



# Project EnergyConnect (NSW – Eastern Section)

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Critical State Significant Infrastructure Assessment  
(SSI 9172452)

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# Executive Summary

## Background

Project EnergyConnect is a joint proposal by Transgrid and ElectraNet (the electricity transmission operators in NSW and South Australia (SA) respectively) for a new 900 kilometre (km) electricity interconnector between Wagga Wagga and Robertstown, with a spur line to Victoria (VIC). It would provide the first direct connection between the NSW and SA transmission line networks.

Within NSW, Project EnergyConnect is a 692 km transmission line that is classified as Critical State Significant Infrastructure (CSSI) under the *Environmental Planning and Assessment Act 1979* (EP&A Act). Consequently, it must be determined by the Minister for Planning.

It is proposed in two separate development applications within NSW:

- **EnergyConnect (West)** (approved by the then Minister for Planning and Public Spaces in September 2021) – a 155 km section from SA to the Buronga substation and the NSW / VIC border; and
- **Energy Connect (East)** (the subject of this application) – a 537 km section from the Buronga substation to the existing Wagga Wagga substation.

## Project

EnergyConnect (East) involves the construction of a new 330 kilovolt (kV) transmission line between the Buronga substation and the proposed new Dinawan substation near Coleambally, and a new 500 kV transmission line between the Dinawan substation and Wagga Wagga.

The majority of the proposed new transmission line would be co-located with existing transmission lines.

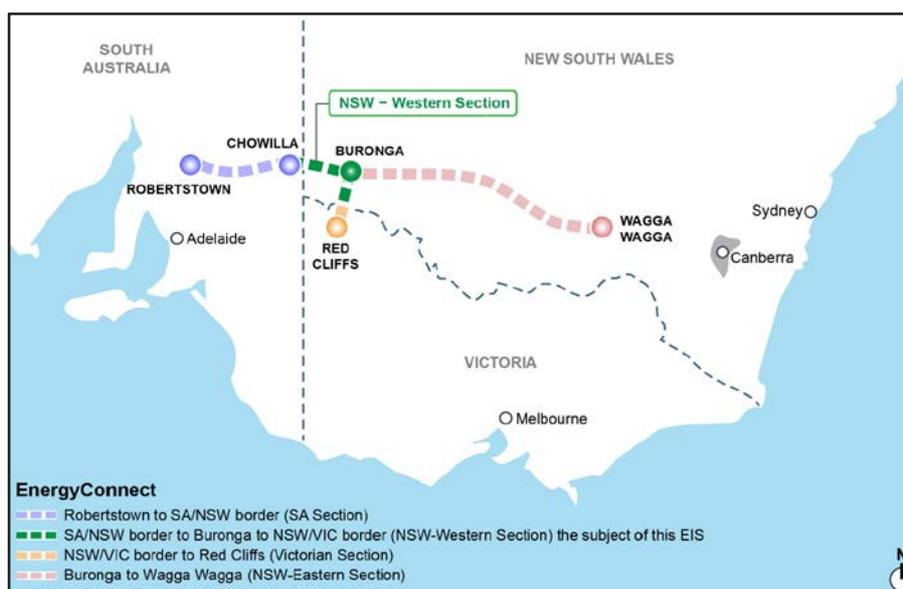


Figure ES 1 | Project EnergyConnect

## Engagement

The Department exhibited the application and Environmental Impact Statement (EIS) from 19 January until 15 February 2022, worked closely with councils and government agencies, consulted with key stakeholders, published all submissions, and required Transgrid to provide a formal response to the issues raised in submissions.

The Department received 41 individual public submissions and 5 submissions from special interest groups. Overall, 39 of the public submissions objected to the project. In addition, comments were received from the 9 host councils and 17 government agencies provided advice. None of the councils or government agencies objected to the project.

The key matters raised in submissions, agency advice and identified in the Department's assessment of the project include energy security and reliability; biodiversity; Aboriginal heritage; agriculture and soils; traffic and transport and noise.

## Assessment

The Department has undertaken a comprehensive assessment of the merits of the project in accordance with the objects of the EP&A Act, including the principles of ecologically sustainable development, and the social and economic welfare of the community.

For large-scale linear infrastructure projects, there is a well-established process of assessing the general nature and scale of potential impacts before determination, while also allowing a process for detailed design and further assessment post-determination. Nevertheless, the Department required Transgrid throughout the assessment process of this project to undertake a best-practice, detailed assessment of all potential impacts, which would leave very few issues to be dealt with post-determination. Consequently, the Department is confident that even if refinements would be required post-determination, this would not change the key environmental impacts that have been assessed.

### *Energy Security and Reliability*

The Department considered all the relevant Commonwealth and State energy policies, plans and reviews and concluded that an interconnector between SA, NSW and VIC is critical for energy security and reliability in NSW, linking the SA, NSW and VIC electricity networks and would play a significant role in supporting the transition of the energy system away from a reliance on coal-fired power stations to renewable energy. It would also play an important role in transporting renewable energy from the NSW South-West Renewable Energy Zone (REZ) to energy consumers

The broader Project EnergyConnect is a priority transmission project in the Australian Energy Market Operator's (AEMO) *2022 Integrated System Plan* and is consistent with the AEMO's roadmap for the National Electricity Market and relevant strategic NSW planning and policy documents, including the *Transmission Infrastructure Strategy* and the *Electricity Strategy*.

Importantly, EnergyConnect (East) would complete the overall interconnector playing a critical role in the National Electricity Market (NEM).

### *Biodiversity*

The Department accepts that Transgrid has designed the project to avoid and minimise impacts on high quality vegetation and habitat as far as practicable, including co-locating sections of the transmission line with existing infrastructure where native vegetation is in the poorest condition, locating the corridor and ancillary infrastructure to avoid impacts on threatened biodiversity, implementing partial vegetation clearing (i.e. limited in height) within the easement, and targeting narrow waterway crossing points to minimise clearing of riparian vegetation.

However, the Department acknowledges that the construction of a 537 km transmission line would inevitably result in impacts to biodiversity and would still disturb 1,615 ha of native vegetation, comprising 1,338 ha of vegetation in moderate to good condition. Of the 1,338 ha of moderate to good condition vegetation, about 887 ha (66%) would be completely cleared and 451 ha (34%) would be partially impacted (tree trimming and temporary ground disturbance). Overall, the Department and the

Department's Biodiversity, Conservation and Sciences Directorate considers that, subject to the recommended conditions, including minimisation of impacts during the detailed design of the project, a range of flora and fauna management measures, and by offsetting the residual biodiversity impacts of the project, the project is unlikely to result in a significant impact on the biodiversity values of the locality over the medium to long term.

#### *Aboriginal Heritage*

Eighty-nine Aboriginal heritage sites, primarily of low to moderate significance, are located within the proposed transmission line easement and may be impacted by the project to varying degrees, dependant on their location relative to proposed infrastructure through ground disturbance during construction and ongoing management of vegetation within the easement.

Across the proposed 537 km transmission line corridor, there were small sections (totalling 18 km) where site suverys could not be undertaken due to landowner access issues. A total of thirty-seven potential archaeological deposits (PAD) were identified within the corridor. Subsurface testing was undertaken for 17 PADs likely to be directly impacted (with significance ranging from low to moderate). Of the 20 PADs not subject to subsurface testing, five would not be impacted and the remaining 15 would be further assessed during detailed design. Importantly, Transgrid has committed to avoid or minimise impacts on any site or PADs of moderate or higher significance.

To ensure the project would not significantly impact the Aboriginal cultural heritage values of the locality, the Department has recommended a condition requiring Transgrid to prepare and implement a Heritage Management Plan in consultation with Registered Aboriginal Parties (RAPs) and Heritage NSW.

#### *Agriculture and Soils*

The Department acknowledges that the proposed transmission line traverses a large number of agricultural properties and the potential for impacts on agriculture and soils was a source of concern in many submissions objecting to the project.

However, the Department notes that the entirety of agricultural land within the site equates to about 0.04% of agricultural land across the nine relevant local government areas, and that the majority of land within the site is used for livestock grazing (67%), with some areas of dryland cropping (25%) and a small area of irrigated cropping (1%). Importantly, no areas of mapped Biophysical Strategic Agricultural Land (BSAL) would be impacted by the project and Transgrid has located the project to avoid the Coleambally Irrigation Area.

Transgrid would prioritise the use of existing access tracks and avoid locating transmission line towers within cropping and horticultural land, where practicable. The Department considers that the risks to agriculture and soils can be managed through ongoing consultation with affected landowners, best practice mitigation and management measures, and the implementation of the recommended conditions, which include the requirement to prepare and implement a Soil and Water Management Plan.

#### *Traffic and Transport*

The potential traffic and transport impacts would be largely restricted to the construction period (up to 24 months). Temporary traffic disruptions would be experienced on the road network, although Transgrid would be required to maintain traffic flows, access and parking as far as possible. There would be negligible impacts on roads during operation of the project.

Subject to appropriate mitigation measures including undertaking suitable road upgrades prior to commencing construction, regular road maintenance, and the implementation of a Traffic Management

Plan, the works can be undertaken without significant impacts to the broader transport network. There would be negligible impacts on roads during operation of the project.

#### *Noise and vibration*

Noise levels above the 'noise affected' criterion are predicted to occur at up to 220 receivers during construction. The exceedances would generally range between 46 – 78 dB(A), with the highest exceedances occurring during the Wagga Wagga substation upgrade, and for approximately three weeks during construction of the transmission line for two residences.

The proposed construction activities, including road traffic noise, are unlikely to result in significant adverse impacts due to the conservative assumptions in the assessment and the short-term and intermittent nature of construction. The Department has recommended conditions requiring Transgrid implement all reasonable and feasible steps to minimise construction vibration generated by the project.

Operational noise associated with the Dinawan and Wagga Wagga substations would comply with the relevant noise criteria at all residences and the transmission lines would comply at all residences during fair weather conditions.

The Department has carefully considered the issue of 'corona' noise discharge, which is a crackling sound resulting from an accumulation of pollution or water on the transmission lines. Under conservative assumptions, corona noise in wet weather events is predicted to exceed the project trigger noise level of 35 d(B)A at 20 residences. However, these exceedances would be limited to less than 30% of the year during wet and misty conditions, and the noise of the rain itself would mostly mask corona noise, with audible noise only likely for up to 1.5 hours after a heavy rain event.

The Department also notes that Transgrid would use corona rings on the end of insulators to reduce corona noise, and accepts that there are currently no other reasonable or feasible measures available 'at source'. In addition, as there is limited scientific research about corona noise internationally, the Department has recommended a condition requiring Transgrid to contribute \$150,000 towards further research, which would contribute to better scientific understanding and knowledge in this space.

#### **Evaluation**

The Department concluded that an interconnector between SA, NSW and VIC is critical for energy security and reliability in NSW and has been identified as a priority transmission project in NSW and SA. Importantly, EnergyConnect (East) would complete the overall interconnector playing a critical role in the National Electricity Market (NEM) and would allow the project to realise the benefits of enhancing the capacity of the NEM by linking SA, NSW and VIC and facilitating transport of renewable energy from the South-West Renewable Energy Zone (REZ) to energy consumers.

It would also deliver significant economic benefits to NSW including a capital investment of \$1.08 billion and creation of up to 500 construction jobs.

The Department acknowledges that Transgrid's route and corridor analysis for the 537 km transmission line has used a comprehensive route selection process (based on a hierarchy of constraints and further corridor refinement) in order to avoid or minimise impacts. The Department also recognises that large linear infrastructure projects of this nature would be further refined to minimise impacts as the design and construction planning is developed by a nominated construction contractor.

Further, the Department has worked closely with Transgrid and key government agencies throughout the assessment process to reduce the residual impacts of the project and Transgrid has made changes to the project to address key issues and reduce impacts to address stakeholder feedback.

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 residual potential impacts of the project on the environment, in consultation with key government agencies.

The Department has concluded that the residual impacts can be adequately minimised, managed, or offset, to an acceptable standard, subject to a comprehensive framework of recommended conditions of approval. Consequently, the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development.

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 electricity system, would support the transition of the electricity system away from long-standing reliance on coal-fired power stations and would transport renewable energy from the South-West REZ to energy consumers.

On balance, the Department considers that the benefits of EnergyConnect (East) outweigh its costs, and the project is in the public interest and approvable, subject to strict conditions.

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# 1 Introduction

Project EnergyConnect is a proposed 900 kilometre (km) electricity interconnector between Wagga Wagga in NSW and Robertstown in South Australia (SA), with a spur line to Victoria (VIC) (**Figure 1**).

It is a joint proposal by Transgrid and ElectraNet (the electricity transmission operators in NSW and SA respectively) and would provide the first direct connection between the NSW and SA networks.

The NSW section (692 km) includes:

- **Project EnergyConnect (West) (PEC-West)** – a 155 km transmission line between the NSW / SA border and the NSW / VIC border, via Buronga substation; and
- **Project EnergyConnect (East) (PEC-East)** – a 537 km transmission line between the existing Buronga and Wagga Wagga substations, including a new substation near Coleambally.

PEC-West was approved by the then Minister for Planning and Public Spaces on 28 September 2021.

PEC-East is the subject of the current infrastructure application and this Assessment Report.



**Figure 1 | Project EnergyConnect**

## 2 Project

### 2.1 Overview

PEC-East (the project) involves:

- constructing and operating:
  - a 375 km long 330 kilovolt (kV) transmission line between the existing Buronga substation and the proposed Dinawan substation, near Coleambally;
  - a 162 km long 500 kV transmission line between the proposed Dinawan substation and the existing Wagga Wagga substation;
  - the Dinawan 330 kV substation;
  - three optical repeater sites to boost communication signal along the proposed transmission lines;
- upgrading the existing Wagga Wagga 330 kV substation to accommodate the project; and
- developing construction facilities, such as construction compounds and accommodation camps.

The majority of the proposed transmission line would be co-located with existing transmission lines (i.e. 406 km of the 537 km).

The main components of the project are summarised in **Table 1** and shown in **Figure 1** and **Figure 3**.

**Table 1 | Main components of the project**

Aspect	Description
<b>Project area</b>	<ul style="list-style-type: none"> <li>• Site and development footprint: 4,889 ha</li> <li>• Permanent infrastructure footprint: 4,490 ha</li> </ul>
<b>Transmission Line</b>	<ul style="list-style-type: none"> <li>• 375 km of 330 kV line (Buronga to Dinawan) of which 344 km co-located</li> <li>• 162 km of 500 kV line (Dinawan to Wagga Wagga) of which 62 km co-located</li> <li>• Easement width: 60 m to 80 m</li> <li>• Tower height: 40 m to 65 m</li> <li>• Typical spacing between towers: 450 m to 600 m</li> <li>• The operating capacity for the 500 kV line would be 330 kV until other network upgrades are completed subject to separate approvals, including potential upgrades to the Dinawan 330 kV substation</li> </ul>
<b>Construction facilities</b>	<ul style="list-style-type: none"> <li>• Four construction compounds and associated accommodation camps at Balranald, Cobb Highway, Dinawan and Lockhart, and use of the approved Buronga compound and camp.</li> <li>• A construction compound adjacent to Wagga Wagga substation</li> <li>• Four concrete batching plants at Balranald, Cobb Highway, Dinawan and Lockhart</li> <li>• Up to 39 water supply points</li> </ul>
<b>Construction timing</b>	<ul style="list-style-type: none"> <li>• Up to 24 months</li> <li>• Construction would commence concurrently at a number of locations along the line</li> <li>• Construction hours: Monday to Friday 7 am to 6 pm, and Saturday 8 am to 1 pm</li> </ul>
<b>Road upgrades</b>	<ul style="list-style-type: none"> <li>• Intersection upgrades to access compounds and accommodation camps</li> <li>• Intersection upgrades associated with minor access points to transmission line</li> </ul>
<b>Decommissioning and rehabilitation</b>	All construction works (including compounds, camps, access tracks and concrete crushing and screening plants) would be progressively decommissioned and rehabilitated at the end of the construction period.
<b>Employment</b>	Up to 500 construction jobs and 5 operational jobs
<b>Capital investment value</b>	\$1.08 billion

## 2.2 Project Design

### Options Analysis

The entire interconnector, now known as Project EnergyConnect, was identified following a comprehensive options analysis that considered the best ways to improve energy sharing across the States. This was discussed in the assessment report for PEC-West.

While PEC-West has already been approved and is under construction, PEC-East was also subject to further analysis of alignment options between Buronga and Wagga Wagga substations, which was aimed at reducing impacts where possible. This involved an 'opportunities and constraints' analysis, including consideration of environmental, social, land use and engineering matters such as National Parks, intensive agricultural land, heritage and residential areas.

However, the Department acknowledges that the construction of a 537 km transmission line would inevitably result in impacts to biodiversity and heritage values, as well as some amenity impacts to the community (such as traffic, noise and visual). For example, the construction of a transmission line between these two locations would inevitably require seven major watercourse crossings and could not entirely avoid disturbance of biodiversity and heritage values.

Nevertheless, Transgrid considered several opportunities and constraints in selecting its corridor alignment, with the view to avoid and minimise environmental, heritage, social and land use constraints, particularly:

- co-locating the transmission line easement with existing transmission lines, with the exception of about 130 km west of Lockhart, which ensured avoidance of the Coleambally Irrigation Area and Morundah Receiver Station defence facility;
- aligning the transmission line with existing roads, access tracks, utility easements, fence lines, cadastral boundaries and degraded grazing lands to minimise biodiversity, heritage and visual impacts;
- incorporating advice from associated landowners and near neighbours to minimise impacts on their properties and the surrounding natural environment, where possible; and
- locating construction compounds, accommodation camps and Dinawan substation near existing roads to avoid high quality vegetation and habitat, Aboriginal and historic heritage sites and watercourses.

Further refinements to the project alignment and construction facilities were made following exhibition of the project to reduce environmental impacts (see **Section 5.4**).

### 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. However, for PEC-East, the Department required Transgrid to undertake a best-practice, detailed assessment of all potential impacts prior to lodging its application, including biodiversity, heritage, traffic, agricultural land, water and amenity, with a view to resolving matters identified during the assessment process prior to determination.

Consequently, while there is only an indicative transmission line footprint within a defined 80 m wide easement, 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). Further, the final detailed design of the final transmission line alignment within the easement would be based on further minimising environmental impacts, wherever practicable.

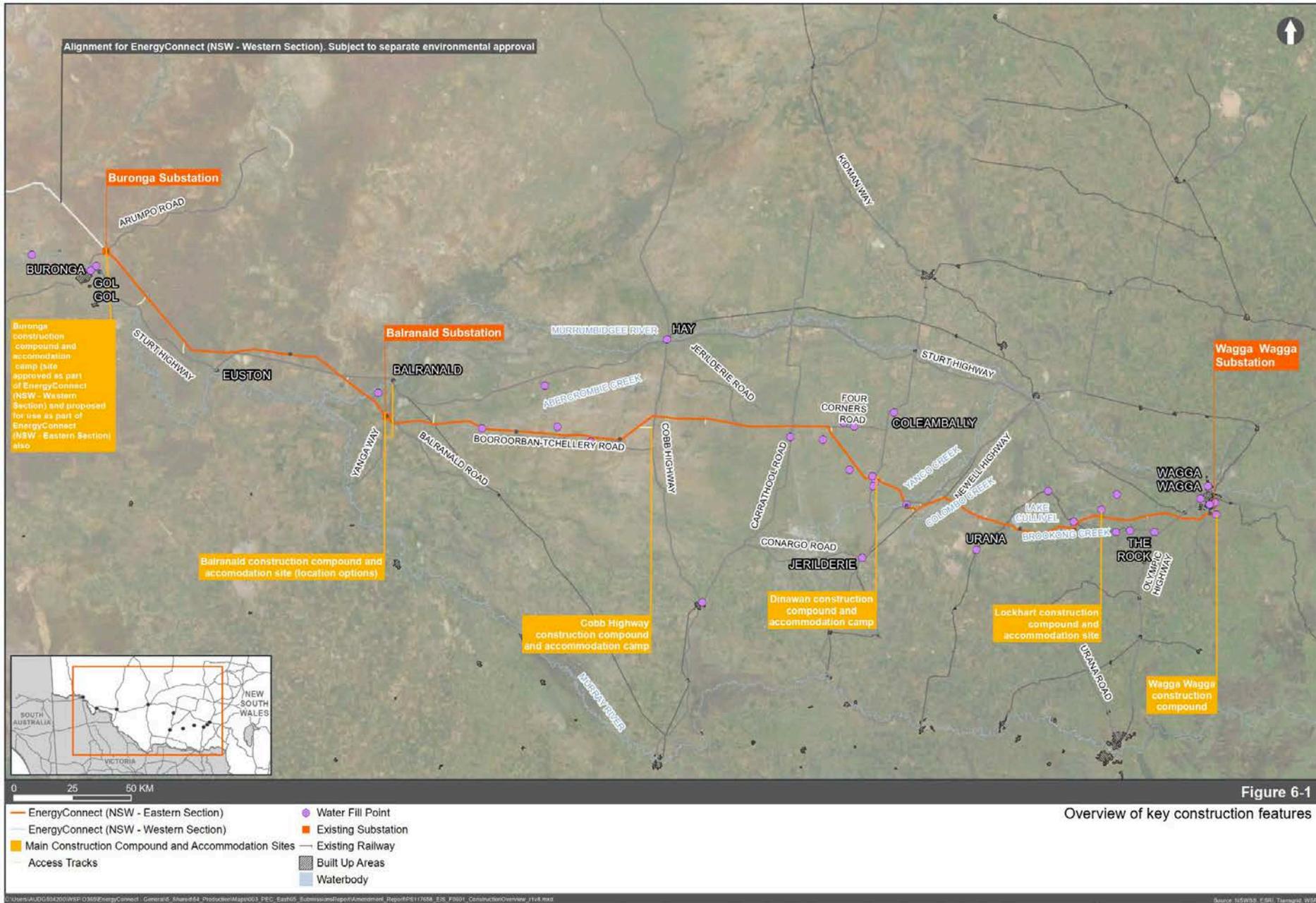


Figure 6-1

Overview of key construction features

Figure 2 | Construction Project Layout

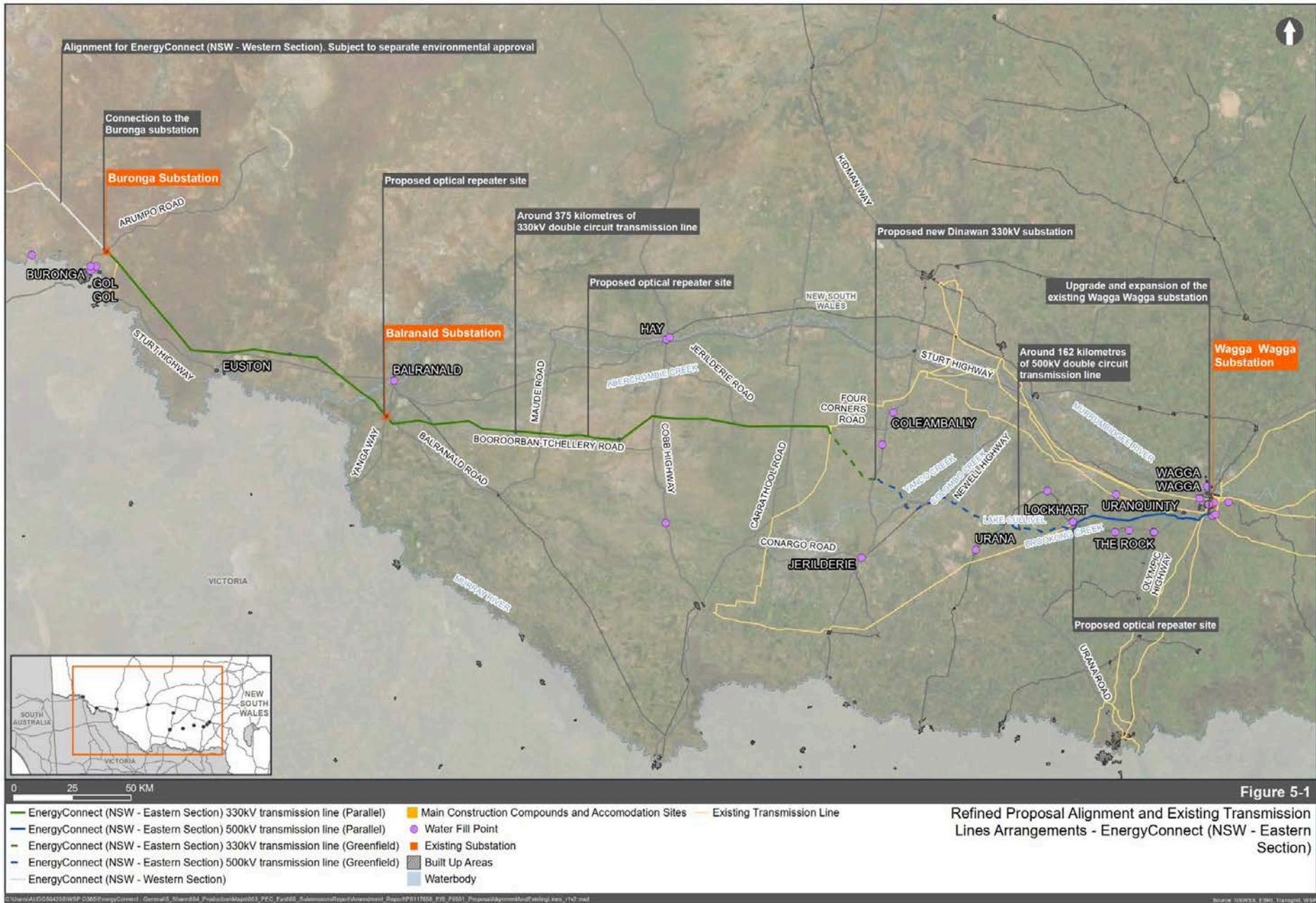


Figure 3 | Operational Project Layout

## 3 Strategic context

### 3.1 Energy Context

As NSW transitions away from coal fired power to renewable energy sources, the National Electricity Market (NEM) requires significant investment in transmission infrastructure, such as Project EnergyConnect, to link these new sources of generation to the energy market.

This is set out in several Commonwealth and State policies and strategies, as summarised in **Table 2**.

**Table 2 | Energy Context**

Policy / Year	Summary
<i>Australia's Long Term Emissions Reduction Plan (2021) and Nationally Determined Contribution (2022)</i>	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 Project EnergyConnect as providing vital support to the grid, while creating jobs, keeping energy prices low and reducing emissions. It also notes that the project would enable electricity to flow between NSW and SA that would unlock renewable energy projects in NSW, SA and VIC.
Australian Energy Market Operator's (AEMO) 2022 <i>Integrated System Plan (ISP)</i>	Identifies Project EnergyConnect as a priority transmission project in NSW and SA, with a critical role in ensuring energy security and reliability, and playing an essential role as the NEM transitions to renewable energy.
NSW: <i>Climate Change Policy Framework (2016)</i> <i>Transmission Infrastructure Strategy (2018)</i> <i>Electricity Strategy (2019)</i> <i>Electricity Infrastructure Roadmap (2020)</i> <i>Net Zero Plan Stage 1: 2020 – 2030 (2020) and Implementation update (2021)</i>	Relevant aspects of these policy documents include: <ul style="list-style-type: none"> <li>- aim to achieve net zero emissions in NSW by 2050 and reduce emissions by 50% below 2005 levels by 2030</li> <li>- set out how the NSW Government will deliver on this objective and fast-track emissions reduction</li> <li>- note that all coal fired power plants in NSW are scheduled for closure within the next twenty years</li> <li>- identify Renewable Energy Zones (REZ) across NSW, including in the South West, aimed at encouraging investment in new electricity infrastructure and unlocking additional generation capacity in order to ensure secure and reliable energy in NSW</li> <li>- note the need to expand transmission infrastructure into REZs to open new parts of the grid for renewable energy projects</li> <li>- the NSW Government has begun the process for declaring the South-West Renewable Energy Zone (REZ) to support transmission upgrades in this zone.</li> </ul>
Australian Energy Regulator's (AER) <i>Regulatory Investment Test for Transmission (RIT-T)</i>	Aims to promote efficient transmission investment in the NEM by promoting greater consistency, transparency and predictability in transmission investment decision making and to consider all credible options to address the identified need (including non-network options). In January 2020, the AER determined Project EnergyConnect satisfied the requirements of the RIT-T.
Australian Government Clean Energy Finance Corporation (CEFC)	The CEFC is responsible for investing \$10 billion in clean energy projects on behalf of the Australian Government. The CEFC has committed \$295 million to facilitate Project EnergyConnect, being its largest single investment.

## 3.2 Site and Surrounds

### Land Use

At 537 km in length, the project traverses nine local government areas and for large stretches is located in relatively remote and sparsely populated parts of southwestern NSW.

The only town near the project with a population greater than 5,000 people is Wagga Wagga, which is located at the easternmost point of the project. There are a small number of scattered rural residences along the alignment, with most of those located near Wagga Wagga.

Land within and surrounding the site is mainly used for agriculture (about 93% of the site), primarily livestock grazing along western and central sections of the site, and dryland cropping towards the east. There is no mapped Biophysical Strategic Agricultural Land (BSAL) in the site and the project only crosses a small area of irrigated cropping (1% of the site).

Land ownership and land use varies across the transmission line corridor. Between Buronga and Balranald, the site largely traverses properties held through western lands leases under the *Crown Land Management Act 2016*. The majority of land east of Balranald is privately owned.

The majority of the site and surrounds is zoned RU1 – Primary Production under the relevant Local Environmental Plans (LEP). The transmission line would also traverse Yanga State Conservation Area, Cullivel State Forest and Brookong State Forest.

The existing Buronga, Balranald and Wagga Wagga substations, and the existing 220 kV transmission lines running east from Buronga and west from Wagga Wagga, are located within sections of site (see **Figure 4**).

### Natural Environment

The topography of the site and surrounds is characterised as relatively flat with slightly undulating terrain and low hills located towards Wagga Wagga. The site traverses the Murrumbidgee, Mid-Murray Peacock Creek and Lower Murray-Darling catchments, which are sub-catchments of the Murray-Darling Basin and would require seven major watercourse crossings and several other smaller creek crossings.

The site contains large areas of connected native vegetation, which connect to other key landscape features beyond the site, such as National Parks and conservation areas. No nationally or internationally important wetlands are located near the site. Lake Cullivel, Dry Lake, Lake Benanee and Waldaira Lake (250 m to 1.5 km from the site) are the closest waterbodies.



**Figure 4** | Existing 220 kV line between Balranald and Hay, adjacent to proposed 330 kV line

## 4 Statutory Context

### 4.1 Critical State Significant Infrastructure and Permissibility

The project is classified as Critical State Significant Infrastructure (CSSI) under section 5.13 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) because it forms part of Project EnergyConnect (SA to NSW Electricity Interconnector), which is listed as CSSI in *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP). Consequently, the Minister for Planning (the Minister) is the approval authority. The project is permissible without development consent under section 2.15 of the Planning Systems SEPP.

### 4.2 Administrative and Procedural Requirements

Under the EP&A Act and the *Environmental Planning and Assessment Regulation 2000* (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 Environmental Impact Statement (EIS) and responding to submissions, and the Department exhibiting the EIS and making key documents available on its website. 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 5.4**) in accordance with clause 192(2) of the EP&A Regulation. The Director, Energy Assessments, has accepted Transgrid's amended application on behalf of the Minister under the delegation of 9 March 2022, for the following reasons:

- the amendments have reduced the impacts of the project as a whole;
- the amended application directly responds to the key issues raised in submissions;
- Transgrid assessed the impacts of the amended project (see **Appendix E**); and
- the Department made the 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 Directorate (BCS), as well as the independent expert advice of Umwelt (see **Appendix I** and **Section 6.2**).

### 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 89-91 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**), and included conditions in the recommended project approval (see **Appendix H**) 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 *SEPP (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 *National Parks and Wildlife Act 1974*, 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 in public roads under the *Roads Act 1993* (Roads Act). It is noted that 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 will generally not require consent from the relevant Councils for works in unclassified (local) roads for 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 is required for the project, specifically for crushing, grinding or separating under Clause 16 of Schedule 1 of the POEO Act.

The Department has consulted with the agencies responsible for these approvals in its assessment of the project.

## 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 J**).

## 4.10 Commonwealth Approvals

On 30 September 2020, the project was declared (EPBC 2020/8766) to be a 'controlled action' in accordance with the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) due to likely significant impacts to listed threatened species and communities (sections 18 / 18A).

The assessment process under the EP&A Act has been accredited under a bilateral agreement with the Commonwealth Government. Accordingly, the NSW Government has undertaken the assessment on behalf of the Commonwealth and has assessed matters of national environmental significance (see **Section 6.2** and **Appendix I** of this Report).

The Department consulted with the Department of Climate Change, Energy, the Environment and Water (DCCEEW) in accordance with the bilateral agreement and provided draft copies of this assessment report and the recommended conditions of approval to DCCEEW for comment.

# 5 Engagement

## 5.1 Department's engagement

The Department publicly exhibited the EIS from 19 January until 15 February 2022 (28 days), advertised the exhibition in several local and national newspapers and notified adjoining landowners. 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, phone number and email address, an online engagement tool for stakeholders to provide comments, stakeholder briefings, presentations and workshops, and face-to-face meetings with potentially affected landowners. Transgrid also undertook consultation the Department, relevant government agencies, Aboriginal stakeholders and potential water suppliers during the assessment process, as well as potentially impacted neighbours and associated landowners to inform the project amendments detailed below.

## 5.3 Submissions and Submissions Report

During the exhibition period of the EIS, the Department received 41 unique public submissions (38 objecting, 2 comments and 1 in support) and 5 submissions from special interest groups (3 comments, 1 in support and 1 objecting). In addition, comments were received from the nine host councils and advice was received from 17 government agencies (see **Table 4**). Full copies of the agency advice and submissions are attached in **Appendix C** and **Appendix F**. Transgrid provided a response to all matters raised in submissions on the project (see **Appendix D**).

## 5.4 Amended Application

Following consideration of submissions on the project, Transgrid amended its application primarily to avoid environmental, heritage and visual impacts, as detailed in the Amendment Report (see **Appendix E**). This included:

- relocating some towers within the easement (reducing the construction footprint by about 110 ha);
- relocating a 13.5 km section of the transmission line to be located further south of Lake Cullivel and adjoining properties, and a 2 km section of the transmission line near Lockhart away from residences;
- minor refinements to the alignment in consultation with agencies and associated landowners;
- removal of the Urana-Lockhart Road construction compound and accommodation camp option;
- refining the location of the Cobb Highway compound and accommodation camp; and
- 16 additional construction water supply points, and removal of three previously identified.

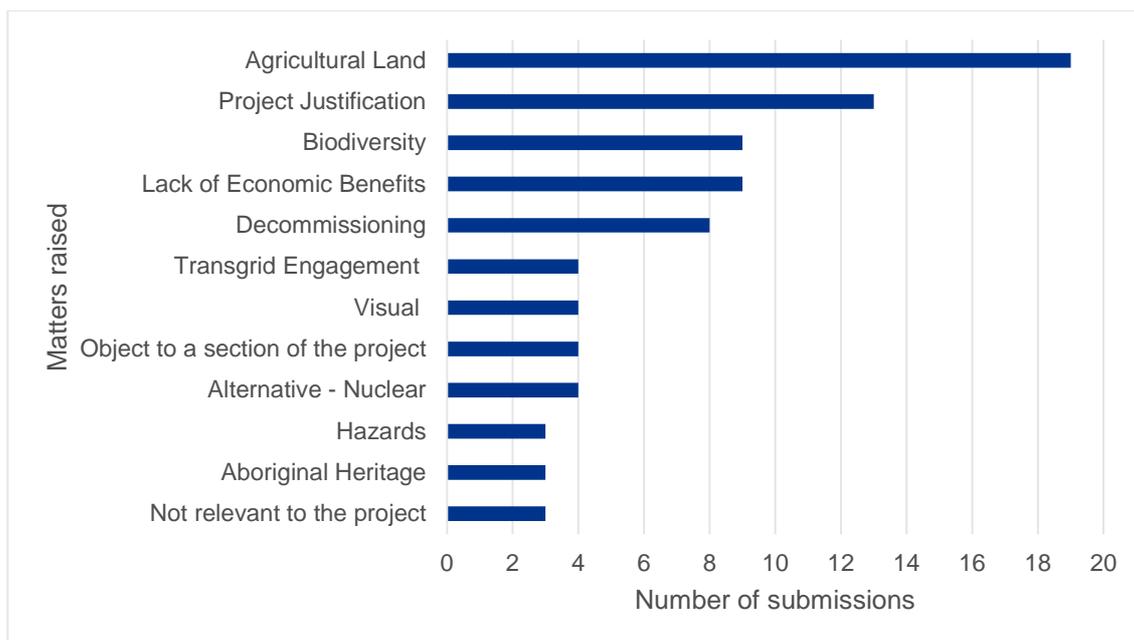
The Department provided the Amendment Report to government agencies and made it available on its website. No comments were received from special interest groups or the public. As the amendments would not increase the impacts of the project as a whole, the Department did not exhibit the Report.

## 5.5 Key Issues – Community

The submissions objecting to the project primarily raised concerns about agricultural land impacts, project justification, biodiversity and decommissioning. **Figure 5** shows the key matters raised in public submissions. **Section 6** provides a summary of the Department's consideration of these matters.

One submission providing comment requested clarification about the location of the transmission line in the vicinity of their property south of Lockhart and the other submission recommended additional mitigation measures related to electric and magnetic fields (EMF) and biosecurity.

The submission supporting the project noted the benefits of connecting the NSW and SA grid systems and the need for a larger electrical grid.



**Figure 5 | Key matters raised in public submissions**

## 5.6 Key Issues – Special Interest Groups

**Table 3 | Summary of Special Interest Group Advice**

Council	Key issue
Wakool Indigenous Corporation	<ul style="list-style-type: none"> <li>Supported the quality of the Aboriginal Cultural Heritage Assessment Report (ACHAR) and recommended Transgrid conduct surveys with Traditional Owners on sections where archaeological survey not yet conducted.</li> </ul>
Coleambally Irrigation Co-operative Limited	<ul style="list-style-type: none"> <li>Supports the project, noting it would contribute to renewable energy generation and lead to economic, social and environmental benefits.</li> </ul>
APA Group	<ul style="list-style-type: none"> <li>Recommended Transgrid undertake an induced electrical current risk assessment study prior to any works traversing its Bomen to Culcairn high pressure pipeline.</li> </ul>
Australian Rail Track Corporation (ARTC)	<ul style="list-style-type: none"> <li>Noted design of the project is to comply with ARTC and Australian Standards and construction works should not affect rail operations.</li> </ul>
Save Our Surroundings	<ul style="list-style-type: none"> <li>Objected to the project raising concerns about numerous matters, including project justification and misleading information regarding the benefits of the project, such as emissions reduction and facilitation of renewable energy.</li> </ul>

## 5.7 Key issues – Agencies and Councils

None of the government agencies or Councils objected to the project. However, they provided comments on the key aspects of the project and recommended conditions of consent. A summary of the key matters raised in the government agency submissions is provided in **Table 4**.

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

**Table 4 | Summary of Agency and Council Advice**

<b>Council</b>	<b>Key issue</b>	<b>Section in Assessment Report</b>
Balranald Shire Council	<ul style="list-style-type: none"> <li>Supported Transgrid's commitment to further consult on the TMP. Requested clarification regarding waste management, source of construction materials and telecommunication impacts, which was addressed in the Submissions Report.</li> </ul>	6.4
Edward River Council	<ul style="list-style-type: none"> <li>Requested clarification regarding waste management, source of construction materials, bushfire risk, and commissioning and decommissioning of compounds and accommodation camps. Noted project's benefits to the region. Additional information was provided in the Submissions Report.</li> </ul>	6.7
Federation Council	<ul style="list-style-type: none"> <li>Requested clarification regarding waste management, source of construction materials, potable water supply, and decommissioning of compounds and accommodation camps. Expressed concern regarding the use of several local roads. Transgrid responded to matters raised in the Submissions Report.</li> </ul>	6.4 and 6.7
Lockhart Shire Council	<ul style="list-style-type: none"> <li>Initially raised concerns regarding potential traffic and transport impacts on local roads to which Transgrid responded in the Submissions Report.</li> </ul>	6.4
Murray River Council	<ul style="list-style-type: none"> <li>Noted that the dilapidation report should be completed prior to works commencing, which Transgrid has committed to.</li> </ul>	6.4
Murrumbidgee Council	<ul style="list-style-type: none"> <li>Noted project's benefits to the State and the local region.</li> </ul>	6.7
Wagga Wagga City Council	<ul style="list-style-type: none"> <li>Requested further information regarding the Wagga Wagga construction compound and Wagga Wagga substation upgrade. Traffic and transport impacts on local roads. Transgrid provided additional information in the Submissions Report.</li> </ul>	6.4 and 6.7
Hay and Wentworth Shires	<ul style="list-style-type: none"> <li>Raised no concerns</li> </ul>	N/A

<b>Agency</b>	<b>Key issue</b>	<b>Section in Assessment Report</b>
Biodiversity, Conservation and Science Directorate (BCS)	<ul style="list-style-type: none"> <li>Raised concerns about inputs to the BDAR, including survey methodology, vegetation integrity scores and spatial data.</li> <li>Requested further information regarding potential impacts on threatened species, potential serious and irreversible impact (SAII) species and communities, measures to avoid and minimise impacts, assessment of partial impacts within the easement and made recommendations regarding offset requirements and the Biodiversity Offset Strategy for the project.</li> <li>Transgrid responded to these matters in its Submission, additional information and a revised BDAR.</li> </ul>	6.2

Heritage NSW – Aboriginal Cultural Heritage	<ul style="list-style-type: none"> <li>Agreed with the recommendations in the revised ACHAR that addressed initial concerns regarding additional surveys and test excavations. Supports the implementation of the identified mitigation measures.</li> </ul>	6.3
Heritage Council of NSW	<ul style="list-style-type: none"> <li>Supports the implementation of measures to avoid and minimise impacts on one listed item and two newly identified sites.</li> </ul>	6.7
Transport for NSW	<ul style="list-style-type: none"> <li>Supports the proposed intersection upgrades. Advised relevant approvals required for works within road reserves and rail land.</li> </ul>	6.4
Department of Primary Industries (DPI) Agriculture	<ul style="list-style-type: none"> <li>Requested that development of the new section of transmission line between Kidman Way and Olympic Highway continues to include landowner consultation and potential impacts to agricultural production are mitigated, which Transgrid incorporated in the project's preferred alignment described in the Amendment Report.</li> </ul>	6.7
Crown Lands	<ul style="list-style-type: none"> <li>Provided a number of requirements when the project traverses Crown land, which Transgrid committed to in the Submissions Report</li> </ul>	6.7
Environment Protection Authority (EPA)	<ul style="list-style-type: none"> <li>Required removal of three water supply points with EPLs that do not permit use of treated wastewater for construction activities, which Transgrid removed as part of the amended application.</li> </ul>	6.7
DPE Water	<ul style="list-style-type: none"> <li>Required post approval management and reporting for water use, groundwater and surface water, which Transgrid committed to in the Submissions Report.</li> </ul>	6.6
WaterNSW	<ul style="list-style-type: none"> <li>Supported the mitigation measures to manage the impacts to soil and water and requested Transgrid consult with WaterNSW if any of its assets are encountered during project implementation, which Transgrid has committed to.</li> </ul>	6.7
DPI Fisheries	<ul style="list-style-type: none"> <li>Supports the aquatic ecology assessment and management measures.</li> </ul>	6.7
Murray-Darling Basin Authority (MDBA)	<ul style="list-style-type: none"> <li>Supports the proposed management measures to avoid and minimise impacts on water quality, watercourses and groundwater.</li> </ul>	6.7
Fire and Rescue NSW	<ul style="list-style-type: none"> <li>Recommended an Emergency Response Plan (ERP) be prepared for the project, which is included in the recommended conditions.</li> </ul>	6.7
Rural Fire Service	<ul style="list-style-type: none"> <li>Recommended several conditions related to bushfire and safety, which Transgrid addressed in the Submissions Report.</li> </ul>	6.7
NSW National Parks and Wildlife Service (NPWS)	<ul style="list-style-type: none"> <li>Supports ongoing consultation and design refinements to avoid and minimise impacts on Yanga State Conservation Area heritage and biodiversity values, which Transgrid has committed to.</li> </ul>	6.2
Regional NSW – Mining, Exploration & Geoscience (MEG)	<ul style="list-style-type: none"> <li>Noted Transgrid's commitment to consult with exploration / mining title holders</li> <li>Noted there are several pending exploration and assessment lease applications which the route would traverse</li> </ul>	6.7
CASA	<ul style="list-style-type: none"> <li>Confirmed that the transmission line would not be a hazard to aircraft operations.</li> </ul>	6.7
Airservices	<ul style="list-style-type: none"> <li>Requested an Aviation Impact Statement (AIS), which Transgrid prepared as part of the Submissions Report.</li> </ul>	6.7

## 6 Assessment

The Department has undertaken a comprehensive assessment of the merits of the project. This report provides a detailed discussion of the key issues, including energy security and reliability; biodiversity; Aboriginal heritage, agriculture and soils; traffic and transport and noise.

The Department has also considered the full range of potential impacts associated with the project and has included a summary of its assessment of these matters in **Section 6.7**.

The key elements of the project are shown in **Figure 2** and **Figure 3**. A list of the key documents that informed the Department's assessment is provided in **Appendix A**.

### 6.1 Energy Security and Reliability

Project EnergyConnect is consistent with a range of national and state policies, which identify the need for the interconnector between SA and NSW to support energy security and reliability, including the:

- NSW Government's *Transmission Infrastructure Strategy* - which highlights the need for investment in interconnection between the states;
- NSW Government's *Electricity Strategy* and *Electricity Infrastructure Roadmap* – which support transmission upgrades in the South-West REZ; and
- *2022 Integrated System Plan (ISP)* – which identifies Project EnergyConnect as a priority transmission project in NSW and SA.

The Department considers that Project EnergyConnect could play an important role in:

- enhancing the capacity of the NEM to provide electricity between SA, NSW and VIC;
- transporting renewable energy from the South-West REZ to energy consumers;
- facilitating the transition to a lower carbon emissions energy system as coal fired generators retire; and
- lower power 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 costs generation sources.

Consequently, the Department considers that an interconnector between SA, NSW and VIC is critical for energy security and reliability in NSW and would play a critical role in supporting the transition of the energy system, and linking SA, NSW and VIC.

EnergyConnect (East) completes the NSW section of Project EnergyConnect and would facilitate the transmission of renewable energy from the South-West REZ to energy consumers.

While the transmission line between Dinawan and Wagga Wagga would be capable of operating at a 500 kV capacity, it would operate at 330 kV until wider network upgrades are undertaken to support the higher operating capacity. Constructing the project with a 500 kV operational capacity would ensure Project EnergyConnect can support ongoing development within the South-West REZ without requiring additional approvals of transmission line upgrades between Dinawan and Wagga Wagga.

### 6.2 Biodiversity

The project has the potential to impact biodiversity values through clearing native vegetation and direct and indirect impacts to listed threatened flora and fauna species and vegetation communities during construction and ongoing management of vegetation within easements.

Transgrid assessed biodiversity impacts in its BDAR and provided additional information and revisions to the BDAR to the Department during its assessment.

There was substantial engagement through the assessment process with BCS regarding potential impacts and the BDAR. Community objections also raised the issue of biodiversity impacts.

The Department also engaged independent ecological advice from Umwelt on the BDAR and proposed offset measures (**Appendix J**).

Landscapes are diverse across the site, which traverses five Interim Biogeographic Regionalisation of Australia (IBRA) sub-regions. Key landscape features within the site are the Murrumbidgee River, Yanco and Colombo Creeks and associated riparian vegetation, Coleambally irrigation channels, Yanga State Conservation Area, and Cullivel and Brookong State Forests.

Native vegetation cover is estimated to be greater than 70% across western and central sections of the site, with land primarily used for livestock grazing. The western and central sections are dominated by arid shrublands and semi-arid woodlands, with the central section also comprising forested and freshwater wetlands associated with riparian vegetation along watercourses.

Along the eastern section of the site, native vegetation cover is approximately 10% to 30%, declining to less than 10% towards Wagga Wagga, with agricultural land largely used for grazing and cropping and limited remnant native vegetation typically located along roadsides or fragmented patches.

### Avoidance and Mitigation

Transgrid has designed the project to avoid and minimise impacts on high quality vegetation and habitat as far as practicable, including:

- **Co-location:** co-locating sections of the transmission line with existing infrastructure where native vegetation and species habitat is in the poorest condition;
- **Re-location:** re-locating the corridor to avoid impacts on listed (and potential SAI) communities and species;
- **Partial clearing:** implementing partial vegetation clearing measures to heights of 4 m and 10 m within the easement;
- **Riparian vegetation:** targeting narrow waterway crossing points and associated flood areas to minimise clearing of riparian vegetation;
- **Access:** using existing access tracks where possible to minimise vegetation clearing;
- **Ancillary infrastructure:** locating ancillary infrastructure to largely avoid impacts on listed (and potential SAI) communities and species; and
- **Construction footprint refinements:** reducing the construction footprint of the proposed transmission towers and ancillary infrastructure, as identified in the Amendment Report.

BCS initially raised concerns about sections of the transmission line passing through Yanga State Conservation Area and Cullivel and Brookong State Forests. While Transgrid has sought to avoid all impacts on State Conservation Areas and State Forests, the Department and BCS accepts that the proposed route balances a range of constraints, including proximity to surrounding residences and avoidance of Commonwealth Department of Defence exclusion zones, and that Transgrid has sought to minimise impacts by co-locating the proposed transmission line with existing transmission lines or existing road alignments in these areas.

During detailed design, Transgrid has committed to further avoid and minimise impacts on biodiversity values through siting transmission line towers and access tracks to avoid higher quality native vegetation and habitat.

### Native Vegetation

The indicative development footprint (4,889 ha) would disturb approximately 1,615 ha of native vegetation, comprising 1,338 ha of vegetation in moderate to good condition, 269 ha of derived native

grassland (DNG) and 3 ha being in poor condition, and the remaining being native vegetation planting (5 ha).

Of the 1,338 ha of moderate to good condition vegetation, about 937 ha (70%) is arid shrublands or semi-arid shrubby woodlands, 185 ha (14%) is grassy woodlands, 120 ha (9%) is grasslands and 94 ha (7%) is forested or freshwater wetlands associated with the major rivers.

Approximately 232 ha of vegetation comprising six threatened ecological communities listed under the BC Act would be impacted, two of which are potential SAI communities, comprising:

- 101.83 ha of Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW Southwestern Slopes bioregions – Endangered;
- 60.48 ha of White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered and SAI community;
- 33.86 ha of Inland Grey Box Woodland in the Riverina, NSW Southwestern Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions – Endangered;
- 22.25 ha of Sandhill Pine Woodland in the Riverina, Murray-Darling Depression and NSW Southwestern Slopes bioregions – Endangered;
- 10.81 ha of *Acacia melvillei* Shrubland in the Riverina and Murray-Darling Depression bioregions – Endangered; and
- 2.93 ha of *Allocasuarina luehmannii* Woodland in the Riverina and Murray-Darling Depression Bioregions – Endangered and SAI community;

Approximately 609 ha of vegetation comprising eight threatened ecological communities listed under the EPBC Act would be impacted, comprising:

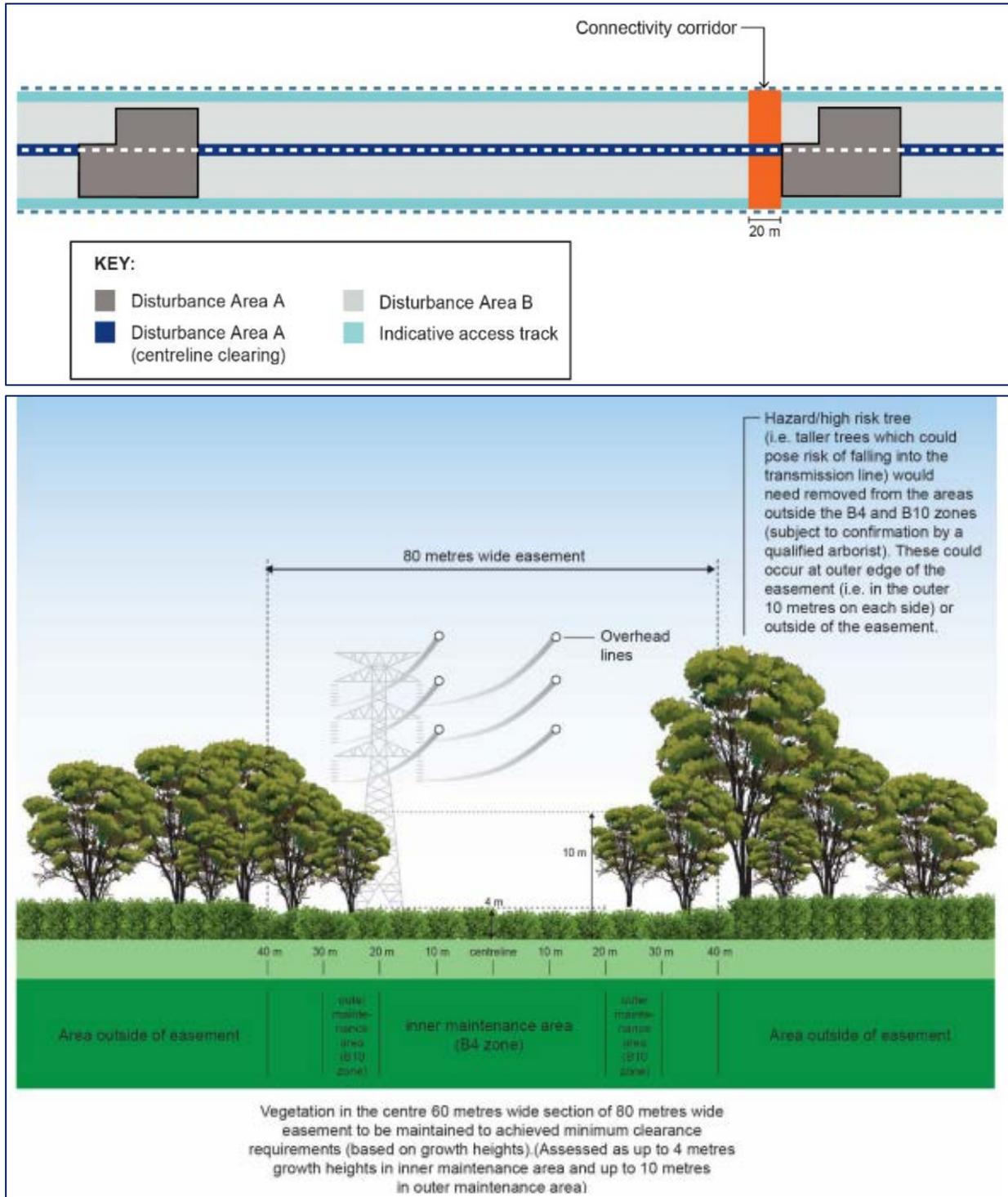
- communities assessed and offset under the BC Act – 101.83 ha of Weeping Myall Woodlands, 34.89 ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland; 17.56 ha of Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia and 2.93 ha of Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions;
- communities not covered by the BC Act – 62.47 ha of Natural Grasslands of the Murray Valley Plains and 2.63 ha of Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains; and
- communities listed after the Referral Decision – 380.93 ha of Mallee Bird Community of the Murray Darling Depression Bioregion and 5.98 ha of Plains mallee box woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions.

The Department notes that while offsets are required for the clearance of the PCTs associated with the two communities that are not covered by the BC Act, BCS has recommended that DCCEEW considers requiring their own conditions to address potential impacts on these communities. BCS has also advised that potential impacts on the two communities listed after the Referral Decision was issued do not require consideration under section 158A of the EPBC Act, however, offsets would still be required under the BC Act for the clearance of the PCTs associated with these communities. Impacts on these communities, including offset liabilities, are identified and considered in **Appendix K**.

Transgrid has applied a conservative approach to assessing and offsetting partial impacts to vegetation. This approach was consistent with the approach agreed with BCS during the assessment of EnergyConnect (West). Of the 1,615 ha of native vegetation potentially impacted, 456 ha would be managed as an area of partial disturbance with vegetation maintenance (i.e. disturbance area B in **Figure 6**).

In summary, these impacts for disturbance area B (**Figure 6**) would typically include:

- a 40 m wide inner maintenance zone for 330 kV (and 60 m for 500 kV), where vegetation above 4 m high would be trimmed (identified as disturbance area B4);
- a 10 m wide outer maintenance zone (either side of the inner zone for both 330kV and 500 kV) where vegetation above 10 m in height would be trimmed (identified as disturbance area B10); and
- complete removal of any hazard/high risk trees within the easement.



**Figure 6 | Vegetation disturbance areas (330 kV transmission line)**

BCS expressed concern that a different approach for the consideration of partial disturbance to that applied in EnergyConnect (West) may be required due to differences in vegetation communities for this section of the project. In light of BCS' concerns, the Department sought advice from an independent ecologist from Umwelt. Umwelt considered the material submitted by Transgrid and BCS' advice and agreed with the partial impact scores applied by Transgrid. Umwelt concluded that Transgrid's proposed approach outlined above is conservative, including for the vegetation communities that are different to EnergyConnect (West), and would adequately compensate for impacts to vegetation in the partial disturbance areas.

Notwithstanding, Transgrid has committed to monitoring clearing within the easement. The Department has recommended that the BMP also include an on-site verification process within three months of the commencement of construction to confirm if any changes are required to the vegetation clearing protocols. Further monitoring and verification would also occur during ongoing operations through the regular Independent Environmental Audit process.

Subject to this commitment, BCS has raised no further concerns, and the Department has included this as a requirement of the BMP.

**Table I1 of Appendix I** provides a summary of the vegetation types that would be impacted by the indicative development footprint, as well as the ecosystem credit liability under the under the *NSW Biodiversity Offset Scheme*.

### 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.

Forty-four candidate threatened flora species listed under the BC Act were identified as having potential to occur within the site and were the subject of targeted surveys. Of these, seven threatened flora species were identified within the indicative development footprint, four of which are also listed under the EPBC Act. In response to concerns raised by BCS regarding the survey methodology used to inform the presence or absence of threatened flora species, Transgrid has assumed presence of an additional 13 threatened flora species, five of which are also listed under the EPBC Act.

Two species recorded during site surveys and five species assumed present are potential SAIL species.

**Table I2 of Appendix I** details the impacts and species credit liability for threatened flora species potentially impacted by the project. Potential impact to threatened flora species recorded and / or assumed present within the site are also listed under the EPBC Act and are considered in **Appendix J**.

### Fauna Impacts

The project has the potential to impact fauna species through direct habitat loss from vegetation clearing, and indirectly due to the potential for avifauna to collide with the transmission lines and from EMF for birds nesting in the transmission towers.

#### *Direct Habitat Loss*

Direct impacts resulting from the indicative development footprint include loss of habitat for 77 threatened fauna species identified or predicted to occur as ecosystem credit species listed under the BC Act. Potential impacts on these species, some of which are listed under the EPBC Act, would be offset via the ecosystem credit offsets detailed in **Table I1 of Appendix I**.

Forty-four candidate species credit species were considered to have potential habitat within the site and were the subject of targeted surveys. Of these, habitat for one species (Plains Wanderer) listed under the BC Act and EPBC Act was recorded within the indicative development footprint. This is also the only threatened fauna species identified as being at risk of SAIL.

In response to concerns raised by BCS regarding the survey methodology used to inform the presence of threatened fauna species habitat, Transgrid has conservatively assumed presence of habitat for an additional eight species listed under the BC Act, two of which are also listed under the EPBC Act.

**Table I3** of **Appendix I** details the direct impacts and species credit liability for threatened fauna species. Direct impacts on threatened fauna species listed under the EPBC Act are considered in detail in **Appendix J**.

#### *Line Strike and EMF*

There is the potential for indirect impacts on eight threatened avifauna species due to the risk of line strike and EMF impacts on birds nesting in transmission line towers. **Table I4** of **Appendix I** details the potential indirect impacts and species credit liability for these species.

In addition to offsetting potential indirect impacts, Transgrid has committed to install bird diverters to minimise the risk of birds colliding with the transmission lines and deter birds from roosting in towers.

### **Serious and Irreversible Impacts**

Transgrid's assessment of communities and species at risk of SAll concluded that the project is unlikely to have a serious and irreversible impact on these species and communities.

In addition to offsetting potential impacts on the two potential SAll vegetation communities, seven potential SAll flora species and one potential SAll fauna species, Transgrid has committed to address concerns raised by BCS by developing additional measures to minimise harm to these communities and species, including avoidance of direct impacts on confirmed locations of SAll entities where possible during detailed design. The Department has included this as a specific requirement in the BMP for the project.

### **Significance of Impacts on Threatened Species and Communities**

Transgrid identified and addressed all threatened species and communities included in the Commonwealth Referral Decision (EPBC 2020/8766) (Referral Decision).

Assessments of significance were undertaken for threatened species and communities that were recorded during field surveys or were identified as having a moderate or higher potential to occur on the site, including eight threatened ecological communities, nine threatened flora species, 31 threatened fauna species, six aquatic and 12 migratory species.

Assessments of significance concluded that there would be significant impacts on four threatened ecological communities and three threatened flora species.

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

### **Biodiversity Offset**

Under the BC Act, the impact on native vegetation and species would generate 43,244 ecosystem credits and 46,030 species credits.

**Table 5** summarises the estimated biodiversity credit liability requirements under the *NSW Biodiversity Offset Scheme* for the project.

**Table 5 | Native Vegetation and Threatened Species Biodiversity Offset Liability**

Impact		Total Area (ha)	Credit Liability
Native vegetation		1,615	43,134
Scattered trees		-	110
		<b>Total Ecosystem Credits</b>	<b>43,244</b>
Threatened Flora	Recorded	98	4,128
	Assumed Present	679	27,349
Threatened Fauna	Recorded	61	1,603
	Assumed Present	478	12,324
	Indirect	29	626
		<b>Total Species Credits</b>	<b>46,030</b>

Both the Department and BCS are satisfied that the offset credit requirements have been correctly calculated. Transgrid would offset the residual biodiversity impacts of the project in accordance with the *NSW Biodiversity Offset Scheme*, which includes the following options:

- acquiring or retiring 'biodiversity credits' within the meaning of the BC Act;
- making payments into an offset fund that has been developed by the NSW Government; or
- funding a biodiversity conservation action that benefits the entity impacted and is listed in the ancillary rules of the NSW Biodiversity Offsets Scheme.

The Department notes that Transgrid has proposed a range of options including securing land based offsets and payment into the offset fund for the residual credits that cannot be offset through the land based offsets.

Transgrid has advised the Department that it intends to establish land-based stewardship sites. Transgrid aims to establish three candidate sites as land-based stewardship sites and purchase residual existing credits (if available) or payment into the Biodiversity Conservation Fund, and is in the process of finalising this process.

The Department has recommended conditions requiring Transgrid to develop a Biodiversity Offset Package in consultation with BCS prior to carrying out any development that could impact biodiversity values. The Department notes 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. The Biodiversity Offset Package would include:

- details of the specific biodiversity offset measures to be implemented and delivered including confirming the offset liability; and
- the timing and responsibilities for the implementation of the actions.

The credits would be re-calculated when the final layout design of the project is known to confirm the final number and class of biodiversity credits required to be offset.

This approach also provides an incentive to Transgrid to avoid and minimise impacts on biodiversity values through the detailed design process to limit the offset liability for the project. 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.

As security that the impacts would be offset prior to impacting biodiversity values, Transgrid would lodge a bank guarantee(s) for the amount calculated by the Biodiversity Offset Payment Calculator (as at 18 August 2022) for the credit liability identified in the EIS which correlates to \$313 million. If Transgrid fails to implement the Biodiversity Offset Package, this security would be used to make an equivalent payment into the Biodiversity Conservation Fund.

### **Monitoring and Management**

The Department has recommended conditions requiring Transgrid to:

- minimise the clearing of native vegetation and key fauna habitat, including hollow bearing trees and habitat for threatened bird and bat populations, within the project footprint and protect native vegetation and key fauna habitat outside the approved disturbance area in accordance with limits in the recommended conditions;
- prepare and implement the Biodiversity Management Plan which would include a description of the measures to:
  - implement clearing and operational management protocols;
  - avoid and minimise impacts on SAI entities and provide additional measures for SAI entities to mitigate harm to these communities;
  - minimise the potential indirect impacts on threatened flora and fauna species, migratory species and 'at risk' species;
  - implement a connectivity strategy and hollow and nest strategy;
  - 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) during the rehabilitation and restoration of the site; and
  - control weeds;
- provide a detailed program to monitor and report on the effectiveness of these measures;
- prepare and implement a Biodiversity Offset Package;
- provide a bank guarantee for \$313 million as security to ensure offsets are implemented.

### **Summary**

The Department acknowledges that biodiversity impacts are unavoidable when constructing a 537 km transmission line, and notes that the project would disturb up to 1,338 ha of native vegetation in moderate to good condition.

However, the Department considers that the project has been designed 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.

In addition, the project involves various other mitigation measures to reduce biodiversity impacts, including partial vegetation clearing beneath the transmission lines and targeting of narrow waterway crossings to minimise clearing of riparian vegetation. Importantly, the final detailed design of the final transmission line alignment would also be based on further reductions in impacts, wherever practicable.

The Department and BCS consider that subject to the recommended conditions, the project would not significantly impact the biodiversity values of the locality.

### **6.3 Aboriginal Heritage**

The project has the potential to impact Aboriginal heritage values through ground disturbance during construction and ongoing management of vegetation within the easement.

Transgrid assessed impacts to Aboriginal heritage values in its ACHAR and provided additional information and revisions to the ACHAR to the Department during its assessment.

The survey area comprised a 100 m wide corridor encompassing most of the transmission line and associated access tracks, and all construction facilities, substations and road intersections. Landowner access restrictions prevented surveys of seven sections of the transmission line, totalling 18 km. Desktop assessment of the unsurveyed areas indicates a low to moderate potential for sites and potential archaeological deposits (PAD) to be present.

Thirty-seven PADs were identified within the survey area. Subsurface testing was undertaken for 17 PADs likely to be directly impacted (significance ranges from low to moderate). Of the 20 PADs not subject to subsurface testing, five would not be impacted and 15 may be impacted to varying degrees, with confirmation of impact subject to detailed design.

Transgrid has committed to complete surveys of the unsurveyed areas, to undertake subsurface testing of PADs identified for impact during detailed design, and to avoid or minimise impacts on sites and PADs of moderate or higher significance. To strengthen this commitment, in consultation with Heritage NSW, the Department has recommended a condition requiring Transgrid to prepare an addendum ACHAR prior to construction in the unsurveyed areas and PADs that may be impacted, in consultation with Registered Aboriginal Parties (RAPs) and Heritage NSW.

Eighty-nine sites, primarily of low to moderate significance (one site of moderate-high), are located within the proposed transmission line easement and may to be impacted by the project to varying degrees, dependant on their location relative to towers, access tracks, centreline clearing and vegetation maintenance zones within the easement. An additional 21 sites are located outside of the project footprint. During detailed design, Transgrid has committed to avoid or minimise impacts on any site of moderate or higher significance.

The Department has recommended conditions requiring Transgrid to protect sites and PADs located outside the project footprint, to avoid or minimise impacts on all sites and PADs during detailed design and to prepare and implement a Heritage Management Plan in consultation with RAPs and Heritage NSW. The Department has recommended the following conditions:

- prepare an Addendum ACHAR in consultation with the RAPs and Heritage NSW for unsurveyed areas and PADs requiring subsurface testing;
- avoid or minimise impacts on all sites and PADs during detailed design;
- ensure the project does not cause any direct or indirect impacts on any items located outside the approved development footprint; and
- salvage and relocate impacted Aboriginal items to suitable alternative locations.

Heritage NSW has no further concerns subject to the implementation of the recommended conditions. The Department considers that subject to the recommended conditions, the project would not significantly impact the Aboriginal cultural heritage values of the locality.

## **6.4 Agriculture and Soils**

About 93% of the site is used for agricultural purposes, comprising livestock grazing (67% of the site), dryland cropping (25% of the site) and a small area of irrigated cropping (1% of the site). Importantly, no areas of mapped BSAL would be impacted by the project and Transgrid has located the project to avoid the Coleambally Irrigation Area.

Nevertheless, community objections expressed concern about the potential impacts to agricultural land and on agricultural operations. The project has the potential to impact on agriculture and soils in various ways, including in relation to access and operations, flooding, erosion and sediment control, and acid sulfate soils and salinity.

## Access and Agricultural Operations

Concerns about impacts on agricultural land were raised in 19 submissions. This included loss of agricultural production (from infrastructure and easements being located on agricultural land), interruption of ongoing agricultural operations (such as aerial-spraying and movement of stock) and land contamination.

The Department notes that the majority of these submissions were not from host landowners, and that the majority were regarding the potential impacts of future renewable energy projects that may be located nearby, rather than the project itself.

Grazing and cropping could continue within and adjacent to the proposed easement, with some limitations on aerial spraying and on the height of machinery used within easements. In addition, during detailed design, Transgrid would prioritise the use of existing access tracks and, where possible, avoid locating transmission line towers within cropping and horticultural land, or within farm dam drainage catchments.

Transgrid has also committed to schedule construction works to minimise impacts on vehicular or stock movements, implement biosecurity controls and install aerial warning markers along relevant sections of the transmission line. The Department considers that the likely potential impacts from contamination including contaminated land, asbestos and unexploded ordinance would be limited and would be managed through conditions requiring Transgrid to prepare and implement a Soil and Water Plan (see **Section 6.7**).

The Department acknowledges that Transgrid has sought to consult with all impacted landowners to identify and minimise potential impacts on agricultural land during preparation of the EIS, and Transgrid has committed to continue consulting with impacted landowners during detailed design to identify and implement further appropriate mitigation and management measures.

## Flooding

Construction of the transmission lines would potentially cause temporary and localised redistribution of flood flows in the immediate vicinity of each tower. Transgrid has committed to minimise construction works in floodplains and to ensure there is no substantial influence on flood flows and levels at any individual tower location. No new or additional flood impacts to buildings outside of the construction impact area are anticipated.

One community submission raised concerns about flooding impacts at Dinawan substation if a levee bank associated with the Coleambally Irrigation System were to overflow. Given the distance to the levee bank (about 3 km), the risk of flood impacts is minimal. Transgrid has committed to design the substation above the 100-year Average Recurrence Interval (ARI) level and to ensure that a 200-year ARI flood would not impede substation function.

During operations, the project is not expected to cause changes to flood levels, depths or velocities.

## Erosion and Sediment

Construction activities would disturb soils and potentially increase erosion and sediment loads to surrounding waterways, cause soil compaction and change overland flows.

Transgrid has committed to implement erosion and sediment controls to mitigate and manage potential impacts, including minimising ground disturbance, diverting runoff around disturbed areas, implementing stockpile management procedures and progressively rehabilitating the site.

Permanent operational infrastructure would be designed to minimise any potential erosion risks.

The Department also notes that it is a strict liability offence to pollute any waters off the site under the POEO Act.

## Acid Sulfate Soils and Salinity

Acid sulfate soil mapping indicates a low likelihood of acid sulfate soils occurring across the site, with the exception of potential occurrences in low-lying areas surrounding lakes and riverbeds.

Salinity mapping indicates a low likelihood of saline soils occurring across the site. However, soil conductivity testing indicates soil conditions within the site are variable, with some areas being moderately saline and very saline soil conditions.

Prior to construction, Transgrid has committed to undertake testing to determine the presence of acid sulphate soils and saline soils and, if present, implement best practice control measures in accordance with the relevant guidelines.

## Monitoring and Management

The Department has recommended conditions requiring Transgrid to:

- prepare and implement a Soil and Water Management Plan including measures to minimise and manage flood risks, erosion and sediment generation, acid sulfate soil and salinity impacts;
- prepare and implement an Accommodation Camp Management Plan that ensures the camps are designed, constructed and maintained to reduce impacts on surface water, localised flooding and groundwater at the site; and
- implement best practice mitigation measures to manage flooding, erosion and sediment, acid sulfate soils, and salinity risks.

## Summary

The Department acknowledges that the potential for impacts on agriculture and soils was a source of concerns in many objections.

While the proposed transmission line traverses a large number of agricultural properties across nine LGAs, the Department notes that the entirety of agricultural land within the site equates to about 0.04% of agricultural land across the nine LGAs. The majority of this land (67%) is used for livestock grazing and the project has been designed to avoid all but a small area of irrigated land.

The Department considers that the risks to agriculture and soils can be managed through ongoing consultation with affected landowners, best practice mitigation measures, and the implementation of the recommended conditions. In relation to the relevant issues discussed above, DPI Agriculture, DPE Water, the MDBA and the relevant councils had no further concerns, subject to the implementation of the recommended conditions.

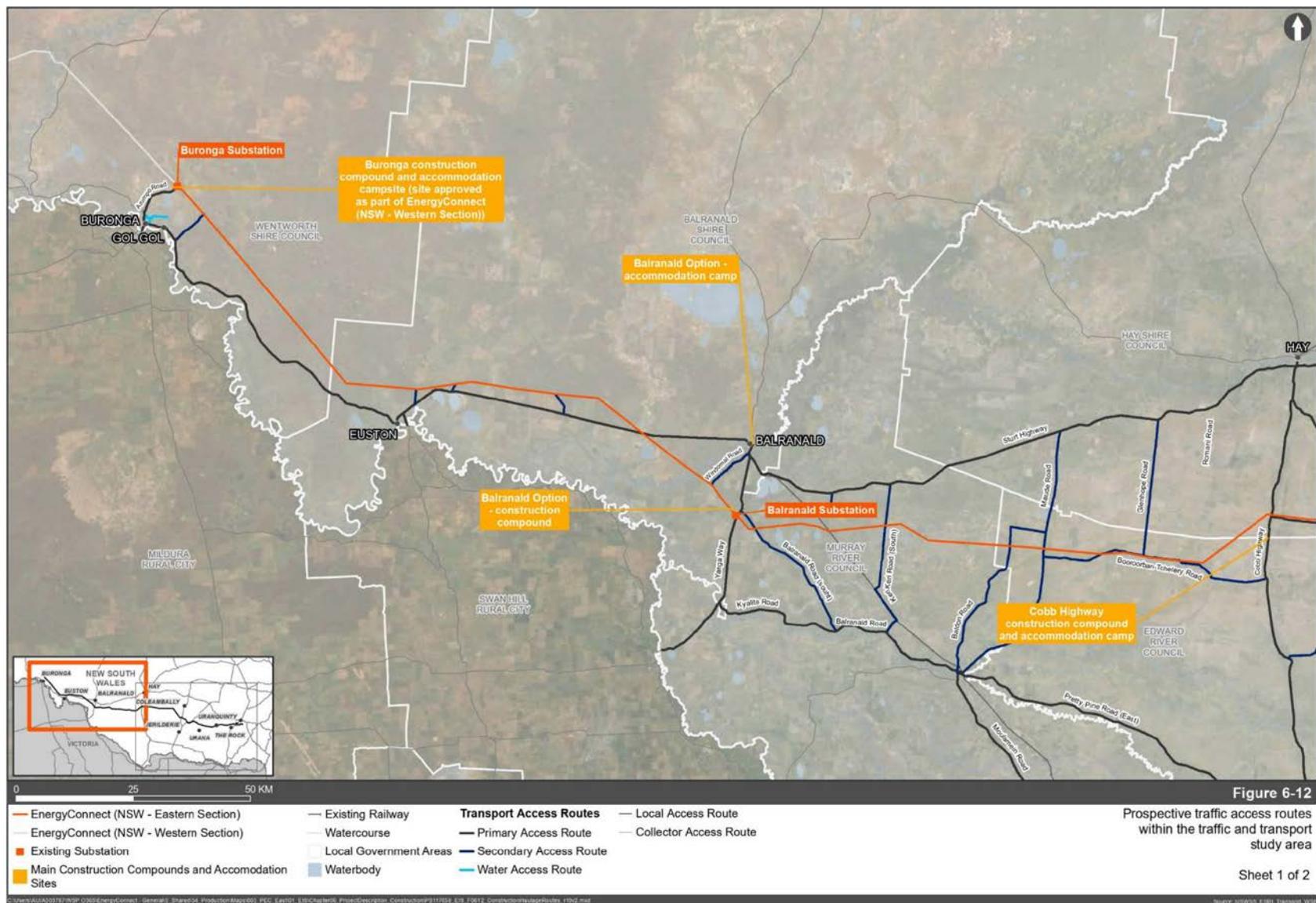
## 6.5 Traffic and Transport

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. No public submissions raised concerns about traffic impacts.

Transgrid assessed traffic and transport impacts in a Traffic Impact Assessment (TIA) accompanying the EIS and provided additional information to the Department during its assessment.

### Transport Route and Site Access

Primary and secondary transport routes and water supply routes would be utilised during construction. The proposed access routes are shown on **Figure 7** and **Figure 8**. The primary route, including 84 roads in nine LGAs, would accommodate the majority of construction traffic, including over-dimensional vehicles, and would be used for access between the main construction compounds and accommodation camps from the ports.



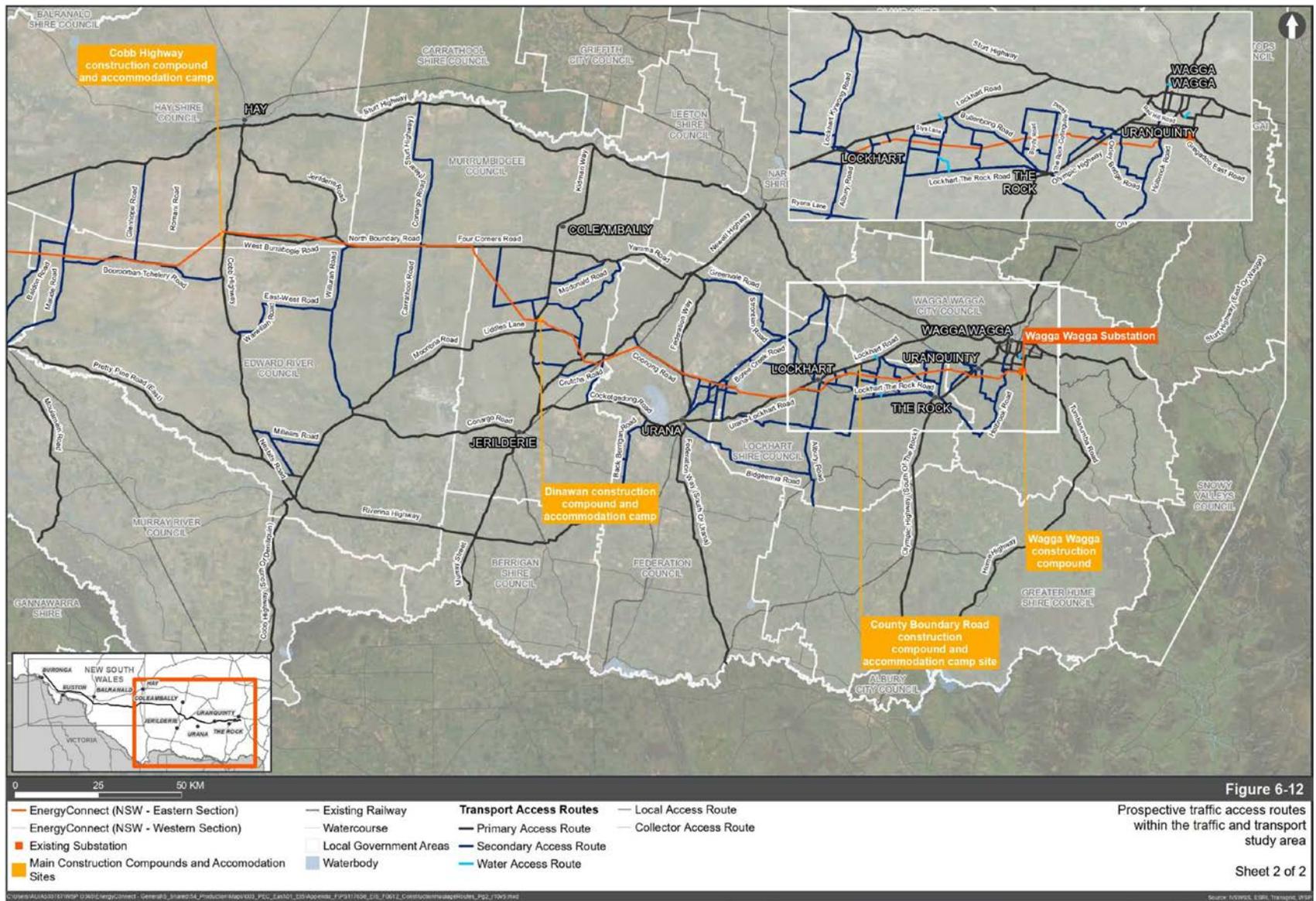


Figure 6-12  
Prospective traffic access routes within the traffic and transport study area  
Sheet 2 of 2

Figure 8 | Transport Access Routes (Cobb Highway to Wagga Wagga)

The secondary and water supply routes would assist in accessing construction areas between the main compounds and the transmission line work areas and to deliver water. These routes would be used for short durations during construction and include 128 roads and up to 182 minor access points along the route. The proposed location of the minor access points has been identified and assessed by Transgrid in its EIS, however the exact final location of the access points would be confirmed during detailed design in consultation with TfNSW and the relevant councils.

Transgrid advised that only 26% of all identified roads would be utilised for the whole duration of construction, 57% of the roads would be utilised for up to nine months and the remaining roads used for less than a week.

### **Traffic Volumes**

Peak vehicle movements during construction would occur on roads adjacent to the main compounds and camps (along the primary access route) and would be up to 280 and 350 movements per day for light and heavy vehicles respectively. Other sections of the project would have lower traffic volumes for intermittent periods of time.

Most of the identified access roads currently operate at the Level of Service (LoS) A (i.e. provide almost completely unimpeded traffic flow in both directions). Only two roads (both within Wagga Wagga) currently operate at Level of Service B, which still provides a reasonable free-flow operation.

Given low existing traffic volumes, all identified access roads have sufficient capacity to accommodate construction traffic and continue to operate at good levels of traffic flow (i.e. LoS A or B).

Peak vehicle movements during operation would occur during site maintenance and monitoring and would require a conservative estimate of up to 10 light vehicle movements per day, which would have a negligible impact on roads.

### **Over-dimensional Vehicles**

Up to 24 over-dimensional vehicles would be required to deliver infrastructure such as transformers from the ports of Newcastle, Port Kembla, Melbourne or Adelaide to the Dinawan substation. The vehicles would travel along the primary access route, which already permits access by over-dimensional vehicles (including road trains).

### **Road, Rail and Gas Main crossings**

The transmission line would cross over 45 public roads and five railway lines (two of which are operational). Stringing the lines over roads and railways would be short-term, and for railways would occur during rail maintenance periods or between scheduled services. TfNSW, Councils and ARTC did not raise any concerns regarding this approach.

The lines would be tensioned at height (up to 10 m) and would not require road closures, however traffic speeds would be reduced as a precaution. Stringing would be done using a drone and would occur in consultation with the relevant road and rail authority and appropriate road occupancy licences would be acquired (where necessary).

The project would cross an existing high-pressure gas main (Bowmen – Culcairn Pipeline) west of Wagga Wagga. The towers would be located on either side of the pipeline to avoid impacts and the need for any protection works. Transgrid has committed to continue its engagement with the gas pipeline owner (APA Group) and enter into any agreements as required. The Department has imposed a condition requiring Transgrid to undertake an induced current risk assessment prior to any works over the gas pipeline easement.

## Road Upgrades and Maintenance

Transgrid has identified that four access points to the main compounds and camps (at Dinawan, Cobb Highway, Lockhart and Wagga Wagga) would require Basic Right Turn (BAR) and Basic Left Turn (BAL) treatments.

Up to 182 potential access points have been identified along the project corridor. Transgrid has grouped access intersections by road type and assigned each type an upgrade that would be required. The final number and type of intersection upgrades would be determined during detailed design in consultation with the relevant roads authority.

The Department has recommended conditions requiring Transgrid to regularly maintain all roads along the transport route and repair any damage to the road network caused by any project-related traffic.

## Monitoring and Management

The Department has recommended conditions requiring Transgrid to:

- undertake all necessary road upgrades to satisfaction of the relevant roads authority prior to the use of roads for construction;
- undertake dilapidation surveys of the relevant local roads and repair any damage resulting from project traffic;
- prepare a Traffic Management Plan in consultation with the relevant roads authority; and
- undertake an induced current risk assessment prior to any works traversing the gas pipeline easement.

## Summary

With 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. TfNSW and the relevant councils have no further concerns subject to the implementation of the recommended conditions.

## 6.6 Noise and Vibration

The project site is located in a rural environment where background noise levels of less than 30 dB(A) during calm weather conditions are typical in the absence of other industrial, rail and road noise.

There is the potential for noise impacts at nearby residences during construction and operation of the project, with operational noise impacts limited to 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 assessed noise impacts in a Noise Impact Assessment accompanying the EIS and provided additional information to the Department during its assessment.

### Construction Noise

#### *Transmission Lines*

The predicted noise levels during construction of the transmission line would depend on the construction stage, with a total of ten stages each typically lasting one week at each tower. The highest noise levels would occur during three stages (access and clearing, earthworks and civil works, and installation of tower footings) in areas of hard rock (which accounts for less than 5% of the transmission line).

The noise assessment indicates that construction noise may exceed the 'highly noise affected' criterion of 75 dB(A) as specified in the EPA's *Interim Construction Noise Guideline (2009)* (ICNG) at two

residences during standard construction hours, with noise levels between 72 – 76 dB(A) at R26749 during one stage (approximately one week) and between 66 – 78 dB(A) at R385 (currently unoccupied) during three stages (approximately three weeks in total).

Noise levels above the 'noise affected' criterion of 45 dB(A) are predicted to occur at up to 166 receivers during standard construction hours, with the majority of exceedances occurring during the three noisiest construction stages (approximately 3 weeks in total) and noise levels typically ranging between 46 – 55 dB(A).

### *Substations*

During standard hours the Wagga Wagga substation upgrades are predicted to exceed 45 dB(A) at up to 26 residences, with the majority of exceedances occurring during the 17 month earthworks and civil works construction period. Noise levels are predicted to range between 50 – 65 dB(A) at nine residences and below 50 dB(A) for the remaining 17 residences.

There would be no noise affected receivers during construction of the Dinawan substation as the closest residence is about 4 km away.

### *Construction Compounds and Accommodation Camps*

The construction compounds and accommodation camps include three stages, comprising a construction stage (six weeks), use of the facilities throughout construction of the transmission lines and substations (18 months), and a decommissioning and rehabilitation stage (six months).

Noise levels at the Wagga Wagga construction compound are predicted to be between 49 – 70 dB(A) during construction of the compound (at 20 residences), use of the compound (3 residences) and decommissioning of the compound (8 residences).

At the Lockhart facility, five residences are predicted to experience noise levels up to 50 dB(A) and one residence up to 60 dB(A) during construction. There would be no exceedances during use of the facility and one exceedance of up to 50 dB(A) during decommissioning.

At the Cobb Highway facility, one residence is predicted to experience noise levels up to 50 dB(A) during construction, with no exceedances during use or decommissioning.

Noise levels would not exceed 45 dB(A) at any receiver during any stage at the Buronga, Balranald and Dinawan construction compounds or accommodation camps.

### *Summary*

The Department notes that the noise assessment is conservative as it assumes all plant and equipment would be used concurrently and in the closest possible proximity to residences.

As the construction works at each tower and the Lockhart and Cobb Highway facilities would be short-term and intermittent during the construction period, the Department accepts that the proposed construction activities are unlikely to result in significant adverse impacts during daytime hours at the majority of residential receivers. Consequently, the Department has recommended conditions restricting works to standard construction hours (i.e. 7 am to 6 pm Monday to Friday, and 8 am to 1 pm Saturday), with no works permitted on Sundays or NSW public holidays.

However, the Department acknowledges that there may be some instances where construction activities may be required to occur outside of standard hours, including activities such as transmission line construction across a main road, emergency works, or where agreement is reached with affected receivers. The Department has recommended conditions allowing these activities to be undertaken with the agreement of the Secretary and the approval and implementation of an Out of Hours Work Protocol.

Given the proximity of surrounding receivers to Wagga Wagga substation and construction compound (closest residence about 330 m from the substation), the Department accepts that there may be

intermittent noise above the noise affected criterion throughout the 24-month construction and rehabilitation period.

The Department has recommended conditions requiring Transgrid to minimise noise during construction by implementing noise mitigation measures set out in the ICNG, including scheduling activities to minimise noise, using quieter equipment, consulting with affected residences prior to undertaking noisy construction works and establishing a complaint handling procedure.

### **Construction Vibration**

The distances required to achieve the construction vibration criteria provided in *Assessing Vibration: A Technical Guideline* (DECC, 2006) are in the order of 2 m to 100 m from the project, with vibration from construction activities unlikely to be detectable to humans at a distance of 100 m.

With the exception of one residence (R385), the proposed construction activities would be located more than 100 m from all receivers, and construction activities would comply with the relevant construction vibration criteria.

The Department notes that the vibration assessment is conservative in assuming that all plant and equipment would be used concurrently and at the closest possible proximity to residences. Based on the current project layout, R385 is located about 60 m from the easement, but about 250 m from the nearest transmission line tower and, as such, construction activities would comply with the relevant construction vibration criteria. During detailed design, Transgrid has committed to minimise construction vibration impacts.

To strengthen this commitment, the Department has recommended conditions requiring Transgrid to implement all reasonable and feasible steps to minimise construction vibration generated by the project.

### **Construction Blasting**

Depending on geotechnical conditions, blasting may be required during construction of the Dinawan and Wagga Wagga substations and some transmission line towers located in areas of hard rock, typically between Wagga Wagga and Lockhart (<5% of the transmission line).

If blasting is required, Transgrid has committed to undertake a blasting vibration and overpressure assessment in accordance with the *Technical Basis for Guidelines to Minimise Annoyance due to Blasting Overpressure and Ground Vibration* (ANZECC, 1990) to demonstrate that blasting would not exceed noise and vibration limits at residences or other sensitive receivers.

Transgrid has also committed to prepare a blast management strategy detailing the measures that would be implemented to ensure compliance with the relevant limits, including notification requirements for nearby residences and alternative construction methods to avoid the need for blasting.

To strengthen these commitments, the Department has recommended conditions on blasting, including strict criteria for airblast overpressure and allowable exceedances for any blasting carried out for the project, and requiring Transgrid to comply with blasting limits at all receivers.

### **Construction Traffic Noise**

Construction traffic noise impacts were assessed for all roads along the proposed access routes as part of the overall construction noise assessment undertaken in accordance with the *NSW Road Noise Policy* (DECCW, 2011) (RNP).

Approximately 23,000 receivers are located along the proposed access routes, of these approximately 14,980 receivers are predicted to experience a relative increase in road traffic noise of between 2 and 10.4 dB(A). However, only 16 receivers located on five local roads are expected to experience noise

levels above the RNP criterion of 55 dB(A)  $L_{Aeq}(1 \text{ hour})$ . This includes one road located on the primary access route, three roads on the secondary access route and one road on the water supply route.

In accordance with the RNP, Transgrid has committed to implement all reasonable and feasible noise mitigation measures to minimise road traffic noise, including scheduling of vehicles and consultation with any residents who raise concerns about traffic noise to identify other possible noise mitigation measures.

Road noise associated with construction traffic is temporary, and most exceedances predicted to occur along the secondary and water supply routes which would be short term (3 to 9 months) and intermittent.

The Department has recommended a condition requiring Transgrid to take all reasonable and feasible steps to minimise construction traffic noise associated with the project in accordance with the RNP.

### **Operational Noise**

Operational noise associated with the Dinawan and Wagga Wagga substations would comply with the project noise trigger level of 35 dB(A) under the *NSW Noise Policy for Industry* (EPA, 2017) (NPI) at all residences.

Operational noise associated with the transmission lines would comply with the project noise trigger level at all residences during fair weather conditions. Where there is an accumulation of water droplets and / or pollution on the conductor surface of the lines, corona discharge noise is predicted to exceed the project noise trigger level at 20 residences, including:

- significant exceedances at two residences of 7 dB(A) and 9 dB(A) at R26749 and R385, respectively;
- moderate exceedances at six residences of between 3 – 5 dB(A) at R422, R20522, R12942, R450, R504 and R202; and
- negligible noise exceedances at 12 residences of between 1 – 2 dB(A).

Of the residences predicted to experience significant or moderate exceedances, seven are located in proximity to the proposed 500 kV line east of Dinawan substation and one is located in proximity to the 330 kV transmission line northwest of Dinawan substation.

Based on the historical meteorological data and conditions in the locality, noise exceedances are predicted to occur for less than 30% of days in the year during wet and misty conditions. However, these conditions would typically occur for short durations on these days and higher ambient noise levels during heavier rain events is expected to mask corona discharge noise, with audible noise only likely for up to 1.5 hours after a heavy rain event.

In accordance with the NPI, Transgrid would implement 'at source' noise mitigation and proposes to use corona rings on the end of insulators to reduce corona discharges which was included in the noise modelling for the project.

The Department requested additional information to determine if other 'at source' noise mitigation measures, including larger conductors, could be implemented to reduce noise levels. Transgrid has advised that there are very limited options available to reduce noise at the source, and provided further detail regarding the use of larger transmission line conductors and noise barriers.

While larger conductors would reduce corona discharge noise, Transgrid has concluded that the use of larger conductors is not reasonable or feasible as the overall noise benefits for a small number of residences is outweighed by the overall adverse impacts. Transgrid advised that the cost of larger conductors is significant, and the installation of larger conductors occurs over a minimum 10 km section of the transmission line. To reduce noise impacts at the eight significantly or moderately impacted receivers, larger conductors would likely be required over a distance of about 40 km.

Based on the information provided, the Department agrees that the use of larger conductors is not reasonable or feasible. Additionally, the installation of larger conductors is expected to increase environmental and visual impacts due to increased ground disturbance and potential tower height increases associated with installing larger conductors.

Transgrid also considered noise mitigation at receivers in the form of noise barriers (interrupting the noise transmission path) was not a reasonable option due to the isolated nature of the affected dwellings needing long continuous barriers and the elevated position of the noise source.

Transgrid therefore proposes noise mitigation at the receiver for moderate to significantly impacted receivers, in consultation with the affected residences. These measures may include upgraded façade elements, such as windows, doors or roof insulation, to further reduce noise levels.

Accordingly, the Department accepts that receiver-based noise mitigation is the only reasonable and feasible option, and has recommended conditions requiring Transgrid to undertake noise monitoring following commissioning to confirm the predicted noise levels and determine appropriate noise mitigation measures in consultation with potentially impacted residences.

Given that the noise management level of 35 dB(A) is not achievable during rain events or mist conditions, and that there are no additional reasonable or feasible options to reduce noise at the source, the Department has recommended a condition requiring compliance with the noise management level of 35 dB(A) during fair weather conditions only.

Noting that there is limited scientific research about corona discharge noise in Australia and internationally, and that there are limited reasonable and feasible 'at source' noise mitigation options, the Department has also recommended a condition requiring Transgrid to contribute \$150,000 towards the research of corona noise discharge. This would contribute to further scientific and engineering understanding and knowledge of corona discharge noise.

## 6.7 Other issues

The Department's consideration of other issues is summarised in **Table 6**.

**Table 6 | Summary of other issues**

Findings	Recommendations
<p><b>Visual</b></p> <ul style="list-style-type: none"> <li>The transmission towers would range from 40 m to 65 m and typically be spaced at intervals of 450 m to 600 m.</li> <li>Transgrid has located the transmission line corridor to avoid and minimise visual impacts, including: <ul style="list-style-type: none"> <li>locating the transmission line away from residences, towns, cultural heritage places and important landscape features, including lakes, The Rock and the Yanga, Mallee Cliffs and Oolambeyan National Parks; and</li> <li>co-locating the lines with existing lines for approximately 75 % of the route.</li> </ul> </li> <li>During detailed design, Transgrid has committed to review the placement of the transmission towers within the easement to further minimise visual impacts, including maximising distances from residences, locating towers to maximise screening offered by existing vegetation and topography, aligning towers where adjacent to existing transmission lines and locating towers at a maximum distance from roads.</li> </ul> <p><u>Impacts on residences</u></p> <ul style="list-style-type: none"> <li>Community objections expressed concern about the potential visual impacts of the projects.</li> <li>Given the landscape is sparsely populated, there would be a relatively small number of visual impacts on residences.</li> <li>Transgrid’s visual assessment considered potential impacts on 240 residences within 5 km of the project. The assessment concluded: <ul style="list-style-type: none"> <li>two residences (R450 and R26749 located 350 m and 135 m away from the nearest tower respectively) would have high-moderate and high visual impacts post mitigation (i.e. additional vegetation to break up views and adjustments to the tower location to avoid placing directly in line of sight);</li> <li>seven residences (R186, R385, R422, R432, R461, R501, R502) would have moderate impacts post mitigation;</li> <li>one residence (R233) would have low-moderate impacts post mitigation.</li> </ul> </li> <li>Impacts at all other residences within 5 km would be low or nil due to distance, intervening topography and vegetation.</li> <li>While residence R26749 would have views of the proposed transmission line at close proximity, the presence of transmission infrastructure would not be a new feature in landscape given the presence of the existing transmission lines that run parallel and adjacent to the proposed new line. In addition, the prime view of the dwelling is oriented northeast, and the proposed new line is located to the northwest. Although, these factors and the addition of landscape screening to break up views of the project, would reduce the visual impacts of the project on the residence, the Department has recommended a condition requiring Transgrid to provide reasonable and feasible measures to minimise the visual impacts of the nearest towers on residence R26749, including increasing setbacks, in consultation with the owner of the residence and to the satisfaction of the Secretary.</li> <li>Residence R450 is oriented towards The Rock landscape feature and would have views of intervening towers. Mitigation in the form of additional vegetation along the boundary of the garden could screen or partially screen views of the towers and lines from the residence.</li> </ul>	<ul style="list-style-type: none"> <li>Ensure that external lighting is minimised and complies with the relevant Australian Standards.</li> <li>Prohibit any signage or advertising on the site, unless it is for safety purposes.</li> <li>Implement appropriate visual impact mitigation measures, such as landscaping and/or vegetation screening at R186, R233, R385, R422, R432, R450, R461, R501, R502 and R26749 residences upon receiving a written request from the owners of these residences.</li> <li>Provide reasonable and feasible measures to reduce visual impacts of towers 16 and 17 on residence R26749, in consultation with the owner of the residence.</li> <li>Ensure ancillary facilities, accommodation camps and earthwork material sites at Buronga substation are rehabilitated.</li> </ul>

- The Department has recommended conditions requiring Transgrid to implement mitigation measures (such as landscaping and vegetation screening) to reduce visual impacts in consultation with the owners of the above 10 residences.
- There would be some minor impacts from some construction facilities, such as compounds and camps, but these impacts would be temporary and the sites would be rehabilitated following construction.

#### Impacts on public viewpoints

- Transgrid assessed all key public viewpoints within 500 metres of the alignment for potential visual impacts.
- Two public viewpoints (a Waterski Club and campground near Colombo Creek) were identified to have potential moderate visual impact, with the nearest towers about 225 m and 270 m away. The towers would appear above the existing intervening vegetation, however the vegetation would break up views of the towers.

#### Landscape impacts

- The site extends across five landscape types, where the visual impact of the project would range from negligible to moderate, including the Mallee shrubland, Murrumbidgee River plains and Lockhart valley rural landscapes, the Great Dividing Range foothills landscape, and the Wagga Wagga rural fringe landscape.
- No significant vistas or identified scenic views exist within the project area. Views from scenic routes, views to landscapes with scenic value and views from road corridors would be minimal. TfNSW and Councils raised no concerns about visual impacts on roads.
- Night-time visual amenity impacts associated with the Dinawan and Wagga Wagga substations would result in a low magnitude of change. There would be no lighting of transmission lines during operation.
- The Department has recommended a condition requiring Transgrid to minimise off-site lighting.

#### Cumulative impacts

- There is the potential for cumulative visual and landscape impacts associated with the project and several proposed wind farms and solar farms proposed along the route associated with the South-West REZ. Given the nature of the project infrastructure, the Department considers that the project's contribution to cumulative visual impacts would be minimal and any residual cumulative visual impacts could be appropriately mitigated with additional screening.
- Subject to the implementation of the recommended conditions, the Department considers the overall visual impact of the project on surrounding residences, road users and the rural landscape would not be significant.

### **Historic Heritage**

- No heritage items listed on Commonwealth, National or State registers are located within the study area (500 m either side of the transmission line). Four locally listed items are located within the study area, with the closest being a Liquid Explosives Store (listed under Wagga Wagga LEP) located 40 m from the proposed easement. The other three locally listed sites are located beyond 150 m from the easement and would not be impacted.
- In addition, the transmission line would pass through the curtilage of the Yanga Pastoral Station Complex sheep yards. While the Complex is listed under the NPWS Historic Heritage Information Management System, the sheep yards is not identified in the listing.
- Avoid direct or indirect impacts on all items located outside the project area.
- Avoid and minimise impacts on Yanga Pastoral Station Complex sheeppyards, PEC-E-H1 and PEC-E-H3.

- Two newly identified items of local significance would be located within the easement, being a survey marker tree (PEC-E-H1) and Bundure Railway Station artefact scatter and Hut site (PEC-E-H3).
- During detailed design, Transgrid proposes to avoid and minimise impacts on all items. If impacts to the Yanga Pastoral Station Complex sheep yards cannot be avoided, Transgrid has committed to consult NPWS and undertake archival recording if required.
- To strengthen this commitment, the Department has recommended conditions requiring Transgrid to avoid or minimise impacts on all heritage items, and if required, consult with NPWS regarding the Yanga Pastoral Station Complex sheep yards and undertake archival recording. Heritage Council of NSW and NPWS have no further concerns subject to the implementation of the recommended conditions. The Department considers that subject to the recommended conditions the project would not significantly impact the heritage values of the locality.
- Prepare and implement a Heritage Management Plan, in consultation NPWS and the Heritage Council, including procedures for unexpected finds and archival records.

## Water Use

- Approximately 1.1 gigalitre (GL) of water would be required during construction of the project, including water for dust suppression, earthworks compaction, concrete batching activities, accommodation camps and vehicle washdown.
- Water would be sourced from existing regulated sources, purchased from the water market or council facilities and accessed via up to 39 existing licensed water supply points. No new extraction infrastructure is proposed.
- Initial consultation with water suppliers, including councils, Riverina Water, Coleambally Irrigation and other private water licence holders, indicates that the required water volume is available. The final water supply points (of the 39 identified points) would be confirmed during detailed design and agreements would be finalised with water suppliers.
- The EPA advised that treated effluent from three existing sewage treatment plants would not be a suitable water source as the EPLs for these facilities prohibit the use of treated water for construction purposes. Transgrid has removed these water sources from the proposal.
- No concerns were raised about the proposed use of treated wastewater from facilities constructed at the Cobb Highway, Dinawan and Lockhart accommodation camps and the EPA confirmed that an EPL would not be required for these wastewater facilities.
- Councils requested that the water and wastewater facilities at accommodation camps are designed and located in accordance with council specifications. The Department has recommended conditions requiring Transgrid to comply with treated wastewater guidelines and to prepare and implement an Accommodation Camp Management Plan in consultation with councils, including measures to ensure water and wastewater facilities are designed and located in accordance with council specifications.
- During operations, approximately 12,000 litres of water per year would be required for use at the Dinawan substation and for transmission line maintenance activities. Water would be sourced from the relevant council and/or rainwater tanks at the substation, and no concerns were raised by councils in this regard.
- The Department and DPE Water consider that the project's water use is unlikely to have any significant impact on water supply and demand in the region, subject to Transgrid obtaining the relevant approvals and licences, and adhering to the requirements of the relevant water sharing plans.
- Ensure that there is sufficient water for all stages of the project, and if necessary, adjust the scale of the project to match its available water supply.
- Ensure treated wastewater used during construction complies with the ANZECC and ARMCANZ (2000) guidelines for irrigation water quality and the requirements of the Public Health Act 2010.
- Prepare and implement an Accommodation Camp Management Plan in consultation with councils, including measures to ensure water and wastewater utilities are designed and located in accordance with Council specifications.

## Watercourses

- The transmission line would cross seven major watercourses and associated riparian areas, including the Murrumbidgee River, Abercrombie Creek, Yanco Creek, the Coleambally Outfall Drain, Colombo Creek, Hallidays Cut and Burkes Creek, and several other smaller creeks, ephemeral streams and drainage lines.
- Transmission line towers would be located at least 50 m from all major watercourses, and drones or watercraft would be used to string lines between towers. As no significant ground disturbing works would affect the banks and bed of any major waterways, no geomorphological impacts are expected.
- Transgrid has committed to undertake a monthly water quality monitoring program during construction and rehabilitation at locations where the transmission line would cross major watercourses, consistent with requests from DPE Water and MDBA.
- Where towers would be located near smaller ephemeral watercourses, Transgrid has committed to implement appropriate buffers, erosion and sediment controls and progressively rehabilitate construction areas. Where alternative access routes are impractical, temporary watercourse crossings and causeways would be required and would be designed to maintain flows and avoid impacts on key fish habitat.
- The Department has recommended conditions requiring Transgrid to ensure the geomorphic conditions of major watercourses are not impacted by the project and that all works on waterfront land and within watercourses comply with the relevant policies and guidelines, and to prepare and implement a Soil and Water Management Plan. DPE Water, Water NSW, the MDBA, DPI Fisheries had no further concerns, subject to the implementation of the recommended conditions.
- The Department considers that subject to the recommended conditions being implemented, the potential impacts of the project on watercourses would be appropriately managed.
- 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.
- Prepare and implement a Soil and Water Management Plan which would include measures to minimise impacts on watercourses.

## Groundwater

- Groundwater levels within the site typically range from 4.5 to 18 m below ground level (BGL). Most excavations required during construction would be to depths of 2 to 3 m BGL and would not intercept groundwater or result in impacts to groundwater quality.
- Groundwater may be intercepted in a limited number of locations where deeper tower foundations (15 – 25 m BGL) are required. Transgrid proposes to use screw or pile driven construction methods to prevent or minimise dewatering at these locations. Groundwater may also be intercepted if blasting is required to install tower footings in areas of shallow hard rock (<5% of the transmission line). Transgrid has advised that the blast halo is unlikely to extend beyond 10 m, and that based on the indicative project design, no registered bores and only one high potential groundwater dependent ecosystem (GDE) (Sandy Creek) is located within 50 m of any potential blast location.
- In response to advice from DPE Water, Transgrid has committed to assess potential impacts on any registered bores or high potential GDEs within 50 m of a confirmed blast location against the minimum impact criteria of the *Aquifer Interference Policy (2012)*, and to implement construction or engineering design solutions to mitigate any potential
- Comply with Section 120 of the POEO Act.
- Prepare and implement a Soil and Water Management Plan which would include measures to minimise groundwater impacts.

impacts on GDEs or bores. Transgrid has also committed to record and report groundwater take annually if dewatering is required, and to obtain the necessary approvals and entitlement if dewatering exceeds 3 ML.

- Transgrid proposes to avoid and protect registered bores located within the proposed easement during detailed design, where possible. If any registered bores cannot be avoided, Transgrid has committed to consult with the registered bore owner and implement make good provisions.
- The risk of groundwater quality impacts is minimal given the depth of groundwater relative to the proposed construction activities, and with the implementation of the proposed management measures, including avoidance of contaminated land and bunding of chemicals, fuels, or other hazardous substances.
- Subject to the above commitments, DPE Water and WaterNSW have raised no further concerns.
- To strengthen these commitments, the Department has recommended a condition requiring Transgrid to implement a Soil and Water Management Plan, including details of potential groundwater take and licencing requirements, and procedures for handling, storage, transport and disposal of groundwater. Subject to the recommended conditions, the Department considers the groundwater risks of the project would be appropriately managed.

### Electric and Magnetic Fields

- The majority of operational infrastructure (including transmission lines, substations and interconnecting cables) are the sources of EMF.
- All the predicted levels are well below the relevant *International Commission on Non-Ionizing Radiation Protection* (ICNIRP) EMF criteria of 2,000 milligauss (mG) for general public exposure.
- The EIS includes an assessment of the EMF levels beneath the proposed lines and at the substations against public exposure guidelines. The results showed that EMF levels within the easement would be up to 440 mG for 330 kV and 647 mG for 500 kV lines, and at the edge of easements up to 39 mG for 330 kV and 221 mG for 500 kV lines.
- EMF reduces rapidly with distance from its source. The EMF produced by the exporting electricity facilities are very low frequency and do not pose a threat to public health.
- The Department considers the project is not likely to have any significant EMF related impacts.
- Comply with the applicable EMF limits and criteria.

### Radiocommunications

- Transgrid undertook a radio frequency interference assessment for the project. The study included consultation with telecommunications licence holders and service providers.
- The radio frequency interference limits for transmission lines are in frequency range 0.15 to 3000 MHz for all the services assessed (i.e. broadcast, navigation, safety-of-life and other radio communication).
- Through consultation with the Department of Defence, the Morundah Receiver Station site has been identified as being susceptible to a radio frequency interference from local background electromagnetic radiation. Transgrid has amended the alignment of the project so the proposed transmission line easement does not encroach into the buffer zone for the site and the project is not anticipated to cause any impact to this site.
- No specific conditions required.

- If concerns are raised about potential interference during operation of the project, Transgrid has committed to investigate any adverse effects and to implement mitigation measures (e.g. signal booster equipment) if required, developed in consultation with the affected operator.
- The Department considers that the project is not likely to have significant impacts on radiocommunications.

### Air Quality

- The EIS includes a qualitative air quality assessment which indicates that prior to mitigation measures, the risk of dust impacts, including dust from vehicle movements, during construction and operation of the project would be low to negligible. With the implementation of further site-specific dust mitigation measures, residual dust impacts would not be significant.
- Emissions from vehicles and other relevant sources during construction would be managed in accordance with the recommended site-specific mitigation measures. Transgrid has committed to minimise emissions as far as possible.
- The Department has recommended a condition requiring Transgrid to minimise dust, fume, blast emissions and other air pollutants. Subject to the recommended conditions, the Department considers that the air quality impact would be appropriately managed, and the project would not cause significant air quality impacts.
- Minimise emissions of dust, fume, blast and other air pollutants of the project.
- Minimise the surface disturbance of the site.

### Contamination

- The EIS includes a contaminated land assessment with minimal potential contamination sources identified at the project site and in the vicinity of the study area.
- The study area largely comprises agricultural land used for grazing which has low potential for contamination. No significant development was observed.
- Potential contamination sources identified were limited to the proposed Dinawan and existing Wagga Wagga substations, existing transmission infrastructure, some agricultural land associated with cropping, farm dams and a potential quarry. These uses pose a medium risk of contamination, however with the implementation of mitigation measures outlined in a management plan the risk would be minimised to an acceptable level.
- No known occurrences of naturally occurring asbestos were identified at the project site.
- Groundwater depth is anticipated to be greater than 4.5 m below ground level. Groundwater may be intercepted at a limited number of locations where deeper tower footings are required, or where blasting may be required in areas of hard rock (<5% of the transmission line). Prior to works in these areas, groundwater contamination investigations would be undertaken and construction and engineering solutions would be implemented to mitigate and managed any potential impacts.
- The transmission line easement would cross the Urana and the Oak Plains unexploded ordinance (ammunition that did not explode when used) (UXO) areas identified on the Department of Defence database. Transgrid has committed to prepare a site-specific risk assessment for areas where the project would cross the UXO areas.
- Manage dangerous goods in accordance with relevant guidelines.
- Prepare and implement provisions for managing contaminated land, soils and groundwater in the project area in a Soil and Water Management Plan.
- Prepare and implement management procedures for the project to mitigate the potential for spills and uncontrolled releases to the environment.
- Include provisions for managing any unexpected or suspected contaminated land, asbestos and UXO.

- The Department considers that the likely potential impacts from contamination including contaminated land, asbestos and unexploded ordinance would be limited and would be managed through conditions requiring Transgrid to prepare and implement a Soil and Water Plan.

## Hazards

### Bushfire safety

- Given the height of the towers and easement clearing requirements, the incidence of ignition of bushfire fuels would be rare.
- Approximately 150 km / 1,200 ha (or 28 %) of the project site is classed as bushfire prone land. Transgrid would be required to:
  - establish and maintain a minimum 50 m wide Asset Protection Zone (APZ) around the hazard perimeter of the construction equipment and accommodation camp buildings; and
  - maintain a maximum grass height within the APZ at 100 mm inside and outside the accommodation camps and construction compounds during the prescribed Bushfire Danger Periods.
- Transgrid would also be required to comply with the RFS's *Planning for Bushfire Protection (2019)* and prepare an Emergency Plan to manage the fire risk.
- In addition, Transgrid has committed to a number of mitigation measures and strategies, including the preparation of an Emergency Management Plan, a Bushfire Risk Management Plan, an Emergency Response Manual for the proposed Dinawan substation and updating the existing Wagga Wagga substation Emergency Response Manual.
- The Department considers that the bushfire risks can be suitably controlled through the implementation of standard fire management plans and procedures.

### High-pressure gas pipeline

- The proposal would cross the existing high-pressure Bomen – Culcairn Pipeline west of Wagga Wagga. Transgrid proposes to locate the towers on either side of the pipeline and avoid the need for protection.
- APA Group recommended Transgrid undertake an induced current risk assessment, which the Department has included in the recommended conditions.
- Subject to the recommended conditions, the Department considers that the project would not pose significant risks to operation of the high-pressure gas pipeline.

- 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 an Emergency Plan.
- Manage dangerous goods in accordance with relevant guidelines.

## 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.
- Transgrid proposes to decommission and rehabilitate all construction compounds and accommodation camps.
- Progressively rehabilitate the project site.
- Comply with rehabilitation objectives, including removing construction infrastructure, restoring rural land capability

- 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.

and vegetation, and ensuring public safety.

### Economic

- The project would deliver significant economic benefits to NSW, including a capital investment of \$1.08 billion.
- The project would generate direct and indirect benefits to the local community, particularly during construction, including:
  - creating up to 500 jobs during the construction period (including up to around 100 local/regional jobs);
  - expenditure on accommodation and 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.
- 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.
- 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 Transgrid prepare and implement a Local Business and Employment Strategy in consultation with the nine councils, investigating options for prioritising the employment of local and Aboriginal workforce and suppliers.
- The Department considers that with the recommended conditions of approval, the project would provide economic benefits for the local community.

- Prepare and implement a Local Business and Employment Strategy in consultation with Council.

### 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. The following potential social impacts have been identified for the project:
  - amenity impacts, including air and noise emissions, road traffic, safety and visual;
  - increased employment opportunities and training initiatives;
  - use of local amenities and businesses during construction (accommodation, recreational facilities and shops);
  - some restrictions to landowners use of land due to presence of towers and lines;
  - perceived health impacts associated with EMF can lead to stress and anxiety;
  - increased development occurring across the region and flow on effect on the local communities; and
  - Traditional Owners and other Aboriginal Groups feel engaged and supportive of the project.
- With the appropriate approvals, the proposed accommodation camps could be used by future projects in the area, which could ease pressure on availability of local housing and accommodation.
- The Department has considered all these impacts in its assessment and recommended appropriate conditions where relevant to avoid and mitigate adverse impacts.

- Prepare and implement a Community Consultation Strategy.

## Waste Management

- Three councils (Balranald Shire, Edward River and Federation) initially raised concerns about waste management during construction, requiring further clarification about potential waste streams and proposed disposal locations.
  - In its Submissions Report Transgrid clarified waste quantities and the proposed waste management processes for various waste types. It also further engaged with the relevant local councils to understand the ability of local landfills to accommodate the proposed waste quantities.
  - The Department has imposed conditions requiring Transgrid to avoid and reduce waste as a priority and where re-use, recycling or waste recovering is not possible, waste must be treated or disposed of at a licenced facility.
  - With the implementation of these conditions, the Department, EPA and councils consider that the waste generated by the project would be appropriately managed.
- Waste would be dealt with in accordance with the following priorities:
    - avoid or reduce where possible;
    - re-use, recycle and recover;
    - treat or dispose of to a licenced facility.

## Aviation Safety

- Transgrid prepared an Aviation Impact Study (AIS) in response to Airservices Australia comments on the EIS. The AIS assessed impacts on certified aerodrome and airport operations and identified potential intrusions into the obstacle limitation surfaces (OLS) by transmission towers or construction cranes. The study concluded:
    - the transmission towers and associated construction cranes would infringe the approach surface of Wagga Wagga Airport's OLS during construction and operation and that the infringement is acceptable and consistent with the existing transmission towers near Wagga Wagga Airport;
    - there would be no adverse impact on aviation communication and navigation or to aerial agricultural activities;
    - the project is unlikely to impact take-off and landing operations or designated air routes and is compatible with aerial application flight operations.
  - CASA and Airservices have no further concerns subject to the implementation of the recommended conditions. The Department considers that the project is unlikely to result in any significant aviation hazards or impacts to aerial agricultural activities.
- Minimise the off-site lighting impacts of the project.

## 7 Evaluation

Project EnergyConnect was declared to be Critical State significant infrastructure (CSSI) by the then Minister for Planning and Public Spaces as it was essential to NSW. It is critical for energy security and reliability in NSW and would play a significant role in supporting the transition of the energy system, and linking the SA, NSW and VIC electricity networks.

The Department recognises that the broader Project EnergyConnect is a priority transmission project in the *2022 Integrated System Plan* and is consistent with the AEMO's roadmap for the National Electricity Market and relevant strategic NSW planning and policy documents, including the *Transmission Infrastructure Strategy* and the *Electricity Strategy*.

Importantly, PEC-East would complete the overall interconnector playing a critical role in the NEM and would allow the project to realise the benefits of enhancing the capacity of the NEM and facilitating transport of renewable energy from the South-West REZ to energy consumers.

It would also deliver significant economic benefits to NSW including a capital investment of \$1.08 billion and creation of up to 500 construction jobs.

The Department acknowledges that Transgrid's route and corridor analysis for the 537 km transmission line has used a comprehensive route selection process (based on a hierarchy of constraints and further corridor refinement) in order to avoid or minimise impacts.

Further, the Department has worked closely with Transgrid and key government agencies throughout the assessment process to reduce the residual impacts of the project and Transgrid has made changes to the project to address key issues and reduce impacts to address stakeholder feedback.

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 residual potential impacts of the project on the environment, in consultation with key government agencies.

The Department considers the key impacts are biodiversity; Aboriginal heritage; agriculture and soils; traffic and transport; and noise. However, the Department has considered a range of other issues in its assessment including social impacts, visual impacts, historic heritage, water, groundwater and hazards. The Department considers these impacts can be appropriately mitigated and/or offset in accordance with NSW government statutory requirements, guidelines and policy requirements.

In regard to biodiversity, the project would disturb up to 1,615 ha of native vegetation, comprising 1,338 ha of vegetation in moderate to good condition, 269 ha of derived native grassland and 3 ha being in poor condition vegetation, and the remaining being native vegetation planting (5 ha). However, this is likely to be further minimised during the detailed design of the project, a range of mitigation and adaptive management measures would be implemented and residual biodiversity impacts of the project would be offset.

In regard to Aboriginal cultural heritage, 89 Aboriginal heritage sites, primarily of low to moderate significance, may be impacted by the project to varying degrees. Thirty-seven PADs were identified and of these, 17 PADs that are likely to be directly impacted were considered low to moderate significance. The remaining PADs that were unsurveyed would be either avoided or subsurface testing would be undertaken if they are identified for impact in detailed design. Transgrid has committed to avoid or minimise impacts on any site or PADs of moderate or higher significance, and Department considers that the project would not significantly impact the Aboriginal cultural heritage values of the locality.

In regard to agriculture and soils impacts, community objections expressed concern about the potential impacts to agricultural land and on agricultural operations. However, the Department considers that the risks would be managed through ongoing consultation with affected landowners, best practice mitigation measures, and the implementation of the recommended conditions. DPI Agriculture, DPE Water, the MDBA and the relevant councils had no further concerns, subject to the implementation of the recommended conditions.

The Department has recommended conditions requiring Transgrid to prepare and implement a Soil and Water Management Plan, an Accommodation Camp Management Plan and implement best practice mitigation measures to manage flooding, erosion and sediment, acid sulfate soils, and salinity risks.

In regard to traffic and transport, any potential impacts would be largely restricted to the construction period and the Department considers that with appropriate mitigation measures, including undertaking suitable road upgrades prior to commencing construction and regular road maintenance, the works can be undertaken without significant impacts to the broader transport network.

In regard to noise and vibration, the Department considers that the proposed construction activities are unlikely to result in significant adverse impacts due to the conservative assumptions in the assessment, and the short-term and intermittent nature of construction works. Under conservative assumptions, operational noise from the transmission line (being corona noise discharge, a crackling sound experienced in limited conditions) is predicted to exceed the project trigger noise level at 20 residences. However, these exceedances would be limited to less than 30% the year during wet and misty conditions and higher ambient noise levels during heavier rain events is expected to mask corona discharge noise, with audible noise only likely for up to 1.5 hours after a heavy rain event. The Department has also recommended conditions requiring Transgrid to implement all reasonable and feasible measures to minimise operational noise for the transmission line.

The Department has concluded that the residual impacts can be adequately minimised, managed, or offset, to an acceptable standard, subject to a comprehensive framework of recommended conditions of approval. Consequently, the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development.

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 the South-West Renewable Energy Zone (REZ) to energy consumers.

Based on its evaluation, the Department considers that the benefits of EnergyConnect (East) 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:

- **considers** the findings and recommendations of this report;
- **accepts** and **adopts** all of the findings and recommendations in this report as the reasons for making the decision to grant approval to the application;
- **agrees** with the key reasons for approval listed in the notice of decision;
- **grants approval** to the application in respect of the Project EnergyConnect (NSW – Eastern Section) (SSI 9172452); and
- **signs** the attached project approval and recommended conditions of approval (see **Appendix H**).

Prepared by:

**Iwan Davies**, Team Leader

**Tatsiana Bandaruk**, Senior Environmental Assessment Officer

Recommended by:



31/08/2022

**Nicole Brewer**

Director  
Energy Assessments



31/08/2022

**Clay Preshaw**

Executive Director  
Energy, Resources and Industry Assessments



01/09/2022

**David Gainsford**

Deputy Secretary  
Development Assessment

## 9 Determination

The recommendation is **Adopted** / Not adopted by:



02/09/2022

**The Hon. Anthony Roberts MP**

Minister for Planning

# Appendices

## Appendix A – List of referenced documents

EnergyConnect (NSW – Eastern Section) – Environmental Impact Statement, Transgrid (January 2022)

EnergyConnect (NSW – Eastern Section) – Submissions Report, Transgrid (May 2022)

EnergyConnect (NSW – Eastern Section) – Amendment Report, Transgrid (May 2022)

EnergyConnect (NSW – Eastern Section) – Response to Request for Information, Transgrid (August 2022)

## Appendix B – Environmental Impact Statement

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix C – Submissions

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix D – Submissions Report

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix E – Amendment Report

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix F – Agency Advice

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix G – Additional Information

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix H – Recommended Instrument of Approval

See the Department's website at:

<https://www.planningportal.nsw.gov.au/major-projects/projects/project-energyconnect-nsw-eastern-section>

## Appendix I – Biodiversity Impact Summary Tables

**Table I1** | Native vegetation impacts

Vegetation Community	Conservation Status <sup>1</sup>		Potential SAII	Disturbance Area (ha)					Ecosystem Credit Liability
	BC Act	EPBC Act		A2 <sup>2</sup>	B4 <sup>3</sup>	B10 <sup>4</sup>	HZ <sup>5</sup>	Total	
PCT 5 – River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub- region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion	-	-	-	1.33	1.47	0.81	0.62	4.23	74
PCT 7 – River Red Gum – Warrego Grass – herbaceous riparian tall open forest wetland mainly in the Riverina Bioregion	-	-	-	1.36	2.27	1.32	1.32	6.27	104
PCT 8 – River Red Gum - Warrego Grass - Couch Grass riparian tall woodland wetland of the semi-arid (warm) climate zone (Riverina Bioregion and Murray Darling Depression Bioregion)	-	-	-	1.70	1.73	1.34	0	4.77	95
PCT 11 – River Red Gum – Lignum very tall open forest or woodland wetland on floodplains of semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	-	-	-	4.90	4.92	3.45	1.27	14.54	295
PCT 13 – Black Box – Lignum woodland wetland of the inner floodplains in the semi-arid (warm) climate zone (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	-	-	-	5.75	2.33	1.67	0	9.75	323
PCT 15 - Black Box open woodland wetland with chenopod understorey mainly on the outer floodplains in south-western NSW (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	-	-	-	10.24	7.38	5.51	0	23.13	473
PCT 17 – Lignum shrubland wetland of the semi-arid (warm) plains (mainly Riverina Bioregion and Murray Darling Depression Bioregion)	-	-	-	18.08	0	0	0	18.08	773
PCT 22 – Semi-arid shrubby Buloke - Slender Cypress Pine woodland, far south-western NSW	E	E	Yes	1.20	1.04	0.69	0	2.93	89

Vegetation Community	Conservation Status <sup>1</sup>		Potential SAIL	Disturbance Area (ha)				Ecosystem Credit Liability	
	BC Act	EPBC Act		A2 <sup>2</sup>	B4 <sup>3</sup>	B10 <sup>4</sup>	HZ <sup>5</sup>		Total
PCT 23 – Yarran tall open shrubland of the sandplains and plains of the semi-arid (warm) and arid climate zones	E*	-		12.62	5.91	0	0	18.58	453
PCT 24 – Canegrass swamp tall grassland wetland of drainage depressions, lakes and pans of the inland plains	-	-		13.52	0	0	0	13.52	447
PCT 26 – Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion	E*	E*		286.00	48.94	0	0	334.94	7,681
PCT 28 – White Cypress Pine open woodland of sand plains, prior streams and dunes mainly of the semi-arid (warm) climate zones	E	-	-	8.06	8.38	5.81	0	22.25	406
PCT 44 – Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion	-	CE	-	43.11	0	0	0	43.11	1,853
PCT 45 – Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion	-	CE	-	28.13	0	0	0	28.13	1,102
PCT 46 – Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plain, Riverina Bioregion	-	CE	-	49.72	0	0	0	49.72	1,612
PCT 47 – Swamp grassland wetland of the Riverine Plain	-	CE	-	2.63	0	0	0	2.63	98
PCT 53 – Shallow freshwater wetland sedgeland in depressions on floodplains on inland alluvial plains and floodplains	-	-	-	1.73	0	0	0	1.73	76
PCT 58 – Black Oak – Western Rosewood open woodland on deep sandy loams mainly in the Murray Darling Depression Bioregion	-	-	-	40.40	44.11	32.43	0	116.94	2,710
PCT 74 – Yellow Box – River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion	CE	CE	Yes	0.84	0.78	0.49	0.38	2.49	67
PCT 75 – Yellow Box – White Cypress Pine grassy woodland on deep sandy-loam alluvial soils of the	CE	CE*	Yes	21.91	10.18	6.00	7.09	45.18	1,260

Vegetation Community	Conservation Status <sup>1</sup>		Potential SAIL	Disturbance Area (ha)				Ecosystem Credit Liability	
	BC Act	EPBC Act		A2 <sup>2</sup>	B4 <sup>3</sup>	B10 <sup>4</sup>	HZ <sup>5</sup>		Total
eastern Riverina Bioregion and western NSW South Western Slopes Bioregion									
PCT 76 – Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions	E	E	-	0.51	0.45	0.19	0.26	1.41	33
PCT 80 – Western Grey Box – White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion	E*	E*	-	11.09	8.72	4.94	5.29	30.04	700
PCT 110 – Western Grey Box – Cypress Pine shrubby woodland on stony footslopes in the NSW South Western Slopes Bioregion and Riverina Bioregion	E	E	-	0.70	1.27	0.70	0.72	3.39	58
PCT 143 – Narrow-leaved Hopbush – Scrub Turpentine – Senna shrubland on semi-arid and arid sandplains and dunes	-	-	-	2.43	0	0	0	2.43	83
PCT 157 – Bladder Saltbush shrubland on alluvial plains in the semi-arid (warm) zone including Riverina Bioregion	-	-	-	73.76	0	0	0	73.76	2,642
PCT 160 – Nitre Goosefoot shrubland wetland on clays of the inland floodplains	-	-	-	29.03	0	0	0	29.03	1,064
PCT 163 – Dillon Bush (Nitre Bush) shrubland of the semi- arid and arid zones	-	-	-	145.80	0	0	0	145.80	5,313
PCT 164 – Cotton Bush open shrubland of the semi-arid (warm) zone	-	-	-	116.29	0	0	0	116.29	4,268
PCT 170 – Chenopod sandplain mallee woodland/ shrubland of the arid and semi-arid (warm) zones	-	E	-	139.52	159.56	0	0	299.08	5,468
PCT 171 – Spinifex linear dune mallee mainly of the Murray Darling Depression Bioregion	-	-	-	23.05	22.14	0	0	45.19	1,073
PCT 172 – Deep sand mallee of irregular dunefields of the semi-arid (warm) zone	-	-	-	22.68	26.54	0	0	49.22	994

Vegetation Community	Conservation Status <sup>1</sup>		Potential SAII	Disturbance Area (ha)					Ecosystem Credit Liability
	BC Act	EPBC Act		A2 <sup>2</sup>	B4 <sup>3</sup>	B10 <sup>4</sup>	HZ <sup>5</sup>	Total	
PCT 182 – Cumbungi rushland wetland of shallow semi-permanent water bodies and inland watercourses	-	-	-	0.05	0	0	0	0.05	2
PCT 199 – Hooked Needlewood – Needlewood – Mulga - Turpentine Bush open shrubland of the semi-arid and arid plains	-	-	-	1.31	0	0	0	1.31	24
PCT 216 – Black Roly Poly low open shrubland of the Riverina	-	-	-	20.28	0	0	0	20.28	618
PCT 249 – River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW	-	-	-	0.02	0.01	0.01	0.01	0.05	1
PCT 267 – White Box – White Cypress Pine – Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion	CE	CE	Yes	0.09	0.13	0.04	0.06	0.32	9
PCT 277 – Blakely's Red Gum – Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion	CE	CE*	Yes	7.46	2.81	1.81	0.40	12.48	410
PCT 319 – Tumbledown Red Gum – White Cypress Pine hill woodland in the southern part of the NSW South Western Slopes Bioregion	-	-	-	11.84	5.20	2.38	2.78	22.20	384
			<b>Total</b>	<b>1159.14</b>	<b>366.27</b>	<b>69.59</b>	<b>20.20</b>	<b>1,615.20</b>	<b>43,134</b>
							<b>Scattered trees</b>		<b>110</b>
							<b>Total with ecosystem credit liability</b>		<b>43,244</b>

<sup>1</sup> 'E' denotes endangered and 'CE' denotes critically endangered

<sup>2</sup> Full vegetation clearance

<sup>3</sup> Partial clearance of vegetation greater than 4 m in height

<sup>4</sup> Partial clearance of vegetation greater than 10 m in height

<sup>5</sup> Removal of high risk/hazard trees

\* Only part of PCT clearance area meets the criteria for listing under the BC Act and / or EPBC Act

**Table I2 | Threatened flora species impacts**

Species	Conservation Significance		Potential SAIL	Impact (ha)		Species Credit Liability		
	BC Act	EPBC Act		Recorded	Assumed	Recorded	Assumed	Total
Harrow Wattle <i>Acacia acanthoclada</i>	E	–	No	0	4.62	0	126	126
A spear- grass <i>Austrostipa metatoris</i>	V	V	No	0	1.82	0	45	45
A spear- grass <i>Austrostipa wakoolica</i>	E	E	No	0	41.15	0	864	864
Mossgiel Daisy <i>Brachyscome papillosa</i>	V	V	No	13.06	119.12	610	5,559	6,169
Sand-hill Spider Orchid <i>Caladenia arenaria</i>	E	E	Yes	0	1.07	0	29	29
A burr-daisy <i>Calotis moorei</i>	E	E	Yes	0	20.25	0	1,200	1,200
Bindweed <i>Convolvulus tedmoorei</i>	E	–	Yes	0	23.44	0	1,585	1,585
Small Scurf- pea <i>Cullen parvum</i>	E	–	No	0	29.34	0	1,168	1,168
Pink Velvet Bush <i>Lasiopetalum behrii</i>	CE	–	Yes	0	4.63	0	190	190
Winged Peppercress <i>Lepidium monoplocoides</i>	E	E	No	0.1	17.45	5	717	722
Lanky Buttons <i>Leptorhynchos orientalis</i>	E	–	No	0.64	43.82	15	1,009	1,024
Button Immortelle <i>Leptorhynchos waitzia</i>	E	-	Yes	0	1.83	0	68	68
Chariot Wheels <i>Maireana cheelii</i>	V	V	No	17.18	127.53	792	5,879	6,671
Austral Pillwort <i>Pilularia novae- hollandiae</i>	E	–	Yes	0.29	4.12	21	301	322
Thyme Rice- Flower <i>Pimelea serpyllifolia</i> subsp. <i>serpyllifolia</i>	E	–	Yes	1.68	4.64	69	189	258
Greenhood Orchid <i>Pterostylis cobarensis</i>	V	–	No	0	2.99	0	82	82
Bladder Senna <i>Swainsona colutoides</i>	E	–	No	0	4.63	0	126	126
Slender Darling Pea <i>Swainsona murrayana</i>	V	V	No	65.36	176.63	2,616	7,071	9,687
Yellow Swainson- pea <i>Swainsona pyrophila</i>	V	V	No	0	4.63	0	126	126

Species	Conservation Significance		Potential SAIL	Impact (ha)		Species Credit Liability		
	BC Act	EPBC Act		Recorded	Assumed	Recorded	Assumed	Total
Silky Swainson- pea <i>Swainsona sericea</i>	V	–	No	0	44.8	0	1,015	1,015
			<b>Total</b>	<b>98.31</b>	<b>678.51</b>	<b>4,128</b>	<b>27,349</b>	<b>31,447</b>

**Table 13** | Threatened fauna species – Direct Impacts

Species	Conservation Significance		Potential SAIL	Impact (ha)		Species Credit Liability		
	BC Act	EPBC Act		Recorded	Assumed	Recorded	Assumed	Total
Bush Stone- curlew <i>Burhinus grallarius</i>	E	-	No	0	188.39	0	4,891	4,891
Little Eagle <i>Hieraaetus morphnoides</i>	V	-	No	0	21.23	0	407	407
Major Mitchell's Cockatoo <i>Lophochroa leadbeateri</i>	V	-	No	0	50.8	0	1,398	1,398
Southern Myotis <i>Myotis Macropus</i>	V	-	No	28.86	0	838	0	838
Barking Owl <i>Ninox connivens</i>	V	-	No	0	74.4	0	1,843	1,843
Plains Wanderer <i>Pedionomus torquatus</i>	E	CE	Yes	0.37	0	25	0	25
Squirrel Glider <i>Petaurus norfolcensis</i>	V	-	No	31.47	0	740	0	740
Regent Parrot (eastern subspecies) <i>Polytelis anthopeplus monarchoides</i>	E	V	No	0	29.09	0	739	739
Superb Parrot <i>Polytelis swainsonii</i>	V	V	No	0	114.33	0	3,046	3,046
			<b>Total</b>	<b>61.70</b>	<b>478.24</b>	<b>1,603</b>	<b>12,324</b>	<b>13,927</b>

**Table I4 | Threatened fauna species – Indirect impacts**

Species	Conservation Significance		Potential SAI	Indirect Impact (ha)	Species Credit Liability
	BC Act	EPBC Act			
Little Eagle <i>Hieraaetus morphnoides</i>	V	-	-	7.97	140
Major Mitchell's Cockatoo <i>Lophochroa leadbeateri</i>	V	-	-	4.66	120
Regent Parrot (eastern subspecies) <i>Polytelis anthopeplus monarchoides</i>	E	V	-	1.89	52
Superb Parrot <i>Polytelis swainsonii</i>	V	V	-	7.70	133
Australasian Bittern <i>Botaurus poiciloptilus</i>	V	V	-	0.11	3
Brolga <i>Grus rubicunda</i>	E	E	-	0.97	24
White-bellied Sea-Eagle <i>Haliaeetus leucogaster</i>	V	–	-	3.37	87
Square-tailed Kite <i>Lophoictinia isura</i>	V	–	-	2.65	67
	<b>Total</b>			<b>29.32</b>	<b>626</b>

## Appendix J – Independent Biodiversity Advice



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### Briefing Note

To: Iwan Davies  
E | iwan.davies@planning.nsw.gov.au  
From: Allison Riley (BAAS 17042), Ryan Parsons (BAAS17048)  
Date: 22 August 2022  
Subject: Peer Review of Transgrid's Draft Response to the DPE's RFI and BCD Advice on the Response to Submission and Revised BDAR for the Project EnergyConnect (NSW – Eastern Section)

#### Purpose

Umwelt was requested to provide a peer review of the Department of Planning and Environment's (DPE) Request for Information (RFI) and Biodiversity and Conservation Division (BCD) Advice on the Response to Submission and Revised BDAR for the Project EnergyConnect (NSW – Eastern Section, hereafter referred to as the 'Project'). This peer review provides overall commentary on the appropriateness of the approaches proposed by Transgrid for the Project, particularly the quantum of calculated offset liability.

#### Documents Reviewed

The focus of this peer review comprised the following documents:

- Project EnergyConnect (NSW – Eastern Section) (SSD 9172452) – Response to Submissions. Letter dated 6 July 2022 from BCD
- EnergyConnect (NSW – Eastern Section) Response to DPE RFI. Memorandum dated 27 July 2022 from Transgrid
- EnergyConnect Eastern Section – Revised BDAR BCD Response. Letter dated 25 July 2022 from WSP.

Where relevant the revised BDAR was accessed (WSP, 24 May 2022).

A targeted review was completed of the latest revised BDAR (WSP, 19 August 2022).

#### Outcomes/Key messages

Overall, the justifications and approaches proposed by Transgrid are reasonable. The current biodiversity credit liability is considered to be an over-estimate, particularly species credits based on the large amount of assumed presence. The WSP responses and revised BDAR are considered appropriate.

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This briefing note and any attachments are confidential and are intended to provide information for use in discussions between Umwelt and the named recipient(s) only.

The current Biodiversity Stewardship Agreements being prepared by Transgrid represent a substantial amount of the Project credit liability, particularly the ecosystem credit component (65%). The species credit component is much less (6%); however, this is likely influenced by the amount of assumed presence at the impact site.

### **Assumptions and Exclusions**

The following assumption and exclusions are associated with this peer review:

- completed in the absence of detailed biodiversity, spatial data and access to the BAM credit calculator assessments, focusing on the overall approaches as opposed to site specific data
- limited details on the current proposed offsets
- targeted review was completed of the latest revised BDAR (WSP, 19 August 2022) in relation to matters raised by BCS.

## Appendix K – Consideration of Commonwealth Matters

In accordance with the bilateral agreement with the Commonwealth Government, the Department provides the following additional information required by the Commonwealth Minister, in deciding whether to approve a development under the EPBC Act.

The Department's assessment has been prepared based on the assessment contained in the EnergyConnect (NSW – Eastern Section) 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 Department's Biodiversity Conservation Directorate (BCS), other NSW government agencies and the DCCEEW.

This Appendix is supplementary to, and should be read in conjunction with, the assessment included in **Section 6.2** and **Appendix I** of this assessment report which includes the Department's 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 2020/8766) (Referral Decision) was based on likely significant impacts on two threatened ecological communities (TECs) and three threatened fauna species, and possible significant impacts on one TEC, 20 threatened flora species and 19 threatened fauna species.

The revised BDAR for the project identified and addressed all of the listed threatened species and communities included in the Referral Decision, and considered potential impacts on additional species with predicted or known habitat within the proposal study area and identified below.

No other species or communities under the controlling provisions were considered to occur in the project area.

Assessments of significance were undertaken for all threatened species and communities that were recorded during field surveys or were identified as having a moderate or higher potential to occur on the site, including eight threatened ecological communities, nine threatened flora species, 31 threatened fauna species, six threatened aquatic species and 17 migratory species.

The Department notes that both Transgrid and BCS concluded that the project is likely to have a significant impact on four threatened ecological communities and three threatened flora species.

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

DCCEEW determined that other matters under the EPBC Act are not controlling provisions with respect to the controlled action. These include listed World Heritage, National Heritage, Ramsar wetlands, Commonwealth marine environment, Commonwealth land, Commonwealth action, nuclear action, Great Barrier Reef Marine Park, Commonwealth Heritage places, overseas and a water resource, in relation to coal seam gas development and large coal mining development.

## Impacts on EPBC Listed Species and Communities

### *Impacts on threatened ecological communities*

Three threatened ecological communities (TECs) were listed under the Referral Decision and an additional five TECs were identified and assessed in the revised BDAR. Transgrid completed assessments of significance for all identified TECs, as detailed in **Table L** below.

Transgrid and BCS concluded that the project is likely to have a significant impact on the three TECs listed under the Referral Decision, and BCS has advised that impacts on these TECs would be appropriately offset via the ecosystem credit requirements detailed in **Table L** below.

BCS has advised that two TECs are not covered under BC Act, being the Natural Grasslands of the Murray Valley Plains and Buloke Woodlands of the Riverina and Murray-Darling Depression bioregions and Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains TECs.

While offsets are required under the BC Act for the clearance of the plant community types (PCTs) associated with these communities, BCS recommends that DCCEEW considers requiring their own conditions to address potential impacts on these communities. As detailed in **Table K1** below, the project is likely to have a significant impact on the Natural Grasslands of the Murray Valley Plains TEC.

The PCTs associated with the Natural Grasslands of the Murray Valley Plains TEC comprise:

- PCT 44: Forb-rich Speargrass – Windmill Grass – White Top grassland of the Riverina Bioregion (impact area 18.60 ha and associated offset liability of 800 credits);
- PCT 45: Plains Grass grassland on alluvial mainly clay soils in the Riverina Bioregion and NSW South Western Slopes Bioregion (impact area 25 ha and associated offset liability of 979 credits); and
- PCT 46: Curly Windmill Grass – speargrass – wallaby grass grassland on alluvial clay and loam on the Hay plains, Riverina Bioregion (impact area 18.87 ha and associated offset liability of 612 credits).

BCS has also advised that potential impacts on the two communities that were listed after the Referral Decision was issued (identified in **Table K1**) are not required to be considered under section 158A of the EPBC Act. However, offsets are required under the BC Act for the clearance of the PCTs associated with these communities.

Section 7.1 of the BDAR provides a summary of Transgrid’s assessment and Appendix D-1 of the BDAR (sections D-1.2.1 to D-1.2.8) provides Transgrid’s detailed assessments of significance for these TECs, including consideration of the relevant Commonwealth guidelines and policy statements including the relevant approved conservation advice, recovery plans and threat abatement plans (TAPs).

**Table K1 | Threatened Ecological Communities**

Threatened Ecological Community	Listed in Referral Decision	Impact (ha)	Ecosystem Credit Liability	Significant Impact
Grey Box ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia – Endangered	Yes	17.56	483	Yes
Weeping Myall Woodlands – Endangered	Yes	101.83	2,994	Yes
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland – Critically Endangered	Yes	34.89	1,070	Yes

Threatened Ecological Community	Listed in Referral Decision	Impact (ha)	Ecosystem Credit Liability	Significant Impact
Natural Grasslands of the Murray Valley Plains – Critically Endangered <sup>1</sup>	No	62.47	2,390	Yes
Buloke Woodlands of the Riverina and Murray-Darling Depression Bioregions – Endangered	Yes	2.93	64	No
Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains – Critically Endangered <sup>1</sup>	No	2.63	98	No
Plains mallee box woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions – Critically Endangered <sup>2</sup>	No	5.98	NA	No
Mallee Bird Community of the Murray Darling Depression Bioregion – Endangered <sup>2</sup>	No	380.93	NA	No

<sup>1</sup> TECs that are not listed under the BC Act

<sup>2</sup> Consideration under s158A of the EPBC Act is not required for TECs listed after Referral Decision was issued

#### Impacts on threatened flora species

The Department and BCS have considered the potential impacts on all EPBC Act listed flora species with predicted or known habitat within the proposal study area, including the 20 flora species identified in the Referral Decision and four additional species identified in the BDAR.

Of the 24 flora species with predicted or known habitat within the proposal study area, 20 flora species were identified to have a moderate likelihood of occurrence and were the subject of targeted surveys. Table 7-22 of the BDAR summarises the outcomes of targeted surveys.

Four flora species were recorded during site surveys, being:

- Endangered (one species) – Winged Peppergrass (*Lepidium monoplocoides*); and
- Vulnerable (three species) – Mossy Daisy (*Brachyscome papillosa*), Chariot Wheels (*Maireana cheelii*) and Slender Darling Pea (*Swainsona murrayana*).

An additional five flora species were assumed present based on potential habitat within the site, being:

- Endangered (three species) – A spear-grass (*Austrostipa wakoolica*), Sand-hill Spider Orchid (*Caladenia arenaria*) and A Burr-daisy (*Calotis moorei*); and
- Vulnerable (two species) – A spear-grass (*Austrostipa metatoris*) and Yellow Swainson-pea (*Swainsona pyrophila*).

Assessments of significance were undertaken for the nine threatened flora species recorded or assumed present.

Transgrid and BCS concluded that the project is likely to have a significant impact on the Mossy Daisy, Chariot Wheels and Slender Darling Pea, with no significant impact on any other threatened flora species. Appendix D-1 of the BDAR (sections D-1.2.9 to D-1.2.17) provides Transgrid's detailed assessments of significance for these species, including the area of potentially impacted habitat and associated PCTs, and consideration of the relevant Commonwealth guidelines and policy statements including the relevant approved conservation advice, recovery plans and TAPs for each species.

The Department and BCS agree with the outcome of Transgrid's assessment and BCS has advised that the potential impacts on these species would be appropriately offset via the species credit requirements detailed in the BDAR. Potential impacts on all other flora species identified to have a

moderate likelihood of occurrence would be offset via the ecosystem credit requirements detailed **Tables 1 and 2 of Appendix I** of this assessment report.

The Department has also recommended additional measures to avoid or minimise impacts on threatened flora species, as detailed in **Section 6.2** of this assessment report.

#### *Impacts on threatened fauna species*

The Department and BCS have considered the potential impacts on all EPBC Act listed fauna species with predicted or known habitat within the proposal study area, including the 22 fauna species identified in the Referral Decision and additional 24 species identified in the BDAR.

Of the 46 fauna species with predicted or known habitat within the proposal study area, 31 species were identified to have a moderate likelihood of occurrence and were the subject of targeted surveys. Table 7-23 of the BDAR details the outcomes of targeted surveys for each species subject to site surveys, including:

- Critically Endangered (eight species) – Golden Sun Moth (*Synemon plana*), Swift Parrot (*Lathamus discolor*), Curlew Sandpiper (*Calidris ferruginea*), Regent Honeyeater (*Anthochaera phrygia*), Plains Wanderer (*Pedionomus torquatus*), Flathead Galaxias (*Galaxias rostratus*), Murray Hardyhead (*Craterocephalus fluviatilis*) and Silver Perch (*Bidyanus bidyanus*);
- Endangered (seven species) – Australian Painted Snipe (*Rostratula australis*), Australasian Bittern (*Botaurus poiciloptilus*), Booroolong Frog (*Litoria booroolongensis*), Sloane's Froglet (*Crinia sloanei*), Spotted-Tailed Quoll (southern subspecies) (*Dasyurus maculatus maculatus*), Macquarie Perch (*Macquaria australasica*) and Trout Cod (*Maccullochella macquariensis*); and
- Vulnerable (16 species) – White-throated Needletail (*Hirundapus caudacutus*), Regent Parrot (Eastern) (*Polytelis anthoepus monarchoides*), Superb Parrot (*Polytelis swainsonii*), Malleefowl (*Leipoa ocellata*), Corben's Long-eared Bat (*Nyctophilus corbeni*), Grey-headed Flying-fox (*Pteropus poliocephalus*), Painted Honeyeater (*Grantiella picta*), Bar-tailed Godwit (*baueri*)/Western Alaskan Bar-tailed Godwit (*Limosa lapponica- baueri*), Grey Falcon (*Falco hypoleucos*), Koala (*Phascolarctos cinereus*), Large-eared Pied Bat (*Chalinolobus dwyeri*), Pink-tailed Worm Lizard (*Aprasia parapulchella*), Red-lored Whistler (*Pachycephala rufogularis*), Southern Bell Frog (*Litoria raniformis*), Striped Legless Lizard (*Delma impar*) and Murray Cod (*Maccullochella peelii*).

Four fauna species were recorded during site surveys, being:

- Critically Endangered (one species) – Plains Wanderer (*Pedionomus torquatus*); and
- Vulnerable (three species) – Corben's Long-eared Bat (*Nyctophilus corbeni*), Regent Parrot (eastern subsp.) (*Polytelis anthoepus monarchoides*) and Superb Parrot (*Polytelis swainsonii*).

Transgrid and BCS concluded that the project is unlikely to have a significant impact on any of fauna species. Appendix D-1 of the BDAR (Table D-1.1 and sections D-1.2.18 to D-1.2.48) includes detailed assessments of significance for these species, including the area of potentially impacted habitat and associated PCTs, and consideration of the relevant Commonwealth guidelines and policy statements including the relevant approved conservation advice, recovery plans and TAPs for each species.

The Department and BCS agree with the outcome of Transgrid's assessment and BCS has advised that potential impacts on these species would be appropriately offset via the ecosystem and species credit requirements detailed in **Tables 1, 3 and 4 of Appendix I** of this assessment report.

The Department has also recommended additional measures to avoid or minimise impacts on threatened fauna species, as detailed in **Section 6.2** of this report.

### *Impacts on aquatic species*

Six EPBC Act listed aquatic species are considered moderately likely to occur in the proposal study area based on the presence of mapped key fish habitat associated with transmission line waterway crossings. Assessments of significance were undertaken for these six species, being:

- Critically Endangered (three species) – Flathead Galaxias (*Galaxias rostratus*), Murray Hardyhead (*Craterocephalus fluviatilis*) and Silver Perch (*Bidyanus bidyanus*);
- Endangered (two species) – Macquarie Perch (*Macquaria australasica*) and Trout Cod (*Maccullochella macquariensis*); and
- Vulnerable (one species) – Murray Cod (*Maccullochella peelii*).

Appendix D-1 of the BDAR (Table D-1.1 and sections D-1.2.43 to D-1.2.48), includes detailed assessments of significance for these species, including the area of potentially impacted habitat and associated PCTs, and consideration of the relevant Commonwealth guidelines and policy statements including the relevant approved conservation advice, recovery plans and TAPs for each species

Assessments of significance concluded that there would be no significant impact on any aquatic species. The Department and BCS agree with the outcome of Transgrid's assessment.

The Department has also recommended additional measures to avoid or minimise impacts on watercourses and riparian vegetation through a Soil and Water Management Plan, including measure to ensure the project is designed to maintain flows and avoid impacts on key fish habitat, as detailed in **Section 6.7** of this report.

### *Impacts on migratory species*

Seventeen EPBC Act listed migratory species are considered moderately likely to occur within the proposal study.

In addition to the threatened fauna species that are also listed as migratory species (considered above), the following seven migratory species were the subject of significance assessments as detailed in Appendix D-1 of the BDAR (section D-1.2.49):

- Migratory marine birds (one species) – Fork-tailed Swift (*Apus pacificus*); and
- Migratory wetland species (six species) – Common Sandpiper (*Actitis hypoleucos*), Sharp-tailed Sandpiper (*Calidris acuminata*), Latham's Snipe (*Gallinago harwickii*), Bar-tailed Godwit (*Limosa lapponica*), Black-tailed Godwit (*Limosa limosa*) and Common Greenshank (*Tringa nebularia*).

Assessments of significance concluded that there would be no significant impact on any migratory species. The Department and BCS agree with the outcome of Transgrid's assessment.

The Department has also recommended additional measures to avoid or minimise impacts on migratory species, including a connectivity strategy, as detailed in **Section 6.2** of this assessment report.

**Table K2** to **K4** 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 K2 | BCS Advice on EPBC Act Listed Threatened Species and Communities**

Requirement	Information	Reference (BAM / BLA <sup>1</sup> )
<b>Background &amp; Description of Action</b>	<p>Does the EIS/BDAR<sup>2</sup>:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> 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</li> <li><input type="checkbox"/> depict stages and timing of the action that may impact on MNES</li> <li><input checked="" type="checkbox"/> 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</li> </ul> <p>Include references to where this detail is provided.</p> <p><b>Provide advice on the adequacy of the background and action description with respect to MNES and identify any recommended additional information requirements:</b></p> <p>The project was assessed by DPE under the Biodiversity Assessment Method (BAM), including the credit calculator (the Calculator) to produce a BDAR. BCD's review of the project EIS and the BDAR concluded that the BAM assessment was adequate and most issues it raised were adequately addressed at the Response to Submissions phase. Some issues including operational impacts will be addressed with post approval monitoring to be detailed in the Biodiversity Management Plan (BMP) for the project.</p> <p>The project covers 540km and 38 PCTs and will have direct impacts on 1,615.20 hectares of native vegetation. A total of 77 threatened fauna species have been identified as predicted or ecosystem credit species within the disturbance area.</p> <p>BCD considers the BDAR adequately describes the project that includes: (i) operational and construction footprints, (ii) structures to be built, (iii) elements of the action in relation to MNES.</p> <p>GIS shapefiles have been provided to BCD/DPE by the proponent that represent MNES matters and can be provided if required.</p> <p><u>Additional information requirements:</u> Information regarding the staging and timing of the action that may impact on MNES has not be discussed. While clearing procedures will be provided as part of the BMP, it is unclear whether these will consider the impacts of clearing timing on MNES.</p>	<p>BAM Chapters 3, 4, 5 and 8.</p> <p>s1.2 to 1.5, 1.7.1 and Appendix D2</p>

<sup>1</sup> Bilateral agreement (BLA) made under section 45 of the EPBC Act, including Amending Agreement No. 1 (2020)

<sup>2</sup> Or revisions of the BDAR and associated documentation made as a result of previous reviews or project changes post-exhibition.

Requirement	Information	Reference (BAM / BLA <sup>1</sup> )
<b>Landscape Context of the MNES</b>	<p><b>Provide advice on the adequacy of the landscape context information and identify any additional information requirements:</b></p> <p>The proposal is linear and is 540km and traverses five IBRA subregions, from the Southern Olary Plain in the west across to the Lachlan, Murrumbidgee, Lower Slopes and Inland Slopes in the east. Each subregion has been assessed as a separate case in BOAMS in accordance with BAM requirements for linear infrastructure.</p> <p>The proposed transmission line route includes three main waterway crossings - the Murrumbidgee River, Colombo Creek and Yanco Creek. The proposal does not intersect any Ramsar or important local wetland area. However, there are a number of local wetlands within about two kilometres of the alignment including Lake Gol Gol, Dry Lake, Lake Benanee, Waldaira Lake and Lake Cullivel.</p> <p>In response to BCD comments on the exhibited BDAR about potential collision and electrocution impacts to water birds and migratory species, an assessment of likely key movement corridors was prepared. This landscape scale approach was used to inform likely high-risk locations for potential collision and electrocution and therefore potential locations for targeted mitigation actions such as bird diverters ('flappers') (see s10 of the revised BDAR dated 19 August 2022).</p> <p>BCD confirms that details on landscape context have been undertaken in accordance with BAM requirements for linear developments, and the landscape assessment meets the requirements of Stage 1 (s3 and 4) of the BAM.</p>	<p>BAM Section 3.1 BLA clause 7.4.</p> <p>s3 of the Revised BDAR</p> <p>s3.1.3 of the Revised BDAR</p>
<b>EPBC Act Listed Threatened Species &amp; Communities</b>	<p>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<sup>3</sup> via:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> field based survey effort</li> <li><input checked="" type="checkbox"/> published peer reviewed literature</li> <li><input type="checkbox"/> local data</li> <li><input checked="" type="checkbox"/> 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)</li> <li><input checked="" type="checkbox"/> 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</li> </ul>	<p>BAM Chapters 4 and 5</p> <p>s7 and s9.5 of the BDAR</p>

<sup>3</sup> On land to which impacts may extend

	<p>include important populations and critical habitat as defined in Approved Listing Advice, Approved Conservation Advice and Recovery Action Plans.</p> <p><b>Provide advice on the adequacy of the identification methods and mapping information / any additional information requirements:</b></p> <p>All EPBC Act listed threatened species and communities that occur on the subject land, or in the vicinity, have been identified in the revised BDAR dated 19 August 2022 and the EIS, including those that are ecosystem credit species.</p> <p>The assessment of species and communities excluded because they do not occur on or near the site is supported by robust analysis and justification.</p> <p>There are no other MNES species or communities missing from the assessment.</p> <p>The scope, timing and methodology of the targeted surveys used for EPBC Act listed threatened species and how they are consistent with (or justification for divergence from) published Australian Government guidelines and policy statements is provided in:</p> <ul style="list-style-type: none"> <li>- Section 5.5.2, Appendix C-3 and Appendix C-5 (Flora), and</li> <li>- Section 5.5.3, Appendix C-4 and Appendix C-6 (Fauna).</li> </ul> <p><b>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):</b></p> <p>The following threatened communities not identified in referral decision EPBC 2020/8766 were added to the list of impacted communities:</p> <ul style="list-style-type: none"> <li>- Natural Grasslands of the Murray Valley Plains</li> <li>- Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains</li> <li>- Plains mallee box woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions (listed after the referral decision; impacts not considered as per s158A of the EPBC Act)</li> <li>- Mallee Bird Community of the Murray Darling Depression Bioregion (listed after the referral decision; impacts not considered as per s158A of the EPBC Act)</li> </ul> <p>The following threatened species identified in referral decision EPBC 2020/8766 were considered and excluded based on geographical limitations:</p>	
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	<ul style="list-style-type: none"> <li>- Greater Glider (<i>Petauroides volans</i>)</li> <li>- Northern Siberian Bar-tailed Godwit (<i>Limosa lapponica menzbieri</i>)</li> </ul>	
<b>Avoidance, Minimisation, Mitigation &amp; Management</b>	<p>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:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> designs and engineering solutions</li> <li><input checked="" type="checkbox"/> modes or technologies</li> <li><input checked="" type="checkbox"/> routes and locations of facilities</li> <li><input type="checkbox"/> sites within the subject site</li> <li><input checked="" type="checkbox"/> 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).</li> </ul> <p>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:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> techniques, timing, frequency and responsibility</li> <li><input type="checkbox"/> identify measures for which there is risk of failure</li> <li><input type="checkbox"/> evaluate the risk and consequence of any residual impacts</li> <li><input type="checkbox"/> any adaptive management strategy proposed to monitor and respond to impacts</li> </ul> <p><b>Provide advice on whether all feasible impact avoidance, minimisation, mitigation and management measures have been considered and are adequately justified:</b></p> <p>Section 8 of the revised BDAR dated 19 August 2022 discusses measures to avoid and minimise impacts. The proponent initially identified a 10km preliminary alignment corridor. This was then further refined to the preferred 100 metre study area alignment based on multiple iterations of a hierarchy of constraints. Relevant biodiversity constraints are broadly outlined below:</p> <p><i>No-go (Tier 1 constraints): Areas where the proposal cannot be located:</i></p> <ul style="list-style-type: none"> <li>• Ramsar Wetlands</li> <li>• World Heritage areas</li> </ul> <p><i>Avoid (Tier 2 constraints): Areas that are to be avoided wherever possible including:</i></p> <ul style="list-style-type: none"> <li>• National Parks, ecological conservation areas (including flora reserves, state conservation areas, Biodiversity Stewardship Sites, Biobanks; wilderness protection areas)</li> <li>• EPBC Threatened ecological communities</li> </ul>	<p>BAM Chapters 6, 7 and 8 BLA clause 7.1</p> <p>s3.2 and 3.3 of the Exhibited EIS.</p> <p>Biodiversity specific avoid and minimise locations in s8 of the Revised BDAR.</p>

	<ul style="list-style-type: none"> <li>• Serious and irreversible impacts (SAII) ecological communities and species</li> <li>• Other Important Wetlands and water sources for migratory birds protected by international agreements</li> </ul> <p><i>Minimise (Tier 3 constraints): Areas where impacts should be minimised and mitigated including:</i></p> <ul style="list-style-type: none"> <li>• Threatened species (flora/fauna) – other non-SAII threatened flora fauna records</li> <li>• Large, contiguous/intact areas of moderate or better-quality woodland vegetation</li> <li>• Threatened ecological communities listed under the BC Act (non-SAII)</li> <li>• Key fish habitat</li> <li>• Riparian corridors within two kilometres of existing alignment</li> </ul> <p>The tiered constraints approach was applied to four options, with the preferred option having a more positive outcome compared to other options.</p> <p>Specific avoidance measures for biodiversity related matters including prescribed impacts of are outlined in Table 8-1 and 8-2 of the Revised BDAR. They broadly include:</p> <ul style="list-style-type: none"> <li>• Preferencing areas of existing disturbance and targeting narrow points of flood out areas, e.g. creek crossings</li> <li>• Co-locating with transmission line easements</li> <li>• Avoidance and minimising impacts to SAI entities including Plains-wanderer and Box-Gum Woodland.</li> </ul> <p>Mitigation measures are outlined in s10 and Table 10-1 of the Revised BDAR. Key biodiversity mitigation actions broadly include:</p> <ul style="list-style-type: none"> <li>• Installation of bird diverters ('flappers') at key high-risk locations identified in the revised BDAR</li> <li>• Vegetation retention at key connectivity locations</li> <li>• Installation of nest boxes</li> <li>• Pre-clearing surveys of fauna habitats including hollow-bearing trees</li> <li>• Biodiversity exclusion zones for areas of Plains-wanderer important mapped areas and known locations of threatened flora including SAI species.</li> </ul> <p>There is currently no assessment of risk of failure of measures, or residual impacts. There is no proposed adaptive management strategy.</p> <p>BCD will recommend a condition of approval for post approval monitoring in the disturbance areas B4,B10 and HZ which have partial impact offsets calculated. The condition will ensure additional offsets are required if the calculated liability is exceeded in these partial impact zones.</p>	<p>Revised BDAR s8 and 10</p>
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<b>Impact Assessment</b>	<p>Verify that the EIS/BDAR:</p> <ul style="list-style-type: none"> <li>☒ identifies the residual adverse impacts likely to occur to <b>each</b> EPBC Act listed threatened species and/or community after the proposed avoidance and mitigation measures are taken into account</li> <li>☒ provides adequate justification and evidence for the predicted level of impact, with reference to the: <ul style="list-style-type: none"> <li>• Commonwealth's Significant Impact Guideline: <a href="https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf">https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf</a></li> <li>• DPIE Guidance to Assist a Decision-Maker to Determine a Serious and Irreversible Impact (SAIL): <a href="https://www.environment.nsw.gov.au/research-and-publications/publications-search/guidance-to-assist-a-decision-maker-to-determine-a-serious-and-irreversible-impact-2019">https://www.environment.nsw.gov.au/research-and-publications/publications-search/guidance-to-assist-a-decision-maker-to-determine-a-serious-and-irreversible-impact-2019</a></li> <li>• (<a href="https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf">https://www.environment.gov.au/system/files/resources/42f84df4-720b-4dcf-b262-48679a3aba58/files/nes-guidelines_1.pdf</a>)</li> </ul> </li> </ul>	<p>BAM Chapters 8 and 9 BLA clauses 6.2(b)(i)-(ii) and 7.1</p> <p>Revised BDAR Appendix D1.</p>
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**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

Confirm the level of predicted impact (cross appropriate):

high risk of impact (requiring offsets)# or SAIL  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)

The quantum of impacts to two communities is significantly greater than the areas listed in the Referral Decision Brief (EPBC 2020/8766). These are Grey Box (*Eucalyptus microcarpa*) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia (from 6.7 to 17.56 ha) and Weeping Myall Woodlands (from 30.3 ha to 101.83 ha).

Threatened Species / Community listed under EPBC Act	Risk level	Nature of impacts	Quantum of impact (ha) – Revised BDAR 19 August 2022	Duration of impact	Consequences of impact
Grey Box Grassy Woodland ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia	High	Direct	17.56	Construction and operation	Reduction in extent of community at the local level as well as increased fragmentation at the local level
Weeping Myall Woodlands	High	Direct	101.83	Construction and operation	Reduction in extent of community at the local level as well as increased fragmentation at the local level
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	High	Direct	41.86	Construction and operation	Reduction in habitat critical to the survival of the ecological community and reduction in extent of community at a local, state and national level

	Mossgiel Daisy ( <i>Brachyscome papillosa</i> )	High	Direct	132.18	Construction	Reduction in the known habitat of an important population and the project may modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline at the local level		
	Chariot Wheels ( <i>Maireana cheelii</i> )	High	Direct	144.71	Construction	Reduction in the known habitat of an important population and interference with the recovery of the species at the local and state level		
	Slender Darling Pea ( <i>Swainsona murrayana</i> )	High	Direct	241.99	Construction	Reduction in the known habitat of an important population and interference with the recovery of the species at the local and state level		
	Australasian Bittern ( <i>Botaurus poiciloptilus</i> )	High	Indirect	0.11	Operation	Increased risk of collision, and line strike during migratory movements at the local level		
	Buloke Woodlands of the Riverina and Murray-Darling Depression bioregions	High	Direct	2.93	Construction and operation	Reduction in extent of community and increased fragmentation at local level		
	Plains-wanderer ( <i>Pedionomus torquatus</i> )	High	Direct	0.37	Construction	Loss of primary habitat and interference with the recovery of the species at the local level		
	Regent Parrot (eastern) ( <i>Polytelis anthopeplus monarchoides</i> )	High	Direct and indirect	30.98	Construction and operation	Reduction of known and potential foraging habitat within 20km of nesting sites at the local and state level. Removal of potential breeding habitat at the Murrumbidgee River crossing.		
	Superb Parrot ( <i>Polytelis swainsonii</i> )	High	Direct and indirect	114.33	Construction and operation	Reduction of known and potential foraging habitat and reduction in potential breeding habitat at the local level		

	<table border="1" data-bbox="472 193 1740 292"> <tr> <td data-bbox="472 193 777 292">Winged Peppercress (<i>Lepidium monoplacoides</i>)</td> <td data-bbox="777 193 871 292">High</td> <td data-bbox="871 193 996 292">Direct</td> <td data-bbox="996 193 1142 292">17.55</td> <td data-bbox="1142 193 1319 292">Construction</td> <td data-bbox="1319 193 1740 292">Removal of both known and assumed potential habitat that contains only one individual at the local level</td> </tr> </table> <p data-bbox="456 320 1740 376">* Denotes revised figure that was presented to the Department of Planning on 27 July 2022 in the document titled 'EnergyConnect (NSW-Eastern Section) Response to Department of Planning and Environment Request for Information'</p> <p data-bbox="456 405 1659 432">Note: Additional communities listed under the EPBC Act and not the BC Act are listed below in Table 3.</p> <p data-bbox="456 499 1740 560">All other species that are listed in Table 2 (moderate likelihood of occurrence and not impacted by project) do not require offset of any residual impacts.</p> <p data-bbox="456 592 1630 652">The impact of the proposed development on the entities listed in the table above is considered to be adequately offset, as outlined in the Biodiversity Offsets Strategy (BDAR 19 August 2022, s12.4).</p> <p data-bbox="456 684 1599 745"><b>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.</b></p> <p data-bbox="456 777 1787 898">BCD considers that various sections of the revised BDAR dated 19 August 2022, notably the Assessment of Significance (Appendix D-1 of the BDAR) and project specific impact assessment requiring additional consideration (Appendix E-1 to E-5 of the BDAR) provides adequate justification and reasoning for the MNES that have been assessed as being at low risk of significant impact.</p>	Winged Peppercress ( <i>Lepidium monoplacoides</i> )	High	Direct	17.55	Construction	Removal of both known and assumed potential habitat that contains only one individual at the local level	
Winged Peppercress ( <i>Lepidium monoplacoides</i> )	High	Direct	17.55	Construction	Removal of both known and assumed potential habitat that contains only one individual at the local level			
<b>Offsets</b>	<p data-bbox="456 951 757 978">Verify that the EIS/BDAR:</p> <ul style="list-style-type: none"> <li data-bbox="456 986 1249 1013"><input type="checkbox"/> identifies any MNES that haven't been offset using the BAM</li> <li data-bbox="456 1021 1317 1048"><input checked="" type="checkbox"/> identifies how impacts requiring offsets correlate to MNES impacts</li> <li data-bbox="456 1056 1711 1123"><input checked="" type="checkbox"/> identifies the plant community types (PCTs) requiring offset and the number and type of ecosystem credits required for impacts to MNES</li> <li data-bbox="456 1131 1744 1192"><input checked="" type="checkbox"/> identifies threatened species requiring offset and the number of species credits required for impacts to MNES</li> <li data-bbox="456 1200 1767 1260"><input checked="" type="checkbox"/> 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</li> <li data-bbox="456 1268 1738 1295"><input type="checkbox"/> identifies if ecological rehabilitation and/or biodiversity conservation actions are proposed for offsetting</li> <li data-bbox="456 1303 1744 1364"><input checked="" type="checkbox"/> 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#.</li> </ul>	<p data-bbox="1794 951 1995 1043">BAM Chapter 10 BLA clauses 7.1 and 7.2</p> <p data-bbox="1794 1075 2033 1353">1 – N/A 2 – Revised BDAR s12.2 and 12.3 (Table 12-11). 3 – Revised BDAR s 7.1 and 12.2. 4 – Revised BDAR s12.3 (Table 12-20 and 12-21).</p>						

	<p># In accordance with the BAM there is no longer a requirement to define the offsetting approach at EIS stage.</p> <p><b>Complete the Impacts and Offsets Summary table below (Table 2)</b></p> <p><b>Provide advice on the adequacy of the proposed offsets in meeting the requirements of the BAM:</b></p> <p>The offset obligation of the project is 43,244 ecosystem credits and 46,030 species credits.</p> <p>The Biodiversity Offsets Strategy outlined at 12.4 will meet the project offset requirements through a combination of:</p> <ul style="list-style-type: none"> <li>- Purchasing and retiring existing credits,</li> <li>- Establishing Biodiversity Stewardship Agreements (BSA),</li> <li>- Payment to the Biodiversity Conservation Fund, and/or</li> <li>- Alternative strategic offset outcomes.</li> </ul> <p>This offsetting approach is consistent with Energy Connect – West. Multiple BSAs are already being processed for Energy Connect - West that will also provide a portion of the credit obligation for Energy Connect - East. Additionally, a financial guarantee will be in place for the sum of the credit liability for Energy Connect - East. The value of any outstanding credit liability not offset through BSAs or by purchasing and retiring credits will be paid to the Biodiversity Conservation Fund.</p> <p>Condition D26 (NSW Approval) requires the proponent to prepare a Biodiversity Offset Package in consultation with BCS and to the satisfaction of the Secretary prior to any impact on biodiversity values.</p> <p>Table 3 below identifies the MNES that have not been offset using the BAM.</p>	<p>5 – Revised BDAR s12 6 – N/A 7 - Revised BDAR s12.4</p>
<p><b>Other Considerations</b></p>	<p>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:</p> <ul style="list-style-type: none"> <li><input checked="" type="checkbox"/> International environmental obligations</li> <li><input checked="" type="checkbox"/> Recovery Plans</li> <li><input checked="" type="checkbox"/> Approved Conservation Advice</li> <li><input checked="" type="checkbox"/> Threat Abatement Plans</li> </ul> <p><i>The relevant Commonwealth guidelines and policy statements for each species and community are available at: <a href="http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl">http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl</a></i></p>	<p>BLA clauses 6.2(b)(iv), 7.2(c), 7.3 and 7.4</p>

	<p><b>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.</b></p> <p>Appendix D-1.2 outlines the relevant Commonwealth guidelines and policy statements including listing advice, conservation advice and recovery plans in relation to the listed threatened species and communities associated with the project.</p> <p>The Appendix shows that Recovery Plans, Approved Conservation Advice, Threat Abatement Plans, and any International Environmental Obligations have been considered when determining the significance of the impact on the species and communities. BCD considers that the MNES assessment has been adequately informed by Commonwealth guidelines and policy statements.</p>	
<b>Recommended Conditions</b>	<b>Provide advice on any recommended conditions and reasons for imposing the conditions:</b>	BLA clause 6.2(c)(iii)
	<p><b><u>EPBC Approval 1</u></b></p> <p>BCD recommends the EPBC approval minimise the impacts of the action on protected matters by not clearing more than the amounts (ha) specified in Table 2 and consistent with Condition D25 of the NSW approval.</p> <p>Two protected matters are not subject to the bilateral agreement because they are not listed in NSW. To minimise the impacts of the project on those protected matters we recommend that the EPBC approval require the proponents to restrict clearing to no more than the amounts (ha) specified in Table 3.</p> <p><b><u>EPBC Approval 2</u></b></p> <p>BCD recommends the EPBC approval require the applicant to implement NSW approval conditions B1 to B6 inclusive. The CEMP will include a range of mitigation measures not established in the BDAR including adaptive management strategies to monitor and respond to impacts, and a risk and consequence framework including response measures. For those measures to mitigate harm to protected matters, Conditions B1 to B6 inclusive must be implemented.</p>	

	<p>BCD recommends the EPBC approval require the applicant to implement NSW approval conditions D25, D26 and D28 inclusive. D25, D26 and D28 are the primary mitigation measures for protected matters and must be stipulated in the EPBC approval.</p> <p>Note: Condition 26 provides for a Biodiversity Offset Package to be prepared post approval whilst funds are secured for meeting the biodiversity credit liability at the time of approval. The mechanism for applying this approach is outlined in the Deferred Biodiversity Offset Obligations policy. The Policy permits the acquittal of the credit liability for this CSSI project to be deferred for up to two years from the date of approval. In line with the policy, consultation with the Department of Climate Change, Energy and the Environment and Water (DCCEEW) will be undertaken where nationally listed threatened species or ecological communities are involved, as offset conditions proposed under the policy are outside the Biodiversity Offsets Scheme as endorsed by the Australian Government and the assessment bilateral agreement under the Environment Protection and Biodiversity Conservation Act 1999 (Cth). Agreement from the Australian Government is required where a deferral arrangement is proposed for an impact to a nationally listed threatened species or ecological community.</p>	
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**Table K3 | 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 (EIS, BDAR)
<b>Entities for which there is a likely significant impact prior to offsetting</b> (based on figures from the 19 August 2022 BDAR and Appendices)					
Chariot Wheels ( <i>Maireana cheelii</i> )	17, 44, 46, 157, 163, 164, 216	144.71	6671 species credits	<p>The offsetting approach for all credits will be met as per the Biodiversity offsets strategy outlined at 12.4. That is:</p> <ul style="list-style-type: none"> <li>- Purchase and retirement of existing credits,</li> <li>- Establishing BSAs,</li> <li>- Payment to BCF, or</li> <li>- Alternative strategic offset outcomes.</li> </ul>	BDAR Tables 9-29, 12-20 and Appendix D1, F3

Grey Box Grassy Woodland (Grey Box ( <i>Eucalyptus microcarpa</i> ) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia)	76, 80, 110	17.56	483 ecosystem credits	As above	BDAR Tables 7-4, 9-28, 12-7 and s7.1.1.2,
Mossgiel Daisy ( <i>Brachyscome papillosa</i> )	13, 15, 24, 44, 45, 46, 76, 80, 157, 160, 163, 164, 216	132.18	6169 species credits	As above	BDAR Tables 5-6, 12-20, 9-29 and Appendix D1, F3
Slender Darling Pea ( <i>Swainsona murrayana</i> )	15, 23, 26, 28, 44, 45, 46, 76, 80, 157, 163, 164, 216	241.99	9687 species credits	As above	BDAR Tables 9-29, 12-20 and Appendix D1, F3

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 (EIS, BDAR)
Weeping Myall Woodlands	26	101.83	2994 ecosystem credits	As above	BDAR Tables 7-19, 9-28, 12-5
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	74, 75, 267, 277,	34.89	974 ecosystem credits	As above	BDAR Tables 7-21, Table 9-28, 12-7. Appendix D1,
<b>Other entities for which the impact is not significant, but for which offsets are required</b> (based on figures from the 19 August 2022 BDAR and Appendices)					
A Burr-daisy <i>Calotis moorei</i>	170	20.24	1200	As above	
Australasian Bittern <i>(Botaurus poiciloptilus)</i>	8, 11, 13, 17, 24, 53, 160, 182, 249	0.11	3 species credits	The offsetting approach for all credits will be met as per the Biodiversity offsets strategy outlined at 12.4. That is: - Purchase and retirement of existing credits, - Establishing BSA's, - Payment to BCF, or - Alternative strategic offset outcomes.	BDAR Tables 5-4, 9-30, 12-21
<i>Austrostipa metatoris</i>	28, 170	1.82	45	As above	BDAR Table 9-10. Appendix F3
<i>Austrostipa wakoolica</i>	17, 26, 28, 74, 76, 80	41.15	864	As above	BDAR Table 9-10. Appendix F3

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 (EIS, BDAR)
Buloke Woodlands of the Riverina and Murray-Darling Depression bioregions	22	2.93	64 ecosystem credits	As above	BDAR Table 9-28, 12.2
Plains-wanderer ( <i>Pedionomus torquatus</i> )	44, 46	0.37	25 species credits	As above	BDAR Table 9-30, 11-7, 12-21
Regent Parrot (eastern) ( <i>Polytelis anthopeplus monarchoides</i> )	2, 8, 9, 10, 11, 13, 15, 16, 20, 22, 170, 171, 630, 631	29.09	739 species credits	As above	BDAR Tables 9-10, 9-22m, 9-30, 12-21.
Sand-hill Spider-orchid ( <i>Caladenia arenaria</i> )	28, 75, 76, 80	1.07	29	As above	BDAR Table 7-22
Superb Parrot ( <i>Polytelis swainsonii</i> )	5, 7, 11, 13, 23, 26, 28, 45, 46, 74, 75, 76, 80, 110, 249, 267, 277	114.33	3046 species credits	As above	BDAR Table 5-4, 9-30, 12-21
Winged Peppercross ( <i>Lepidium monoplacoides</i> )	13, 15, 24, 26, 45, 46, 47, 74, 80, 160, 163, 170, 216	17.55	722 species credits	As above	BDAR Table 5-6, 9-29, 12-20. Appendix F1, F3
Yellow Swainson-pea ( <i>Swainsona pyrophila</i> )	170, 171, 172	4.64	126	As above	BDAR Table 5-6, 7-22, 9-29, 12.13. Appendix F1
<b>Other entities for which impacts are offset through ecosystem credits</b> (Based on the 19 August 2022 BDAR and Appendices)					
Australian Painted Snipe ( <i>Rostratula australis</i> )	5, 7, 8, 11, 13, 17, 24, 47, 53, 160, 182, 249		Part of Ecosystem Credits	As above	BDAR Table 5-4, Table 9-30
Corben's Long-eared Bat ( <i>Nyctophilus corbeni</i> )	22, 23, 28, 58, 75, 80, 110, 170, 171, 172, 199, 249, 267		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30
Curlew Sandpiper ( <i>Calidris ferruginea</i> )	24, 47, 53		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30

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 (EIS, BDAR)
Grey-headed Flying Fox ( <i>Pteropus poliocephalus</i> )	5, 76 & 267		Part of Ecosystem Credits	As above	BDAR Table 5-4, 5-31, 9-30
Malleefowl ( <i>Leipoa ocellata</i> )	110, 170, 171, 172		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30
Painted Honeyeater ( <i>Grantiella picta</i> )	5, 7, 8, 11, 13, 15, 23, 26, 28, 58, 74, 75, 76, 80, 110, 143, 249, 267, 277, 319		Part of Ecosystem Credits	As above	BDAR Table 5-4, 7-23 and s5.6.4.14
Regent Honeyeater ( <i>Anthochaera phrygia</i> )	5, 7, 74, 75, 267, 277, 319		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30
Swift Parrot (foraging habitat) ( <i>Lathamus discolor</i> )	5, 7, 8, 11, 74, 75, 76, 80, 110, 249, 267, 277		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30
White-throated Needletail ( <i>Hirundapus caudacutus</i> )	5, 7, 8, 11, 13, 15, 17, 24, 26, 44, 45, 46, 47, 53, 74, 76, 80, 110, 157, 160, 182, 216, 249, 267, 277, 319		Part of Ecosystem Credits	As above	BDAR Table 5-4, 9-30
<b>Entities with a moderate likelihood of occurrence and not impacted by project</b> (Based on the 19 August 2022 BDAR and Appendices)					
<i>Atriplex infrequens</i>	23, 163, 170	-	-	None required	BDAR Table 7-22
Black-eared Miner ( <i>Manorina melanotis</i> )	170, 171, 172	-	-	None required	BDAR Table 5-8, 5-31
Greater Glider ( <i>Petauroides volans</i> )	-	-	-	None required	
Koala ( <i>Phascolarctos cinereus</i> )	5, 7, 8, 11, 13, 15, 74, 75, 76, 80, 110, 249, 267 & 277	-	-	None required	BDAR Table 5-31, 7-23, 9-30
Mallee Emu-wren ( <i>Stipiturus mallee</i> )	-	-	-	None required	BDAR 7.1.1.3
Menindee Nightshade ( <i>Solanum karsense</i> )	13, 15, 17, 24, 160	-	-	None required	BDAR Table 7-22

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 (EIS, BDAR)
Mountain Swainson-pea ( <i>Swainsona recta</i> )	58, 199	-	-	None required	BDAR Table 7-22
Mueller Daisy ( <i>Brachyscome muelleroides</i> )	44, 45, 46, 47	-	-	None required	BDAR Table 7-22
Northern Siberian Bar-tailed Godwit ( <i>Limosa lapponica menzbieri</i> )	-	-	-	None required	
Pink-tailed Worm-lizard ( <i>Aprasia parapulchella</i> )	267, 277, 319	-	-	None required	BDAR Table 5-8, 9-30
Purple-wood Wattle ( <i>Acacia carneorum</i> )	58, 199	-	-	None required	BDAR Table 7-22
Red Darling-pea ( <i>Swainsona plagiotropis</i> )	26, 44, 45, 46	-	-	None required	BDAR Table 7-22
Red-lored Whistler ( <i>Pachycephala rufogularis</i> )	171, 172	-	-	None required	BDAR Table 5-8, 9-30, and s7.1.1.3
River Swamp Wallaby-grass ( <i>Amphibromus fluitans</i> )	249	-	-	None required	BDAR Table 7-22
Southern Bell Frog ( <i>Litoria raniformis</i> )	7, 8, 11, 13, 15, 17, 24, 47, 53, 249	-	-	None required	BDAR Table 5-8, 5-31, 9-30
Spike-Rush ( <i>Eleocharis obicis</i> )	11, 12, 13, 17, 24, 47, 53, 74, 76, 160, 164, 216	-	-	None required	BDAR Table 7-22
Spiny Peppergrass ( <i>Lepidium aschersonii</i> )	26, 53, 74, 76	-	-	None required	BDAR Table 7-22
Striped Legless Lizard ( <i>Delma impar</i> )	277	-	-	None required	BDAR Table 5-8, 9-30
Tarengo Leek Orchid ( <i>Prasophyllum petilum</i> )	267, 277	-	-	None required	BDAR Table 7-22
Turnip Copperburr ( <i>Sclerolaena napiformis</i> )	26, 44, 46	-	-	None required	BDAR Table 7-22

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 (EIS, BDAR)
Yass Daisy ( <i>Ammobium craspedioides</i> )	277	-	-	None required	BDAR Table 7-22

**Table K4 | MNES Impacted Outside the Bilateral Agreement**

Threatened Species / Community listed under EPBC Act	PCTs associated with the species / ecological community	Area of Impact (ha)	Credits required	Reference (EIS, BDAR)	Significance
Natural Grasslands of the Murray Valley Plains	44, 45, 46	62.47	2390 (PCT44 (mur) = 800, OCT 45 (Mur) = 969, PCT46 (mur) = 612, PCT45 (LS) = 9)	Revised BDAR Table 9-28 and Appendix D-1.2.2.4-5	<p>Significant Impact</p> <p>The proposed action would result in a reduction of the extent of the <i>Natural Grasslands of the Murray Valley Plains</i> within the Proposal study area. This will interfere with the recovery of this community and has the potential to increase fragmentation of the community.</p> <p>While the Natural Grasslands of the Murray Valley Plains are not listed under the BC Act, the impacts to the PCTs associated with the community have generated an ecosystem credit liability in accordance with the BAM that will be offset through the post-approval Biodiversity Offsets Strategy.</p>

Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains	47	2.63	98	Revised BDAR Table 9-28 and Appendix D-1.2.3.4-5	<p>Not a significant impact</p> <p>The proposed action would result in only a small reduction of the community in the region. It would not interfere with the recovery of this community and has limited potential to increase fragmentation.</p> <p>While the Seasonal Herbaceous Wetlands (Freshwater) of the Temperate Lowland Plains are not listed under the BC Act, the impacts to the PCTs associated with the community have generated an ecosystem credit liability in accordance with the BAM that will be offset through the post-approval Biodiversity Offsets Strategy.</p>
Plains mallee box woodland of the Murray Darling Depression, Riverina and Naracoorte Coastal Plains bioregions*	170	5.98	*	Revised BDAR Table 9-28 and Appendix D-1.2.4	* Community listed on 10 June 2021
Mallee Bird Community of the Murray Darling Depression Bioregion*	170, 171, 172	380.93	*	Revised BDAR Table 9-28 lists 380.93 while Appendix D-1.2.8.4 lists 387.49 and 380.93	* Community listed on 7 December 2021

\* Denotes entities that were listed after the controlled action approval process decision (EPBC 2020/8766 on 30 Sept. 2020), so impacts do not need to be considered as per s158A of the EPBC Act.

While the threatened communities shown in Table 3 are not listed under the BC Act, the impacts to the PCTs associated with the communities have generated an ecosystem credit liability in accordance with the BAM that will be offset through the post-approval Biodiversity Offsets Strategy.

## Additional EPBC Act Considerations

**Table K5** contains the additional mandatory considerations, factors to be taken into account and factors to have regard to under the EPBC Act additional to those already discussed.

**Table K5 | Additional considerations for the Commonwealth Minister under the EPBC Act**

EPBC Act section	Considerations	Conclusion
<b>Mandatory Considerations</b>		
136(1)(b)	Social and economic matters are discussed in <b>Section 6</b> and <b>7</b> of this report.	<p>The project would provide benefits for the local and regional economy and is of public benefit. Up to 500 workers would be required during the construction period and Transgrid has committed to source up to 100 workers from the local community where possible.</p> <p>Impacts on the local community would mostly occur during the construction period, which has been considered in the assessment report. The recommended conditions require Transgrid to implement road upgrades, manage traffic movements along the transport route, and minimise potential amenity impacts including noise, dust and visual by maintaining setback distances to the nearest receiver.</p>
<b>Factors to be taken into account</b>		
3A, 391(2)	<p>Principles of ecologically sustainable development, including the precautionary principle, have been taken into account, in particular:</p> <ul style="list-style-type: none"> <li>the long term and short term economic, environmental, social and equitable considerations that are relevant to this decision;</li> <li>conditions that restrict environmental impacts and impose monitoring and adaptive management, reduce any lack of certainty related to the potential impacts of the project;</li> <li>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;</li> <li>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</li> </ul>	<p>The Department considers that the project, if undertaken in accordance with the recommended conditions of approval, would be consistent with the principles of ecologically sustainable development.</p>

EPBC Act section	Considerations	Conclusion
	<ul style="list-style-type: none"> <li>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.</li> </ul>	
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.

### Factors to have regard to

176(5)	Bioregional plans	There is no approved bioregional plan related to the activity.
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### Consideration on deciding conditions

134(4)	<p>Must consider:</p> <ul style="list-style-type: none"> <li>Information provided by the person proposing to take the action or by the designated proponent of the action; and</li> <li>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.</li> </ul>	<p>All project related documentation is available from the Department's website <a href="http://www.planningportal.nsw.gov.au">www.planningportal.nsw.gov.au</a></p> <p>The Department considers that the conditions at <b>Appendix H</b> are a cost effective means of achieving their purpose. The conditions are based on material provided by the proponent that was prepared in consultation with the Department, BCS and other government agencies.</p>
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### Conclusions on Controlling Provisions

For the reasons set out in **Section 6.2** 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 conditions of approval in **Appendix H**.

## Appendix L - Consideration of the Objects of the Act

**Table L1 |** Consideration of the project against the relevant Objects of the EP&A Act

Issue	Consideration
<p>(a) to promote the social and economic welfare of the community and a better environment by the proper management, development and conservation of the State's natural and other resources;</p>	<ul style="list-style-type: none"> <li>• The project would provide ongoing through the contribution to energy security and reliability in NSW through ongoing employment opportunities during construction and operations.</li> <li>• Consideration has also been given to the sensitive environmental features located within proximity to the project including riparian areas, including the Murrumbidgee River, Abercrombie Creek, Yanco Creek, the Coleambally Outfall Drain, Colombo Creek, Hallidays Cut and Burkes Creek, and endangered species and communities, with appropriate conditioning of the project to avoid, minimise and offset impacts.</li> </ul>
<p>(b) to facilitate ecologically sustainable development by integrating relevant economic, environmental and social considerations in decision-making about environmental planning and assessment;</p>	<p>The Department considers that the project can be carried out in a manner that is consistent with the principles of ecologically sustainable development. The Department's assessment has sought to integrate all significant environmental, social and economic considerations. Consideration of the key principles and programs of ecologically sustainable development is detailed below.</p>
	<p><b><i>Precautionary Principle</i></b></p> <ul style="list-style-type: none"> <li>• The Department has 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.</li> <li>• The EIS contains a number of specialist environmental impact assessments and a number of design, construction and operation measures to mitigate, remediate or offset potential impacts.</li> <li>• The Department has also recommended conditions of approval that further mitigate potential residual impacts of the project such limits on blasting and traffic generation, adequate buffer distances from riparian areas, dust suppression and requiring Transgrid to retire biodiversity offsets.</li> <li>• The Department considers that the recommended conditions can provide an appropriate level of protection to environmental values in the region.</li> </ul>
	<p><b><i>Inter-generational equity</i></b></p> <ul style="list-style-type: none"> <li>• 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.</li> <li>• The Department recognises that climate change and reducing GHG emissions are key considerations for inter-generational equity and consider that the project</li> </ul>

Issue	Consideration
	<p>contributes to reducing potential climate impacts by linking new renewable sources of generation to the energy market.</p> <p><b>Conservation of biological diversity and ecological integrity</b></p> <ul style="list-style-type: none"> <li>The projects potential impacts on biodiversity were an important consideration of the Department's assessment of the project. As described in <b>Section 6.2 Appendices I and J</b>, 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.</li> </ul> <p><b>Improved valuation, pricing and incentive</b></p> <ul style="list-style-type: none"> <li>This principle of ecologically sustainable development emphasises the internalisation of environmental costs in the pricing of assets and services.</li> <li>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 be required for Wentworth construction compound, and that the project's crushing and screening plants would operate under an Environment Protection Licence issued by the EPA.</li> </ul>
<p>(c) to promote the orderly and economic use and development of land;</p>	<ul style="list-style-type: none"> <li>The project site covers an area of around 4,889 ha, primarily zoned RU1 – Primary Production, and is consistent with the objectives in the RU1 zone, including minimising the fragmentation and alienation of resource lands and minimising conflict between land uses within this zone and land uses within adjoining zones.</li> <li>five small areas zoned RU3 – Forestry, SP1 – Special Activities, SP2 – Infrastructure, E1 – National Parks and Nature Reserves and E2 – Environmental Conservation.</li> </ul>
<p>(e) to protect the environment, including the conservation of threatened and other species of native animals and plants, ecological communities and their habitats;</p>	<ul style="list-style-type: none"> <li>The Department considers that the project has been designed to minimise environmental and biodiversity impacts as much as practicable by designing the project to avoid and minimise impacts on high quality vegetation and habitat.</li> <li>Although some clearing of threatened ecological communities would be required, the Department considers that the proposed biodiversity offset strategy would maintain or enhance biodiversity values in the medium to long term.</li> </ul>
<p>(f) to promote the sustainable management of built and cultural heritage (including Aboriginal cultural heritage);</p>	<ul style="list-style-type: none"> <li>The Department has assessed the project's impacts on built and cultural heritage (see <b>Section 6.3</b> and <b>6.7</b>) and considers that potential impacts to heritage items can be appropriately minimised and mitigated through detailed design, including refining the location of transmission infrastructure and tower structures where practicable.</li> </ul>

Issue	Consideration
	<ul style="list-style-type: none"> <li>The Department has recommended a range conditions, including a Heritage Management Plan prepared in consultation with RAPS and Heritage NSW, and subsurface testing of PADs that would be potentially impacted once the alignment of the transmission line has been refined during detailed design.</li> </ul>
<p>(g) to promote good design and amenity of the built environment;</p>	<ul style="list-style-type: none"> <li>The Department recognised 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.</li> <li>Nonetheless, the proposed mitigation measures and conditions would minimise off-site visual impacts of the project by maximising the distance between transmission towers and residences, maximise the screening of infrastructure offered by existing vegetation and topography, and ensure consistent spacing between towers where the alignment would be visible for a long duration in open landscapes.</li> </ul>
<p>(h) to promote the proper construction and maintenance of buildings, including the protection of the health and safety of their occupants;</p>	<ul style="list-style-type: none"> <li>The proposed 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 site and surrounding residents.</li> <li>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.</li> </ul>
<p>(i) to promote the sharing of the responsibility for environmental planning and assessment between the different levels of government in the State; and</p>	<ul style="list-style-type: none"> <li>The Department notified and consulted with the nine local councils being Wentworth Shire, Balranald Shire, Murray River Shire, Hay Shire, Edward River, Murrumbidgee, Federation, Lockhart Shire and Wagga Wagga City and NSW government authorities (including further discussion of key issues with the BCS, TfNSW and Heritage NSW) throughout the assessment of the project and carefully considered all responses in its assessment (see <b>Section 6</b>).</li> <li>The Department has also consulted with the DCCEEW throughout the assessment due to the assessment process under the EPBC Act.</li> </ul>
<p>(j) to provide increased opportunity for community participation in environmental planning and assessment.</p>	<ul style="list-style-type: none"> <li>The Department publicly exhibited the project application and EIS and made all relevant documents publicly available on its website (see <b>Section 6</b>). All public submissions have been considered by Transgrid and the Department during the assessment process.</li> </ul>