Transgrid

People. Power. Possibilities.

Victoria to New South Wales Interconnector West (VNI West) (NSW)

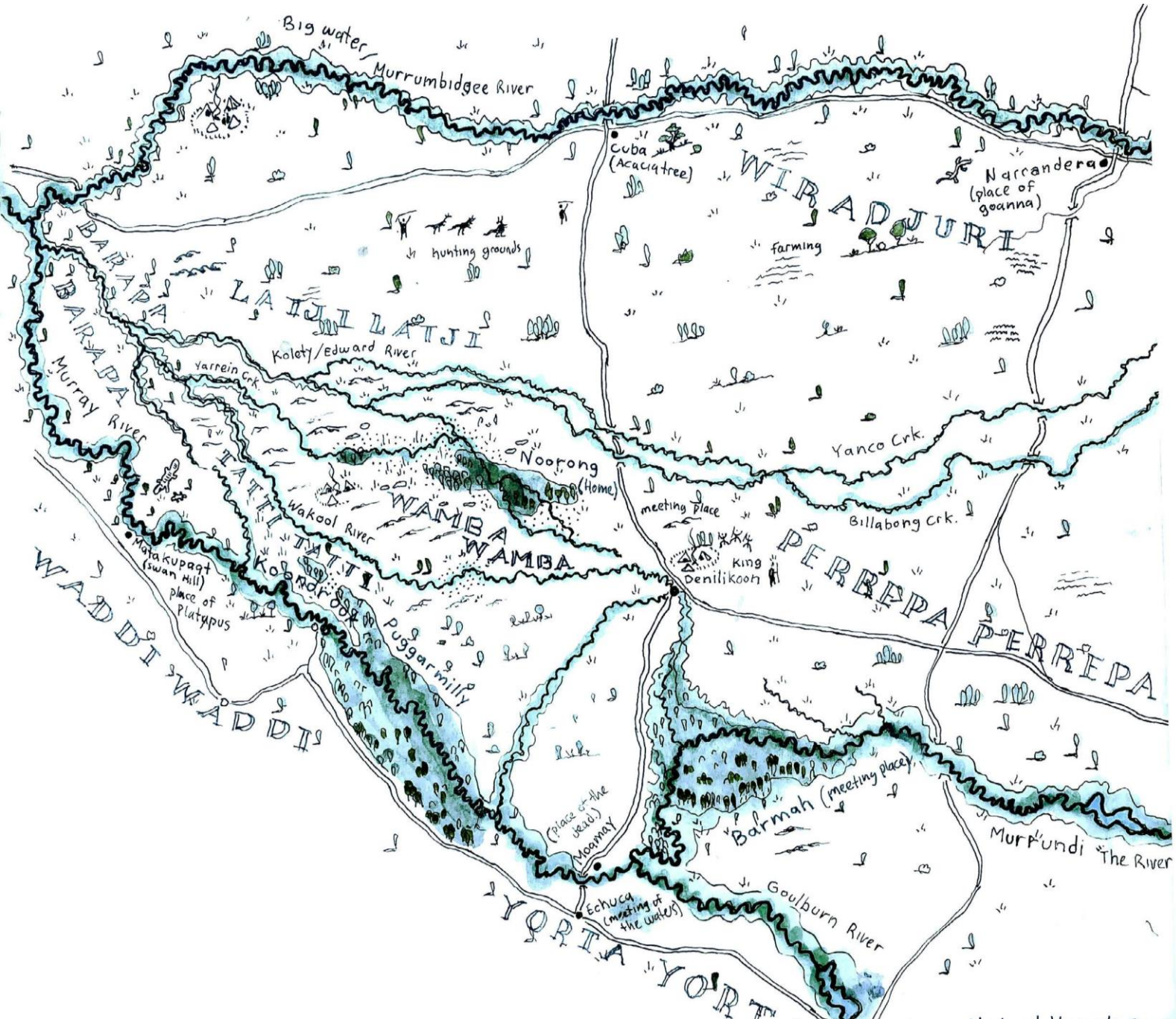
Environmental Impact Statement – Summary document

July 2025

ACKNOWLEDGEMENT

Transgrid acknowledges Indigenous and Torres Strait Islander peoples as the Traditional Custodians of the land, water and sky throughout Australia on which we do business. We recognise their strength, diversity, resilience and deep connections to Country.

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



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Preface

The Australian energy landscape is transitioning to a greater mix of low-emission renewable energy sources, such as wind and solar. To support this transition, meet our future energy demands and connect Australian communities and businesses to these lower cost energy sources, the national electricity grid needs to evolve. In response to this need, Transgrid and Transmission Company Victoria are jointly developing a new 500 kilovolt (kV) double circuit overhead electrical connection between NSW and Victoria. This project is collectively referred to as the Victoria to NSW Interconnector – West project (or 'VNI West'). VNI West would form a second transmission link between NSW and Victoria to harness clean, low-cost electricity from Renewable Energy Zones (REZs) in both states and improve the reliability and security of electricity supply. VNI West is a priority actionable project for the Australian Energy Market Operator (AEMO) as well as a priority project for the Commonwealth, NSW and Victorian governments.

The NSW Minister for Planning and Public Spaces declared the NSW component of the VNI West project (referred to as 'the project' or 'VNI West (NSW)' to be a critical state significant infrastructure (CSSI) project on 19 June 2024, requiring assessment by the NSW Department of Planning, Housing and Infrastructure (DPHI) under Part 5, Division 5.2 of the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). The project was also determined to be a 'controlled action' on 4 September 2024 under the *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) and will also be assessed by the Commonwealth Department of Climate Change, Energy, the Environment and Water. In making the controlled action decision, it was confirmed that the project would be subject to the bilateral assessment process that has been established between the Commonwealth and NSW governments. This agreement accredits certain NSW processes to reduce assessment duplication by the Commonwealth government. The approval authorities are the NSW Minister for Planning and Public Spaces and the Commonwealth Minister for Environment and Water.

The EIS has been prepared in accordance with the Planning Secretary's Environmental Assessment Requirements (SEARs), the requirements of the EP&A Act and EPBC Act, the Environmental Planning and Assessment Regulation 2021, and the State Significant Infrastructure Guidelines. The EIS details the project, its potential environmental, social and economic impacts and benefits, and how these impacts would be avoided, minimised and managed throughout construction and operation. Should the project be approved, it would be constructed and operated in accordance with the mitigation and management measures proposed in the EIS as well as the conditions of approval.

A summary of the overall planning approvals process for the project is summarised in Figure 1.

This summary describes the project and its development to date, the relevant legislative and policy framework and the outcomes of community and stakeholder engagement to date. It also describe the key findings of each of the assessments undertaken to consider the potential construction and operational impacts of the project and proposed management and mitigation measures identified.

Further detailed information on each of the environmental issues assessed can be found within the relevant sections of the EIS and associated technical papers. Information on where to view the EIS and other support tools is provided further in the 'Exhibition of the EIS' section of this summary.

The full EIS and associated technical papers are available to download on the DPHI website: https://www.planningportal.nsw.gov.au/major-projects/projects/victoria-nsw-interconnector-west or via the VNI West (NSW) project website (transgrid.com.au/projects-innovation/vni-west).

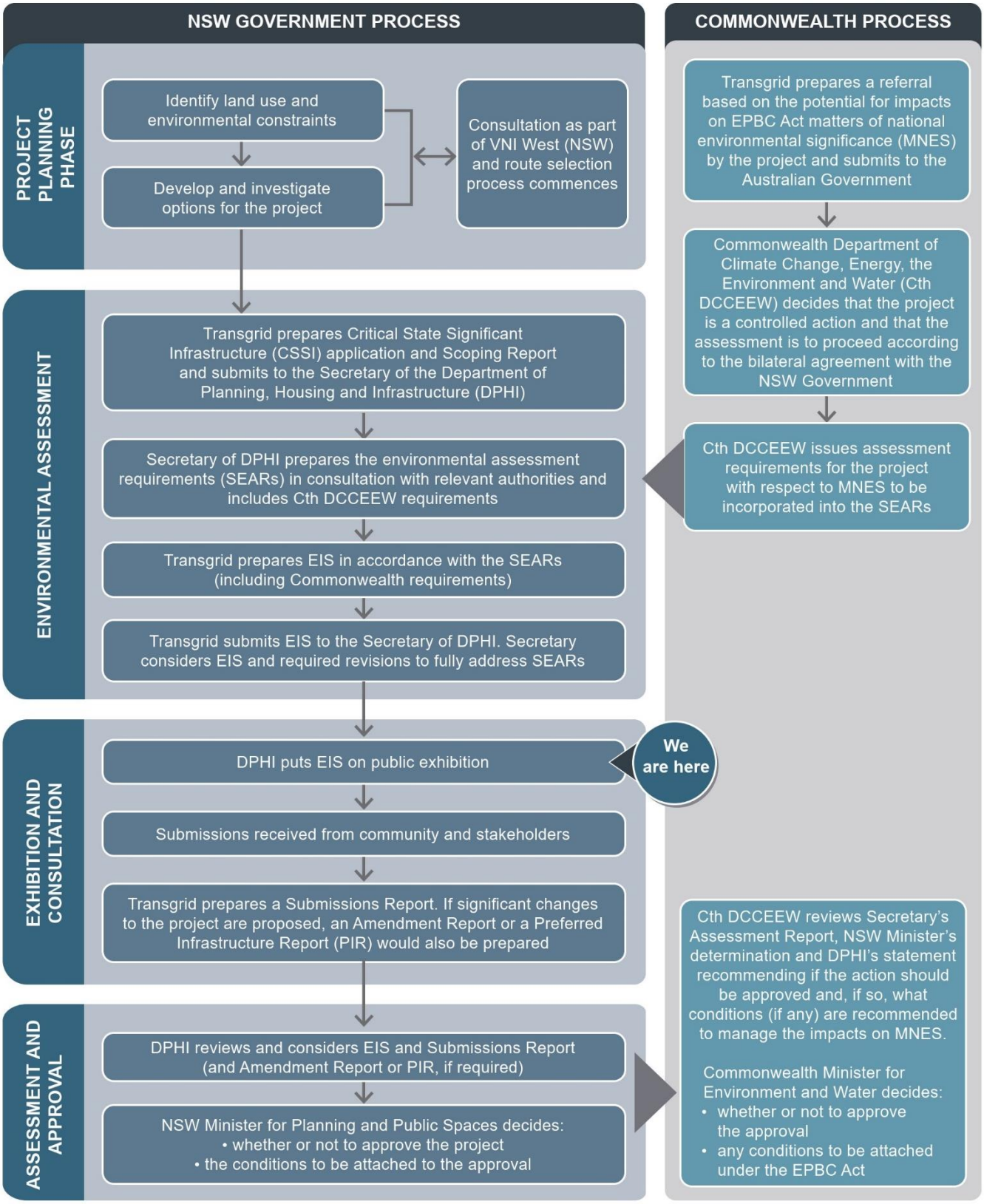


Figure 1 **NSW and Commonwealth planning approval process for the project**

VNI West (NSW) Environmental Impact Statement

Transgrid understands community members and stakeholders will be interested in different aspects of the EIS relating to their local area or individual circumstances.

The infographic explains the different types of information available and where this information can be found and provides guidance on the content of each suite of resources (refer to Figure 2).

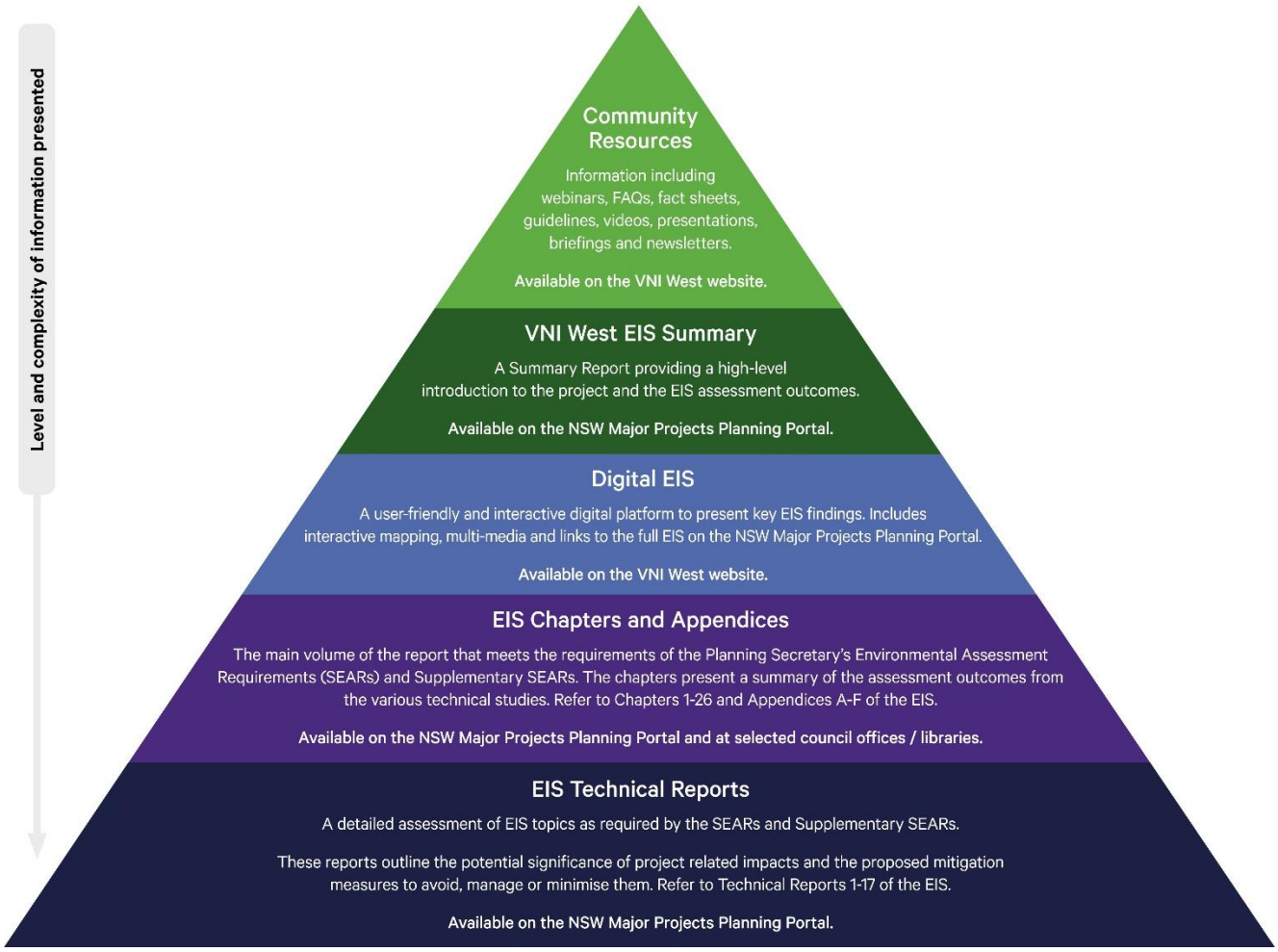


Figure 2 Public information on the EIS

The EIS itself has been structured into three main parts and is supported by a series of appendices and detailed technical papers. The overarching structure of the EIS is outlined in Figure 3.

Figure 3 Structure of the EIS

Description of the project

Who is Transgrid and what is VNI West

Transgrid

The project is proposed to be undertaken by NSW Electricity Networks Operations Pty Ltd as a trustee for NSW Electricity Operations Trust (referred to as Transgrid). Transgrid is the operator and manager of the main high voltage transmission network in NSW and the Australian Capital Territory (ACT)

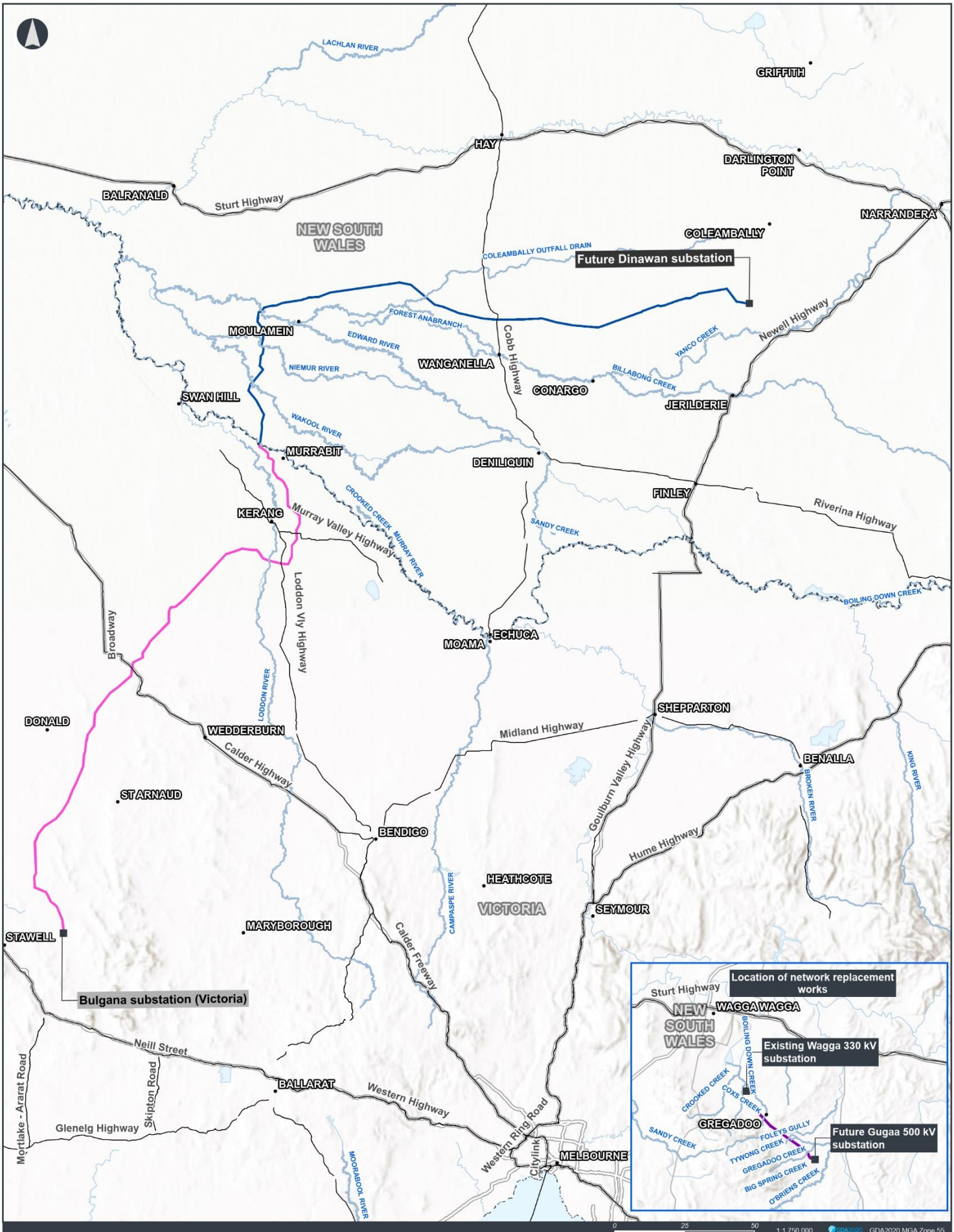
Transgrid's network enables more than three million homes and businesses to access a safe, reliable and affordable supply of electricity. Comprising more than 128 substations and more than 13,000 kilometres of high voltage transmission lines, underground cables, and interconnections with Queensland and Victoria. The network is instrumental to the electricity system and, therefore, the economy and facilitates energy trading across the National Electricity Market (NEM). The network is instrumental to the electricity system and, therefore, the economy and facilitates energy trading across the NEM.

Victoria to NSW Interconnector – West

VNI West proposes the construction, operation and ongoing maintenance of a high voltage, 500 kV double circuit overhead transmission line that would connect the high voltage electricity grids in NSW and Victoria. Specifically, VNI West would connect the Western Renewables Link proposal (at Bulgana in Victoria) with the EnergyConnect (NSW – Eastern section) project at the future Dinawan substation in NSW via a new substation near Kerang (in Victoria) (refer to Figure 4).

Transgrid (the proponent) is responsible for seeking the required planning approval and delivering the NSW component of VNI West. The key components of the project would include (refer to Figure 5):

- transmission line works comprising:
  - a new 500 kV double circuit overhead transmission line around 240 kilometres in length between the NSW/Victoria border near Murrabit, and the future Dinawan substation
  - replacement of around nine kilometres of an existing 330 kV single circuit overhead transmission line (Line 51), generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road with a new 330 kV double circuit overhead transmission line
- substation works comprising:
  - connection and line diversion works at the future Dinawan substation to allow for connection of the proposed 500 kV switchyard
  - expansion of the future Dinawan substation to include a new 500 kV switchyard and two new 330 kV transformer bays
  - connection and line diversion work at the existing Wagga 330 kV substation and at the future Gugaa 500 kV substation to allow for connection to the newly replaced Line 51
- establishment of new and/or upgraded temporary and permanent access tracks/roads
- provision of up to two telecommunication facilities (optical repeater sites) and associated connections to existing local electrical infrastructure
- ancillary works required for construction of the project such as construction compounds, combined temporary worker accommodation facilities, utility connections and/or relocations, brake and winch sites, and helipad/helicopter support facilities.



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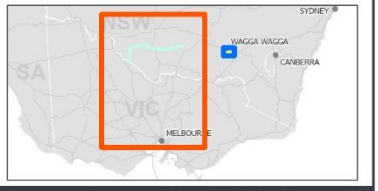
VNI West (NSW)

Figure 4
Overview of VNI West

Legend

- Project transmission line corridor (NSW/Victorian border to Dinawan substation)
- Network replacement between the existing Wagga 330 kV substation and future Gugaa 500 kV substation
- Victorian project transmission line corridor (subject to separate assessment)
- NSW/Victorian border
- Substation
- Watercourse
- Roads



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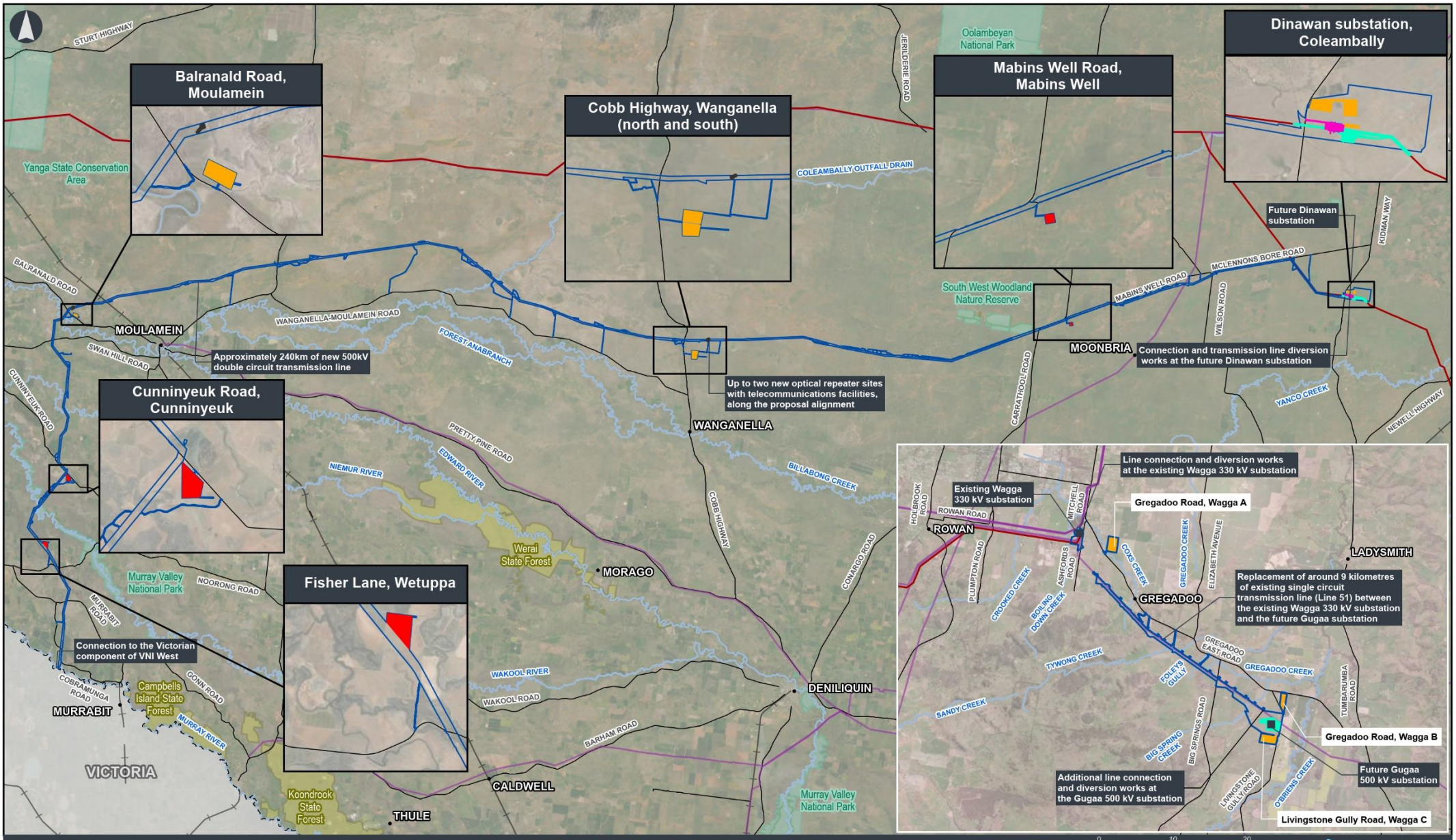
Data sources: NSW EPI, DELWP, WSP, EnergyConnect



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VNI West (NSW)

Figure 5
Overview of the VNI West (NSW) Project

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Data sources: NSW EPI, DELWP, WSP, EnergyConnect

What are the key details of the project?

The project description is based on an indicative concept design and construction methodology which would continue to be refined by Transgrid and the successful construction contractors. Further details of the construction and operation of the project are provided in Chapter 3 (Project description) of the EIS.

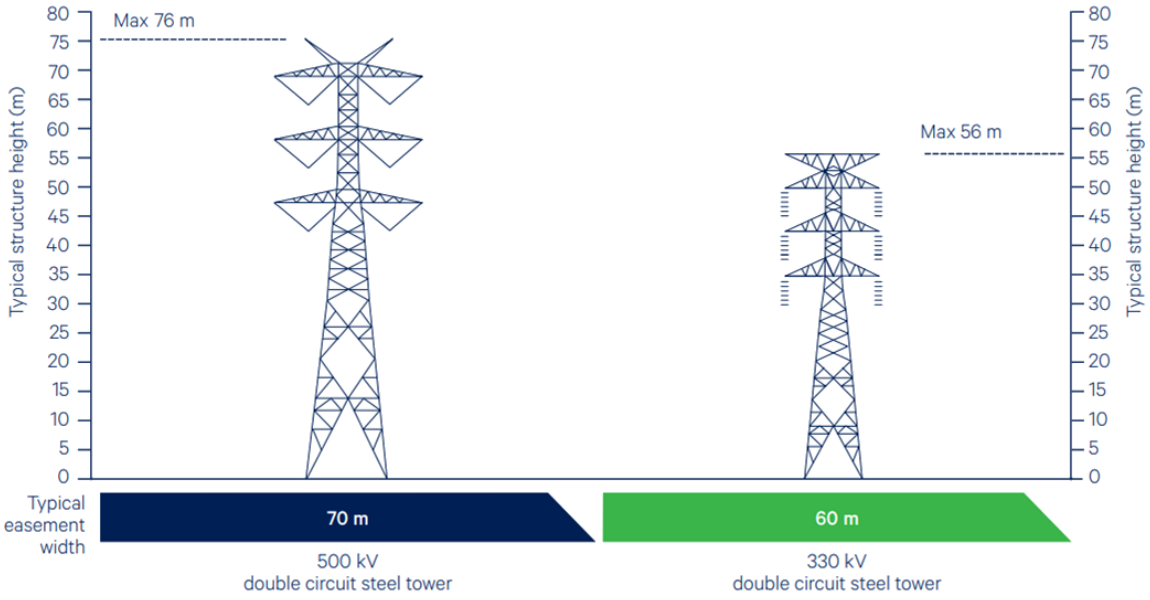
Project infrastructure

Transmission lines

The main component of the project would include the construction of new double circuit 500 kV transmission lines from the NSW/Victorian border to the future Dinawan substation (under construction as part of the EnergyConnect (NSW – Eastern section) project), a distance of around 240 kilometres.

The project also includes the demolition and rebuild of about nine kilometres of existing 330 kV single circuit transmission line (existing Transgrid transmission line known as 'Line 51') generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation, Livingstone Gully Road. This section of Line 51 would be demolished and replaced with a new double circuit 330 kV transmission line, as well as provide connection to the existing Wagga 330 kV substation and the future Gugaa 500 kV substation. This section of the project is referred to as the network augmentation works.

The transmission lines would be supported on a series of free-standing steel lattice transmission line structures that would be generally spaced between around 400 and 600 metres apart. For the 500 kV transmission line structures, these would be up to 76 metres in height and for the 330 kV transmission line structures, these would be up to 56 metres in height (compared to the existing transmission line structures along this section of existing transmission line that are currently up to around 41 metres in height). The final transmission line structure types, number of transmission line structures, size, height and spacing would be determined during detailed design. Indicative transmission line structures are shown in Figure 6.



Note: Figure is not to scale and represents indicative maximum heights

Figure 6 Indicative transmission line structure designs proposed for the project

The project would require a new easement (i.e. a legal right of access) to be established for the 500 kV transmission lines between the NSW/Victorian border and the future Dinawan substation. This easement would be typically 70 metres wide except at some locations where a wider easement of up to around 110 metres would be required for technical engineering reasons. The section of the transmission line for the network augmentation works would be contained within the existing 60 metre easement.

Dinawan substation expansion

To provide a connection point for the new 500 kV transmission lines, a new 500 kV switchyard would be constructed adjoining the 330 kV component of the future Dinawan substation (currently under construction as part of the EnergyConnect (NSW – Eastern section) project).

The required infrastructure for the 500 kV switchyard would occupy an area of about 17 hectares and would include new transformers and reactors, overhead electrical components, auxiliary services and associated facilities (e.g. for drainage and buffer zone surrounding the site for bushfire purposes).

Ancillary infrastructure

Up to two telecommunication facilities (optical repeater sites) may be required along the alignment between the NSW/Victorian border and the future Dinawan substation. These sites would house signal-boosting equipment and backup power supplies to maintain stable long-distance communications. Telecommunication facilities locations are currently proposed at locations in Moulamein (west of Balranald Road) and north of Wanganella (east of the Cobb Highway).

Where possible, existing roads, tracks and other existing disturbed areas would be used to access the project. However, upgrades to existing access tracks or new access tracks and/or waterway crossings would be required where there is no suitable access.

Construction

Construction overview

Construction of the project would commence in late 2026, subject to subject to planning approval and potential construction staging. The main construction work phase for the transmission line, replacement transmission lines and the proposed Dinawan substation expansion would take up to around 24 months. The proposed Dinawan substation expansion and network augmentation works are expected to be commissioned/energised in late 2028 with initial operation to commence by early 2029, with the system at full capacity by around the end of 2029.

The environmental impacts occurring during the construction phases would be managed through the implementation of a construction Environmental Management Plan (CEMP).

The indicative timeframes for key construction activities are shown in Figure 7.

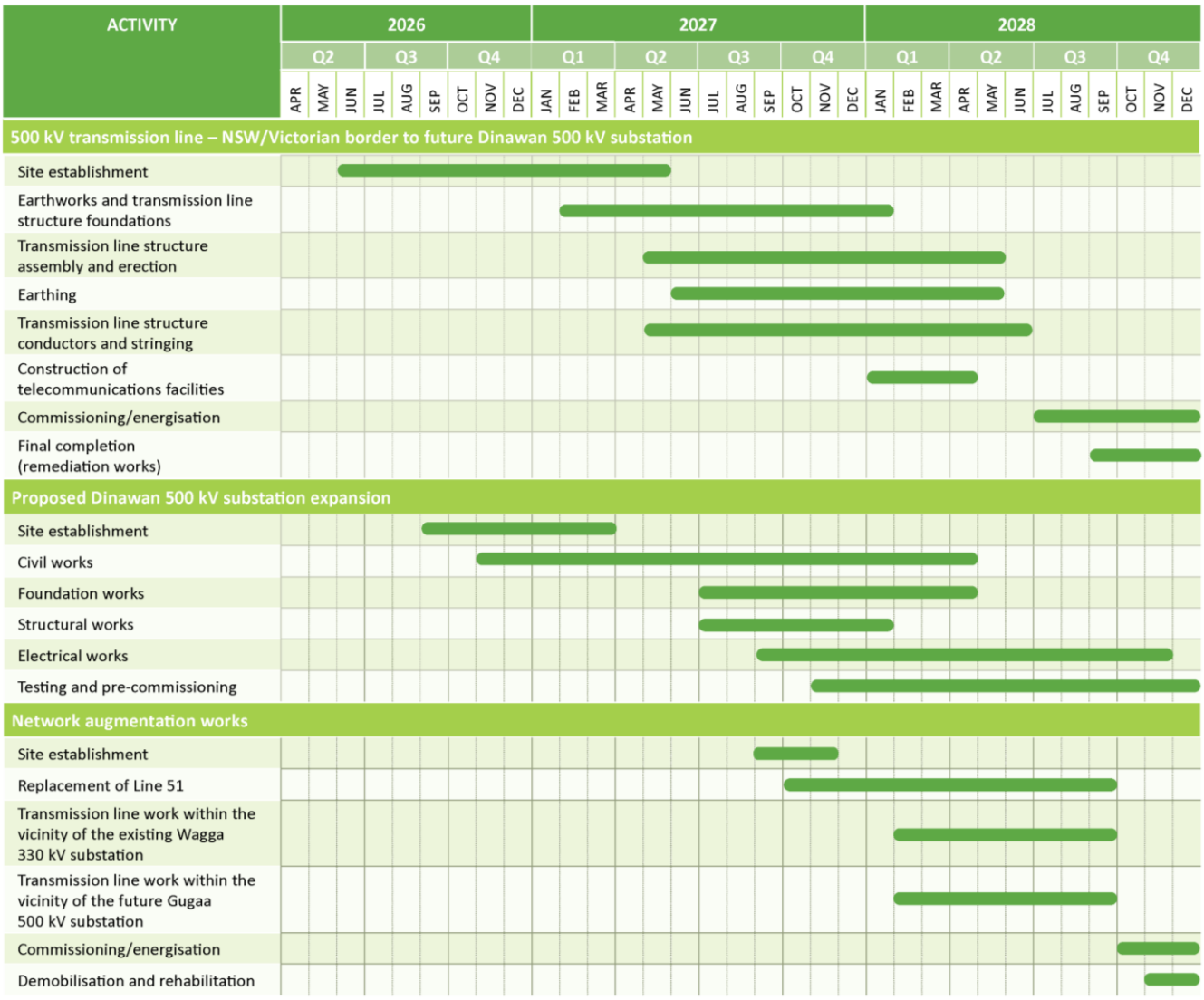


Figure 7 Indicative construction program

Timing of construction

Figure 8 shows an indicative duration of construction activities associated with the construction of each individual transmission line structure. Durations of any particular construction activity, and respite periods, can vary for a number of reasons including (but not limited to) resource and engineering constraints, and works sequencing and location. These activities would typically also have multiple work fronts, therefore (for example) foundation works or transmission line structure erection would be occurring in several locations along the project footprint at the same time.

It is expected that construction activities would largely be undertaken during standard construction hours. However, there would be times when working outside of standard construction hours would be required. This would be managed through an out of hours work protocol and appropriate consultation with, and notification to, affected landholders.

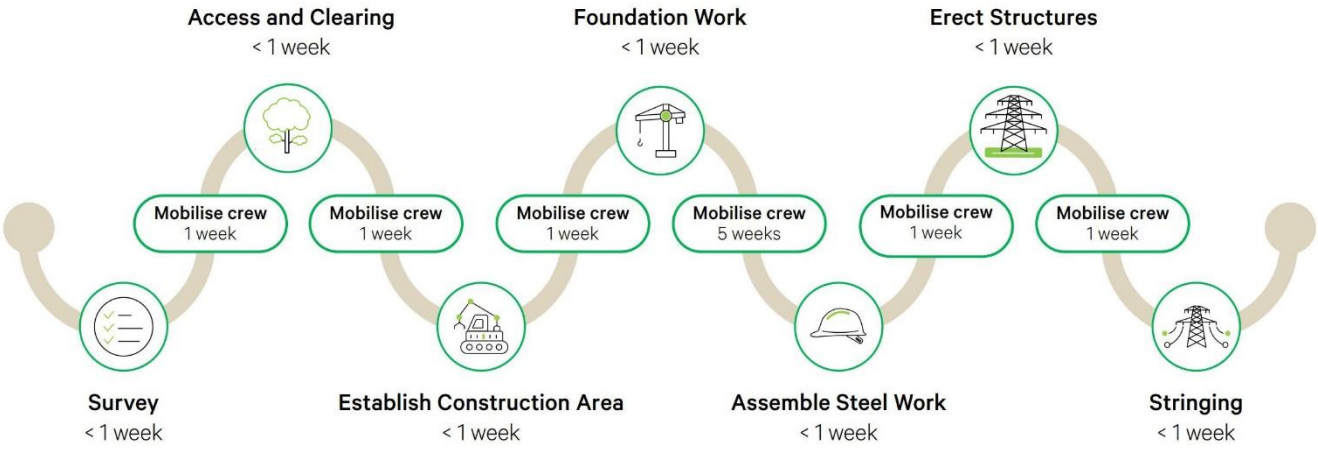


Figure 8 Indicative duration and sequence of construction activities for transmission line structures

Construction movements along the length of the project would comprise vehicles transporting equipment, materials and workers. More heavy vehicles would be required during the main work associated with the Dinawan substation expansion. Non-standard or oversized loads would also be required for the switchyard work (e.g. for transformers) and transportation of transmission line structure materials and conductors.

The construction worker numbers would vary depending on the stage of construction and activities. During peak construction, the project would employ up to 1,500 workers across multiple work fronts.

Construction facilities

Several construction compounds and combined temporary worker accommodation facilities would be required to support the construction of the project.

Combined temporary worker accommodation facilities are currently proposed at Moulamein, two locations along the Cobb Highway, Wanganella (north), Wanganella (south), Dinawan substation, Coleambally and Wagga Wagga (refer to Figure 5). These sites would provide worker accommodation and other amenity facilities for between 150 and 500 workers. Construction worker accommodation would be developed in accordance with the temporary worker accommodation facility management plan for the project. The final worker accommodation requirements would be confirmed by the construction contractors.

In addition, up to two standalone construction compounds would be required during project construction. Site location options have been identified at both Wetuppa, Cunninyeuk and Mabins Well. Construction compounds would be required to support staging and equipment laydown, temporary storage of materials, plant and equipment and worker parking. However, the specific use of each compound (if confirmed required) and their proposed boundaries/layout would be refined as the project design develops.

Helicopters may also be used to deliver materials/equipment and workers to construction areas. Helicopters may also be used for stringing of the transmission lines (to be determined during detailed design). To enable helicopters to operate safely and allow easy access to the site, helicopter landing pads (helipads) would be required. The helipad locations would be confirmed during detailed design by the construction contractors.

Operation and maintenance

The proposed infrastructure would be safely operated and maintained in compliance with the Transgrid's safety rules and operations and maintenance procedures for its high voltage transmission network. Field staff and contractors would carry out inspections and maintenance of the substations and transmission lines over the design life of the project.

Activities would include:

- regular inspection and maintenance (ground and/or aerial) of transmission lines and transmission line structures
- inspection and maintenance of electrical equipment within the Dinawan substation
- inspection of asset protection zones and access roads/tracks
- vegetation clearance/trimming within the easement or of adjacent hazard trees
- fire detection system inspection and maintenance
- stormwater drainage systems maintenance.

Figure 9 Example of a 500 kV transmission line

Why is the project needed

Project need and objectives

To meet our future energy demands, Australia needs to transition to a greater mix of low-emission renewable energy sources, such as wind and solar. The development of a new interconnector between NSW and Victoria would meet the energy transition policy needs by providing an important connection to both the South West REZ (NSW) and Murray River REZ (Victoria). The development of VNI West would provide a key electricity transmission connection between Victoria and south western NSW to encourage future renewable energy providers to invest in lower emission electrical generation alternatives within this region and the identified REZs.

The project is also consistent with the AEMO's roadmap for the NEM, the *2024 Integrated System Plan* (ISP) (AEMO, 2024), and relevant strategic NSW planning and policy documents, including the *NSW Transmission Infrastructure Strategy* (DPE, 2018) and the *NSW Electricity Strategy* (DPIE, 2019). In particular, AEMO has identified VNI West as a key 'already actionable' transmission project (AEMO, 2024).

The development of a new interconnector between NSW and Victoria would expand the power transfer capability between these regions and enable:

- the efficient sharing of generation resources between regions in the NEM
- encouragement of more efficient investment in low-cost generation sources, allowing overall demand and system reliability requirements to be met at lowest cost
- placement of downward pressure on wholesale market electricity costs in NSW and Victoria by enabling electricity demand to be met using low-cost generating capacity and future renewable generators
- a reduction of costs for consumers by delivering transmission that would repay its $16 billion investment cost, save consumers a further $18.5 billion in avoided costs, and deliver emissions reductions valued at a further $3.3 billion[1].

In the longer term, an enhanced ability to import low-cost power from other states, including significant high-quality renewables, would provide market benefits by enabling supply in NSW to be met at a lower overall cost as existing coal-fired plant retires. This is particularly the case for VNI West, as NSW is forecast by AEMO to experience the greatest retirement of coal generation after 2035 and would otherwise rely on higher-cost sources of generation to fill the resulting supply gap. Allowing for a greater sharing of resources across regions will help smooth demand and supply fluctuations, and reduce reliance on increasingly expensive gas generation, reducing price volatility and trading risk.

In addition to the new interconnector between the NSW/Victorian border and the future Dinawan substation, the network augmentation works are required to meet the strategic interconnection of the VNI West Project to EnergyConnect and HumeLink projects.

[1] Section 7.1 *Integrated System Plan for the National Electricity Market (AEMO 2024)*

The project has been developed to meet the following four key objectives:

- provide reliable and affordable electricity to customers
- improve energy security of the south western NSW transmission network, enable greater sharing of energy between NSW and Victoria and help to unlock the potential capacity of proposed REZs in the region
- support the national transition to a lower carbon emission energy system by enabling more renewable energy generation to enter the market, supporting Australia's emissions reduction targets
- support the development of a greater mix of renewable energy in the NEM.

The project also aims to support the strategic objectives of several other plans and strategies related to energy including:

- global need for emissions reduction including Australia's global commitment to reduce its net greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2030 and to zero by 2050
- the shift towards renewable energy including strategically placed large-scale transmission lines to balance resources and unlock REZs in new regions, in particular the South West REZ in NSW
- *2024 Integrated System Plan*
- *NSW Network Infrastructure Strategy 2023*
- *NSW State Infrastructure Strategy 2022-2042*
- *NSW Electricity Infrastructure Roadmap*
- *NSW Government's Net Zero Plan Stage 1: 2020 – 2030*
- *NSW Electricity Strategy*
- *NSW Transmission Infrastructure Strategy.*

Further details of the project need and objectives are provided in Chapter 2 (Strategic context, need and project development).

How was the project developed and what alternatives were considered?

The development of the project involved a robust process commencing with the regulatory assessment of strategic and technical options (the Regulatory Investment Test for Transmission (RIT-T) process), then progressing to detailed corridor and route refinement process. Chapter 2 (Strategic context, need and project development) of the EIS provides further information on the project development processes. These processes involved engagement with landholders, communities and key stakeholders. Figure 10 provides a summary of the key steps and outcomes in the development of the project and preferred transmission line option. Figure 11 also provides an overview of the corridor and route selection process.

Timeframe	Key process	Summary of key processes and outcomes
Strategic option identification and assessment through RIT-T process		
2019	Project Specification Consultation Report	The RIT-T process for VNI West confirmed the need for the project and commences consideration a range of transmission network options.
2020 to 2022	Technical Options assessed in the Project Assessment Draft Report (PADR)	Transgrid (along with AEMO Victoria Planning) published the PADR for VNI West. The PADR assessed two different options to provide additional transfer capacity between NSW and Victoria. The PADR identified the preferred technical option providing a connection between the Western Renewables Link in Victoria to EnergyConnect in NSW, via new substations at Ballarat, Bendigo and Kerang.
2022 to May 2023	Best technical option / project solution published in the Project Assessment Conclusions Report (PACR)	Transgrid and Transmission Company Victoria undertook additional consultation regarding the preferred technical option. Community feedback raised concern with the proposed NSW/Victoria border crossing location. This process resulted in confirmation of a broad area of interest for the project (around 200 km wide) for further refinement – generally located between Swan Hill and Dinawan.
Transmission line area of interest assessment, corridor and route identification		
February to June 2023	Corridor options assessment	Transgrid identified and assessed a number of high level constraints and opportunity criteria through desktop analysis and community engagement processes within the area of interest. Three preliminary corridors were considered within the final identified area of interest. A recommended draft corridor option was presented to the community for feedback from June 2023 to September 2023.
June to October 2023	Corridor refinements	In response to feedback on the recommended draft corridor option, Transgrid made multiple refinements in developing the final preferred corridor.
October 2023 to January 2024	Route options assessment	An initial series of nine preliminary routes were identified within the final preferred corridor, four of which were short-listed for further investigation and assessment. The recommended preferred route option was presented to the community in January 2024.
February 2024 to March 2024	Route refinements	In response to feedback on the recommended preferred route option, Transgrid made multiple refinements in developing the final preferred route.
Detailed assessment and project corridor identification		
April 2024 (ongoing)	Detailed assessment areas to address community feedback and minimise environmental impacts in particularly sensitive areas	Ongoing refinement of the preferred route including refinements to the project footprint (assessed in this EIS) based on landholder discussions and ongoing field surveys to avoid specific constraints or to minimise impacts to land uses and assets Refinement to specific project elements (such as transmission line structure locations) to respond to ongoing field surveys and landholder discussions.

Figure 10 Key steps and outcomes in the development of the preferred option

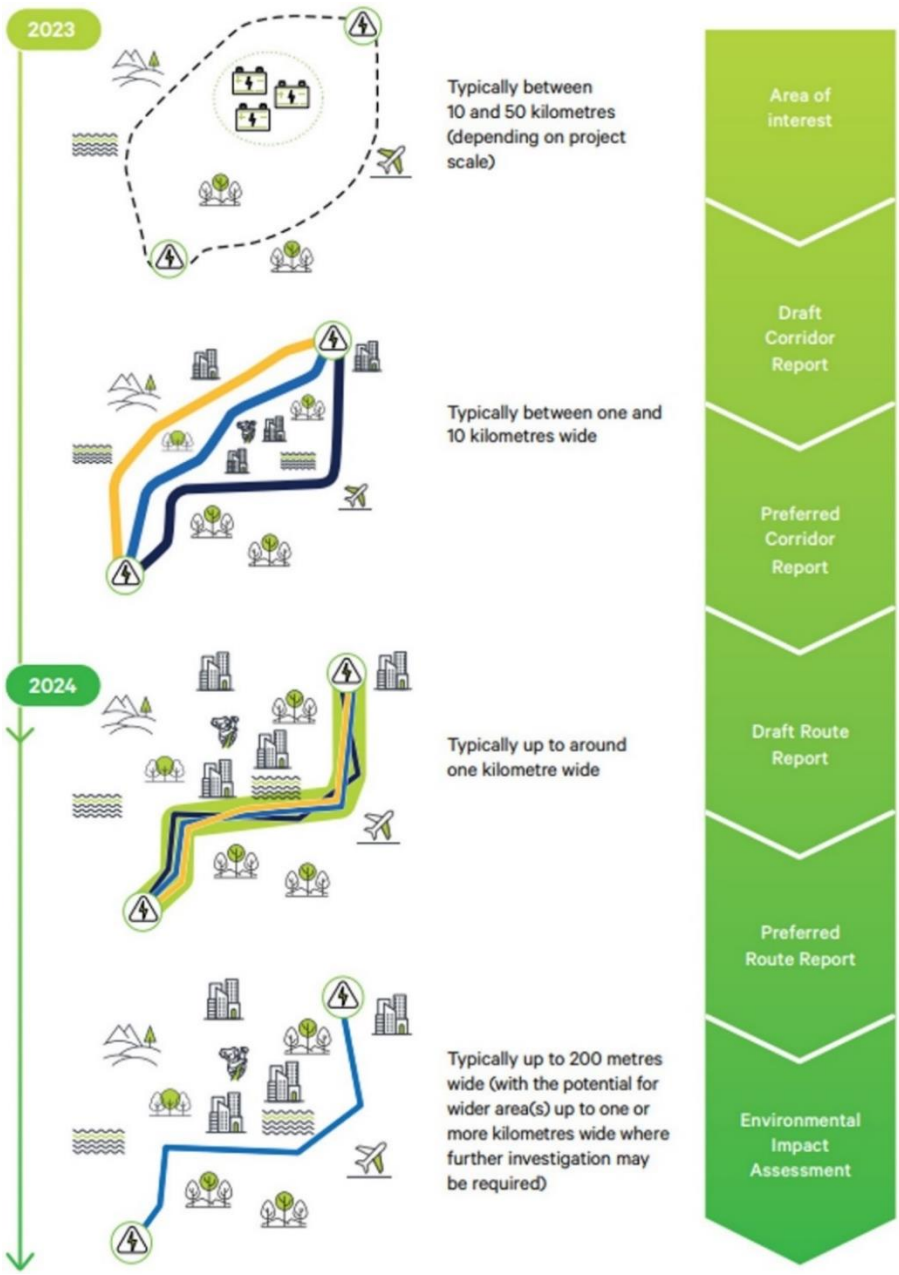


Figure 11 Project development process

Extensive engagement with community stakeholders has informed the project development process and the identification of strategies to avoid and minimise a broad range of environmental, social and land use impacts. Key areas of focus have included:

- the potential transmission line corridor, in particular the avoidance of impacts to the township of Moulamein and potential land use conflicts
- the proposed crossing location of the Murray River and connection with the Victorian component of the VNI West
- potential technical configurations for the network augmentation works
- alternative locations for key construction elements such as construction compounds and combined temporary worker accommodation facilities.

The proposed transmission line corridor and locations for all key project components were selected on the basis of best meeting the project objectives and avoiding and/or minimising the impacts on communities and the environment.

The process for confirming the final transmission line alignment is ongoing, with an ultimate goal of identifying a final transmission line easement. Opportunities to further reduce impacts on landholders and the community, construction risks, construction timeframes, and impacts on the environment will continue to be investigated. Aspects of the project will continue to be refined as part of the detailed design and construction process, including the specific location and height of transmission line structures, the location of access tracks and confirmation of the final construction compound and combined temporary worker accommodation facilities (where options are currently proposed) within the project footprint.

A more detailed assessment of the development of the project and alternatives considered is provided in Chapter 2 (Strategic context, need and project development) and Appendix C (Options Report) of the EIS.

Consideration of undergrounding the transmission lines

As part of the strategic options assessment for the project, the option to provide an underground transmission line alignment was considered by Transgrid. While the installation of High Voltage Direct Current (HVDC) underground cables is possible, the delivery of high-capacity 500 kV underground lines, along the full length of the project was not considered to economically feasible based on current cost assumptions, and known technical challenges.
The limitations and challenges of undergrounding for this project would include:

- HVDC (both overhead and underground) would not meet the identified need of VNI West
- a higher degree of technical difficulty and cost to connect renewable generation to HVDC
- underground high voltage alternating current (HVAC) have increased technical limitations
- underground HVAC being significantly more expensive than HVAC overhead
- cable joints being required at regular intervals along the length of any underground sections
- differences in reliability and fault restoration (including increased repair timeframes)
- limited supply of underground high voltage expertise
- shorter asset life expectancy of underground cables
- construction and operational differences between overhead and underground installations, including restrictions on potential land uses within transmission line easements
- significant ground disturbance during construction (resulting in significant environmental impacts) and greater potential biosecurity risks
- the required width of easements and impact of undergrounding to agricultural land.

Transgrid acknowledged that both overhead and underground transmission systems have a range of impacts for local communities. Whilst there is greater visual impact with overhead transmission lines, undergrounding is considered to cause a greater on-balance negative impact for many environmental

How have the community and stakeholders been involved?

Community engagement for the project began in June 2022 and has included individual landholder meetings, community information sessions, Regional Reference and Community Consultative groups and other targeted activities to support the preparation of specific technical studies including the Aboriginal heritage, social and agricultural impact assessments.

Engagement has been carried out in line with the *VNI West Community and Stakeholder Engagement Plan,* the International Association of Public Participation's (IAP2) public participation spectrum and the requirements of the SEARs. Consultation included a series of engagement commitments and principles which were adopted for the project based on the *Transgrid Community Engagement Policy* which included:

- recognition of the vital role that landholders and the community have in the planning and delivery
- working with the community in a meaningful, accountable, responsive and equitable way
- dedication to continuously improving engagement in decision making and delivering community benefits
- minimising the social impacts of the project and operations by engaging with the community to understand what matters most and build trust
- building positive and lasting relationships with the local community
- creating long-term benefits to Transgrid customers, community and the environment.

Transgrid has undertaken a wide and ongoing program of community and stakeholder engagement through the development of the project. In addition, dedicated landholder liaison teams have been established to facilitate communication with landholders directly affected by the project. A range of channels and activities were used to connect with the community across the project area.

Feedback was heard from stakeholders across the project area on a range of topics both related to the EIS and to the energy transition and the development of renewable energy zones. Key topics raised and responded to during community consultation in the development of the project and EIS included:

- design and construction including alignment and route selection; transmission line structure design and locations; and the potential to underground transmission lines

- environment and heritage impacts including impacts on visual amenity, in particular due to the flat topography of the region; biosecurity risks and impacts on biodiversity; impacts on Aboriginal heritage; impacts on local roads during construction; risks from electric and magnetic fields; and impacts from bushfire/bushfire management

- land and property impacts including compensation; land access agreements; property valuations; agricultural crop production impacts, in particular rice; other agricultural operations including impacts on lambing and disruption to stock movements; and impacts of transmission lines on aerial seeding.

- socio-economic impacts including worker accommodation; local partnerships and opportunities for local community benefits/investment and impacts to mental health

- project consultation including consultation processes and provision of information (including with landholders) and engagement fatigue.

Figure 12 provides an overview of EIS engagement undertaken during the development of the EIS.

Member of Parliament briefings – State and Federal

- Ongoing and regular communication between Transgrid and MPs through the life of the project, including email updates and offers of briefings.

Key agency and stakeholder meetings

- Regular communication including meetings, briefings and emails between Transgrid and agencies through the life of the project.

Aboriginal stakeholder meetings

- Regular communication with Aboriginal stakeholders, including Local Aboriginal Land Councils, as well as through the Community Consultative Group and informal meetings.

Aboriginal Focus Groups

- First Nations groups and representatives were invited to regular briefings to discuss project updates, potential impacts, and provide ongoing feedback. Four focus group sessions were held in August 2024.

Community Consultative Group meetings

- 20 March 2024
- 5 June 2024
- 29 August 2024
- 27 November 2024
- 13 February 2025
- 8 May 2025.

One on one landholder engagement

- Transgrid prioritised face-to-face engagement with easement-impacted landholders through dedicated Place Managers and Land Access Officers. By May 2025, this included 221 meetings and 3,100+ interactions.
- Engagement began in June 2023 and informed route refinement by incorporating feedback on land use, farming operations and local constraints. Alignment changes were made in consultation with affected landholders.
- As the project progressed, engagement focused on developing Property Management Plans to address access, construction timing, infrastructure, and biosecurity. Consultation will continue through detailed design.

Regulatory engagement

- Agency briefings and meetings with the Australian Energy Regulator (AER) throughout the project with specific EIS updates.

Council meetings

- Murray River Council
- Edward River Council
- Wagga Wagga City Council
- Murrumbidgee Council.

Cultural Heritage and Values Assessments

- Consultation was conducted in line with the *Aboriginal Cultural Heritage Consultation Requirements for Proponents 2010*, involving:
  - Notification and registration
  - Project information
  - Cultural significance feedback
  - Review of the draft report

Registered Aboriginal Parties

- Registered Aboriginal Parties contributed to cultural heritage assessments, reviewed findings, and advised on mitigation
- Consultation with Aboriginal stakeholders will continue during detailed design.

Community events

- Deniliquin Show: 1-2 March 2024
- Jerilderie Fun Fair: 2 March 2024
- Henty Field day: 17-19 September 2024

Community information sessions

- 29 community information sessions were held between June 2023 and March 2024 during the route selection phase.
- An additional 13 EIS-specific community information sessions were held throughout November 2024 and February 2025, including in Mallan, Moulamein, Deniliquin, Wanganella, Jerilderie, Conargo and Wagga Wagga.
- Transgrid participated at the Energy Corporation of NSW's South West REZ community information sessions in Hay, Coleambally and Jerilderie in May 2025.

Social impact assessment interviews

- 3 phone and online interviews with Councils
- 32 interviews with landholders directly impacted by project infrastructure, neighbouring landholders, community members, Aboriginal and/or Torres Strait Islander people, local businesses and public services
- 23 survey responses from across stakeholder groups.

Community investment and benefits

- Five focus groups:
  - Wanganella
  - Jerilderie
  - Moulamein
  - Mallan
  - Conargo
  - Plus two online sessions

Printed copies of surveys with reply-paid envelopes were made available at local communities meeting points.

Print advertising

- 12 November – 22 November 2024: Two-week advertising campaign in six local newspapers
- 21 January – 6 February 2025: Three-week advertising campaign in local newspapers.

Project e-newsletters and email updates

- December 2024
- January 2025
- February 2025
- March 2025

EIS specific website information, project email and telephone

- Website information updated from March 2024
- Project phone line available from May 2022 - current

Emails to Councils and MPs regarding information sessions

- November 2024
- February 2025

Media releases

- 28 August 2024
- 30 October 2024
- 5 February 2025

EIS specific project collateral

- November 2024
- February 2025

Figure 12 Overview of stakeholder engagement activities (March 2024 – March 2025)

Transgrid will continue to provide opportunities for community and stakeholder engagement during the exhibition period, including stakeholder briefings and community information sessions. Transgrid will share information contained in the EIS, with supporting communications such as fact sheets, and advise the community, landholders and stakeholders how submissions can be made to the NSW DPHI.

Engagement with the community and stakeholders (including the Community Consultative Group) will continue throughout the assessment process and during the construction of the project. In particular, consultation would continue with directly impacted landholders during the detailed design and construction of the project to develop individual Property Management Plans that address specific property requirements.

Chapter 5 (Stakeholder and community engagement) of the EIS provides further information on how the community and stakeholders have been involved during development of the project and will continue to be involved throughout the detailed design and construction stages of the project.

Project impacts

What are the potential impacts of the project?

Approach to impact assessment

The EIS adopts a conservative approach to assessing project impacts across different geographical areas depending on the extent and nature of each potential impact being assessed. These areas include:

- the *project footprint* has been adopted in the EIS as a conservative area that has the potential to be directly affected by the construction and operation of the project. The project footprint has been developed to achieve a level of flexibility for future design refinements and promoting impact avoidance and minimisation, while meeting the level of assessment required
- an *indicative disturbance area* sits within the project footprint to provide a more refined area for assessment of biodiversity impacts related to vegetation clearance
- various *study areas* have been defined for the assessment of impacts for specific environmental aspects. These study areas have been defined by technical specialists to meet legislative/regulatory guidelines and industry best practice. Their size is generally larger than the project footprint, which enables a greater understanding of the surrounding environment and the scope and scale of potential impacts being assessed.

The EIS is based on an indicative concept design and construction methodology which would continue to be refined by Transgrid and the nominated construction contractor(s). Chapter 6 (Approach to assessment of impacts) of the EIS provides further details on how the project was assessed.

Summary of key impact assessment findings

The project has been developed following a robust and iterative process including detailed options analysis, engineering design, environmental assessment, and community and stakeholder engagement. The project aims to avoid and minimise potential environmental impacts however where these impacts are unavoidable, mitigation measures have been identified to reduce the likelihood, magnitude and consequences of any residual impacts. The following sections provide a summary of potential project impacts. Chapters 7 to 24 of the EIS provide further information on each topic.

Biodiversity

An extensive field survey program has been undertaken across the project footprint for native vegetation, threatened flora and threatened fauna since November 2023 to inform the development of the Biodiversity Development Assessment Report.

Construction impacts and management

Biodiversity impacts have been minimised during development of the project through co-locating the transmission line route with existing areas of disturbance where possible and minimising native vegetation clearance. However, given the scale of the project, a number of biodiversity impacts were identified.

Construction would result in direct impacts to around 1,432 hectares (around 29 per cent of the project footprint) of native vegetation and habitat for the various threatened species. The project would require vegetation clearance to facilitate construction and to establish the transmission line easement.
No vegetation clearance is proposed within the adjacent Murray Valley National Park or the Southwest Woodland Nature Reserve.

There is potential for direct impacts on:

- six threatened ecological communities (TECs) listed under the *Biodiversity Conservation Act 2016* (BC Act), four of which are also listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) with an additional two TECs listed under the EPBC Act, all identified during field surveys. One additional candidate TEC listed under the EPBC Act was identified on desktop search.
- 27 threatened flora species comprising:
  - 19 species listed under the BC Act and EPBC Act
  - 8 species listed under the BC Act
  - 3 critically endangered species under the BC Act and/or EPBC Act
- 18 threatened fauna species (12 bird, three mammal, two reptile and one amphibian) comprising:
  - 8 species listed under the BC Act and the EPBC Act
  - 9 species listed under the BC Act
  - one critically endangered species under (EPBC Act) (also listed as an endangered (SAII) under the BC Act (Plains-wanderer)
  - one endangered fauna populations listed under the BC Act.

Figure 13 Critically Endangered Plains-wanderer

Not all threatened flora and fauna species identified as impacted have been recorded via field survey within the project footprint. Twenty-one threatened flora species and 14 threatened fauna species have conservatively been assumed to be present due to the presence of suitable habitat identified through desk based mapping within the project footprint. This approach has been adopted because of various survey limitations relating to access (including land access restrictions which have not allowed for survey to be conducted), adverse weather and seasonal survey timing constraints.

Indirect impacts occur when the project affects native vegetation and threatened species habitat beyond the project footprint. The project would have the potential for negligible to moderate indirect impacts during construction. Moderate indirect impacts would include loss of breeding habitats and increased risk of bushfire. Mitigation measures would be implemented to ensure the potential indirect impacts are minimised.

Based on conservative assumptions and assumed presence for some species, the project could impact TECs and species at risk of serious and irreversible impacts (SAII) as defined by the Biodiversity Conservation Regulation 2017. Two ecological communities, seven flora species and one fauna species at risk of SAII are considered to be impacted by the project with a low likelihood of significant impact for each.

Based on the potential extent of biodiversity direct and indirect impacts and likelihood of presence, two EPBC Act listed communities, five threatened flora and three threatened fauna species were identified as likely to be significantly impacted or have potential for significant impacts.

Aquatic species and habitats may be impacted during construction as a result of inadvertent impacts on adjacent habitat or vegetation that can result in a range of indirect impacts including soil disturbance, erosion, sedimentation, enriched run-off and water quality that would have a low impact on aquatic species and habitat. The project has been carefully designed to minimise the potential impacts on aquatic species and habitat, such as narrow crossing points of waterways including the Murray River and Edward River (also known as Kolety).

Construction of the project is unlikely to pose a significant risk to groundwater dependent ecosystems as:

- there are no mapped groundwater dependent ecosystems close to the proposed Dinawan substation expansion locations
- transmission line structure construction would only require a relatively small area to be impacted at each location, which is unlikely to restrict groundwater or alter water quality. Any potential impacts on groundwater dependent ecosystems would be temporary and localised.

With the implementation of mitigation measures, impacts on aquatic species and habitats are anticipated to be short-term and limited in extent. Significant impacts on threatened aquatic species and communities listed under the *Fisheries Management Act 1994* and EPBC Act are unlikely.

During detailed design and construction planning, potential biodiversity impacts would be avoided and/or minimised where practicable and in accordance with mitigation measures included the EIS. This would include minimising the indicative disturbance area and reducing vegetation clearance where practicable. A Biodiversity management sub-plan would be prepared as part of CEMP, which would include a process for implementing, evaluating and reporting on mitigation measures for biodiversity impacts during construction. The Biodiversity management sub-plan would be complemented by a Connectivity Strategy, as well as other sub-plans such as a Soil and water management sub-plan and activity-specific erosion and sediment control plan(s) to further manage potential impacts. In addition, biodiversity surveys will potentially be undertaken in areas that were not previously accessible and where impacts have currently been conservatively assessed.

Residual biodiversity impacts would be offset in accordance with Biodiversity Assessment Method calculations for both ecosystem and species credits and through implementation of the Biodiversity Offset Strategy for the project. The strategy proposes a combination of offset options, including establishing Biodiversity Stewardship Agreement site (s), the purchase and retirement of existing biodiversity credits and/or making a payment into the Biodiversity Conservation Fund.

Operational impacts and management

The project would have limited additional or ongoing biodiversity impacts during operation. Potential direct impacts to native vegetation and threatened species habitat during operation could occur during regular management of vegetation in the transmission line easements for safety and operational reasons, including bushfire risk management. These direct impacts have been factored in the vegetation clearance estimates for construction.

Potential indirect impacts on native vegetation, TECs and threatened species habitat during operation would have a negligible to moderate potential impact. Representative species credit species would include White-bellied Sea-Eagle (*Haliaeetus leucogaster*), Little Eagle (*Hieraaetus morphnoides*) and Square-tailed Kite (*Lophoictinia isura*) associated with a high risk of collision with transmission line infrastructure. Mitigation measures, such as line markers, would reduce this potential impact.

Figure 14 Threatened species: Slender darling-pea (*Swainsona murrayana*)

Potential impacts during operation to BC Act and/or EPBC Act listed ecological communities and species including those at risk of SAII are related to the increased fragmentation and/or loss of habitat connectivity. The project may alter connectivity or increase fragmentation of some areas of existing vegetation and/or habitat, however potential impacts would be managed through minimising vegetation clearance where possible and preparing and implementing a Connectivity Strategy, which would identify the connectivity corridors required for fauna movement.

Potential impacts to aquatic species and habitats during operation would generally be limited to changes to waterways from waterway crossings and water quality impacts from sedimentation or accidental spills. However, given the proposed mitigation measures to be implemented, impacts to aquatic species and habitats would be limited. Operation of the project is unlikely to pose a significant risk to groundwater dependent ecosystems.

Aboriginal heritage

Construction impacts and management

Construction of the project would have direct and indirect impacts on Aboriginal sites located within the project footprint. Direct impacts would occur as a result of disturbance to the ground surface or soil profile such as vegetation removal and earthworks. Indirect impacts could include impacts from vegetation clearance and visual impacts to cultural values and views.

Direct impacts could result in a total or partial loss of value at a site or the potential for direct harm or disturbance. Indirect impacts (such as from vegetation clearance and visual amenity) depend on the site type, site context, and its archaeological and cultural significance and may not result in a loss of heritage value. Indirect impacts may also occur to areas beyond the project footprint.

There are 194 Aboriginal heritage sites located within the project footprint, 176 of which were recorded during surveys. These include potential archaeological deposits (PADs), hearths and heat retainers, artefact scatters and isolated finds and 17 modified trees. A total of 26 PADs were identified, including 25 within the project footprint of the NSW/Victorian border to the future Dinawan substation component and one within the network augmentation works component.

Fourteen of the 25 PADs identified within the project footprint of the NSW/Victorian border to the future Dinawan substation component were subject to test excavations. Of these, 12 were assessed to have a low sensitivity. The remainder of the PADs were unavailable for text excavations due to being comprised of dunes, which in accordance with *Code of Practice for Archaeological Investigation of Aboriginal Objects in NSW* may not be tested prior to project approval.

These sites have the potential to be directly or indirectly impacted by the project. The number of sites to be impacted and the extent of the potential impact would be confirmed during detailed design, which would consider opportunities to avoid or minimise impacts on the identified sites. The final number of directly impacted sites is expected to be much smaller than the 194 identified within the wider project footprint once the 70 metre wide transmission line easement is identified and final disturbance area is defined.

Where impacts cannot be avoided or minimised, identified artefacts would be salvaged as a measure to mitigate harm.

Participants in the cultural values assessment expressed some concerns about potential direct and indirect impacts associated with construction of the project on the areas of Delta Creek, Yanco Creek, Coxs Creek and Boiling Down Creek.

Figure 15 Example of a modified (scar) tree recorded in the project footprint

Potential Aboriginal heritage impacts would be managed during construction by implementing a Heritage management sub-plan as part of the CEMP. The heritage management sub-plan would be developed in consultation with RAPs and would include measures to identify, protect and/or manage heritage items/sites, procedures for unexpected finds, heritage monitoring and compliance management and induction requirements for construction workers. Consultation with Aboriginal stakeholders would continue until the completion of construction of the project.

Operational impacts and management

Access track, transmission line easement and transmission line structure maintenance activities during operation could result in impacts to Aboriginal heritage. However, the likelihood of these impacts are expected to be negligible with mitigation measures supported by Transgrid's environmental management system (EMS) and environmental management framework.

The project footprint crosses over the Edward River (also known as Kolety) and the Murray River, with participants indicating that the presence of transmission lines over the rivers would impact how they 'see' the rivers which are sites of cultural value. Participants also raised concerns about indirect impacts to Delta Creek, Yanco Creek, Coxs Creek and Boiling Down Creek due to spills and other aspects of the project design.

Landscape character and visual amenity

Construction impacts and management

Construction activities could impact views and landscape character from temporary plant and equipment visible throughout the project footprint, establishment of temporary worker accommodation facilities and construction compounds, access tracks and vegetation removal.

The project footprint has been divided into seven landscape character zones (LCZs) for the purpose of assessing impacts on the landscape. Each landscape character zone reflects different geology, topography, vegetation, waterways, built form patterns and land use. The Murray River Rural Valley LCZ is expected to experience moderate impacts on the landscape from daytime construction while Moulamein Rural Plains LCZ, Hay Open Rural Plains LCZ, Delta Creek Rural Plains LCZ and Gregadoo River Valleys LCZ are expected to experience moderate impacts on the landscape during night-time due to lighting required at construction compounds and temporary worker accommodation facilities. The remaining LCZs, being the Wagga Wagga rural fringe LCZ and Gregadoo Great Dividing Range foothills LCZ are expected to experience either low or negligible impacts both during daytime and night time periods.

There would be temporary visual impacts experienced at three private dwellings located near the construction compound at Fisher Lane, Wetuppa. Combined temporary worker accommodation facilities and/or construction compounds would also be visible from Fisher Lane, Cunninyeuk Road, Balranald Road, Cobb Highway, Mabins Well Road and Kidman Way.

There would be a low visual impact from the air (such as scenic flights) over the project footprint, particularly in the vicinity of the Murray River, where the project construction would contrast with the natural character of the river corridor.

Operational impacts and management

Approaches to avoid and minimise permanent impacts on landscape character and visual impacts have been considered as part of the ongoing refinement of the project footprint. These include paralleling existing transmission lines and locating the transmission line easement away from towns, where practicable.

However, during operation, the new permanent infrastructure elements including the transmission lines, expanded Dinawan substation and modification to the transmission line between the existing Wagga 330 kV and future Dinawan 500 kV substations would be visible from some viewpoints. In particular, there would be higher impacts where the landscape is more open, the transmission line changes direction and the project extends across broad expanses of flat land and where there are currently no existing transmission line structures in view.

The Murray River Rural Valley LCZ is expected to have a moderate impact on landscape character during operation, while there would be very low to low impact for each of the other LCZs. There would also be a negligible to low impact on all LCZs during night-time.

During operation there would be a very low to moderate visual impact from most public viewpoints. Two viewpoints that are anticipated to experience moderate visual impacts were identified from Cunninyeuk Road and Cobb Highway respectively where they would be passing under or parallel to the transmission line easement in the open rural landscapes of Moulamein and Hay. These views are expected to be moderate as there is limited natural screening vegetation.

View east from Cobramunga Road

View west from Noorong Road at Merran Creek

View east from Cunninyeuk Road

View east along Swan Hill Road

View south along Maude Road

View east along Mabins Well Road

Figure 16 **Example photomontages showing indicative views at locations along the transmission line**

There are 13 dwellings with private viewpoints that are not easement-affected properties and were identified as being potentially visually affected, all of which are located in the NSW/Victorian border to the future Dinawan substation component of the project. Nine of the 13 dwellings with private viewpoints are over a kilometre from the easement and all but one are over 500 metres from the project footprint.
For non-easement affected properties, the simple assessment identified a low potential visual impact on nine private viewpoints, a moderate potential impact on two private viewpoints and a high potential impact on two private viewpoints. Further assessment of the two moderate and two high impact private viewpoints concluded that due to the distance of the project from sensitive receivers and intervening vegetation (field verified), views to the project would be prevented and result in nil to very low visual impacts overall for these dwellings.

Vegetation clearance for the project would be limited to the minimum extent necessary for construction and operation to maximise existing visual screening and retention of the existing landscape character.

Land use and agriculture

Construction impacts and management

Construction of the project would require the acquisition of permanent transmission line easements and access easements and the temporary leasing/licensing of land for ancillary purposes. Most of the land within the project footprint is used for agriculture and primary production, which includes grazing and various types of cropping.

Potential impacts on agricultural land uses during construction would include:

- temporary removal of land from agricultural production
- temporary movement restrictions and disruption to agricultural activities such as livestock movements and aerial agricultural operations
- biosecurity risks from potential spread of weeds, pests, diseases associated with vehicle and worker movements resulting in impacts to productivity, additional costs for control and lower quality of agricultural outputs
- inadvertent impacts to crops and pastures or farm infrastructure
- disturbance to sheep and cattle caused by noise and vehicle movements.

Figure 17 Example of irrigated cropping (left) and grazing (right) agriculture within the vicinity of the project

Transgrid has, and will continue to, undertake extensive consultation with landholders affected by the transmission line easement to establish necessary property arrangements with impacted landholders. Construction impacts on property and existing land uses, such as spraying and cropping, would be managed in accordance with individual Property management plans which will be developed during the transmission line easement acquisition process in consultation with affected landholders.

The individual Property management plans would include specific measures to minimise disruption to agricultural activities as well as access and biosecurity protocols that are required to be complied with to address landholder concerns. Any leased and/or licensed land not required for permanent infrastructure elements would be rehabilitated in consultation with the relevant landholders.

Operational impacts and management

Establishment of permanent transmission line easements provides Transgrid the right to access, operate and maintain the transmission line. Permitted activities within transmission line easements would depend on the nature or scale of the activity, as well as proximity to the transmission line structures as described in *Transgrid's Easement Guidelines – Living and Working with Electricity Transmission Lines 2022.*

Land within the transmission line easement may continue to be used for some agricultural activities such as grazing. However, permanent transmission line infrastructure would result in some restrictions on agricultural operations such as aerial agriculture operations, grain loading/unloading activities, drone use and crop spraying close to the new transmission line. These impacts will form part of compensation under the *Just Terms (Land Acquisition) Act.*

The transmission lines would result in some localised impacts on aerial agriculture operations (such as mustering, monitoring, aerial spreading of fertilisers, aerial rice seeding and aerial pesticide spraying with drones, fixed wing aircraft or helicopters) in agricultural areas. Transmission line structures and lines are also considered to be a potential hazard for low level aviation activities, and the operation of the project would need to be considered in planning safe aerial application programs.

Acknowledging that the project would have direct impacts on some individual landholders, overall, the impact of the project on agricultural production within the region would be minimal during operation due to the small area affected, relative to total size of agricultural enterprises in the surrounding LGAs. It is estimated that only 34 hectares of irrigated land would be permanently impacted by the project (equivalent to around four per cent of the operational footprint) in addition to, between four and seven per cent of grazing modified pastures, cropping, grazing irrigated modified pastures and irrigated cropping land (within the operational footprint).

Under the NSW Government's Strategic Benefit Payments Scheme, private landholders would receive compensation for each kilometre of new transmission infrastructure hosted on their land for a twenty year period, in addition to the valuation compensation under the *Land Acquisition (Just Terms Compensation) Act 1991*. The acquisition of easements over privately owned land would be carried out in consultation with the landholders in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and the Property Acquisition Standards (Department of Finance, Services and Innovation, 2019).

The project would also impact on some areas of Crown Land (such as where it crosses travelling stock reserves). The acquisition of Crown Land as part of the project would be undertaken in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991* and *Crown Lands Management Act 2016*.

Social

Construction impacts and management

Construction of the project would have positive social benefits associated with:

- enhanced community wellbeing as a result of Community investment and benefits plan and Community Partnerships Program, noting that this benefit would extend through operation
- local business opportunities and economic stimulus due to project procurement opportunities and increased demand for goods and services within the local and regional social locality, including Aboriginal and Torres Strait Islander businesses
- improved livelihoods due to increased local employment opportunities for people within the local and regional social localities.

Negative social impacts affecting the community and key stakeholders are also expected to occur during construction. Potential negative social impacts may include:

- impacts to the visual landscape and scenic quality, where construction activities would temporarily disrupt the views and amenity for dwellings near the project footprint and affect people's enjoyment of their local areas and sense of pride
- impacts to landholders through property impacts
- diminished community cohesion between landholders directly affected by the project footprint, adjacent neighbouring landholders and community members due to:
- a temporary increase in of non-residential workers
- conflicting views of the project impacts and benefits
- impacts to sense of place due to construction-related amenity impacts and to sense of safety due to the introduction of a non-resident workers and the increase in road traffic
- potential adverse mental health effects amongst landholders directly affected by the project footprint and neighbouring landholders to the project due to uncertainty, stress and concern about project impacts
- stress and uncertainty arising from property acquisitions, creation of easements and leases, which may affect how landholders use their properties and go about their day-to-day activities
- potential impacts on Aboriginal culture for Aboriginal and Torres Strait Islander communities within the local and regional social locality.

These negative social impacts would be managed through the mitigation measures proposed to address landscape and visual as well as land use and property impacts. This would include the preparation of a Community wellbeing strategy which would include measures such as:

- maintaining landholder mental health support via independent provider(s)
- identifying mechanisms that will be used to provide information to landholders who report wellbeing issues
- identifying existing or new programs and activities to strengthen community cohesion and wellbeing.

This may involve consultation with affected landholders, community and stakeholders where relevant.

Operational impacts and management

During operation, the project would improve landholders' economic well-being through payments from the Strategic Benefit Payments Scheme, and the community from the and the Community investment and benefits plan. However, potential negative social impacts may include:

- landholders neighbouring transmission line easements may experience unequal distribution of impacts and benefits
- landholders neighbouring transmission lines and landholders subject to compulsory acquisition may experience stress due to:
- perceived uncertainty about potential changes to land/property prices and insurance costs
- reduced sense of place and belonging due to project infrastructure
- perceived health risks associated with electromagnetic fields.

Transgrid would continue the engagement strategy during the initial years of operation which would include an outline of how communication with residents and landholders in close proximity to the transmission line would be maintained to provide updated information and monitor experience and concerns.

Economic

Construction impacts and management

Design and construction of the project would require substantial capital investment, which would support employment in the regional and national economies which would generate economic activity in the construction and professional, scientific and technical services industries.

Additional economic activity generated in the LGAs surrounding the project footprint is also expected from workers spending at local businesses and retailers, including accommodation, food, groceries and services, and the generation of local employment opportunities for skilled workers.

Given the predominant land use within which the project is to be located, there may be some impacts to existing agricultural production during construction. Reduced gross agricultural income during the two years of construction is estimated at around $1.354 million.

Operational impacts and management

The project would generally have a beneficial economic outcome and is estimated to contribute up to $1.4 billion in net benefits to electricity customers (for the NSW and Victoria components of the project combined). By increasing the amount of electricity that can be delivered to the NEM and providing greater access to reliable and affordable electricity, the project would increase competition in wholesale energy and help lower and stabilise electricity prices and reduce volatility in the longer term. This may help increase business productivity and lower living expenses.

Direct adverse residual impacts would largely at a local level in cases where permanent land adjustments are required. These impacts would be managed through landholder agreements.

The reduced gross agricultural income due to the loss of land use during the operation period is estimated at around $230,000 per annum (rounded) across the operational footprint.

Noise and vibration

Construction impacts and management

Construction of the project would generate temporary noise and vibration from plant and equipment use and movements. The potential impacts would vary across the project footprint depending on timing, intensity and location of construction activities. Construction would generate noise from:

- construction work within the project footprint associated with transmission lines, access tracks and substations
- construction and operation of temporary worker accommodation facilities and construction compounds
- traffic generation along construction traffic routes outside the project footprint
- aircraft noise from helicopter and drone use for construction.

Across all construction works, no receivers are predicted to be highly noise affected (where noise levels exceed 75 dBA $L_{eq15min}$).

A majority of the predicted exceedances associated with the construction of the transmission line are considered to be minor with 17 of the identified exceedances less than 10 dB above noise management levels). Most exceedances are predicted to occur within the vicinity of the network augmentation works (due to the closer proximity of rural residences in this area).

No sensitive receivers would experience noise impacts from the combined temporary worker accommodation facilities and construction compounds for the NSW/Victorian border to future Dinawan substation component. Up to nine sensitive receivers would experience noise impacts (that may exceed the relevant criteria by less than 10 dB) at each of the three options for the proposed combined temporary worker accommodation facility associated with the network augmentation works (during standard daytime hours). These exceedances are predicted for all stages of the construction. Up to three sensitive receivers may experience noise impacts exceeding the relevant criteria by between 5 and 25 dBA at the Fisher Lane construction compound during standard daytime hours and out of hours periods if the site is used at this time.

Aerial methods of construction using helicopters or drones for the stringing of transmission lines would produce short-term, transient noise as they operate during standard daytime periods. Helicopter noise levels is expected to exceed 75 dBA L_{max} at one receiver. If drones are used as an alternative, this would reduce aircraft noise levels by around 20 dBA.

Potential vibration impacts during construction are considered minor and readily managed with standard construction vibration mitigation measures. Three existing unoccupied structures were identified within the recommended minimum safe working distances for potential cosmetic damage. No heritage items are predicted to be impacted by ground vibration.

A Noise and vibration management sub-plan would be prepared to manage and mitigate all potential temporary noise and vibration impacts from construction of the project as part of the CEMP. Where noise criteria are likely to be exceeded, practical measures such as barriers, alternate construction methods and scheduling of activities would be investigated to minimise noise impacts.

Operational impacts and management

The new transmission lines may generate audible noise during operation, during certain weather conditions, such as light rain or mist (referred to as corona noise), at up to two sensitive receivers within the vicinity of the network augmentation works. The extent of exceedance is considered to be negligible (between 1 dBA and 2 dBA).

Maintenance activities during operation would occur as required, however would generally not generate significant noise. No noise impacts have been predicted for all other operational aspects of the project.

Traffic and access

Construction impacts and management

During construction, there is potential for temporary traffic impacts associated with the movement of construction vehicles. Heavy vehicle traffic would be distributed across work sites for the delivery or disposal of construction material. Vehicle traffic would typically originate from the combined temporary worker accommodation facilities and towns close to the project footprint and would be distributed to active work sites for transmission line construction, construction compounds and substations. Roads next to the combined temporary worker accommodation facilities and standalone construction compounds are expected to experience higher volumes of high vehicle traffic due to the nature of their use.

The additional construction traffic would result in a noticeable increase in traffic on access roads (particularly on local roads) due to low existing levels of traffic and the regional rural setting across the project footprint. However, with regards to road capacity, all roads are predicted to operate in reasonably free flow conditions and the road network is expected to perform similar to existing conditions.

Other potential impacts on traffic and transport during construction are related to:

- ***road condition*** – Impacts on road condition most likely to occur on unsealed roads used to access the project footprint. Potential impacts to road condition would be managed through road condition surveys which would be carried out for all sealed local and regional roads to be used during construction. The surveys would assess the current condition of the road surface and will be documented in a road condition report, with a copy being provided to the relevant roads authority. For unsealed road, an inspection and maintenance schedule would also be developed and implemented in consultation with the relevant roads authority (to supplement existing maintenance programs. Any damage caused by the project will be rectified or compensated for, during or after construction in consultation with the relevant roads authority.
- ***road access and safety*** – Road improvement work and several new connections to access tracks would be required to provide safe access during construction. Any new connections to the road network (including connections to State road such as the Cobb Highway) would be designed in accordance with relevant Austroads guides and in consultation with the relevant road authority. Transgrid has identified a preliminary schedule of potential road and intersection improvements works in consultation with Transport for NSW and local councils that would be undertaken prior to commencement construction.
- ***transportation of oversize-overmass components*** – Three preliminary haul routes have been identified to transport oversize-overmass components from the Port of Newcastle, Port of Adelaide and Port of Melbourne to the future Dinawan substation site (depending on the final port of material delivery). Transport of this equipment would be undertaken in accordance with applicable approvals and requirements from the relevant road authorities

- ***stringing over public roads*** – The project would cross around 20 roads along the length of the transmission line. At these locations, the design of the transmission line would include a transmission line structure on either side of the feature. The crossing methodology options available for stringing transmission lines over roads include:
  - short-term partial or full road or lane closure with an appropriate detour
  - implementation of traffic management, which could consist of a stop-go arrangement at the crossing location
  - the use of additional temporary infrastructure, such as 'hurdles'.

  The selection of the preferred crossing methodology would be considered on a case-by-case basis depending on the type of road to be crossed and other factors such as, but not limited to, traffic volumes, topography, and acceptability of the method to the relevant roads authority. However, based on consultation with Transport for NSW and to manage potential impacts to road users, the use of the hurdle method is preferred for crossing State and regional roads. The crossing of local roads may utilise any of the above options subject to further investigation during detailed design and construction planning and consultation with the relevant road authority
- ***property access and emergency services*** – access to properties for residents (including emergency vehicle access and egress) would be maintained throughout the construction. In some limited circumstances, short-term restrictions for a particular property may be required. Temporary alternative access arrangements would be provided following consultation with affected landholders.

Impacts on traffic and transport during construction would be managed through implementation of a Traffic and transport management sub-plan, which would form part of the CEMP. This would be developed in consultation with local councils and Transport for NSW.

Operational impacts and management

Based on the proposed operation and maintenance activities and their frequencies, the traffic generated for these activities would be insignificant. As such, operation of the project would have negligible impact on road network performance and road condition.

Hydrology, flooding and water quality

Construction impacts and management

Around 1.25 gigalitres of water would be required for construction to support dust suppression, concrete batching and temporary worker accommodation facilities. Discussions are currently ongoing with various water suppliers within the broader region to identify the availability of required water volumes (potable and non-potable) for the project from existing facilities. Based on engagement to date, Murray Irrigation Limited, Coleambally Irrigation Co-operative Limited, Riverina Water, Edward River Council and Murrumbidgee Council have indicated potential water supply availability, which would vary according to climatic conditions.

Broadly, the project is expected to have a negligible impact on flood behaviour as the area impacted by the project footprint within the Murrumbidgee and Murray River floodplains is insignificant when compared to the extent of the floodplain.

Construction activities of the project have the potential for localised and minor impacts on local flood behaviour, in particular through:

- excavation for the proposed Dinawan substation expansion and transmission line structure foundations and new/upgraded access tracks
- stockpiling of material and modification of existing surface levels (e.g. filling) during establishment and use of construction compounds and combined worker accommodation facilities. Minor potential flooding impacts have been identified at the combined temporary worker accommodation facility and construction compound at the future Dinawan substation and the Fishers Lane construction compound
- locations where new access tracks are required to cross minor watercourses, with the project potentially having localised and temporary impacts on flooding regimes and geomorphic conditions (for example changes in flow patterns and scour and bank stability (if not properly designed)).

Flooding also has potential to impact construction activities, particularly if these activities are undertaken in flood-prone areas. Temporary stockpiles and equipment have the potential to be washed away in a flood event, particularly those located near waterways and drainage lines. Excavations have the potential to fill with flood water, requiring dewatering and resulting in unstable embankments. Potential impacts would be managed through incorporation of appropriate drainage, scour protection and site layout considerations during detailed design and identified in the CEMP.

Water quality impacts during construction could also result from:

- disturbance and mobilisation of soil (including soil with elevated levels of contaminants, nutrients and salinity) or other pollutants from vegetation clearance, excavation, movement and/or material storage
- accidental chemical and fuel spills when using and maintaining equipment and machinery.

During construction of the project, the potential impacts would be managed using a range of measures specified in the Soil and water management sub-plan and Flood emergency management sub-plan which would be prepared as part of the CEMP.

Operational impacts and management

The project would have minimal impact on flood behaviour due to the sparsely located transmission line structures and the small physical footprint of the transmission line structures. Permanent access tracks (where proposed) are not expected to impact flood behaviour, where they are located away from overland flow paths. The design of any access track (as established for construction) would consider the local drainage conditions to minimise changes to minor watercourses.

The future Dinawan substation expansion would not change the existing flood risk beyond the site boundary, however it is predicted that there would be minor flood levels increases of up to 0.02 metres across land already subject to flood depths of 0.3 to 1.0 metres during Probable Maximum Flood event(s).

The potential for operational water quality impacts from runoff from the new impervious area at the future Dinawan substation expansion is minimal. The drainage system at the future Dinawan substation would be extended to collect the additional impervious areas to existing discharge points and therefore minimise potential erosion and water quality impacts.

Operational water demands would be confined to the future Dinawan substation expansion (being around 60 kilolitres of water per year). The operational water requirements would be sourced from the local water authority and/or rainwater tanks.

Groundwater

Construction impacts and management

Construction of the project is expected to have a minor impact on groundwater as:

- shallow earthworks are unlikely to intercept groundwater; therefore, the risk of changes to groundwater levels, water quality, and contamination is expected to be low
- piles for the transmission line structures may intersect the water table; however, the impacts are likely to be temporary and localised, resulting in a low risk of impacts to groundwater
- temporary dewatering of piles and deeper excavations (if required) may exceed the minimal impact consideration in the *NSW Aquifer Interference Policy* (AIP) if shallow groundwater is encountered. However, the induced drawdowns are anticipated to be temporary and localised, resulting in a limited impact footprint and, therefore, are unlikely to affect the long-term viability of sensitive groundwater receptors
- 13 bores located within the project footprint have an increased risk of being directly impacted during construction activities, however, the opportunity to avoid direct impacts to bores within the project footprint would be explored during detailed design and further construction planning
- the potential risk to groundwater quality due to construction activities, such as spills and leaks, would be appropriately managed as part of the CEMP.

Operational impacts and management

Operation of the project is considered to have a low risk of impact to groundwater as the project does not require groundwater take.

Non-Aboriginal heritage

Construction impacts and management

Of the four existing listed heritage items of local significance, three located within the vicinity of the proposed network augmentation works component of the project (Ivydale, Ivydale Woolshed and the Stone Ruin) would be subject to potential indirect impacts, including visual intrusions, during construction. The stone ruin and the Ivydale Woolshed would also be subject to long term direct impacts to the listed curtilage of the property as the transmission line corridor transects these properties. However, the primary values for which these places are listed appear to lie in the structures themselves and their landscape context as remnants of the historic rural landscape, and these values would not be impacted by the project once the project is operational. The heritage values of the listed heritage items would not be negatively impacted as the project footprint would not impact the listed structures. The remaining item, Black Swamp, is located along the Cobb Highway, around 1.3 kilometres to the north of the project and is not expected to be impacted.

Six new heritage items were recorded during field surveys, located within the vicinity of the NSW/Victorian border and future Dinawan substation component of the project. These items were assessed as meeting the threshold for local significance; four of which are within the project footprint and are considered at risk of direct impact from project construction. The potentially impacted sites include the decommissioned Wetuppa station and siding, Larry's Creek railway bridge, a survey reference 'blaze tree', and the Merran Creek wooden railway bridge. Direct impact to these sites would continue to be investigated through project footprint refinements during detailed design. Additionally, some heritage sites located within

the footprint may be avoided through detailed design by applying measures such as demarcating site boundaries and establishing exclusion zones.

Operational impacts and management

Maintenance activities during operation of the project may have potential, temporary (non-direct) impact on heritage items that are located immediately adjacent to the transmission line easement.

Hazards and risks

Construction impacts and management

Table 1 provides a summary of the hazards and risks that have potential to occur during construction.

Table 1 Consideration of hazards and risks during construction

Consideration	Potential impact and management
Aviation	Use of cranes and construction of transmission line structures could infringe the Procedures for Air Navigational Services—Aircraft Operations (PANS-OPS) surface associated with the two runway approach segments for the Wagga Wagga Airport. Helicopter pilot(s)/drone operators associated with the construction of the project would maintain an awareness of nearby emergency aeromedical incident(s) through the use of radios and would give way to the emergency aeromedical aircraft as required. Emergency aeromedical requirements would take priority over any ongoing construction activities. Aviation safety risks would be managed through consultation with relevant stakeholders and further construction planning in detailed design.
Bushfire	During construction, there is potential for bushfires to impact construction activities as well as potential for bushfires to be started by construction activities (e.g. hot works) accidentally igniting nearby vegetation. The risk of bushfires is highest near heavily vegetated areas within Category 1 Bush Fire Prone Land, in Category 2 Grassland, unmanaged grassland and near stockpiles of removed vegetation. A Bushfire Emergency Management and Evacuation Plan would include mitigation measures for construction activities, which would adequately manage bushfire risks.
Emergency egress and evacuation routes	Emergency egress and evacuation routes could be temporarily impacted during stringing of the transmission line over roads. However, consultation would be carried out with emergency service providers and landholders to provide alternative emergency access and evacuation routes during construction. The proposed use of hurdles during stringing operations would also limit impacts to any emergency egress and evacuation routes.
General hazards	Dangerous goods and hazardous materials also have potential to cause risks associated with worker health or environmental contamination if inappropriately stored, handled and transported. These risks would be appropriately managed through procedures specified in the CEMP. There is potential existing utilities may need to be relocated or protected during construction, which would need to be appropriately managed. Consultation with utility providers with existing assets within the project footprint has commenced and would continue during detailed design and construction.

Operational impacts and management

Table 2 provides a summary of the hazards and risks that have potential to occur during operation.

Table 2 Consideration of hazards and risks during operation

Consideration	Potential impact and management
Aviation	The main risks to aircraft movements during operation of the project are associated with the transmission lines and their structures. Establishment of transmission lines and structures would introduce a new obstacle into the airspace. However additional transmission lines are unlikely to impact aviation safety as they would be published on aeronautical charts and advised to aviation stakeholders, prior to construction. For agricultural aerial operations, the transmission lines and transmission line structures would reduce the area available for aerial agricultural uses (e.g. application of fertiliser or pesticides) as aircraft would not be able to operate under the transmission lines. However, the inclusion of the transmission line on aeronautical charts and briefings prior to such flights would minimise these risks and would be consistent with current standard practices for low-level flights near large transmission lines. The project is likely to create an adverse impact on the operational safety of some of the airstrips within three nautical miles of it and may even preclude operations from some of these airstrips. Up to 18 operational private airstrips with the potential to have a major or moderate impact from the operation of the project have been identified, 12 of which are located on properties affected by the project footprint, and six on properties within three nautical miles of the proposed transmission line. Where airstrips are located on properties affected by the project footprint operational impacts would be mitigated through the preparation of individual Property Management Plans. Where airstrips are located on properties not directly affected by the project footprint, Transgrid has consulted with the relevant landholders to confirm the operational status of the airstrips, and document agricultural activities reliant on their operation. Where impacts are identified as moderate to major, these airstrips will be subject to further detailed assessment prior to construction to identify appropriate mitigation measures.
Bushfire	During operation, potential bushfire ignition sources (if not appropriately managed) are associated with hot works during maintenance, substation and transmission line equipment or services failure, vehicles, accidental ignitions and storage or use of hazardous materials. Transgrid has a vegetation management program to manage bushfire risks with established standards and procedures and monitoring frameworks. Within the proposed transmission line easements, vegetation clearance widths would be consistently applied in accordance with relevant standards. Managing safe clearances from transmission line infrastructure reduces the potential for a fire to start, thereby maintaining public safety, assets, environmental values, and electricity supply. Other strategies to manage overall bushfire risk include: • consideration of bushfire attack level mapping and access routes in design • adoption of asset protection zones and transmission line clearances • emergency preparedness and response procedures.
Electric and magnetic fields (EMF)	EMF exists wherever electricity is generated, transmitted or distributed in transmission lines or cables, or used in electrical appliances. Transgrid has designed the project to comply with the relevant guideline levels. Overall, it is unlikely there would be any prolonged human exposure to EMF from the project or any notable adverse effects on animals or plants.

Consideration	Potential impact and management
Emergency egress and evacuation routes	Operation of the project is not expected to have an impact on emergency vehicle egress or evacuation routes.
General hazards	No dangerous goods and hazardous materials would be held or stored along the transmission line during operation, although small amounts may be transported, and used on site during maintenance activities.

Air quality

Construction impacts and management

During construction, dust emissions can be caused by construction activities and movement of vehicles on unsealed access tracks. The risk assessment indicated there would be potential impacts ranging from negligible to high risk of adverse dust impacts from construction of the transmission line without implementation of mitigation measures. However, these emissions are typically localised and short-term, occurring primarily during structure installation and use of unsealed tracks. Key findings included:

- there were no human sensitive receivers identified within 250 metres of the project footprint that may be subject to dust soiling impacts and human health impacts
- earthworks and trackout (trucks driving along unsealed roads creating dust) activities associated with the NSW/Victorian border to the future Dinawan substation construction are considered to have a high risk for ecological impacts (i.e. when most dust generating works are being undertaken), however a low risk during main construction activities (such as tower installation or stringing works)
- earthworks, construction and trackout activities associated with the network augmentation works are considered to have a low risk of dust soiling impacts and human health impacts, and a high risk for ecological impacts

There are also likely to be many locations within the project footprint where minimal (if any) dust-generating activities may occur. It is expected that with the implementation of mitigation measures (such as water sprays for dust suppression, covering stockpiles and minimising exposed areas of soil), residual dust impacts would be managed so there was negligible risk of adverse air quality effects at the sensitive receivers.

Gaseous emissions from the construction works are not anticipated to significantly influence local air quality and would be managed through the implementation of standard mitigation measures.

Operational impacts and management

Maintenance activities during operation of the project would be infrequent and a low number of vehicles would be required. Gaseous and dust emissions during operation would be negligible.

Soils and contamination

Construction impacts and management

Construction would potentially disturb areas of contamination. Disturbance of soil where contaminants are present has the potential to expose contaminants and impact on human health and water quality. Accidental spills and leaks from use of plant and equipment, and the improper waste or contaminated soil management could also result in contamination of the surrounding soil and water environments.

With implementation of appropriate and standard construction controls, the risk of contamination from project activities would be minimised.

Operational impacts and management

The potential contamination impacts of this project during operation are expected to be minimal and would be managed through Transgrid's Environmental Management System (EMS).

Waste management

Construction impacts and management

Waste generated during construction of the project has the potential to contaminate soils, pollute water and generate leachate, odours and dust if improperly managed. The project would adopt waste management strategies in accordance with the waste management hierarchy (avoidance, resource recovery and disposal), which will be specified in the Waste management sub-plan prepared as part of the CEMP).

Licensed waste contractors would be used for the collection and transport of waste for off-site processing and/or disposal to a licensed facility.

Operational impacts and management

Waste during operation is expected to be minimal and would be managed in accordance with Transgrid's existing EMS.

Greenhouse gas and climate change

Construction impacts and management

Construction of the project is likely to experience recent changes in climate that have already been observed and include:

- an increase in the number of days with extreme high temperatures (above 35 degrees Celsius), that may cause heat stress to construction workers
- worsening bushfire conditions, that may cause disruptions or health and safety risks
- excessive and intense rainfall events that might cause flooding and may limit access to work sites and result in construction delays.

These potential climate change risks would be considered during construction planning, and mitigation measures required to manage the risks would be implemented.

The main source of greenhouse gas (GHG) emissions would be vegetation clearance, which accounts for 55 per cent of the total estimated emissions, with unleaded fuel consumption the next highest use, followed by oils and greases, electricity consumption and the energy embodied in construction materials.

Operational impacts and management

The project has a design life of 50 years, which can be extended to more than 70 years for some components. As such, the project is likely to be exposed to a number of climate change risks, including those related to increased temperatures, bushfire and flooding, which could damage the transmission line and reduce their transmission capacity. Climate change is also anticipated to impact materials such as concrete and steel. These risks would be considered further during detailed design so the project is resilient in the long-term.

The main source of GHG emissions associated with the ongoing operation of the project are those related to unavoidable energy losses from transmission lines, followed by some emissions of sulfur hexafluoride (SF_6) from electrical components within the Dinawan substation. The impact of project operation on NSW and national GHG emission loads is estimated to be negligible, with the annual emission estimate representing less than around 0.02 and 0.01 per cent of the total NSW and Australia's yearly emissions respectively.

However, GHG emissions from the project would be offset to some extent by its role in enabling the introduction of new renewable energy generation in the region, which would support Australia’s emissions reduction targets.

Sustainability

Transgrid is committed to leading the nation’s transition to a clean energy future, including through corporate-level sustainability goals and priorities to project-specific contractor requirements and individual project sustainability ratings. A project-specific sustainability strategy has been developed for VNI West (NSW) – the *VNI West (NSW) Sustainability Strategy*. The strategy provides a targeted approach to sustainability outcomes for the project through the development of eight project themes that align with Transgrid’s Sustainability Framework (refer to Figure 18).

The *VNI West (NSW) Sustainability Strategy* would continue to evolve in parallel with the planning and approvals process. Identified sustainability initiatives and targets would be further refined along with relevant requirements included in the contract documents for all detailed design, construction and operations contracts.

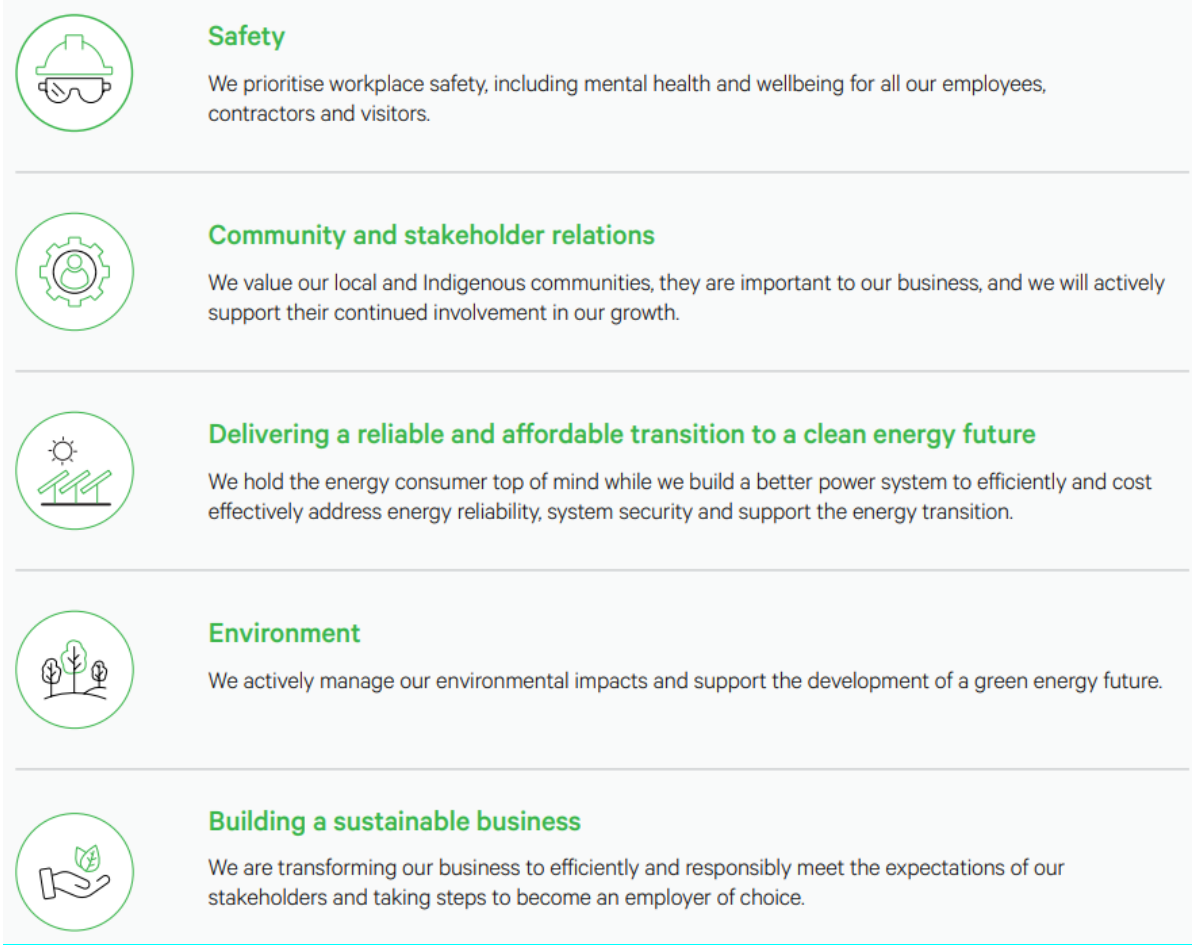


Figure 18 Transgrid's Sustainability Framework (Transgrid, 2025)

Cumulative impacts

Cumulative impacts describe the impacts of the project together with the impacts of other relevant projects within an identified area. Around 26 known or future developments were identified within the vicinity of the project that were considered to have potential cumulative impacts during construction and operation. These included projects such as future renewable developments (solar and wind farms) and other electricity projects (such as EnergyConnect (NSW – Eastern section) and HumeLink). Potential positive cumulative benefits from the project and other relevant projects were identified and generally apply across the region.

The key matters identified as potentially negatively affected by cumulative impacts include biodiversity, Aboriginal heritage, landscape character and visual, land use and agriculture, noise and vibration, traffic and access, hydrology, flooding and water quality and hazards and risk.

On a broad scale, positive cumulative impacts from the project and relevant future projects would be associated with their contribution to the NEM transition to diverse renewable and distributed energy generation. The projects represent a once-in-a-generation opportunity to re-shape the NSW and Victorian transmission networks in a way that delivers the best possible value to electricity customers over the long term. The project is expected to deliver up to $1.4 billion in net benefits to electricity customers (NSW and Victoria components of the project combined). The majority of the relevant future projects would also contribute significant net benefits to electricity customers.

Localised combined cumulative impacts would most likely be experienced from projects in close proximity around future Dinawan substation for the NSW/Victorian border to future Dinawan substation component including EnergyConnect (NSW – Eastern section), Dinawan Solar Farm, Dinawan Wind Farm, Argoon Wind Farm and Yanco Delta Wind Farm and around Gregadoo for the network augmentation works including the HumeLink project, Livingstone Solar Farm, Belhaven BESS and Gregadoo Solar Farm.

South West Renewable Energy Zone access right agreements

In April 2025, EnergyCo granted access rights to six wind, solar and large-scale battery projects with a combined generation capacity of 3.56 gigawatts. These projects consisted of the following:

- Yanco Delta Wind Farm
- Dinawan Energy Hub – consisting of the Dinawan Solar Farm and Dinawan Wind Farm
- Pottinger Energy Park – consisting of the Pottinger Solar Farm and Pottinger Wind Farm
- Bullawah Wind Farm.

The combined generation capacity of these proposed or approved projects represents the initial allocation of access rights under the South West Renewable Energy Zone access scheme. In making this decision, the maximum capacity for access rights assigned to each proposed renewable energy project is lower than what has been identified in planning assessment documentation for those projects, and it would alter the likelihood of some of the remaining projects in the South West Renewable Energy Zone proceeding in the short-term. However, for the purposes of the cumulative assessment presented in the project EIS, it was assumed that all identified projects would still be possible to proceed, as described in the relevant planning assessment documentation available at the time of the assessment on the NSW major project planning portal (and in line with the *Cumulative Impact Assessment Guidelines for State Significant Projects* (NSW DPIE, 2022)).

The negative combined cumulative impacts would likely be associated with aspects including:

- increased demand for accommodation and housing during construction
- increased impacts on amenity due to increased noise impacts during construction
- increased impacts on landscape character and visual amenity during construction and operation.

Through the implementation of mitigation measures identified in the EIS, and implementation of equivalent mitigation measures as part of the delivery of the other relevant projects, negative cumulative impacts are expected to be minimised and appropriately managed. Coordination and engagement with proponents and/or construction contractors of relevant future projects would also occur during detailed design and construction to confirm the potential cumulative impacts and timing of activities that have potential cumulative impacts. Coordination and engagement will include; providing regular construction program updates; identifying potential conflict points with other relevant future projects (e.g. identifying opportunities for shared construction access routes and traffic management requirements); and developing mitigation strategies to manage conflicts that may arise.

Environmental management

How will environmental impacts be managed?

The approach to environmental management for the project would be consistent with:

- the objective of avoiding and minimising impacts throughout all stages of the project
- the relevant conditions of approval for the project (subject to project approval)
- mitigation measures and management plans proposed in the EIS (or as otherwise updated in the Submissions Report and/or an Amendment Report or Preferred Infrastructure Report)
- the environmental management system (EMS) of the construction contractors (during pre-construction and main construction works) and of Transgrid (during operation and decommissioning).

Figure 19 illustrates the overall environmental management approach for the project. Additional discussion on the environmental management approach is provided in the following sections.

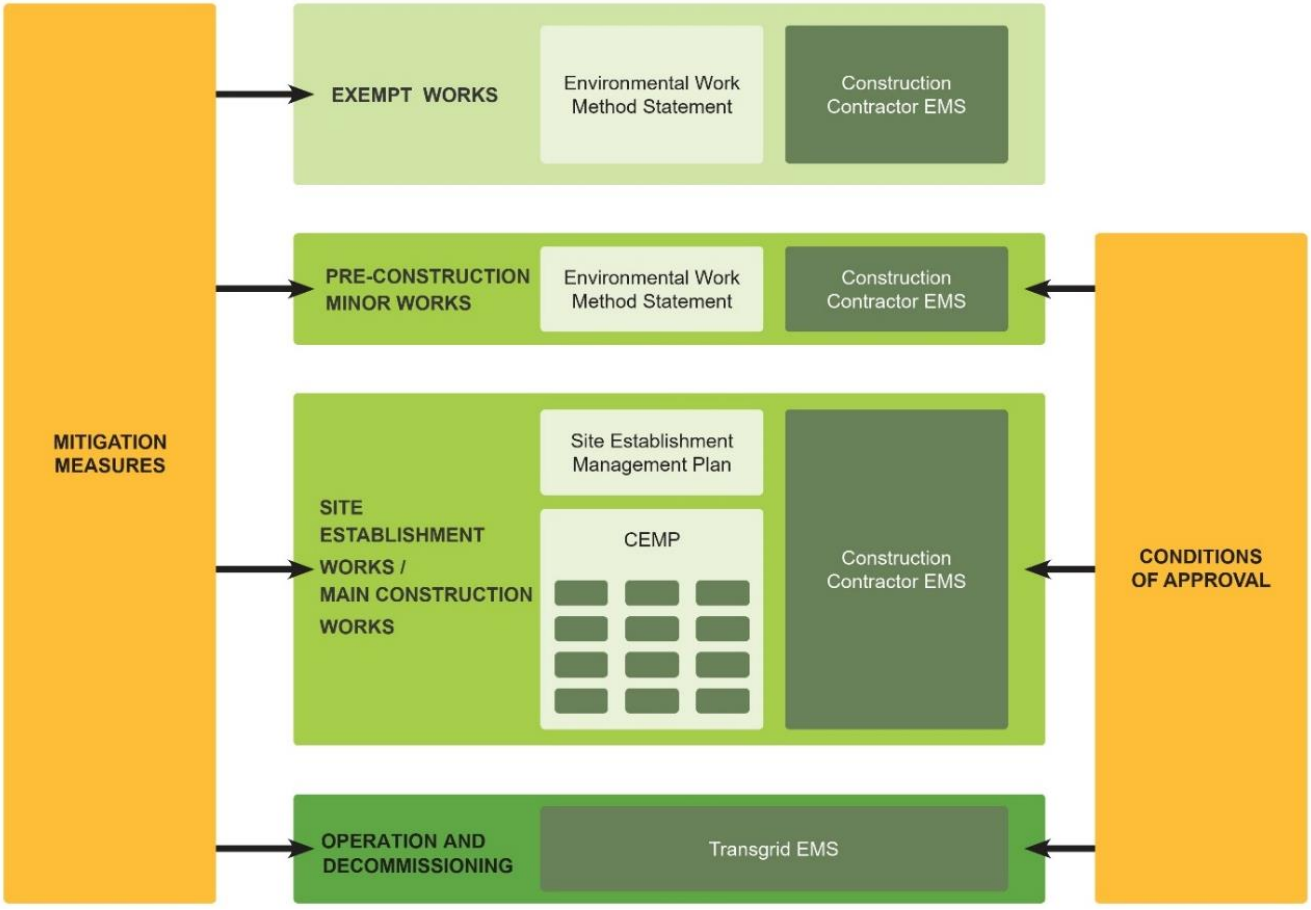


Figure 19 Overall environmental management approach for the project

Should the project be approved, Transgrid would develop an Environmental Management Strategy (EMS) to describe the strategic environmental management framework for the project's construction. Pre-construction work would comprise either:

- pre-construction minor impact work which are activities that are required to inform the ground conditions and utilities investigations as part of the development of design. These works are activities with low potential for environmental and community impacts that would be carried out in accordance with the construction contractors EMS
- site establishment works which involve preparing the site for future activities, such as the building of construction compounds and temporary worker accommodation facilities, relocating, adjusting or protecting utilities or establishing new access tracks. These works would be managed by an Site Establishment Works Management Plan

Main construction work would occur in accordance with an approved Construction Environmental Management Plan (CEMP) that has been prepared by the construction contractor in accordance with Environmental Management Plan Guideline for Infrastructure Projects. The CEMP would be adaptive, establishing a continuous cycle of monitoring, assessment, investigation and corrective actions. This process would be used to continuously evaluate and monitor the effectiveness of the environmental management measures proposed in this EIS. The CEMP would be supported by several sub-plans that provide more detail on the management of a certain environmental aspect (such as biodiversity, heritage, bushfire, soil and water, air quality, etc).

A series of management plans in addition to the CEMP (and associated sub-plans) would also be prepared to support the project during detailed design and construction including:

- Aboriginal and Torres Strait Islander peoples' participation plan
- Community and stakeholder engagement plan
- Community investment and benefit plan
- Community wellbeing strategy
- individual Property management plans
- Local industry participation plan
- Temporary worker accommodation facility management plan.

An overarching Community and stakeholder engagement plan would also be implemented to detail the approach to communication between Transgrid, the construction contractor, the community, community groups, other stakeholders and government authorities during pre-construction and main construction work.

The operation of the project would be managed through Transgrid's EMS (which includes an Environmental Assessment Framework, environmental checklists, procedures, guidance notes and Transgrid's *Environmental Handbook*) and as otherwise outlined in the EIS or conditions of approval for the project. Transgrid's EMS has been designed to meet the commitments of its *Environment Policy* by identifying and assessing environmental risks and, where reasonable and practicable, implementing controls to avoid or limit these risks.

Chapter 25 (Environmental management) of the EIS provides further information on the approach. Details of the mitigation measure proposed to manage identified impacts during construction and operation of the project as also detailed in Appendix F (Summary mitigations measures) of the EIS.

What is the justification for the project?

It is anticipated that the project would bring the following key benefits:

- *improved energy distribution*: the project would increase the capacity to share electricity between NSW and Victoria
- *reliable power*: the project would improve electricity supply reliability and security, and maintain downward pressure on power prices, in both states
- *renewables development*: the project would increase access to sources of renewable energy to help Australia achieve its net zero targets
- *jobs and opportunities*: the project would create an economic boost for regional communities through the provision of jobs, training and local supply opportunities
- *cleaner, sustainable future*: the project would help achieve renewable energy targets, while continuing to deliver safe, reliable and affordable electricity to consumers.

The project has been developed following a robust and iterative process that has involved substantial options analysis, design, environmental assessment, and stakeholder engagement. Where feasible and reasonable, the project has aimed to avoid and minimise biophysical, social and economic impacts. At this stage of assessment, a conservative worst-case assessment has been carried out, which indicates that no unacceptable impacts are anticipated. Overall, the project is not anticipated to cause impacts that would lead to serious and irreversible environmental damage.

Construction and operation of the project is also expected to provide positive economic activity to the regional and NSW economies. The project is expected to deliver around $1.4 billion in net market benefits to consumers and producers of electricity by achieving fuel cost savings associated with access to lower-cost generation in the southern states including NSW and Victoria, and capital cost savings associated with deferred or avoided investment in additional generation capacity.

During the continued development of the project design and the construction methodology, opportunities to further minimise potential impacts will be sought and ongoing input from stakeholders and the community will be taken into account. The potential residual construction and operational impacts of the project are considered manageable with the implementation of the proposed mitigation and management measures.

Not proceeding with the project would not meet NSW needs for future energy transmission and would also lead to missed opportunity to harness the energy generated by current and future renewable developments within the South West REZ and to reduce Australia's dependency on fossil fuels for energy, which create GHG emissions.

On balance, it is considered that the strategic need and benefits of the project outweigh the mitigated project impacts and, therefore, the project is justified and would be in the public interest.

Exhibition of the EIS

Public exhibition of the EIS

The EIS will be placed on public exhibition in August 2025. During this time, stakeholders and the community have the opportunity to review and comment on the EIS via submission to DPHI. Electronic copies of the EIS will be made available to be viewed on the:

- DPHI Major Projects website (www.majorprojects.planning.nsw.gov.au)
- VNI West (NSW) project website (transgrid.com.au/projects-innovation/vni-west).

Hard copies of the EIS will also be made available at council offices / libraries.

Digital EIS portal

An interactive digital EIS will also be available through the project website (transgrid.com.au/projects-innovation/vni-west). This will provide an online tool to explore the EIS.

Response to public submissions

After the EIS exhibition and public consultation period, submissions will be reviewed, categorised, and analysed to identify key issues related to environmental, social, and economic impacts. A formal Response to Submissions Report will be prepared (along with an Amendment report /Preferred infrastructure report if changes to the current project are proposed) which will outline how the feedback has been considered, including any modifications to the project design, additional mitigation measures, or commitments to ongoing monitoring. This process ensures transparency, regulatory compliance, and a balanced approach that integrates community input with environmental and project feasibility considerations.

Following preparation of the Response to Submissions Report, DPHI will then assess all of the information regarding the project and make a determination as to whether to approve the project.

Figure 20 provides an overview of the current stage of the project and future phases of the environmental planning and approval process.

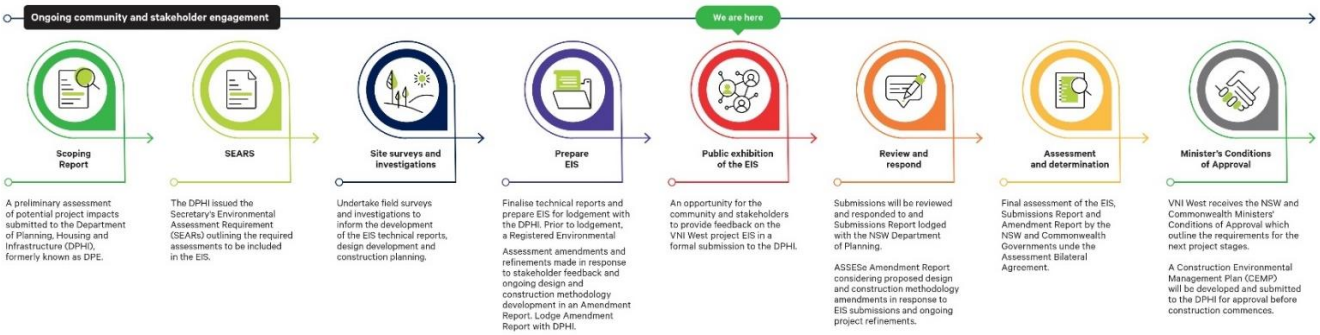


Figure 20 Planning and approval process for the project

Glossary of terms

Key terms used throughout this summary document and the environmental impact statement are listed in the table below.

Project term	Definition
access routes	Roads providing the access to and from the project footprint.
annual exceedance probability	The annual exceedance probability (AEP) is the probability that a given rainfall total accumulated over a given duration will be exceeded in any one year.
areas of environmental concern	Potential contamination sources are referred to as areas of environmental concern.
annual exceedance probability	The probability of an event occurring in any given year, (i.e. a one per cent (1%) AEP means there is a 1% chance in any given year of the event occurring).
Asset Protection Zone	A bushfire protection measure, providing a buffer around assets. APZs are designed and maintained to reduce fuel near assets, and to reduce the potential for damage from direct flame contact, smoke, radiant heat, and ember attack. The dimensions for APZs are designed in line with *Planning for Bush Fire Protection: A guide for councils, planners, fire authorities and developers* (NSW RFS, 2019), and are determined by surrounding vegetation type, slope, and the type of asset/development.
brake and winch site	A temporarily cleared area where plant and equipment are located to spool and winch conductors into place on transmission line structures. The locations of the brake and winch sites may or may not be within the nominated transmission line easement. These sites are only required for construction of the project and do not need to be maintained during operation.
combined cumulative impact assessment	Combined cumulative impact assessment approach involves considering the combined effect of the different cumulative impacts of the project with other relevant future projects on key matters in an identified area ((NSW) Department of Planning and Environment, 2022b).
construction environmental management plan	A Construction Environmental Management Plan (CEMP) describes how activities undertaken during the construction phase of development would be managed to avoid or mitigate impacts, and how those environmental management requirements would be implemented.
Critical State Significant Infrastructure	Critical State Significant Infrastructure (CSSI) projects are high priority infrastructure projects that are essential to the State for economic, social or environmental reasons.
double circuit	A power transmission configuration where two separate electrical circuits are installed on the same transmission towers or poles. This means there are two sets of three-phase conductors, essentially doubling the power carrying capacity and redundancy of the system.

Project term	Definition
easement	An easement provides a right of access for Transgrid and its staff or contractors to construct, maintain and operate the transmission line and other operational assets. The easement also generally identifies the zone of initial vegetation clearance and ongoing vegetation management to ensure safe electrical clearances during the operation of the transmission line. The transmission line between the NSW/Victorian border and the future Dinawan substation would be located within an easement that is typically 70 metres wide. There would be sections of the transmission line that would require the easement to be 110 metres wide, such as at transposition sites (locations where periodic swapping of the positions of conductors on a transmission line occurs in order to improve transmission voltage balance). Two transposition locations are proposed along the 500 kV transmission line approximately 93 kilometres and 193 kilometres from the future Dinawan substation.
electric and magnetic fields	Electric and magnetic fields (EMF) are part of the natural environment and are present in the earth's core and the atmosphere. These fields are also produced wherever electricity or electrical equipment is used.
greenhouse gas	A gas that absorbs and emits radiant energy within the thermal infrared range.
hazard tree	A hazard tree is defined as a tree or part of tree that if it were to fall would infringe on the vegetation clearance requirements at maximum conductor sag of the transmission lines.
historic item	An item that is of historic heritage significance. Historic heritage is non-Aboriginal heritage.
indicative disturbance footprint	Refers to the indicative area that would be temporarily or permanently cleared during the construction of project comprising the following: • locations of all project infrastructure elements (including the proposed transmission line, transmission line easement, substation works (at the future Dinawan, existing Wagga 330 kV and future Gugaa 500 kV substations), telecommunication facilities, and other ancillary works) • locations for construction elements such as construction compounds and temporary worker accommodation facilities, access tracks (excluding public roads proposed to be used for access routes), site access points, water supply points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices. The area is identified based on realistic project component locations and areas however it is indicative at this stage. The final disturbance area would be confirmed during finalisation of the design and construction methodology and would be developed as part of the consideration of avoidance and impact minimisation. This indicative disturbance area includes areas required for operation and maintenance.
interconnector	An electricity interconnector is a connection that allows power to flow in both directions between regions in the National Electricity Market (NEM), providing access to a larger number of electricity generators and greater ability to meet varying demand where and when it is needed most.

Project term	Definition
issue-specific cumulative impact assessment	Issue-specific cumulative impact assessment approach involves considering the impacts of the project together with the impacts of other relevant future projects on specific issues (key matters) within an identified area ((NSW) Department of Planning and Environment, 2022b).
level of service	A measure of the performance of a road network which typically considers an assessment of various factors including speed, volume of traffic, geometric features, traffic interruptions, delays, and freedom to manoeuvre.
metres above Australian Height Datum	A common reference level used in Australia which is approximately equivalent to the height above sea level in meters.
network augmentation works	Part of the overall project consisting of between the existing Wagga 330 kV substation and the future Gugaa 500 kV substation consisting of: • the replacement of around 9 km of an existing 330 kV single circuit transmission line (Line 51) generally between Ivydale Road (south of the existing Wagga 330 kV substation) and the future Gugaa 500 kV substation with a new double circuit 330 kV transmission line • transmission line diversion work within the vicinity of the existing Wagga 330 kV substation • connection works at the existing Wagga 330 kV substation and future Gugaa 500 kV substation.
OLS	Defines the airspace surrounding an airport that must be protected from obstacles to ensure aircraft flying in good weather during the initial stages and final stages of a flight, or in the vicinity of the airport, can do so safely.
oversized and/or over mass	A heavy vehicle carrying, or designed for the purpose of carrying, a large item that cannot be divided without extreme effort, expense or risk of damage to it, or cannot be carried on any heavy vehicle without contravening a mass requirement or dimension requirement.
PANS-OPS	A traffic control acronym which stands for Procedures for Air Navigation Services – Aircraft Operations.
particulate matter	A category of airborne particles which is classified in relation to its size as either: • PM_{10} particles which are sufficiently small enough to penetrate the large airways of the lungs • $PM_{2.5}$ particles which are generally small enough to be drawn in and deposited into the deepest portions of the lungs.
preliminary alignment corridor	A 10 km corridor identified during the initial assessment of transmission line corridor options which is generally based on desktop assessment only.
Project footprint (the)	Refers to the generally 200 m wide corridor area that may be directly impacted by the project including all proposed infrastructure elements (including the proposed transmission line corridor, substation site works and other ancillary works) as well as locations for proposed construction elements such as temporary worker accommodation facilities, construction compounds, access tracks and site access points, laydown and staging areas, concrete batching plants, brake and winch sites and site offices. The project footprint has been developed to achieve a level of flexibility for future design refinement.

Project term	Definition
Ramsar wetland	Wetlands designated under the Convention on Wetlands of International Importance which are representative, rare or unique wetlands, or wetlands that are important for conserving biological diversity.
Scope 1 emissions	Direct GHG emissions released to the atmosphere as a direct result of an activity, or series of activities at a facility level.
Scope 2 emissions	Indirect GHG emissions released to the atmosphere from the indirect consumption of an energy commodity.
Scope 3 emissions	Indirect GHG emissions other than Scope 2 emissions that are generated in the wider economy that occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business.
sensitive receptor	A location where people are likely to work or reside; this may include a dwelling, school, hospital, office or public recreational area.
Strahler stream order	Strahler stream order classification is a 'top down' system in which streams of the first order have no upgradient streams flowing into them. If two streams of the same order merge, the resulting stream is given a number that is one higher. If two rivers with different stream orders merge, the resulting stream is given the higher of the two numbers. Under the Strahler stream order classification, 1st to 3rd order streams are called headwater streams. Streams classified as 4th through 6th order are medium streams and streams that are 7th order or larger are a river.
Substation terminology	The following terms have been used for the three main substations associated with the project: • future Dinawan substation – refers to specific components, being either: - the 330 kV switchyard – for approved infrastructure as part of the EnergyConnect (NSW – Eastern section) project; or - the 500 kV switchyard – for new infrastructure associated with the project • existing Wagga 330 kV substation • future Gugaa 500 kV substation
telecommunications facility	Telecommunication facilities contain signal boosting equipment and back-up power supplies to ensure the stability of the communications system over great distances (greater than around 135 kilometres).
Combined temporary worker accommodation facility and construction compound terminology	Combined temporary worker accommodation facility sites: • Balranald Road, Moulamein • Cobb Highway, Wanganella (north) • Cobb Highway, Wanganella (south) • Dinawan substation, Coleambally 2 • Gregadoo Road, Wagga A (Wagga option 2) • Gregadoo Road, Wagga B (Wagga option 3) • Livingstone Gully Road, Wagga (Wagga option 4). Construction compound sites: • Fisher Lane, Wetuppa (western option 1) • Cunninyeuk Road, Cunninyeuk (western option 2) • Mabins Well Road, Mabins Well.

Project term	Definition
Transgrid (or 'the proponent')	The manager and operator of the high voltage electricity transmission network in New South Wales and the Australian Capital Territory with connections to Victoria and Queensland. Transgrid manages the network that is the backbone of the National Energy Market, which enables energy trading between Australia's three largest states along the east coast.
Transmission line alignment	The location of the transmission line structures along the middle of the transmission line easement.
Transmission line corridor	A general 200 m wide corridor along the length of the transmission line within which the transmission line, structures and easement would be located.
Transmission line easement	The area surrounding and including the transmission lines that allows access, construction and maintenance work to take place. The easement grants a right of access and for construction, maintenance and operation of the transmission line and other operational assets. The easements for the new 500 kV transmission line between the NSW/Victorian border and the expanded Dinawan substation would typically be 70 m wide. However, transposition locations would require wider easements up to 110 m wide. The replacement of the 330 kV transmission line between Ivydale Road, Wagga and the future Gugaa 500 kV substation would occur within the existing 60 m wide easement.
Transmission line structure	Proposed free standing metal structures designed to support the double circuit transmission lines.
Transposition	Transposition is the periodic swapping of positions of the conductors of a transmission line to improve voltage balance.
switchyard	A junction in the power transmission process which contains a range of electrical infrastructure (switch gear) responsible for the switching (of voltages), protection, and overall control of electrical circuits.
VNI West	An interconnector of about 450 km between the power grids of NSW and Victoria. Specifically, VNI West would connect the EnergyConnect (NSW – Eastern section) project (at the new Dinawan substation in NSW) with the Western Renewables Link proposal (at Bulgana in Victoria) via a new substation near Kerang (in Victoria).
VNI West (NSW) ('the project')	The NSW component of the project includes: • a new 500 kV transmission line connection between the NSW/Victorian border and Transgrid's Dinawan substation (currently under construction as part of the EnergyConnect (NSW – Eastern section) project) • replacement of a section of existing single circuit 330 kV transmission line to a double circuit 330 kV line generally between Ivydale Road in Gregadoo and Transgrid's future Gugaa 500 kV substation (which is subject to a separate planning approval as part of the HumeLink project) • expansion of the future Dinawan 330 kV substation to include a new 500 kV switchyard and two new 330 kV bays • connection and transmission line diversion works at both the Wagga 330 kV substation and the future Gugaa 500 kV substation to connect the new transmission line infrastructure • ancillary activities to support construction and operation of the project.