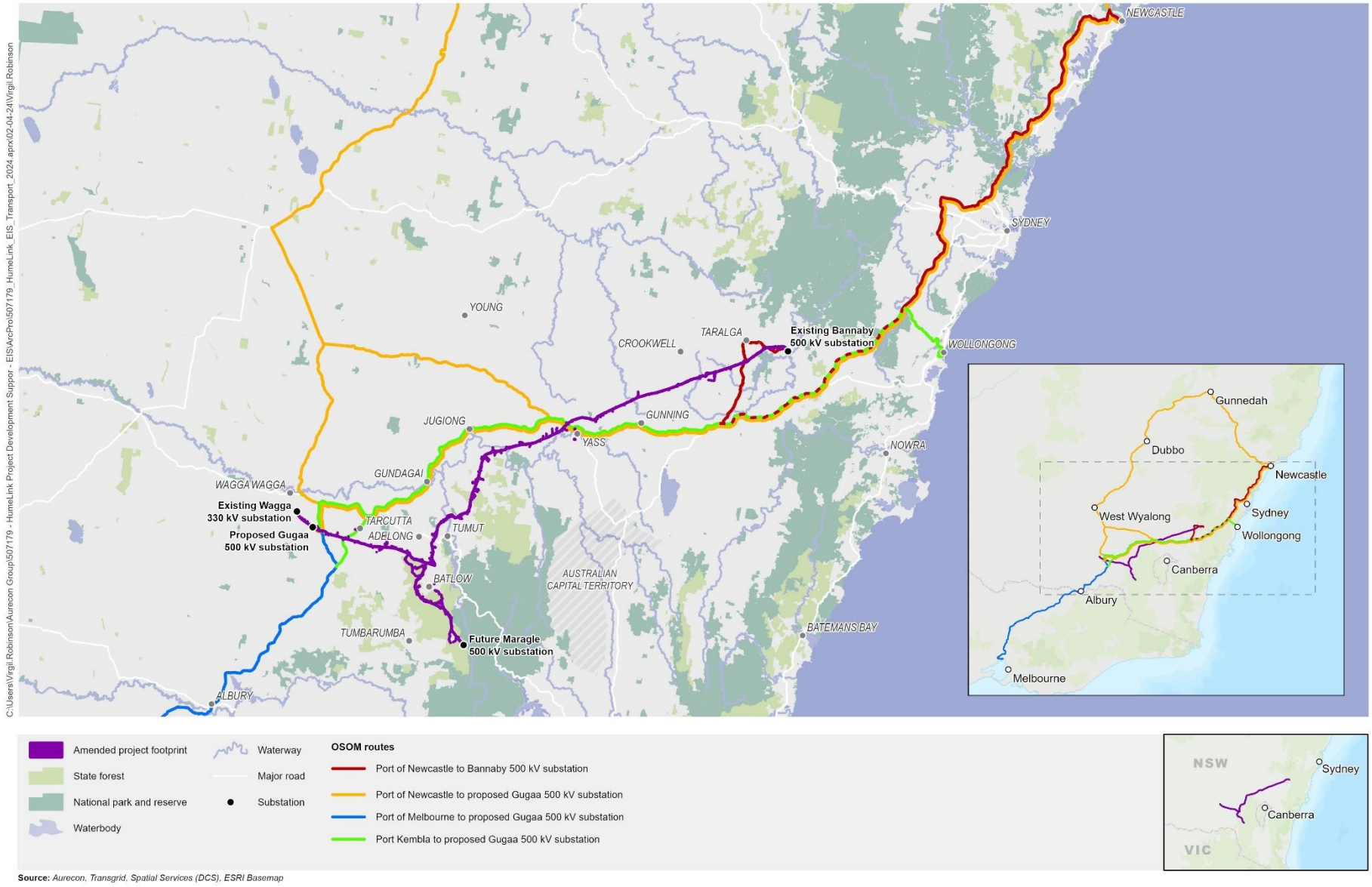

Figure 11 | Proposed OSOM routes

6.6.4 Road upgrades and maintenance

As described above, all roads would continue to operate at free-flowing conditions. Road upgrades would be required where an intersection cannot accommodate safe access for vehicles, and to create site access points.

Transgrid identified 383 intersections within the traffic study area where intersection upgrades may be required. Out of these 383 intersections, 224 do not require any upgrade, and a further 16 do not require any changes to the public road network but would require upgrades outside of the road reserve.

Of the remaining 143 intersections that would require upgrades:

- 57 intersections would require lengthening and widening to accommodate project traffic;
- one intersection (servicing the Maragle 500 kV substation compound) would be upgraded in accordance with the Snowy 2.0 Transmission Connection Infrastructure Approval;
- 85 site access points would be required to be newly constructed.

These intersections would be constructed in accordance with the Austroads Guide to Road Design.

The Department has also recommended conditions requiring Transgrid to implement all necessary road upgrades in accordance with the relevant standard and timing requirements, to the satisfaction of the relevant roads authority, and to regularly maintain all roads along the transport route and repair any damage to the road network caused by any project-related traffic.

Road crossings

Transmission lines would be strung over several roads, including Hume Highway, Snowy Mountains Highway, Gocup Road, Batlow Road, and multiple regional and local roads. This would result in temporary closure or disruption to these roads, resulting in short-term increases in travel time and distance for road users.

The Department has recommended conditions requiring Transgrid provide detailed procedures for each transmission line crossing. All stringing across roads would occur in consultation with the relevant road authority and in accordance with a road occupancy licence as required.

6.6.5 Recommended conditions

The Department has recommended the following conditions:

- undertake all necessary road upgrades to the satisfaction of the relevant road authority;

- undertake dilapidation surveys of the relevant local roads along the transport routes prior to Enabling Works, construction, upgrade and decommissioning, on an annual basis during construction, within one month of the completion of the constructions, upgrade and decommissioning and repairing any damage resulting from construction traffic;
- prepare a Traffic Management Plan in consultation with the relevant roads authority that includes provisions for:
    - temporary traffic controls, including detours and signage;
    - notifying the local community about development-related traffic impacts;
    - minimising potential for conflicts with school bus routes, in consultation with local schools, and stock movements;
    - implementing measures to minimise development-related traffic on the public road network outside of standard construction hours;
    - responding to any emergency repair or maintenance requirements during construction and/or decommissioning;
    - a traffic management system for managing over-dimensional vehicles; and
    - a drivers' code of conduct that addresses travelling speeds, fatigue management and procedures to ensure that drivers implement safe driving practices; and
- ensure that vehicles requiring escort vehicles to adhere to specified routes.

6.6.6 Conclusion

With suitable road upgrades, regular road maintenance, and the implementation of a Traffic Management Plan, the Department considers that the project would not result in unacceptable impacts on the capacity, efficiency or safety of the road network. The roads authority is satisfied that any outstanding issues, including intersection design and road crossings, can be resolved following approval with the implementation of the recommended condition.

6.7 Noise and vibration

The construction of large-scale linear infrastructure projects such as HumeLink can potentially impact many people during construction. In contrast, operational noise impacts are typically limited to substations and corona discharge noise, which is characterised by a crackling sound occurring during wet weather, mist conditions and/or with an accumulation of pollution on the conductor surface of the transmission lines.

Transgrid prepared a Noise and Vibration Impact Assessment (NVIA) for the project and an additional assessment addressing project amendments in accordance with the relevant guidelines.

6.7.1 Construction noise

Site establishment

Construction noise at ancillary facilities would be greatest during the site establishment phase, lasting up to four weeks at construction compounds and 12 weeks at combined worker accommodation and construction compound sites. During this period, construction noise would exceed daytime construction noise management levels at 621 residential receivers, including:

- 14 receivers predicted to experience 'highly intrusive' impacts (> 20 dBA above the noise management level); and
- 2 receivers that would exceed the 'highly noise affected' criterion of 75 dBA.

The majority of these affected receivers (536 in total) are located in Batlow near the Memorial Avenue construction compound, with a further 65 located near the Yass accommodation facility and construction compound.

A number of non-residential receivers near the Memorial Avenue construction compound would also be impacted, including:

- 'moderately intrusive' impacts (11-20 dBA above the noise management level) at the Batlow / Adelong Health Services Facility; and
- 'clearly audible' impacts (1-10 dBA above the noise management level) at Batlow Technology School, Saint Mary's Primary School, Saint Mary's Church and St John's Anglican Church.

The Department acknowledges the high level of impact that would be experienced by some receivers during the four week site establishment phase, particularly around the Memorial Avenue construction compound, and has recommended a condition requiring Transgrid implement noise mitigation measures aimed at achieving compliance with relevant construction noise criteria prior to commencing site establishment works.

Ancillary facilities

Following the establishment of construction compounds and accommodation facilities, the operation of these facilities over the 2.5-year construction period would generate generally lower, but more sustained noise impacts.

The NVIA predicts that 396 receivers would exceed daytime construction noise management levels during the operation of construction compounds, including:

- five receivers predicted to experience highly intrusive impacts (> 20 dBA above the noise management level); and
- one receiver expected to exceed the 'highly noise affected' criterion of 75 dBA.

The majority of affected receivers (370) are located near the Memorial Avenue construction compound.

The operation of the Adjungbilly, Yass and Green Hills accommodation facilities is predicted to result in 'clearly audible' impacts (≤10 dBA above the noise management level) at four receivers during the day. Accommodation facilities would also operate during the night, resulting in potential sleep disturbance and amenity impacts for nearby residences. Sleep disturbance is predicted at up to 12 residential receivers, including:

- 'moderately intrusive' noise impacts (16–25 dBA above the noise management level) at one receiver closest to the Green Hills accommodation facility; and
- 'clearly audible' impacts (6–25 dBA above the noise management level) at five residential receivers closest to the Yass and Adjungbilly accommodation facilities.

Transgrid has committed to implementing measures such as temporary noise barriers (hoarding) or earth bunds to mitigate noise impacts from construction compounds and accommodation facilities.

Given these potential impacts would occur for the duration of the 2.5 year construction period, the Department has recommended conditions requiring Transgrid implement noise mitigation measures to reduce impacts to below the 'noise affected' noise management levels and sleep disturbance criteria for nearby sensitive receivers.

Additional restrictions have also been recommended for the Memorial Avenue construction compound, which is the source of the majority of noise exceedances, including limiting operation to standard daytime hours and prohibiting significant noise generating activities at this site.

Transmission lines

Receivers along the transmission line alignment are predicted to experience high noise impacts during construction, however the impacts at individual receivers are likely to be of relatively short duration (up to nine weeks per transmission line structure), while work is occurring in proximity to that receiver.

Over the duration of the construction period, up to 415 receivers may experience noise levels greater than noise management levels for short periods, with up to 14 exceeding the 'highly noise affected' criterion.

Access track construction is expected to result in short-term (one to two days) noise impacts at 474 receivers across the project footprint, with up to 27 exceeding the 'highly noise affected' criterion.

Blasting and crushing activities in some locations would result in additional short-term noise impacts at around 80 residential receivers, including one receiver experiencing 'highly intrusive' impacts.

Transgrid has committed to monitoring construction noise levels and implementing a range of standard construction noise mitigation measures where impacts exceed noise management levels. This may include screening, plant selection, alternative construction methods, scheduling of noisy works, plant orientation, plant attenuation, notification and consultation with affected receivers.

The Department has recommended conditions requiring Transgrid implement all feasible and reasonable measures to minimise construction noise in accordance with the requirements of the *Interim Construction Noise Guideline* (DECC 2009) (ICNG), as well as to implement noise mitigation measures to reduce impacts to below the 'highly noise affected' criteria at impacted sensitive receivers.

Out of hours construction

Transgrid is seeking approval for extended construction hours from 7am to 7pm seven days per week, where necessary, and to undertake certain works outside standard construction hours. This would include activities such as transmission line construction across a main road, emergency works, transmission line connection or commissioning, works that are inaudible at receivers or where agreement is reached with affected receivers.

The Department acknowledges there may be a need for such works and has recommended a condition to establish a protocol for the consideration, management, and approval of works outside standard hours, including a requirement for the Planning Secretary's approval prior to undertaking any high-risk activities outside standard hours.

Road traffic noise

Construction traffic is likely to result in a noticeable increase in noise levels (greater than two decibels) for sensitive receivers on all local roads and around 25 per cent of the arterial/sub-arterial roads, due largely to low existing traffic volumes on the routes.

Transgrid has committed to minimise out of hours vehicle movements where possible and implementing a driver's code of conduct to minimise road traffic noise emissions.

Vibration

The project requires the use of vibration intensive equipment. Twenty-seven receivers have been identified as being located within the minimum working distance for cosmetic damage and a further 67 within the minimum offset for human comfort.

Transgrid has committed to utilising alternative construction methods where possible, monitoring vibration impacts and halting work where construction vibration exceeds the relevant criteria. The Department has recommended conditions requiring Transgrid comply with relevant vibration criteria at all sensitive receivers.

Aircraft noise

Helicopters used for line stringing would result in maximum noise levels above 85 dBA at receivers around the Memorial Avenue construction compound and Yass construction and accommodation facility, as well as at up to 20 receivers along the transmission line corridor. Due to the large number of residential and community receivers around the Memorial Avenue construction compound, the Department has recommended a condition prohibiting the use of the Memorial Avenue compound for helicopter take-offs and landings.

Transgrid has committed to a suite of mitigation measures to minimise aircraft noise impacts, including consultation with affected receivers, prioritising the use of helipad facilities located away from sensitive receivers and varying flight paths to provide respite.

The Department notes that certain helicopter related activity may require an Environment Protection Licence. Notwithstanding, the Department has recommended conditions restricting hours of use of helicopters, unless otherwise specified in an Environment Protection Licence.

6.7.2 Operational noise

The Gugga 500 kV substation would be designed to comply with operational noise criteria at all surrounding receivers.

Corona discharge noise is predicted to impact up to 78 residential receivers during adverse conditions, including:

- significant impacts at 42 receivers; and
- moderate impacts at nine receivers.

This assessment is based on worst case positioning of infrastructure within the transmission line corridor. The extent of impacts would likely reduce once the alignment is confirmed. Transgrid has committed to preparing a detailed operational noise assessment once the transmission line and conductor arrangement is finalised in order to confirm potentially noise affected receivers.

Transgrid would then undertake monitoring at all potentially affected receivers following commissioning and implement noise mitigations in consultation with the landowner where noise levels above the operational criteria are confirmed. This may include receiver-based treatment options, such as upgrading windows or glazing and sealing doors and windows.

The Department has recommended conditions requiring Transgrid implement all reasonable and feasible noise mitigation measures at receivers predicted to experience corona discharge noise levels or circuit breaker noise levels that exceed the operational noise criteria.

6.7.3 Recommended conditions

The Department has recommended conditions requiring Transgrid:

- implement noise mitigation measures during construction as set out in the ICNG, including scheduling activities to minimise noise, using quieter equipment, consulting with affected residences prior to undertaking noisy works and establishing a complaint handling procedure;
- implement noise mitigation measures for any 'noise affected' or 'highly noise affected' receivers prior to commencing works;
- limit operation of the Memorial Avenue Construction Compound to standard hours and prohibiting significant noise generating activities at this site;
- limit blasting and the use of helicopters to between 9am and 5pm Monday to Friday and between 9am to 1pm on Saturday;
- prepare a Noise and Vibration Management Plan that evaluates and reports on the effectiveness of the noise and vibration management system and identifies a process for the consideration, management and approval of works outside standard construction hours;
- implement reasonable and feasible noise mitigation measures at receivers predicted to experience corona discharge or circuit breaker noise levels that exceed relevant criteria;
- prepare an Operational Noise Compliance Assessment to confirm whether further noise mitigation is required at any residences surrounding the project.

6.7.4 Conclusion

The Department acknowledges the potential for noise impacts to a large number of receivers during the construction of the project. Construction noise would however be temporary, and the recommended conditions restrict highly noise generating activities and require mitigation measures be implemented, consistent with the ICNG.

Once operational, the project would have limited noise impacts however the Department has recommended conditions requiring Transgrid implement noise mitigation measures at residences impacted by corona discharge noise. Transgrid would also be required to undertake noise monitoring and submit a noise compliance report to confirm that operational noise complies with relevant criteria and identify whether additional mitigation measures are required. Based on these conditions, the Department considers operational noise impacts can be suitably managed.

6.8 Other issues

The Department's consideration of other issues is summarised in **Table 9** below.

Table 9 | Assessment of other issues

Findings and conclusions	Recommended conditions
Aboriginal heritage	
• Transgrid prepared an Aboriginal Cultural Heritage Assessment Report (ACHAR) accompanying the EIS, and an addendum report addressing project amendments and concerns raised by Heritage NSW. • Surveys to establish areas of Aboriginal cultural or heritage significance were conducted on 80.5% of the project footprint, with landowner access restrictions preventing access to the remaining areas. Desktop assessment of the unsurveyed areas utilising a field calibrated archaeological sensitivity model indicates a low to moderate potential for sites and potential archaeological deposits (PAD) to be present. • 178 Aboriginal sites were identified within the project footprint, and would be potentially subject to direct impact. • The majority of the Aboriginal sites to be impacted are stone artefact scatters and isolated finds. Most sites were assessed as having a low or moderate significance, and four sites were identified as having high scientific significance at a local level. • Transgrid has committed to undertaking test excavations at potential archaeological deposits. Those sites that cannot be avoided would be salvaged and relocated to suitable alternative locations in consultation with Aboriginal stakeholders, as required. • Heritage NSW raised concerns regarding test excavations within additional testing areas identified as having moderate or high sensitivity. Heritage NSW recommended these matters be addressed in the Heritage Management Plan required for the project and the Department has conditioned this requirement.	• Ensure the development does not cause harm to any Aboriginal heritage items located outside the construction area. • Undertake additional surveys for areas of Aboriginal heritage or cultural significance. • Implement all reasonable and feasible measures to avoid and minimise harm to heritage items located within the construction area. • Prepare and implement a Heritage Management Plan, in consultation with Aboriginal stakeholders, including procedures for unexpected

Findings and conclusions	Recommended conditions
• The Department has recommended a condition requiring Transgrid to implement all reasonable and feasible measures to avoid and minimise harm to these sites, and provide a detailed justification where impacts cannot be avoided. • The Department has also recommended a condition requiring Transgrid complete further surveys within unsurveyed areas prior to disturbance to identify any previously unidentified areas of Aboriginal cultural or heritage significance.	finds and detailed photographic archival records
Historic heritage	
• Transgrid's Historic Heritage Impact Assessment Addendum identified seven listed heritage items with curtilages located partially within the amended project footprint. These items include five items listed on Local Environment Plans (LEP), one item listed on the Register of the National Estate (RNE), and one item that is listed on both. The project is not anticipated to impact the significance of any of these items. • Two historic items on the State Heritage Register (SHR) are within the broader heritage study area, the Hillas Farm Homestead and Outbuildings near Bannaby, and the Hambledon Homestead near Tarcutta. • The Hillas Homestead is the State Heritage Register listed item located approximately 600 m south of the proposed corridor, which the Heritage Council raised concerns regarding potential indirect visual impacts to the location. Although the landowner is an easement affected receiver, the Department has acknowledged the higher sensitivity of this location and recommended additional visual mitigation be implemented for the homestead (refer to Section 6.5). • The Department considers that the potential impacts to the Hillas Homestead are likely to be limited and manageable through measure such as vegetative screening. The Department has recommended additional visual impact mitigation measures to minimise impacts to this receiver.	• Avoid direct impacts on all heritage items located outside the development footprint. • Avoid and minimise indirect impacts on the Hillas Homestead and items on the Register of the National Estate. • Prepare and implement a Heritage Management Plan, in consultation with the Heritage Council, including procedures for unexpected finds and archival records.

Findings and conclusions	Recommended conditions
• Two places listed on the National Heritage Register, Derringullen Creek Fossil Area and Kiley's Run, are located near the project, outside of the project footprint but have curtilages located within the project footprint. There would be low visual impact to these items. • Subject to the implementation of the recommended conditions, the Department considers the potential impacts on heritage values would be appropriately managed. Any unexpected finds of potential heritage significance could be appropriately managed by an unexpected finds protocol.	
Land use	
• Community and Council submissions raised concerns over potential land use conflicts arising from the project. In particular, concerns related to likely impact on agricultural production, biosecurity threats and land values. Concerns were also raised in relation to the high level of usage of private land over Crown land. • Transgrid responded to community concerns by amending its application and relocating the Maragle to Wondalga corridor through Green Hills State Forest, located west of Batlow. Although the amendment increases the project footprint by 284 hectares to 8,835 hectares, it reduces the freehold land required by about 412 hectares. • 96.7% of the project footprint is used for agricultural and primary production purposes, including livestock grazing, cropping and forestry. Other land uses include, infrastructure and utilities (including existing substation compounds), urban land, and nature conservation and extractive industries. • No nature conservation land use areas are mapped within the project footprint. While the project footprint is located in close proximity (within 150m) to six national parks and nature reserves, the project would not encroach or require access through NPWS land for either construction or operational activities. • The project would require the permanent acquisition of three land parcels, totalling 103 ha for the construction and operation of the Gugaa 500 kV substation.	• Committed mitigation measures considered adequate. No additional conditions considered necessary.

Agricultural Land

- During the 2.5 year construction period, 1,005 ha of agricultural land would be unavailable for agricultural use, including up to 509 ha of BSAL. This is expected to result in a total productivity loss of around $1.48 million.
- During operation, the project would have a permanent direct impact on an estimated 593 ha of agricultural land, with agricultural production loss assessed at $350,106 per annum. This is equivalent to 0.04% of the total area of agricultural holdings in the land use and property study area.
- Transgrid committed to addressing impacts associated with direct loss of productivity from agricultural land during operation of the project through compensation of landowners by agreement and/or in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*.
- Transgrid also recognises the need to compensate Forestry Corporation NSW (FCNSW) for the loss of forestry land, which has been generally agreed upon in accordance with the *Land Acquisition (Just Terms Compensation) Act 1991*. The negotiations for the required compensation to FCNSW, in particular due the amendment of project alignment, are ongoing and inclusive of identifying suitable replacement areas to compensate for impacted forestry land.
- The Department acknowledges that the project would directly impact around 509 ha of land classed as BSAL during construction, with most of the area to be restored or rehabilitated and returned to its former land use during operation. The Department is satisfied that Transgrid has demonstrated appropriate avoidance of BSAL through its project design, which involved re-routing the transmission line alignment to avoid large contiguous areas of important agricultural land.
- Impacts to agricultural land and disruptions to landholders would be mitigated through ongoing consultation with landholders, the development of individual Property Management Plans and Biosecurity Management Plan, limiting new access tracks and ongoing weed management.
- DPI Agriculture agrees that once operational, typical local livestock grazing and dryland cropping activities can largely continue within transmission easements, minimising impacts on agricultural productivity.

Findings and conclusions	Recommended conditions
• The Department and DPI Agriculture are satisfied that the overall impact of the project on agricultural land and productivity is small and can be appropriately managed by implementing the mitigation measures proposed by Transgrid.	
Social	
• Transgrid prepared a Social Impact Assessment (SIA) as part of the EIS, which identified a range of potential social impacts, both positive and negative. These include: – reduced landscape character, amenity, health and wellbeing impacts; – reduced availability and affordability of goods and services; – amenity impacts, including air and noise emissions, road traffic, safety and visual; – increased employment opportunities and training initiatives; and – local business opportunities and economic stimulus. • Submitters and Councils raised concerns about short-term and long-term social impacts of the project. Perceived short-term impacts during construction include potential amenity impacts associated with the workforce accommodation camps, reduced availability and affordability of goods and services and impacts on local services such as health and emergency services. • Concerns raised about long-term social impacts of the project largely related to visual and amenity impacts from the overhead transmission lines. • The project would generate up to 1,600 full-time equivalent jobs during construction and 5 ongoing jobs during operation. • Five accommodation camps would provide accommodation for up to 1,840 construction workers during the peak construction period. These camps would ease pressure on local housing and accommodation.	• Prepare an Accommodation Camp Management Plan and a Local Business Employment Strategy for the project in consultation with relevant Councils, with consideration to prioritising the employment of local workers. • Prepare and implement a Social Impact Management Plan in consultation with Councils and affected stakeholders, with the intent of enhancing positive social impacts from the development.

Findings and conclusions	Recommended conditions
• The workforce accommodation camp would be designed and managed in accordance with an Accommodation Camp Management Plan, which would include measures to facilitate worker cohesion, safety, health and wellbeing and provision of on-site medical services. • Transgrid has committed to preparing a Social Impact Management Plan and a Community Engagement Management Plan to ensure landowners, businesses and local residents with the potential to be affected by construction activities are promptly notified about upcoming activities and potential impacts. This plan would also include consultation with local health and emergency services to establish processes for managing potential increased demands due to the non-resident workforce. • Transgrid would also be required to prepare and implement a Local Business and Employment Strategy to investigate opportunities for the delivery of training and upskilling programs for the local labour force, and foster collaboration with stakeholder groups. The strategy would include initiatives to promote local employment, such as early engagement with local employment agencies. • The Department has considered all these impacts in its assessment and recommended appropriate conditions where relevant to avoid and mitigate adverse impacts.	
Economic	
• The project would deliver significant economic benefits to NSW, with a capital investment of $4.8 billion. • The project would generate direct and indirect benefits to the local community, particularly during construction, including: – creating up to 1,600 full-time equivalent jobs during the construction period; – creation of up to 5 ongoing jobs for the operational life of the project, in addition to 58 maintenance workers already working in the regions in which the project is located; – expenditure on business in the local economy by workers who would reside in the area; and – the procurement of goods and services by Transgrid and associated contractors.	• Prepare and implement a Local Business and Employment Strategy in consultation with the relevant Council.

Findings and conclusions	Recommended conditions
• Once operational, the project is unlikely to result in significant demand on community services and infrastructure given the relatively low level of local employment generated. • Several Councils requested Transgrid establish a Community Enhancement Fund. In response, Transgrid commits to working closely with relevant Councils to co-design and deliver community programs in consultation with relevant stakeholders. • Transgrid has sought to consult with all impacted landowners, including discussions regarding areas of agricultural land which should be avoided, and has committed to continuing this consultation during the detailed design stage. • The Department has recommended conditions requiring Transgrid prepare and implement a Local Business and Employment Strategy in consultation with Councils, investigating options for prioritising the employment of local and Aboriginal workforce and suppliers. • The Department considers that with the recommended conditions, the project would provide economic benefits for the local community.	
Water use and supply	
• The amount of water required during construction is estimated to be around 715 ML per year, of which approximately 285 ML would be potable and 430 ML would be from non-potable sources. • Transgrid proposes to prioritise use of non-potable water, including from rainwater harvesting, wastewater, groundwater from existing licensed extraction bores and surface water sources under water access licences. • Potable water would be sourced from Council-owned potable water supplies, on-site water treatment systems or purchased from third part commercial suppliers. • Wastewater generated at the worker accommodation facilities and construction compounds would be collected in wastewater tanks and disposed of at local sewage treatment plants. The daily volume of	• Ensure the development has adequate water supplies for the project and that it obtains any necessary licences under the *Water Act 1912* or *Water Management Act 2000*. • Prepare and implement an Accommodation Camp Management Plan in

Findings and conclusions	Recommended conditions
wastewater generated during construction is expected to be about 50 to 100 kilolitres per accommodation facility. • The Department, DCCEEW Water Group, and WaterNSW are satisfied that the project's water use is unlikely to have any significant impact on water supply and demand in the region. However, the Water Group noted that any water sourced for the project is required to be appropriately licensed.	consultation with Councils, including measures to ensure water and wastewater utilities are designed and located in accordance with Council specifications.
Surface water and Flooding	
• Councils and public submitters raised concerns about potential water quality and erosion impacts. • Transgrid identified the construction of waterway crossings for access tracks as the primary risk for potential direct impact to aquatic habitats. • The project proposes 115 indicative waterway crossings located in streams designated as Class 1 Key Fish Habitat. Where impacts cannot be avoided, Transgrid has committed to minimising potential impacts to key fish habitat by undertaking pre-construction surveys and implementing site specific mitigation measures, in consultation with DPI Fisheries. • The Department has recommended a condition requiring Transgrid undertake all works on waterfront land (including waterway crossings) in accordance with the relevant guidelines and that the geomorphic condition of the major rivers and channels crossed by the development is not impacted. • Transgrid has committed to the preparation and implementation of a Soil and Water Management Plan to manage water quality and erosion impacts during construction. • Riparian vegetation subject to removal would be appropriately offset and riparian areas subject to disturbance would be progressively stabilised and rehabilitated. The Water Group and DPI Fisheries confirmed they are satisfied with the conditions. • Neither the EPA nor the Water Group raised concerns about the project area's erosion potential, and the Department considers that with the implementation of best practice control measures, any risks can be	• Comply with legislation to ensure no pollution of waters. • Ensure the geomorphic conditions of major watercourses are not impacted by the project. • Ensure all works on waterfront land and within watercourses comply with the relevant policies and guidelines. • Minimise erosion and control sediment generation. • Ensure all works are designed, constructed and maintained in such way that it does not materially alter the flood storage capacity, flows or

Findings and conclusions	Recommended conditions
adequately managed. The Department also notes that it is a strict liability offence to pollute any waters under the *Protection of the Environment Operations Act 1997*. <u>Flooding</u> • Community submissions raised concerns regarding changes to flood behaviour impacting residents close to creeks and rivers, in particular flood behaviours at or near the proposed Gugaa 500 kV substation in relation to Big Springs Creek. BCS raised concerns regarding potential flooding impacts, in particular changes in overland flow as a result of new and upgraded road and power infrastructure. • BCS also raised concerns about the flood risk assessment, requesting an assessment of impacts of flooding on the development, the community and public safety. • The flood assessment identified that there may also be minor impacts to local flood behaviour as a result of new or upgraded access tracks, and any associated waterway crossings, that would be established during construction and may be retained during operation of the project. The exact location of any waterway crossings and the requirement for any drainage structures to minimise impact on flooding would be confirmed during detailed design. • The flood assessment identified that the Gugaa 500 kV substation construction and modifications to the existing Bannaby 500 kV substation would likely result in minor increases in flood levels. In both cases downstream impacts are predicted to be minor with drainage measures and refinements during the detailed design phase identified as appropriate methods for managing on site impacts. • The flood assessment identified that the Yass accommodation facility and compound and Crookwell accommodation facility and compound may experience some local flood risks. These flood impacts would be managed through the site drainage design and stormwater management plan. • The remaining infrastructure is generally located in areas which are not subject to mainstream flooding however have the potential to become inundated by overland flow which would be managed by diversion channels and culverts.	characteristics in the development area • Prepare and implement a Soil and Water Management Plan in consultation with relevant state agencies.

Findings and conclusions	Recommended conditions
• Transgrid identified that during a major flooding event, it is possible that some access and local roads would be inundated. However, as substations are unattended and operated remotely, there is no risk to the safety of personnel for normal operations with any routine maintenance that requires a physical presence at the site to be rescheduled until after any local flooding or road inundation has subsided. • The Department has recommended a condition requiring Transgrid ensure the development, excluding the Gugaa 500 kV substation, is designed, constructed and maintained in such way that it does not materially alter the flood storage capacity, flows or characteristics in the development area. • With regard to the Gugaa 500 kV substation, the Department considers that the assessment and categorisation of flood risk is reasonable and the mitigation measures proposed by Transgrid are adequate to address this risk. • The Department has recommended a condition requiring Transgrid, prior to the commencement of construction, to prepare a soil and water management plan to establish/confirm the process for minimising and managing impacts to surface water quality and potential flood impacts. • The Department is satisfied that the flood impacts would be appropriately managed through recommended conditions.	
Groundwater	
• Community submissions raised concerns regarding the lack of clarity on the on the quantum of groundwater take and the suitability of groundwater sources. The submissions highlighted that while the EIS mentions potential locations of surface water and/or groundwater to meet site demands, there is a lack of information to confirm the suitability of these extraction points in terms of assessment of impact or water availability. • Water Group raised concerns that blasting and excavation activities could alter groundwater flow paths in proximity to 'high priority' Groundwater Dependent Ecosystems.	• Committed mitigation measures and licensing requirements are considered adequate. No additional conditions considered necessary.

Findings and conclusions	Recommended conditions
• Transgrid's assessment concluded that the risk the project poses to groundwater resources is likely to be low to moderate, as the main disturbance would be the construction of five-metre-deep concrete bases for the transmission line structures, which generally occur in elevated areas, and construction of the proposed Gugaa 500 kV substation. The project also has the potential to damage one registered groundwater bore. • Excavations for the bases or substations are unlikely to make significant alterations to flow during the short construction period and it is only during this short window that there is any potential to impact groundwater quality. This however can be effectively managed though standard site environmental controls. • Drawdown from dewatering of these excavations has the potential to temporarily reduce groundwater availability for surrounding GDEs and groundwater users. However, any excavations would be temporary and only open for a short period, limiting the volumes to be dewatered and any associated impact to GDEs. Given the limited and short-term nature of dewatering activities, impacts to GDEs and groundwater users are expected to be low. No GDEs were recorded in the vicinity of the Gugaa 500 kV substation. • In response to concerns raised by Water Group, Transgrid committed to engaging a suitably qualified blasting specialist to carry out a detailed blasting assessment and trial blasts (if required) to determine blasting designs and site-specific parameters. The assessment would consider impacts and mitigation measures to Groundwater Dependent Ecosystems, groundwater users and surface water bodies. • The operation of the project would have negligible impacts on groundwater, largely limited to minor changes to recharge process associated with changes in flow patterns and increases in impervious ground cover.	
Waste & contamination	
<u>Waste management</u> • Councils and several public submissions raised concerns about the inability of local waste facilities to handle the types and volumes of waste estimated to be generated by the construction of the project.	• Require waste be dealt with in accordance with the following hierarchy of:

Findings and conclusions	Recommended conditions
• Transgrid has committed to minimising, reusing and recycling as feasible. Where generated waste cannot be recycled or reused, this would potentially require transportation of waste over longer distances to reach facilities with capacity. • Transgrid has also committed to preparing a Waste Management Plan that would detail measures to reduce waste generated by the project. • The Department considers that the waste generated by the project could be appropriately managed. <u>Contamination</u> • The EIS includes a contaminated land risk assessment. • Potential sources of contamination from notified sites identified within the construction area include the existing Yass Substation compound, a former Caltex Depot at 150 Albury Street, Tumbarumba and Crown Reserves located on Mill Road, Batlow. Transgrid committed that any encountered soil contamination will be managed and remediated in accordance with relevant government guidelines and protocols. • Controlled blasting is proposed in some locations mapped has having a medium to high potential for naturally occurring asbestos (NOA), including controlled blasting areas 3 (north of Batlow), 5 (north-west of Tumut) and 8 (north of Wyangle). Transgrid has committed to consider the risk of NOA during detailed design. This may include movement of footings to areas with less risk of NOA, footing design changes or minimising rock blasting and ripping where practicable. Additionally, Transgrid has committed to preparing an Asbestos Management Plan in accordance with the NSW Government *Code of Practice How to manage and control asbestos in the workplace.* The Soil and Water Management Plan would also provide requirements for the management of any encountered NOA. • Acid sulfate soils are unlikely to be encountered during construction based on acid sulfate soils mapping, the project's elevation and surface geology. Regardless, Transgrid has committed to carrying out testing to determine the presence of actual and/or potential acid sulfate soils in areas where there is higher probability	– avoid or reduce where possible; – re-use, recycle and recover; – treat or dispose of to a licenced facility. • Prepare and implement a Waste Management Plan in consultation with Councils and the EPA. • Prepare and implement a Soil and Water Management Plan in consultation with the Council, BCS and Water Group.

Findings and conclusions	Recommended conditions
of occurrence. If acid sulfate soils are identified, they would be managed in accordance with relevant guidelines. • The Department is satisfied that contamination risks associated with the project are low and can be appropriately managed.	
Bushfire hazard	
• Councils and public submitters raised concerns that the project could result in higher bushfire risks, with the project infrastructure acting as a potential source of ignition, as well as the capacity of local emergency services to respond. • A bushfire risk assessment was prepared to determine whether the project would introduce additional risks for on-site ignitions which may result in a fire escaping to the surrounding State forests or National Park. Factors considered included potential ignitions from electrical failure, contact between conductors and vegetation, or hot works during construction or operation and impacts to firefighting vehicles in accessing bushfires within the project footprint. • Parts of the project area are classed as bushfire prone land. Transgrid would be required to maintain asset protection zones (APZ) around the construction site, accommodation camps and substations. • Vegetation removal and trimming along the transmission line easement and APZ surrounding the switching stations, and accommodation camps would be undertaken to maintain appropriate clearances to manage bushfire risk. • The Department notes that evidence provided to the Select Committee on the Feasibility of Undergrounding the Transmission Infrastructure for Renewable Energy Projects in relation to Bushfire risk associated with overhead transmission lines compared to underground transmission lines was that high voltage, 500 kilovolt lines, were unlikely to act as an ignition source.	• Ensure that the project complies with relevant requirements in the RFS's *Planning for Bushfire Protection 2019* (or equivalent) and Australian Standard AS3959-2018. • Ensure the project is suitably equipped to respond to fires on site, including the provision of a 20,000 litre water tank at each construction compound and accommodation camp. • Prepare and implement a Bushfire Emergency Management and Evacuation Plan.

Findings and conclusions	Recommended conditions
• Transgrid assessed that the frequency of elevated fire danger days may increase, but that this increase is most directly attributable as a result of climate change. This may subsequently increase bushfire events that have the potential to negatively impact the community, including Transgrid infrastructure. • Transgrid's bushfire risk assessment identified that the project would be compliant with *Planning for Bushfire Protection,* that access tracks would be suitable for firefighting vehicles to use and that adequate water supplies would be available for firefighting purposes. • Recommended conditions require Transgrid comply with RFS's *Planning for Bushfire Protection 2019* and prepare a Bushfire Emergency Management and Evacuation Plan to manage the bushfire risk. • The NSW Rural Fire Service has reviewed the project and accepted Transgrid's approach to managing bushfire risks. • The Department considers that the bushfire risks can be suitably managed through the implementation of standard fire management plans and procedures during construction and throughout operations.	
Air quality	
• The Department considers the potential air quality impacts associated with the construction of the project would be minimal. • Transgrid has committed to minimising air quality emissions by utilising a range of best practice dust mitigation measures. • The Department considers that the proposed mitigation measures are suitable to mange potential impacts to air quality.	• Minimise emissions of dust, fume, blast and other air pollutants from the development. • Minimise surface disturbance.
Aviation safety	
• Transgrid prepared an Aviation Impact Statement which found that the use of cranes and the construction of transmission line structures as part of the project may encroach into the obstacle limitation surface for the	• Provide reasonable and feasible measures or a negotiated

Findings and conclusions	Recommended conditions
Wagga Wagga Airport. This would cause temporary disruptions to existing aerial activities and potential aviation safety risks during construction. • Crane operations would be managed in conjunction with Wagga Wagga Airport management to enable the cranes to work without impacting aviation operations. Aviation safety risks would be managed through consultation with relevant stakeholders and further construction planning in detailed design. • During operation, some transmission line structures near Gregadoo East Road and Angels Lane have potential to infringe on the obstacle limitation surface of the Wagga Wagga Airport. • The project could also result in a moderate impact on the operation of one non-easement affected uncertified aircraft landing area (located at Lot 108 in DP757214) within three nautical miles (5.6 kilometres) of the project. The impact may result in some flight paths not being available or a moderate adjustment to avoid the transmission line for most types of flight operations. However, a sufficient number of alternative aircraft landing areas are located in the area surrounding the project. The Department notes that Transgrid would be required to compensate land owners of easement affected landing areas. • The Department has recommended a condition requiring Transgrid provide reasonable and feasible measures or a negotiated agreement to minimise impacts to operational aerial activities for the Lot 108 aircraft landing area, in consultation with the owner or manager of the aircraft landing area. • The transmission lines and their structures may result in risks to aerial applications of fertilisers and pesticides, aerial baiting in National Parks and Wildlife Services land and emergency services operations. However, the inclusion of the transmission line on aeronautical charts and briefings prior to such flights would minimise these risks and would be consistent with current standard practices for low-level flights near large transmission lines. • Transgrid has committed to further consultation with Airservices Australia, CASA and the Department of Defence during detailed design. Final design details would also be provided to nearby landowners and owners of local aircraft landing areas.	agreement to minimise impacts to operational aerial activities at the 'Shore North' aircraft landing area, in consultation with the owner or manager of the aircraft landing area.

Findings and conclusions	Recommended conditions
• CASA has no further concerns subject to the implementation of the recommended conditions. The Department considers that with the recommended conditions, the project is unlikely to result in any significant aviation hazards or impacts to aerial agricultural activities.	
Electric and magnetic fields and radio and telecommunications	
• Like other electrical equipment, the project's transmission lines, substation, and interconnecting cabling would generate EMF. It is noted that EMF also comes from natural sources such as the Earth's magnetic field. • Predicted EMF levels associated with the project are well below the relevant International Commission on Non-Ionizing Radiation Protection EMF criteria of 2,000 milligauss (mG) for general public exposure. The substation would be designed to ensure predicted EMF exposure limits would be within the EMF reference levels. • Electromagnetic signals transmitted for telecommunication systems (such as radio, televisions, mobile phones and mobile/fixed radio transmitters) function most efficiently where a clear line of sight exists between the transmitting and receiving locations. • Transmission lines have negligible impact on ultra-high frequency (UHF) signals that range from 300 MHz to 3GHz. Both mobile phone coverage and emergency services radio frequencies use UHF. However, the design and placement of transmission line towers has the potential to obstruct point to point microwave links, which transmit microwave signals. • The NSW Telco Authority has confirmed that the proposed tower locations will not interfere with any microwave links. The Department has included a recommended condition which would require Transgrid consult with the NSW Telco Authority when finalising tower locations to ensure telecommunications services are not impacted. • The Department is satisfied the development is unlikely to cause any significant EMF-related impacts or impacts to radio and telecommunications.	• Comply with the applicable EMF criteria • Make good any disruption to radio communications services in the area cause by the project as soon as possible following the disruption, and no later than 1 month following the disruption of the service unless the relevant service provider or user or Planning Secretary agrees otherwise.

Findings and conclusions	Recommended conditions
Cumulative impacts	
• Several public submissions commented on the cumulative impacts of the project, some of which suggested that the project needed to provide additional consideration of the likely cumulative impacts, in particular those relates to visual amenity, agricultural impacts, demand on local resources. • Transgrid prepared its cumulative impact assessment in accordance with the Department's *Cumulative Impact Assessment Guidelines for State Significant Projects*. The cumulative impact assessment for the project assesses the potential impacts of the project alongside the potential impacts of other relevant proposed projects. • Within the region, a significant number of new developments are proposed, approved or under construction, including renewable energy generation and storage projects. These developments are expected to result in substantial investment, economic benefits and job opportunities in the region, however, cumulative social and environmental impacts would also occur. • Where construction schedules overlap, these projects would also potentially place pressure on existing communities and services such as accommodation, health services, retail, hospitality, emergency services and waste facilities. Development of these projects would also have the potential for cumulative amenity impacts associated with visual, traffic, noise and air quality impacts during construction. Cumulative impacts during construction would be temporary and vary depending on the extent of activity occurring at each project concurrently. Each project would implement mitigation measures to minimise their potential impacts. Long-term cumulative impacts, such as land use, agriculture, and visual impacts, would occur when all the projects are operational. • Transgrid has undertaken further refinements to the design and layout of the project. These refinements have provided several benefits, including reduced earthworks, increasing separation distance to the closest sensitive receiver, and improved constructability. The refinement would also provide the opportunity to reduce potential cumulative impacts at some locations.	• Addressed through implementation of committed mitigation measures and recommended conditions

Findings and conclusions	Recommended conditions
• The assessed scale of negative cumulative social impacts would generally be minor. If the proposed construction periods overlap, impacts may be exacerbated but are expected to remain minor. Transgrid identified that overlapping construction programs for the proposed Belhaven Battery Energy Storage System and proposed Yass Solar Farm may result in adverse cumulative impacts associated with demand for local workers. This increased need for workers may result in temporary labour shortages that would need to be met with commuter workers or internal migration in and around the Wagga Wagga region, increasing pressure on housing supplies. • Negative cumulative social impacts associated with the demand for rental housing and short-term accommodation would likely be reduced with the inclusion of temporary worker accommodation facilities as part of the amended project. • Other identified cumulative impacts would be managed by implementing the mitigation measures detailed for other environmental matters, including noise and vibration, traffic, transport and access, as well as the implementation of equivalent mitigation measures as part of the delivery of the relevant additional future projects. • The Department acknowledges that the project has the potential to contribute to cumulative impact associated with the development of multiple projects. The Department also considers that the majority of these impacts would occur as part of the construction phase and be temporary in nature. These impacts can suitably be addressed though the implementation of committed mitigation measures and recommended conditions.	
Enabling Works	
• To facilitate timely commencement of construction, Transgrid has identified a range of enabling works that would be required to be carried out before the start of the main construction works. These works broadly involve the preparation of work sites for construction.	• Prepare and implement an Enabling Works Management Plan.

Findings and conclusions	Recommended conditions
• The scope of enabling works would be limited to low risk activities such as works within areas of low or no significant biodiversity constraints and works would be managed in accordance with an Enabling Works Management Plan. • The Department has recommended conditions limiting the scope and duration of the enabling works to a four month period, following which works would be managed under the main construction works program and associated management plans. • Transgrid has been consulting with the Department on a draft version of the Enabling Works Management Plan during the assessment process. Separate approval of the plan would be required following determination of the CSSI application.	• Restrict enabling works being undertaken under the Enabling Works Management Plan to a period of four months. • Within four months, transition any remaining enabling works to be managed under approved management plans for main construction works.
Rehabilitation	
• Transgrid proposes progressive site rehabilitation following the completion of construction, involving the removal of all materials not required for operation. This would include the removal/remediation of the construction compounds and accommodation camp sites. These areas would be restored to the previous natural conditions as far as possible. • To ensure that redundant infrastructure is removed, and the areas rehabilitated appropriately, the Department has recommended conditions requiring Transgrid to rehabilitate and revegetate temporary disturbance areas and make good any project related damage.	• Progressively rehabilitate the project area. • Comply with rehabilitation objectives, including removing construction infrastructure, restoring rural land capability and vegetation, and ensuring public safety.

7 Evaluation

The HumeLink Transmission project is critical for energy security and reliability in NSW as it would play an essential role in supporting the transition from a long-standing reliance on coal-fired power stations to a reliance on renewable energy and would connect the NEM with the Snowy 2.0 project. Consequently, the Minister for Planning and Public Spaces declared the project to be critical State significant infrastructure.

The project is consistent with AEMO's roadmap for the NEM, the *Integrated System Plan* and relevant strategic NSW planning and policy documents, including the *Transmission Infrastructure Strategy*, the *Electricity Strategy*, and more broadly the *Climate Change Policy Framework and Net Zero Stage 1: 2020 – 2030*.

It would also deliver significant economic benefits to NSW including a capital investment of $4.8 billion and creation of 1,600 construction jobs.

Overall, the Department considers that the project has been designed in a way that avoids and minimises social and environmental impacts as far as practicable. The Department has carefully considered the potential residual impacts of the project on the environment and landowners. The Department has worked closely with key government agencies to ensure a robust assessment of the impacts of the project and to prepare a comprehensive framework of recommended conditions of approval, requiring a range of controls and measures to minimise the impacts of the project.

The Department has carried out a detailed assessment of the merits of the project in accordance with all relevant NSW legislation, policies and guidelines. It has also consulted widely with the community and key government agencies, and closely considered the issues they have raised during this consultation in its assessment. The Department notes that Transgrid amended the project alignment to reduce impacts on private property, reduce landscape character and visual amenity impacts, reduce impacts to native vegetation and increase separation distance to Kosciusko National Park.

The Department considers the key impacts are biodiversity, landscape character and visual amenity impact, traffic and transport impacts, and noise and vibration. The Department has also considered a range of other impacts in its assessment including heritage, land use, hazards, surface and groundwater use, supply and flooding, waste and contamination, air quality, social, economic and cumulative impacts. The Department considers these impacts can be appropriately mitigated and/or offset in accordance with NSW government statutory requirements, guidelines and policy requirements.

The Department acknowledges that due to the scale of the project, impacts are likely to be experienced by the community during construction. The Department notes however that these

impacts would be short term and strictly managed in accordance with the recommended conditions of consent.

The Department has carefully weighed the impacts of the project against the benefits. The project would have long-term benefits for the transmission of electricity in NSW and the broader NEM, would support the transition of the NEM away from long-standing reliance on coal-fired power stations and would transport renewable energy from Snowy 2.0 project to energy consumers.

On balance, the Department considers that the HumeLink Transmission project benefits to energy security and reliability outweigh its costs, and the project is in the public interest and approvable, subject to strict conditions.

8 Recommendation

It is recommended that the Minister for Planning and Public Spaces:

- **considers** the findings and recommendations of this report
- **accepts and adopts** the findings and recommendations in this report as the reasons for making the decision to grant approval to the application
- **considers** any advice provided by the Minister having portfolio responsibility for the project
- **agrees** with the key reasons for approval listed in the notice of decision
- **grants approval** for the application in respect of Humelink project (SSI 36656827) as amended, subject to the conditions in the attached infrastructure approval
- signs the attached infrastructure approval (**Appendix G**).

Prepared by:

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Lauren Clear, Senior Environmental Assessment Office

Jess Watson, Planning Officer

Recommended by:

Nicole Brewer
Director
Energy Assessments
10 October 2024

Recommended by:

Chris Ritchie
A/Executive Director
Energy, Resources and Industry
10 October 2024

Recommended by:

David Gainsford
Deputy Secretary
Development Assessment and Sustainability

11 October 2024

9 Determination

The recommendation is ~~adopted~~/**not adopted** by:

The Hon Paul Scully MP
Minister for Planning and Public Spaces

13/11/24

Appendices

Appendix A – Summary of key amendments to the project

Since lodgement, some key aspects of the project have been amended in response to public submissions, agency advice and at the request of the Department via an amendment report.

A summary of the key amendments is provided in **Table A-1** and the amended project construction layout is shown in **Figures A-1** to **A-6**.

Table A-1 | Key amendments

Aspect	Original project in EIS	Amended project	Difference
Construction access points / roads	Proposed construction access points removed: • Adjungbilly Road (C09) • Alfred Street (AC1) • Binda Road • Brookland Street • Courabyra Road (AC1) • Gregadoo East Road (C06) • Keenans Road (C15) • Mitchell Road (C01) • Northcott Street • Red Hill Road (C08) • Selwyn Street • Snubba Road (C03 and C16) • Tooma Road • Tumut Street Woodhouselee Road (C11)	Proposed construction access points added: • Adjungbilly Road (AC04) • Ardrossan Headquarters Road (C17) • Back Camp Road (C17) • Bago Forest Way (C18) • Britannia Street • Burley Griffin Way • Camp Street • Comur Street • Ellerslie Road (C21) • Faulder Avenue (AC05) • Gadara Road (C19) • Graywood Siding Road (AC06) • Green Hills Access Road (AC07) • Lachlan Valley Way • Mates Gully Road (AC03) • Yaven Creek Road (C21)	Amendments to the construction access points and roads following community and agency consultation.
Changes to ancillary development – telecommunication facilities	4 telecommunications connections between the transmission line corridor and Transgrid substations	Removal of the telecommunications hut at Killimicat from the scope and inclusion of additional telecommunications connections to the following Transgrid substations: Gadara 132 kV substation Gullen Range 330 kV substation Crookwell 2 330 kV substation.	Following design review telecommunications connections to existing Transgrid substations were identified in addition to the telecommunications connection to the existing Rye Park 330 kV Switching Station proposed in the EIS.

Aspect	Original project in EIS	Amended project	Difference
Changes to ancillary development – construction compounds	The following seven construction compounds described and assessed in the EIS have been removed from the project: • Snowy Mountains Highway compound (C02) • Snubba Road compound (C03) • Red Hill Road compound (C08) • Adjungbilly Road compound (C09) • Woodhouselee Road compound (C11) • Bowmans Lane compound (C15) • Snubba Road compound (C16).	These have been replaced with the following compounds: • Ardrossan Headquarters Road compound (C17) – located about 7.6 km west of Batlow • Snubba Road compound (C18) – located about 7.7 km south of Batlow • Gadara Road compound (C19) – located about 4.9 km west of Tumut Ellerslie • Road compound (C21) – located about 13.1 km south-west of Adelong. • The proposed footprint for the Gregadoo Road compound (C06), Honeysuckle Road compound (C07), Bannaby substation compound (C12) and Memorial Avenue compound (C14) have also been revised.	Amendments to construction have been proposed following further construction planning and consultation with affected landowners.
Land acquisition	The project would require the acquisition of 80.74 ha of freehold land for the proposed Gugaa 500 kV substation and telecommunications hut located at Killimicat	The project would require the acquisition of 103.49 ha of freehold land for the proposed Gugaa 500 kV substation and telecommunications hut located at Killimicat	An additional 22.75 ha of freehold land to be acquired to facilitate the construction and operation of required infrastructure

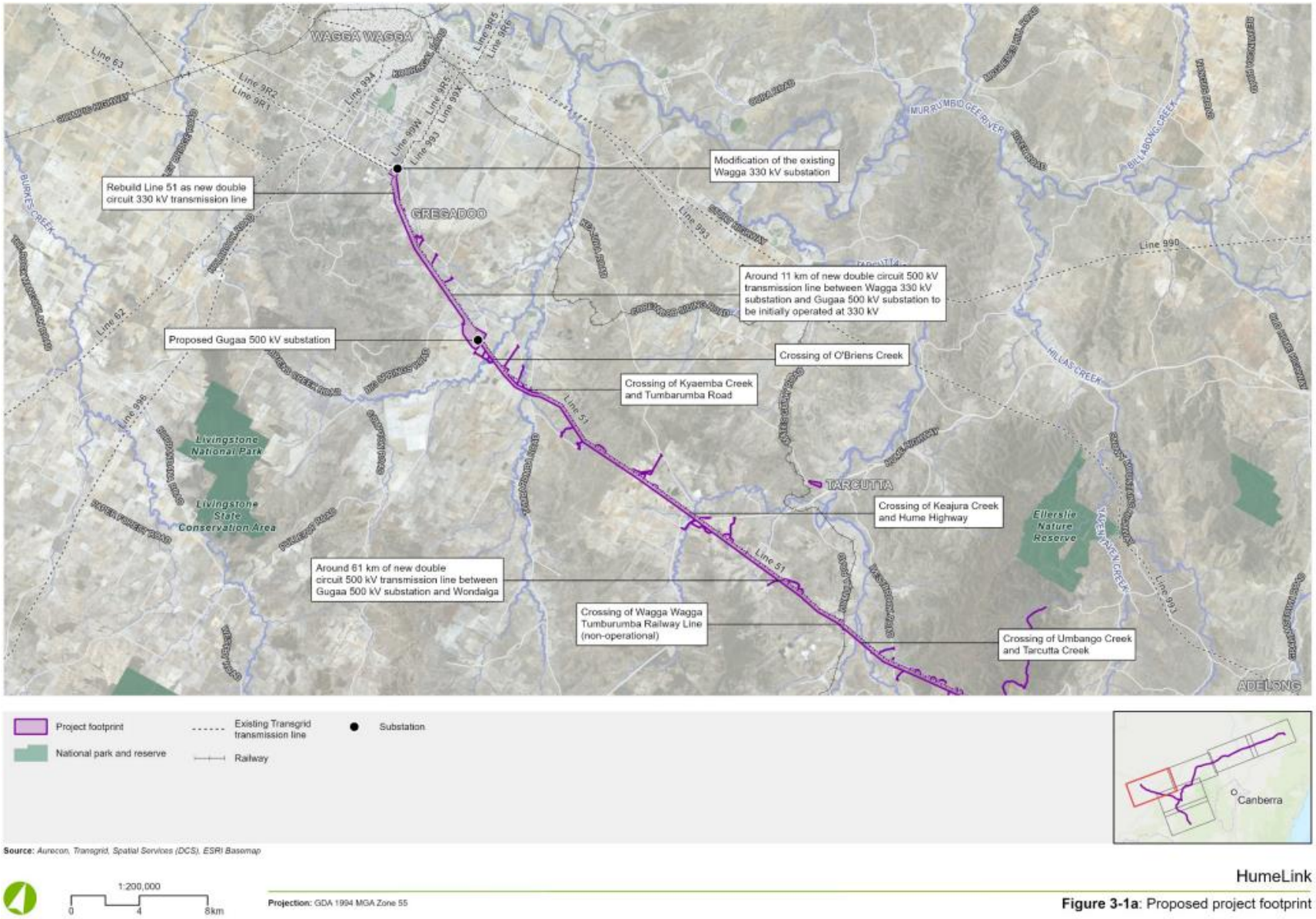

Figure A1 | Construction Overview 1 of 6

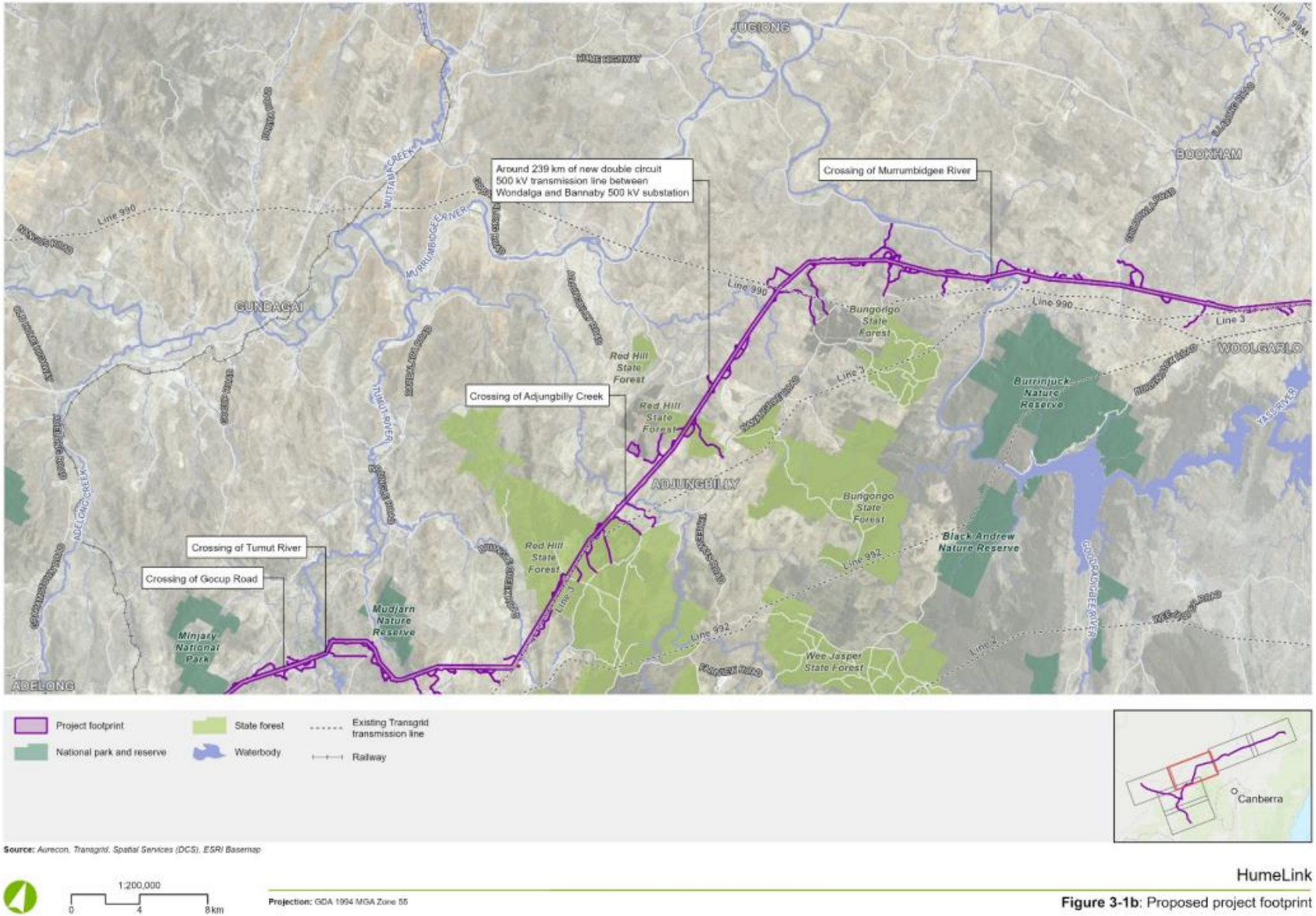

Figure 3-1b: Proposed project footprint

Figure A2 | Construction Overview 2 of 6

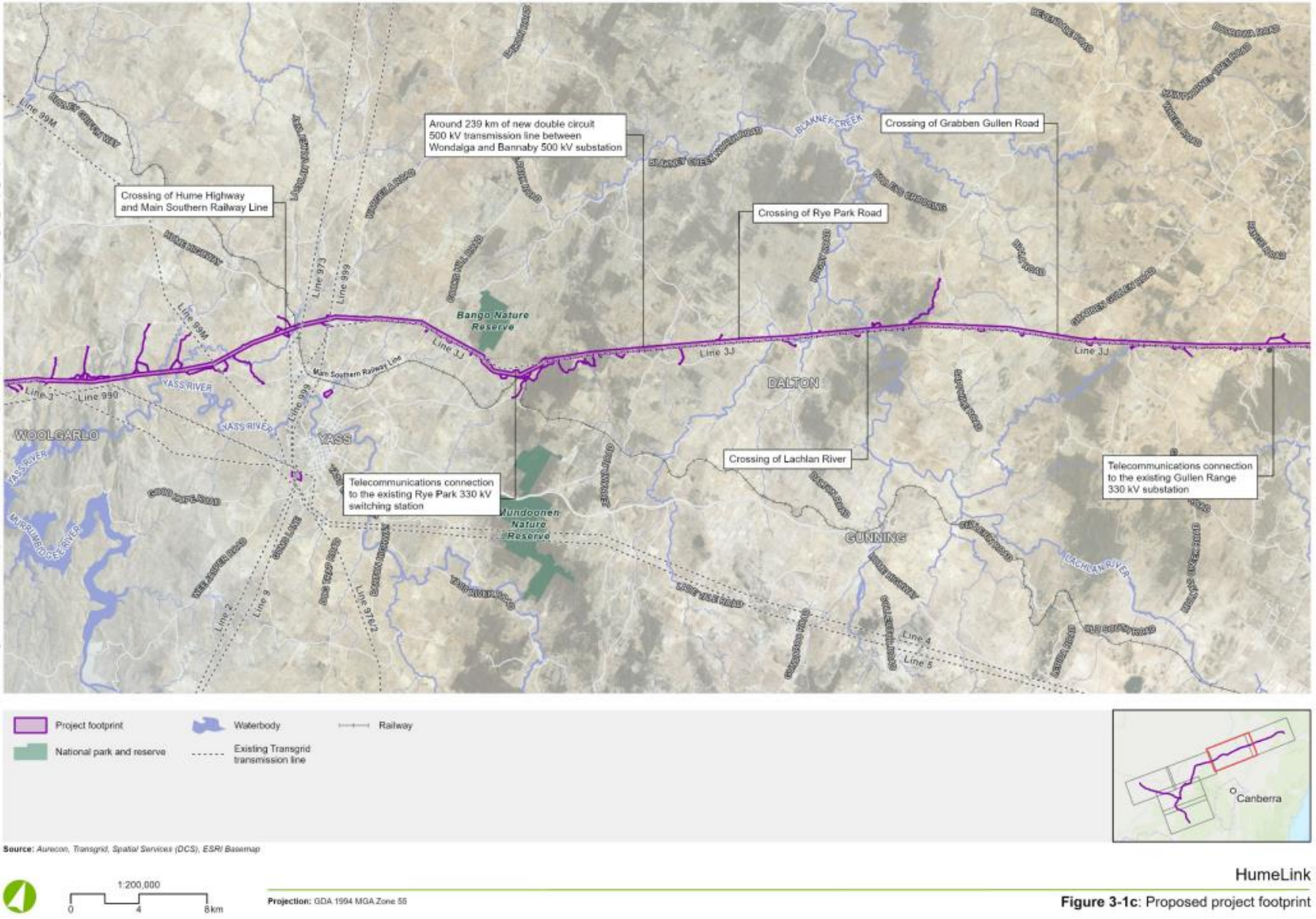

Figure A3 | Construction Overview 3 of 6

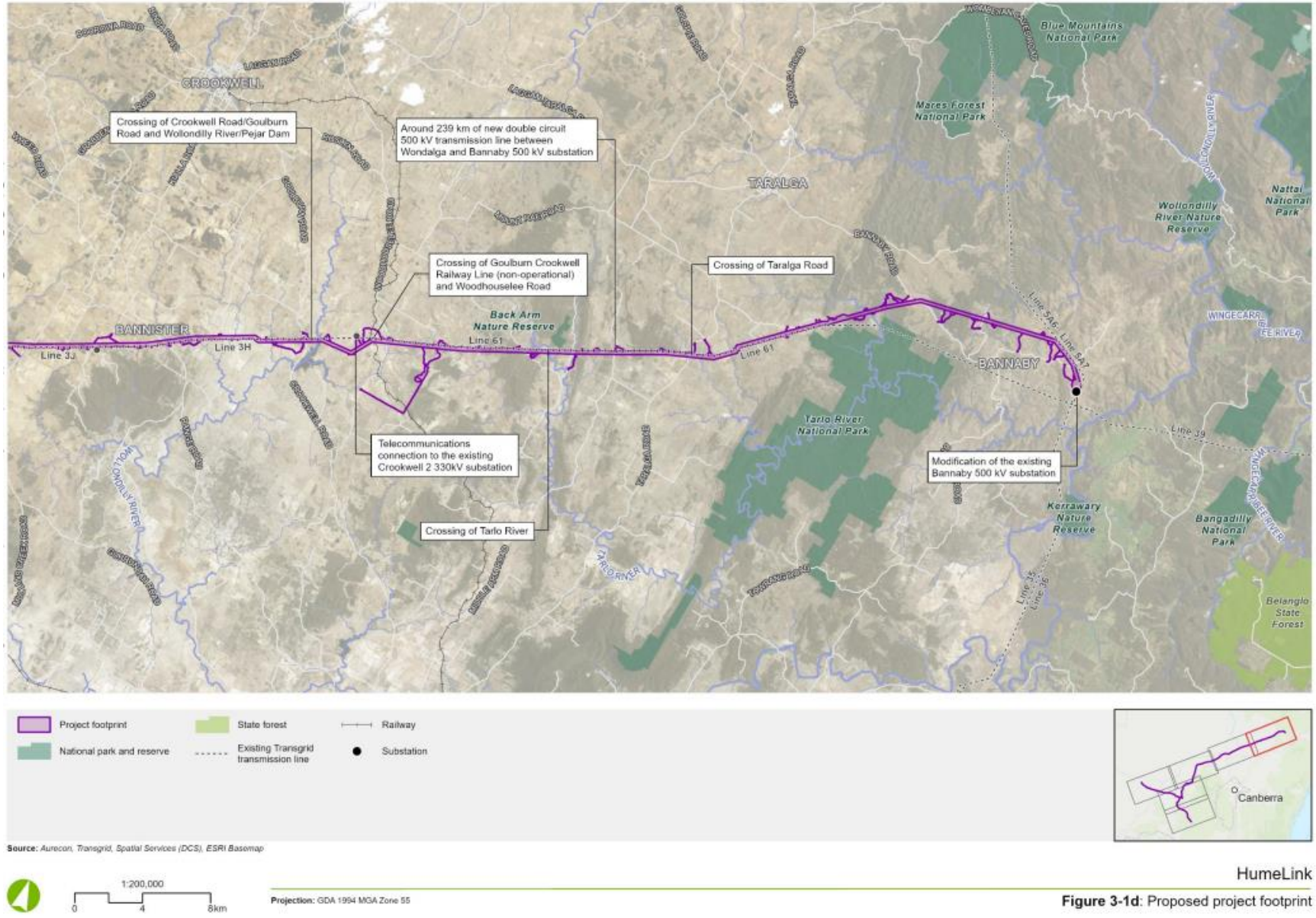

Figure A4 | Construction Overview 4 of 6

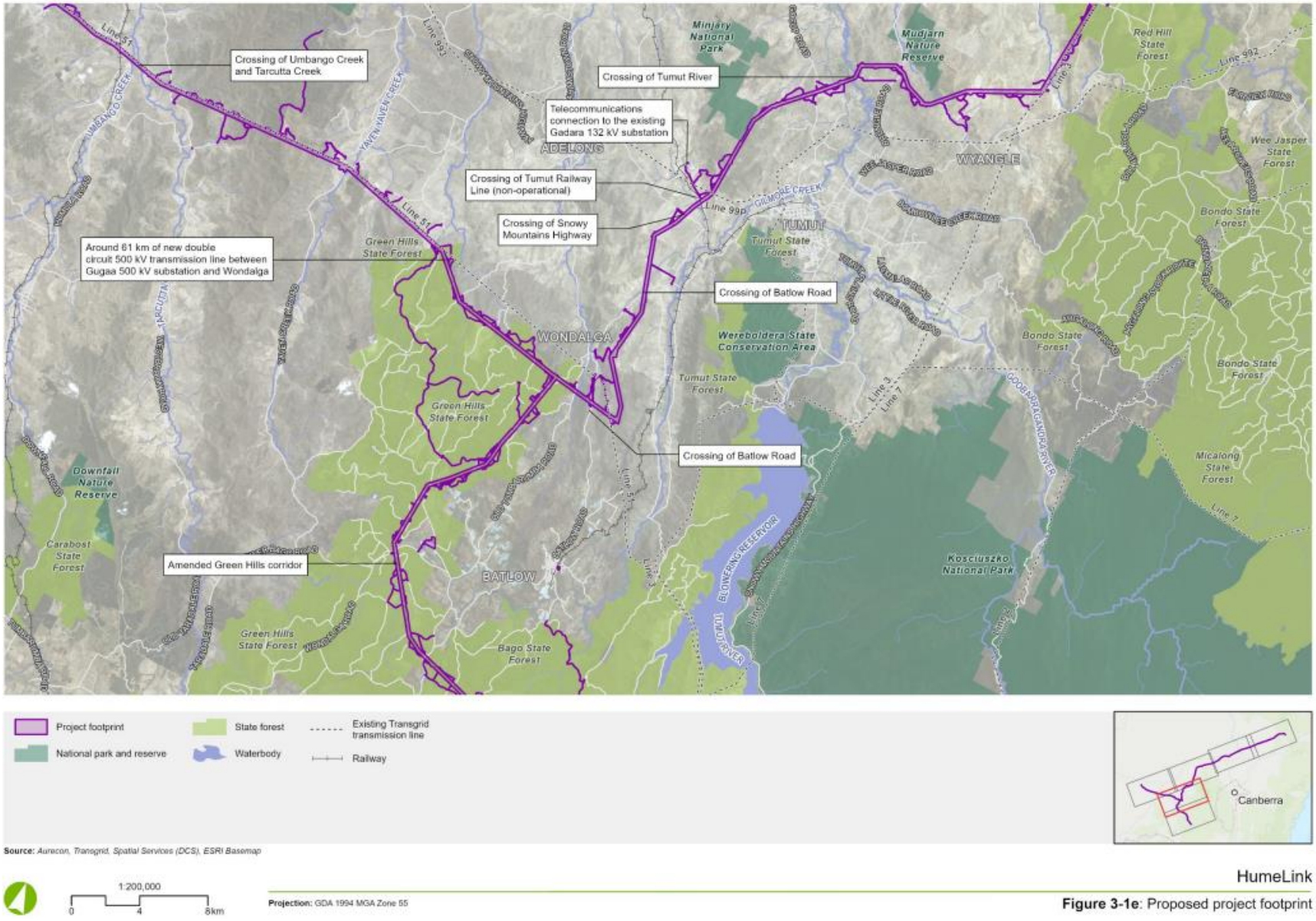

Figure A5 | Construction Overview 5 of 6

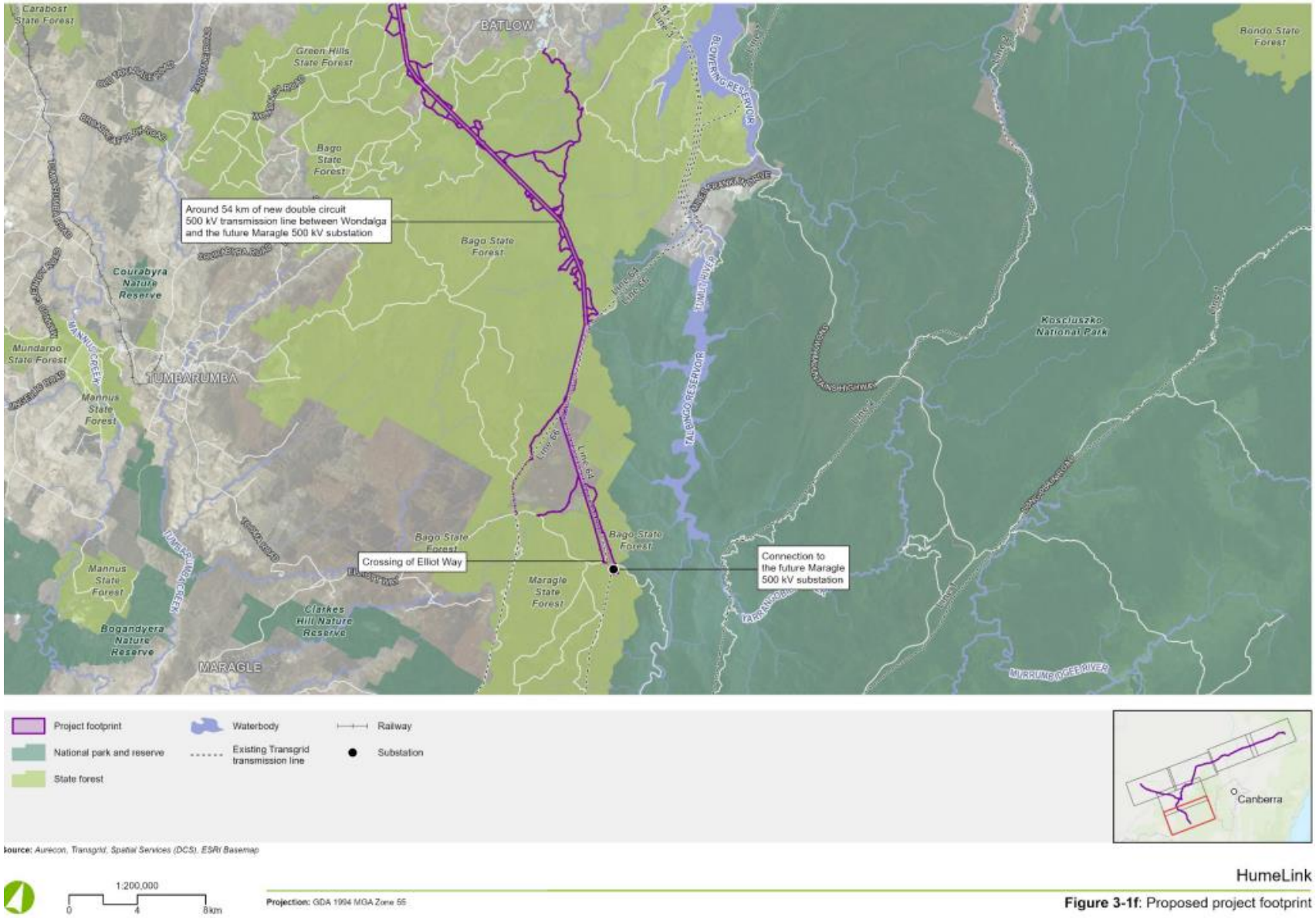

Figure A6 | Construction Overview 6 of 6

Appendix B – Environmental Impact Statement

Appendix C – Submissions and government agency advice

Appendix D – Submissions Report

Appendix E – Amendment Report

Appendix F – Additional information

Appendix G – Recommended Instrument of Approval

Appendices B to F available at: https://www.planningportal.nsw.gov.au/major-projects/projects/humelink

Appendix H – Biodiversity impact summary tables

Table H-1 | Native vegetation impacts

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 5 - River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains	-	-	-	1.82	0.29	0.53	**2.64**	**29**	**3**	**32**
PCT 266 - White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion	CEEC	CEEC	Yes	6.11	0.44	48.29	**54.85**	**1650**	**0**	**1650**
PCT 268 - White Box – Blakely's Red Gum - Long-leaved Box – Norton's Box - Red Stringybark grass-shrub woodland on shallow soils on hills	CEEC	CEEC	Yes	2.40	0.09	24.11	**26.61**	**829**	**18**	**847**
PCT 277 - Blakely's Red Gum - Yellow Box grassy tall woodland	CEEC	CEEC	Yes	11.64	0.96	115.34	**127.94**	**533**	**6**	**539**
PCT 278 - Riparian Blakely's Red Gum - box - shrub - sedge - grass tall open forest	CEEC	CEEC	Yes	2.99	0.29	6.40	**9.68**	**89**	**2**	**91**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 280 - Red Stringybark – Blakely's Red Gum +/- Long-leaved Box shrub/grass hill woodland	CEEC	CEEC	Yes	10.84	0.39	61.07	**72.30**	**952**	**38**	**990**
PCT 283 - Apple Box – Blakely's Red Gum moist valley and footslopes grass-forb open forest of the NSW South-Western Slopes Bioregion	CEEC	CEEC	Yes	1.62	0.01	4.48	**6.10**	**90**	**6**	**96**
PCT 285 - Broad-leaved Sally grass - sedge woodland on valley flats and swamps	-	-	-	7.99	0.31	2.86	**11.16**	**271**	**2**	**273**
PCT 287 - Long-leaved Box - Red Box - Red Stringybark mixed open forest on hills and hillslopes	-	-	-	3.45	0.17	4.09	**7.70**	**184**	**8**	**192**
PCT 290 - Red Stringybark - Red Box - Long-leaved Box - Inland Scribbly Gum tussock grass - shrub low open forest on hills	-	-	-	1.96	0.03	9.57	**11.55**	**183**	**10**	**193**
PCT 294 - Nortons Box – Red Box – White Box tussock grass open forest	-	-	-	0	0	0.14	**0.14**	**2**	**0**	**2**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 295 - Nortons Box - Red Box - White Box tussock grass open forest of the southern section of the NSW South Western Slopes Bioregion	-	-	-	2.46	0	1.79	**4.26**	**66**	**0**	**66**
PCT 297 - Broad-leaved Peppermint – Norton's Box - Red Stringybark tall open forest on red clay on hills	-	-	-	0.66	0	1.54	**2.20**	**26**	**2**	**29**
PCT 299 - Riparian Ribbon Gum – Robertson's Peppermint - Apple Box riverine very tall open forest	-	-	-	13.08	0.27	5.29	**18.65**	**353**	**15**	**368**
PCT 300 - Ribbon Gum - Narrow-leaved (Robertsons) Peppermint montane fern - grass tall open forest on deep clay loam soils in the upper NSW South Western Slopes Bioregion and western Kosciuszko escarpment	-	-	-	11.26	4.89	6.42	**22.57**	**472**	**23**	**495**
PCT 301 - Drooping Sheoke - *Ricinocarpus bowmannii* - grasstree tall open shrubland of the Coolac - Tumut Serpentinite Belt	EEC	-	-	0.00	0	3.37	**3.38**	**63**	**0**	**63**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 306 - Red Box - Red Stringybark – Norton's Box hill heath shrub - tussock grass open forest of the Tumut region	-	-	-	0.19	0.03	3.70	**3.93**	**13**	**0**	**13**
PCT 314 - Apple Box - Red Stringybark basalt scree open forest in the upper Murray River region	-	-	-	1.38	0.05	6.83	**8.26**	**124**	**5**	**129**
PCT 316 - Norton's Box - Red Box - Red Stringybark +/- Nodding Flax Lily forb-grass open forest	-	-	-	9.47	0.84	8.65	**18.96**	**479**	**23**	**502**
PCT 319 - Tumbledown Red Gum - White Cypress Pine hill woodland	-	-	-	0.08	0	1.40	**1.48**	**23**	**0**	**23**
PCT 322 - Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub woodland on metamorphic substrates	-	-	-	0.09	0	0.82	**0.91**	**15**	**0**	**15**
PCT 335 - Tussock grass – sedgeland fen – rushland – reedland wetland in impeded creeks in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion	-	-	-	0.01	0	0.36	**0.37**	**16**	**0**	**16**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 343 - Mugga Ironbark - Red Box - Red Stringybark - Western Grey Box grass/shrub	-	-	-	1.03	0.04	5.16	**6.22**	**60**	**0**	**60**
PCT 349 - Inland Scribbly Gum - Red Stringybark open forest on hills composed of siliceous substrates	-	-	-	1.30	0.02	3.14	**4.46**	**63**	**1**	**64**
PCT 351 - Brittle Gum - Broad-leaved Peppermint - Red Stringybark open forest	-	-	-	1.40	0.06	5.22	**6.67**	**129**	**4**	**133**
PCT 352 - Red Stringybark – Blakely's Red Gum hillslope open forest on meta-sediments	CEEC	CEEC	Yes	0.79	0	14.52	**15.31**	**38**	**0**	**38**
PCT 637 - Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas	EEC	EEC	Yes	0	0	0.02	**0.02**	**1**	**0**	**1**
PCT 638 - Alpine Ash - Mountain Gum moist shrubby tall open forest of montane areas, southern South Eastern Highlands Bioregion and Australian Alps Bioregion	-	-	-	34.48	15.56	21.87	**71.91**	**1132**	**70**	**1202**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 679 - Black Sallee - Snow Gum low woodland of montane valleys	-	-	-	2.68	0.17	2.67	**5.54**	**121**	**0**	**34**
PCT 727 - Broad-leaved Peppermint - Brittle Gum - Red Stringybark dry open forest	-	-	-	0.48	0.01	3.55	**4.04**	**89**	**3**	**92**
PCT 731 - Broad-leaved Peppermint - Red Stringybark grassy open forest on undulating hills	-	-	-	4.06	0.27	5.95	**10.27**	**201**	**3**	**204**
PCT 870 - Grey Gum - Thinleaved Stringybark grassy woodland	-	-	-	0.83		1.10	**1.93**	**52**	**5**	**57**
PCT 939 - Montane wet heath and bog of the eastern tablelands, South-Eastern Highlands Bioregion	EEC	EEC	-	0.53	0.05	0.07	**0.65**	**8**	**0**	**8**
PCT 952 - Mountain Gum – Narrow-leaved Peppermint – Snow Gum dry shrubby open forest on undulating tablelands, southern South Eastern Highlands Bioregion	EEC	-	-	0.71	0.00	5.17	**5.88**	**80**	**0**	**80**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 953 - Mountain Gum - Snow Gum - Broad-leaved Peppermint shrubby open forest of montane ranges	EEC	-	-	49.93	11.94	39.57	**101.45**	**2215**	**86**	**2301**
PCT 1093 - Red Stringybark - Brittle Gum - Inland Scribbly Gum dry open forest of the tablelands	-	-	-	17.75	0.55	28.04	**46.35**	**1072**	**56**	**1128**
PCT 1097 - Ribbon Gum - Narrow-leaved Peppermint grassy open forest on basalt plateaux	EEC	-	Yes	0.06	0.02	0.30	**0.38**	**3**	**0**	**3**
PCT 1107 - River Peppermint - Narrow-leaved Peppermint open forest on sheltered escarpment slopes	EEC	-	Yes	0.02	0	0.01	**0.03**	**2**	**1**	**3**
PCT 1150 - Silvertop Ash - Blue-leaved Stringybark shrubby open forest on ridges	-	-	-	8.12	0.57	9.03	**17.71**	**428**	**32**	**460**
PCT 1151 - Silvertop Ash - Broad-leaved Peppermint dry shrub forest	-	-	-	6.74	0.66	5.44	**12.85**	**457**	**19**	**476**
PCT 1191 - Snow Gum - Candle Bark woodland on broad valley flats	-	-	-	0.32	0	1	**1.32**	**3**	**0**	**3**

Vegetation Community	Conservation Status*		Potential SAII	Disturbance Area (ha)**				Total Ecosystem Credit Liability	Indirect Impact Credit Liability	Total Credit Liability
	BC Act	EPBC Act		ECZ	HTZ	TCZ	Total Impact Area			
PCT 1196 - Snow Gum - Mountain Gum shrubby open forest of montane areas	-	-	-	22.86	3.30	7.09	**33.25**	**637**	**28**	**665**
PCT 1224 - Sub-alpine dry grasslands and heathlands of valley slopes	-	-	-	0.00	0	0.02	**0.02**	**1**	**0**	**1**
PCT 1256 - Tableland swamp meadow on impeded drainage sites of the western Sydney Basin Bioregion and South Eastern Highlands	EEC	EEC	Yes	0.02	0	0.32	**0.34**	**7**	**0**	**7**
PCT 1330 - Yellow Box – Blakely's Red Gum grassy woodland on the tablelands	CEEC	CEEC	Yes	26.27	0.72	137.21	**164.20**	**1370**	**19**	**1389**
Total				**269.91**	**42.99**	**613.54**	**926.43**	**14631**	**402**	**15033**

* CEEC = Critically Endangered Ecological Community, EEC = Endangered Ecological Community

** ECZ – Easement Clearing Zone HTZ – Hazard Tree Zone TCZ – Total Clearing Zone

Table H-2 | Summary of residual impacts by Threatened Ecological Communities (TEC) and Critically Endangered Ecological Communities (CEEC)

TEC	Impact Area (ha)
Coolac-Tumut Serpentinite Shrubby Woodland	3.38
Monaro Tableland Cool Temperate Grassy Woodland	2.03
Montane Peatlands and Swamps	1.02
Tableland Basalt Forest	6.91
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	476.98
Total TEC	**490.32**
CEEC	Impact Area (ha)
Monaro Tableland Cool Temperate Grassy Woodland	2.03
White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland	476.98
Total CEEC	**479.01**

Table H-3 | Threatened flora impacts (species credit species)

Flora name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Area	
Acacia ausfeldii / Ausfeld's Wattle	V	-	-	6.54	11.13	17.67	**555**
Acacia bynoeana / Bynoe's Wattle	E	V	-	1.18	2.99	4.17	**128**
***Acacia flocktoniae* /** Flockton Wattle	V	V	-	5.39	5.85	11.25	**385**
***Ammobium craspedioides* /** Yass Daisy	V	V	-	34.16	263.59	297.74	**17366**
***Baloskion longipes* /** Dense Cord-rush	V	V	-	0.10	1.21	1.31	**45**
Bossiaea fragrans	CE	CE	Yes	0.51	5.81	6.31	**254**
Bossiaea oligosperma / Few-seeded Bossiaea	V	V	-	0.15	2.27	2.42	**57**
***Caesia parviflora var. minor* /** Small Pale Grass-lily	E	-	-	0.25	1.46	1.71	**29**
Caladenia concolor / Crimson Spider Orchid	E	V	Yes	9.77	24.89	34.66	**1559**
Caladenia montana	V	-	-	156.72	76.18	233.51	**4543**

Flora name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Area	
Commersonia prostrata / Dwarf Kerrawang	E	E	-	0	0.82	0.82	**4**
Cullen parvum / Small Scurf-pea	E	-	-	10.60	8.45	19.05	**387**
Dillwynia glaucula / Michelago Parrot-pea	E	-	-	0.10	1.21	1.31	**45**
Diuris aequalis / Buttercup Doubletail	E	E	-	17.5	28.55	46.05	**1075**
Diuris tricolor / Pine Donkey Orchid	V	-	-	0.48	1.12	1.61	**13**
Eucalyptus aggregate / Black Gum	V	V	-	0.20	0.59	0.79	**4**
Eucalyptus macarthurii / Paddys River Box	E	E	-	0.64	2.00	2.64	**82**
Eucalyptus robertsonii subsp. ***Hemisphaerica /*** Robertson's Peppermint	V	V	Yes	0	0.77	0.77	**3**
Genoplesium superbum / Superb Midge Orchid	E	-	Yes	5.70	5.19	10.89	**543**
Grevillea iaspicula / Wee Jasper Grevillea	CE	E	Yes	0.76	4.43	5.19	**24**
Grevillea wilkinsonii / Tumut Grevillea	CE	CE	Yes	5.02	17.49	22.51	**994**
Kunzea cambagei / Cambage Kunzea	V	V	-	4.08	4.20	8.27	**282**
Lepidium hyssopifolium / Aromatic Peppercress	E	E	-	10.84	56.69	67.53	**450**
Leucochrysum albicans subsp. ***Tricolor*** / Hoary Sunray	E	E	-	32.86	153.95	186.80	**107500**
Persoonia marginata / Clandulla Geebung	V	V	-	3.12	1.92	5.03	**162**

Flora name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Area	
Persoonia mollis subsp. ***revoluta***	V	-	-	0	1.37	1.37	**52**
Phyllota humifusa / Dwarf Phyllota	V	V	-	5.38	5.96	11.35	**381**
Pimelea bracteate	CE	CE	Yes	3.47	1.29	4.76	**88***
Pomaderris cotoneaster / Cotoneaster Pomaderris	E	E	-	4.61	4.36	8.96	**300**
Pomaderris delicata / Delicate Pomaderris	CE	CE	Yes	0	1.37	1.37	**77**
Pomaderris pallida / Pale Pomaderris	V	V	Yes	0.06	1.12	1.17	**67**
Prasophyllum bagoense / Bago Leek-orchid	CE	CE	Yes	0	0.04	0.04	**3**
Prasophyllum innubum / Brandy Marys Leek Orchid	CE	CE	Yes	0	0.02	0.02	**1**
Prasophyllum keltonii / Kelto's Leek-orchid	CE	CE	Yes	0	0.03	0.03	**2**
Prasophyllum petilum / Tarengo Leek-orchid	E	E	-	21.03	28.63	49.67	**827**
Pterostylis alpina / Alpine Greenhood	V	-	-	2.09	0.67	2.76	**69**
Pterostylis foliata / Slender Greenhood	V	-	-	37.04	17.02	54.06	**1150**
Pterostylis oreophila / Blue-tongued Greenhood	CE	CE	Yes	0.57	0.08	0.65	**11**
Pultenaea humilis / Dwarf Bush-pea	V	-	-	6.22	13.99	20.21	**569**
Senecio garlandii / Woolly Ragwort	V	-	-	5.54	6.02	11.56	**269**
Solanum armourense	E	-	-	0.10	0.29	0.40	**19**
Swainsona recta / Small Purple-pea	E	E	-	14.01	55.45	69.45	**1249**
Swainsona sericea / Silky Swainson-pea	V	-	-	25.03	91.22	116.25	**2059**

Flora name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Area	
Thelymitra alpicola / Alpine Sun-orchid	V	-	-	0.57	0.06	0.63	**5**
Thesium australe / Austral Toadflax	V	V	-	24.63	124.5	149.12	**902**
Xerochrysum palustre / Swamp Everlasting	-	V	-	0.64	0.13	0.77	**8**
Total				457.66	1036.38	1494.61	144509

* EPBC Act and BC Act conservation status: CE-Critically Endangered; E-Endangered; V-Vulnerable

Table H-4 | Threatened fauna impacts (species credit species)

Fauna name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Impact Area	
Birds							
Burhinus grallarius / Bush Stone-curlew	**E**	**-**	**-**	24.53	36.35	60.87	**1684**
Callocephalon fimbriatum / Gang-gang Cockatoo	V	E	**-**	273.6	202.27	**475.87**	**12838**
Calyptorhynchus lathami lathami / Glossy Black-Cockatoo	V	**-**	**-**	23.8	21.3	**45.09**	**1423**
Haliaeetus leucogaster / White-bellied Sea-eagle	V	**-**	**-**	2.63	0.42	**3.05**	**61**
Hieraaetus morphnoides / Little Eagle	V	**-**	**-**	68.31	27.59	**95.89**	**1999**
Lophoictinia isura / Square-tailed Kite	V	**-**	**-**	25.28	14.38	**39.66**	**824**
Ninox connivens / Barking Owl	V	**-**	**-**	144.68	120.39	**265.06**	**7281**
Ninox strenua / Powerful Owl	V	**-**	**-**	156.14	95.9	**252.04**	**7120**
Petroica rodinogaster / Pink Robin	V	**-**	**-**	30.03	8.74	**38.77**	932
Polytelis swainsonii / Superb Parrot	V	V	**-**	56.26	70.76	**127.01**	**2884**

Fauna name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Impact Area	
***Tyto novaehollandiae* /** Masked Owl	V	-	-	118.46	78.12	**196.57**	**5600**
Tyto tenebricosa / Sooty Owl	V	-	Yes	48.04	20.77	**68.81**	**2180**
Mammals							
Cercartetus nanus / Eastern Pygmy-possum	V	-	-	163.49	89.9	**253.39**	**6700**
***Chalinolobus dwyeri* /** Large-eared Pied Bat	V**	V	-	2.36	0.71	3.08	**93**
Mastacomys fuscus / Broad-toothed Rat	V	V	-	0.0	0.03	**0.03**	**1**
Myotis macropus / Southern Myotis	V	-	-	23.98	48.32	**72.32**	**1188**
Pseudomys fumeus / Smoky Mouse	CE	E	Yes	4.37	1.42	**5.79**	**191**
Petauroides volans / Greater Glider	E	E	-	108.96	49.46	**158.42**	**4213**
Petaurus norfolcensis / Squirrel Glider	V	-	-	39.09	27.83	**66.93**	**2034**
Phascogale tapoatafa / Brush-tailed Phascogale	V	-	-	114.56	64.65	**179.20**	**4944**
Phascolarctos cinereus / Koala	E	E	-	275.43	211.95	**487.37**	**12776**
Reptiles							
Aprasia parapulchella / Pink-tailed Legless Lizard	V	V	-	10.6	26.69	**37.29**	**618**
Cyclodomorphus praealtus / Alpine She-oak Skink	E	E	-	27.40	7.75	35.15	**925**
Delma impar / Striped Legless Lizard	V	V	-	2.37	90.45	**92.81**	**357**
Insects							
Keyacris scurra / Key's Matchstick Grasshopper	E	E	-	39.17	134.73	**173.91**	**2167**
Synemon plana / Golden Sun Moth	V	V	-	1.04	27.44	**28.48**	**165**

Fauna name	Conservation Status*		Potential SAII	Impact (ha)			Species Credit Liability
	BC Act	EPBC Act		Partial Clearing	Full Clearing	Total Impact Area	
Amphibians							
***Crinia sloanei* /** Sloane's Froglet	V	E	-	0.45	0.30	0.75	**14**
***Litoria booroolongensis* /** Booroolong Frog	E	E	-	0.01	0.06	**0.06**	**2**
***Litoria castanea* /** Yellow-spotted Tree Frog	CE	CE	Yes	0.60	0.67	**1.26**	**39**
***Mixophyes balbus* /** Stuttering Frog	E	V	Yes	8.50	7.07	**15.56**	**791**
Total							

* EPBC Act and BC Act conservation status: CE- Critically Endangered; E -Endangered; V- Vulnerable

On 9 September 2024 Large-eared Pied Bat **(*Chalinolobus dwyeri*) was listed as endangered under the BC Act and the Pilotbird (*Pycnoptilus floccosus*) and Latham's Snipe (*Gallinago hardwickii*) were both listed as vulnerable under the BC Act.

Table H5: Threatened fauna impacts (species credit species) – Endangered populations

Fauna name	Impact (ha)			Species Credit Liability
	Partial Clearing	Full Clearing	Total Impact Area	
Petaurus norfolcensis / Squirrel Glider in the Wagga Wagga Local Government Area	3.78	7.74	11.52	331
Petaurus australis / Yellow-bellied Glider population on the Bago Plateau	96.07	38.7	134.78	3396

Table H6: Threatened fauna indirect and prescribed impacts

Fauna name	Impact (ha)			Additional Credit Liability
	Impact Area	5% of impact area	Average credits per ha	
Cercartetus nanus / Eastern Pygmy-possum	252.58	22.9	27	618
Mastacomys fuscus / Broad-toothed Rat	0.03	0	0	0
Pseudomys fumeus / Smoky Mouse	5.78	0.29	33	10
Petauroides volans / Greater Glider	158.36	7.91	36	285
Petaurus norfolcensis / Squirrel Glider	66.73	3.34	11	37

Fauna name	Impact (ha)			Additional Credit Liability
	Impact Area	5% of impact area	Average credits per ha	
Petaurus norfolcensis / Squirrel Glider in the Wagga Wagga Local Government Area	10.46	0.52	31	16
Petaurus australis / Yellow-bellied Glider- population on the Bago Plateau	134.77	6.74	25	169
Phascolarctos cinereus / Koala	484.7	24.23	27	654
Aprasia parapulchella / Pink-tailed Legless Lizard	36.58	1.83	17	31
Delma impar / Striped Legless Lizard	90.65	4.53	4	18

Appendix I – Statutory considerations

Objects of the EP&A Act

A summary of the Department's consideration of the relevant objects (found in section 1.3 of the EP&A Act) are provided in **Table I-1** below.

Table I-1 | Objects of the EP&A Act and how they have been considered

Summary
Objects of the EP&A Act
The objects of most relevance to the approval authority's decision on whether to approve the project are found in section 1.3(a), (b), (c), (e), (f), (g), (h), (i) and (j) of the EP&A Act. The Department considers the project encourages the proper development of natural resources (Object 1.3(a)) and the promotion of orderly and economic use of land (Object 1.3(c)), particularly as the project: • is a permissible land use on the subject land; • is able to be managed such that the impacts of the project could be adequately minimised, managed, or at least compensated for, to an acceptable standard; • would contribute to a more diverse local industry, thereby supporting the local economy and community; • would not fragment or alienate resource lands in the LGAs; and • is consistent with the goals of NSW's *Climate Change Policy Framework* and *Net Zero Plan Stage 1: 2020-2030* and *Implementation update* (2022) and would assist in meeting Australia's renewable energy targets whilst reducing greenhouse gas emissions. Ecologically Sustainable Development (ESD) (Object 1.3(b)) has been considered in the Department's assessment of the project. This assessment integrates all significant socio-economic and environmental considerations and seeks to avoid any potential serious or irreversible environmental damage, based on an assessment of risk-weighted consequences. In addition, the Department considers that appropriately designed transmission infrastructure facilitating connection to renewable energy generation projects, in itself, is consistent with many of the principles of ESD. The proponent has also considered the project against the principles of ESD. Consideration of the key principles of ESD is detailed below. Precautionary Principle The Department has considered the Precautionary Principle and assessed the project's potential direct and indirect environmental impacts and considers that there is sufficient scientific certainty regarding environmental impacts and residual risks to enable determination of the application. The EIS contains a number of specialist environmental impact assessments and a number of design and operation measures to mitigate, remediate or offset potential impacts. The Department has also recommended conditions of approval that further mitigate potential residual impacts of the project such as limits on clearing, measures

to protect key habitat features and requiring Transgrid to retire biodiversity offsets. The Department considers that the recommended conditions can provide an appropriate level of protection to environmental values in the region.

Inter-generational equity

The Department recognises that the NSW energy market is in a state of transition from one dominated by coal-fired power stations to a renewable energy mix. Whilst this transition is being fuelled by investment in renewable energy zones and increased battery storage systems, increased interconnection between regions of the NEM will play a crucial role in the transition of the energy market. The Department recognises that climate change and reducing greenhouse gas emissions are key considerations for intergenerational equity and consider that the project contributes to reducing potential climate impacts by linking new renewable sources of generation to the energy market.

Conservation of biological diversity and ecological integrity

The project's potential impacts on biodiversity were an important consideration of the Department's assessment of the project. As described in section 6.4 and Appendix J, the Department considers that direct and indirect impacts on biodiversity and on EPBC matters, including the likely impacts to listed threatened species and communities, can be minimised through proposed mitigation measures and offsets.

Improved valuation, pricing and incentive

This principle of ESD emphasises the internalisation of environmental costs in the pricing of assets and services. The Department's assessment has sought to apply the 'polluter pays principle', insofar as Transgrid would be required to offset or remediate potential environmental impacts. As such, the Department has conditioned that biodiversity impacts be offset, wastewater treatment facilities will be required for both workforce accommodation camps and that the project's crushing and screening plants would operate under an Environment Protection Licence (if required) issued by the EPA.

As such, the Department considers that the project can be carried out in a manner that is consistent with the principles of ESD.

Consideration of environmental protection (Object 1.3(e)) is provided in section 6 of this report. The Department considers that the project is able to be undertaken in a manner that would at least maintain the biodiversity values of the locality over the medium to long term and would not significantly impact threatened species and ecological communities of the locality. The Department is also satisfied that any residual biodiversity impacts can be managed and/or mitigated by imposing appropriate conditions and retiring the required biodiversity offset credits.

Consideration of the sustainable management of built and cultural heritage (Object 1.3(f)) is provided in section 6 of this report. The Department considers the project would not significantly impact the built or cultural heritage of the locality, and any residual impacts can be managed and/or mitigated by imposing appropriate conditions.

Summary

Consideration of good design and the amenity of the built environment (Object 1.3(g)) is provided in section 6 of this report. The Department recognises that, while the transmission lines would create a linear corridor across the landscape, this would not change the prevailing character and nature of the surrounding environment. Nonetheless, the proposed mitigation measures and conditions would require the proponent to implement appropriate visual impact mitigation measures, such as landscaping and/or vegetation screening at select receivers and to rehabilitate work areas.

The Department has considered the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants (Object 1.3(h)) and consider the mitigation measures for fire safety and minimise bushfire risks would provide acceptable levels of protection for the health and safety of occupants of the accommodation camps during construction, the overall project area and surrounding residents. The Department has also conditioned further requirements including finalisation of emergency planning and construction and demolition conditions to ensure structural adequacy of the buildings and safe demolition of temporary facilities at the end of construction period.

The Department notified and consulted with seven local Councils being Wagga Wagga City Council, Snowy Valleys Council, Upper Lachlan Shire Council, Cootamundra–Gundagai Regional Council, Yass Valley Council, Goulburn–Mulwaree Council, and Hilltops Council and NSW government authorities (including further discussion of key issues with BCS and TfNSW) throughout the assessment of the project and carefully considered all responses in its assessment. The Department has also consulted with the AG DCCEEW throughout the assessment due to the assessment process under the EPBC Act.

Regarding opportunity for community participation in environmental planning and assessment (Object 1.3(j)), the Department publicly exhibited the application and EIS and made all relevant documents publicly available on its website (see section 5 of this report). All public submissions have been considered by Transgrid and the Department during the assessment process.

Appendix J – Assessment of Matters of National Environmental Significance

In accordance with the Bilateral Agreement between the Australian Government and NSW Government, the Department provides the following additional information required by the Commonwealth Minister for the Environment and Water, in deciding whether to approve a proposed action (i.e. the project) under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the HumeLink Environmental Impact Statement (EIS), Submissions Report, Amendment Report, revised Biodiversity Development Assessment Report (BDAR) and additional information provided during the assessment process, public submissions, and advice provided by the BCS, other NSW government agencies and the AG DCCEEW.

This Appendix is supplementary to, and should be read in conjunction with, the assessment included in **section 6.4** of this report, which includes consideration of impacts to listed threatened species and communities, and mitigation and offsetting measures for threatened species and communities, including Matters of National Environmental Significance (MNES).

Identifying MNES

The Commonwealth Referral Decision (EPBC 2021/9121) (Referral Decision) was based on likely significant impacts on threatened ecological communities (TEC), threatened fauna species, migratory species, and two listed items of national heritage significance, Australian Alps National Parks and Reserves and the Snowy Mountains Scheme.

The revised BDAR for the project identified and addressed all the listed threatened species and communities and migratory species included in the Referral Decision.

Assessments of significance were undertaken for the threatened communities and species recorded during field surveys or were identified as having a moderate or higher potential to occur within the project area, including two ecological communities, 13 threatened flora and 20 threatened fauna.

Transgrid assessed the significance of the impacts on these listed species and communities using the methodology outlined in the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* (2013) as documented in Appendix 3 of the BDAR.

The Heritage report identified and addressed all the heritage attributes of the listed items of national heritage significance and the project's potential to result in direct and indirect impacts attributes.

Impact on EPBC Listed Threatened Species and Communities

Impacts on threatened ecological communities

Transgrid assessed the potential impacts of two listed threatened ecological communities (TEC) with known habit within and/or adjacent to the amended project development footprint:

- Alpine Sphagnum Bogs and Associated Fens – Endangered
- White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered.

Transgrid's assessment determined that the project is unlikely to have a significant impact on Alpine Sphagnum Bogs and Associated Fens given the small scale of assessed impact (0.01ha). This assessment determined that the removal of 117.15 ha White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland was likely to result in a significant impact to this TEC.

Transgrid has committed to minimise clearing of TECs where feasible via micro-siting at the detailed design stage, and to offset the residual biodiversity impacts of the project in accordance with the requirements of NSW Biodiversity Offset Scheme. The Department considers that impacts to these TECs would be appropriately offset via the ecosystem credit requirements detailed in s**ection 6.4.8** of this report.

Impacts on threatened flora species

Transgrid assessed the potential impacts of 13 threatened flora species listed under the EPBC Act, considered to have a moderate likelihood of occurrence, being:

- *Acacia bynoeana* (Bynoe's Wattle) – Vulnerable
- *Ammobium craspedioides* (Yass Daisy) – Vulnerable
- *Diuris aequalis* (Buttercup Doubletail) - Endangered
- *Eucalyptus aggregata* (Black Gum) – Vulnerable
- *Kunzea cambagei* (Cambage Kunzea) – Vulnerable
- *Leucochrysum albicans* var. *tricolor* (Hoary Sunray) - Endangered
- *Pimelea bracteate* – Critically Endangered
- *Pomaderris cotoneaster* (Cotoneaster Pomaderris) - Endangered
- *Prasophyllum bagoense* (Bago Leek-orchid) – Critically Endangered
- *Prasophyllum innubum* (Brandy Marys Leek Orchid) – Critically Endangered

- *Prasophyllum keltonii* (Kelton's Leek-orchid)- Critically Endangered
- *Pterostylis oreophila* (Blue-tongued Greenhood) – Critically Endangered
- *Thesium australe* (Austral Toadflax) – Vulnerable
- *Xerochrysum palustre* (Swamp Everlasting) – Vulnerable

Transgrid's assessment determined that the project has the potential to or is likely to have a significant impact on these threatened flora species, excluding *Eucalyptus aggregata* (Black Gum).

The Department and BCS agree with the outcome of Transgrid's assessment and consider that the potential impacts on these species would be appropriately offset via the species credit requirements and identified additional management actions detailed in s**ection 6.4.8** of this report.

Impacts on threatened fauna species

Transgrid determined that there is predicted habitat or identified known habitat within the project area for 35 threatened fauna species, including 7 threatened aquatic fauna species, listed under the EPBC Act which have been identified to have a moderate likelihood of occurrence or higher, being

- Sloane's Froglet (*Crinia sloanei*) - Endangered
- Booroolong Frog (*Litoria booroolongensis*) - Endangered
- Yellow-spotted Tree Frog (*Litoria castanea*) - Critically endangered
- Regent Honeyeater (*Anthochaera phrygia*) - Critically endangered
- Southern Whiteface (*Aphelocephala leucopsis*) - Vulnerable
- Gang-gang Cockatoo (*Callocephalon fimbriatum*) - Endangered
- Glossy Black-Cockatoo (*Calyptorhynchus lathami*) - Vulnerable
- Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*) - Vulnerable
- Painted Honeyeater (*Grantiella picta*) - Vulnerable
- Swift Parrot (*Lathamus discolor*) - Critically endangered
- South-Eastern Hooded Robin (*Melanodryas cucullata cucullata*) - Endangered
- Superb Parrot (*Polytelis swainsonii*) - Vulnerable
- Pilotbird (*Pycnoptilus floccosus*) - Vulnerable
- Diamond Firetail (*Stagonopleura guttata*) - Vulnerable
- White-throated Needletail (*Hirundapus caudacutus*) - Vulnerable
- Key's Matchstick Grasshopper (*Keyacris scurra*) - Endangered

- Golden Sun Moth (*Synemon plana*), - Vulnerable
- Large-eared Pied Bat (*Chalinolobus dwyeri*) - Vulnerable
- Spotted-tailed Quoll (*Dasyurus maculatus*) - Endangered
- Broad-toothed Rat (*Mastacomys fuscus*) - Vulnerable
- Greater Glider (*Petauroides volans*) - Endangered
- Yellow-bellied Glider (*Petaurus australis*) - Vulnerable
- Koala (*Phascolarctos cinereus*) - Endangered
- Smoky Mouse (*Pseudomys fumeus*) - Endangered
- Grey-headed Flying-fox (*Pteropus poliocephalus*) - Vulnerable
- Pink-tailed Legless Lizard (*Aprasia parapulchella*) - Vulnerable
- Striped Legless Lizard *(Delma impar*) - Vulnerable
- Sharp-tailed Sandpiper (*Calidris acuminata*) - Vulnerable
- Latham's Snipe (*Gallinago hardwickii*) - Vulnerable
- Flatheaded Galaxias (*Galaxias rostratus*) - Critically endangered
- Southern Pygmy Perch (*Nannoperca australis*) - Vulnerable
- Trout Cod (*Maccullochella macquariensis*) - Endangered
- Macquarie Perch (*Macquaria australasica*) - Endangered
- Silver Perch (*Bidyanus bidyanus*) - Critically Endangered
- Riek's Crayfish (*Euastacus rieki*) - Endangered

Assessments of significance were carried out for these species (Attachment 3, Section 2.3, of the BDAR. The assessments of significance for these species determined that the project has the potential to or is likely to have a significant impact on these threatened flora species, excluding Sloane's Froglet (*Crinia sloanei*), Booroolong Frog (*Litoria booroolongensis*), Yellow-spotted Tree Frog (*Litoria castanea*), White-throated Needletail (*Hirundapus caudacutus*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Broad-toothed Rat (*Mastacomys fuscus*), Smoky Mouse (*Pseudomys fumeus*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Flatheaded Galaxias (*Galaxias rostratus*), Southern Pygmy Perch (*Nannoperca australis*), Trout Cod (*Maccullochella macquariensis*), Macquarie Perch (*Macquaria australasica*), Silver Perch (*Bidyanus bidyanus*) and Riek's Crayfish (*Euastacus rieki*)

The Department and BCS agree with the outcome of Transgrid's assessment and consider that the potential impacts on these species would be appropriately offset via the species credit requirements and identified additional management actions detailed in section 6.4.8 of this report.

Impacts on migratory species

The following EPBC Act listed Migratory species are considered moderately likely to occur in, or adjacent to, the project area based on the presence of suitable habitats:

- Sharp-tailed Sandpiper (*Calidris acuminata*)
- Red-necked Stint (*Calidris ruficollis*)
- Latham's Snipe (*Gallinago hardwickii*)
- White-throated Needletail (*Hirundapus caudacutus*)
- Common Greenshank (*Tringa nebularia*)
- Marsh Sandpiper (*Tringa stagnatilis*)
- Black-faced Monarch (*Monarcha melanopsis*)
- Fork-tailed Swift (*Apus pacificus*)
- Rufous Fantail (*Rhipidura rufifrons*)
- Satin Flycatcher (*Myiagra cyanoleuca*)

Three of these migratory species, the Fork-tailed Swift (*Apus pacificus*), Rufous Fantail (*Rhipidura rufifrons*) and Satin Flycatcher (*Myiagra cyanoleuca*), were recorded as a part of field surveys:

Transgrid's assessments of significance concluded that while some migratory birds may use the project area, it is not considered important habitat for these species and would therefore not have a significant impact on these species. The Department and BCS agree with the outcome of Transgrid's assessment.

Conservation advice

In its MNES assessment, Transgrid has appropriately referred to the Conservation Advice for Alpine Sphagnum Bogs and Associated Fens endangered ecological community (Attachment 3 of the BDAR) in relation to the relevant recovery and threat abatement actions for each TEC relevant to the proposal.

Conservation Advice for Bynoe's Wattle (*Acacia bynoeana*), Yass Daisy (*Ammobium craspedioides*), Swamp Everlasting (*Xerochrysum palustre*), Black Gum (*Eucalyptus aggregata*), Cambage Kunzea (*Kunzea cambagei*), Hoary Sunray (*Leucochrysum albicans* subsp. *tricolor*), *Pimelea bracteate*,

Cotoneaster Pomaderris (*Pomaderris cotoneaster*), Bago Leek-orchid (*Prasophyllum bagoense*), Brandy Mary's Leek-orchid (*Prasophyllum innubum*), Kelton's Leek-orchid (*Prasophyllum keltonii*), Blue-tongued Greenhood (*Pterostylis oreophila*), Austral Toadflax (*Thesium australe*), Buttercup Doubletail (*Diuris aequalis*), Sloane's Froglet (*Crinia sloanei*), Booroolong Frog (*Litoria booroolongensis*), Yellow-spotted Tree Frog (*Litoria castanea*), Regent Honeyeater (*Anthochaera phrygia*), Southern Whiteface (*Aphelocephala leucopsis*), Gang-gang Cockatoo (*Callocephalon fimbriatum*), Glossy Black-Cockatoo (*Calyptorhynchus lathami*), Brown Treecreeper (eastern subspecies) (*Climacteris picumnus victoriae*), Painted Honeyeater (*Grantiella picta*), Swift Parrot (*Lathamus discolor*), South-Eastern Hooded Robin (*Melanodryas cucullata cucullata*), Superb Parrot (*Polytelis swainsonii*) Pilotbird (*Pycnoptilus floccosus*), Diamond Firetail (*Stagonopleura guttata*), White-throated Needletail (*Hirundapus caudacutus*), Key's Matchstick Grasshopper (*Keyacris scurra*), Golden Sun Moth (*Synemon plana*), Bogong Moth (*Agrotis infusa*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Spotted-tailed Quoll (*Dasyurus maculatus*), Broad-toothed Rat (*Mastacomys fuscus*), Greater Glider (*Petauroides volans*), Yellow-bellied Glider (*Petaurus australis*), Koala (*Phascolarctos cinereus*), Smoky Mouse (*Pseudomys fumeus*), Pink-tailed Legless Lizard (*Aprasia parapulchella*), Striped Legless Lizard (*Delma impar*), Sharp-tailed Sandpiper (*Calidris acuminata*), Latham's Snipe (*Gallinago hardwickii*), Flatheaded Galaxias (*Galaxias rostratus*), Southern Pygmy Perch (*Nannoperca australis*), Macquarie Perch (*Macquaria australasica*), Silver Perch (*Bidyanus bidyanus*), and Riek's Crayfish (*Euastacus rieki*) are also appropriately referred to (Appendix 3 of the BDAR) to inform habitat requirements and impact assessments for each species.

The Department notes the key threats to species and communities include landscape fragmentation, introduction of weeds, competition for land, habitat degradation (particularly by rabbits, unmanaged goats, and feral pigs), climate change, disease transmission (particularly by feral pigs), biological effects associated with invasive species and predations (particularly by feral cats and foxes).

The Department's recommended conditions require Transgrid to prepare and implement a Biodiversity Management Plan detailing how these risks would be minimised and managed, including measures to ensure the development does not adversely affect the native vegetation and habitat outside the disturbance footprint;

- minimise the clearing of native vegetation and habitat within the disturbance footprint;
- minimise the impacts of the development on threatened flora and fauna species within the disturbance footprint and its surrounds;
- rehabilitate and revegetate temporary disturbance areas;
- protect native vegetation and key fauna habitat outside the approved disturbance footprint;

- maximise the salvage of resources within the approved disturbance footprint – including vegetative and soil resources – for beneficial reuse (such as fauna habitat enhancement) during the rehabilitation and revegetation of the project area;
- collect and propagate seed (where relevant);
- control weeds and feral pests;
- control erosion; and
- manage bushfire.

Transgrid would be required to prepare the Biodiversity Management Plan in consultation with BCD and the AG DCCEEW, and ensure the plan is prepared by a suitably qualified and experienced biodiversity expert.

In addition, Transgrid is required to ensure impacts on species and communities are avoided and minimised, where practicable during detailed design, and offset the residual biodiversity impacts of the project in accordance with the NSW Biodiversity Offset Scheme.

Recovery Plans

Recovery plans for White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC, Alpine Sphagnum Bogs and Associated Fens TEC, Swamp Everlasting, Hoary Sunray, *Cotoneaster Pomaderris,* Booroolong Frog, Yellow-spotted Tree Frog, Regent Honeyeater, Painted Honeyeater, Swift Parrot, Superb Parrot, Large-eared Pied Bat, Spotted-tailed Quoll, Koala, Smoky Mouse, Grey-headed Flying-fox, Trout Cod and Macquarie Perch are referenced in Attachment 3 of the BDAR. Recovery Plans have generally been referenced to inform the identification of areas of important habitat for the above species.

Threat Abatement Plans

The relevant Threat Abatement Plans that apply to the project include:

- Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs *(Sus scrofa*) (Australian Government Department of the Environment and Energy, 2017);
- Threat abatement plan for disease in natural ecosystems caused by Phytophthora cinnamomic (Australian Government Department of the Environment and Energy, 2018);
- Threat abatement plan for predation by feral cats (Australian Government Department of the Environment, 2015);
- Threat abatement plan for predation by the European red fox (Australian Government Department of the Environment, Water, Heritage and the Arts, 2008);

- Threat abatement plan for competition and land degradation by rabbits (Australian Government Department of the Environment and Energy, 2016); and
- Threat abatement plan for competition and land degradation by unmanaged goats (Australian Government Department of the Environment, Water, Heritage and the Arts, 2008).

The Department has included measures for the control of feral animals under the recommended Biodiversity Management Plan for the project, including specific requirements for the Applicant to consider the actions identified in relevant Threat Abatement Plans. With these measures in place, the Department considers that the action can be carried out in a manner which is compatible with the relevant Threat Abatement Plans.

Subject to the recommended conditions, the Department considers that the project can be carried out in a manner that is consistent with the relevant conservation advice, recovery plans and threat abatement plans.

Review of EPBC listed threatened species and communities

Table J-1 provides a detailed review of whether the assessment documentation (i.e. the EIS, Submissions Report, Amendment Report and BDAR) includes all relevant required information.

Table J-1 | BCS advice to the Department on EPBC Act listed threatened species and communities

Requirement	Information
Background & Description of Action **Reference** **(BAM / BLA[1])** BAM Chapters 3, 4, 5 and 8	Does the EIS/BDAR[2]: ☐ clearly show how operational and construction footprints, including clearing boundaries, structures to be built and elements of the action are situated with regard to MNES ☐ depict stages and timing of the action that may impact on MNES ☐ provide a map(s) of the subject land boundary showing the final proposal/disturbance footprint with respect to location of MNES, including GIS shape files Include references to where this detail is provided.
	Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements: The project includes construction of around 365 kilometres (km) of new 500 kilovolt (kV) high-voltage transmission lines and associated infrastructure and ancillary works between Wagga Wagga, Bannaby and Maragle. Figures 13-16, 13-17 and 13-18 show the current proposed project footprint in relation to MNES. Additional information has been provided to BCS that has provided some further assessment of the impacts and offsets for single-use access tracks. This has led to increased impacts to a number of PCTS, some of which constitute Box Gum woodland TEC. There are many MNES assumed present, as access to survey these areas has not been possible. Further information is required to inform the MNES assessment once the assessor can complete targeted surveys. The accredited assessor will be required to revise the MNES evaluation to address any remaining uncertainty once the additional surveys have been completed. Transgrid have provided a draft package of Additional and Appropriate Measures (AAM's) for Box Gum Woodland, Sooty Owl and *Pimelea bracteata* to the value of $7.3 million, with the largest investment being in Box Gum Woodland. The AAMs will be re-evaluated once the final clearing figures are determined. The total offset figure to be secured in the bank guarantee is $AUD 502,300,000. This will be adequate to ensure any revised residual offset liability calculated as a result of the additional targeted surveys for MNES is met. A requirement of the approval is that the post approval surveys are completed to a standard equal to BAM requirements to rule out presence and/or guide avoidance. BCS has written assurance from Transgrid that the post approval survey effort that is completed to BAM standard and will be

[1] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

[2] Or revisions of the BDAR and associated documentation made as a result of previous reviews or project changes post-exhibition.

Requirement	Information
	adequate and sufficiently reliable to determine a species' true absence from the project footprint including areas identified in the BDAR as indirectly impacted for the purpose of recalculation of residual impacts after impacts to MNES entities have been appropriately avoided and minimised. Transgrid have provided additional information to the BDAR at the request of BCS, to justify an increased offset obligation for indirect impacts, prescribed impacts and temporary access tracks to where easement and hazard tree clearing will be undertaken. This information has resulted in an increased credit obligation. The approval relies on BCS endorsement of a Supplementary Biodiversity Assessment Strategy (SBAS) prepared by Transgrid. The SBAS will be developed in consultation with and to the satisfaction of BCS and will detail the requirements for post approval biodiversity surveys for land not previously surveyed. The SBAS will be used for: • Verifying biodiversity values including predicted candidate species currently assumed present to determine presence/absence • Informing avoidance and mitigation strategies • Justifying any offset liability re-calculations • Monitoring and reconciling clearing limits (including final location of access tracks to ECZ and HTZ polygons) within an appropriate timeframe as specified in the approval • Justifying any credit reduction Informing how the avoid/minimise/offset residual impact hierarchy will be applied to SAII and /or MNES species if detected. SBAS survey will be conducted to a standard equivalent to the BAM and appropriate survey guidelines including NSW and Australian government advice. Project staging is provided in Section 2.2 of the BDAR which sets out the proposed construction timeframe, following approval, with it due to commence in 2024 and finishing at the end of 2026. It is expected that construction activities would largely be undertaken during standard construction hours. However, there would be times when working outside of standard construction hours would be required (as defined by the Interim Construction Noise Guideline (DECC, 2009)), subject to approval. As the details of construction methodology and amended project needs are developed, these hours will be refined for certain activities. Management and mitigation of impacts of different stages and timing for MNES impacts are broadly addressed in Table 14-1 of the BDAR and will be detailed in the BMP. Mitigation will include pre-clearing surveys, and implementation of a Connectivity Strategy that will be developed in consultation with BCS.
Landscape Context of the MNES	**Provide advice on the adequacy of the landscape context information and identify any additional information requirements:** The amended project occurs within three Interim Biogeographic Regionalisation of Australia (IBRA) regions

Requirement	Information
Reference **(BAM / BLA[3])** BAM Section 3.1 BLA clause 7.4 BDAR section 4 and chapter 9	that are comprised of six IBRA subregions, being: • South-Eastern Highlands region: Bondo subregion, Bungonia subregion, Crookwell subregion, Murrumbateman subregion • NSW South-Western Slopes region: Inland Slopes subregion • Australian Alps region: Snowy Mountains subregion. The landscape features relevant to each IBRA subregion within the landscape assessment area have been used to inform the suitability of habitats for threatened species. As per the BAM, calculations have been broken down by subregion. Section 4 adequately describes the location of the project area in the context of landscape, habitat connectivity, catchment, and geological features. BCS confirms that details on landscape context have been undertaken in accordance with the BAM for linear developments, and the landscape assessment meets the requirements of Stage 1 (s3 and 4) of the BAM. The implications of the 2019/2020 bushfire season on native vegetation and the assessment are explored in Section 4.3 and chapter 9. No additional information is required.
EPBC Act Listed Threatened Species & Communities **Reference** **(BAM / BLA[4])**	Verify that the EIS/BDAR includes relevant information on the identification of all EPBC Act listed threatened species and communities on the site or in the vicinity[5] via: ☒ field based survey effort ☒ published peer reviewed literature ☒ local data ☒ supporting databases (such as the NSW BioNet Vegetation Classification, NSW BioNet Threatened Biodiversity Data Collection, NSW BioNet Atlas, Commonwealth Species Profile and Threats Database search results) ☒ Verify that the EIS/BDAR includes appropriate mapping of all EPBC Act listed threatened species and communities in accordance with the relevant Commonwealth Listing Advice. The EIS/BDAR should include important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans.

[3] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

[4] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

[5] On land to which impacts may extend

Requirement	Information
BAM Chapters 4 and 5	**Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements:** The BDAR has addressed the above requirements for each MNES that are either at risk of likely, potential, or potential (precautionary), significant impact. This has been addressed in Attachment 3, Section 3 NSW Assessment Bilateral requirements. However, it should be noted that there are areas within the project footprint that have not been surveyed, which will need to occur post approval. Transgrid have committed to address these deficiencies through the SBAS which will provide detailed survey plans**. Conditions of approval will require the SBAS to be developed in consultation with BCS and that any residual impacts MNES will be subject to mitigation and offset via a revised Biodiversity Offset Package within BOS requirements. The bank guarantee is considered sufficient to ensure this can be achieved.** The survey effort has been represented in the BDAR figures and spatial data provided to BCS. Areas of the project footprint the have not been surveyed due to inaccessibility have been mapped and are also identified in the spatial data. The mapping has been reviewed by BCS and is considered adequate for the purpose of reviewing survey effort. At the request of BCS additional offsets have been calculated for easement clearing, indirect and prescribed impacts of the assessment to determine the final offset payment. Spatial data supporting these calculations has been provided and reviewed. Most MNES have been assumed present and post approval targeted surveys will be undertaken by the SBAS to determine presence/absence and re-calculate offsets required for residual impacts (should impacts be unavoidable). Field survey techniques used to undertake surveys were in generally accordance with the NSW guide for the BAM (DPIE, 2020b) with a detailed field verification method provided in Section 4.5 of the BDAR. Mapping of native vegetation and habitat extent within the amended project is required under Section 4.1 of the BAM, with detailed requirements outlined in Section 3.2 of the BAM 2020 Operational Manual. Field data was used to assign condition classes for any given observed habitat patch, where relevant. Field surveys for threatened flora were carried out using a combination of parallel field traverses and a two-phase grid-based systematic survey approach as set out in the DPIE (2020d) guideline for Surveying threatened plants and their habitats. Field survey effort in detailed in Section 4.5 of the BDAR. Survey methods were selected to detect target candidate threatened fauna species, as well as to employ a broad range of survey techniques that allowed for detection of the variety of fauna species groups. Relevant threatened species guidelines and the TBDC (NSW DCCEEW, 2024b) were consulted to assist in determining appropriate survey methods, effort, and timing (refer to Table 4-15). Survey methods utilised are outlined in Table 4-16. Targeted fauna survey effort is summarised in Table 4-17 and shown in Figure 4-22F 3 (Attachment 5). Attachment 1 provides a detailed overview of the survey effort review and final species polygon development process undertaken to support these outcomes.

Requirement	Information
	Species polygons for the Gang gang cockatoo, Superb Parrot, threatened owls and raptors, including the white bellied sea eagle are considered adequate for generating a satisfactory offset amount however will be subject to a condition of approval requiring revision for avoidance and mitigation purposes. Aquatic habitats have been assessed primarily through a detailed desktop assessment of high-resolution aerial imagery and other data sources, augmented by opportunistic field assessment of aquatic habitats within accessible lands. The habitat-based assessment includes identification and mapping of any sensitive fluvial geomorphological features or significant aquatic ecological habitats in perennial or ephemeral streams within the amended project footprint. A number of MNES were recorded during surveys. These include; **Threatened Ecological Community** 1. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland 2. Alpine Sphagnum Bogs and Associated Fens **Flora** 1. *Ammobium craspedioides* Yass Daisy 2. *Leucochrysum albicans* subsp. *tricolor* Hoary Sunray 3. *Pimelea bracteata* Pimelea bracteata 4. *Prasophyllum keltonii* Kelton's Leek-orchid 5. *Xerochrysum palustre* Swamp Everlasting **Fauna** 1. *Aprasia parapulchella* Pink-tailed Legless Lizard 2. *Callocephalon fimbriatum* Gang-gang Cockatoo 3. *Calyptorhynchus lathami* Glossy Black-Cockatoo 4. *Keyacris scurra* Key's Matchstick Grasshopper 5. *Petauroides volans* Greater Glider 6. *Polytelis swainsonii* Superb Parrot Confirm that all EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the BDAR/EIS including those that are ecosystem credit species. **If any species and communities identified in the referral documentation (provided by DCCEEW) have been ruled out because they don't occur on or near the site, verify that there is robust analysis and justification for why these species can be ruled out.** This assessment is based on the 2024 PMST results. The following species and communities identified in the referral documentation have been excluded from further Significant impact assessment because they are not considered likely to occur on or near the site. This is partially justified by survey effort and likelihood of occurrence. Where

Requirement	Information
	the species have not been ruled out by the targeted surveys or likelihood of occurrence, the species have been assumed present and will be subject post approval surveys. See Table 3 for exclusion adequacy assessment.

1. *Acacia_flocktoniae*
2. *Acacia phasmoides*
3. *Actitis hypoleucos*
4. *Amphibromus fluitans*
5. *Austrostipa wakoolica*
6. *Baloskion_longipes*
7. *Botaurus poiciloptilus*
8. *Bossiaea_fragrans*
9. *Bossiaea_oligosperma*
10. *Brachyscome muelleroides*
11. *Burramys parvus*
12. *Caladenia arenaria*
13. *Caladenia_concolor*
14. *caladenia rosella*
15. *Caladenia tessellata*
16. *Calidris ferruginea*
17. *Calidris melanotos*
18. *Callitris oblonga*
19. *Calotis glandulosa*
20. *Commersonia prostrata*
21. *Colobanthus curtisiae*
27. *Dodonaea procumbens*
28. *Epacris gnidioides*
    Eucalyptus alligatrix subsp. Alligatrix
29. *Eucalyptus forresterae*
30. *Eucalyptus glaucina*
31. *Eucalyptus macarthurii*
32. *Eucalyptus recurva*
33. *Eucalyptus robertsonii subsp hemisphaerica*
34. *Euphrasia arguta*
35. *Falco hypoleucos*
36. *Genoplesium baueri*
37. *Genoplesium vernale*
38. *Glycine_latrobeana*
39. *Grevillea iaspicula*
40. *Grevillea raybrownii*
41. *Grevillea wilkinsonii*
42. *Hakea_dohertyi*
43. *Haliaeetus leucogaster*
44. *Haloragis exalata subsp exalata*
51. *Isoodon obesulus obesulus*
52. *Leipoa ocellata*
53. *Lepidium aschersonii*
54. *Lepidium_hyssopifolium*
55. *Lepidium monoplocoides*
56. *Leptospermum thompsonii*
57. *Liopholis guthega*
58. *Liopholis montana*
59. *Litoria aurea*
60. *Litoria littlejohni*
61. *Litoria raniformis*
62. *Litoria spenceri*
63. *Litoria verreauxii alpina*
64. *Lophoictinia leadbeateri leadbeateri*
65. *Maccullochella peelii*
66. *Mixophyes_balbus*
67. *Motacilla flava*
68. *Neophema chrysostoma*
69. *Nyctophilus corbeni*
70. *Pandion haliaetus*
71. *Paralucia spinifera*
79. *Pomaderris_delicata*
80. *Pomaderris pallida*
81. *Potorous tridactylus*
82. *Prasophyllum petilum*
83. *Prasophyllum retroflexum*
84. *Prasophyllum sp wybong*
85. *Pseudemoia cryodroma*
86. *Pseudomys_novaehollandiae*
87. *Pseudophryne_corroboree*
88. *Pseudophryne pengilleyi*
89. *Rhizanthella slateri*
90. *Rostratula australis*
91. *Rutidosis_leiolepis*
92. *Rutidosis leptorhynchoides*
93. *Senecio macrocarpus*
94. *Swainsona recta*
95. *Swainsona murrayana*
96. *Thelymitra kangaloonica*
97. *Viola improcera*
98. *Zieria obcordata*
99. Grey Box (Eucalyptus microcarpa) Grassy

Requirement	Information
	22. *Corunastylis vernalis (listed as Genoplesium vernale) see below* 23. *Cyclodomorphus praealtus* 24. *Cynanchum elegans* 25. *Dicanthium setosum* 26. *Diuris_ochroma* 45. *Heleioporus australiacus* 46. *Helichrysum calvertianum* 47. *Hibbertia acaulothrix* 48. *Hoplocephalus bungaroides* 49. *Hypseleotris gymnocephala* 50. *Indigofera efoliata* 72. *Pedionomus torquatus* 73. *Persoonia marginata* 74. *Persoonia mollis subsp revoluta* 75. *Persoonia oxycoccoides* 76. *Petrogale penicillata* 77. *Phyllota humifusa* 78. *Pomaderris brunnea* Woodlands and Derived Native Grasslands of South-eastern Australia 100. Natural Temperate Grassland of the South Eastern Highlands 101. Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion *102.* Weeping Myall Woodlands However, of these MNES listed above, the following have been assumed present in the BDAR and will require SIA if post approval surveys find them present on site. As they are assumed present, they will be surveyed to rule out presence, until then they have been included in the offset credit requirement.
	1. *Acacia flocktoniae* 2. *Baloskion longipes* 3. *Bossiaea fragrans* 4. *Bossiaea oligosperma* 5. *Caladenia concolor* 6. *Calotis glandulosa* 7. *Commersonia prostrata* 8. *Cyclodomorphus praealtus* 9. *Eucalyptus macarthurii* 10. *Eucalyptus robertsonii subsp hemisphaerica* 11. *signi* 12. *Grevillea wilkinsonii* 13. *Leipoa ocellata – ecosystem credit species -* 14. *Lepidium hyssopifolium* 15. *Liopholis montana -* 16. *Mixophyes balbus (must be surveyed for post approval – see below)* 17. *Nyctophilus corbeni* 18. *Persoonia marginata* 19. *Persoonia mollis subsp revoluta* 20. *Phyllota humifusa* 21. *Pomaderris delicata* 22. *Pomaderris pallida* 23. *Prasophyllum petilum* 24. *Rostratula australis* 25. *Swainsona recta* <u>Threatened ecological communities</u> The vegetation survey plots and mapping were sufficient to demonstrate that the following threatened ecological communities were not present within the project site. 1. Grey box (Eucalyptus macrocarpa) Grassy woodlands and derived native grasslands of South Eastern Australia. 2. Natural temperate grasslands of the south eastern highlands 3. Upland basalt eucalypt forests of the Sydney basin bioregion 4. Weeping myall woodlands Chapter 11 of the BDAR explains that these TECs have been excluded from further assessment as none of the PCTs associated with the development constitute these TECs. They have not been considered further in the assessment. This is a reasonable approach and BCS agrees that no further

Requirement	Information
	assessment is required. It is unlikely that these TECs will be found in the post approval surveys given the level of survey already undertaken and with SVTM data to support it. Table 4 has further details on reasoning for exclusion from further assessment of significance. **Provide advice on whether there are any other MNES species or communities that are missing from the assessment based on BCS knowledge and experience**. Threatened reptiles It should be noted that one of the MNES listed above, that is, *Mixophyes balbus,* the stuttering frog, cannot be ruled out from being present in the Bungonia IBRA Subregion unless it has been subject to targeted survey, under the advice of DCCEEW, . If they are found to be present, then a SIA will need to be considered if avoidance and mitigation measures are not achievable In addition, further assessment will be required for the *Pseudemoia cryodroma* – Alpine bog skink if the project footprint impacts alpine bog (suitable habitat). If it is found, then a SIA will need to be considered if avoidance and mitigation measures are not achievable. The conditions of approval require that impacts to Alpine bogs be avoided. The *Liopholis montana* - Mountain skink has not been assessed. Whilst it was in the 2024 PMST results, it has not been assessed. Advice has been provided by NPWS that there is suitable habitat within the project footprint and will need to be surveyed for. If it is found, then a SIA will need to be considered if avoidance and mitigation measures are not achievable Threatened Flora All MNES plant species have been addressed in the BDAR, except detail is lacking on justification for exclusion for the East Lynne Midge Orchid. 1. *Genoplesium vernale* – East Lynne Midge Orchid is listed in Table A2- 3: although the BDAR did not provide a clear rationale for the species exclusion from the assessment, BCS are supportive of exclusion based on geographic limitations of the species and non-proximity to the alignment. Likelihood of occurrence and likelihood of impact summary, but there is no detail on why it has been ruled out for further assessment. Whilst BCS agree that its unlikely to occur or be impacted by the project and can be excluded from further assessment, this should have been addressed in the BDAR, specifically in Table A2- 4: Likelihood of occurrence and likelihood of impact. The remaining MNES flora species that have been excluded from further assessment have otherwise been justified, through lack of records, or unsuitable habitat for the species to occur. Threatened fauna The following MNES fauna species have not been adequately addressed in the BDAR. • *Chalcites osculans* as *Chrysococcyx osculans* – Black eared cuckoo. The 2024 PMST results included this MNES. This species is shown as recorded in the Bondo IBRA subregion in Attachment 18 – Fauna species list. However, this list incorrectly states that the species is not

Requirement	Information
	EPBC listed, as it is listed as Marine. It has not been addressed in tables A2-3 or A2-4, and has not been assessed further in the BDAR. BCS are supportive of the exclusion of the species from SIA due to low likelihood of occurrence. • *Merops ornatus* – Rainbow bee eater. This MNES was not in the 2024 PMST results, but it was recorded in Inland slopes IBRA subregion and Murrumbateman region as shown in Attachment 18 Fauna species list. This table also says that it is not an EPBC listed species, however it is listed as Marine. It is absent from tables A2-3 and A2-4 and has not been assessed further in the BDAR. BCS are supportive of the exclusion of the species from SIA due to low likelihood of occurrence. • *Bubulcus ibis* as *Ardea ibis* – cattle egret – listed as Marine in the 2024 PMST results, but has not been addressed in the BDAR. Although it should have been addressed in tables A2-3 and A2-4 BCS are not concerned about risk of significant impact from the project. • *Pterodroma cervicalis* – white necked petrel - listed as Marine and is in the 2024 PMST results, but has not been addressed in the BDAR. Although it should have been addressed in tables A2-3 and A2-4 BCS are not concerned about risk of significant impact from the project. • *Pedionomus torquatus* – plains wanderer – listed in the 2024 PMST results. Has been addressed in table A2-3 Likelihood of occurrence and likelihood of impact summary, but not the comprehensive Table A2-4. Table A2-3 says that it not being assessed further as there is a low likelihood of it occurring as there are no records of the species in the wider locality and as potential impacts are highly unlikely. According to Bionet, the species is associated with the following PCTs, none of which have been identified as occurring within the impact area. They are PCTs 377, 150, 46, 165, 44, 1203 and 183. BCS do not consider that this species is at risk of significant impact from the project. • *Haliaeetus leucogaster* - white bellied sea eagle – listed as Marine and in the 2024 PMST results. It has not been included in tables A2-3 or A2-4, nor has it been assessed in accordance with the Significant impact guidelines. The BDAR has failed to identify that the sea eagle is listed under the EPBC Act as Marine and that it is an MNES entity. The white bellied sea eagle will be subject to post approval surveys for avoidance and mitigation (BMP and SBAS). A credit liability has been determined on the assumed presence of the species. No action required, just for noting The following MNES fauna species, *Numenius madagascariensis* – far eastern curlew was previously listed in the PMST 2023 results, but did not come up in the 2024 results and has not been assessed in the BDAR. BCS also note that the following MNES flora and fauna species are included in the BDAR and are additional to the 2024 PMST results. This is due to the BAM-C predictions /inputs as per BAM requirements. 1. *Acacia_flocktoniae* 2. *Acacia phasmoides* 3. *Baloskion_longipes* 4. *Bossiaea_fragrans* 5. *Bossiaea_oligosperma* 13. *Eucalyptus_macarthurii* 14. *Eucalyptus recurva* 15. *Eucalyptus_robertsonii_subsp_hemisphaerica* 16. *Euphrasia arguta* 17. *Haloragis exalata subsp exalata* 25. *Litoria littlejohni* 26. *Litoria verreauxii alpina* 27. *Persoonia_marginata* 28. *Pomaderris_delicata* 29. *Potorous tridactylus*

Requirement	Information

6. *Caladenia rosella*
7. *Calidris_ruficollis*
8. *Callitris oblonga*
9. *Dicanthium setosum*
10. *Epacris gnidioides*
11. *Eucalyptus alligatrix subsp. Alligatrix*
12. *Eucalyptus glaucina*
18. *Heleioporus australiacus*
19. *Indigofera efoliata*
20. *Isoodon obesulus obesulus*
21. *Leptospermum thompsonii*
22. *Liopholis guthega*
23. *Litoria aurea*
24. *Litoria_castanea*
30. *Prasophyllum retroflexum*
31. *Prasophyllum sp wybong*
32. *Pseudophryne pengilleyi*
33. *Rutidosis_leiolepis*
34. *Tringa_nebularia*
35. *Tringa_stagnatilis*
36. *Zieria obcordata*

In addition, the SEARs required assessment of Bogong moths.

The following MNES have been subject to a Significant Impact Assessment (SIA) under the Significant Impact Guidelines 1.1 - Matters of National Environmental Significance

1. *Acacia_bynoeana*
2. *Ammobium_craspedioides*
3. *Anthochaera_phrygia*
4. *Aphelocephala_leucopsis*
5. *Aprasia_parapulchella*
6. *Apus_pacificus*
7. *Bidyanus bidyanus*
8. *Calidris acuminata*
9. *Calidris_ruficollis*
10. *Callocephalon_fimbriatum*
11. *Calyptorhynchus_lathami_lathami*
12. *Chalinolobus_dwyeri*
13. *Climacteris_picumnus_victoriae*
14. *Crinia_sloanei*
15. *Dasyurus_maculatus*
16. *Delma_impar*
22. *Gallinago_hardwickii*
23. *Grantiella_picta*
24. *Heleioporus australiacus*
25. *Hirundapus_caudacutus*
26. *Keyacris_scurra*
27. *Kunzea_cambagei*
28. *Lathamus_discolor*
29. *Leucochrysum_albicans_subsp_tricolor*
30. *Litoria_booroolongensis*
31. *Litoria_castanea*
32. *Maccullochella macquariensis*
33. *Macquaria australasica*
34. *Mastacomys_fuscus mordicus*
35. *Melanodryas_cucullata_cucullata*
36. *Monarcha melanopsis*
37. *Myiagra_cyanoleuca*
43. *Phascolarctos_cinereus*
44. *Pimelea_bracteata*
45. *Polytelis_swainsonii*
46. *Prasophyllum_innubum*
47. *Prasophyllum_keltonii*
48. *Pseudomys_fumeus*
49. *Pteropus_poliocephalus*
50. *Pterostylis_oreophila*
51. *Pycnoptilus_floccosus*
52. *Rhipidura_rufifrons*
53. *Stagonopleura_guttata*
54. *Synemon_plana*
55. *Thesium_australe*
56. *Tringa_nebularia*
57. *Tringa_stagnatilis*
58. *Xerochrysum_palustre*

Requirement	Information
	17. *Diuris_aequalis* 18. *Euastacus rieki* 19. *Eucalyptus_aggregata* 20. *Galaxias rostratus* 21. *Haliaeetus_leucogaster - assessed elsewhere but no SIA* 38. *Nannoperca australis Murray-Darling basin lineage* 39. *Petauroides_volans* 40. *Petaurus_australis* 41. *Pomaderris_cotoneaster* 42. *Prasophyllum_bagoense* • 59. Alpine Sphagnum Bogs and Associated Fens 60. White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland • The *Agrotis infusa* (Bogong moth) has also been assessed for significant impact despite not being an MNES or listed under the EPBC Act 1999 as required by the SEARs. List of MNES entities that are likely to be impacted by the project and SIA conducted are as follows: **Likely significant** BCD agree a significant impact is likely for the following 7 MNES due to the extent of predicted impacts to entities known to occur in the project footprint. 1. *Ammobium craspedioides* - Yass Daisy 2. *Aprasia parapulchella* - Pink-tailed worm-lizard 3. Box Gum Woodland 4. *Leucochrysum albicans* subsp. *tricolor* - Hoary sunray 5. *Phascolarctos cinereus* - Koala 6. *Pimelea bracteata* 7. *Xerochrysum palustre* - Swamp everlasting **Potential significant** A potential significant impact is predicted for 17 MNES (listed below) known to occur in or in close proximity to the alignment. Impact avoidance is reliant on the ability of Transgrid to avoid impacts at McPhersons Plain and post approval plans to detail requirements for surveys to identify opportunities for avoidance of habitat constraints. 1. *Prasophyllum bagoense* - Bago leek orchid 6. *Climacteris picumnus victoriae* - Brown treecreeper 7. *Dasyurus maculatus* - Tiger quoll 12. *Melanodryas cucullata cucullata* - South-eastern Hooded Robin 13. *Petauroides volans* - Greater glider

Requirement	Information
	2. *Prasophyllum innubum* - Brandy Marys Leek-orchid 3. *Prasophyllum keltonii* - Kelton's leek orchid 4. *Callocephalon fimbriatum* - Gang-gang cockatoo **5.** *Calyptorhynchus lathami* - Glossy black cockatoo 8. *Delma impar* - striped legless lizard 9. *Grantiella picta* - painted honeyeater 10. *Keyacris scurra* - Key's Matchstick Grasshopper 11. *Lathamus discolor* - Swift parrot 14. *Petaurus australis* - yellow-bellied glider 15. *Polytelis swainsonii* - superb parrot 16. *Stagonopleura guttata* - Diamond firetail **17.** *Synemon plana* - Golden sun moth **Potential Significant impact (precautionary)** A potential Significant impact (precautionary) is predicted in the assessment for 16 MNES species (listed below) with potential to occur in areas assumed present. The white bellied sea eagle is missing from the assessment and so is the Mountain Skink which has been recently listed under EPBC Act and BC Act as endangered. The Mountain Skink has predicted habitat within the alignment and should be included in the assessment. The White bellied sea eagle will be addressed under BC Act / BAM & BOS requirements. 1. *Acacia bynoeana* - Bynoe's wattle 2. *Anthochaera phrygia* - Regent honeyeater 3. *Aphelocephala leucopsis* - Southern whiteface 4. *Apus pacificus* - Fork-tailed swift 5. *Calidris acuminata* - sharp-tailed sandpiper 6. *Calidris ruficollis* - Red-necked stint 7. *Diuris aequalis* - Buttercup doubletail 8. *Gallinago hardwickii* - Latham's snipe 9. *Kunzea cambagei* 10. *Pomaderris cotoneaster* - Cotoneaster pomaderris 11. *Pterostylis oreophila* - Blue-tongued orchid, Kiandra greenhood 12. *Pteropus poliocephalus* - Grey-headed flying fox 13. *Pycnoptilus floccosus* - Pilotbird 14. *Thesium australe* - Austral Toadflax, Toadflax 15. *Tringa nebularia* - common greenshank 16. *Tringa stagnatilis* - Marsh sandpiper MNES not significant impact (assessed in accordance with Significant impact guidelines) (from BDAR)

Requirement	Information
	1. *Bidyanus bidyanus* - silver perch 2. *Chalinolobus_dwyeri* - large-eared pied bat 3. *Crinia sloanei* - Sloanes froglet 4. *Euastacus reiki* - Riek's Crayfish 5. *Eucalyptus aggregata* - Black gum 6. *Galaxias rostratus* - Flathead galaxis 7. *Litoria booroolongensis* - Booroolong frog 8. *Litoria castanea* - Yellow-spotted tree frog 9. *Maccullochella macquariensis* - trout cod 10. *Macquaria australasica* - Macquarie Perch 11. *Mastacomys fuscus mordicus* - Broad toothed rat 12. *Pseudomys fumeus*- Smoky mouse *13.* Alpine Sphagnum Bogs and Associated Fens
	BCS do not agree with the extent of assumed presence for *Eucalyptus aggregata* and have recommended that further targeted surveys are conducted as part of the SBAS to determine presence/absence for avoidance and recalculation any residual impact /credit obligation for offsetting. **Advise whether there is appropriate justification and supporting evidence for the addition and/or exclusion of any EPBC Act listed threatened species and/or communities from the list (if applicable):** Overall, the BDAR has provided appropriate justification and supporting evidence for the exclusion of EPBC listed threatened species and communities from the list. Table 3 provides a detailed analysis of each excluded species and table 4 provides a detailed analysis of each TEC.
Avoidance, Minimisation, Mitigation & Management **Reference** **(BAM / BLA[6])** BAM Chapters 6, 7 and 8	Verify that the EIS/BDAR demonstrates all feasible alternatives and efforts to avoid and minimise impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including an analysis of alternative: ☒ designs and engineering solutions ☒ modes or technologies ☒ routes and locations of facilities ☒ sites within the subject site ☒ Verify that the EIS/BDAR identifies any other site constraints in determining the location and design of the proposal (such as bushfire protection requirements, flood planning levels, servicing constraints, etc). Verify that the EIS/BDAR provides feasible measures to mitigate and/or manage impacts on EPBC Act listed threatened species and communities (including direct, indirect and prescribed impacts) including: ☐ techniques, timing, frequency and responsibility ☐ identify measures for which there is risk of failure

[6] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

Requirement	Information
BLA clause 7.1	☐ evaluate the risk and consequence of any residual impacts ☐ any adaptive management strategy proposed to monitor and respond to impacts.
	Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified: **Avoid and Minimise** Chapter 12 of the BDAR addressed the **avoidance and minimisation** measures for both direct and indirect impacts to biodiversity. Section 12.1 lists opportunities that have been identified to minimise impacts from the amended project. The following tables set out the measures to avoid and minimise impacts; • Table 12-1: Measures implemented to avoid and minimise direct impacts • Table 12-2: Measures implemented to avoid and minimise prescribed impacts Chapters 1 and 2 of the BDAR describes the amended project footprint, including the proposed amendments to the project since the EIS original footprint. An Options Report was prepared by Transgrid which included several options for the transmission corridor and associated infrastructure which considered Tier 1 and 2 constraints and opportunities. Tier 1 constraints included wilderness protection areas, built up areas, wetlands protected by international agreements among others. Tier 2 constraints included National Parks and Reserves, EECs, forested areas (bushfire risk), intensive agricultural activities and horticultural use, among others. Opportunities included minimising overall line length to reduce costs, impacts and construction duration, detailed design including a central portion of McPhersons Plain being fenced and designated a no go zone. Further route refinement and options analysis was undertaken over many months for the EIS project and amended project, including the following amendments and refinements which specifically reduced impacts to biodiversity: • route adjustment which decreased the distance through intact native vegetation in Bago State Forest and diverted the amended project footprint away from areas supporting native vegetation on private land to largely pine plantation within Green Hills State Forest (referred to as the Green Hills corridor amendment), in areas where use of existing access tracks could be maximised. The Green Hills corridor amendment reduces the potential biodiversity impacts, requiring less native vegetation clearing, including reduced impacts to TECs and threatened species • avoidance of reserves in State Forests, including Forestry Management Zone 3A Harvesting Exclusions Zone • avoidance of Kosciuszko National Park, to minimise biodiversity impacts and offset requirements • the Tumut north option was selected over the Blowering option (which was previously considered), as it had a lower ecological impact • the Tumut north route was designed to avoid both Minjary National Park and Mudjarn Nature Reserve • in the Bannaby area, the route selected minimised PCT impacts and avoided Tarlo River National Park

Requirement	Information
	• avoidance of Back Arm Nature Reserve and Burrinjuck Nature Reserve • north-east of Yass, a route avoiding Bango Nature Reserve and the Rye Park Wind Farm biodiversity offset area was selected. The BDAR notes that the potential for avoiding impacts by means of project siting is limited. For example, the location of the future Maragle 500 kV substation in a densely vegetated area in Bago State Forest adjacent to Kosciuszko National Park limits opportunities to avoid impacts to native vegetation in this area. Consideration was also given to alternative technologies such as underground cabling, however this technology was not determined to be economically feasible. Where practicable, Transgrid will aim to minimise impacts on biodiversity by adopting a partial clearing methodology, which proposes to retain vegetation beneath the easement during the operational maintenance phase of the amended project, i.e. Transgrid are not adopting full continuous clearance of the easement (Transgrid, 2023b), which is the 'easier' maintenance option. See Chapter 13 for details regarding clearing impacts of the amended project. Table 14-1, B38 of the BDAR has been developed to include the avoidance and minimisation commitments. In addition, the Biodiversity Management Plan (BMP) will set out the implementation of relevant measures. BCS has not been provided with the BMP at the time of this review so is unable to comment on its adequacy. **BCS have recommended a Condition of approval to ensure that adequate consultation is undertaken with BCS on the BMP.** The proponent has stated that as the project footprint has not been finalised, micro-siting of infrastructure within the amended project footprint would continue to be undertaken during finalisation of the detailed design of the amended project. This would aim to minimise impact on biodiversity values where practicable (see Table 14-1, B1). BCS expects that this will be detailed in the BMP. A Connectivity Strategy is being developed to minimise interactions with threatened entities, in particular for facilitating fauna movement and reducing fragmentation of threatened fauna populations**. BCS have recommended a Condition of approval to ensure that adequate consultation is undertaken with BCS on the connectivity strategy.** **Mitigation and Management** Chapter 14 of the BDAR addresses the approach to **mitigation and management** measures during the detailed design, construction and operation phases, as well as the proposed mitigation and management measures that will be addressed in the Connectivity Strategy and the Supplementary Biodiversity Assessment Strategy (SBAS). **BCS have recommended a Condition of approval to ensure that adequate consultation is undertaken with BCS on the BMP, connectivity strategy and SBAS.** Environmental management strategies to mitigate and manage biodiversity impacts have been developed for the following stages of the amended project:

Requirement	Information
	• Detailed Design – addressed in the Construction Environmental Management Plan (CEMP) and BMP, Supplementary Hollow and Nest Strategy, Connectivity Strategy • Construction – CEMP, BMP, Supplementary Hollow and Nest Strategy and Connectivity Strategy. • Operation – outlined in Table 14-1 Specific measures proposed in BDAR MNES assessment to mitigate any residual impacts to MNES include the following: • Project design refinement to potentially avoid impacts to the species wherever possible (Table 14-1, B1) • Micro-siting of transmission line infrastructure and associated construction working areas to avoid impacts to the species, where possible (Table 14-1, B1). • Using existing cleared areas and access tracks, where possible (Table 14-1, B28, B29). • Biodiversity exclusion zones, which could consider the species habitat and known locations (Table 14-1, B13) • Vegetation clearing and maintenance guidelines and procedures that addresses avoiding access and disturbance in biodiversity exclusion zones identified during the construction and avoiding maintenance of vegetation that does not need to be maintained during operation (Table 14-1, B16). • Soil and Water Management Plans (SWMP) including Erosion and Sediment Control Plans and Water Quality Monitoring Plans to mitigate construction impacts to groundwater and surface water drainage patterns (Table 14-1, B26). • Biodiversity Management Plan (BMP) to be implemented during construction, including measures to reduce disturbance to sensitive vegetation areas, procedures for the demarcation and protection of retained vegetation, rehabilitation strategies for the management and maintenance of rehabilitated areas and monitoring requirements and compliance management (including weed control and management). (Table 14-1, B3) Table 14-1 of the BDAR provides further detail on the measures as well as referencing adaptive management plans that will be prepared as a component of the BMP. **BCS expect to undertake a review of the documents referenced post approval and prior to any impacts on biodiversity values including MNES and have recommended conditions to support this requirement.** In addition, the BDAR concludes that the mitigation measures have been developed based on Government and industry policies, guidelines and procedures to address potential impacts from major infrastructure projects. Mitigation measures carried out in accordance with these guidelines and procedures have proven to be effective on similar projects. As such, the proposed measures are considered to be proven. However, until BCS are able to review the proposed measures in detail we are unable to determine this is the case. Adaptive management plans have been proposed in Table 14-1 that will include monitoring programs to provide early warning of ineffective measures and/or uncertain impacts occurring (DPE, 2023a). Monitoring programs, inspections and independent auditing would confirm the

Requirement	Information
	effectiveness of mitigation measures. Further measures would be developed and undertaken if required, including implementation of corrective and preventative actions for any actual or potential noncompliant activities. **BCS have recommended conditions of approval to support this requirement. Audit frequency and reporting parameters are proposed to be identified in the CEMP, and Independent Audit Post Approval Requirements.** The SBAS primary purpose is to reduce the credit liability, however until the SBAS has been implemented this cannot solely be relied upon to avoid impacts. The BMP will need to be revised following completion of SBAS survey including revised mitigation actions performance measures and monitoring requirements for species determined to be present, **BCS have recommended conditions of approval to support this requirement.** **Finally, BCS understand that some works will commence during the detailed design stage. Impact will need to be mitigated and managed during this process via a BMP developed in consultation with BCS. BCS expect that relevant measures will be implemented prior to the commencement of any construction or impact on biodiversity values and that the BMP will be revised following completion of SBAS survey to update mitigation actions performance measures and monitoring requirements for species determined to be present. BCS have recommended conditions of approval to support this requirement.**
Impact Assessment **Reference (BAM / BLA[7])** BAM Chapters 8 and 9 BLA clauses 6.2(b)(i)-(ii) and 7.1	Verify that the EIS/BDAR: ☐ identifies the residual adverse impacts likely to occur to **each** EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account ☐ provides adequate justification and evidence for the predicted level of impact, with reference to the: • Commonwealth's Significant Impact Guideline*:* *https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf* • DPIE Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SAII): (*https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf)*
	Complete the following information for each EPBC Act listed threatened species and/or community (add/remove rows as necessary): • EPBC Act listed threatened species and/or community • nature and consequences of impacts (i.e. direct and indirect) • duration of impact (e.g. construction, operation, life of project) • quantum of impact • consequences of impacts on the species, the population and / or extent of the community at local, state and national scales

[7] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

Requirement	Information
	Confirm the level of predicted impact (cross appropriate): ☒ high risk of impact (requiring offsets)[#] or SAII ☐ Low risk of impact (not requiring offsets) [#] For purposes of EPBC approval, as a minimum, significant adverse residual impacts **must** be offset (significant impact can be evaluated with reference to the significance impact guidelines) It should be noted that the information relied upon to determine the level of significance of impact is not complete. This is because the survey effort is incomplete and the project footprint has not been finalised. Therefore the checkboxes above remain blank. The assessment for MNES species was undertaken in four tiers – 1. Likelihood of Occurrence of the species occurring in the project footprint 2. Likelihood of Impact to the species by the amended project 3. Significant Impact Assessment 4. Assessed under the NSW Bilaterial Agreement to show how the NSW Offsets Scheme can address impacts or meets the EPBC Offsets Policy provision to offset under NSW BOS. As described above, an assessment of impacts was completed for each MNES in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DoE, 2013a) and the Commonwealth requirements (Bilateral Assessment) outlined within the project SEARs (refer to Attachment 3). The outcomes of the Significant Impact Assessments (SIAs) are summarised in Table 13-32 of the BDAR and have been informed by a number of factors, including availability of data, extent of survey, area of assumed presence, likelihood of occurrence in the amended project footprint and likelihood of impacts from the amended project. Based on the precautionary principle, the SIA assessment outcomes have taken a conservative approach (this being largely for data-deficient species) and have been divided into four categories based on likelihood and severity of impact: • **likely** significant impact - species/TECs known or considered highly likely to occur in the amended project footprint, where impacts from the amended project are likely to occur and cannot be sufficiently avoided or minimised through finalisation of detailed design. • **potential** significant impact - species/TECs considered highly likely to occur, where impacts from the amended project are likely to occur, but are moderate in extent or could be sufficiently avoided/minimised through finalisation of detailed design and further survey • **potential** significant impact (**precautionary**) - species/TECs considered moderately likely to occur, where impacts from the amended project are moderate in extent or could sufficiently avoided/minimised through finalisation of detailed design and further survey and assessed as potential significant as a precautionary approach

Requirement	Information

- significant impact **unlikely** - species/TECs where extent of impacts are limited as a result of the amended project, but have been assessed as a conservative measure.

Where a likely significant impact is predicted to occur, avoidance and mitigation measures to reduce impacts on MNES during the design, construction and operation phase are proposed (refer to BDAR Chapters 12 and 14).

The table below sets out the MNES that are at risk of significant impact. The MNES that will be offset as a result of assumed presence are listed in the BOP and will be subject to refinement once the SBAS has been implemented. A revised BOP will be provided prior to any impacts on biodiversity values. A revised BMP will also be required following the results of the targeted surveys and prior to impacts on biodiversity values. BCS have recommended conditions of approval to support this requirement.

MNES Entity	SAII	Nature of Impact	Duration	Area of Impact (ha)
Threatened Ecological Communities (TEC)				
White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Yes	Direct and indirect	Permanent	117.50
Flora				
Acacia bynoeana (Bynoe's Wattle)		Direct and indirect	Permanent	4.17
Ammobium craspedioides (Yass Daisy)		Direct and indirect	Permanent	298.28
Kunzea cambagei (Cambage Kunzea)		Direct and indirect	Permanent	8.27
Leucochrysum albicans subsp. tricolor (Hoary Sunray)		Direct and indirect	Permanent	187.06
Pimelea bracteata	Yes	Direct and indirect	Permanent	4.66
Pomaderris cotoneaster (Cotoneaster Pomaderris)		Direct and indirect	Permanent	8.96
Prasophyllum bagoense (Bago Leek-orchid)		Direct and indirect	Permanent	0.04
Prasophyllum innubum (Brandy Mary's Leek-orchid)		Direct and indirect	Permanent	0.02
Prasophyllum keltonii (Kelton's Leek-orchid)		Direct and indirect	Permanent	0.03
Pterostylis oreophila (Blue-tongued Greenhood)		Direct and indirect	Permanent	0.65
Thesium australe (Austral Toadflax)		Direct and indirect	Permanent	149.45

Requirement	Information				
	Xerochrysum palustre (Swamp Everlasting)		Direct and indirect	Permanent	0.77
	Diuris aequalis (Buttercup Doubletail)		Direct and indirect	Permanent	46.11
	Fauna				
	Anthochaera phrygia (Regent Honeyeater)		Direct and indirect	Permanent	188.31 (foraging)
	Aphelocephala leucopsis (Southern Whiteface)		Direct and indirect	Permanent	292.98
	Callocephalon fimbriatum(Gang-gang Cockatoo)		Direct and indirect	Permanent	476.46 (breeding) and 420.81 (foraging)
	Calyptorhynchus lathami (Glossy Black-Cockatoo)		Direct and indirect	Permanent	45.12 (breeding) and 99.17 (foraging)
	Climacteris picumnus victoriae (Brown Treecreeper)		Direct and indirect	Permanent	375.74
	Grantiella picta (Painted Honeyeater)		Direct and indirect	Permanent	203.74
	Lathamus discolor (Swift Parrot)		Direct and indirect	Permanent	248.51
	Melanodryas cucullata cucullata (South-eastern Hooded Robin)		Direct and indirect	Permanent	629.21
	Polytelis swainsonii (Superb Parrot)		Direct and indirect	Permanent	127.49 (breeding) and 240.23 (foraging)
	Pycnoptilus floccosus (Pilotbird)		Direct and indirect	Permanent	203.47
	Stagonopleura guttata (Diamond Firetail)		Direct and indirect	Permanent	59.26
	Keyacris scurra (Key's Matchstick Grasshopper)		Direct and indirect	Permanent	174.50
	Synemon plana (Golden Sun Moth)		Direct, indirect and prescribed	Permanent	28.53
	Dasyurus maculatus (Spotted-tailed Quoll)		Direct and indirect	Permanent	470.67
	Petauroides volans (Southern Greater Glider)		Direct and indirect	Permanent	158.44
	Petaurus australis (Yellow-bellied Glider)		Direct, indirect and prescribed	Permanent	490.1 and 117.87 (endangered population)
	Phascolarctos cinereus (Koala)		Direct and indirect	Permanent	488.05

Requirement	Information

Pteropus poliocephalus (Grey-headed Flying-fox)		Direct, indirect and prescribed	Permanent	203.69
Aprasia parapulchella (Pink-tailed Worm-lizard)		Direct, indirect and prescribed	Permanent	37.41
Delma impar (Striped Legless Lizard)		Direct, indirect and prescribed	Permanent	93.04
Migratory Species				
Apus pacificus (Fork-tailed Swift)		Direct and indirect	Permanent	81.64
Calidris acuminata (Sharp-tailed Sandpiper)		Direct and indirect	Permanent	2.32
Calidris ruficollis (Red-necked Stint)		Direct and indirect	Permanent	2.32
Gallinago hardwickii (Latham's Snipe)		Direct and indirect	Permanent	2.90
Tringa nebularia (Common Greenshank)		Direct and indirect	Permanent	29.62
Tringa stagnatilis (Marsh Sandpiper)		Direct and indirect	Permanent	29.62

MNES Entity	Area of Impact (ha)	Local consequence	State consequence	National consequence
Threatened Ecological Communities (TEC)				
White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland	117.50	Box Gum Woodland occurs along the western slopes and tablelands of the Great Dividing Range from southern Queensland through New South Wales and the Australian Capital Territory to Victoria.	The extent of Box Gum Woodland within the state is approximately 250,729ha. The amended project would impact	The national extent of Box Gum Woodland is approximately 416,326ha. The amended project would impact less than 0.03% of

Requirement	Information				
			Direct impacts of the amended project on Box Gum Woodland includes the removal of approximately 117.15 ha of habitat. Indirect effects include edge effects, resource partitioning, changes in community structure and reduced genetic exchange. The project will increase fragmentation of this community within the landscape. The amended project is considered likely to have a significant impact on Box Gum Woodland.	0.05% of extant Box Gum Woodland in NSW.	extant Box Gum Woodland on a national scale.
	Flora				
	Acacia bynoeana (Bynoe's Wattle)	4.17	No individuals of Bynoe's Wattle were recorded within the amended project footprint, however potential habitat for the species is to be removed. There is the potential for indirect impacts (such as edge effects and weed incursion) to occur to any retained areas of Bynoe's Wattle habitat within or adjacent to the amended project footprint. The residual impact to this species is considered to have the potential to be significant.	Bynoe's Wattle is found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains. It is currently known from about 30 locations, with the size of the populations at most locations being very small (1-5 plants). There are three known records of the species within 20km of the footprint. No further	No further information provided on impacts to national extent.

Requirement	Information				
				information provided on impacts to state extent	
	Ammobium craspedioides (Yass Daisy)	298.28	Known and potential habitat for the Yass Daisy will be removed by the amended project. There is the potential for indirect impacts (such as edge effects and weed incursion) to occur to any retained areas of the species habitat within or adjacent to the amended project footprint. The residual impact to this species is considered to have the potential to be significant.	Yass Daisy is known from localities in NSW near Crookwell, on the southern tablelands to near Wagga Wagga, on the south-western slopes. Most populations occur in the Yass District, at Lake Burrinjuck, Bookham, Rye Park and Dalton. A small population exists in Livingstone National Park, about 30 km south of Wagga Wagga. Other populations are found in Bigga, north of Crookwell and Tumut. No further information provided on impacts to state extent.	No further information provided on impacts to national extent.
	Kunzea cambagei (Cambage Kunzea)	8.27	The amended project will remove potentially suitable habitat for the species, with the potential for indirect impacts (such as edge effects and weed incursion) to occur to any retained areas of the species habitat within or adjacent to the amended project footprint. Therefore, the amended	Cambage Kunzea occurs in the western and southern parts of the Blue Mountains, NSW, with four main populations with 20–150 individuals. No further information provided on impacts to state extent	No further information provided on impacts to national extent.

Requirement	Information				
			project is considered to have the potential to have a significant impact on the species.		
	Leucochrysum albicans subsp. tricolor (Hoary Sunray)	187.06	Hoary Sunray has been recorded in the amended project footprint. Based on the removal of a relatively large area of known and potential habitat, that likely supports what is likely an important population and habitat that may be critical to the species survival, the amended project is considered likely to have a significant impact on the Hoary Sunray.	Hoary Sunray is endemic to south-eastern Australia, where it occurs in three geographically separate areas. The majority of Hoary Sunray subpopulations are in NSW and the ACT where the taxon is still locally common although some roadside subpopulations may be declining. No further information provided on state extent.	No further information provided on impacts to national extent.
	Pimelea bracteata	4.66	*Pimelea bracteata* is known within the amended project footprint in the Snowy Mountains with numerous individuals recorded along drainage lines, which the amended project intersects. It also has a high likelihood of occurrence within the amended project footprint in the Bondo IBRA subregion, in which three records of the species occur within 5 km of the amended project footprint. The amended project is	*Pimelea bracteata* is endemic to NSW and has a very limited geographic distribution. No further information provided on impacts to state extent.	No further information provided on impacts to national extent.

Requirement	Information				
			considered likely to significantly impact the species due to the removal of suitable and known habitat.		
	Pomaderris cotoneaster (Cotoneaster Pomaderris)	8.96	The amended project is considered to have the potential to significantly impact Cotoneaster Pomaderris due to the removal of potentially suitable habitat where it is considered to have a moderate likelihood of occurrence based on the precautionary principle.	No further information provided on impacts to state extent.	The distribution of Cotoneaster Pomaderris is split across south-eastern Australia, from Lue, near Mudgee, north-west of Sydney, to far eastern Victoria. In total, 19 subpopulations have been recorded. The total number of plants known to exist in the wild is at least 3,200, although accurate population counts have not been made for all known subpopulations. No further information provided on impacts to national extent.
	Prasophyllum bagoense (Bago Leek-orchid)	0.04	Whilst the amended project would not directly clear any recorded individuals, there would be direct impacts to the 30 m buffer applied to a known record of the species. Associated indirect impacts (including edge effects and weed incursion) are likely to occur due to the amended project. The residual	The Bago Leek-orchid is known from a single population at McPhersons Plain, east of Tumbarumba in the Southern Tablelands of New South Wales. Both its extent of occurrence and area of occupancy are less than 1 km^2. No further	No further information provided on impacts to national extent.

Requirement	Information				
			impact to this species was considered to have the potential to be significant.	information provided on impacts to state extent.	
	Prasophyllum innubum (Brandy Mary's Leek-orchid)	0.02	Brandy Mary's Leek-orchid was not recorded during targeted surveys but has a high likelihood of occurrence within potential habitat mapped in the amended project footprint and three previous known records are located within 1 km of the amended project footprint. it is considered that the amended project has the potential to have a significant impact on the species.	Brandy Mary's Leek-orchid occurs east of Tumbarumba in the Southern Tablelands in Bago State Forest Crown leases and on adjacent private land. It has an extent of occurrence of 45 km^2 and an area of occupancy of 1.5 ha. Its population size fluctuates between 0 and 200 visible plants in eight small populations, with one population now thought to be extinct. The population has declined from around 400 plants since. No further information provided on impacts to state extent.	No further information provided on impacts to national extent.
	Prasophyllum keltonii (Kelton's Leek-orchid)	0.03	Whilst the amended project would not directly clear any recorded individuals, there would be direct impacts to the 30 m buffer applied to a known record of the species. Associated indirect impacts (including edge effects and	Kelton's Leek-orchid occurs on McPhersons Plain in Bago State Forest, east of Tumbarumba in the Southern Tablelands, in Brandy Mary's Crown	No further information provided on impacts to national extent.

Requirement	Information				
			weed incursion) are likely to occur due to the amended project. The residual impact to this species was considered to have the potential to be significant.	Leases and on adjacent private land. It has an extent of occurrence of approximately 12 ha and area of occupancy of less than 1 ha. Its population size fluctuates between 10 and 250 individuals. The population has declined from around 400 plants since 2004. No further information provided on impacts to state extent.	
	Pterostylis oreophila (Blue-tongued Greenhood)	0.65	Blue-tongued Greenhood was not recorded during targeted surveys but has a high likelihood of occurrence within potential habitat mapped in the amended project footprint. Four previous known records are located within 1 km of the amended project footprint. Associated indirect impacts (including edge effects and weed incursion) are likely to occur due to the amended project.	The species occurs within NSW in the Kiandra and Bago areas. No further information provided on impacts to state extent.	The Blue-tongued Greenhood occurs in 20 locations in four distinct geographic locations in the ACT, NSW and north-east VIC. Its total estimated population is 240 mature individuals. The extent of occurrence and area of occupancy of this species are unknown, however due to the low number of mature individuals and severe fragmentation it is likely that the species has a very restricted geographic distribution. Given the

Requirement	Information				
					current threats impacting on the species, it is likely that the number of plants will decline in the future. No further information provided on impacts to national extent.
	Thesium australe (Austral Toadflax)	149.45	Whilst the species was not recorded during targeted surveys, there are 11 previous records within 20 kilometres of the amended project footprint and is considered to have a moderate likelihood of occurrence in areas of the amended project footprint. The amended project is therefore considered to have the potential to have a significant impact on the Austral Toadflax.	In NSW, the species is found as far as the southern, central, and northern tablelands. No further information provided on impacts to state extent.	The distribution of the Austral Toadflax is along the Eastern border of Australia from Queensland down to Victoria. Its current distribution is sporadic but widespread. No further information provided on impacts to national extent.
	Xerochrysum palustre (Swamp Everlasting)	0.77	Known and potential habitat will be removed. Indirect impacts (such as edge effects and weed incursion) may occur to any retained areas of the species habitat within or adjacent to the amended project footprint.	In New South Wales, Swamp Everlasting occurs from the Victorian border near Delegate as far north as Lithgow and ranges up to about 1,300 m altitude. Whilst the known and potential habitat of Swamp Everlasting proposed to be impacted is relatively small, this habitat is on the	Swamp Everlasting is endemic to south-eastern Australia, where it is widely distributed from south-eastern New South Wales, through Victoria, to north-eastern Tasmania. No further information provided on impacts to national extent.

Requirement	Information				
				edge of the species' predicted range, therefore the amended project is considered likely to cause a significant impact.	
	Diuris aequalis (Buttercup Doubletail)	46.11	The amended project would result in the clearing of potential habitat of the species and is considered to have the potential to have a significant impact.	Buttercup Doubletail is found in forests and woodlands near the Great Dividing Range on the NSW Southern and Central tablelands. Only a few small, scattered populations remain in the wild with about 200 plants known, which are scattered across 20 small and fragmented populations. Most populations are restricted to remnant vegetation along roadsides and within agricultural lands. No further information provided on impacts to state extent.	No further information provided on impacts to national extent.
	Fauna				
	Anthochaera phrygia (Regent Honeyeater)	188.31 (foraging)	The amended project footprint is geographically removed from Regent Honeyeater key breeding areas. Hence,	In NSW, the species' distribution is mainly confined to the two main	The Regent Honeyeater has a fragmented distribution extending from south-east

Requirement	Information				
			no impact on breeding habitat is expected. Within the amended project footprint, the Regent Honeyeater has a moderate likelihood of occurrence as a nomadic forager. The amended project footprint would result in the loss of potential foraging habitat for the species. the amended project is considered to have the potential to have a significant impact on the Regent Honeyeater under the precautionary principle.	breeding areas and surrounding fragmented woodlands, though flocks occasionally converge on flowering coastal woodland and forests. No further information provided on impacts to state extent.	QLD, through to NSW, ACT, and central Victoria. The area of occupancy for Regent Honeyeater cannot be defined due to their nomadic nature. Therefore, the extent of impact on habitat is unknown on a national scale.
	Aphelocephala leucopsis (Southern Whiteface)	292.98	The Southern Whiteface has a moderate to high likelihood of occurrence across the amended project footprint, of which would result in the loss of potential foraging and breeding habitat, including habitat critical to the survival of the species.	Within the amended project footprint, the species has a moderate likelihood of occurrence in Snowy Mountains and Bungonia and a high likelihood of occurrence in Crookwell, Murrumbateman and Inland Slopes IBRA regions. No further information provided on impacts to state extent.	The Southern Whiteface has a large distribution, spanning south of the tropics from the Western Australian wheatbelt through to the east of the Great Dividing Range. The amended project will result in the loss of approximately 292.98 ha of potential foraging and breeding habitat which is approximately 0.004% of the Southern Whiteface's full national extent.

Requirement	Information				
	Callocephalon fimbriatum (Gang-gang Cockatoo)	476.46 (breeding) and 420.81 (foraging)	The Gang-gang Cockatoo is known to occur in all IBRA subregions within the amended project footprint. The amended project would result in the removal of known foraging habitat and potential breeding habitat used by this species. This includes habitat critical to the survival of the species. The amended project also has the potential to cause direct impacts to the species via injury or mortality during clearing and construction work.	No further information provided on impacts to state extent.	The national distribution of the Gang-gang Cockatoo extends from southern VIC through to south and central eastern NSW. The approximate population of mature individuals in the wild is 25,300. No further information provided on impacts to national extent.
	Calyptorhynchus lathami (Glossy Black-Cockatoo)	45.12 (breeding) and 99.17 (foraging)	The Glossy Black-Cockatoo is both known and to occur and has the potential to occur in other areas of the project footprint. The amended project would result in the removal of known and highly likely foraging habitat and potential breeding habitat for the species.	No further information provided on impacts to state extent.	The area of occupancy of the Glossy Black-Cockatoo is estimated at 4,000,000 ha and the national distribution of this species extends from VIC, along the south-east coast of NSW, through to the south-east coast of QLD. The amended project would impact 0.0001% of Glossy Black-Cockatoo habitat on a national scale.
	Climacteris picumnus victoriae (Brown Treecreeper)	375.74	The amended project would result in the removal of known, highly likely and moderately likely foraging and breeding habitat of the species.	No further information provided on impacts to state extent.	The Brown Treecreeper (south-eastern) has an estimated area of occupancy of 30,000 km^2, however, confidence in this estimate is

Requirement	Information				
					low. Proposed habitat removal will account for approximately 0.1% of the Brown Treecreeper's full national extent. This includes habitat critical to the survival of the species.
	Grantiella picta (Painted Honeyeater)	203.74	The Painted Honeyeater has a high likelihood of occurrence in the Inland Slopes IBRA subregion portion of the amended project footprint. The amended project would result in the clearing of suitable foraging and nesting habitat. This includes habitat critical to the survival of the species.	No further information provided on impacts to state extent.	The national distribution of the Painted Honeyeater extends from southern Victoria through to Queensland and north of the Northern Territory. No further information provided on impacts to national extent.
	Lathamus discolor (Swift Parrot)	248.51	The species has a moderate to high likelihood of occurrence in areas of the amended project footprint which intersects a Priority Management Area for the species. The amended project will result in the removal of potential suitable foraging habitat.	In NSW, the species is found on the coast and south-west slopes and there are approximately 300 individuals remaining in the wild.	It is unclear how much preferred habitat of the Swift Parrot remains nationally and where it is spatially located. This is further obfuscated due to movement of the species in response to flowering events, which vary spatially and temporally.

Requirement	Information				
	Melanodryas cucullata cucullata (South-eastern Hooded Robin)	629.21	The amended project would result in the clearing of potential habitat in the amended project footprint.	No further information provided on impacts to state extent.	The Hooded Robin is distributed from South-eastern Australia up in Yorke Peninsula down through to South Australia in the southern section of the Murray-Darling Basin. The area of occupancy is considered to be 30,000 km^2. The proposed clearing represents 0.02% of the species national extent.
	Polytelis swainsonii (Superb Parrot)	127.49 (breeding) and 240.23 (foraging)	The amended project would result in the removal of foraging and potential breeding habitat within the amended project footprint. This includes habitat critical to the survival of the species.	The Superb Parrot is found throughout eastern inland NSW with the estimated habitat extent unknown. No further information provided on impacts to state extent.	Currently, the population is estimated to range between 6,500-100,000 mature individuals; however, this estimate has low reliability. No further information provided on impacts to national extent.
	Pycnoptilus floccosus (Pilotbird)	203.47	Direct impacts of the amended project on this species include the removal of potential foraging and breeding habitat.	No further information provided on impacts to state extent.	The national distribution of the Pilotbird extends from south-eastern Victoria along the south-east coast of NSW. The estimated area of occupancy for the Pilotbird is 2,660,000 ha. Therefore, the amended project is likely to reduce the species' area

Requirement	Information				
					of occupancy by 0.00008% on a national scale.
	Stagonopleura guttata (Diamond Firetail)	59.26	Direct impacts of the amended project on this species include the removal of known and potential foraging and breeding habitat.	No further information provided on impacts to state extent.	The national distribution of the Diamond Firetail extends from south-eastern QLD along the south-east coast of NSW to southern SA. The estimated area of occupancy for the Diamond Firetail is 2,600,000 ha. Therefore, the amended project is likely to reduce the species' area of occupancy by 0.0001% on a national scale.
	Keyacris scurra (Key's Matchstick Grasshopper)	174.50	The amended project will remove 174.50 ha of potential habitat of the species.	No further information provided on impacts to state extent.	Across the amended project footprint there is 1604.33 ha of known and potential habitat, of which 174.50 ha will be impacted. According to the approved Conservation Advice there is approximately 14,200 ha of habitat for this species nationally. The amended project is likely to remove 1.14% of known habitat for the species nationally, and 10.09% of the potential

Requirement	Information				
					habitat within the amended project footprint.
	Synemon plana (Golden Sun Moth)	28.53	Within the amended project footprint, the species is known to occur in the Murrumbateman and Inland Slopes IBRA subregions with multiple sightings in suitable grassland habitat. The amended project has the potential to result in the loss of foraging and breeding habitat (including 3.06 ha of prescribed impacts) and may reduce habitat connectivity between subpopulations of this species.	No further information provided on impacts to state extent.	The national distribution of the Golden Sun Moth extends from western and southern VIC through the south and central eastern NSW; however, its relative area of occupancy is very small. There are no robust estimates available in the literature to determine the current population of the species.
	Dasyurus maculatus (Spotted-tailed Quoll)	470.67	The direct impacts of the amended project on the species include the removal of foraging and denning habitat. There is the potential for indirect impacts as a result of habitat removal and fragmentation to occur to any retained areas of Spotted-tailed Quoll habitat within or adjacent to the amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy of the Spotted-tailed Quoll is estimated at 251,200 ha and the national distribution of this species extends from VIC, along the southeast coast of NSW, through to the south-east coast of QLD. The amended project would impact 0.36% of Spotted-tailed Quoll habitat on a national scale. However, it must be noted that this species has a low abundance in cleared areas and is

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					unlikely to persist in smaller patches of bushland due to their large home range.
	Petauroides volans (Greater Glider)	158.44	The impacts of the amended project on the species includes the loss of known and potential habitat. The final width of the linear transmission line easement would be generally 70 metres wide, with some discrete areas, being up to 130 metres wide. Clearing widths greater than 80 metres would exceed potential glide distances for the species and would pose a partial barrier to movement. The species has little ability to safely traverse cleared landscapes without the ability to glide.	No further information provided on impacts to state extent.	The Greater Glider has a broad distribution along the east coast of Australia which is primarily associated with eucalyptus forests along the Great Dividing Range. Throughout this range, its distribution may be patchy even in continuous areas of habitat. There are no robust estimates of the species population size available. The amended project would impact 0.007% of the species area of occupancy.
	Petaurus australis (Yellow-bellied Glider)	490.1 and 117.87 (endangered population)	The amended project would impact potential habitat (including prescribed impacts) for this species.	No further information provided on impacts to state extent.	The area of occupancy of the Yellow-bellied Glider is estimated at 1,272,400 ha. The amended project would impact 0.04% of known and potential habitat for this species on a national scale.

Requirement	Information				
	Phascolarctos cinereus (Koala)	488.05	The residual impact to the Koala is estimated at 488.05 ha of habitat removal. There is the potential for indirect impacts (such as edge effects) to occur to any retained areas of Koala habitat within or adjacent to the amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy of the Koala is estimated at 1,940,000ha. The distribution of the listed population extends from the coastal and inland areas of QLD, through NSW and the ACT. The amended project would impact approximately 0.02% of potential Koala habitat on a national scale.
	Pteropus poliocephalus (Grey-headed Flying-fox)	203.69	Approximately 203.69 ha of potential foraging habitat, that contains key foraging resources for the Grey-headed Flying-fox will be directly impacted by the amended project. Indirect impacts resulting from the amended project include increased risk of entanglement and collision.	No further information provided on impacts to state extent.	The area of occupancy for Grey-headed Flying-fox cannot be defined given lack of knowledge on the species. Therefore, the extent of impact on habitat is unknown on a national scale.
	Aprasia parapulchella (Pink-tailed Worm-lizard)	37.41	The direct impact of the amended project on this species includes removal of potential habitat (including prescribed impacts).	In NSW it is known only from isolated sites in the Central and Southern Tablelands and South-western slopes. No further information provided on impacts to state extent.	The species is widely but patchily distributed across NSW, VIC and the ACT. No further information provided on impacts to national extent.

Requirement	Information				
	Delma impar (Striped Legless Lizard)	93.04	The direct impact of the amended project on this species includes removal of approximately 125.47 ha of potential habitat (including prescribed impacts (non-native habitats)). Creation of new access tracks and transmission line structures are the actions likely to cause the most impact on the species.	No further information provided on impacts to state extent.	The species is known to be patchily distributed throughout south-eastern NSW, the ACT, north-eastern, central and south-western VIC, and south-eastern SA. No further information provided on impacts to national extent.
	Migratory Species				
	Apus pacificus (Fork-tailed Swift)	81.64	The species is known to occupy the airspace above most vegetation formations, and habitats found within the amended project footprint. The amended project would remove potential (non-breeding) habitat. There is the potential for indirect impacts (such as reduced habitat connectivity, and increased risk of collision with transmission lines) within or adjacent to the amended project footprint.	In NSW, the Fork-tailed Swift is recorded in all regions. No further information provided on impacts to state extent.	The area of occupancy for Fork-tailed Swift cannot be defined given lack of knowledge on the species. Therefore, the extent of impact on habitat is unknown on a national scale.
	Calidris acuminata (Sharp-tailed Sandpiper)	2.32	The amended project has the potential to impact 2.32 ha of riparian foraging habitat within the Inland Slopes portion of the amended project footprint and increase the potential for collision or entanglement.	No further information provided on impacts to state extent.	The area of occupancy for Sharp-tailed Sandpiper in Australia, primarily occurs in wetland habitats during annual migration. Given the migratory movements of this species, it is difficult to

Requirement	Information				
					determine the extent of impact on habitat on a national scale.
	Calidris ruficollis (Red-necked Stint)	2.32	The Red-necked Stint is at higher risk of collision in areas where wetlands and major waterbodies intersect or are within 1 km of the amended project footprint. are within 1 km of the amended project footprint. The amended project has the potential to impact 2.32 ha of riparian foraging habitat. There is the potential for indirect impacts (such as reduce habitat connectivity, and increased risk of collision) within or adjacent to the amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy for Red-necked Stint in Australia, primarily occurs in wetland habitats during annual migration. Given the migratory movements of this species, it is difficult to determine the extent of impact on habitat on a national scale.
	Gallinago hardwickii (Latham's Snipe)	2.90	The proposed transmission line has the potential to indirectly impact aerial connectivity, and directly impact 2.90 ha of riparian habitat within the amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy for Latham's Snipe in Australia, primarily occurs in wetland habitats during annual migration. Given the migratory movements of this species, it is difficult to determine the extent of impact on habitat on a national scale.

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	Tringa nebularia (Common Greenshank)	29.62	Based on the ecology (highly transient) of Common Greenshank, the species is at higher risk of collision in areas where wetlands and major waterbodies intersect or are within 1 km of the amended project footprint. The amended project has the potential to impact 29.62 ha of riparian habitat within the Inland Slopes portion amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy for Common Greenshank in Australia, primarily occurs in wetland habitats during annual migration. Given the migratory movements of this species, it is difficult to determine the extent of impact on habitat on a national scale.
	Tringa stagnatilis (Marsh Sandpiper)	29.62	Based on the ecology (highly transient) of Marsh Sandpiper, the species is at higher risk of collision in areas where wetlands and major waterbodies intersect or are within 1 km of the amended project footprint. The proposed transmission line has the potential to also impact 29.62 ha of riparian habitat within the Inland Slopes portion of the amended project footprint.	No further information provided on impacts to state extent.	The area of occupancy for Marsh Sandpiper in Australia, primarily occurs in wetland habitats during annual migration. Given the migratory movements of this species, it is difficult to determine the extent of impact on habitat on a national scale.
	Adequate justification and evidence for predicted level of impact Chapter 13 of the BDAR addresses direct, indirect and prescribed impacts on both BC Act listed and MNES entities. The MNES assessment and Bilateral Assessment addresses the level of impact on MNES entities on a local, state and national level. The level of final impact for species assumed present cannot be ascertained until post approval surveys have been completed in accordance with the Supplementary Biodiversity Assessment Surveys (SBAS). The BDAR provides a precautionary, upper quantum area of impact, and therefore any future targeted surveys completed prior to construction commencing may refine and reduce the area of impact. A revised MNES assessment will				

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	need to be undertaken following the completion of the post approval surveys. **BCS have recommended conditions of approval to support this requirement.** **Migratory birds** Table A3-4 says that migratory birds will not be significantly impacted if appropriate mitigation measures are implemented. However, the BDAR also states that transmission lines are known to cause mortalities of migrating birds as they are flying through unfamiliar habitat, sometimes in poor visibility or at night, and that there is inadequate data to determine the risk of transmission line collision to sharp-tailed sandpiper and Latham's snipe. Mitigation measures proposed in Table 13-20 say that "The risk of collision would likely reduce over time as animals acclimatise to the presence of the transmission line structures and transmission lines and that Conductor line-marking techniques would be implemented during design refinement to minimise bird strike, and that use of fauna deterrent devices, most likely consisting of the "flapper" variety, would be implemented. Positioning and exact diverter model would be finalised during design refinement and would be developed as part of impact mitigation. At minimum these would be used within 1 km of wetland/riverine habitats to reduce impacts on aerial fauna species from collision and allow safer passage within these areas (Table 14-1, B11), Figure 13-2, and Attachment 24). Appropriate mitigation measures will need to be addressed in the BMP's and **BCS have recommended conditions of approval to support this requirement.** Some conclusions regarding impacts to important populations including the Yellow-bellied glider, and golden sun moth rely heavily on the development of a connectivity strategy to mitigate impacts. BCS will require further consultation on the development of this strategy to ensure it is satisfactory for the species at risk of fragmentation of habitat and loss of connectivity. **BCS have recommended conditions of approval to support this requirement.** **Bogong moth** As per Attachment 24, Section 1.2, 4.78 ha of potential Bogong Moth habitat is expected to be indirectly impacted by increased artificial light spill resulting from the amended project. This is likely to occur within 100 m of the Maragle 500 kV substation compound (C05). Migrating moths may be distracted from their migration route by artificial lights (Knop et al. 2017). Mitigation measures to reduce light spill/glow on adjacent habitats are outlined in Section 14, Table 14-1 of the BDAR. Whilst there are likely to be potential residual impacts to this species, they are not likely to be significant, so offsets are not proposed. **Bushfire Impact Assessments** The SEARs required an analysis of the impacts of the 2019/20 bushfires on EPBC listed threatened species and communities. The aim of this was to determine "whether the remaining habitat within the proposed action area is of substantially greater importance to the survival of the listed

Requirement	Information
	threatened species following the fires and/or whether the population of the species in the area is considered an important population. This information, once obtained, can be considered when determining avoidance, mitigation and offset measures for these species." Attachment 4. EPBC Act bushfire impact assessments addresses this requirement. BCS have reviewed this attachment and consider it was not adequately supported by scientific evidence. In consideration of this, and the BAM 2020 guidelines for assessment of severely burnt sites, BCS have recommended that a number of MNES and species credit species (BC Act) are assumed present in sites that were assessed as severely burnt (2019/2020 bushfires). This will ensure that populations that have not fully recovered to levels where they could be reliably detected (or dismissed) by survey will be offset. **BCS have recommended conditions of approval to support this requirement.** **Provide advice on whether adequate justification and evidence is provided for species and communities that have been identified as being at low risk of impact.** BCS has reviewed the significant impact assessment and likelihood of occurrence for the MNES that have been classified as low risk of impact. Transgrid have committed to undertaking additional surveys for MNES when full access is achieved post approval. This will be via the SBAS. **BCS have recommended conditions of approval to support this requirement.** The MNES assessment will need to be revised in conjunction with a revised/updated BOP and BMP detailing avoidance strategies and/or mitigation where impacts cannot be avoided and there is residual impact. This should occur prior to any impact on biodiversity values. **BCS have recommended conditions of approval to support this requirement.** See table 5 for detailed BCS assessment of each MNES found to be at low risk of impact.
Offsets **Reference** **(BAM / BLA[8])** BAM Chapter 10	Verify that the EIS/BDAR: 1. ☐ identifies any MNES that haven't been offset using the BAM 2. ☒ identifies how impacts requiring offsets correlate to MNES impacts 3. ☒ identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES 4. ☒ identifies threatened species requiring offset and the number of species credits required for impacts to MNES 5. ☒ correctly uses the BAM (and BAM calculator) to identify the number and class of biodiversity credits that need to be offset to achieve a standard of 'no net loss' of biodiversity 6. ☒ identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting

[8] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

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BLA clauses 7.1 and 7.2	7. ☒ if known, identifies any other offsetting approach proposed, such as land-based offsets, retiring credits by payment into the Biodiversity Conservation Fund and/or through supplementary measures[#]. [#] In accordance the BAM there is no longer a requirement to define the offsetting approach at EIS stage. **Complete the Impacts and Offsets Summary table below (Table 2) - see attached**
	Provide advice on the adequacy of the proposed offsets in meeting the requirements of the BAM: Chapter 15 of the BDAR sets out the offset requirements for the project, including ecosystem and species credit offsets for direct impacts, indirect and prescribed impacts, aquatic species and environments and the commonwealth offset liability. All significant residual impacts for all MNES at risk of significant impact, and those assumed present under BAM, would be addressed through the provision of biodiversity offsets under the NSW BOS. Offsets delivered under the NSW BOS address the requirements of the EPBC Act Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements. The BDAR specifically addresses Section 11 of the BAM and provides information on the application of the no net loss standard and the amended project biodiversity offset obligations. The offsets have been calculated through the BAM-C. The tables in the BOP that set out the offsets required for EPBC Act listed species are as follows. • Table 16 Biodiversity offsets required for EPBC Act listed TECs • Table 17 Biodiversity offsets required for EPBC Act listed threatened species, including those that are not at risk of significant impact in accordance with the Significant Impact Guidelines 1.1. Table 17 does not currently have a complete list of MNES and the next draft will need to be updated to include all of them. As these figures are not final and remain dynamic while post approval surveys are completed and the final footprint is determined, BCS cannot provide a final analysis of adequacy. Chapter 16 of the BDAR outlines the biodiversity offset strategy for the amended project. The offset obligations would be met through implementing a combination of the following offset delivery options: • The purchase and retirement of existing biodiversity credits currently available on the biodiversity credit register. • Establishing a biodiversity stewardship site(s) on lands with like for like biodiversity values to those impacted by the amended project • Through making a payment into the Biodiversity Conservation Fund.

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	A draft Biodiversity Offset Plan (BOP) has also been developed which provides further detail on the proposed offsetting to meet the requirements of the BAM for each MNES. **The BOP will be updated in accordance with the CoA's and the outcomes of the SBAS and biodiversity verification reports. Updates to the BOP will occur in consultation with DPHI and NSW DCCEEW/BCS.** A revised BOP will be provided prior to any impacts on biodiversity values and will provide the total amount for the bank guarantee, secured by a Deed of Agreement. Transgrid will have until September 2026 to finalise & retire their offset liability. **BCS have recommended conditions of approval to support this requirement**. Some of the species listed under the EPBC Act, are not listed under the BC Act. However, the majority of them will be offset through ecosystem credits under the BOS, and one will be offset with species credits. The BDAR states that an assessment under the NSW Bilateral Agreement has also shown they are able to be offset under the NSW BOS. These are listed below and include the proposed offset mechanism. 1. Swamp Everlasting (*Xerochrysum palustre*) – species credits generated under the BOS 2. Southern Whiteface – ecosystem credits generated under the BOS 3. Pilotbird – ecosystem credits generated under the BOS 4. Fork-tailed Swift– ecosystem credits generated under the BOS 5. Sharp-tailed Sandpiper – ecosystem credits generated under the BOS 6. Red-necked Stint – ecosystem credits generated under the BOS 7. Latham's Snipe – ecosystem credits generated under the BOS 8. Common Greenshank – ecosystem credits generated under the BOS 9. Marsh Sandpiper – ecosystem credits generated under the BOS. It should be noted that there are EPBC listed species that are also listed under the Biodiversity Conservation Act 2016 that will be required to be offset under the BAM. These are species that are not at risk of significant impact, but are assumed present under the BAM until this can be shown otherwise. For example, Flockton's Wattle – Acacia flocktoniae, among others- subject to the SBAS surveys. There are also offsets calculated for the threatened ecological community, Alpine Sphagnum Bogs and Associated Fens, which is precautionary given the intent to avoid impact. **BCS have recommended conditions of approval to support this requirement.**
Other Considerations	Verify if any relevant Commonwealth guidelines and policy statements are applicable to the action and listed threatened species and/or community, including but not limited to: ☒ International environmental obligations

Requirement	Information
Reference **(BAM / BLA[9])** BLA clauses 6.2(b)(iv), 7.2(c), 7.3 and 7.4	☒ Recovery Plans ☒ Approved Conservation Advice ☒ Threat Abatement Plans *The relevant Commonwealth guidelines and policy statements for each species and community are available at: http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl*
	For each EPBC Act listed threatened species and/or community, provide advice on whether the assessment has been adequately informed by applicable Commonwealth guidelines and/or policy statements. For example, the interaction between the proposed action and important populations or critical habitat identified in policy documents and/or the interaction between the proposed action and threatening processes or recommended conservation actions outlined in Commonwealth policies and plans. **International environmental obligations** The proposal does not impact any Ramsar wetlands, and there are no other international obligations referred to in the BDAR Attachment 3. Attachment 3 does refer to the Bogong moth being listed on the International Union for Conservation of Nature and Natural Resources, but provides no further analysis on whether there are obligations as a result of this listing. **Important populations and critical habitats** Each of the assessments for the EPBC Act listed threatened species has referenced relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans where applicable. Important populations and critical habitats have been considered and the interaction between the proposed action and threatening processes or recommended conservation actions. **Important Populations** It should be noted that it is possible that not all these MNES listed below will be impacted by the project, as there are still post approval surveys to be completed in accordance with the SBAS, so a lot of species have been defined as important populations as a precautionary approach. It may be the case that once surveyed post approval they can be ruled out and would no longer be determined to be an important population. Until then, these are the MNES that may have an important population impacted by the project. This could be through fragmentation, disrupting the breeding cycle, reduce the area of occupancy, and a long term decrease in the size of the important population. A Connectivity Strategy is proposed (as part of the BMP) to address some of these issues, but BCS has not been provided with this strategy or the BMP at the time of this

[9] Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

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	MNES assessment. There are several MNES where there the presence of that MNES is likely to constitute an important population. These are as follows. • Yass Daisy • Swamp everlasting • Hoary sunray • Pink-tailed legless lizard • Bynoes wattle • Black gum • Cambage kunzea • Austral toadflax • Buttercup doubletail • Glossy black-cockatoo • Brown treecreeper • Painted honeyeater • Hooded robin • Superb parrot • Pilot bird • Diamond firetail • Golden sun moth • Grey-headed flying fox • Striped legless lizard • Sharp-tailed sandpiper • Latham's snipe Further details on the above listed important populations are provided below. • **Yass daisy** – No important populations have been defined for the Yass Daisy and the species is known only from near Crookwell to Wagga Wagga and may be locally 'common'. The majority of the recorded individuals and the habitat within the amended project footprint span the predicted range, however the records and habitat in the amended project footprint north of Goulburn are on the edge of the predicted range according to the species SPRAT profile. Therefore, the records and habitat in the amended project footprint likely comprise an important population. • **Swamp everlasting** - No important populations have been defined for Swamp Everlasting. Swamp Everlasting has a wide but scattered distribution, with a population estimate of about 10,000 plants nationally. Within the areas surveyed, this species was not recorded occurring in large populations (i.e. only six individuals recorded). Swamp Everlasting was recorded in the Snowy Mountains IBRA subregion portion of the amended project footprint, and these records are just outside the western edge of the predicted habitat as per the species SPRAT profile. Therefore, it is likely that these individuals may constitute part of an important population. • **Hoary Sunray** - Populations recorded within the amended project footprint were large and could be necessary for maintaining genetic diversity or dispersal across the region. As such, any individuals or population of this species recorded within the amended project footprint are considered to form part of an important population. Pg 1204 • **Pimelea bracteata** - Given the relatively large area of impact and if the placement of the amended project footprint physically bisects known habitat containing P. bracteata, the amended project is considered to have the potential to fragment an existing important population into two or more populations. Pg 1211 • The **Pink-tailed Legless Lizard** was recorded in the amended project footprint during field surveys (five individual records). No important populations have been identified for the Pink-tailed Legless Lizard in in the approved Conservation Advice (TSSC, 2015c). Given the

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	scattered distribution of the species' records, it is likely that any population could be regarded as important since they have limited dispersibility (restricted home range) and would be required to maintain genetic diversity on a local scale. Pg 1328 • **Bynoes wattle** - No important populations have been defined for Bynoe's Wattle. However, potential habitat for Bynoe's Wattle within the amended project footprint is located within the southern extent of the species range, in areas where it is predicted the species habitat is likely to, or may occur, according to the species SPRAT profile. Therefore, any individuals present within the amended project footprint are likely to occur on the edge of the species range and thus may be considered part of an important population. • **Black gum** - None of the defined important populations are located within the amended project footprint, however, the eastern end of the footprint is approximately 1 km west of the Wingecarribee local government border. No associated habitat has been mapped in Bungonia, however, given Crookwell and Inland Slopes IBRA Subregions occur on the edge of the species predicted habitat distribution, potential habitat within the amended project footprint may be used by an important population if it occurs • **Cambage Kunzea** - No important populations have been defined for Cambage Kunzea. However, potential habitat for Cambage Kunzea within the amended project footprint is located within the south-western extent of the species range, in areas where it is predicted the species habitat is likely to, or may occur, according to the species SPRAT profile. Therefore, any individuals present within the amended project footprint are likely to occur on the edge of the species range and be considered part of an important population due to their location at the extent of the species range. • **Austral Toadflax** - The Conservation advice (DoE, 2013d) does not describe any populations as 'Important Populations' for the Austral Toadflax. However, as mentioned above, the potential habitat for Austral Toadflax within the amended project footprint is located at the western extent of the species range and therefore any individuals within the potential habitat may comprise an important population. • **Buttercup Doubletail** - No important populations have been defined for Buttercup Doubletail. This species is considered to be data deficient in terms of known population size, as mature plants can survive underground (TSSC 2021b). However, given that remaining populations are small, fragments and subject to a number of threats (TSSC 2021b), it is assumed that all populations are considered to be important populations. • **Glossy black-cockatoo** - The amended project has the potential to reduce the area of occupancy of an important population of Glossy Black-Cockatoo via the removal of suitable nesting hollows within the amended project footprint, however fragmentation of the important population is unlikely. • **Brown treecreeper** - important populations have not been defined for this species; however, a precautionary approach has been taken and it is assumed that the amended project footprint contains habitat that may support an important population within the meaning of the guideline. Due to the negative effects of fragmentation and habitat loss on the genetic connectivity of the subspecies, there is potential for the amended project to reduce the area of occupancy of an important population this species.

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	• **Painted honeyeater** - Currently, no Important Population of this species has been defined, however, given the dispersive, nomadic habits, this species is considered to comprise of a single population (DAWE, 2021h). The Painted Honeyeater does persist in five Key Biodiversity Areas (KBA) in NSW, one located within the amended project footprint. The amended project traverses a Priority Management Area for the species under the NSW Save Our Species (SoS) program, and a KBA in the South-west Slopes of NSW in which the Painted Honeyeater is a Trigger Species (DAWE, 2021h). Therefore, a precautionary approach has been taken and it is assumed that the amended project footprint contains an important population within the meaning of the guideline. • **Hooded Robin** - Currently, no important populations of this species have been defined by the literature. There are more than 10 known locations of the Hooded Robin, however, some populations are fragmented and assumed to be genetically isolated (Commonwealth DCCEEW, 2023e). The amended project traverses species or species habitat known or likely to occur in the modelled distribution of the Hooded Robin. Therefore, a precautionary approach has been taken and it is assumed that the amended project footprint contains an important population within the meaning of the guideline. • **Superb parrot** - Currently, no important populations of this species have been defined by the literature. However, there are two main populations of the Superb Parrot, including the Riverina population and the Southwest Slopes and Southern Tablelands population (OEH, 2018b), the latter being potentially impacted by the amended project. The amended project also traverses a Priority Management Area for the species under the NSW Save Our Species (SoS) program, and a Key Biodiversity Area (KBA) in the South-west Slopes of NSW in which the Superb Parrot is considered a Trigger species (DAWE, 2021i). Therefore, a precautionary approach has been taken and it is assumed that the amended project footprint contains an important population within the meaning of the guideline. • **Pilotbird** - Important populations are not defined in the conservation advice for this species. The species consists of two subspecies distributed in two areas: Upland Pilotbirds which occur in the Snowy Mountains (11,000 mature individuals), and Lowland Pilotbirds which occur around the wetter forests of eastern Australia. Given that potential habitat for both subspecies occurs in the amended project footprint, a precautionary approach has been taken and it is assumed that the amended project footprint could contain an important population. • **Diamond firetai**l- its a bit confusing as it says that it wouldnt be an important population, but then further down in the SIA it says that the project may lead to a long-term decrease in the size of an important population, reduce the area of occupancy, disrupt the breeding cycle and fragment the population. this should be clarified after the SBAS post approval surveys have been completed. • **Golden sun moth** – the SIA and its conclusions have relied on avoiding known habitat within the project footprint where possible and implementing a Connectivity Strategy. • **Grey-headed flying fox** - a reduction in occupancy of an important population of the Grey-headed Flying Fox as a result of the amended project is considered likely, due to scale of habitat loss and increased risk of entanglement and collision. There are no Nationally Important

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	flying fox camps within close proximity of the project footprint, however there are established camps within 10km from the project footprint at Wagga Wagga, Tarcutta, Yass and Tumut River Island. • **Striped legless lizard** - Any population of the Striped Legless Lizard within the alignment would be considered part of an important population. The national area of occupancy for the Striped Legless Lizard is unknown (TSSC, 2016j). The amended project footprint intersects the species likely distribution, both at the edges and entirely within the distribution. Therefore, the amended project is likely to fragment an existing important population into two or more populations of this species. A Connectivity Strategy and BMP would be developed to mitigate connectivity impacts associated with the amended project (Table 14-1, B10, B3). • **Sharp-tailed sandpiper** – important populations have not been defined for this species, however a precautionary approach has been taken and it is assumed that the amended project footprint contains habitat that may support an important population within the meaning of the guideline. • **Lathams snipe** - important populations have not been defined for this species, however a precautionary approach has been taken and it is assumed that the amended project footprint contains habitat that may support an important population within the meaning of the guideline. The BDAR has also determined some MNES to not be an important population reliant on mitigation measures, particularly the Connectivity Strategy. These include Yellow-bellied glider, golden sun moth, and southern pygmy perch. **BCS require further consultation on the development of this strategy and have recommended conditions of approval to support this requirement.** **Critical habitat** There are no areas of Critical Habitat listed on the Register of Critical Habitat in the Species Profile and Threats Database that occur within the project footprint. Recovery Plans have been considered where they identify critical habitat for MNES and this habitat has been considered in the SIA. Extracts from the MNES assessment are set out below. **Pimelea bracteata** - There is no Critical Habitat in NSW defined under Section 207A of the EPBC Act or in the Register of Critical Habitat for the species. However, due to the species eligibility for listing (restricted range and/or severe fragmentation) (TSSC, 2021g), under the precautionary principle, all habitat is considered critical to the survival of the species for the purposes of this assessment. **Cotoneaster Pomaderris** - There is no Critical Habitat in NSW defined under Section 207A of the EPBC Act or in the Register of Critical Habitat for the species. However, due to the species eligibility for listing (restricted range and/or severe fragmentation), all habitat is considered critical to the survival of the species (DAWE, 2021d). **Brandy Mary's Leek-orchid, Kelton's Leek-orchid, Blue-tongued Greenhood and Bago Leek-orchid** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat or identified in the conservation advice for any of

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	the orchid species discussed in this assessment. Conservation Advice for these species indicates that the distribution and area of occupancy of these species is very limited. Therefore, should these species occur in these areas of potential habitat, these areas of habitat may be considered critical to the survival of the species. If the amended project would result in impacts to these areas of potential habitat, the amended project has the potential to adversely affect habitat that may be critical to the survival of the species. Transgrid have committed to the avoidance of known habitat for these species. **BCS have recommended conditions of approval to support this requirement.** **Southern Whiteface** - No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this species. The Conservation Advice for Aphelocephala leucopsis (Southern Whiteface) (Commonwealth DCCEEW, 2023c) identifies habitat critical to the survival of the species as: • relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both • habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat • living and dead trees with hollows and crevices which are essential for roosting and nesting. The amended project would result in the clearing of potential foraging and breeding habitat for the species. Following the above definitions, the amended project has the potential to adversely affect habitat critical to the survival of the Southern Whiteface. **Gang-gang Cockatoo** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. However, Conservation Advice for *Callocephalon fimbriatum* (Gang-gang Cockatoo) (DAWE, 2022b) identifies habitat critical to the survival of the species as: • All foraging habitat during both the breeding and non-breeding season, excluding exotic vegetation within urban and suburban areas. • Stands of suitable hollow bearing trees, these include known or potentially suitable hollows, with chambers that are generally around 20 cm in floor diameter, around 50.5 cm deep (range 22–90 cm) and occur between around 7.5 m (range 5–9.4 m) above the ground. • Stands of trees within or adjacent to known breeding areas, that are likely to become hollow bearing in future years. The amended project would result in the clearing of 19.92 ha of known foraging habitat and 430.1 ha of potential breeding habitat within the amended project footprint. Following the above definitions, the amended project has the potential to adversely affect habitat critical to the survival of the Gang-gang Cockatoo. **Glossy Black-Cockatoo** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. However, Conservation Advice (Commonwealth DCCEEW, 2022j) for the Glossy Black-cockatoo identifies habitat critical to the survival of the species as habitat: • for activities such as foraging, breeding, roosting, or dispersal

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	• for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
	• to maintain genetic diversity and long-term evolutionary development
	• for the reintroduction of populations or recovery of the species or ecological community.
	The amended project would result in the removal of 99.17 ha of known and highly likely foraging habitat and 40.82 ha of potential breeding habitat for the species. Following the above definitions, the amended project has the potential to adversely affect habitat critical to the survival of the Glossy Black-Cockatoo.
	The Brown Treecreeper - No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this species. The Conservation Advice for *Climacteris picumnus victoriae* Brown Treecreeper (south-eastern) (Commonwealth DCCEEW, 2023d) identifies habitat critical to the survival of the species as:
	• Relatively undisturbed grassy woodland with native understorey
	  ○ Habitat structure should be quite open at ground level so that birds are able to feed on or near the ground and maintain vigilance against predators
	  ○ The required degree of openness is mostly likely to be created by moderate levels of disturbance by fire and/or grazing
	• Large living and dead trees which are essential for roosting and nesting sites and for foraging
	• Fallen timber which provides essential foraging habitat and
	• Hollows in standing dead or live trees and tree stumps are also essential for nesting.
	The amended project would result in the removal of 375.74 ha of foraging and breeding habitat, in which the species is known to occur, or has a high or moderate likelihood of occurrence. Following the above definitions, the amended project has the potential to adversely affect habitat critical to the survival of the Brown Treecreeper.
	Pilot bird - No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this species. The conservation advice (DAWE, 2022c) states that habitat critical to the survival of the Pilotbird includes:
	• Wet sclerophyll forests in temperate zones in moist gullies with dense undergrowth, and
	• Dry sclerophyll forests and woodlands occupying dry slopes and ridges
	• As well as any breeding or foraging habitat in areas where the species is known or likely to occur.
	The amended project would result in the clearing of 203.47 ha of potential foraging and breeding habitat within the amended project footprint, in which the species has a high likelihood of occurrence based on the presence of high condition suitable foraging and breeding habitat and

Requirement	Information
	conservation advice mapping. There are 324 Pilotbird records within 20 kilometres of the amended project footprint (NSW DCCEEW, 2024a), with records primarily distributed near Tumut, Bago State Forest and Bondo State Forest. Following the above definitions, the amended project has the potential to adversely affect habitat critical to the survival of the Pilotbird. **Key's Matchstick Grasshopper** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. However, Conservation Advice identified Key's Matchstick Grasshopper habitat as native grasslands, secondary native grasslands or areas that contain the native grass understorey. The amended project would remove up to 1.14% of known habitat for the species (habitat used for all life stages of the species). The removal of habitat used by the species for all stages of its life cycle has the potential to adversely affect habitat that may be critical to the survival of Key's Matchstick Grasshopper. **Golden Sun Moth** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. However, Conservation Advice for *Synemon plana* (Golden Sun Moth) (DAWE, 2021a) states that habitat critical to the survival of the species likely includes: • All native grasslands occupied by the species across its range. • All occupied habitat is important for the breeding activity of a subpopulation and the recovery of the species. • Large subpopulations or small, well-connected subpopulations occurring in high quality habitat would classify as important for the long-term maintenance of the species. • High quality habitat for the species is defined as medium to large sites containing native grassland with an abundant component of forage species including Rytidosperma spp. and/or Austrostipa spp., with low weed cover, tussock cover with heterogenous bare earth, and land management reflecting the ecological value of the site. • Sites occurring at or near the limit of the species ranges or sites a long distance from other subpopulations. There are large areas of potential habitat within the amended project footprint. However, known habitat within the amended project footprint would be avoided where possible and the Connectivity Strategy implemented. Therefore, it is considered unlikely that the amended project would adversely affect habitat critical to the survival of the Golden Sun Moth **Large-eared Pied Bat** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat. This is a data deficient species and information on critical habitat is limited. However, the Recovery Plan of the Large-eared Pied Bat describes the following as critical habitat: • Sandstone cliffs and fertile wooded valley habitat within proximity of each other • Rainforests and moist eucalypt forest habitats on other geological substrates at high elevations • Any maternity roosts.

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	Within the amended project footprint, impacts to sandstone escarpments will be avoided and no maternity roosts were found. Where possible, impacts to potential foraging habitat will be avoided and mitigated. Given the relatively small clearing of suitable forage habitat compared with that in the surrounding vegetation, the amended project is unlikely to adversely affect habitat critical to the survival of the species. **Spotted-tailed Quoll** - The recovery plan for the Spotted-tailed Quoll states that habitat critical to the survival of the species includes large patches of forest with adequate denning resources and relatively high densities of medium sized mammalian prey (DELWP, 2016). However, the recovery plan expands on this to say that it is currently not possible to define (or map) habitat critical to the survival of the Spotted-tailed Quoll because the threshold densities of these critical components are unknown. The amended project footprint is predominantly cleared of intact bushland, however a small number of patches of contiguous bushland would be intersected by the amended project footprint which may adversely affect critical habitat through fragmentation. The implementation a Connectivity Strategy may reduce fragmentation impacts. **Greater glider** - No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Greater Glider. However, habitat critical to the survival for the Greater Glider may be broadly defined as (Commonwealth DCCEEW, 2022l): • Large, contiguous areas of eucalyptus forest containing mature hollow-bearing trees and a diverse range of the Greater Glider's preferred regional food species • Smaller or fragmented habitat patches connected to larger patches of habitat that can facilitate the dispersal or recolonisation of the species • Cool microclimate forest or woodland areas (e.g., protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes • Areas identified as refuges under future climate changes scenarios • Short-term or long-term post-fire refuges (i.e., unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas. Irrespective of the abundance or density of the Greater Glider or perceived habitat quality, habitat meeting any of the above criteria is considered habitat critical to the survival of the species (Commonwealth DCCEEW, 2022l). Habitat meeting the above criteria occurs within the amended project footprint in the Bondo, Bungonia and Snowy Mountains IBRA subregions, which included high condition, mature remnants where the species was recorded. Therefore, it is considered likely that the amended project would impact habitat critical to the survival of the Greater Glider. **Yellow-bellied glide**r - No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Yellow-bellied Glider. However, habitat critical to the survival for the Yellow-bellied Glider may be broadly defined as (DAWE, 2022a): • large contiguous areas of floristically diverse eucalypt forest, which are dominated by winter flowering and smooth-barked eucalypts, including mature living hollow-bearing trees and sap trees (see Appendix A) • areas identified as refuges under future climate change scenarios

Requirement	Information
	• short or long-term post-fire refuges (i.e., unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas • habitat corridors required to facilitate dispersal of the subspecies between fragmented habitat patches and/or that enable recolonization or movement away from threats. Yellow-bellied gliders (south-eastern) have a glide ratio (horizontal distance/height dropped) of around 2.0, and corridors spanning gaps larger than the distance gliders are likely to be able to travel should be considered critical to the survival. There is not enough evidence to define the canopy and width characteristics of appropriate corridors. In the absence of such information, a precautionary approach should be taken to maximise dispersal by considering all habitat corridors in the species' range to be habitat critical to the survival; and • areas in which some trees have evidence of use for sap extraction by yellow-bellied glider (southeastern). Irrespective of the abundance or density of the Yellow-bellied Glider or perceived habitat quality, habitat meeting any of the above criteria is considered habitat critical to the survival of the species (DAWE, 2022a). Habitat meeting the above criteria occurs within the amended project footprint in the Bondo, Bungonia, Inland Slopes and Snowy Mountains IBRA subregions, which included high condition, mature remnants where the species was recorded. Therefore, it is considered likely that the amended project would impact habitat critical to the survival of the Yellow-bellied Glider. Koala - As defined in the conservation advice for Koala, habitat critical to the survival of the species is defined as the areas that the species relies on to avoid or halt decline and promote the recovery of the species (DAWE, 2022d). Given that records of the species are found in all cardinal directions of the amended project footprint, all native vegetation within the amended project footprint is considered habitat critical to the survival of the species. The amended project footprint does not occur within any Areas of Regional Koala Significance (ARKS). Bungonia is the only IBRA subregion that will be impacted by the amended project which contains an ARKS (also called Bungonia). The nearest point of the ARKS is approximately 3.5 km from the amended project footprint, however, the ARKS spans over 353,546 ha and only around 13% of it occurs within the Bungonia IBRA subregion. The majority of the Bungonia ARKS occurs within the Ettrema, Burragorang, Moss Vale, Cumberland, Sydney Cataract, and Illawarra IBRA subregions. Native vegetation containing Koala use trees would be partially cleared to accommodate the development, and up to 441.09 ha of critical habitat would be modified. Therefore, the amended project is likely to adversely impact habitat critical to the survival of the species. Macquarie Perch - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. • The National Recovery Plan for the Macquarie Perch (DEE, 2018) identifies critical habitat as: ○ All areas within the species' range which are characterised by flowing runs or riffles and small complex rock piles;

Requirement	Information
	○ The current area of occupancy of the species (including historically translocated populations in Cataract Reservoir and the Mongarlowe River in New South Wales and the Yarra River in Victoria); ○ Any newly discovered locations within the species' natural range which hold populations that extend the area of occupancy for the species; ○ Unoccupied habitat within the species' natural range into which the species could disperse, be stocked or be translocated. Whilst referenced in the National Recovery Plan for the species (DEE, 2018), the document does not define the area of occupancy of the species. The amended project footprint does extend into the natural range of the species as described in DEE (2018), as it includes Adjungbilly Creek. Sections of riffle may be present along reaches of Adjungbilly Creek and the Lachlan River within or adjacent to the amended project footprint, as such these habitats may be considered critical habitat. No direct impacts to critical habitat would occur as a result of the amended project. Any indirect impacts that may occur would be temporary and localised. The key potential indirect impact that could occur would be the potential for sedimentation associated with construction work that could infill the interstitial spaces between rocks and pebbles used by the species for spawning. This is considered unlikely to occur given mitigation measures proposed to control this risk (Chapter 14) and the distance at which construction would be taking place from these reaches that may be considered critical habitat (approximately 40 metres from the bank). **Riek's Crayfish** - To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species or identified in the Conservation Advice for the species. Small highland streams and wetlands holding permanent surface water within the highlands of the Australian Alps would be considered critical habitat for the species, given the lack of ecological understanding of the species (Commonwealth DCCEEW, 2023a). This would include habitats within the amended project footprint. While the amended project would result in modification to potential habitats, the limited scope of the construction and would suggest that the critical habitat is unlikely to significant adverse effects. **Diamond firetail** - Habitat critical to the survival of the species is defined in the Conservation Advice of the Diamond Firetail (Commonwealth DCCEEW, 2023f). It includes the following: • Eucalypt, acacia or casuarina woodlands, open forests, and other lightly timbered habitats • Low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting, and breeding • Drooping she-oak (*Allocasuarina verticillata*) within the Mt Lofty Ranges. The amended project would result in the clearing of potential habitat; therefore, the amended project would affect habitat considered critical to the survival of the species.

Requirement	Information
	Key threatening processes (KTPs) and threat abatement plans Section 13.9 identifies 19 Key Threatening Processes, of which 11 are listed under the EPBC Act 1999. Table 13-37 provides a list of the relevant KTPs, an assessment of their likelihood and proposed mitigation measures and references Table 14-1 which provides detailed mitigation measures and proposes avoidance where possible. The proposed Biodiversity Management Plan will include several plans including a Connectivity Plan, Biosecurity Management Plan which (will include pest management for dogs, foxes, cats, noisy miners, rabbits, goats, pigs and deer), a Weed Management Plan, and Biodiversity Monitoring Program. Other plans include a Soil and Water Management Plan, Erosion and Sediment Control Plan, and there will also be a Supplementary Hollow and Nest Strategy. KTPs identified as relevant in the BDAR include the following; 1. Clearing of native vegetation (land clearing) 2. High frequency fire resulting in the disruption of life cycle processes in plants and animals and loss of vegetation structure and composition 3. Infection of frogs by amphibian chytrid causing the disease chytridiomycosis 4. Infection of native plants by *Phytophthora cinnamomi* 5. Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants 6. Predation by the European red fox *Vulpes vulpes* 7. Predation by feral cat Felis catus *8.* Aggressive exclusion of birds from woodland and forest habitat by abundant Noisy Miners *Manorina melanocephala.* 9. Competition and grazing by the feral European rabbit 10. Competition and habitat degradation by feral goats 11. Predation, habitat degradation, competition and disease transmission by feral pigs *Sus scrofa* Whilst there are no EPBC Act 1999 key threatening processes that impact aquatic MNES species, the BDAR identifies KTPs under the Fisheries Management Act 1994. The mitigation measures for these KTPs are also described in Table 13-37 and rely on the development of Management Plans such as Erosion and Sediment Control Plans and relevant mitigation measures set out in Table 14-1. Table 14-1, B3, B33 sets out specific mitigation measures. **Threat Abatement Plans**

Requirement	Information
	Applicable Threat Abatement Plans as listed in the SPRAT profiles for each MNES have been included in the MNES assessment. The objectives and actions of these plans have been considered and incorporated into the mitigation measures in Table 14-1. **Conservation Advice and Recovery Plans** Conservation Advice (including conservation actions) and Recovery Plans have been considered in the SIA for each MNES, and an assessment made as to whether the project will interfere with these plans. Where there are likely to be significant impacts to MNES, the project may interfere with these actions. This includes the following; • **Yellow-bellied glider** - the project would impede or interfere with targeted recovery actions in the Conservation Advice via interrupted connectivity. • **Grey-headed flying fox** – the amended project would partially interfere with Recovery Action 1 "Identify, protect, and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox", with the removal of 203.69 ha of foraging habitat (within 20 kilometres of known camps), however, these camps are not recognised as Nationally Important, therefore, the amended project is considered unlikely to interfere with the recovery of the Grey-headed Flying-fox. • **Striped legless lizard** - The amended project may impede or interfere with any of targeted recovery actions for the species through the potential reduction in habitat and population numbers. • **Bynoe's wattle** – there is no recovery plan, but the approved Conservation Advice lists a number of research priorities and actions that the project would not substantially interfere with, it would contribute to the two main threats of habitat loss and fragmentation and inappropriate habitat disturbance. • **Buttercup doubletail** – there is no Recovery Plan, but approved Conservation Advice for the species lists a number of research priorities and priority actions to support the recovery of the species. While the amended project would not substantially interfere with these actions, it would result in disturbance to areas of potential habitat for the species which would contribute to identified threats to Buttercup Doubletail, such as clearing • **Glossy black cockatoo** - The removal of known and potential habitat including breeding hollows may impede or interfere with targeted recovery actions directed at minimising habitat clearance and increase competition for nest hollows. For all the remaining MNES it has been determined that the project is unlikely to interfere with the relevant Conservation Advice and Recovery Plans. It should be noted that the Booroolong frog assessment did not include the Booroolong Frog Recovery Plan as TransGrid have incorrectly stated that there is not one, TransGrid have relied on the Conservation Advice.

Requirement	Information
Recommended Conditions BLA clause 6.2(c)(iii)	**Provide advice on any recommended conditions and reasons for imposing the conditions:** BCS suggest the following conditions of approval are applied: • SBAS condition • BOP condition • Biodiversity verification Reports • BMP condition BCS suggest the following conditions of approval are applied: **Supplementary Biodiversity Assessment Surveys (SBAS)** A SBAS is to be prepared by Transgrid in consultation with and to the satisfaction of BCS prior to commencement of works/ within 3 months of approval date, whichever is first. The SBAS will: • detail the requirements to verify biodiversity values (Plant Community Type (PCT) vegetation zone, habitat constraints) in areas currently not surveyed including any roadside vegetation and planted native vegetation • define the mechanism and timeframe for re-assessing impacts and re-calculating an offset liability if the disturbance area is changed during detailed design or construction and • outline a process to review zone vegetation integrity scores when considering micro-siting impacts during construction. The SBAS must apply the following sections of the BAM: • Sections 4.1.1 through to 5.3 inclusive – vegetation integrity and habitat suitability assessments • Section 6 – identifying prescribed impacts • Section 7.1 – 7.2 avoid or minimise direct, indirect and prescribed impacts • Sections 8.1 and 8.2 – assess direct and indirect impacts • Sections 9.1 and 9.2 – SAII assessment Credit calculations are to be completed in the BAM-C The SBAS need to prioritise survey of MNES entities that have been assumed present and re-evaluate whether significant impact is likely to determine whether further additional and appropriate measures to minimise impacts to MNES entities will be required within a timeframe determined to the satisfaction of BCS. Survey in severely burnt sites cannot be used to rule out species without further guidance from BCS

Requirement	Information
	The following MNES species are likely to be in such low numbers in severely burnt land (BAM 2020) that they are undetectable via standard survey effort, they are therefore to be assumed present and offset accordingly: • Yellow-bellied Glider • Greater glider • Koala • Tumut grevillea Species survey need to be completed in accordance with published survey guides and advice in the TBDC. Where there is insufficient information in these sources to complete surveys or map species polygons, this advice is to be sought from BCS. While a complete BDAR is not required, the SBAS needs to be presented as a single document that includes: a. Descriptions of survey methods for each target species that will be used to determine presence or absence to exclude a species from impact – including the requirement for targeted surveys for predicted candidate species to extend beyond the impact footprint as far as necessary to encompass the buffer distances specified in TBDC for habitat constraints b. If survey cannot be completed to the required distance to rule out presence, then the species is to remain assumed present. c. BAM-C case number d. Treatment of new MNES (e.g. not current MNES subject to this approval). BCS expect that species credits would be generated for any species credits detected as a result of the SBAS that cannot be avoided and that the bank guarantee would be used and be sufficient to fund any calculated offset e. Requirements for biodiversity verification reports which need to include but not be limited to: i) survey results and progressive evaluation of biodiversity impacts ii) timeframes for submission of biodiversity verification reports and revised SAII and MNES assessments f. Where impacts to MNES entities cannot be avoided, mitigation and offset measures will be determined in consultation with BCS and will be dependent on the nature and scale of the impact. Minimum requirements for ecosystem credit recalculation will include • Biodiversity verification reports, relevant BAM-C cases and credit reports • Spatial data verifying the following: • Clearing extents per PCT are below the limits identified in Table 15.1 of the approved BDAR final design footprint and the location of direct and indirect impacts - Vegetation zones • Ensuring location of BAM plots are adequate to compare VI scores in areas subject to impacts Vs no impacts and dated within 3 months of commencement of works.

Requirement	Information

	• Evidence confirming the date of post approval biodiversity verification (BAM) plots is within 3 months of clearing works or commencement of works occurring whichever is the latter
	There should be no application for a reduction in the ecosystem credit liability without written confirmation from BCS that the above provides satisfactory evidence to determine whether biodiversity values will be retained (Vegetation integrity score) across the final design project footprint.
	
	Minimum requirements for species credit reduction will include:
	
	• Revised BAM-C cases, credit reports and credit liability
	• Spatial data verifying the following:
	  ○ final design footprint and the location of direct and indirect impacts
	  ○ extent and timing of survey effort per species, location of any threatened species detections (including additional predicted candidate species) and locations of any threatened species habitat detected as a result of the survey effort
	  ○ vegetation zones and location of BAM plots
	  ○ final revised species polygons in that reflect the final project footprint
	  ○ location of measures to avoid and minimise impacts
	  ○ location of mitigation measures in relation to verified threatened species habitat and/or threatened ecological communities (TECs).
	• Revised MNES assessment/evaluation of MNES for subject species
	
	After detailed design and micro-siting, species polygons need to be revised to match the final location of the development footprint. The final biodiversity offset obligation calculations are to use the revised species polygons.
	
	The SBAS must include surveying to inform the evaluation of impacts and avoidance measures for assumed presence MNES including the Mountain skink Endangered EPBC/ BC Act (listed in August 2023).
	
	The MNES is reassessed following survey of currently unsurveyed areas and the detailing of avoidance and mitigation measures in the Biodiversity Management Plans.
	
	Transgrid need to minimise impacts to:
	
	1. Alpine Sphagnum Bogs and Associated Fens
	2. *Ammobium craspedioides*
	3. *Aprasia parapulchella*

Requirement	Information
	4. Box Gum Woodland 5. *Leucochrysum albicans subsp. Tricolor* 6. *Phascolarctos cinereus* 7. *Pimelea bracteata* 8. *Xerochrysum palustre* Transgrid need to avoid and minimise impacts to the following: *Prasophyllum bagoense, Dasyurus maculatus, Petauroides volans, Anthochaera phrygia, Gallinago hardwickii, Thesium australe, Prasophyllum innubum, Delma impar, Petaurus australis, Aphelocephala leucopsis, Kunzea cambagei, Prasophyllum keltonii, Grantiella picta, Polytelis swainsonii, Apus pacificus, Pomaderris cotoneasterCallocephalon fimbriatum, Keyacris scurra , Stagonopleura guttata, Calidris acuminata, Pterostylis oreophila, Calyptorhynchus lathami, Lathamus discolor, Synemon plana , Calidris ruficollis, Pteropus poliocephalus, Climacteris picumnus victoriae, Melanodryas cucullata cucullata, Acacia bynoeana, Diuris aequalis, Pycnoptilus floccosus* <u>McPherson's Plain Area Specific Conservation Management Plan</u> • Transgrid prepare and implement a BMP and approved Area Specific Conservation Management Plan for McPhersons Plain in consultation with BCS prior to works commencing. • The BMP is to include the conservation management requirements for buffers to the Alpine Bog and measures to avoid and mitigate impacts to any threatened orchid locations detected by additional surveys. These shall include (but not be limited to) protective fencing/access restrictions, weed control, and pathogen control and monitoring. • Sediment and erosion controls need to be located outside the protective buffers. • A 50m buffer to Alpine Bog PCT 637 is to be provided, maintained and protected before, during and after construction • No disturbance of any kind is to occur within the 50m buffer from the Alpine Bog PCT 637 and within the 30m buffer from the SAII Prasophyllum bagoensis, Prasophyllum keltonii, and Pterostylis oreophila (as mapped in the BDAR or new finds during post-approval survey) • The existing horse fence is not to be disturbed. • Transmission lines will be strung by helicopter /drone to further avoid impacts to sensitive Alpine Bog vegetation • The Area Specific Conservation Management Plan may form a component of the BMP however needs to include (but not be limited to) the following: i) Clearly identified no-go zones and include a plan for marking and maintaining no-go zones on the ground

Requirement	Information
	ii) Protective fencing of buffers and buffer management requirements iii) Mapped locations of threatened flora (including any located as a result of additional surveys for SBAS or BMP pre-clearing survey) and Alpine Bog in relation to the final design iv) Details and locations of sediment and erosion controls outside 50m buffer to the Alpine bog - v) Weed and pathogen control vi) Mapping and rehabilitation of helipad sites vii) Timeframes and schedule for implementation of works viii) A program to monitor and report on the effectiveness of the above measures ix) Performance criteria to guide monitoring x) Measurable thresholds to identify when remedial action is triggered xi) Adaptive management actions xii) A trigger for additional credit obligations and/or additional and appropriate measures if impacts cannot be avoided <u>Biodiversity Management Plan (BMP)</u> The BMP need to include specific actions as listed in Table 14.1 for mitigation of impacts including: • Monitoring and reporting activities on effectiveness of mitigation measures, including the offset trigger • Procedures for relocation/fauna handling and rescue • Procedures for protecting retained vegetation • Vegetation clearing processes including two step clearing and pre clearing inspection • Retention of habitat features • Rehabilitation measures • Unexpected finds protocol • Plant hygiene/biosecurity protocol • Trigger Action Response Plan for known biosecurity threats • Suitable hygiene protocols for Phytophthora areas • Education of staff on collision on roads • Nest relocation • Actions in line with protecting Key Fish Habitat (survey requirements, design of crossings and additional mitigation measures) • Stockpiling procedures • Adaptive management measures for uncertain impacts, failed mitigation, residual impacts and prescribed impacts

Requirement	Information
	• Frequency and responsibility of actions • Future survey requirements and processes for reporting and incorporating recommendations into project • The BMP need to also include supplementary documents as listed in the BDAR: • Supplementary Hollow and Nest Strategy • A maintenance, monitoring and reporting plan for measuring the effectiveness of the methods used • Connectivity Strategy • Vegetation Clearing Memo • Weed Control Strategy • SBAS • Glider Memo • CEMPs with specific actions for each site The mitigation actions for riparian areas and waterway crossings should include: • Final line of project to target narrow waterways • Best practice to be used for riparian work including preventing chemical drift, sufficient erosion control, rock and tree stumps left in-situ • Design and micro-siting to avoid disturbance to waterways, away from native vegetation, channel bends, riffles and rapids and sensitive habitat features • Reuse of existing removed material where possible • Structures to maintain flow characteristics and fish passage in line with the guidelines in the BDAR • Remediation for stability, rehabilitation of temporary crossings The BMP should also include: • detailed requirements for mitigation measures implementation, developed in consultation with BCS, to address habitat fragmentation and loss of habitat connectivity for threatened fauna at the 81 wildlife corridor locations identified in the BDAR • details of the infrastructure that will be installed to augment glider habitat and facilitate glider movement at all of the locations identified and recommended by 2023 Memo prepared by the accredited assessor • mitigation measures to avoid disturbance from activities and machinery noise/vibration to threatened owls and raptors at or near nests during breeding and nesting periods • consultation with threatened species experts and BCS to ensure appropriate and specific measures are included for reducing impacts of collision and/or electrocution on birds and bats, for example, identifying high risk locations and specifying the number and type of flappers that are likely to reduce collision risk.

Requirement	Information
	• measures to address risks due to collision, electrocution, and electromagnetic fields, which will need to specify the assumptions on which the risks have been assessed, the details and locations of specific measures for reducing risks, and the monitoring that will be used to ensure the measures are effective • a program and timeframes for monitoring and reporting on the effectiveness of measures to mitigate project impacts to the MNES entities. • the pre-clearing procedures and actions that will be applied to avoid, minimise and mitigate impacts to detected threatened species habitats in areas not previously accessed for survey The BMP needs to include adaptive management measures for uncertain impacts, including prescribed impacts. This needs to include but is not limited to all items listed under adaptive management in Mitigation Measure B3, Table 14.1: • Detailed procedures for uncertain impacts, risks associated with potential failure of mitigation measures, circumstances where avoidance is not possible, and prescribed impacts. • A monitoring program to provide early warning of where the mitigation measures are not effective and/or uncertain impacts are occurring • Management measures including: ○ Performance criteria to guide monitoring ○ Measurable thresholds to identify when remedial action is triggered ○ Adaptive management actions ○ A trigger for additional credit obligations and/or conservation measures for uncertain, indirect or prescribed impacts ○ Reporting requirements • Detail on the necessary measures that will be implemented to minimise and mitigate impacts to any BC Act and EPBC Act listed threatened species (including unexpected finds) detected as a result of pre clearing and/or targeted post approval surveys completed to verify presence/absence of assumed present species. <u>Connectivity Strategy</u> A connectivity strategy needs to be prepared in consultation with and to the satisfaction of BCS prior to commencement of works (or within 6 months of approval, whichever is first). The connectivity strategy needs to provide: • The location, detailed design and information about the installation for glider poles or suitable habitat augmentation hardware and infrastructure to mitigate loss of connectivity for gliders at a minimum of the 16 locations recommended by the accredited assessor in the 2023 Memo, as well as alternate and additional locations if deemed appropriate after ground truthing, in consultation with BCS. • Details of measures to maintain connectivity at the glider corridor locations identified in the BDAR Table A 24-10 and Figure 13-2.

Requirement	Information
	• Details of measures to maintain connectivity for all entities listed as moderate or major risk of impact at corridor locations identified in Table A24-10 and for the following entities listed at risk of impact from loss of connectivity provide: i) Timeframe for implementing the measures ii) Performance metrics iii) Maintenance requirements iv) A program to monitor, report and evaluate the effectiveness of the measures against performance metrics and requirements for adaptive management and consultation with BCS for ways to improve the measures should they be determined to be ineffective or are not achieving the performance standards **Biodiversity Offset Plan (BOP)** The credit calculations in the BOP needs to be consistent with current credit reports and BCT figures. Any recalculation of credit liability associated with the impacts of the project will be included in and delivered via the Biodiversity Offset Package CoA i.e. not just indirect and prescribed The BOP is to be progressively revised every 6 months to incorporate: i) Any re-calculation of credit liability ii) Consultation with BCS on conservation measures for species where the credit obligation cannot be met through BSAs The following information needs to be provided with any application to reduce the credit requirement i) SBAS report – biodiversity verification reports ii) Report on MNES to allow re-evaluation of the impact to MNES entities **Clearing limits** A CoA should be applied to ensure predicted impacts to biodiversity values are not exceeded: This would include A clearing limit CoA to require that the predicted clearing limits within Vegetation zones- particularly for TEC are not exceeded. Please ensure vegetation zone clearing limits for TEC are listed in the appendix to the approval. All TEC impacted by the project are SAII and impacts in high or moderate condition zones must not be exceeded. **Biodiversity Verification Reports** • Biodiversity verification reports with accompanying maps and spatial data will be provided within 3 months of clearing and contain sufficient details to verify the areas cleared Vs areas predicted per CEEC associated PCT vegetation zone.

Requirement	Information
	• Biodiversity clearing verification reports provide evidence (using BAM plot method) to demonstrate post clearing vegetation integrity scores are within those predicted in the ECZ and HTZ across all vegetation zones if any ecosystem credit refund is being sought for easement clearing/ ECZ's. • Updated BAM C cases are provided to BCS with verification reports

Table J-2 | MNES impact and offset summary

Threatened Species / Community listed under EPBC Act	PCTs associated with the ecosystem credit species / ecological community (if applicable)	Area of Impact (ha)	Credits Required	Offsetting Approach	Reference (BDAR, Attachments)
Ecological Communities					
Alpine Sphagnum Bogs and Associated Fens TEC	PCT 939 and 1256	0.58	14	Ecosystem credits are estimated to be required to address residual impacts for these TECs. All significant residual impacts would be addressed through the provision of biodiversity offsets under the NSW BOS. Offsets delivered under the NSW BOS address the requirements of the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements.	Draft BOP, Table 16
White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC	PCT 266, 268, 277, 278, 280, 283, 352 and 1330	117.15	5,168		BDAR Section 16.2.1.1 Attachment 3, Section 3.1, Table A3-6 Draft BOP, Table 16
Species Credit					
Acacia bynoeana (Bynoe's Wattle)	Species credit	4.17	117	All significant residual impacts would be addressed through the provision of biodiversity offsets under the NSW Biodiversity Offsets Scheme (BOS). Offsets delivered under the NSW BOS address the requirements of the EPBC Act Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements.	Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo 9/8/24 - Updated clearing limits
Acacia flocktoniae (Flockton Wattle)	Species credit	11.25	348		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits

Ammobium craspedioides (Yass Daisy)	Species credit	298.28	16,866		Attachment 3, Section 3.2 Table A3-8 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Aprasia parapulchella (Pink-tailed Legless Lizard)	Species credit	37.41	561		Attachment 3, Section 3.3 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Baloskion longpipes (Dense Cord-rush)	Species credit	1.31	44		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Bossiaea fragrans	Species credit	6.31	251		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Bossiaea oligosperma (Few-seeded Bossiaea)	Species credit	2.42	56		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Caladenia concolor	Species credit	34.75	1,455		Draft BOP, Table 17

(Crimson Spider Orchid)					Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Callocephalon fimbriatum (Gang-gang Cockatoo)	Species credit	476.46 (breeding)	11,754	Residual impacts to the Gang-gang Cockatoo would be offset under the NSW BOS (species credit and ecosystem credit requirement).	Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Calyptophynchus lathami (Glossy Black Cockatoo)	Species credit	45.12 (breeding)	1,300	Residual impacts to Glossy Black-Cockatoo would be offset under the NSW BOS (species credit and ecosystem credit requirement).	Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Chalinolobus dweryi (Large-eared Pied Bat	Species credit	3.09	78	All significant residual impacts would be addressed through the provision of biodiversity offsets under the NSW Biodiversity Offsets Scheme (BOS). Offsets delivered under the NSW BOS address the requirements of the EPBC Act Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements.	Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Commersonia prostrata (Dwarf Kerrawang)	Species credit	0.82	4		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Crinia sloanei (Sloane's Froglet)	Species credit	0.75	13		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Cyclodomorphus praealtus	Species credit	35.16	837		Draft BOP, Table 17

(Alpine She-oak Skink)					Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Delma impar (Striped Legless Lizard)	Species credit	93.04	345		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Diuris aequalis (Buttercup Doubletail)	Species credit	46.11	986		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
**Eucalyptus aggregata* (Black Gum)	Species credit	0.79	14		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
**Eucalyptus macarthurii* (Paddy's River Box, Camden Woollybutt)	Species credit	2.64	24		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
**Eucalyptus robertsonii subsp. Hemisphaerica* (Roberston's Peppermint)	Species credit	0.77	6		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits

Grevillea ispicula (Wee Jasper Grevillea)	Species credit	5.19	24		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Grevillea wilkinsonii (Tumut Grevillea)	Species credit	22.57	936		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Keyacris scurra (Key's Matchstick Grasshopper)	Species credit	174.50	1,968		Draft BOP, Table 8 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Kunzea cambagei	Species credit	8.27	250		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Lepidium hyssopifolium (Aromatic Peppercress)	Species credit	67.68	393		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Leucochrysum albicans var. tricolor (Hoary Sunray)	Species credit	187.06	86,886		Attachment 3, Section 3.2 Draft BOP, Table 17

					Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Litoria booroolongensis (Booroolong Frog)	Species credit	0.06	2		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Litoria castanea (Yellow-spotted Tree Frog)	Species credit	1.26	38		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Mixophyes balbus (Stuttering Frog)	Species credit	15.57	710		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Persoonia marginata (Clandulla Geebung)	Species credit	5.06	142		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Petauroides volans (Southern Greater Glider)	Species credit	158.44	3,866		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Petaurus australis – endangered population	Species credit	117.87	3,029		Draft BOP, Table 8

(Yellow-bellied Glider population on the Bago Plateau)					
Phascolarctos cinereus (Koala)	Species credit	488.05	11,768	All significant residual impacts would be addressed through the provision of biodiversity offsets under the NSW Biodiversity Offsets Scheme (BOS). Offsets delivered under the NSW BOS address the requirements of the EPBC Act Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements.	Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Phyllota humifusa (Dwarf Phyllota)	Species credit	11.35	354		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Polytelis swainsonii (Superb Parrot)	Species credit	127.49 (breeding)	2,599	Residual impacts to Superb Parrot would be offset under the NSW BOS (species and ecosystem credits).	Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Pomaderris cotoneaster (Cotoneaster Pomaderris)	Species credit	8.96	245	All significant residual impacts would be addressed through the provision of biodiversity offsets under the NSW Biodiversity Offsets Scheme (BOS). Offsets delivered under the NSW BOS address the requirements of the EPBC Act Environmental Offset Policy through like for like offset trading requirements and the provisions for the establishment and securing into perpetuity of Biodiversity Stewardship Agreements.	Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Pomaderris delicata (Delicate Pomaderris)	Species credit	1.37	77		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Pomaderris pallida	Species credit	1.17	67		Draft BOP, Table 17

(Pale Pomaderris)					Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Prasophyllum bagoense (Bago Leek-orchid)	Species credit	0.04	3		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Prasophyllum innubum (Brandy Mary's Leek-orchid)	Species credit	0.02	1		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Prasophyllum keltonii (Kelton's Leek-orchid)	Species credit	0.03	2		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Pseudomys fumeus (Smokey Mouse)	Species credit	5.79	189		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Pterostylis oreophila	Species credit	0.65	10		Draft BOP, Table 17

(Blue-tongued Greenhood*)*					Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Swainsona recta (Small Purple-pea)	Species credit	69.63	1,176		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Synemon plana (Golden Sun Moth)	Species credit	28.53	161		Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Thesium australe (Austral Toadflax)	Species credit	149.45	711		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Xerochrysum palustre (Swamp Everlasting)	Species credit	0.77	8		Attachment 3, Section 3.2 Draft BOP, Table 17 Transgrid Memo to BCS 9/8/24 - Updated clearing limits
Ecosystem Credit					
Anthochaera phyrgia (Regent Honeyeater)	PCT 5, 266, 268, 277, 280, 283, 287,	188.31 (foraging)	The total ecosyste	Residual impacts to the Regent Honeyeater would be offset under the NSW BOS through impacts to	Draft BOP, Table 7 BDAR Table 7-8

	294, 319, 343, 352, 731, 870, 1093, 1097, 1107, 1191, and 1330		m offset requirement for the amended project is 13,810 credits. However, species-specific ecosystem credit requirements have not been provided in the BDAR or its attachments.	potential habitat (ecosystem credits). The species was not identified as a species credit species under the Biodiversity Assessment Method (BAM) as the amended project does not impact any habitat as mapped on the Important Habitat Map for the species.	Attachment 3, Section 3.3
Aphelocephala leucopsis (Southern Whiteface)	Not provided	292.98		Given the species is not included in the BAMC candidate species list for the amended project, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-17
Apus pacificus (Fork-tailed Swift)	None	81.64		The Fork-tailed Swift is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-36
Calidris acuminata (Sharp-tailed Sandpiper)	None	2.32		The Sharp-tailed Sandpiper is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under	Attachment 3, Table A3-37

				the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	
Calidris ruficollis (Red-necked Stint)	None	2.32		The Red-necked Stint is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-38
Callocephalon fimbratum (Gang-gang Cockatoo)	PCT 5, 266, 268, 277, 278, 280, 283, 285, 287, 290, 294, 295, 297, 299, 300, 306, 314, 316, 322, 343, 349, 351, 352, 638, 679, 727, 731, 870, 952, 953, 1093, 1097, 1107, 1150, 1151, 1191, 1196 and 1330	420.81 (foraging)		Residual impacts to the Gang-gang Cockatoo would be offset under the NSW BOS (species credit and ecosystem credit requirement).	BDAR Table 7-8 Attachment 3, Table A3-18
Calyptophynchus lathami (Glossy Black Cockatoo)	PCT 266, 290, 343, 870, 1093, 1097, 1107, 1150, 1191 and 1330	99.17 (foraging)		Residual impacts to Glossy Black-Cockatoo would be offset under the NSW BOS (species credit and ecosystem credit requirement).	BDAR Table 7-8 Attachment 3, Table A3-19
Climacteris picmnus victoriae	PCT 266, 268, 277, 278, 280, 283, 287, 290, 294, 306, 314,	375.74		Residual impacts to the species would be offset under the NSW BOS through impacts to potential habitat (ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-20

(Brown Treecreeper (eastern subspecies))	316, 322, 335, 343, 349, 351, 352, 731, 870, 1093, 1191, 1256 and 1330				
Dasyurus maculatus (Spotted-tailed Quoll)	PCT 278, 280, 283, 285, 287, 290, 294, 295, 297, 299, 300, 306, 314, 316, 322, 343, 349, 351, 352, 638, 679, 727, 731, 870, 939, 952, 953, 1093, 1097, 1107, 1150, 1191, 1196, 1256 and 1330	470.67		Residual impacts to Spotted-tailed Quoll would be offset under the NSW BOS (ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-29
Gallinago hardwickii (Latham's Snipe)	None	2.90		The Latham's Snipe is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-39
Grantiella picta (Painted Honeyeater)	PCT 5, 266, 268, 277, 278, 280, 287, 290, 294, 319, 322, 343, 349, 351, 352, 727,	203.74		Residual impacts to potential habitat of the Painted Honeyeater would be offset under the NSW BOS (ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-21

	731, 1093, 1097 and 1330				
Lathamus discolor (Swift Parrot)	PCT 5, 266, 268, 277, 278, 280, 283, 287, 290, 294, 295, 297, 299, 301, 306, 314, 316, 319, 322, 343, 349, 352, 731, 870, 1093, 1097, 1107, 1150 and 1330	248.51		Residual impacts to the Swift Parrot would be offset under the NSW BOS through impacts to potential habitat (ecosystem credits). The species was not identified as a species credit species under the BAM (DPIE, 2020a) as the amended project does not impact any habitat as mapped on the Important Habitat Map for the species.	BDAR Table 7-8 Attachment 3, Table A3-22
Melanodryas cucullata cucullata (South-Eastern Hooded Robin)	PCT 5, 266, 268, 277, 278, 280, 283, 287, 290, 294, 297, 306, 314, 316, 319, 322, 349, 352, 731, 1093, 1191 and 1330	629.21		Residual impacts to Hooded Robin would be offset under the NSW BOS (ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-23
Petaurus australis (Yellow-bellied Glider)	PCT 299, 300, 351, 638, 731, 870, 952, 953, 1093, 1097, 1107, 1150, 1191, 1196 and 1330	490.1		Residual impacts to the Yellow-bellied Glider would be offset under the NSW BOS.	BDAR Table 7-8 Attachment 3, Table A3-16
Polytelis swainsonii (Superb Parrot)	PCT 5, 266, 277, 278, 280, 283, 322, 343, 349, 352 and 1330	240.23 (foraging)		Residual impacts to Superb Parrot would be offset under the NSW BOS (species and ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-24

Pteropus poliocephalus (Grey-headed Flying-fox)	PCT 5, 266, 268, 277, 278, 280, 1093, 1107, 1130, 1330, 283 and 731	203.69		Ecosystem credits under the NSW BOS are proposed to offset the residual impacts to the species.	Attachment 3, Table A3-33
Pycnoptilus floccosus (Pilotbird)	None	203.47		The Pilotbird is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species' habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-25
Stagnonopleura guttata (Diamond Firetail)	PCT 5, 266, 268, 277, 278, 280, 283, 285, 287, 290, 294, 295, 297, 301, 306, 314, 319, 322, 343, 349, 351, 352, 727, 731, 870, 1093, 1097, 1191 and 1330	59.26		Residual impacts to Diamond Firetail would be offset under the NSW BOS (ecosystem credits).	BDAR Table 7-8 Attachment 3, Table A3-26
Tringa nebularia (Common Greenshank)	None	29.62		The Common Greenshank is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through	Attachment 3, Table A3-40

				calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	
Tringa stagnatilis (Marsh Sandpiper)	None	29.62		The Marsh Sandpiper is currently not listed under the BC Act and has no associated PCTs identified in BioNet. It is not identified as an ecosystem or species credit species. Therefore, offsets will need to be established under the EPBC Act Environmental Offset Policy. However, residual impacts to the species habitat would be offset under the NSW BOS through calculation of offsets required due to impacts to vegetation types with which it is associated (ecosystem credits).	Attachment 3, Table A3-41

Table J-3 | BCS Assessment of adequacy for exclusion of Significant Impact Assessment for MNES species and recommendations

MNES	Reason for exclusion for SIA	Acceptable or not	Recommendations
Acacia_flocktoniae	Limited potential impacts-ruled out by targeted survey in Bungonia IBRA subregion-known range limited to Southern Blue Mountains and no records in this subregion	yes-outside of known range	if detected in areas subject to post approval survey will need to be considered for SIA
Acacia phasmoides	outside known location of Woomargama National Park (80km south west of project site)	yes-outside of known range	none
Actitis hypoleucos	no records within 20km or IBRA subregion, some potential habitat in project footprint, however likely to be transient visitor as mostly found in coastal wetlands, some inland wetlands	yes-no wetlands to be impacted by project	none
Amphibromus fluitans	grows mostly in permanent swamps, 2 records are within 20km of project footprint. No associated PCTs mapped in the amended project footprint	yes-no associated PCTs	none

Austrostipa wakoolica	There are no associated PCTs mapped in the amended project footprint. Additionally, the species is geographically restricted to west of Cowra.	yes - no associated PCTs and outside range of occurrence	none
Baloskion_longipes	surveys of accessible areas have ruled out presence and there is minimal suitable habitat and no records of individuals in IBRA subregions CRO and INL	yes - limited habitat and ruled out by survey in areas surveyed	if recorded in post approval additional survey areas will need to be considered for SIA
Botaurus poiciloptilus	favours permanent freshwater wetlands with tall dense vegetation. No records within 20km of the project footprint and there is only small area of suitable habitat	yes - very limited habitat in the project footprint	none
Bossiaea_fragrans	the project footprint is 55km from Abercrombie Karst Conservation Reserve, the only known population. Surveys did not identify any individuals in the CRO and INL IBRA subregions	yes - Currently only known from the Abercrombie Karst Conservation Reserve, south of Bathurst on the NSW central tablelands. It is highly restricted, with only a small number of known sub-populations	if recorded in post approval survey areas will need to be considered for SIA
Bossiaea_oligosperma	surveys of accessible areas did not identify any individuals, records occur in the IBRA subregion, but the known occurrence is restricted and known only from Warragamba and Windellama areas which are 50km from project footprint	yes - known occurrence restricted	if recorded in post approval survey areas will need to be considered for SIA
Brachyscome muelleroides	- There is one record of the species in the wider locality (within 20 km), and within the IBRA subregion, however there is no potential habitat in the amended project footprint. It is unlikely that the species inhabits the amended project footprint.	Yes - no potential habitat in project footprint	none

Bubulcus ibis as Ardea ibis (not assessed at all)	no reason provided - has not been assessed at all	no - not addressed at all	Not likely to be impacted
Burramys parvus	not within the area of known distribution	Yes - area of known distribution will not be impacted	none
Caladenia arenaria	– There are no associated PCTs mapped in the amended project footprint. Additionally, there are only six previous records in the IBRA subregion, one of which occurs within 5 km of the amended project footprint	yes - as the Sand-hill Spider Orchid is currently only known to occur in the Riverina between Urana and Narrandera	none
Caladenia_concolor	No associated PCTs in amended project footprint, but there are records within 5km of project area in BON IBRA subregion, some surveys in MUR IBRA subregion - no individuals recorded	yes - no associated PCTs	if recorded in post approval survey will need to be considered for SIA
caladenia rosella	no targeted surveys for this orchid, one record within INL IBRA subregion, but not within 20km of project footprint	yes - outside known range	none
Caladenia tessellata	not identified during targeted surveys, no records within 20km of project footprint, only 3 records within 3 IBRA subregions	Yes outside known area of occurrence	none
Calidris ferruginea	project is outside of mapped important areas, and is rare to western NSW, prefers estaurine and intertidal habitats, some records within 5km of the project	Yes - There are sparsely scattered records inland. In NSW, they are widespread east of the Great Divide, especially in coastal regions. They are occasionally recorded in the Tablelands and are widespread in the Riverina and south-west NSW, with scattered records elsewhere.	none

		Important sites include ICI and Price Saltfields, and the Coorong	
Calidris melanotos	no records within 20km or IBRA subregion, some potential habitat in project footprint, however likely to be transient visitor as mostly found in coastal wetlands, some inland wetlands	yes - The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire	none
Callitris oblonga	There are no associated PCTs mapped in the amended project footprint. There are 24 previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint	yes - no PCTs or nearby records	none
Calotis glandulosa	Was not identified during targeted surveys and the species has not been incidentally identified during any other flora surveys for the project. There are 151 previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint	yes - not found during targeted surveys and no previous records within 20km of project footprint	if recorded in post approval survey will need to be considered for SIA

Chalcites osculans as Chrysococcyx osculans (not assessed at all)	not addressed in BDAR at all	no - not addressed at all	Data deficient species however is widely distributed & BCS consider unlikely to rely on habitat in project footprint – not important habitat. Habitat is closely aligned to speckled warbler and red throat (arid core distribution of the red throat which is unlikely to occur)
Commersonia prostrata	none provided - Table A2-3 just says highly unlikely with no explanation	no as has been assumed present and 4 species credits have been assigned to it in the BDAR	if recorded in post approval survey will need to have SIA carried out
Colobanthus curtisiae	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint	Yes - outside range on distribution map in SPRAT. And in Victoria and NSW, the species occurs in treeless vegetation in the Australian Alps (but may extend for a short distance into adjoining snow gum woodland)	none
Corunastylis vernalis (listed as *Genoplesium vernale*) see below	see genoplesium vernale below	see genoplesium vernale below	none

Cyclodomorphus praealtus	Alpine She-oak Skink has a relatively small home range and is confined to native grassland or heath habitats within a narrow altitudinal range. Based on consultation with NSW DCCEEW, the species is unlikely to occur west of Maragle at elevations less than 1200 m elevation. Given this, the amended project footprint is considered outside of the known range of the species	yes - outside known range	if recorded in post approval survey will need to have SIA carried out
Cynanchum elegans	-There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - no records occur	none
Dicanthium setosum	There are no associated PCTs mapped in the project footprint. Additionally, there are only three previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint.	yes - no associated PCTs	none
Diuris_ochroma	targeted surveys in SNO IBRA subregion across all areas of potential habitat and none found. In the BUN IBRA subregion no records within 20km of project footprint	yes - Recorded in south-eastern NSW on the sub-alpine plains of Kosciuszko National Park and the Kybeyan area.	none
Dodonaea procumbens	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - no records occur	none
Epacris gnidioides	There are no associated PCTs mapped in the amended project footprint. Additionally, the species has only been recorded in the Northern Budawang Range, which is approximately 90 km south of the amended project footprint	Yes - no suitable habitat occurs in the project footprint	none

Eucalyptus alligatrix subsp. Alligatrix	–Detected in 1992 within the Inland Slopes IBRA subregion north of Kandos Quarries, approximately 170 km north of the amended project footprint. Based on consultation with NSW DCCEEW, the species is considered a vagrant within the central and southern portions of the Inland Slopes IBRA subregion that intersect the amended project footprint	yes - considered vagrant in the portion of INL IBRA subregion that the project will occur in	none
Eucalyptus aggregata	Known to occur in close proximity to the alignment in Crookwell and inland slopes and has not been surveyed across all areas of predicted habitat.	No-Was not addressed	if recorded in post approval survey will need to have SIA carried out as could be an important population
Eucalyptus forresterae	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - no records occur	none
Eucalyptus glaucina	no associated PCTs in project footprint, and no records occur within 20km of project footprint	yes - no records and no associated PCTs	none
Eucalyptus macarthurii	Was not identified during targeted surveys and the species has not been incidentally identified during any other flora surveys for the amended project. There are 18 previous records in the IBRA subregion, 10 of which occur within 20 km of the amended project footprint. Given this species is conspicuous, it is likely to have been recorded either during the threatened flora surveys and/or initial vegetation mapping where canopy species were heavily relied on to confirm PCT ID. Given the moderate survey effort and the conspicuous nature of the species, the likelihood of occurrence is low.	Not sure - they have done targeted surveys and didn't find any, but there are 10 records within 20km of amended project footprint - they have said that because it is conspicuous they would have seen it.	if recorded in post approval survey will need to have SIA carried out as could be an important population

Eucalyptus recurva	There are no associated PCTs mapped in the amended project footprint. Additionally, there are 22 previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint.	Yes - The Mongarlowe Mallee is confined to the NSW Southern Tablelands where it is known from only four locations. Three of these occur near Mongarlowe (with at least a two km separation between the sites) and the third is about 30 km away near Windellama. Three of these sites support only single plants, whilst the other has three individuals	none
Eucalyptus robertsonii subsp hemisphaerica	The species was not identified during targeted surveys and the species has not been incidentally identified during any other flora surveys for the amended project. There is one previous record in the CRO IBRA subregion, this record does not occur within 20 km of the amended project footprint, it is predicted to occur in the INL IBRA subregion. The survey effort is considered sufficient to consider this species likelihood of occurrence as low within this subregion of the amended project footprint	yes - Known only from the central tablelands of NSW, at small disjunct localities from north of Orange to Burraga.	if recorded in post approval survey will need to have SIA carried out as could comprise an important population
Euphrasia arguta	no known records within 195km of the project footprint, species considered vagrant	Yes - no known records near to project footprint	none

Falco hypoleucos	no records within 20km of project, some in IBRA subregion, likely to be transient visitor, project footprint contains very common habitat that species would not rely on for ongoing local existence	Yes - The species occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (Marchant and Higgins 1993). The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread, although it is essentially confined to the arid and semi-arid zones at all times	none
Genoplesium baueri	no known records within 20km or in any of the IBRA subregions	Yes - not recorded in the IBRA subregions impacted by the project footprint	none
Genoplesium vernale	no associated PCTs occur within the project footprint, but there are 3 records within 5km of the project footprint	Yes - no associated PCTs	none
Glycine_latrobeana	Targeted surveys completed across all potential habitat with amended project footprint. Species was not recorded. Excluded through survey.	yes - the known NSW population is in subalpine grassland at about 1300m ASL	none
Grevillea iaspicula	not identified during targeted surveys, species distribution restricted to Wee Jasper - Burrinjuck. No records occur within 20km of project footprint	Yes - species is restricted to area not impacted by project footprint	if recorded in post approval survey will need to have SIA carried out as potential for important population

Grevillea raybrownii	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	Yes - species is not known to occur in area impacted by project footprint	none
Grevillea wilkinsonii	17 records within 20km of project footprint, not identified during targeted surveys, and it is highly restricted to Goobarragandra River which does not intersect with project	Yes - The Tumut Grevillea has a highly restricted distribution in the NSW South-west Slopes region. Its main occurrence is along a 6 km stretch of the Goobarragandra River approximately 20 km east of Tumut where about 1,000 plants are known. The other occurrence is a small population that straddles the boundary of two private properties at Gundagai where only eight mature plants survive.	if recorded in post approval survey will need to have SIA carried out as could comprise an important population
Hakea_dohertyi	Targeted surveys were completed across all areas of mapped habitat. The species was not recorded. Species excluded through survey.	yes - outside known range	none
Haliaeetus leucogaster	not specified	no - it has been addressed through an expert report but no SIA	if recorded in post approval survey will need to be considered for SIA
Haloragis exalata subsp exalata	Haloragis exalata subsp. exalata in the Snowy Mountains IBRA subregion has recently been identified as a new taxon and renamed to Haloragis milesei (not listed as threatened under the BC or EPBC Act).	Yes - it appears to be broadly out of its area of occurrence of the Central Coast, South Coast and North Western Slopes	none

Heleioporus australiacus	species is considered to be coastal and reliant on sydney sandstone geologies	yes - the TBDC indicates that there are 2 distinct populations that occur - a northern population largely confined to the sandstone geology of the Sydney Basin and extending as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.	none
Helichrysum calvertianum	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint	Yes - only known in the Wingecarribee Shire so outside known range	none
Hibbertia acaulothrix	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	Yes - the Species of National Environmental Significance dataset map shows that its range is unlikely to extend to the project footprint	none
Hoplocephalus bungaroides	no sandstone ridgetop habitat occurs within project footprint	yes - no known habitat	none
Hypseleotris gymnocephala	has a highly restricted range and the 2 known populations are outside the project footprint	yes - not known outside of restricted range	none
Indigofera efoliata	There are no associated PCTs mapped in the amended project footprint. Additionally, there are only three previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint. The amended project footprint is approximately 200 km south of any known populations of the species.	yes - outside of known range	none

Isoodon obesulus obesulus	Based on multiple lines of evidence (survey effort, restricted distribution, and no nearby records), the likelihood of occurrence for Southern Brown Bandicoot (eastern) is considered low.	Yes - ruled out by survey and no records within 10km of project footprint	none
Leipoa ocellata	predominantly inhabit mallee communities, multiple records within broader IBRA subregion, suitable habitat in subject land	Yes	none
Lepidium aschersonii	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - Not widespread, occurring in the marginal central-western slopes and north-western plains regions of NSW (and potentially the south western plains)	none
Lepidium_hyssopifolium	No records within 20km of the project footprint and was not identified during targeted surveys	Yes - excluded by targeted survey and not known in the area of the project footprint	if recorded in post approval survey will need to be considered for SIA
Lepidium monoplocoides	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - outside of known range	none
Leptospermum thompsonii	not identified during targeted surveys, 17 records in the IBRA subregion, but none within 20km of project footprint. Survey effort considered sufficient to consider likelihood of occurrence to be low	Yes - outside known range - The species is mostly found in Monga National Park near Braidwood. Two populations have also been recorded in Morton National Park to the north (near The Vines).	none
Liopholis guthega	the project footprint is outside the known range of the skink	Yes - outside the known range of the skink	none

Liopholis montana	There are no records of the species in the wider locality (within 20 km), but records may occur within the IBRA subregion. It is unlikely that the species inhabits the amended project footprint. If present, the species would likely be a transient visitor. The amended project footprint may contain very common habitat for this species which the species would not rely upon for its on-going local existence	not sure - right on edge of range extent - The mountain skink occurs in montane and subalpine areas stretching from the Bimberi Range in the Australian Capital Territory (ACT), through the Snowy Mountains in New South Wales (NSW), into Victoria (Green & Osborne 2012).	Accountable officer (NPWS) has advised that there is potential for them to occur in the footprint. If detected by post approval surveys it will need to be considered for SIA
Litoria aurea	superficially suitable habitat but no records for 2 IBRA sub regions, one subregion no recent records, or within 5km of project and not associated with known populations	Yes - TBDC says only one known population on the NSW Southern Tablelands	none
Litoria littlejohni	species confined to the sydney basin - local records likely to be Watsons Tree Frog	Yes - majority of records are from within the sydney basin bioregion	none
Litoria raniformis	No associated PCTs in amended project footprint	Yes - unlikely to occur - only known to exist in isolated populations in the Coleambally Irrigation Area, the Lowbidgee floodplain and around Lake Victoria. A large population is also present in the Murray Irrigation Area. The species is also found in Victoria, Tasmania and South Australia, where it has also become endangered	none

Litoria spenceri	No suitable habitat is present, and known populations are isolated and are not near the amended project footprint	yes agree	none
Litoria verreauxii alpina	No suitable habitat is present, and known populations are isolated and are not near the amended project footprint	yes - as The Alpine Tree Frog occurs in the south-eastern NSW and Victorian high country (alpine and sub-alpine zones) generally above 1100 m asl. Most locations are within National Park and some are close to alpine resorts.	none
Lophoictinia leadbeateri leadbeateri	limited suitable habitat in project, 8 records within IBRA subregion, but none within 20km of project footprint	yes - on edge of distribution area based on species of national environmental significance dataset	none
Maccullochella peelii	the project footprint is not located in an area that is considered part of an important population , so it has not been assessed. Despite it having the potential to occur in the amended project footprint	yes - listed as vulnerable - so as no important populations would be impacted by the amended project, although it is noted that the avoidance and mitigation measures presented within the BDAR would apply to any individuals not part of the important population that may occur within the amended project footprint. Murrumbidgee river	none
Merops ornatus (has not been assessed at all)	not addressed in BDAR	not addressed in BDAR	not a species of concern /highly mobile species with low likelihood of occurrence & /or

			reliance on habitat in project footprint
Mixophyes_balbus	Suitable habitat in Bungonia IBRA subregion, but excluded as closest records are near Ruby Creek in the Blue Mountains (40km from project)	not sure - have undergone considerable range contraction in NSW, particularly in south-east NSW. It is the only Mixophyes species that occurs in south-east NSW and in recent surveys it has only been recorded at three locations south of Sydney. The Dorrigo region, in north-east NSW, appears to be a stronghold for this species	surveys should be undertaken post approval to rule it out from area in Bungonia. If detected it will need to be considered for SIA as it could comprise an important population
Motacilla flava	no records within 20km or the IBRA subregion, if present, the species would likely be a transient visitor. The amended project footprint may contain very common habitat for this species which the species would not rely on for its on-going local existence	yes - as it favours wet meadows, marshland, grassy and muddy lakeshores - unlikely to be present	none
Neophema chrysostoma	There are no records of the species in the wider locality (within 20 km), but records may occur within the IBRA subregion. It is unlikely that the species inhabits the amended project footprint. If present, the species would likely be a transient visitor. The amended project footprint may contain very common habitat for this species which the species would not rely on for its on-going local existence.	yes as main populations occur in tasmania and Victoria	none

Nyctophilus corbeni	Suitable foraging and roosting habitat is present in the subject land. There are multiple records within the broader IBRA subregion, none of which occur within 20 km of the amended project footprint	not sure - as overall, the distribution of the south eastern form coincides approximately with the Murray Darling Basin with the Pilliga Scrub region being the distinct stronghold for this species. But it is distributed throughout inland NSW except in the north-west area which is dominated by treeless plains. It can be found in the Hunter Valley, extending from central NSW to the eastern Hunter Valley coast	if recorded in post approval survey will need to be considered for SIA
Pandion haliaetus	There are no records of the species in the wider locality (within 20 km) or IBRA subregion, however there is potential habitat in the amended project footprint. It is unlikely that the species inhabits the amended project footprint. If present, the species would likely be a transient visitor. The amended project footprint may contain very common habitat for this species which the species would not rely on for its on-going local existence.	yes - as the species favours coastal areas, especially the mouths of large rivers, lagoons and lakes	none
Paralucia spinifera	No records in the IBRA subregion and no impacts to potential habitat.	Yes - no records in IBRA subregion	none

Pedionomus torquatus	There are no records of the species in the wider locality (within 20 km), or the IBRA subregion. It is unlikely that the species inhabits the amended project footprint. If present, the species would likely be a transient visitor. The amended project footprint may contain very common habitat for this species which the species would not rely on for its on-going local existence.	Yes - no records in IBRA subregion	none
Persoonia marginata	not identified during targeted surveys, and no previous records in INL IBRA subregion, and given conspicuous nature of species its unlikely to occur in the project footprint	Yes - outside of known range - The Clandulla Geebung occurs between Kandos and Clarence in the western Blue Mountains. Populations are largely disjunct and include Clandulla, Ben Bullen, and Sunny Corner State Forests; isolated populations have also been recorded from Turon and Gardens of Stone National Parks	if recorded in post approval survey will need to be considered for SIA
Persoonia mollis subsp revoluta	Some limited suitable habitat is in the project area. There are 2 BioNet records for the IBRA subregion, including 1 record within 20 km of the amended project footprint.	Yes - outside of known range - Soft Geebung is endemic to New South Wales (NSW) where it is known only from between Mittagong, Canyonleigh and Bindook Highlands, southwest of	if recorded in post approval survey will need to be considered for SIA

		Sydney, usually between 600 and 800m ASL.	
Persoonia oxycoccoides	There are no records of the species in the wider locality (within 20 km), but records occur within the IBRA subregion. It is unlikely that the species inhabits the amended project footprint	Yes - outside of known range - Persoonia oxycoccoides is endemic to New South Wales where it is currently known from the Wingecarribee Shire in the south-eastern portion of the Central Tablelands, with the easternmost records in the municipality of Kiama, and a south-western outlier at Tallong in Goulburn-Mulwaree Shire in the Southern Tablelands. The historical northern limit of distribution is Colo Vale; the eastern limit is Budderoo National Park and environs (between Jamberoo and Robertson); and the southern and western limits are Tallong. It is known from Budderoo and Morton National Parks, Upper Nepean State Conservation Area and	none

		Stingray Swamp Flora Reserve.	
Petrogale penicillata	Patchily distributed along the Great Dividing Range, predominantly on the eastern scarp with known outlying populations at Warrumbungle Ranges and Mt Kaputar. No known populations within proximity to the amended project footprint.	Yes - outside of known range as shown in Species of National Environmental Significance dataset distribution map	none
Phyllota humifusa	The species was not identified during targeted surveys and the species has not been incidentally identified during any other flora surveys for the amended project. Whilst this species is predicted to occur in Bungonia, there are no previous records in the subregion	yes - outside known range- Dwarf Phyllota is known from the southern Blue Mountains (Bimlow Tableland), the Joadja area west of Mittagong and Penrose area near Paddys River.	Assumed present - if recorded in post approval survey will need to be considered for SIA
Pomaderris brunnea	There are no associated PCTs mapped in the amended project footprint. Additionally, there are only four previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint. The species Brown Pomaderris is associated with, have either not been recorded, or recorded in low abundance in the amended project footprint.	Yes - outside known range - Brown Pomaderris is found in a very limited area around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands and in far eastern Gippsland in Victoria.	none

Pomaderris_delicata	Was not identified during targeted surveys and the species has not been incidentally identified during any other flora surveys for the amended project. There are 121 previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint.	Yes - outside known range - Delicate Pomaderris is known from only two sites; between Goulburn and Bungonia and south of Windellama (Cullula).	if recorded in post approval survey will need to be considered for SIA
Pomaderris pallida	no records within 20km of project footprint in BUN and MUR IBRA subregion and was not identified during targeted surveys, survey effort considered sufficient	Yes - outside known range - Pale Pomaderris has been recorded from near Kydra Trig (north-west of Nimmitabel), Tinderry Nature Reserve, the Queanbeyan River (near Queanbeyan), the Shoalhaven River (between Bungonia and Warri), the Murrumbidgee River west of the ACT and the Byadbo area in Kosciuszko National Park.	if recorded in post approval survey will need to be considered for SIA
Potorous tridactylus	–Vagrant In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 millimetres. Outside of known species range (vagrant).	yes - In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm.	none
Prasophyllum petilum	not identified during targeted surveys, there are records within INL IBRA subregion, but not within 20km of the project site.	Yes - not near known populations - Natural populations are known from a total of five sites in NSW. These are near Boorowa, Queanbeyan area, Ilford. Delegate and a newly	if recorded in post approval survey will need to be considered for SIA

		recognised population 10 km west of Muswellbrook.	
Prasophyllum retroflexum	The species is restricted to treeless vegetation above 1000 m in altitude in Kosciuszko National Park. There are 12 previous records in the IBRA subregion, none of which occur within 20 km of the amended project footprint.	Yes - outside of known range	none
Prasophyllum sp wybong	This species is synonymous with Prasophyllum petilum and is currently undergoing a taxonomic review. Whilst this species is predicted to occur within the subregion, there are no previous records in the Inland Slopes IBRA subregion. Following consultation with NSW DCCEEW, this species has been excluded from the assessment.	Yes - it was not in the PMST results	none
Pseudemoia cryodroma	no records in the IBRA subregion, but potential habitat. Species likely to be transient visitor	Not sure as if they impact alpine bogs TEC they maybe impacted too	alpine bog skink - if the project will impact alpine bog TEC then this species should be surveyed for to rule it out. I think it should have an SIA carried out.
Pseudomys_novaehollandiae	suitable habitat but no records within 20km of project footprint	Yes as while there are multiple records in the IBRA subregion INL - the distribution map in the SPRAT profile shows it being further east than the project footprint. in addition, the New Holland Mouse is	none

		known from: Royal National Park (NP) and the Kangaroo Valley (Posamentier & Recher 1974); Kuringai Chase NP (Prosser et al. 2007); and Port Stephens to Evans Head near the Queensland border	
Pseudophryne_corroboree	Unlikely - ruled out by survey by Aurecon Jan 2024 in area of potential habitat	yes - limited range, and ruled out by survey	none
Pseudophryne pengilleyi	excluded as a vagrant based on DCCEEW consultation and project footprint is north of Wee Jasper State Forest	yes - outside known range as shown on Species of National Environmental Significance dataset Distribution map	none
Pterodroma cervicalis (has not been assessed at all)	not addressed in BDAR at all	not addressed in BDAR at all	needs to be addressed as to why it would not be likely to occur or be impacted by project footprint
Rhizanthella slateri	no records in the IBRA subregion, but is predicted to occur.	yes - the project footprint is outside known locations	none
Rostratula australis	limited records within IBRA subregions and no records within 20km of project footprint	yes - unlikely to inhabitat project footprint as it prefers fringes of swamps, dams and nearby marshy areas	if recorded in post approval survey will need to have SIA carried out
Rutidosis_leiolepis	Targeted surveys were completed across all areas of potential habitat in the amended project footprint. The species was not identified during targeted surveys. Species excluded through survey	yes - The Monaro Golden Daisy is found in scattered populations on the Monaro, and in low subalpine plains of Kosciuszko National Park (eg. Long Plain and Happy Jacks Plain).	none

Rutidosis leptorhynchoides	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	yes - project footprint out of known range - the Local populations at Goulburn, the Canberra - Queanbeyan area, Bredbo, north of Captains Flat and Michelago	none
Senecio macrocarpus	There are no associated PCTs mapped in the amended project footprint. Additionally, there are only four records within the IBRA subregion, none of which occur within 20 km of the amended project footprint	Yes - no associated PCTs	none
Swainsona recta	species not identified during targeted surveys in INL and MUR IBRA subregions. Some records within 20km of project site in INL IBRA sub region, but none within 5km. Survey effort considered sufficient to consider this species has a low likelihood of occurrence	Yes - likely to be out of range - Populations still exist in the Queanbeyan and Wellington-Mudgee areas. Over 80% of the southern population grows on a railway easement.	if recorded in post approval survey will need to have SIA carried out
Swainsona murrayana	There are no associated PCTs mapped in the amended project footprint. Additionally, there are no BioNet records in the IBRA subregion.	Yes - out of known range - Found throughout NSW, it has been recorded in the Jerilderie and Deniliquin areas of the southern riverine plain, the Hay plain as far north as Willandra National Park, near Broken Hill and in various localities between Dubbo and Moree.	none

Thelymitra kangaloonica	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint.	Yes - outside known range - Kangaloon Sun Orchid is only known to occur on the southern tablelands of NSW in the Moss Vale - Kangaloon - Fitzroy Falls area at 550-700 m above sea level. It is known to occur at three swamps that are above the Kangaloon Aquifer	none
Viola improcera	There are no records of the species in the wider locality (within 20 km), or in any of the IBRA subregions intersected by the development. It is unlikely that the species inhabits the amended project footprint	Yes - as in New South Wales (NSW), the species is known from only a single subpopulation, recently discovered on Big Badja Hill on the western edge of Deua NP	none
Zieria obcordata	Found in Kosciuszko National Park and the eastern escarpment south of Badja, NSW, more than 110 km from the amended project footprint. Occurs only in rocky areas or within 100 m of granite boulders or rocky outcrops. Following consultation with NSW DCCEEW, the species is considered unlikely to occur within the amended project footprint.	Yes - check consultation has occurred	none
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Given Eucalyptus macrocarpa was not recorded in any plots in the amended project footprint, none of the PCTs recorded in the amended project footprint align with this TEC. Chapter 11 of BDAR	Yes	none

Natural Temperate Grassland of the South Eastern Highlands	They have given the reason that the only grassland PCT 1224 within the project footprint isnt associated with NTG	Yes - as the only grassland PCT found within the project footprint is PCT 1224 which is not listed in the Threatened Biodiversity Data Collection (TBDC) as being associated with NTG.	none
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	The amended project footprint does not occur in the Sydney Basin Bioregion, nor in the Kanangra and Oberon IBRA sub-regions of the South Eastern Highlands bioregion. (which is where this TEC is found) Therefore, none of the PCTs recorded in the amended project footprint align with this TEC.	yes	none
Weeping Myall Woodlands	Given Acacia pendula was not recorded in any plots in the amended project footprint, and none of the PCTs recorded in the amended project footprint align with this TEC, it is unlikely to occur in the project impact area.	yes	none

Table J-4 | BCS Assessment of adequacy for exclusion of Significant Impact Assessment for MNES TECs

Threatened ecological communities (TEC) in PMST list	Not likely to occur	Assessed in BDAR and if not, justification	Significant Impact
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	No-Given Eucalyptus macrocarpa was not recorded in any plots in the amended project footprint, none of the PCTs recorded in the amended project footprint align with this TEC. Chapter 11 of BDAR	No as TEC not likely to occur and not assessed in BDAR
Natural Temperate Grassland of the South Eastern Highlands	Natural Temperate Grassland of the South Eastern Highlands	the only grassland PCT found within the project footprint is PCT 1224 which is not listed in the Threatened Biodiversity Data Collection (TBDC) as being associated with NTG.	No as TEC not likely to occur and not assessed in BDAR
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion	The amended project footprint does not occur in the Sydney Basin Bioregion, nor in the Kanangra and Oberon IBRA sub-regions of the South Eastern Highlands bioregion. (which is where this TEC is found) Therefore, none of the PCTs recorded in the amended project footprint align with this TEC.	No as TEC not likely to occur and not assessed in BDAR
Weeping Myall Woodlands	Weeping Myall Woodlands	Given Acacia pendula was not recorded in any plots in the amended project footprint, and none of the PCTs recorded in the amended project footprint align with this TEC, it is unlikely to occur in the project impact area.	No as TEC not likely to occur and not assessed in BDAR
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland		White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland has been assessed in the BDAR	Yes as known to occur
Additional TECs below that have been added later - they have said that the PMST results had 2 more, but the one that they have attached in the BDAR only lists 6. they have not assessed these further in the BDAR and ruled them out.			

Southern Highland Shale Forest and Woodland of the Sydney Basin Bioregion	Southern Highland Shale Forest and Woodland of the Sydney Basin Bioregion	The amended project footprint is not within the known range of this TEC, therefore Southern Highlands Shale Forest and Woodland of the Sydney Basin Bioregion ecological community does not occur in the amended project footprint. This would also explain why its not in the PMST list in the BDAR. Not sure how they came up with this TEC.	No as TEC not likely to occur and not assessed in BDAR
Temperate Highland Peat Swamps on Sandstone	Temperate Highland Peat Swamps on Sandstone	The Temperate Highland Peat Swamps on Sandstone is an ecological community of temporary or permanent swamps. The ecological community is confined to New South Wales, and comprises particular swamps in the Blue Mountains, Lithgow, Southern Highlands and Bombala regions. The components of the Temperate Highland Peat Swamps on Sandstone ecological community are (TSSC, 2005):Blue Mountains Swamps, Butler's Swamp, Jackson's Bog (Mila Swamp), Newnes Plateau Swamps, Paddy's River Swamps - Hanging Rock, Long, Mundego and Stingray Swamps, Wildes Meadow Swamp, Wingecarribee Swamp. None of the above listed swamps occur in the amended project footprint, therefore Temperate Highland Peat Swamps on Sandstone does not occur in the amended project footprint.	No as TEC not likely to occur and not assessed in BDAR

Table J-5 | Assessment of EPBC listed species that have been assessed for significance and found to be unlikely to be significantly impacted by the HumeLink Project

EPBC Listed Entity	Common Name	SIA Outcome in Accordance with SIS Guidelines	Reason for Unlikely Significant Impact	BCS Recommendations & Comments
Alpine sphagnum bogs and associated fens		***Reduce the extent of an ecological community:*** Considered unlikely. ***Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines:*** Considered unlikely. ***Adversely affect habitat critical to the survival of an ecological community:*** Considered unlikely. ***Modify or destroy abiotic (non-living) factors (such as water, nutrients, or soil) necessary for an ecological community's survival, including reduction of groundwater levels, or substantial alteration of***	The amended project proposes to directly impact 0.007% of extant Alpine Sphagnum Bogs on a national scale. As relatively small areas (0.58ha) of this TEC could be subject to clearing, impacts associated with habitat fragmentation are unlikely. Given the small scale of impact (0.01 ha of TCZ) and the recorded patches of the TEC in high condition within the existing transmission easement, the amended project is considered unlikely to have the potential to significantly impact on the Alpine Sphagnum Bogs TEC. Further, it is likely that this TEC will be avoided during finalisation of detailed design. Habitat critical to the survival of Alpine Sphagnum Bogs has not been established (TSSC, 2009b; DEWHA, 2008a). However, due to the restricted and highly fragmented	MNES is reassessed following survey of currently unsurveyed areas and the detailing of avoidance and mitigation measures in the Biodiversity Management Plans. Transgrid need to minimise impacts to: Alpine Sphagnum Bogs and Associated Fens The proponent will need to put in place effective avoidance measures to avoid impacts on critically endangered flora and CEEC Alpine Bog at McPhersons Plain. The BDAR proposes a 30m buffer to McPhersons Plain which BCS does not consider to be adequate to protect the Alpine Bog and associated threatened orchid habitats, particularly where there will be ground disturbance. The BDAR does not provide details of other protection measures that will ensure avoidance or continued protection of SAII or MNES species. BCS has discussed this matter with Transgrid and have agreed on an approach on minimising risk. A suggested condition of approval to formalise this agreement follows:

		surface water drainage patterns: Considered unlikely. *Cause a substantial change in the species composition of an occurrence of an ecological community, including causing a decline or loss of functionally important species, for example through regular burning or flora or fauna harvesting:* Considered unlikely. *Will the action cause a substantial reduction in the quality or integrity of an occurrence of an ecological community, including, but not limited to:* *1. assisting invasive species, that are harmful to the listed ecological community, to become established* *2. causing regular mobilisation of fertilisers, herbicides or other*	nature of this ecological community across its range, all known locations of this ecological community, whether in high or low condition, are considered to be of high conservation value (DoE, 2015b).	Additional surveys will be carried out, the MNES will be reassessed, and the details of avoidance and mitigation measures will be provided. For Transgrid to avoid a significant impact on these entities, it will be necessary to avoid MNES impacts as much as possible and implement effective mitigation measures. This information will be provided in the BMP and the SBAS. Mitigation Measures: - Work within proximity of aquatic ecosystems would require stringent erosion and sediment controls to avoid increased run-off and pollutant loads. - Subsurface work in or near TECs would be minimal - Controlled blasting would be limited to specific locations and may not occur if it is not determined to be the preferred construction method in an area. Where controlled blasting is required, a suitably qualified blasting specialist will conduct a detailed blasting assessment and trial blasts where necessary to delineate site specific parameters and limits and ensure that impacts are highly localised. These findings will be used to inform site-specific Erosion and Sediment Control Plans (ESCPs) and

		chemicals or pollutants into the ecological community which kills or inhibit the growth of species in the ecological community: Considered unlikely. *Interfere with the recovery of an ecological community:* Considered unlikely.		Soil and Water Management Plans (SWMPs) (Table 14-1, B26). - Mitigation measures including the preparation and implementation of the SWMP, ESCP and WQMP are recommended to ensure any impacts associated with the proposed work are effectively mitigated (Table 14-1, B26). Micro-siting of infrastructure requiring sub surface and controlled blasting work, such as transmission line structures, within the amended project footprint would be undertaken as part of the detailed design stage of the amended project, to minimise prescribed impacts where possible (i.e. minimising impact to GDEs and supporting aquifers) (Table 14-1, B1). - Bunding at construction compounds, regular vehicle maintenance and hydrocarbon spill kits available. - Hygiene protocols to prevent weed introduction and spread

Bidyanus bidyanus	Silver perch	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:*** Considered unlikely. ***Fragment an existing important population into two or more populations:*** Considered unlikely. ***Adversely affect habitat critical to the survival of a species:*** Considered unlikely. ***Disrupt the breeding cycle of a population:*** Considered unlikely. ***Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:***	The construction process for the transmission line structures avoids direct impacts to streams and none of the waterways that have been mapped as within the species indicative distribution (DPI, 2023a) would be crossed by any of the potential waterway crossings identified in the updated indicative disturbance area. Any indirect impacts that may occur are anticipated to be localised and temporary in nature. No potential waterway crossings intersect with waterways identified as within the indicative distribution of the species (DPI, 2023a) and therefore the amended project will not result in any barriers to fish passage to the species. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. Any possible indirect impacts to potential habitats would be anticipated to be localised and temporary and these would be considered unlikely to occur based	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines. - Consultation and pre-construction survey to provide site specific mitigation recommendations at sites of new or upgraded waterway crossings in CLASS 1 KFH. - To prevent Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis* washdown procedures will be required.

		Considered unlikely. ***Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:*** Considered unlikely. ***Introduce disease that may cause the species to decline:*** Considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	upon the distance of construction from the Murrumbidgee River (approximately 40 metres from the bank), as well as the mitigation measures proposed.	
Chalinolobus dwyeri	Large-eared pied bat	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of an important population:*** Considered unlikely.	Direct impacts would occur to 2.42ha of potential roosting and foraging habitat (PCTs 1330 & 1093). Suitable rocky habitat for Large-eared Pied Bat would be avoided. Large-eared Pied Bats may also be negatively affected by increased habitat fragmentation which may affect bat species assemblages, and	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Connectivity strategy - Pre-construction surveys with adaptive safeguards to any individuals detected - Pest species monitoring program - Hygiene protocols

		Fragment an existing important population into two or more populations: Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically*	interactions with transmission lines. However, the transmission lines are highly permeable, and the Connectivity Strategy would be implemented to mitigate (Table 14-1, B10) impacts of habitat fragmentation on this species. No individuals or roosting sites were recorded within the amended project footprint during targeted surveys. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for this species. Impacts to sandstone escarpments will be avoided and no maternity roosts were found. Where possible, impacts to potential foraging habitat will be avoided and mitigated. Within the amended project footprint, there are no known roosting or breeding sites and impacts on potential roosting or breeding sites would be avoided. The development would not lead to any significant barriers that would limit the species use of potential foraging habitat within or outside of the amended project footprint. For	

		endangered species' habitat: Once mitigation measures are implemented, it is considered unlikely. **Introduce disease that may cause the species to decline:** Considered unlikely. *Interfere substantially with the recovery of the species:* Considered unlikely.	areas where potential cliff line habitats have been mapped, but were inaccessible during the field surveys, pre-construction surveys have been recommended to determine species absence/presence. If Large-eared Pied Bat individuals' area identified during these surveys, adaptive safeguards to mitigate impacts (e.g., avoidance/delineation of habitat) to roosting individuals would be implemented, where necessary and feasible. A Connectivity Strategy would also be implemented to mitigate any impacts of habitat fragmentation on this species. Development of a pest species monitoring program may be required if there is a substantial occurrence of large intact remnants and threatened species habitat within or adjacent to the disturbance areas. Whilst there is a risk that construction machinery and workers may disperse soil and plant pathogens that can affect forage species, this risk will be mitigated through hygiene protocols throughout the development and	

			management of the amended project. The amended project does not interfere with any recovery plan actions for the Large-eared Pied Bat detailed in the National Recovery Plan for the species (DERM, 2011). The avoidance and mitigation measures described above will be implemented where practicable to reduce the potential impact of habitat fragmentation on the species because of the amended project.	
Crinia sloanei	Sloanes froglet	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of an important population:*** Considered unlikely. ***Fragment an existing important population into two or more populations:*** Considered unlikely.	Sloane's Froglet has not been recorded in the amended project footprint but is considered likely to occur based on indicative mapping and habitat assessments. The area of potential habitat is located throughout the amended project footprint as various waterbodies. Potential habitat to be cleared includes 0.66 ha of PCTs associated with the Sloane's Froglet (PCT 5) (with an additional 2.13 ha of impacts on non-native habitats for Sloane's Froglet (prescribed impacts)). Therefore, the total impact to Sloane's Froglet habitat, including prescribed impacts, is 2.80 ha.	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - General mitigation measures have been proposed to further mitigate the risk of indirect impacts within the BMP. - Limit hydrological and physical change in the waterbodies associated with construction work that could temporarily remove necessary vegetation for egg laying. - Mitigation measures to control the spread of weeds and pest - animals would be detailed in the Biodiversity Management Plan and

		Adversely affect habitat critical to the survival of a species: Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:* Once mitigation measures are implemented, it is considered unlikely.	The construction process for the transmission line structures would avoid direct impacts to major waterways and none of the waterways that have been mapped as within the species indicative distribution (Commonwealth DCCEEW, 2022d) are crossed by any indicative access tracks with indicative waterway crossings. As such, this assessment of significance focusses on the potential for residual indirect impacts to potential habitats following the implementation of avoidance and mitigation measures, to the species (i.e., the removal of native riparian vegetation, erosion, and sedimentation risk) during construction. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for these species. The key impacts that could occur would be the potential for hydrological and physical change in the waterbodies associated with construction work that could temporarily remove necessary	SWMP within the CEMP (Table 14-1, B3, B26). - Mitigation measures to control the spread of pathogens would be detailed in the Biodiversity Management Plan. - The risk of pathogen spread is to be managed using wash down procedures for in-stream plant between waterway crossing locations.

		Introduce disease that may cause the species to decline: Once mitigation measures are implemented, it is considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	vegetation for egg laying. This is considered unlikely to occur given mitigation measures proposed to mitigate these impacts. The amended project is considered unlikely to have a significant impact on Sloane's Froglet, Booroolong Frog, or Yellow-spotted Tree Frog due to the relatively small area of potential terrestrial habitat to be impacted, the highly localised (and temporal nature) of impact adjacent to nominated waterway crossings, and implementation of proposed measures for mitigation of indirect impacts to water quality.	
Euastacus rieki	Riek's Crayfish	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:*** Considered unlikely. ***Fragment an existing important population into two or more populations:*** Considered unlikely.	The construction process for the transmission line structures avoids direct impacts to streams. Out of the small to moderate sized streams (stream order three or below) identified within the broadscale mapping of the species predicted distribution (Commonwealth DCCEEW, 2023a), 86 would be intersected by the indicative access track footprint, with 21 of these also being included in KFH mapping. The majority (71) of these waterway crossings coincide with existing	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Several design considerations have been incorporated into the waterway crossing methodology and mitigation approach, aligning with relevant biodiversity guidelines, to achieve crossings that are sensitive to aquatic environments. - Several avoidance and mitigation measures have already been

		Adversely affect habitat critical to the survival of a species: Considered unlikely. *Disrupt the breeding cycle of a population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:* Considered unlikely.	crossing in some form that are observable from aerial imagery. A total of 17 indicative waterway crossing locations have been identified for new tracks or upgraded tracks in the indicative access track mapping. Generally, these access tracks occur within or adjacent to the cleared existing easement or existing access trails, reflecting a managed and modified landscape at the site of the majority of the proposed waterway crossings. Although a minority would require the establishment of new tracks and waterway crossings. While this would result in impacts through vegetation clearing and direct modification to establish waterway crossings, this would occur within the context of similar modifications through the locality and would be small scale and localized in the context of surrounding available habitat. There is potential for disturbance and residual indirect impacts to potential habitats following the implementation of avoidance and mitigation measures, to the species (i.e. the removal of native riparian	incorporated into the amended project to mitigate the potential for impacts. - Further detailed recommendations as to specific mitigation measures to prevent indirect impacts to potential habitats for the species have been included in the BDAR. - Targeted survey and micro-siting inspections are included in the BMP that have been incorporated into the suite of mitigation measures for new access tracks in areas of predicted habitat. - Procedures for consultation with DPI Fisheries and pre-construction survey (where required) for threatened aquatic species (and Commonwealth DCCEEW as required), and pre-construction aquatic biodiversity surveys at CLASS 1 waterway crossing locations (new and upgraded tracks) potentially supporting threatened aquatic species and identification of any management measures to be implemented (e.g. timing construction outside of breeding seasons, waterway crossing type, micro siting). - The risk of translocating water-borne pathogens generally will be managed using wash down procedures.

		Introduce disease that may cause the species to decline: Considered unlikely. *Interfere with the recovery of the species:* Considered unlikely.	vegetation, erosion and sedimentation risk) during access track and waterway crossing construction. Any indirect instream impacts that may occur are anticipated to be localised and temporary in nature e.g. disturbance to instream habitats during the construction of waterway crossings for access tracks or trimming of riparian trees to facilitate transmission line installation. Several design considerations have been incorporated into the waterway crossing methodology and mitigation approach, aligning with relevant biodiversity guidelines, to achieve crossings that are sensitive to aquatic environments. The majority of waterway crossing locations within predicted habitat for the species feature established or informal crossings already. It is anticipated that upgraded waterway crossings would be more sensitive than those currently in place, likely leading to improved ecological outcomes. While new waterway crossings will be required to be established, these would occur	

			within the context of similar impacts that are extant and common throughout the locality. A number of avoidance and mitigation measures have already been incorporated into the amended project to mitigate the potential for impacts. Further detailed recommendations as to specific mitigation measures to prevent indirect impacts to potential habitats for the species have been included in this the BDAR. Recommendations to undertake targeted survey and micro-siting inspections through the BMP (mitigation measure B3 in Table 14-1) have been incorporated into the suite of mitigation measures for new access tracks in areas of predicted habitat. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species or identified in the Conservation Advice for the species. While the amended project would result in modification to potential habitats, the limited scope of the	

			construction and would suggest that the critical habitat is unlikely to significant adverse effects. The amended project is projected to exert small scale and localised impacts on potential habitats for the species, in most cases in habitats that have existing similar modifications. Any direct or indirect impacts on the habitat are anticipated to be localised and small scale. The potential effects on breeding are likely to be minimal i.e. habitat disturbance and modification, particularly considering the Riek's Crayfish's extended breeding period (Commonwealth DCCEEW, 2023a), which affords some resilience to short-term disturbances. Overall, aquatic habitats within the amended project footprint generally are in poor condition. Any Impacts to potential habitats for this species would be localised and small scale. Several mitigation measures have also been proposed to further mitigate the risk of indirect impacts (Chapter 14). This includes procedures for consultation with DPI Fisheries and pre-construction	

			survey (where required) for threatened aquatic species (and Commonwealth DCCEEW as required), and pre-construction aquatic biodiversity surveys at CLASS 1 waterway crossing locations (new and upgraded tracks) potentially supporting threatened aquatic species and identification of any management measures to be implemented (e.g. timing construction outside of breeding seasons, waterway crossing type, micro siting). Threats related to key invasive species, such as *Cherax destructor* and large-hoofed mammals are not expected to be exacerbated because of the construction. *Aphanomyces astaci* (Crayfish Plague) is the key pathogenic threat to Crayfish globally, it is not recorded as being established in Australia. It has been recommended that the risk of translocating water-borne pathogens generally be managed using wash down procedures.	
Eucalyptus aggregata	Black gum	***Lead to a long-term decrease in the size of an***	A small area of potential habitat for the species would be impacted: approximately 0.65 ha in the	BCS recommends a condition of approval for the SBAS to address via survey. BCS and Commonwealth both believed a significant

		important population of a species: Considered unlikely. *Reduce the area of occupancy of an important population:* Considered unlikely. . *Fragment an existing important population into two or more populations:* Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of a population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:*	Crookwell and 0.12 ha in the Inland Slopes IBRA subregions. The species was not recorded during field surveys carried out within potential habitats. The total impact to Black Gum habitat is 0.77 ha. The amended project would result in the removal of 0.77 ha (11% of the total habitat mapped in the amended project footprint) of potential habitat. While the species was not recorded, the removal of 0.77ha of potential habitat that may support an important population, thus the amended project has the potential to lead to species decline. The amended project would directly impact potential habitat for the species through clearing about 11% of potential habitat available within the amended project footprint. The amended project also has the potential to result in indirect impacts to habitats (such as edge effect and weed invasion). No Critical Habitat in NSW defined under Section 207A of the EPBC Act that has been identified or included in the Register of Critical Habitat for the species. However, due to the	impact could be likely if present and not avoidable. Mitigation measures include: - Control the spread of weeds and pest animals to be detailed in the Biodiversity Management Plan (Table 14-1, B3). - The control of pathogens such as *Phytophthora cinnamomi* (Cinnamon Fungus) and *Puccinia psidii* (Myrtle Rust) to which Black Gum are susceptible would be detailed in the Biodiversity Management Plan. It has been recommended that this risk be managed using wash down procedures for instream plant between indicative waterway crossing locations.

		The amended project has the potential to lead to species decline. ***Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:*** Considered unlikely. ***Introduce disease that may cause the species to decline:*** Considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	species association with at least one EPBC-listed TEC, this habitat will have high conservation value that benefits the species (TSSC, 2015b).	
Galaxias rostratus	Flathead galaxis	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:***	The construction process for the transmission line structures avoids direct impacts to streams. Two streams (Tarcutta Creek and O'Brien's Creek) that are intersected by indicative waterway crossings within the updated indicative disturbance area have been identified	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended,

		Considered unlikely. . ***Fragment an existing important population into two or more populations:*** Considered unlikely. ***Adversely affect habitat critical to the survival of a species:*** Considered unlikely. ***Disrupt the breeding cycle of a population:*** Considered unlikely. ***Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:*** Considered unlikely. ***Result in invasive species that are harmful to an endangered or critically endangered species becoming***	as being within the indicative species distribution. A total of two waterway crossings are indicated. These waterways both have a fish community status of "very poor" and of the two waterway crossings, both have an existing crossing in some form present. In other words, the amended project would not result in any additional crossings in these areas of indicative habitat. It is anticipated that any constructed waterway crossings upgrades associated with the amended project would contribute to overall improvements to aquatic conditions and be more sensitive than existing informal crossings and would not result in any additional deleterious processes. While waterway crossings for access tracks are indicated, mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines (Fairfull, 2013). Additional mitigation measures have been proposed to focus on the	with crossings designs aligning with relevant guidelines. - consultation and pre-construction survey to provide site specific mitigation recommendations at sites of new or upgraded waterway crossings in CLASS 1 KFH. - To prevent Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis* washdown procedures will be required.

		established in the endangered or critically endangered species' habitat: Considered unlikely. ***Introduce disease that may cause the species to decline:*** Considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	minimisation of potential impacts to CLASS 1 KFH streams that may support threatened aquatic species (B33, Table 14 1), including provision for consultation and pre-construction survey to provide site specific mitigation recommendations at sites of new or upgraded waterway crossings in CLASS 1 KFH. There are limited direct impacts to streams within the mapped indicative distribution of the species (DPI, 2023a) and although the amended project has the potential to result in indirect impacts to aquatic habitats generally, these would be localised and temporary. It is considered unlikely that the scale of these impacts would be significant given the history of landscape modification and existing deleterious processes operating in the streams generally within the amended project footprint, or that these potential impacts would act to render any potential habitats no longer suitable. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the	

			species or identified in the Conservation Advice for the species. The amended project would not result create additional barriers to fish passage and is unlikely to modify water temperatures. Any indirect impacts to potential habitats would be anticipated to be localised and temporary. As such it is unlikely that the amended project would disrupt the breeding cycle of a population of the species. There is a low potential for any instream plant or machinery used in waterway crossing construction to transport the Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis*, which is also known to occur. It has not been established whether the Flathead Galaxias is susceptible to EHNV, although a number of galaxiid species are (DPI, N.D.c). It has been recommended that this risk be managed using wash down procedures.	

			A Recovery Plan has not been prepared for the species, with the species profile (DCCEEW, 2022c) stating that "many of the threats to the flathead galaxias are threats to other EPBC Act-listed threatened fish species that occur within the Murray-Darling Basin. Actions and mechanisms that are being implemented through a variety of other existing programs (including in other species recovery plans, water management plans, actions being undertaken by relevant catchment management authorities) are likely to be of benefit to this species".	
*Hirundapus caudacutus**	White-throated needletail	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:*** Considered unlikely. . ***Fragment an existing important population into two or more populations:*** Considered unlikely.	The White-throated Needletail was not recorded during the field surveys for the amended project and there are no previous records within the amended project footprint, and no recent records in the broader locality. Potential foraging habitat is present in the amended project footprint in the form of associated PCTs. Vegetation clearing for the installation of transmission lines and associated infrastructure may reduce the availability of foraging resources for these species, as well as suitable	Avoidance and minimisation of impacts to this species are adequately demonstrated.

		Adversely affect habitat critical to the survival of a species: Considered unlikely. *Disrupt the breeding cycle of a population:* N/A as the species does not breed within Australia. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:* Considered unlikely.	hollow bearing trees used as roosting habitat by the White-throated Needletail. Potential direct impacts include species injury or mortality during clearing and construction. A total of 5,772.23 ha of potential foraging habitat is mapped as occurring in the amended project footprint with approximately 481.19 ha (including 1.78 ha of prescribed impacts) of potential habitat for this species that would be impacted. Extensive areas of potential foraging habitat for this species are also present within the locality and would be retained. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. The SPRAT profile for this species indicates that there is the constant threat of collision with overhead wires when in Australia, however this affects only a few individuals and is not a threat to the species overall (Commonwealth DCCEEW, 2022t). Given the existing threat of collision with overhead wires, it is unlikely that	

		Introduce disease that may cause the species to decline: Considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	the installation of transmission lines in the amended project footprint would increase this threat to the extent that there would be a substantial impact to the species overall. The species is highly mobile, and is almost always aerial in Australia, at heights up to 'cloud level', above a wide variety of habitats and disturbed areas (Commonwealth DCCEEW, 2022t). They use updrafts, low pressure systems to glean aerial insects, and are less reliant on terrestrial vegetation communities as a habitat resource. Therefore, a significant impact is unlikely.	
Litoria booroolongensis	Booroolong frog	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of an important population:*** Considered unlikely.	Booroolong Frog has not been recorded in the amended project footprint but is considered likely to occur based on indicative mapping and habitat assessments. The area of potential habitat is located throughout the amended project footprint at various waterbodies. Potential habitat to be cleared includes 0.05 ha within the Inland Slopes IBRA subregion (PCT 280) and 0.01 ha within the Crookwell IBRA subregion (PCT 1330). An additional	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - General mitigation measures have been proposed to further mitigate the risk of indirect impacts within the BMP. - Limit hydrological and physical change in the waterbodies associated with construction work that could temporarily remove necessary vegetation for egg laying.

		Fragment an existing important population into two or more populations: Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically*	0.25 ha of impacts on non-native habitats would also occur (prescribed impacts). The construction process for the transmission line structures would avoid direct impacts to major waterways and none of the waterways that have been mapped as within the species indicative distribution (Commonwealth DCCEEW, 2022e) is crossed by any indicative access tracks with indicative waterway crossings. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for these species. The amended project is considered unlikely to have a significant impact on Sloane's Froglet, Booroolong Frog, or Yellow-spotted Tree Frog due to the relatively small area of potential terrestrial habitat to be impacted, the highly localised (and temporal nature) of impact adjacent to nominated waterway crossings, and	- Mitigation measures to control the spread of weeds and pest - animals would be detailed in the Biodiversity Management Plan and SWMP within the CEMP (Table 14-1, B3, B26). - Mitigation measures to control the spread of pathogens would be detailed in the Biodiversity Management Plan. - The risk of pathogen spread is to be managed using wash down procedures for in-stream plant between waterway crossing locations.

		endangered species' habitat: Once mitigation measures are implemented, it is considered unlikely. **Introduce disease that may cause the species to decline:** Once mitigation measures are implemented, it is considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.	implementation of proposed measures for mitigation of indirect impacts to water quality.	
Litoria castanea	Yellow-spotted tree frog	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of an important population:*** Considered unlikely.	Yellow-spotted Tree Frog has not been recorded in the amended project footprint but is considered likely to occur based on indicative mapping and habitat assessments. The area of potential habitat is located throughout the amended project footprint as various waterbodies. Potential habitat to be cleared includes 1.17 ha (1.33 ha including prescribed impacts) of PCTs associated with the Yellow-spotted Tree Frog.	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - General mitigation measures have been proposed to further mitigate the risk of indirect impacts within the BMP. - Limit hydrological and physical change in the waterbodies associated with construction work that could temporarily remove necessary vegetation for egg laying.

		Fragment an existing important population into two or more populations: Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically*	The construction process for the transmission line structures would avoid direct impacts to major waterways and none of the waterways that have been mapped as within the species indicative distribution (Commonwealth DCCEEW, 2022f) are crossed by any indicative access tracks with indicative waterway crossings. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for these species. The amended project is considered unlikely to have a significant impact on Sloane's Froglet, Booroolong Frog, or Yellow-spotted Tree Frog due to the relatively small area of potential terrestrial habitat to be impacted, the highly localised (and temporal nature) of impact adjacent to nominated waterway crossings, and implementation of proposed measures for mitigation of indirect impacts to water quality.	- Mitigation measures to control the spread of weeds and pest - animals would be detailed in the Biodiversity Management Plan and SWMP within the CEMP (Table 14-1, B3, B26). - Mitigation measures to control the spread of pathogens would be detailed in the Biodiversity Management Plan. - The risk of pathogen spread is to be managed using wash down procedures for in-stream plant between waterway crossing locations.

		endangered species' habitat: Once mitigation measures are implemented, it is considered unlikely. **Introduce disease that may cause the species to decline:** Once mitigation measures are implemented, it is considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.		
Maccullochella macquariensis	Trout cod	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:*** Considered unlikely. . ***Fragment an existing important population into two or more populations:***	The construction process for the transmission line structures avoids direct impacts to streams and none of the waterways that have been mapped as within the species indicative distribution (DPI, 2023a) would be crossed by any of the potential waterway crossings identified in the updated indicative disturbance area. Any indirect impacts that may occur are anticipated to be localised and temporary in nature.	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines. - Consultation and pre-construction survey to provide site specific mitigation recommendations at sites of new or

		Considered unlikely. ***Adversely affect habitat critical to the survival of a species:*** Considered unlikely. ***Disrupt the breeding cycle of a population:*** Considered unlikely. ***Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:*** Considered unlikely. ***Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:*** Considered unlikely.	No potential waterway crossings intersect with waterways identified as within the indicative distribution of the species (DPI, 2023a) and therefore the amended project will not result in any barriers to fish passage to the species. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. Any possible indirect impacts to potential habitats would be anticipated to be localised and temporary and these would be considered unlikely to occur based upon the distance of construction from the Murrumbidgee River (approximately 40 metres from the bank), as well as the mitigation measures proposed.	upgraded waterway crossings in CLASS 1 KFH. - To prevent Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis* washdown procedures will be required.

		Introduce disease that may cause the species to decline: Considered unlikely. ***Interfere with the recovery of the species:*** Considered unlikely.		
Macquaria australasica	Macquarie Perch	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of the species:*** Considered unlikely. . ***Fragment an existing important population into two or more populations:*** Considered unlikely. ***Adversely affect habitat critical to the survival of a species:*** Considered unlikely.	The construction process for the transmission line structures avoids direct impacts to streams and none of the waterways that have been mapped as within the species indicative distribution would be crossed by potential waterway crossings identified in the updated indicative disturbance area. Any indirect impacts that may occur are anticipated to be localised and temporary in nature e.g. disturbance to instream habitats during the construction of waterway crossings for access tracks or trimming of riparian trees to facilitate transmission line installation. No potential waterway	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines. - Consultation and pre-construction survey to provide site specific mitigation recommendations at sites of new or upgraded waterway crossings in CLASS 1 KFH. - To prevent Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis* washdown procedures will be required.

		Disrupt the breeding cycle of a population: Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically endangered species becoming established in the endangered or critically endangered species' habitat:* Considered unlikely. *Introduce disease that may cause the species to decline:* Considered unlikely. *Interfere with the recovery of the species:*	crossings intersect with waterways identified as within the indicative distribution (DPI, 2023a) and therefore, the amended project is unlikely to result in any barriers to fish passage to the species. No Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. The amended project footprint does extend into the natural range of the species as described in DEE (2018), as it includes Adjungbilly Creek. Sections of riffle may be present along reaches of Adjungbilly Creek and the Lachlan River within or adjacent to the amended project footprint, as such these habitats may be considered critical habitat. No direct impacts to critical habitat would occur as a result of the amended project. Any indirect impacts that may occur would be temporary and localised. The key potential indirect impact that could occur would be the potential for sedimentation associated with construction work that could infill the	- Mitigation measures proposed to control sedimentation infill of the interstitial spaces between rocks and pebbles.

		Considered unlikely.	interstitial spaces between rocks and pebbles used by the species for spawning. This is considered unlikely to occur given mitigation measures proposed to control this risk and the distance at which construction would be taking place from these reaches that may be considered critical habitat (approximately 40 metres from the bank). There is a low potential for any instream plant or machinery used in waterway crossing construction to transport the Epizootic Haematopoietic Necrosis Virus (EHNV), to which Macquarie Perch are susceptible. EHNV is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch, which is also known to occur in this catchment.	
Mastacomys fuscus mordicus	Broad toothed rat	*Lead to a long-term decrease in the size of an important population of a species:* Considered unlikely. *Reduce the area of occupancy of an important population:*	The Broad-toothed Rat has not been recorded in the amended project footprint but is considered to have a high likelihood of occurrence in Snowy Mountains. The proposed amended project footprint will result in the loss of approximately 0.03 ha of potential habitat in the Snowy Mountains IBRA subregion.	No Commonwealth advice was sought. Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Pest species monitoring program - Hygiene protocols

		There is potential for the amended project to reduce the area of occupancy of this species. *Fragment an existing important population into two or more populations:* Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to an endangered or critically*	Where possible, impacts to heathy midstories, rocky habitats, grass tree skirts, ground cover and soils (habitats utilised by this species) would be minimised under the linear transmission line infrastructure. Due to the lack of records and that no individuals were found within the amended project footprint, direct mortality because of the amended project is considered unlikely. The amended project footprint is near the northern extent of the species range except for an isolated population around Barrington Tops (New South Wales) and therefore is unlikely to increase fragmentation. The Broad-toothed Rat exists within a subpopulation in the Snowy Mountains, which has exhibited decline due to climate change and associated early snow thaw. However, due to the factors outlined above, and the ability of the species to traverse the linear project infrastructure via retained midstories and ground cover, it is considered unlikely that an existing population of the Broad-toothed Rat would be fragmented.	- Several mitigation measures have also been proposed to further mitigate the risk of indirect impacts. (these should be further defined). Contacted A.O (Mel Schroder 20/08/24) to enquire whether additional mitigation measures within the impact area of veg removal would be required e.g. to include hollow logs to provide additional shelter? Exotic weed control will also be necessary for Scotch Broom and Blackberry. Fox, cat, hare and rabbit control may be required. The SOS strategy for this species lists KNP as a priority site. Regular monitoring of management effectiveness and trends in local populations and ecological community viability at a site scale is an important component of this strategy. Ongoing monitoring should be a requirement.

		endangered species becoming established in the endangered or critically endangered species' habitat: Once mitigation measures are implemented, it is considered unlikely. **Introduce disease that may cause the species to decline:** Considered unlikely. ***Interfere substantially with the recovery of the species:*** Considered unlikely.	There is no Critical Habitat in NSW defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species. Proposed vegetation removal is unlikely to disrupt the breeding cycle of the species in the long-term, as there will be other suitable habitats still in-tact in the amended project footprint and surrounding areas. Limited direct impacts to potential habitats for this species would occur and any indirect impacts would be localised. Several mitigation measures have also been proposed to further mitigate the risk of indirect impacts. Vegetation clearing and increased habitat fragmentation may increase predation by these species. Development of a pest species monitoring program may be required if there is a substantial occurrence of large intact remnants and threatened species habitat within or adjacent to the disturbance areas. Dieback of understory heathlands due to the Cinnamon Fungus	

			(Phytophthora cinnamomi) is listed as a minor threat to the Broad-toothed Rat (TSSC, 2016i). Whilst there is a risk that construction machinery and workers may disperse P. cinnamomi as well as other soil and plant pathogens, this risk would be mitigated through hygiene protocols throughout the development. A management plan has been developed for Kosciuszko National Park, which may include intensive and extensive management of threats to the subspecies such as predator control programs.	
*Monarcha melanopsis**	Black-faced monarch	Based on the transient nature of the species, no nearby records, and the implementation of appropriate mitigation measures a significant impact is unlikely.	The Black-faced Monarch has not been recorded in the amended project footprint and is considered to have a low likelihood of occurrence in all IBRA subregions, however as it was identified in SEARs further was assessment required. A total of 1,045.16 ha of potential habitat for Black-faced Monarch is mapped as occurring within the amended project footprint. The amended project has the potential to remove approximately 271.11 ha of potential migratory habitat.	Avoidance and minimisation of impacts to this species are adequately demonstrated.

			Vegetation clearing for the installation of transmission lines and associated infrastructure may reduce the availability of foraging resources for these species. Extensive areas of potential habitat for these species are also present within the locality. The habitat within the amended project footprint to be impacted is therefore, not considered important habitat for these species. The removal of the potential habitat because of the amended project is unlikely to disrupt the lifecycle of an ecologically significant proportion of these species.	
*Myiagra cyanoleuca**	Satin Flycatcher	Based on the transient nature of the species, no nearby records, and the implementation of appropriate mitigation measures a significant impact is unlikely.	The Satin Flycatcher is known to occur in the amended project footprint in Murrumbateman IBRA subregion. A total of 260.60 ha of potential habitat for the species is mapped as occurring within the amended project footprint with the potential to remove approximately 39.83 ha of potential foraging habitat for this species. Vegetation clearing for the installation of transmission lines and associated infrastructure may reduce the availability of foraging resources	Avoidance and minimisation of impacts to this species are adequately demonstrated.

			for these species. Extensive areas of potential habitat for these species are also present within the locality. The habitat within the amended project footprint to be impacted is therefore, not considered important habitat for these species. The removal of the potential habitat because of the amended project is unlikely to disrupt the lifecycle of an ecologically significant proportion of these species. Based on the transient nature of the species, no nearby records, and the implementation of appropriate mitigation measures a significant impact is unlikely.	
Nannoperca australis	Southern pygmy perch	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of important population of the species:*** Considered unlikely.	Twelve streams within the indicative access track footprint have been identified as being within the indicative distribution for this species. These do not include distributions of any known populations of the species. Fish community status mapping is available for four of the indicative crossings indicating "very poor" conditions where available. There are a total of nine crossings between the six streams with Merrill	Avoidance and minimisation of impacts to this species are adequately demonstrated. The mitigation measures proposed for this species are suitable that include: - Mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines. - Consultation and pre-construction survey to provide site specific mitigation

		Fragment an existing important population into two or more populations: Considered unlikely. *Adversely affect habitat critical to the survival of a species:* Considered unlikely. *Disrupt the breeding cycle of an important population:* Considered unlikely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered unlikely. *Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:* Considered unlikely.	Creek (4) and Three Waterholes Creek (3) crossed multiple times. Existing crossings in some forms are present at all but one of these locations. It is anticipated that any constructed waterway crossings upgrades associated with the amended project would contribute to overall improvements to aquatic conditions and be more sensitive than existing informal crossings and would not result in any additional deleterious processes. While waterway crossings for access tracks are proposed, mitigation measures to prevent as far as practical the creation of any barriers to fish passage have been recommended, with crossings designs aligning with relevant guidelines (Fairfull, 2013). Additional mitigation measures have been proposed to focus on the minimisation of potential impacts to CLASS 1 KFH streams that may support threatened aquatic species (B33, Table 14 1), including provision for consultation and pre-construction survey to provide site specific mitigation recommendations at sites	recommendations at sites of new or upgraded waterway crossings in CLASS 1 KFH. - To prevent Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch *Perca fluviatilis* washdown procedures will be required. - Waterway crossing at Oolong Creek is required, the waterway crossing will incorporate a fish passage barrier to prevent the upstream incursion of carp and redfin. If the design cannot incorporate an appropriate fish passage barrier, further engagement will be undertaken with DPI Fisheries to confirm alternate measures for implementation.

		Introduce disease that may cause the species to decline: Considered unlikely. *Interfere substantially with the recovery of the species:* Considered unlikely.	of new or upgraded waterway crossings in CLASS 1 KFH. If a waterway crossing at Oolong Creek is required, the waterway crossing will incorporate a fish passage barrier to prevent the upstream incursion of carp and redfin to protect the endangered Southern Pygmy Perch population. If the design cannot incorporate an appropriate fish passage barrier, further engagement will be undertaken with DPI Fisheries to confirm alternate measures for implementation. Any impacts that may occur are anticipated to be localised and temporary in nature e.g. disturbance to instream habitats during the construction of waterway crossings for access tracks or trimming of riparian trees to facilitate transmission line installation. To date, no Critical Habitat as defined under Section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the species or identified in the Conservation Advice for the species. Potential habitats within the amended project footprint would not be	

			considered critical to the survival of the species. This is given the highly restricted known distribution of the species, the limited presence of key habitat features and prevalence of deleterious processes such as flow regulation, grazing and riparian clearing. There is a low potential for any instream plant or machinery used in waterway crossing construction to transport the Epizootic Haematopoietic Necrosis Virus (EHNV), which is known to occur within the Murrumbidgee catchment and is associated with the invasive Redfin Perch, which is also known to occur. Although it has not been established whether the Southern Pygmy Perch is susceptible to EHNV. It has been recommended that this risk be managed using wash down procedures for instream plant between indicative waterway crossing locations. A Recovery Plan has not been prepared for the species, with the species profile (Commonwealth DCCEEW, 2022b) stating that "Many of the threats to the Southern Pygmy	

			Perch-MDB are threats to other EPBC Act listed threatened fish species that occur within the Murray-Darling Basin. Actions and mechanisms that are being implemented through a variety of other existing programs (including in other species recovery plans, a national native fish recovery strategy, water management plans, actions being undertaken by relevant catchment management authorities) are likely to be of benefit to this species".	
Pteropus poliocephalus	Grey-headed flying-fox	***Lead to a long-term decrease in the size of an important population of a species:*** Considered likely. ***Reduce the area of occupancy of an important population:*** Considered likely. ***Fragment an existing important population into two or more populations:*** Considered unlikely.	**The amended project is considered to have a potential significant impact on the Grey-headed flying fox.** No breeding or roosting habitat (camps) were observed and no Nationally Important Flying Fox Camps occur within the amended project footprint (Commonwealth DCCEEW, 2022au), however 12 individuals were recorded in the Inland Slopes IBRA subregion. The Grey-headed Flying-fox has a moderate likelihood of occurrence in the Bungonia IBRA subregion, and a high likelihood of occurrence in the Crookwell and Murrumbateman IBRA	Commonwealth advice included checking the National Flying-fox monitoring viewer to ensure no known camps were nearby the impact area. **This species was considered to have a significant impact**- included due to Commonwealth comment regarding checking national register. Mitigation measures included: - Connectivity Strategy would be prepared as part of the amended project, which would mitigate indirect impacts to connectivity. - hygiene protocols implemented through the Biodiversity Management Plan to

		Adversely affect habitat critical to the survival of a species: Considered likely. *Disrupt the breeding cycle of an important population:* Considered likely. *Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:* Considered likely. *Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat:* Considered unlikely. **Introduce disease that may cause the species to decline:** Considered unlikely.	subregion portions of the amended project footprint, which contains a variety of suitable forage habitats. There are eight known Grey-headed Flying-fox camps within foraging range (less than 20 km) of the amended project footprint. An area of approximately 203.69 (17%) of foraging habitat for the Grey-headed Flying-fox would be directly impacted by the amended project. Indirect impacts resulting from the amended project include increased risk of entanglement and collision. In Mo *et al.* (2020), a broad range of factors were involved in flying-fox mortality or injury, the main ones being entanglements and electrocutions. The HumeLink project would involve high voltage lines spaced more than 6 m apart thus minimising any risk of electrocution. It is assumed that the reduction in foraging resources within 20 kilometres of known camps, would lead to long-term decrease in the size of an important population. **It is considered likely** that the amended project would lead to the long-term decrease in the size of an important	prevent soil pathogens from effecting plant species that the GHFF is reliant on for food.

		Interfere substantially with the recovery of the species: Considered unlikely.	population of Grey-headed Flying-fox. The species is highly mobile, the amended project is unlikely to impede aerial movement throughout the landscape. Despite this, a Connectivity Strategy would be prepared as part of the amended project, which would mitigate indirect impacts to connectivity resulting from the amended project. There is evidence that foraging resources (in southern NSW) in remaining habitat are inadequate to provide reliable resources during critical periods in the reproductive cycle of Grey-headed Flying-foxes. The species is subject to recurring food shortages during late gestation, birth, and early lactation. The amended project **is likely to adversely affect habitat critical to the survival of the species.** There is anecdotal evidence that the Grey-headed Flying-fox is predated upon by a range of animals, but their impact is considered insignificant (DAWE, 2021b). Whilst there is a risk that construction machinery and workers may disperse	

			soil and plant pathogens that can affect forage species, this risk would be mitigated through hygiene protocols implemented through the Biodiversity Management Plan to be prepared for the amended project. **The amended project would partially interfere with Recovery Action 1** "*Identify, protect, and increase native foraging habitat that is critical to the survival of the Grey-headed Flying-fox*", with the removal of 203.69 ha of foraging habitat (within 20 kilometres of known camps), however, these camps are not recognised as Nationally Important, therefore, the amended project is considered unlikely to interfere with the recovery of the Grey-headed Flying-fox.	
Pseudomys fumeus	Smoky mouse	***Lead to a long-term decrease in the size of an important population of a species:*** Considered unlikely. ***Reduce the area of occupancy of an important population:***	The Smoky Mouse has not been recorded in the amended project footprint but is considered to have a moderate likelihood of occurrence in Bondo and Snowy Mountains due to the presence of suitable habitats within the species known distribution and multiple records within 20 km of the amended project footprint (nine in Bondo and 28 in Snowy Mountains).	Will be ruled out by survey. BCS is confident this species can be successfully surveyed for post-approval, as demonstrated during the Snowy Hydro project. Avoidance and minimisation of impacts to this species are adequately demonstrated.

		There is potential for the amended project to reduce the area of occupancy of this species by 0.02% . ***Fragment an existing important population into two or more populations:*** Considered unlikely. ***Adversely affect habitat critical to the survival of a species:*** Considered unlikely. ***Disrupt the breeding cycle of an important population:*** Considered unlikely. ***Modify, destroy, remove, or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline:*** Considered unlikely. ***Result in invasive species that are harmful to an endangered or critically***	The amended project footprint would result in the loss of approximately 5.78 ha of potential habitat in the Bondo IBRA subregion. Where possible, impacts to heathy midstories (e.g., vegetation stepping-stones), rocky habitats, and ground refugia should be minimised under the linear transmission line infrastructure. The amended project footprint is near the northern extent of the species range. Therefore, there is potential for the amended project to reduce the area of occupancy of this species by 0.02%. The amended project footprint is located near the edge of the species range, and the ability of the species to traverse the linear project infrastructure via retained midstories and ground cover reduces the likelihood of fragmenting existing populations. The amended project would not impact any of the five Smoky Mouse biogeographic regions outlined by the Recovery Plan. The amended project would result in a relatively low clearing of suitable foraging habitat	The mitigation measures proposed for this species are suitable that include: - Vegetation impacts to be minimised. - Pest species monitoring program - Hygiene protocols to prevent the spread of *P. cinnamomi* It may be required to undertake fox, wild dog, rabbit and feral cat control programs targeting known high quality habitat and recently disturbed potential habitat. South-East NSW including the Snowy region is classified as a priority management site within the SoS strategy for this species. It would be appropriate to include ongoing monitoring of mitigation measure effectiveness and the trends in local populations and ecological community viability at the site scale.

		endangered species becoming established in the endangered or critically endangered species' habitat: Once mitigation measures are implemented, it is considered unlikely. **Introduce disease that may cause the species to decline:** Considered unlikely. ***Interfere substantially with the recovery of the species:*** Considered unlikely.	compared to that remaining in the surrounding vegetation. Vegetation clearing and increased habitat fragmentation may increase predation of the Smoky Mouse by these species. Development of a pest species monitoring program may be required if there is a substantial occurrence of large intact remnants and threatened species habitat within or adjacent to the disturbance areas. Dieback of understory heathlands due to the Cinnamon Fungus *Phytophthora cinnamomi* is listed as a major threat to the Smoky Mouse (Menkhorst & Broome, 2006; TSSC, 2020b). Whilst there is a risk that construction machinery and workers may disperse *P. cinnamomi* as well as other soil and plant pathogens, this risk would be mitigated through hygiene protocols throughout the development.	
*Rhipidura rufifrons**	Rufous Fantail	Based on the transient nature of the species, no nearby records, and the implementation of appropriate mitigation measures a significant	The Rufous Fantail is known to occur in the amended project footprint in Bondo IBRA subregion. A total of 96.86 ha of potential habitat for the species is mapped as occurring within the amended project footprint with	Avoidance and minimisation of impacts to this species are adequately demonstrated.

		impact is unlikely.	the potential to remove approximately 30.64 ha of opportunistic non-breeding habitat. Vegetation clearing for the installation of transmission lines and associated infrastructure may reduce the availability of foraging resources for these species. Extensive areas of potential habitat for these species are also present within the locality. The habitat within the amended project footprint to be impacted is therefore, not considered important habitat for these species. The removal of the potential habitat because of the amended project is unlikely to disrupt the lifecycle of an ecologically significant proportion of these species.	

Impacts on National Heritage Places

The project is located in close proximity to the curtilage of two heritage places on the National Heritage List, being the Australian Alps National Parks and Reserves and the Snowy Mountains Scheme.

Transgrid has assessed the project against the National Heritage Significance Criteria for the Australian Alps National Parks and Reserves and the Snowy Mountains Scheme in Technical Report 3 of the EIS and Technical Report 3 of the Amendment Report, which is listed for:

- Criterion A – Events, Processes (natural environmental features including glacial/periglacial features, fossils, karst and biological heritage along with historic cultural events);
- Criterion B – Rarity (unique natural environment);
- Criterion D – Principal characteristics of a class (pastoral history and post-contact human occupation);
- Criterion E (Australian Alp only) – Aesthetic characteristics (natural features and human artistic output);
- Criterion F (Snowy Mountain Scheme only) - Creative or technical achievement
- Criterion G – Social value; and
- Criterion H – Significant people.

Transgrid has consulted with DCCEEW throughout the assessment of the project, and DCCEEW has been generally supportive of the level of assessment and described impacts on both National Heritage Places.

The project would not impact any of the physical components of the Snowy Mountains Scheme. The heritage assessment found that while the amended project footprint is located in close proximity to the Snowy Mountains Scheme impacts would be limited to potential indirect visual impacts. The potential indirect visual impacts were assessed as not impacting the heritage values associated with this item.

The project would not impact any direct impact on the parks and reserves that comprise the larger Australian Alps National Parks and Reserves heritage place.

The heritage assessment found that while the amended project footprint is located in close proximity to this item and may result in an indirect visual impact from the amended project on this item due to vegetation clearance and the proximity of transmission line structures. The closest amended project components were identified as are pre-existing access tracks. The assessment concluded the project was likely to have a negligible impact on the heritage significance of this National Heritage place.

For the reasons set out in section 6.5 and above, the Department recommends that the impacts of the project on the Australian Alps National Parks and Reserves and the Snowy Mountains Scheme would be acceptable, subject to the implementation of the requirements in the recommended conditions relating to native vegetation clearance limits, funding for biodiversity improvement works and rehabilitation objectives.

Additional EPBC Act Considerations

Table J-6 contains the additional mandatory considerations, factors to be taken into account and factors to have regard to under the EPBC Act that are additional to those already discussed.

Table J-6 | Additional considerations for the Commonwealth Minister under the EPBC Act

EPBC Act Section	Considerations	Conclusion
Mandatory considerations		
136(1)b	Economic and social matters are discussed in **sections 2.1 and 6.8** of this report.	The project would provide benefits for the local and regional economy and is of public benefit. Up to 1,600 construction jobs and 5 operational jobs would be required. Impacts on the local community would primarily occur during the construction period, which has been considered in the assessment report. The recommended conditions require Transgrid to minimise potential aboriginal and historic heritage impacts, and amenity impacts including construction and operational noise. Social impacts will also be managed through a Social Impact Assessment (SIA) as part of the EIS.
3A, 391(2)	Principles of ecologically sustainable development (ESD), including the precautionary principle, have been taken into account, in particular: • the long term and short term economic, environmental, social and equitable considerations that are relevant to this decision; • conditions that restrict environmental impacts and impose monitoring and	The Department considers that the project, if undertaken in accordance with the recommended conditions of consent, would be consistent with the principles of ESD.

EPBC Act Section	Considerations	Conclusion
	adaptive management, reduce any lack of certainty related to the potential impacts of the project; • conditions requiring the project to be delivered and operated in a sustainable way to protect the environment for future generations and conserving the relevant matters of national environmental significance; • advice provided within this report reflects the importance of conserving biological diversity, ecological and cultural integrity in relation to all of the controlling provisions for this project; and • mitigation measures to be implemented which reflect improved valuation, pricing and incentive mechanisms are promoted by placing a financial cost on the proponent to mitigate the environmental impacts of the project.	
136(2)(e)	Other information on the relevant impacts of the action.	The Department considers that all information relevant to the impacts of the project has been taken into account in its assessment.
139(1)	Requirements for decisions about threatened species and endangered communities	Recovery plans and threat abatement plans are addressed above. Australia's obligations under the Convention on Biological Diversity (Biodiversity Convention) include the conservation of biological diversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources, including by appropriate access to genetic resources and by appropriate transfer of relevant technologies, taking into account all rights over those resources and technologies, and by appropriate funding.

EPBC Act Section	Considerations	Conclusion
		The recommendations of this assessment report are consistent with the Biodiversity Convention, which promotes environmental impact assessment (such as this process) to avoid and minimise adverse impacts on biological diversity. Accordingly, the recommended development consent requires avoidance, mitigation and management measures for listed threatened species, and all information related to the project is required to be publicly available to ensure equitable sharing of information and improved knowledge relating to biodiversity. There are no additional requirements for decisions about threatened species and endangered communities that apply to the project. The Apia convention and CITES are not relevant to the project.
Factors to have regard to		
176(5)	Bioregional plans	There is no approved bioregional plan related to the activity.
Consideration on deciding conditions		
134(4)	Must consider: • Information provided by the person proposing to take the action or by the designated Applicant of the action; and • The desirability of ensuring as far as practicable that the condition is a cost effective means for the Commonwealth and the person taking the action to achieve the object of the condition.	All project related documentation is available on the NSW Planning Portal. The Department considers that the recommended conditions at Appendix G are a cost-effective means of achieving their purpose. The conditions are based on material provided by the Applicant that was prepared in consultation with the Department, BCS and other government agencies.

Conclusions on controlling provisions

For the reasons set out in **section 6.4** of this report and this Appendix, the Department considers that the impacts of the action would be acceptable, subject to the avoidance and mitigation

measures described in the EIS, Amendment Report and the recommended instrument of approval in Appendix G.