July 2024

Bungaban Wind Farm Connection Project

Study Area Report

Contents

Acknowledgement of Country

Powerlink acknowledges the Traditional Owners and their custodianship of the lands and waters of Queensland and in particular the lands on which we operate. We pay our respect to their Ancestors, Elders and knowledge holders and recognise their deep history and ongoing connection to Country.

How to provide feedback on the study area

Feedback is being sought on the study area for the proposed Bungaban Wind Farm Connection Project. Feedback can be provided in the following ways:

In-person: Community information drop-in sessions in early August 2024

Phone: 07 3898 4838

Email: sqprojects@powerlink.com.au

Website: www.powerlink.com.au/bungaban

Our project webpage has links to an interactive map where you can add your comments within the study area. This page also features a feedback survey which we encourage you to complete. You can also sign-up for our regular project-related email updates. We are inviting feedback on the study area until **5pm Sunday 1 September 2024.**

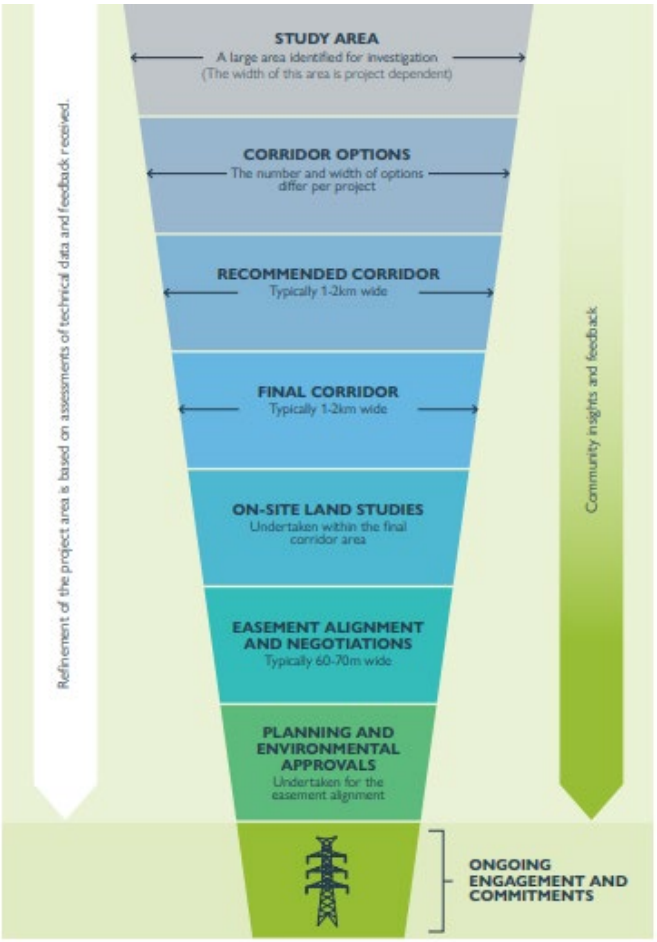
1. Executive summary

Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland (Powerlink), is a leading Australian provider of high voltage electricity transmission network services, and owns, develops, operates and maintains the high voltage electricity transmission network in Queensland.

Our purpose is to connect Queenslanders to a world-class energy future, which includes moving to a low carbon future comprising a diverse mix of generation technologies, while maintaining a sharp focus on safety, affordability and reliability of electricity supply to our customers.

The purpose of this Study Area Report (SAR) is to provide a summary of the process that has been undertaken to identify the study area for developing a transmission line connection for the proposed Bungaban Wind Farm being developed by renewable energy developer Windlab, known as the Bungaban Wind Farm Connection Project (the project).

The study area is the area within which the new transmission infrastructure could be located. The process to identify a final location for the new transmission infrastructure is multi-step and considers many factors. Powerlink uses our Transmission Easement Engagement Process (TEEP) in the development of new transmission infrastructure. The steps included in the TEEP are listed below.



At every step in the development of new transmission infrastructure, Powerlink seeks feedback from landholders, Traditional Owner groups, the community and other stakeholders to help inform our project planning and decision making, and how to avoid, minimise and mitigate impacts resulting in the least overall impact from the project.

Powerlink engaged WSP Australia Pty Ltd to undertake technical, spatial and mapping analysis to support the preparation of this report.

The study area is located in the Western Downs region of Queensland, approximately 220km west of Gympie and 210km north-west of Toowoomba. Key localities in the region include Guluguba, Auburn, Roche Creek, Bungaban, Woleebee and Wandoan.

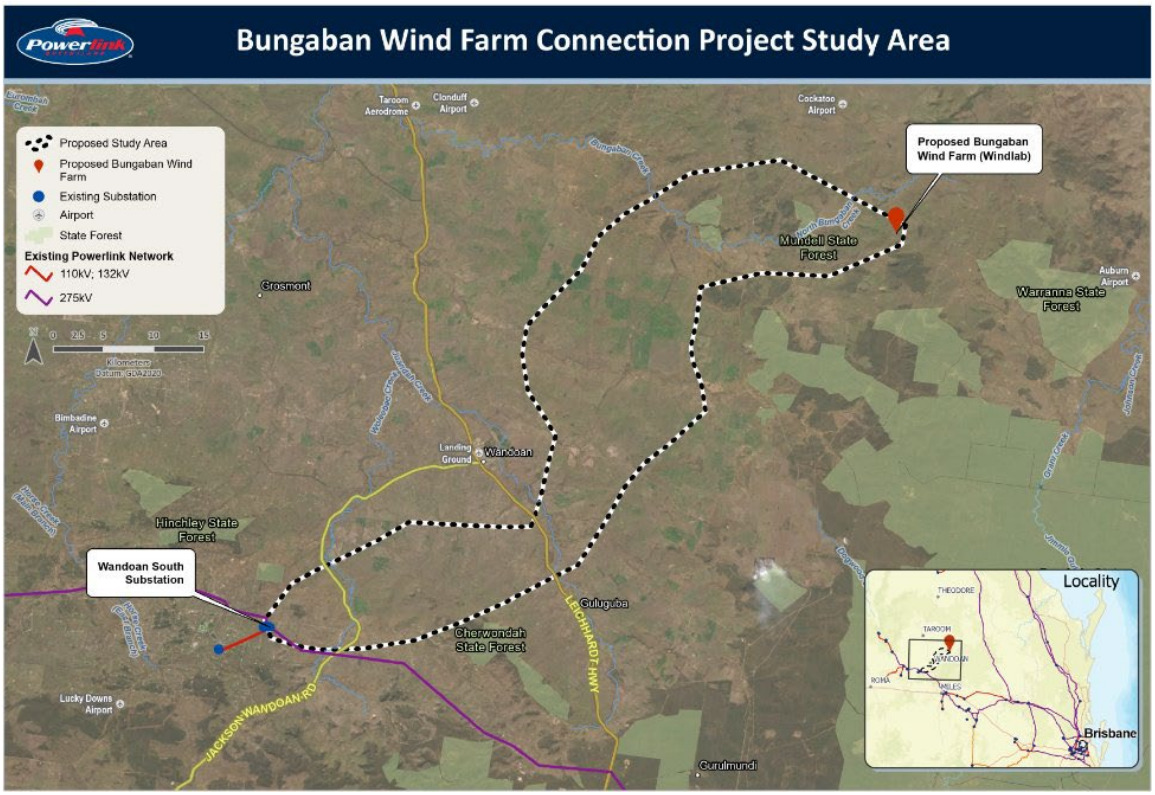
Areas of protected state forest are located in the south-western and north-eastern portions of the study area. These include the Mundell, Barakula, Hinchley, Juandah and Cooaga State Forests. The majority of the central portion of the study area is mapped as areas of regional interest – Strategic Cropping Area.

In summary, the study area that has been identified seeks to:

- avoid impacts to priority living areas around Wandoan
- minimise impacts to cropping land
- minimise impacts to state forests.

Whilst the study area still includes some highly and moderately constrained areas, including residences, Mundell State Forest, coal seam gas (CSG) wells and Of Concern and Endangered regional ecosystems, sensitive siting of potential corridor options within the study area can minimise and mitigate impacts to those areas. Figure 1 shows the location of the study area.

Figure 1: Bungaban Wind Farm Connection Project Study Area



2. Background

2.1 Strategic context

The Queensland Government has committed to unlocking renewable investment and achieving a Renewable Energy Target (RET) of 80% by 2035. The Queensland Energy and Jobs Plan (QEJP) applies a whole-of-system planning approach, setting out the pathways and targets that will facilitate a low carbon economy in the future and ensure an orderly, least-cost transformation of Queensland's power system.

Powerlink will play a critical role in supporting the energy transformation over the coming decade.

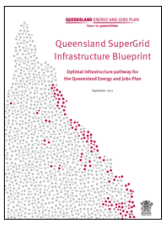
To deliver on this commitment, in September 2022 the Queensland Government released the Queensland Energy and Jobs Plan (QEJP), which outlines how Queensland's energy system will transform to delivery clean, reliable and affordable energy to provide power for generations. That plan includes having 25GW of new and existing large-scale wind and solar generation by 2035.

Figure 2: Queensland Energy and Jobs Plan

Plan and Blueprint

Three focus areas:

- Clean energy economy
- Empowered households and businesses
- Secure jobs and communities.



- Queensland SuperGrid Infrastructure Blueprint outlines the infrastructure to enable the decarbonisation of the existing electricity system
- Includes Renewable Energy Zones, pumped hydro energy storage and high capacity transmission.

Key targets and objectives

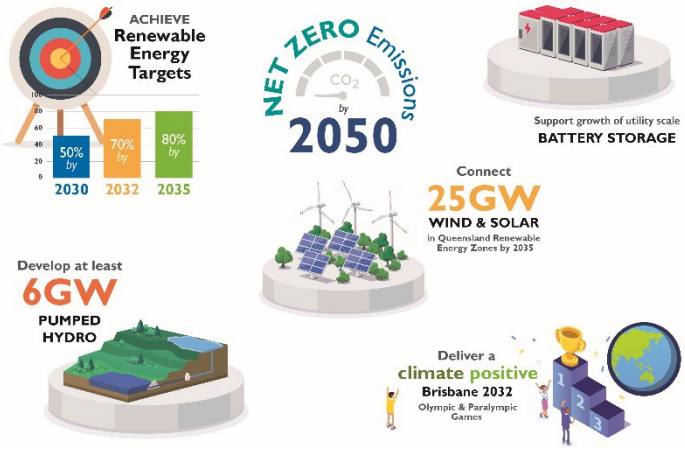
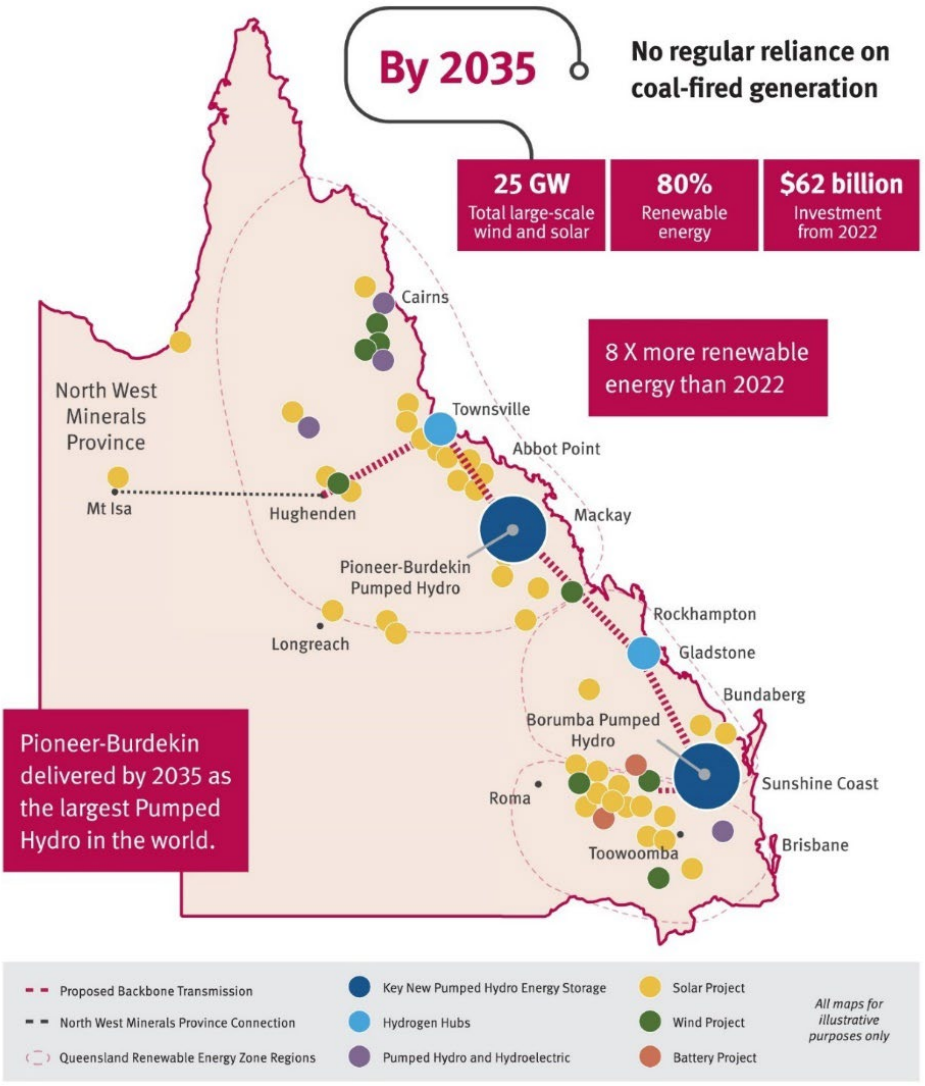


Figure 3: Queensland SuperGrid



The Queensland Government has outlined the optimal infrastructure pathway in the *Queensland SuperGrid Infrastructure Blueprint.*

Projections informed by independent modelling and internal analysis

2.2 Project background

Bungaban Wind Farm is a proposed 1.4GW wind farm located in the Western Downs and Banana Shire regions of Queensland, about 40km from Wandoan and 60km from Taroom, or 450km north-west of Brisbane. Australian renewable energy company Windlab is undertaking the project.

Energy generated by the proposed wind farm will provide low-cost clean energy to Queensland households.

To connect the proposed wind farm to the electricity network, the following new transmission infrastructure is proposed under the project:

- a 275kV substation
- a double circuit 275kV transmission line between Powerlink's existing Wandoan South Substation and the proposed wind farm.

3. Purpose of this report

The purpose of this report is to:

- describe the objectives and guiding principles for identifying the location of new transmission infrastructure
- describe the process that has been undertaken to identify the study area
- outline the next steps.

4. Objectives and guiding principles

The key objectives in developing this project are:

Social
To consider the use of land and the community livelihood within and adjacent to corridor options.

Environment
To consider a balanced approach to corridor selection with the least practicable impact on environment and heritage values.

Economic
To consider construction and operational factors such as cost at a preliminary level, given the scale of the project.

Project objectives are the high-level value-based considerations that are used during the corridor selection process. Each objective is then refined into measurable criteria to determine the possible impact and how it may be avoided, minimised, mitigated or offset. Feedback from the community helps to identify and refine the criteria that is applicable to the project.

At every phase of the development of the project, Powerlink seeks to:

- provide opportunities for input from landholders, Traditional Owner groups, the community and other stakeholders
- demonstrate a continual approach of seeking to reasonably avoid, minimise and mitigate impacts from the development of the project.

5. The study area

5.1 Purpose of the study area

The key objective of the study area is to identify an area based on initial high-level desktop spatial data that can be further refined through the corridor selection process, including engaging with the landholders, Traditional Owner groups, the broader community and other stakeholders.

Defining a study area boundary establishes an area in which corridor options can be identified for new transmission infrastructure.

Feedback from our engagement process will be used to verify desktop information and to support the refinement process. Engagement will once again be carried out on the corridor options to further refine opportunities and constraints, whilst balancing the project objectives to identify a corridor which, on balance, has the least overall impact.

5.2 Study area identification

The identification of the study area involved the following key steps:

- feasibility investigations to connect the proposed Bungaban Wind Farm to the existing Wandoan South Substation
- map and consider constraints
- consider opportunities and areas of significance
- define the study area for the project.

A desktop review of existing data and information was undertaken to identify physical, natural, social and economic characteristics to form the study area. Information sources included topographic maps, satellite imagery, local government planning schemes, government digital web mapping (e.g. Queensland Globe and GeoRes Globe) and database searches.

High-level considerations in identifying the study area include the following:

- number of land titles
- avoiding areas of incompatible use or dense, highly frequented areas such as townships
- avoiding residential houses where practical
- agricultural land and farming operations
- existing road networks
- sensitive ecological areas
- Aboriginal cultural and heritage sites
- bushfire risks
- topographical and geological conditions
- watercourse and floodplains
- economic and constructability factors including existing electricity.

5.3 Constraints and opportunities

Within the identified study area, initial constraints and opportunities have been identified. The aim of the initial study area is to avoid significant constraints and sensitivities at the very early phase in the development of the project.

Appendix A provides an overview of the social, physical and environmental constraints and considerations within the study area.

Where avoidance is not possible, the project will aim to minimise and/or mitigate impacts associated with these constraints. Initial constraints for consideration are identified and summarised below as either significant or moderate.

The significant environmental, social or land use concerns include:

- priority living areas
- residential areas
- mining leases
- active coal seam gas (CSG) wells
- rugged and inaccessible terrain.

The moderate level of environmental, social or land use constraints include:

- cropping land
- endangered and of concern regional ecosystems
- high risk areas for protected plants
- mapped essential habitat and matters of national environmental significance wildlife habitat
- local heritage places
- state forests
- strategic cropping land
- least concern regional ecosystem.

Opportunities that could improve or benefit project outcomes have also been identified so these can inform the study area. Opportunities identified include:

- minimising overall corridor length (to reduce impacts, construction activities and costs)
- targeting areas of existing disturbance such as land with poorer habitat, existing roads, tracks, property boundaries and other utility services (to reduce environmental and property impacts).

6. Corridor selection criteria

Corridor selection criteria will be developed to inform the corridor selection process for the project. This criteria will be based on the initial constraints and opportunities outlined in this report, as well as feedback from landholders, Traditional Owner groups, the community and other stakeholders on the land uses and values of the region.

7. Next steps

This project is currently in Step 1 (study area phase) of Powerlink's Transmission Easement Engagement Process (TEEP). Engagement will now take place in relation to the study area in order to inform the next stage of the TEEP, being the identification of corridor options.

Community information drop-in sessions are being held to gather further information from the community in regards to land use, known areas of likely constraints and sharing local values.

Feedback can be provided in a number of ways:

- Face-to-face: Community information drop-in sessions in early August 2024
- Phone: 07 3898 4838
- Email: sqprojects@powerlink.com.au
- Website: www.powerlink.com.au/bungaban.

Our project webpage has links to an interactive map where you can add comments within the study area. This page also features a feedback survey which we encourage you to complete. You can also sign up for regular project-related email updates. We are inviting feedback on the study area until 5pm Sunday 1 September 2024.

Figure 4: Engagement Timeline

APPENDIX A

Study area constraints and considerations:

Constraints and consideration	Assessment
Existing tenure	The majority of the study area is freehold tenure with smaller areas of state forest, lands leased and profit a prendre tenure. Some of the leasehold properties are identified as grazing homestead freeholding or perpetual leases.
Lot size	Within the study area, larger lots are generally present within the north-east.
Land use	Land use within the study area is predominantly rural, consisting of grazing native vegetation. Other land uses include production forestry and cropping. Residential land uses associated with the Wandoan township are noted in a separate category and are not addressed here. There are notable amounts of strategic cropping land throughout the study area. Areas categorised as cropping land under land use mapping have been considered a constraint. State forests have the potential to contain habitat for threatened flora and fauna, as well as the potential complexities associated with obtaining an easement through state forest area. State forests have therefore been considered a constraint.

Constraints and consideration	Assessment
Resource interests	The study area contains a number of petroleum leases associated with coal seam gas (CSG). A high density of CSG wells are located in the north-central and south-western sections of the study area. The majority of the wells in the north-central section are classified as 'suspended/capped/shut in' or 'plugged and abandoned', however many wells in the south-west are listed as producing hydrocarbons. Any development of transmission line infrastructure through these areas will need to take this into consideration. Areas containing active CSG wells are considered highly constrained. A number of wells have an 'unknown status' and these are considered highly constrained as a precaution. Mining leases, especially active surface rights area, represent an incompatible land use with respect to the development of transmission line infrastructure and are considered highly constrained. There are several mining leases located within the vicinity, but outside of the study area - ML20229, ML50230, and ML50231 (granted, Wandoan Holdings Pty Ltd). One key resource activity transport route (Roche Creek Road) and a number of high-pressure pipelines (CSG) are located within the study area, however these could easily be spanned and do not represent a constraint. The study area boundary has looked to avoid a number of existing wells, where feasible to do so. In areas that cannot be avoided, further consultation with relevant stakeholders will ensure appropriate and adequate separation between transmission line infrastructure and existing gas infrastructure including CSG wells.
Residential dwellings	The study area includes the rural town of Wandoan that is classified as a priority living area. Residential areas associated with Wandoan are considered highly constrained and have been excluded from the study area. Scattered residential dwellings have been considered highly constrained and avoidance will be sought through the corridor selection process.
Utilities	The study area contains a number of easements, likely to be water pipelines, and a number of Ergon Energy low voltage powerlines connecting residential and commercial premises. These are likely easily spanned and therefore considered a low constraint.

Constraints and consideration	Assessment
Traffic and transport	The study area contains two state-controlled roads as well as numerous local roads. Crossing of these roads has not been considered a constraint. When identifying potential corridor options, consideration should be given to crossing major roads at perpendicular angles and using existing road networks where feasible, minimising the need for new access tracks.
Visual amenity	While visual amenity has not been specially considered in determining the study area, visual amenity impacts have been captured through the inclusion of other considerations particularly residential dwellings.
Heritage places	The Western Downs Planning Scheme maps four local heritage sites within the study area. These areas are considered a constraint. The transmission line infrastructure may also traverse areas where cultural heritage values are likely to occur, particularly within and around waterways, and areas of remnant vegetation. The presence of unknown cultural heritage places and artefacts will need to be investigated in future studies. If heritage sites are identified, they will need to be managed through discussions and, if necessary, agreements with the relevant Aboriginal parties.

Constraints and consideration	Assessment
Fauna	Desktop searches show a number of threatened wildlife species as being known/likely to be present or having habitat within the study area. Threatened fauna species could be potentially impacted through the loss of habitat resulting from vegetation clearing needed for transmission line structures and access tracks. Given that fauna species are mobile and move throughout their habitat, the potential extent of impact to fauna species cannot be accurately determined by desktop searches alone. The presence of protected fauna species within clearing sites will need to be investigated in future ecological investigations. The study area also includes mapped essential habitat for threatened species including Koala, Central greater glider, Glossy black cockatoo (eastern), Golden-tailed gecko and Yellow-bellied glider. A significant residual impact to habitat for these and other matters of national environmental significance would trigger referral of the project to the Department of Climate Change, Energy, the Environment and Water under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999*, as well as biodiversity offsets under both State and Commonwealth legislation. Mapped areas of essential habitat are considered a constraint.
Protected areas	A number of state forests, protected under the *Forestry Act 1959*, are located within the study area. State forests may be established to protect ecological and biodiversity values, and to protect natural resources (i.e. timber reserves). As such they are considered to be a constraint.
Topography	The topography across much of the study area is relatively consistent with slightly undulating hills and valleys, with the average topography in the central and southern portions around 300m Australian Height Datum (AHD), and the average in the northern section around 380m AHD. The terrain in the central and southern sections is flatter than in the more rugged northern section, where peak elevations exceed 500m AHD. The steepest areas are generally associated with heavily vegetated land in and around Barakula State Forest. Areas of rugged terrain, especially those with limited road access, are considered a constraint.

Constraints and consideration	Assessment
Geology and soils	Geological conditions vary throughout the study area and predominantly include a mix of sandstone, siltstone, mudstone and conglomerate, with smaller areas of sand, silt, gravel and clay mainly associated with land around watercourses. Soil types include vertosols, chromosols, tenosols, dermosols and sodosols. Sodosols are considered more susceptible to erosion due to their dispersive nature. Transmission towers can generally be constructed on any ground although geology and soil conditions can lead to constructability issues due to erosion, dispersion and acidity which may affect the structural integrity of the transmission line infrastructure, as well as rocky underlying soils and geological units which may cause constructability complexities. The ground conditions will need to be studied in future geotechnical investigations to establish the appropriate design strategies. Due to the variability of soils across the area, geology and soils have not been used as a constraint in identifying the study area but will be further investigated through the corridor selection processes.
Hydrology	The study area contains a very high number of key waterways, creeks and tributaries. Two potential flood hazard areas are mapped – one to the east of the Leichardt Highway associated with Junadah Creek, and the second is associated with Woleebee Creek along Jackson-Wandoan Road. The transmission line may be sited to span across the width of these waterways however floodplains should be considered. Waterway crossings may require a tailored design response to ensure minimal damage to riparian vegetation and mitigate risks of erosion to tower structures.
Bushfire Risk/Hazard	Large areas in the northern section of the study area are classified a medium bushfire hazard. Small, scattered areas classified as high hazard are found within the study area, mainly in the north-east.

Contact us

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