POWERLINK QUEENSLAND

MARCH 2022

WAMBO WIND FARM

DRAFT CORRIDOR SELECTION REPORT

Wambo Wind Farm
Draft Corridor Selection Report

Powerlink Queensland

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REV	DATE	DETAILS
A	1 July 2021	Preliminary investigation
B	13 July 2021	Updated preliminary investigation
C	25 February 2022	Draft issue
D	14 March 2022	Updated draft issue
E	25 March 2022	Updated issue

	NAME	DATE	SIGNATURE
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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

EXECUTIVE SUMMARY

A new wind energy farm, known as the Wambo Wind Farm, is planned to be constructed near Jandowae in the Western Downs region of Queensland.

Powerlink Queensland (Powerlink) has been engaged by the proponent of the Wambo Wind Farm project to investigate the connection of the Wambo Wind Farm to the existing electricity network. The corridor would need to allow for the construction, maintenance and operation of a double circuit 275 kilovolt (kV) high voltage transmission line connecting a substation proposed to be located in the Wambo Wind Farm site to Powerlink's existing Halys Substation.

Powerlink engaged WSP Australia Pty Ltd (WSP) to prepare a Draft Corridor Selection Report (CSR) with the purpose of assessing the suitability of the current Tarong-Chinchilla corridor for a transmission line connecting the Wambo Wind Farm to Powerlink's Halys Substation. A finalised Corridor Selection Report will be issued after consultation with stakeholders, landholders and parties who have participated in the consultation process to date.

A review of the study area identified that there was the potential to primarily utilise the existing Tarong to Chinchilla corridor (and associated easements) for the Wambo Wind Farm connection, as opposed to establishing new corridors and easements. This approach would result in significantly less impact to landholders and the environment. Therefore, Powerlink has confined the Draft CSR and its detailed investigations to the option of utilising the existing Tarong to Chinchilla corridor. This means the Wambo Wind Farm connection will be almost entirely co-located with the existing transmission corridor.

The methodology used to conduct the assessment included a desktop review of key constraints within a defined study area along the current Tarong-Chinchilla corridor as well as identification of key criteria and objectives for siting of the proposed transmission line. The assessment used a range of criteria based on the physical, natural and social constraints within the study area and along the current Tarong-Chinchilla corridor. In addition, issues of cost and constructability were considered.

Based on the results of the assessment process, it has been concluded that the current corridor (Tarong-Chinchilla corridor) is suitable for the proposed transmission line. This was primarily due to it being deemed to have a low level of impact to social, natural and environmental values, as well as being cost-effective and constructible (as it would utilise the existing easement of the Tarong-Chinchilla line).

1 INTRODUCTION

1.1 PROJECT BACKGROUND

A new wind energy farm, known as the Wambo Wind Farm, is planned to be constructed near Jandowae in the Western Downs region of Queensland. The Wambo Wind Farm project (the project) will involve the staged construction of wind turbines, with the first stage consisting of 42 turbines delivering approximately 250 megawatts (MW) of renewable wind energy to the national electricity grid.

Powerlink Queensland (Powerlink) has been engaged by the proponent of the Wambo Wind Farm project to undertake an investigation into the connection of the Stage 1 Wambo Wind Farm to the existing electricity network. The corridor would need to allow for the construction, maintenance and operation of a double circuit 275 kilovolt (kV) high voltage transmission line connecting a substation proposed to be located in the Wambo Wind Farm site to Powerlink's existing Halys Substation.

1.2 PURPOSE OF THIS REPORT

To determine the most feasible transmission line route, Powerlink requires an assessment to progress the corridor investigations on behalf of the proponent. Powerlink has engaged WSP Australia Pty Ltd (WSP) to prepare this Draft Corridor Selection Report (CSR). The purpose of the report is to assess the current Tarong-Chinchilla corridor in regard to the provision of a new transmission line connecting the Wambo Wind Farm to Powerlink's Halys Substation.

A review of the study area identified that there was the potential to utilise the existing Tarong to Chinchilla corridor as well as establishing new corridors. New corridors would involve totally new easements for the Wambo Wind Farm connection. Powerlink saw there is notably less impact to landowners and the environment to utilise the existing Tarong to Chinchilla corridor (and associated easements) rather than establishing a new corridor. Therefore Powerlink confined the Draft CSR to the existing Tarong to Chinchilla corridor. This results in a corridor that is almost totally co-located with the existing transmission corridor.

The goal of the Draft CSR is to assess the suitability of the current Tarong-Chinchilla corridor within the study area, as an appropriate route for further investigation of a proposed transmission line, taking into consideration the social, environmental and physical factors identified via a desktop constraints and opportunities analysis, and early engagement with stakeholders. A finalised CSR will be issued after consultation with stakeholders, landholders and parties who have participated in the consultation process to date.

1.3 METHODOLOGY

The methodology in carrying out the assessment of the current Tarong-Chinchilla transmission corridor is as follows:

1. Define a broad study area around the proposed origin and destination points for the transmission line.
2. Build a project-specific geographical information system (GIS) database which includes data that is publicly available or supplied by Powerlink.
3. Undertake a desktop assessment of available site characteristics and features using the GIS database, topographic maps, satellite imagery, local government planning schemes, government mapping and database searches.
4. Establish the objectives of the corridor assessment which take account of the key constraints and opportunities within the study area.

5 Evaluate the current corridor based on the social, environmental and physical constraints and opportunities identified, as well as economic considerations. This includes consideration of initial stakeholder consultation by Powerlink.

6 Provide a recommendation as to the suitability of the current transmission corridor for further detailed investigation and consultation by Powerlink.

This methodology complies with Powerlink's Site Selection, Easements and Sites – Guideline.

1.3.1 EARLY ENGAGEMENT WITH LANDHOLDERS AND COMMUNITY

Powerlink has undertaken early consultation with landholders and community to ensure the proposed infrastructure planning meets local expectations and delivers a strong transmission network for the future.

This early engagement approach has been vital in understanding what is important to the individuals and communities that play a key role in enabling Powerlink to deliver a safe, cost-effective and reliable electricity supply.

Since September 2021, Powerlink has engaged in a number of one-on-one conversations with landholders and neighbouring properties along the existing Tarong-Chinchilla 132 kV transmission line. Two open community engagement sessions were also held in Kingaroy and Jandowae in late 2021 to provide an overview of Powerlink's infrastructure planning and the potential development required to support large-scale renewable energy projects proposed in the region. Briefings were also provided to local councils and other stakeholders as part of engagement activities.

The local insights and feedback that were received from those who have participated in the one-on-one discussions and community sessions has been integral to developing this Draft CSR. Powerlink would like to recognise all those individuals who have taken the time to engage in open conversations to support this process. Powerlink will continue to engage with stakeholders and landholders with opportunities for more formal feedback and submissions as the project develops.

1.4 STRUCTURE

The structure of this Draft CSR is outlined in Table 1-1.

Table 1-1 Structure of the Draft Corridor Selection Report

SECTION	OVERVIEW
1 Introduction	Describes the project background, purpose and scope of works.
2 Project description	Describes the study area and Powerlink's transmission infrastructure requirements.
3 Constraints and opportunities	Describes the social, physical and environmental characteristics within the study area and along the current Tarong-Chinchilla corridor.
4 Corridor assessment	Describes the assessment of the current corridor against the constraints and opportunities.
5 Recommendation	Provides a recommendation on the suitability of the current corridor to accommodate the new transmission line.
6 Legislative and approval requirements	Summarises applicable Commonwealth, State and local legislation and approval requirements.
7 Conclusions	Summarises the outcomes of the Draft CSR.

2 PROJECT DESCRIPTION

2.1 STUDY AREA

A broad study area for the proposed new transmission line was defined and assessed. The study area encompasses the origin point of the transmission line at the proposed Wambo Wind Farm Substation site, the destination point of the transmission line at Powerlink's Halys Substation, and a surrounding rectangular area. It comprises a geographical area large enough to understand constraints and opportunities between the proposed and existing substation locations.

The study area, shown in Figure 2-1, is located approximately 50 kilometres (km) west of Kingaroy and 120 km north of Toowoomba, within the Western Downs Regional Council local government area (LGA) and South Burnett Regional Council LGA. The Wambo Wind Farm site is located approximately 50 km west of the Halys Substation. The Wambo Wind Farm Substation site is planned to be located on Lot 77 LY323 at the intersection of the Tarong-Chinchilla 132 kV transmission line and Diamondy Road.

Key features of the study area include:

- Stuart River, Boyne River and tributary streams
- Bunya Mountains National Park
- Rural residential dwellings and homesteads
- Bunya Highway
- Coopers Gap Wind Farm (constructed)
- Iron Leaf Wind Farm (proposed)
- Kingaroy Wind Farm (proposed)
- High voltage transmission lines:
  - Tarong-Chinchilla 132 kV transmission line
  - Calvale-Halys 275 kV line transmission line
  - Western Downs-Halys 275 kV transmission line.

2.2 INFRASTRUCTURE REQUIREMENTS

2.2.1 PHYSICAL FEATURES

The transmission corridor is required to accommodate a double circuit 275 kV transmission line comprising steel lattice towers. 275 kV transmission structures are generally centrally located within a 60 m wide easement or offset 50 m from existing transmission line if co-located within an existing transmission line corridor.

Easements are typically cleared of vegetation unless an environmental assessment determines the need to retain vegetation to minimise ecological impacts and such vegetation can safely remain under the transmission lines at an appropriate economic cost. These measures usually involve over the canopy stringing, vegetation scalloping and careful tower placement which can result in increased construction costs for the project.

Steel lattice towers (generally 30-65 m high) keep the high voltage conductors separate from each other and clear of the ground and other obstacles. Requirements for minimum clearance between energised conductors and various types of obstacles are specified in the *Electricity Safety Regulation 2013*. The distance between structures (typically 450-500 m on flat ground) and their height is determined by the topography, land use, average temperatures, sensitive environmental areas, clearance requirements and structure loading limits.

Structures are fabricated in a range of heights to allow optimum height to be provided at each site. Typically, shorter structures are found on elevated areas such as hills, with taller structures in gullies, or where additional clearance is required over a mid-span obstacle. Various designs of self-supporting towers have been used in Queensland for over 50 years and are the standard form of support structure for high voltage construction observed through the State. Individual components are fabricated from galvanised steel angle sections (members) and steel plate and are assembled onsite. Individual foundations support the four legs of each tower.

2.2.2 CONSTRUCTION REQUIREMENTS

Construction of a transmission line involves a series of field activities which are broadly grouped in Table 2-1.

Table 2-1 Transmission line construction field activities

ACTIVITY GROUP	FIELD ACTIVITIES
Clearing and access	— Site set out. — Mobilisation, including establishment of accommodation camps, laydowns and offices. — Installation of gates, grids, clean down bays and access tracks. — Vegetation clearing.
Foundations	— Tower site benching (as necessary). — Foundation installation.
Erection	— Structure assembly and erection.
Stringing	— Conductor and earth wire stringing.
Demobilisation	— Site rehabilitation. — Demobilisation.

2.2.3 SITING CONSIDERATIONS

Siting of a transmission line is influenced by a range of issues including those outlined in Table 2-2.

Table 2-2 Transmission line siting considerations

CATEGORY	CONSIDERATION
Social factors	— Intensive land uses such as cultivation, good quality agricultural land, residential and rural residential areas. — Mining and gas production tenements and infrastructure (mining and petroleum leases, mineral development license areas, petroleum facilities, pipelines). — Separation from houses and places of assembly. — Interactions with other physical infrastructure such as roads, rail, wind turbines, dams and transmission lines. — Proximity to property boundaries. — Locations of visual amenity, viewpoints and lookouts. — Places of Aboriginal and European cultural significance.
Environmental factors	— Protected flora and fauna. — Areas of high environmental value.
Physical factors	— Steep topography – limits vehicle access and increases the amount of earthworks benching at each structure site. — Geological features – rock, acid sulfate soils, erosive soils. — Number of watercourse crossings and flood risk. — Contaminated land. — Unexploded ordnance. — Population centres including towns and villages.
Economic factors	— Length of corridor. — Number of bend points. — Requirement for tall structures. — Foundations affected by rock. — Crossing of other power lines that require outages for construction and /or maintenance.

These factors have been taken into consideration in the corridor assessment.

2.3 ASSUMPTIONS

2.3.1 DECOMMISSIONING TARONG-CHINCHILLA LINE

A portion of the existing Tarong-Chinchilla 132 kV transmission line is located between the Wambo Wind Farm Substation site and Powerlink's Halys Substation. For the purpose of this Draft CSR, it is assumed that the 132 kV line will be decommissioned.

The line was built in the 1980s and is still operational and in good condition, but some key substation equipment at either end (Tarong and Chinchilla) is reaching the end of their service lives. A regulatory process is currently underway, - known as a Regulatory Investment Test for Transmission (RIT-T) - to consider longer term planning for these assets. The proposed approach described in the RIT-T involves the decommissioning of this line. The RIT-T process is expected to be finalised by June 2022.

Powerlink will take into consideration maintaining safe and reliable power supply, other potential growth across the region and the proposed Wambo Wind Farm connection. Depending on the location of the new alignment within the corridor, easements would require a widening of up to 50 m (refer to section 5.1 for easement requirements).

2.3.2 DISTANCE TO WIND TURBINES

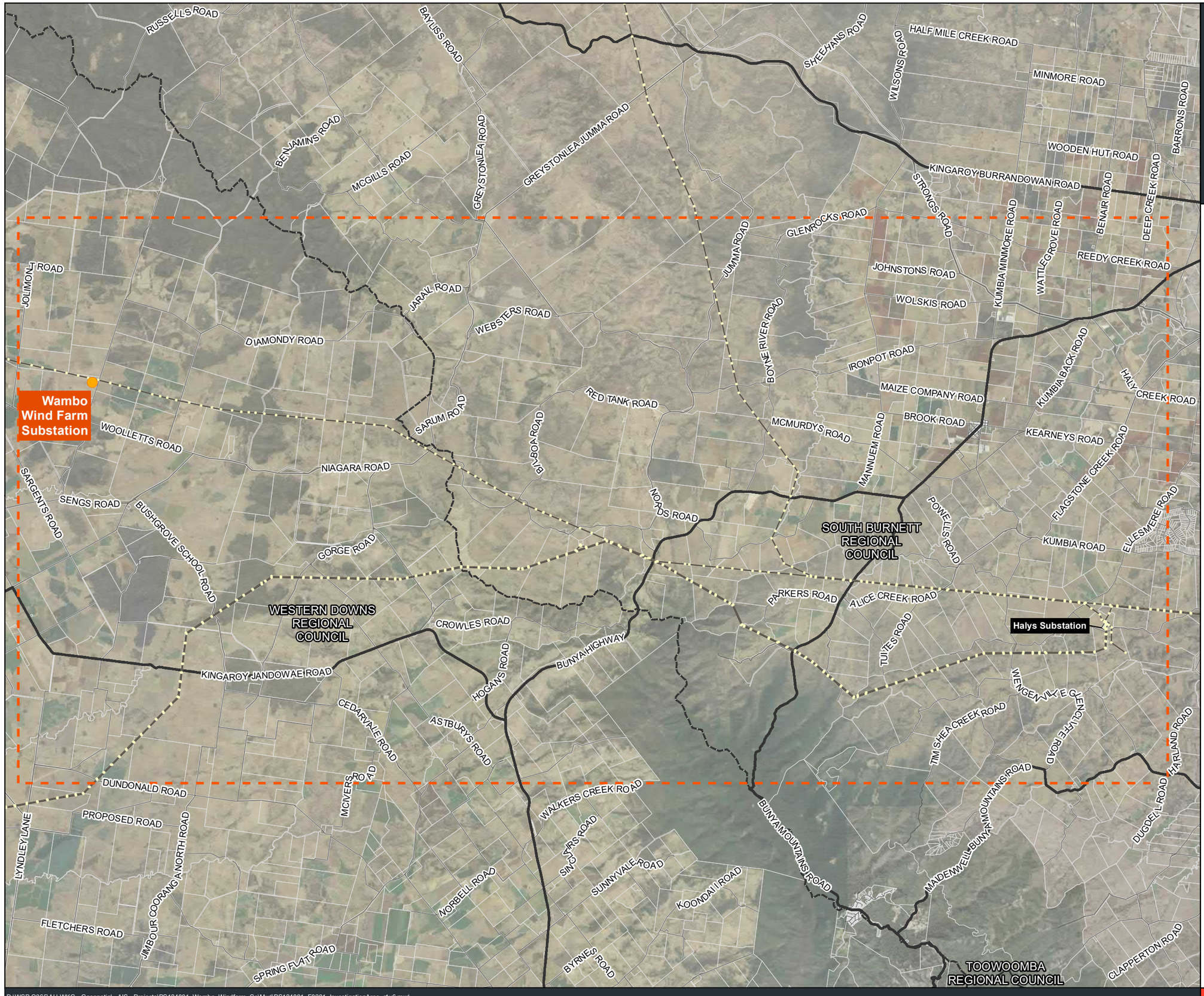
The transmission line will need to avoid existing or proposed wind turbines by a certain distance. The corridor assessment will need to consider the location of wind turbines in the Coopers Gap Wind Farm as well as proposed wind turbines in the Wambo Wind Farm.

In general, the recommended minimum separation distance between wind turbines and overhead transmission lines should be determined by two criteria:

- the turbine should be sufficiently distant to avoid the possibility of toppling onto the overhead line
- the turbine should be sufficiently distant to avoid causing damage to the overhead line due to downwind wake effects.

The existing Tarong-Chinchilla 132 kV line traverses the Coopers Gap Wind Farm. To assess the current corridor, it is assumed that the proposed 275 kV transmission line retain the same minimum separation distance as currently exists between the Tarong-Chinchilla 132 kV line and the Coopers Gap Wind Farm turbines.

There is no standard height of the wind turbines. For the purposes of this assessment the separation distance is one times the tip height or the existing separation distance between the nearest edge of the easement and the foot of a wind turbine, whichever is the lesser.



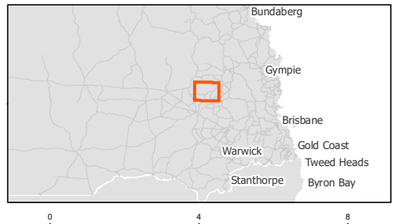
wsp

Wambo Wind Farm

Figure 2-1
Investigation Area

Legend

- Wambo Wind Farm Substation
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- State Controlled Roads
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- Cadastral Boundaries
- Substations (Powerlink)



Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:165,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

3 CONSTRAINTS AND OPPORTUNITIES

This section provides a description of the social, environmental and physical characteristics in the study area which present potential constraints or opportunities for the location of a transmission corridor.

3.1 SOCIAL ENVIRONMENT

3.1.1 TENURE AND ENCUMBRANCES

Land tenure arrangements in the study area is predominantly freehold land, with an area of National Park located in the south of the study area associated with the Bunya Mountains. Other tenures include reserve land and State forest land scattered throughout the study area. The land parcels vary in size, from around 30 hectares (ha) to 3,000 ha in rural areas and smaller lot sizes within local townships around 2 ha. It is noted that Powerlink prefers to cross as few operating entities as possible to minimise social impacts, and therefore the transmission corridors are best placed within larger lots in the study area where feasible.

The main easements located within the study area include those associated with Powerlink's existing Calvale- Halys 275 kV transmission line, Western Downs-Halys 275 kV transmission line and Tarong-Chinchilla 132 kV transmission line.

Land tenure is mapped in Figure 3-1.

3.1.2 LAND USE

The study area crosses two LGAs, the South Burnett Regional Council LGA on the eastern side and the Western Downs Regional Council LGA on the west. Under the South Burnett Regional Council Planning Scheme 2017 and Western Downs Planning Scheme 2017, most of the study area is zoned 'Rural' land. Other land uses that are scattered throughout the study area include community facilities, extractive industry and environmental management and conservation.

The land use intent for rural land is similar under each relevant planning scheme and recognises a range of land uses, including grazing and agriculture, and the need to protect the rural character and amenity of the regions. They also recognise the need to provide opportunities for compatible non-rural uses, and for areas to be managed for their contribution to the economy, landscape character and ecological values. Land use within the study area is primarily rural, consisting of pasture production. A cluster of broadacre cropping, forestry plantation and animal farming for cattle feedlots and piggeries is located in the north of the study area around Benair and Wattle Grove.

The study area spans across two regional planning areas which includes the Wide Bay Burnett Regional Planning Area and the Darling Downs Regional Planning Area. Both regional planning areas follows the same boundaries as the South Burnett and Western Downs LGAs. Most of the study area is zoned under the regional plans as 'Regional Landscape and Rural Production Area'. Key mapped regional interests include priority agricultural areas in the west and strategic cropping areas scattered throughout the study area. Key State planning interests include agricultural areas scattered throughout and matters of State environmental significance (MSES) located particularly around the waterways and within the Bunya Mountains National Park.

Recent development within the study area includes the Coopers Gap Wind Farm project which was approved by the Coordinator General in March 2017 and construction of the final wind turbine occurred in April 2020. The Coopers Gap Wind Farm project footprint is located to the east of the proposed Wambo Wind Farm site. The existing Coopers Gap Substation is located within the footprint of the Coopers Gap Wind Farm. Other proposed development is the Kingaroy Wind Farm project by Australian Energy Wind Farm which was approved in September 2019, construction of which has not yet commenced. The Iron Leaf Wind Farm is also currently in its planning stages. The proposed Kingaroy Wind Farm and Iron Leaf Wind Farm sites are situated in the north of the study area adjacent to the Calvale-Halys 275 kV transmission line.

Existing and proposed land uses within the study area are mapped in Figure 3-1.

3.1.3 RESOURCE INTERESTS

Small mining lease areas exist near Maidenwell in the south-east extent of the study area. As exploration permits do not affect land use rights, they have not been included as a constraint in assessing the transmission corridor.

The resource interests within the study area are unlikely to be impacted by the transmission corridor as they are close to the eastern boundary of the study area and the transmission line can be sited to avoid these resource interests.

3.1.4 UTILITIES

Powerlink's existing 275 kV and 132 kV transmission network is located throughout the study area. This network comprises the Calvale-Halys 275 kV line, Western Downs-Halys 275 kV line and Tarong-Chinchilla 132 kV line. In several places, these lines have been co-located to minimise impacts on existing land use by:

- confining vegetation clearing to one corridor through an area instead of multiple corridors
- using one track to access the infrastructure
- minimising potential for introduction and dispersal of weed and pest species
- minimising the requirement to reconfigure farm infrastructure
- reducing vegetation fragmentation.
- less vegetation clearing as can use part of existing clearing, less edge effects on flora and fauna
- lower biosecurity risk and management costs as access confined to one location within property
- confines visual amenity impacts to one corridor
- construction and maintenance access confined to one corridor providing better control and awareness by landholder
- any required changes to property operations are confined to one area (i.e. drones, electric fencing, mustering).

The existing transmission line corridors may provide opportunities to collocate part of the proposed Wambo Wind Farm connection 275 kV transmission line.

The study area also contains a significant number of Ergon Energy low voltage lines which connect residential and commercial premises. The corridor intersects low voltage lines, which are likely to require design solutions for the overcrossings.

The 2,048 ha Coopers Gap Wind Farm, construction of which has been recently completed, adjoins the proposed Wambo Wind Farm site to the east. The existing Coopers Gap Substation is located within the footprint of the Coopers Gap Wind Farm. Where feasible, the transmission line needs to maintain a buffer to surrounding wind turbines.

Utility infrastructure is mapped in Figure 3-1.

3.1.5 TRANSPORT AND TRAFFIC

Three main State-controlled roads traverse the study area, including the Bunya Highway which provides a connection between Dalby and Kingaroy, Bunya Mountain Road which connects to the Bunya Mountains area, and Kingaroy-Jandowae Road which leads to the township of Jandowae.

It is likely the proposed transmission line will need to span over the Bunya Highway and Bunya Mountain Road. The existing roads may provide opportunities for collocation of the proposed transmission line where they run parallel with the road corridor. Access to roads for construction machinery is critical to the efficient construction of a transmission line. As such, the transmission corridor should allow the greatest possible access from existing roads in the study area.

There are no airports, private airstrips or railways within the study area and no building height restricted areas, as mapped under South Burnett Regional Council's Airport Environs Overlay Map.

3.1.6 HOUSING

Residences are widely dispersed throughout the study area, with the most intensely settled areas being around the eastern half in the Kumbia, Benair and Alice Creek areas. There are also residences sparsely situated further west around Boyneside and Cooranga.

The transmission line will need to avoid populated areas to minimise adverse impacts to the community, including loss of visual amenity. Where feasible, transmission lines need to maintain a minimum of 500 m buffer to surrounding houses.

Note that public data on property dwellings and structures is not completely accurate and therefore property buildings have been identified manually using aerial imagery. While care was taken to identify all possible built structures within the study area, a comprehensive analysis and ground-truthing of all potentially affected properties will need to be undertaken in future studies.

Dwelling locations within the study area are mapped in Figure 3-2.

3.1.7 CULTURAL HERITAGE

A search of the Department of Aboriginal and Torres Strait Islander Partnership (DATSIP) database identified numerous Aboriginal cultural heritage sites, particularly along waterways (Stuart River, Barker Creek and Boyne River) and around the Bunya Mountains in the south extent of the study area. The presence of cultural heritage values will need to be investigated in future studies.

The eastern section of the study area is covered by a Native Title claim by the Wakka Wakka People #3 (QC2016/003) which has not been determined. Other small Native Title claims are scattered throughout the study area by the Auburn Hawkwood People (QUD2019/006). A determination on this claim was made in November 2019 where it was decided that Native Title exists in parts of the determination area. Activities to be carried out over land subject to Native Title rights are assessed under the *Aboriginal Cultural Heritage Act 2003*. Native Title areas within the study area are mapped in Figure 3-2.

An Indigenous Land Use Agreement (ILUA) (QI2008/027) covers almost two thirds of the study area. The ILUA is between Wakka Wakka #2 and TEC Coal Pty Limited and Tarong Energy Corporation Limited.

There are no European cultural heritage places listed in the Australia Heritage Database within the South Burnett Regional Council or Western Downs Regional Council LGAs. No Queensland heritage places are identified within the study area.

The relevant regional council planning schemes identify local heritage listed sites, including Kumbia Memorial School or Arts Hall (Kumbia), Reedy Creek Reserve (Mannuem), St Paul's Lutheran Church cemetery and hall (Benair) and Trinity Evangelical Congregation Church site and cemetery (Kumbia).

3.1.8 VISUAL AMENITY

The study area contains a variety of landscape features including undulating arable plains, native forest areas and open valleys which contribute to the visual amenity and rural setting. The Bunya Mountains is a significant landscape feature which enhances the scenic amenity within the study area.

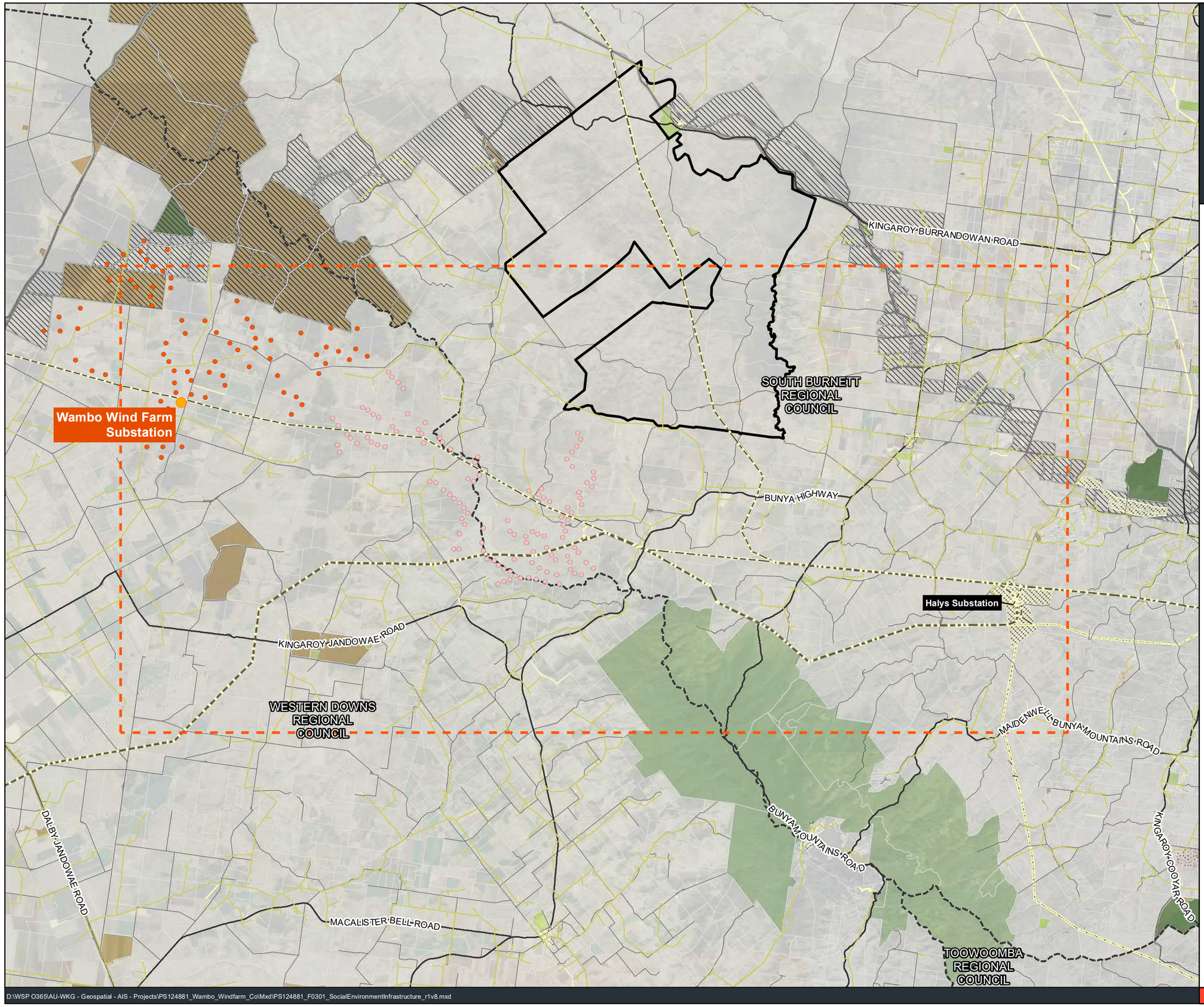
The Bunya Mountains is the highest point in the study area. Information about recreational and lookout areas was limited for this study and will need to be investigated in future stages. Based on initial aerial imagery there does not appear to be any lookouts within the study area. The closest lookouts are located toward the southern extent (e.g. Fishers Lookout) of the Bunya Mountains and has a viewpoint towards the south, which is away from the study area.

The proposed transmission line may be visible from certain viewpoints including townships, rural residences and roads. Residences that may have greater visual impacts include Kumbia, Alice Creek and Boyneside. Collocating the proposed transmission line with the existing transmission corridors will help to reduce any additional visual impact.

Scenic drives within the study area includes the Great Bunya Drive, which includes Bunya Highway and Bunya Mountain Road. It is likely the transmission corridor will span over these main roads, however, there is opportunity to collocate with existing transmission lines for these crossings.

The visual amenity of the area will also be impacted by the Coopers Gap Wind Farm and potentially the Iron Leaf and Kingaroy Wind Farm developments.

The transmission line will require a sufficient distance from townships, residential houses and other sensitive viewpoints to minimise permanent visual impacts where the infrastructure can be viewed. Most of the eastern section around Kumbia is relatively flat, with little to no topography to shield a potential transmission line. In the central and western sections of the study area, the land is also relatively flat and potential sensitive receptors are sparsely distributed. Where possible, the transmission line should be located at least 500 m away from sensitive receptors to minimise visual amenity impacts.



Wambo Wind Farm

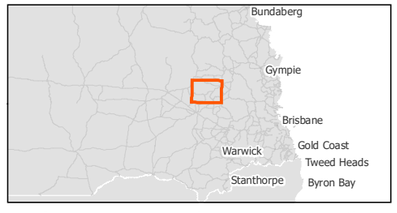
Figure 3-1
Social Environment - Infrastrucure

Legend

- Wambo Wind Farm Substation
- Wambo Turbine Locations
- Coopers Gap Turbine Locations (as-constructed)
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- State Controlled Roads
- Ironleaf Wind Farm Site Boundary
- Electrical Network LV (Ergon)
- Electrical Network (Ergon)
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- Cadastral Boundaries
- Easement
- Infrastructure Designation
- Substations (Powerlink)

Land Tenure

- Covenant
- Freehold
- Lands Lease
- National Park
- Profit à Prendre
- Reserve
- State Forest
- State Land



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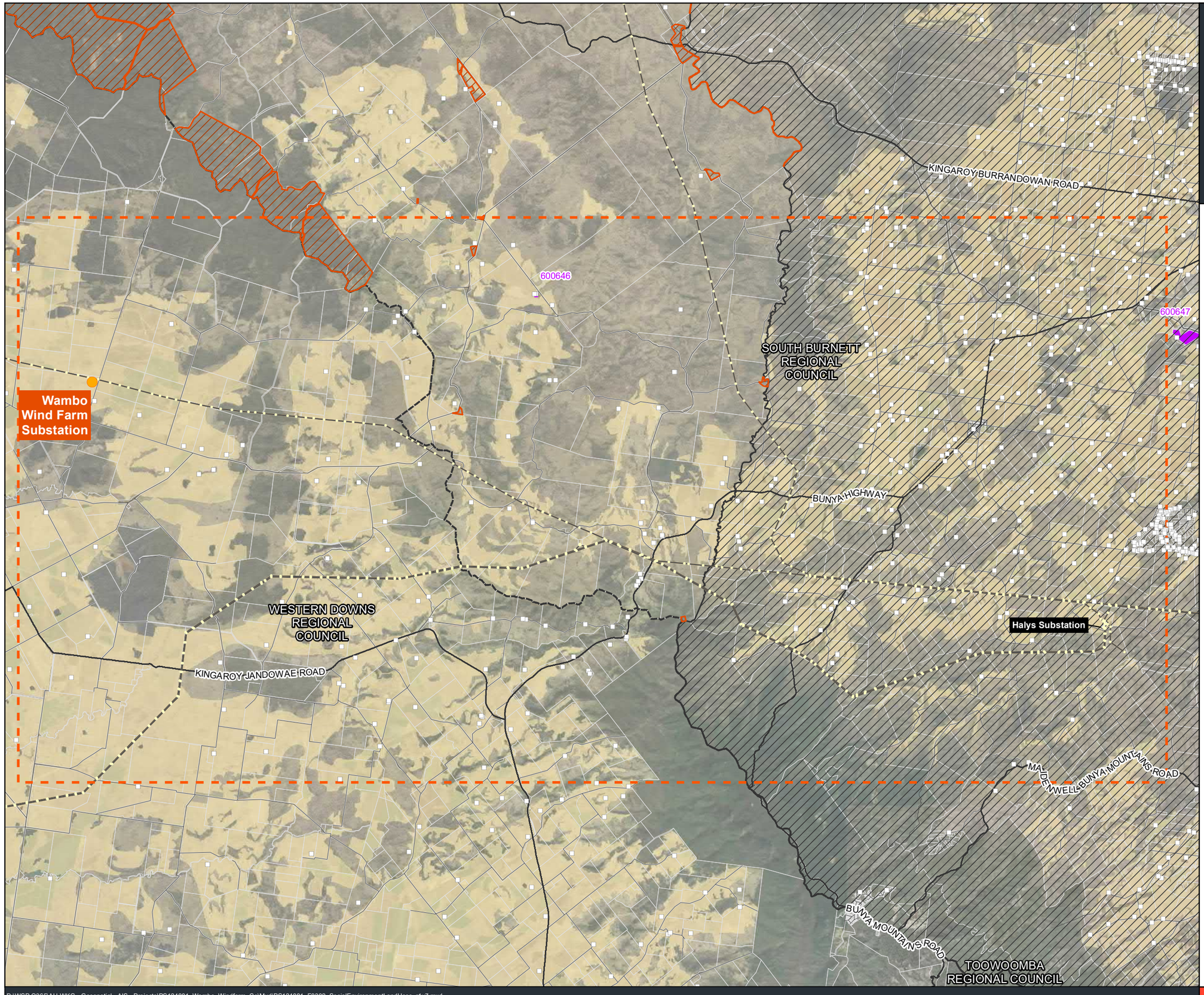
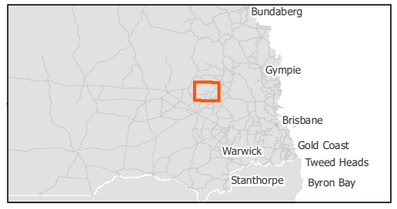


Wambo Wind Farm

Figure 3-2
Social Environment - Land Uses

Legend

- Homesteads
- Wambo Wind Farm Substation
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- State Controlled Roads
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- Cadastral Boundaries
- Register of Native Title Claims
- Register of Native Title Determinations
- Strategic Cropping Land
- Queensland Heritage Register
- Substations (Powerlink)



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3.2 NATURAL ENVIRONMENT

3.2.1 FLORA

The study area is relatively cleared and modified as a result of historical and current rural land uses in the region, including grazing and other rural industry uses. Notwithstanding this, a number of regional ecosystems are mapped as occurring in the study area, including some that are analogous with threatened ecological communities listed as matters of national environmental significance (MNES) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Protected Matters Search Tool (PMST) report identified 22 threatened plant species that have the potential to occur within the study area. Regional ecosystems are classifications of native vegetation communities prescribed under the *Vegetation Management Act 1999* and are listed as matters of State environmental significance (MSES).

3.2.1.1 REGIONAL ECOSYSTEMS

Areas of mapped regional ecosystems containing remnant vegetation are scattered throughout the study area, including 'of concern' and 'endangered' regional ecosystems. Remnant vegetation is found mainly in association with the Bunya Mountain ranges in the south as well as scattered in small clusters throughout the study area. Patches of endangered regional ecosystems are dispersed in various locations around the Tarong-Chinchilla 132 kV transmission line, most prominently where the boundaries of the Wambo Wind Farm site and Coopers Gap Wind Farm meet.

Mapped regional ecosystems within the study area are shown in Figure 3-3.

3.2.1.2 PROTECTED PLANTS

High risk areas for protected plants represent land where plants listed as endangered, vulnerable or near threatened (EVNT) under the *Nature Conversation Act 1992* (NC Act) are known to occur and likely to be present. Any clearing of native vegetation within a high risk area and is 'in-the-wild' requires a flora survey to be carried out in accordance with the *Flora Survey Guidelines – Protected Plants* (Flora Survey Guidelines). Small clusters of high risk areas are scattered across the study area, including near the Tarong-Chinchilla 132 kV transmission line (refer Figure 3-3). These may be spanned or otherwise avoided as part of the alignment design process.

3.2.1.3 THREATENED ECOLOGICAL COMMUNITIES

MNES identified as potentially present within the study area include nationally threatened species and threatened ecological communities (TECs). The PMST report identified eight TECs listed as endangered or critically endangered under the EPBC Act that are known or likely to occur within the study area. TECs identified include:

- Brigalow (*Acacia harpophylla* dominant and co-dominant) (endangered)
- Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions, (endangered)
- Lowland Rainforest of Subtropical Australia (critically endangered)
- Natural grasslands on basalt and fine-textured alluvial plains of northern New South Wales and southern Queensland (critically endangered)
- Poplar Box Grassy Woodland on Alluvial Plains (endangered)
- Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (endangered)
- Weeping Myall Woodlands (endangered)
- White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (critically endangered).

The TECs which are most likely to occur based on the mapped regional ecosystem types in the area includes the Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions TEC (endangered) and White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC (critically endangered).

Ecological field surveys of the corridor and immediate surrounds would be required to verify the presence of the identified TECs.

3.2.1.4 INVASIVE FLORA

Note that no useful information is available via a desktop assessment on weed distribution and the prevalence of invasive species, in order assess the existing integrity of flora species within the study area. Weed and pest information will need to be sourced in future investigations.

3.2.2 FAUNA HABITAT

3.2.2.1 THREATENED FAUNA SPECIES

The PMST report identified threatened and migratory species that have the potential to occur within the study area. Twenty eight (28) threatened fauna species and 14 migratory species were identified. The confirmation of presence of threatened and migratory species in the study area will require ecological field studies to be undertaken in future investigations.

Ecological field surveys of the corridor and immediate surrounds are required to determine the presence of threatened species in accordance with the requirements of the Commonwealth Department of Agriculture, Water and the Environment (DAWE) survey guidelines for nationally threatened species. Results of any fauna significant impact assessments may trigger the need for an EPBC Act referral to the Commonwealth Minister for the Environment.

3.2.2.2 ESSENTIAL HABITAT

Essential habitat are areas in which a species that is listed as endangered or vulnerable under the NC Act is known to occur. Areas of essential habitat for the Koala (*Phascolarctos cinereus*) and Glossy Black Cockatoo (*Calyptorhyn chus lathami*), both listed as vulnerable under the NC Act, are mapped across the study area. The status of the Koala has also recently been upgraded to Endangered under the EPBC Act. As such mapped areas of essential habitat should be avoided as far as practical to do so. Essential habitat is not mapped as occurring along or adjacent to the Tarong-Chinchilla corridor.

Mapped essential habitat areas within the study area are shown in Figure 3-3.

3.2.3 PROTECTED AREAS

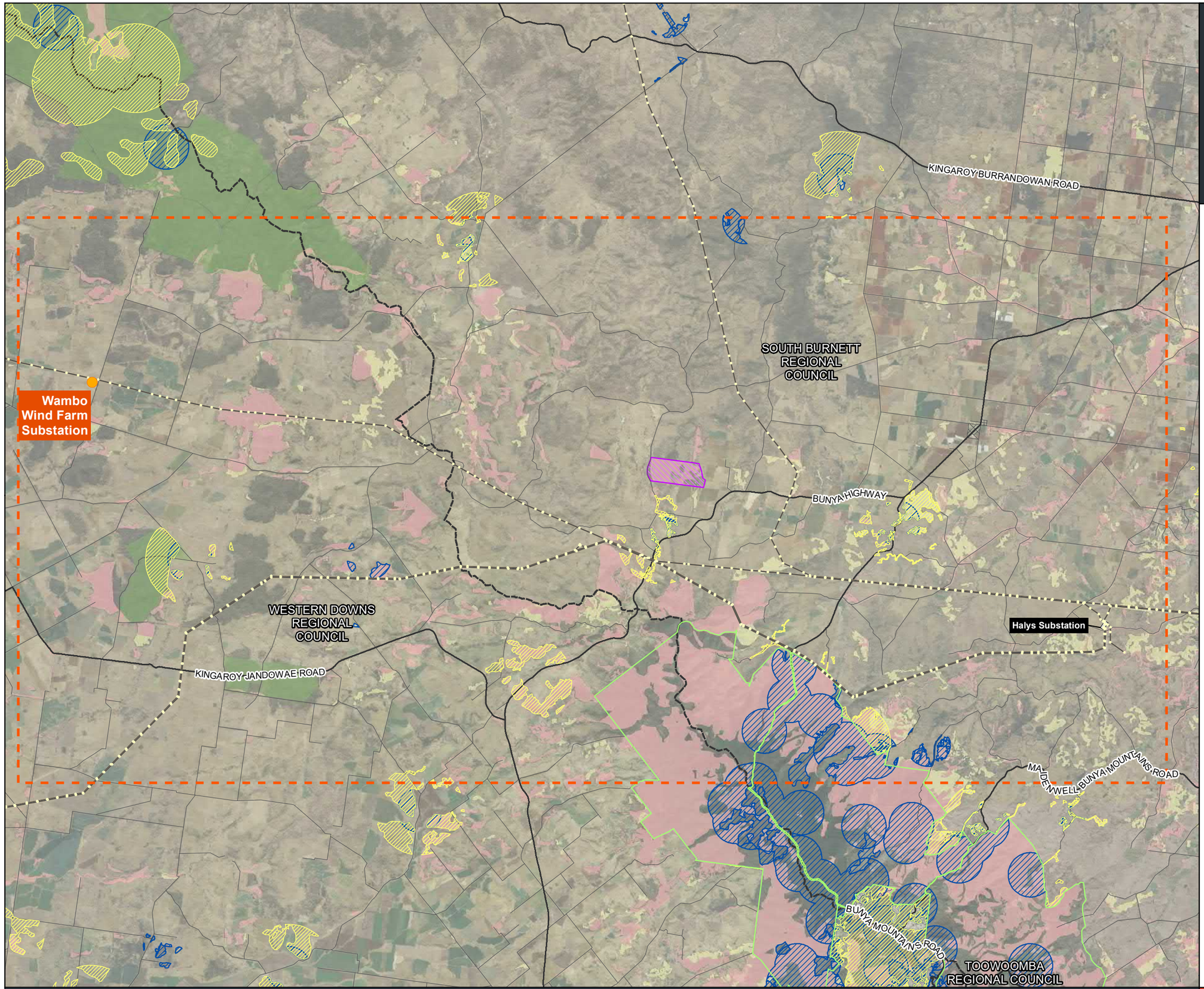
The study area contains a protected area (nature refuge) and national park which is a protected area (estate). National parks and conservation parks are listed as protected areas under the NC Act which are classified as MSES. The protected areas identified within the investigation is located at:

- Boyneside Nature Refuge, approximately 20 km east of the Wambo Wind Farm site
- Bunya Mountain National Park, approximately 20 km south-east of the Wambo Wind Farm site.

The study area also contains several State forests including:

- Diamondy State Forest, adjoining the northern boundary of the Wambo Wind Farm site
- Jandowae State Forest, approximately 5 km south of the Wambo Wind Farm site
- Mahen State Forest, approximately 10 km south of the Wambo Wind Farm site.

Protected areas are mapped on Figure 3-3. These areas are protected for their significant ecological value and should therefore be avoided as far as possible.

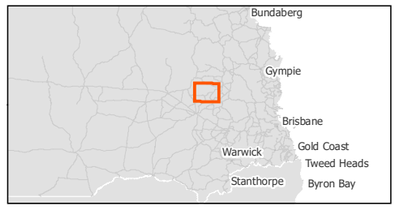


Wambo Wind Farm

Figure 3-3
Natural Environment

Legend

- Wambo Wind Farm Substation
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- State Controlled Roads
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- MSES Protected Area - Estates
- MSES Protected Area - Nature Refuges
- Protected Plants Flora Survey Trigger Map
- Vegetation Management - Essential Habitat
- MSES Regulated Vegetation - Category B - Endangered, of Concern
- MSES Regulated Vegetation - Category C - Endangered, of Concern
- State Forest
- Substations (Powerlink)



Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:165,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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3.3 PHYSICAL ENVIRONMENT

3.3.1 TOPOGRAPHY

The topography of the study area varies from undulating hills to mountainous ranges, with the average topography around 500 to 600 m Australian Height Datum (AHD). The most dominant topographic feature is the Bunya Mountain range, which forms part of the Great Dividing Range stretching from the north-west to the south-east of the study area. The Bunya Mountains is located in the south of the study area and has a peak elevation of 1,154 m AHD. Other key topographic features include Mount Cloudy with a peak elevation of 819 m AHD which is located around 1.7 km east of the existing Coopers Gap Substation and Halys Round Mountain which is located around 1.7 km west of Halys Substation and has a peak elevation of 655 m AHD.

Topography is an important consideration for corridor assessment due to associated constructability issues. Steep slopes should be avoided where possible, as this limits vehicle access and increases the extent of earthworks at each structure site.

3.3.2 GEOLOGY AND SOILS

Geological conditions vary throughout the study area and include a mix of basalt, granitoid, alluvium and arenite-mudrock. The main geological units identified within the study area are presented in Table 3-1 and mapped in Figure 3-4.

Table 3-1 Geological units

GEOLOGICAL UNIT NAME	AGE	DOMINANT ROCK TYPE	LOCALITY
Main Range Volcanics	Ecocene - Miocene	Basalt	Covers majority of study area
Marburg Subgroup	Early Jurassic – Middle Jurassic	Arenite-mudrock	Associated with densely vegetated areas on the western side of study area
TQr\w-SEQ>Main Range Volcanics	Later tertiary - Quaternary	Miscellaneous unconsolidated sediments	Central region of study area
Qa-QLD	Quaternary	Alluvium	Around waterway and waterbodies

Mapped soil units found within the study area are described by the Australian Soil and Resource Information Service (ASRIS). The main soil types are described in Table 3.2 with locations shown in Figure 3-4.

Table 3-2 Soil types

MAP CODE	DESCRIPTION	CHIEF SOILS	AUSTRALIA SOILS CLASSIFICATION	LOCALITY
Kb6	Rolling basaltic uplands	Black self-mulching cracking clays	Vertosol	Majority of study area, particularly across the centre
X12	Hilly to mountainous	Sandy pedal mottled-yellow duplex soils	Sodosol	Western part of study area near Wambo Wind Farm
Oa6	Low hilly to gently rolling terrain	Hard pedal red duplex soils	Chromosol	Western part of study area near Wambo Wind Farm

MAP CODE	DESCRIPTION	CHIEF SOILS	AUSTRALIA SOILS CLASSIFICATION	LOCALITY
Gd4	Steep hilly to submountainous basaltic uplands crests and steep slopes of flat topped and also rounded hills	Shallow friable loams with rough-ped fabric	Rudosol	Bunya Mountain National Park area
Tb67	Hilly granitic country of moderate relief with broad convex slopes	Hard pedal mottled-yellow duplex soils	Sodosol/Rudosol	Central northern section of study area
Mp4	Plateaux and plateau remnants of laterized basalt with undulating to rolling relief	Red smooth-ped earths	Chromosol	Eastern part of study area around Kumbia

It is noted that vertosol and sodosol soils are considered to be more susceptible to erosion due to the dispersive nature of these soils. Rocky soils are associated with the steeper mountain terrain areas.

Acid sulfate soils (ASS) are commonly found in low-lying coastal areas where the natural ground level is less than 5 m AHD. There is a low to very low probability of encountering acid sulfate soils within most of the study area as the generally topography of the area is around 500-600 m AHD.

3.3.3 HYDROLOGY

The study area falls within the Burnett Basin and Balonne-Condamine Basin. The major waterways within the study area comprise the Stuart River, Boyne River, Flagstone Creek, Mannuem Creek and Ironpot Creek as well as several other smaller creeks and waterways. Waterways are mapped in Figure 3-4.

Waterway crossings could involve specific design requirements to address potential flooding and erosion risks or to mitigate damage to riparian vegetation. They may require installation of additional or taller tower structures, leading to increased costs. The proposed transmission line is likely to span across the Stuart River, Boyne River, Ironpot Creek and Flagstone Creek.

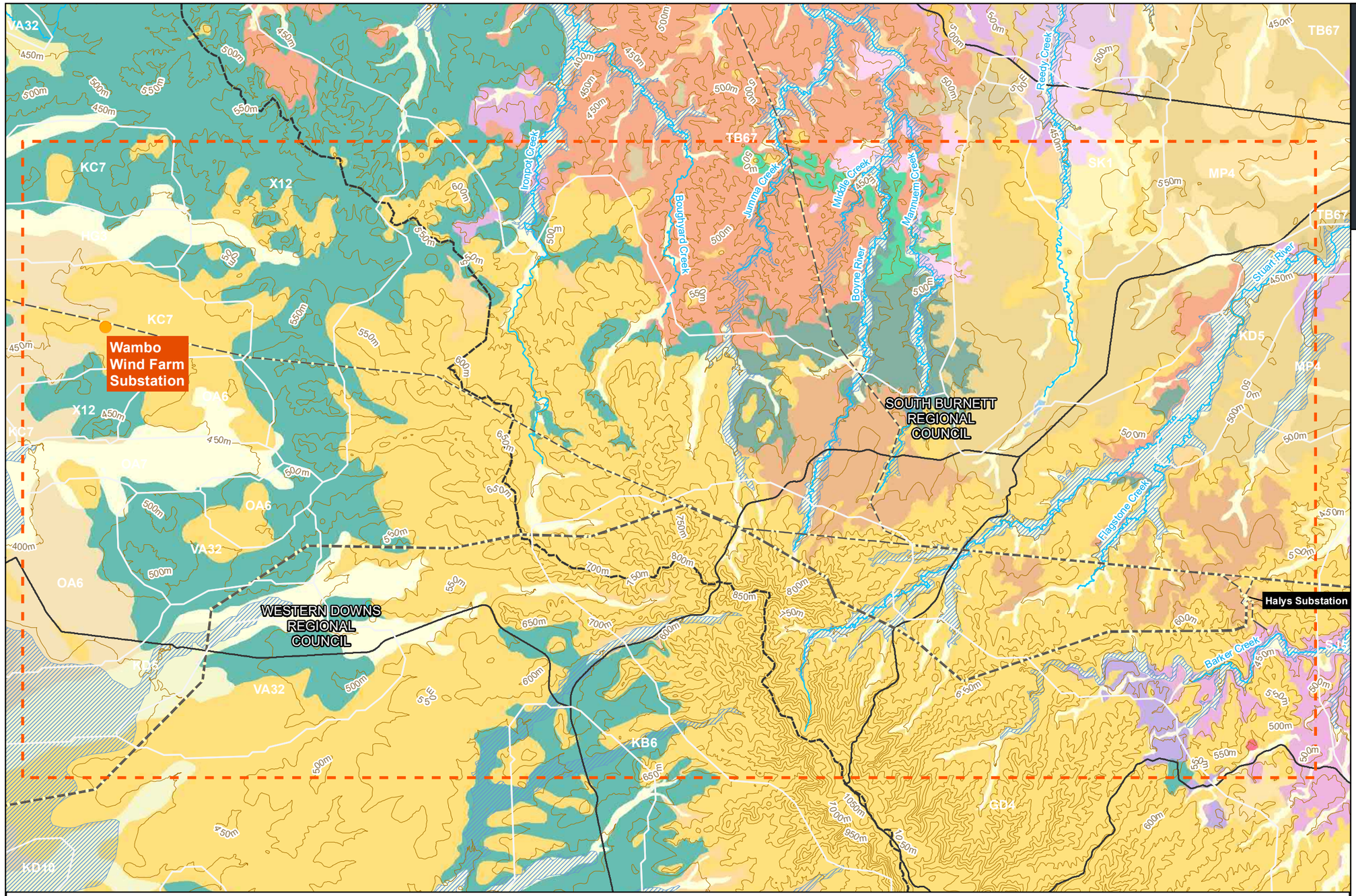
If waterways cannot be avoided, the transmission line should traverse areas of the floodplain which would result in the least possible impact depending on span distance, access requirements, vegetation clearing, and water flow rates. The proposed transmission line is not otherwise expected to impact upon hydrology or water quality of existing watercourses as the infrastructure can be designed to span over constraints without the need to clear or disturb beds or banks. During the detailed design phase of works, the transmission line should be sited through careful consideration of topography by locating the towers on high points to maximise span distances and elevate the lines over streamside vegetation, therefore minimising any necessary clearing of riparian vegetation.

3.3.4 CONTAMINATED LAND

Contaminated land searches were not undertaken as part of this assessment. However, the land uses that generally registered on the environmental management and contaminated land database include, but not limited to, railways, landfill sites, service stations, mine processing and waste areas and manufacturing activities.

3.3.5 UNEXPLODED ORDNANCE

Defence UXO Mapping has identified no lands subject to potential unexploded ordnance within the study area.



Detailed Surface Geology

- Boondooma Igneous Complex
- Boondooma Igneous Complex-PRgb/g
- Boondooma Igneous Complex-PRgbo/g
- Boondooma Igneous Complex-PRgbo/k
- Boondooma Igneous Complex-Rgbo
- Boondooma Igneous Complex-Rgbo(w)
- Boondooma Igneous Complex-Rgbo/m
- Boondooma Igneous Complex-Rgbo/p
- Boondooma Igneous Complex-Rgbo\p
- Chahpingah Meta-igneous Complex
- Chahpingah Meta-igneous Complex?
- Evergreen Formation
- Main Range Volcanics
- Main Range Volcanics/u(w)
- Main Range Volcanics?
- Marburg Subgroup
- Marburg Subgroup>Tib-QLD
- Precipice Sandstone
- Precipice Sandstone?
- Qa-QLD
- Qa-QLD>Main Range Volcanics
- Qa\b-QLD
- Qa\b-QLD>Main Range Volcanics
- Qpa-QLD
- Qrs-SEQ>Main Range Volcanics
- Qs-SQ
- Qs-SQ>Main Range Volcanics
- Qt-SEQ
- Ri/r-SEQ
- Sugarloaf Metamorphics?
- TQf-SEQ
- TQf-SEQ>Main Range Volcanics
- TQr-QLD
- TQr-QLD>Boondooma Igneous Complex-Rgbo
- TQr-QLD>Boondooma Igneous Complex-Rgbo/p
- TQr-QLD>Main Range Volcanics
- TQr\b-SEQ
- TQr\b-SEQ>Main Range Volcanics
- TQr\r-SEQ
- TQr\w-SEQ
- TQr\w-SEQ>Main Range Volcanics
- TQs-QLD
- TQs-QLD>Main Range Volcanics
- Td-QLD
- Td-QLD>Boondooma Igneous Complex-Rgbo
- Td-QLD>Chahpingah Meta-igneous Complex
- Td\q-QLD
- Td\r-QLD
- Td\r-QLD>Boondooma Igneous Complex-Rgbo
- Td\r-QLD>Ts-SEQ
- Ts(w)-QLD
- Ts-SEQ
- Ts?-SEQ
- Ts\s-SEQ
- Water body (unspecified)

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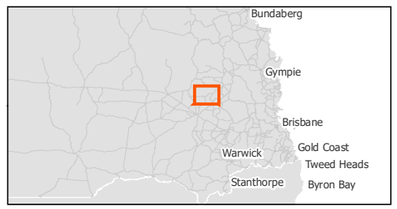
Wambo Wind Farm

Figure 3-4
Physical Environment

Legend

- Wambo Wind Farm Substation
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Watercourses
- State Controlled Roads
- Elevation Contours 50m
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- Digital Atlas of Australian Soils
- Floodplain Assessment Overlay
- Substations (Powerlink)



Coordinate system: GDA 1994 MGA Zone 56

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1:165,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

4 CORRIDOR ASSESSMENT

4.1 KEY CONSTRAINTS AND OPPORTUNITIES

Physical, environmental and social constraints were taken into account in the corridor assessment. Based on the desktop analysis of the study area, the following key constraints and opportunities were considered:

- Powerlink's existing Tarong-Chinchilla 132 kV transmission line, Western Downs-Halys 275 kV transmission line and Calvale-Halys 275 kV transmission line, including opportunity to collocate with this existing infrastructure
- the location of residential houses and structures, particularly in the eastern extent of the study area
- existing and proposed wind farm sites and locations (existing and proposed) of wind turbines
- steep topography, particularly around the Bunya Mountain range and its surrounds
- watercourses and floodplains, in particular Stuart River and Boyne River
- presence of remnant vegetation, TECs, protected areas and State forests, particularly around the Bunya Mountains and scattered throughout the study area
- agricultural land scattered throughout the study area, particularly areas mapped as strategic cropping land
- the existing road network, particularly the Bunya Highway and Bunya Mountains Road
- size and location of property boundaries, smaller lots are located in the east, larger lots are located in the west of the study area
- the type of soils, particularly rocky soils associated with the steeper mountain terrain areas and dispersive soils around the watercourses and much of the study area
- siting considerations outlined in this document, and in particular as laid out in section 2.2.3.

In addition to these constraints, matters relating to economic costs associated with construction of and access to the proposed transmission line were considered.

4.2 OBJECTIVES

The transmission corridor should minimise the effects on factors of the social and natural environment and be best suited to the conditions of the physical environment, while avoiding unreasonable and indirect routes, extreme costs and non-standard design requirements to the maximum extent possible. To achieve this, the objectives of the corridor assessment are identified as follows:

- utilise existing electricity corridors, as far as practicable
- limit the number of land titles affected by the proposed infrastructure
- minimise impact to residential houses by maintaining at least a 500 m buffer
- align with property boundaries where possible
- minimise impact to agricultural land and position the transmission structures and wires so as to cause minimal interference to farming operations
- minimise risks associated with wind turbines by maintaining a buffer
- utilise existing road network where feasible

- cross major roads at perpendicular angles
- minimise impact on sensitive ecological areas (remnant vegetation, TECs, protected areas and State forests) and Aboriginal and European cultural and heritage sites and areas
- minimise interaction with difficult topographical conditions
- minimise the number of watercourse and floodplain crossings, and intersect at perpendicular angles where practicable
- minimise the corridor length and the number of major bends required
- minimise areas of rocky soils which may pose constructability risks and dispersive soils which may be prone to erosion.

4.3 OVERVIEW OF CORRIDOR

In line with the objectives outlined in Section 4.2, the corridor subject to this assessment follows the existing Tarong-Chinchilla 132 kV transmission line for almost its entire extent between the proposed Wambo Wind Farm Substation site and Halys Substation (refer to Figure 4-1). As this corridor generally follows the existing corridor, it introduces few, if any, additional environmental impacts. As such, this assessment has focused on identifying constraints to the use of this corridor for the transmission line connection of the Wambo Wind Farm to the Powerlink network at Halys.

An assessment of the Tarong-Chinchilla corridor in terms of social, natural and physical constraints is provided in the following section 4.4.

Wambo Wind Farm

Figure 4-1
Corridor

KINGAROY BURRANDOWAN ROAD

SOUTH BURNETT REGIONAL COUNCIL

Wambo Wind Farm Substation

BUNYA HIGHWAY

Halys Substation

WESTERN DOWNS REGIONAL COUNCIL

KINGAROY JANDOWAE ROAD

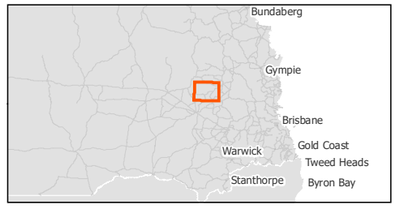
MAIDENWELL BUNYA MOUNTAINS ROAD

BUNYA MOUNTAINS ROAD

TOOWOOMBA REGIONAL COUNCIL

Legend

- Wambo Wind Farm Substation
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- State Controlled Roads
- Local Government Areas
- Wambo Wind Farm Corridor Study Area
- Wambo Wind Farm Corridor
- Substations (Powerlink)



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Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:165,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

4.4 ASSESSMENT

This section provides a description of the existing social, natural and physical constraints present in the corridor and the potential for the development of a 275 kV transmission line within this corridor to impact upon those constraints.

4.4.1 TARONG-CHINCHILLA CORRIDOR

The Tarong-Chinchilla corridor originates at the proposed Wambo Wind Farm Substation site and tracks east along the route of the existing Tarong-Chinchilla 132 kV transmission line for almost the entire length of the corridor diverting south-east off the existing route through greenfield land 2 km before reaching the Halys Substation. The 1 kilometre (km) wide corridor has been positioned 500 m either side of the existing Tarong-Chinchilla 132 kV transmission line. The corridor is much wider than the final easement will be. This is to allow flexibility in the final location of the transmission line based on ongoing engagement and further detailed studies.

The intention of this corridor is to utilise the existing 50 m wide easement and widen it (refer to section 5.1 for easement requirements) to accommodate a higher voltage 275 kV transmission line. Utilising the existing easement reduces the land requirements and potential social impact of the new line.

In addition to utilising existing Powerlink easement, this corridor offers an almost direct route from the Wambo Wind Farm Substation site to the Halys Substation. The corridor is approximately 50 km in length.

The Tarong-Chinchilla corridor is shown in Figure 4-2 along with detail of key constraints within and surrounding the corridor. A breakdown of the constraints captured is provided in Table 4-1.

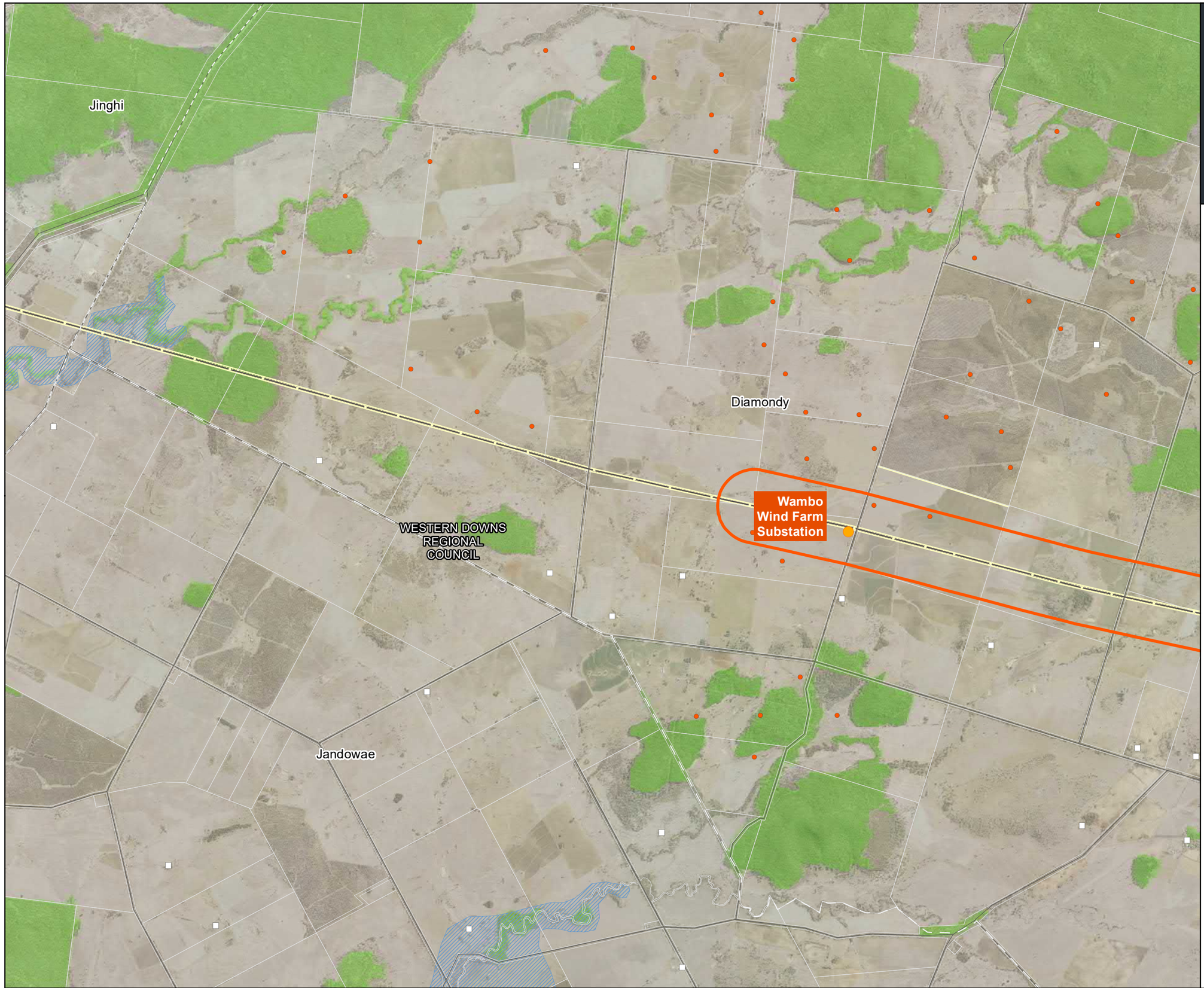
Table 4-1 Tarong-Chinchilla corridor constraints

TARONG-CHINCHILLA CORRIDOR	
Constraint	Assessment
Social Environment	
Existing Tenure	The corridor intersects freehold land along its entire length, along with small sections of road reserve. The corridor traverses 72 freehold lots in total (excluding Powerlink owned land). Multiple lots are likely owned by single operating entities and therefore the number of landholders or operating entities affected by the corridor would be less than the total number of lots traversed. The majority of the corridor follows Powerlink's existing Tarong-Chinchilla line, with the exception of a section approximately 2 km in length, where the corridor diverts off from the Tarong-Chinchilla line to connect to the Halys Substation.
Land Use	The corridor is located within rural land primarily used for grazing purposes. The corridor intersects areas of strategic cropping land, which is dispersed in clusters along the corridor. Other than grazing and agricultural land, the corridor also intersects the existing Coopers Gap Wind Farm in Boyneside. Given the corridor is intended to utilise the existing cleared easement for the Tarong-Chinchilla line, the impact to existing land uses and cropping land will be an edge effect only where the easement is widened.
Resource Interests	No resource interests are intersected by this corridor.

TARONG-CHINCHILLA CORRIDOR	
Constraint	Assessment
Housing	Houses in proximity to the corridor are mainly located off Niagara Road, Bunya Highway and Alice Creek Road. The closest dwellings are located within 200 m of the corridor around the locality of Alice Creek. This is less than the recommended 500 m buffer distance between residential dwellings and transmission line infrastructure. However, where possible, the new transmission line is likely to be located where the existing Tarong-Chinchilla is decommissioned and removed and would see negligible change in social impacts associated with housing, with only a low to moderate increase in scale and intensity of development from the higher voltage line.
Utilities	The corridor follows the existing Tarong-Chinchilla line for almost the entire corridor length. This report assumes the existing transmission line is to be decommissioned and removed along the corridor. The new line is likely to be placed close to the area vacated by the removal of the existing transmission line. The Tarong-Chinchilla line adjoins the Western Downs-Halys line around Boyneside for approximately 2 km and is also adjoined by the Calvale-Halys line from Alice Creek for approximately 10 km, before the corridor diverts south towards the Halys Substation. Ergon Energy high and low voltage lines also cross the corridor at several locations, however, this infrastructure is unavoidable and is able to be spanned by the new line. The corridor intersects the Coopers Gap Wind Farm in Boyneside. There are approximately 27 wind turbines (Coopers Gap and Wambo) within the corridor. The separation distances from wind turbines is detailed in section 2.3.2.
Traffic and Transport	The corridor crosses the Bunya Highway and Bunya Mountains Road, which are State-controlled roads and also part of the Great Bunya Scenic Drive. Local roads crossed by the corridor include Diamondy Road, Wellcamp Lane, Niagara Road, Alice Creek Road, Glencliffe Road, Ellesmere Road, and Oaky Creek Back Road. The corridor intersects all roads at perpendicular angles, meaning visual impacts from these sections of road would be temporary and therefore negligible. Due to collocation with the existing transmission lines, existing road crossings are utilised and there is also potential to utilise existing access tracks, leading to potential savings in cost and reduced land use impacts.
Visual Amenity	The corridor will be temporarily visible to traffic for a short amount of time where it crosses public roads. The corridor is located in relatively remote rural areas and can avoid most residential properties by at least 500 m, with the exception of three houses near Alice Creek. Visual impacts of transmission infrastructure would be greatest in the flat landscapes around Boyneside where the corridor crosses the Bunya Highway, however, there are a limited number of houses identified in this area. This region is also subject to the existing Coopers Gap Wind Farm, proposed Iron Leaf Wind Farm, and potentially the Kingaroy Wind Farm developments which may eventually be highly developed with wind turbines. As the corridor is intended to be mostly along an existing transmission line corridor, the additional visual amenity impacts are minimised.

TARONG-CHINCHILLA CORRIDOR	
Constraint	Assessment
Heritage Places	The corridor may traverse areas where cultural heritage values are known to occur, particularly around the land surrounding Bunya Mountain National Park, as the corridor is positioned along the foothills of this National Park. Cultural heritage values may also be associated with the Stuart River, Boyne River, Flagstone Creek, and Ironpot Creek. The presence of unknown cultural heritage places and artefacts will need to be investigated in future studies. If cultural heritage sites are identified within the corridor, they will need to be managed through discussions and, if necessary, agreements with the relevant Aboriginal parties. No European cultural heritage places are identified that impact the corridor.
Natural Environment	
Flora	Remnant vegetation is scattered in small clusters along the corridor and is identified as of concern regional ecosystem. None of the vegetation within the corridor is mapped as essential habitat. The corridor intersects a high risk area for protected plants which is associated with a minor waterway, Spring Creek, where the corridor crosses the Bunya Highway. As the corridor is intended to utilise an existing transmission line corridor, the impact to vegetation may be some additional clearing in a few places, with edge effect impacts remaining largely unchanged. To minimise the environmental impact, there may be opportunity for the transmission line to span over vegetation where it occurs in small clusters along the corridor.
Fauna Habitat	There are a number of threatened wildlife observation records relating to MNES and MSES identified within the corridor. Both least concern and threatened fauna species could be potentially impacted through the loss of habitat resulting from vegetation clearing needed for the 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. Presence of protected fauna species within clearing sites will need to be investigated in future ecological investigations.
Protected Areas	The corridor does not intersect any protected areas.
Physical Environment	
Topography	The corridor commences from the Wambo Wind Farm Substation site, which lies at approximately 480 m AHD, and passes over the Great Dividing Range and foothills of the Bunya Mountains National Park, which has a peak elevation of approximately 700 m AHD. The corridor continues along undulating topography before reaching the Halys Substation at 550 m AHD.

TARONG-CHINCHILLA CORRIDOR	
Constraint	Assessment
Geology and Soils	Geological conditions include primarily basalt with some areas of arenite-mudrock. Other areas are of poorly consolidated sediments including sand, silt, gravel and clay, which are mainly associated with land around watercourses. The main soil units within the corridor include black self-mulching cracking clays with areas of hard acidic yellow mottled soils and a small area of red smooth-ped earths. The corridor is subject to several soil types mainly vertosols and sodosol, which are considered more susceptible to erosion due to their dispersive nature. Although transmission towers can be constructed on any ground, 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.
Hydrology	The main waterway crossings include the Stuart River, Boyne River, Flagstone Creek, and Ironpot Creek. The corridor also crosses several other creeks and tributaries. The transmission line may be sited to span across the width of these waterways, however most are subject to floodplains. Therefore, waterway crossings may require a tailored design response to ensure minimal damage to riparian vegetation and mitigate risks of erosion to tower structures.



Wambo Wind Farm

Figure 4-2
Corridor Key Constraints
Page 1 of 4

Legend

- Wambo Wind Fam Substation
- Wambo Turbine Locations
- Homesteads
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Roads and Tracks
- Suburb Boundary
- Local Government Areas
- Wambo Wind Farm Corridor
- Cadastral Boundaries
- Easement
- Floodplain Assessment Overlay
- Remnant Vegetation Cover

0 1 2 km

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:50,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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Wambo Wind Farm

Figure 4-2
Corridor Key Constraints
Page 2 of 4

Legend

- Wambo Wind Fam Substation
- Wambo Turbine Locations
- Coopers Gap Turbine Locations
- Homesteads
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Watercourses
- Roads and Tracks
- Suburb Boundary
- Local Government Areas
- Wambo Wind Farm Corridor
- Cadastral Boundaries
- Easement
- Floodplain Assessment Overlay
- Remnant Vegetation Cover

0 1 2 km

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:50,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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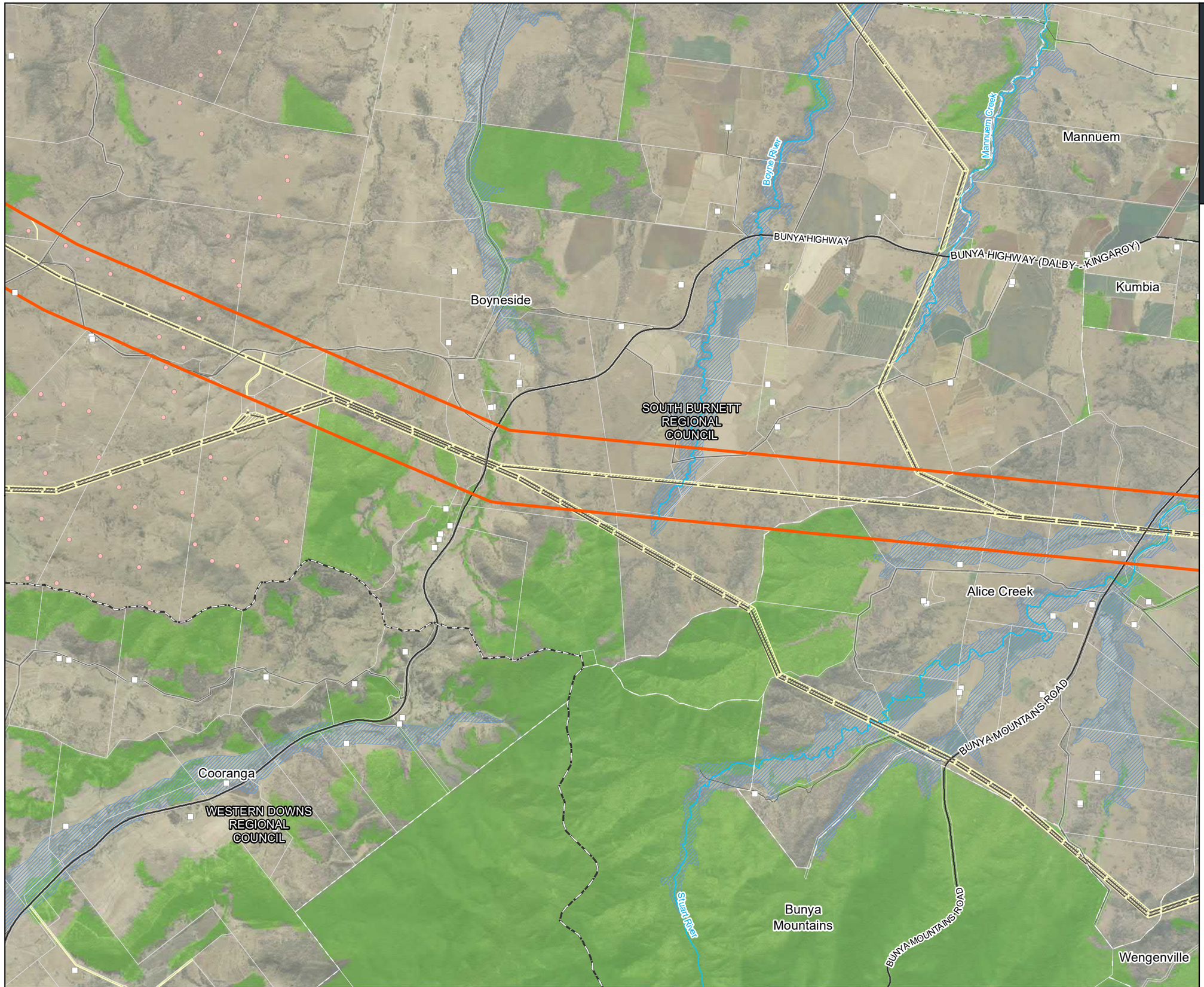


Wambo Wind Farm

Figure 4-2
Corridor Key Constraints
Page 3 of 4

Legend

- Wambo Wind Fam Substation
- Coopers Gap Turbine Locations
- Homesteads
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Watercourses
- Roads and Tracks
- State Controlled Roads
- Suburb Boundary
- Local Government Areas
- Wambo Wind Farm Corridor
- Cadastral Boundaries
- Easement
- Floodplain Assessment Overlay
- Remnant Vegetation Cover

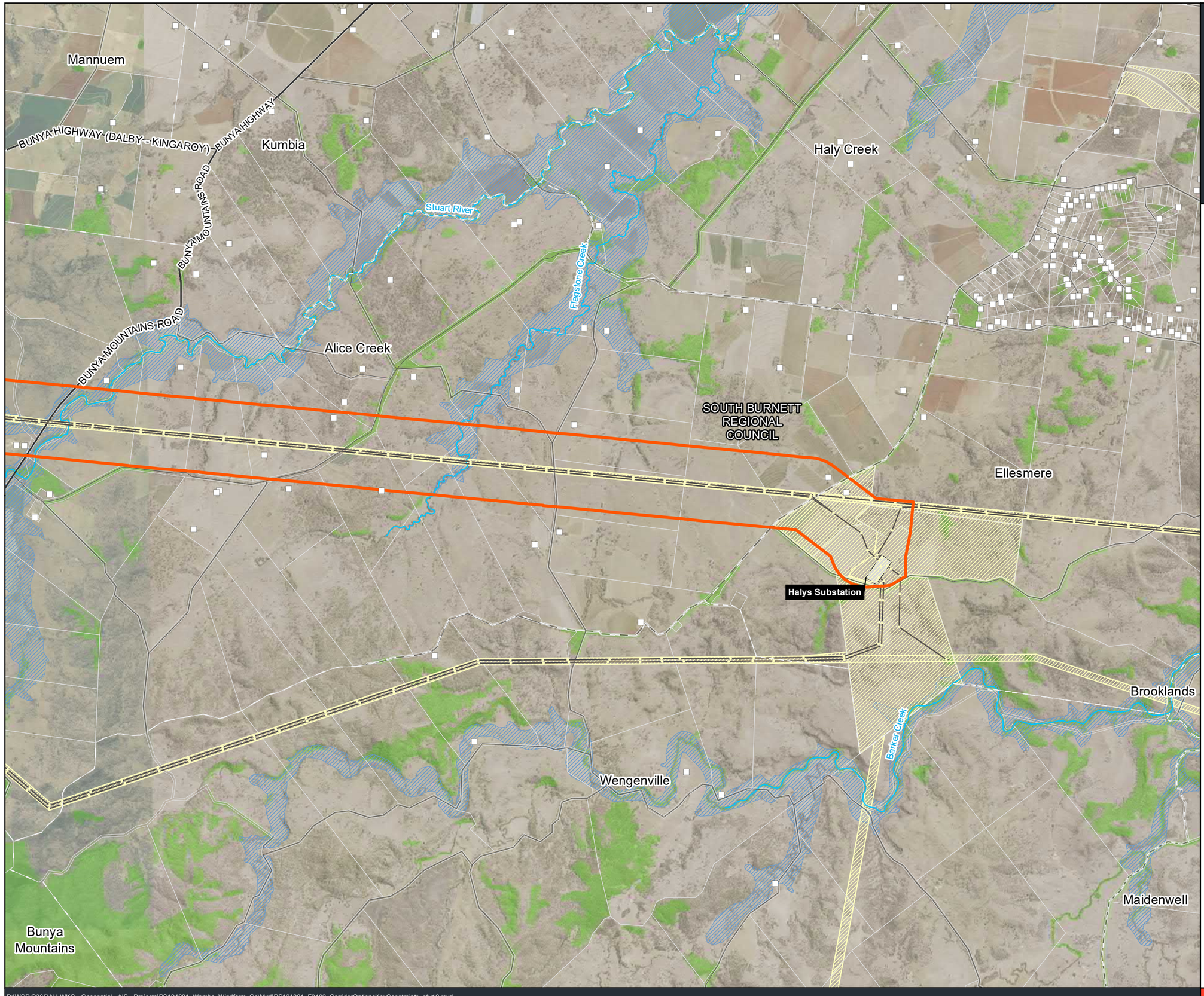
0 1 2 km

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:50,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia



Wambo Wind Farm

Figure 4-2
Corridor Key Constraints
Page 4 of 4

Legend

- Wambo Wind Fam Substation
- Homesteads
- Powerlink Transmission Structures
- Powerlink Transmission Feeders
- Watercourses
- Roads and Tracks
- State Controlled Roads
- Suburb Boundary
- Local Government Areas
- Wambo Wind Farm Corridor
- Cadastral Boundaries
- Easement
- Floodplain Assessment Overlay
- Remnant Vegetation Cover
- Substations (Powerlink)

0 1 2 km

Coordinate system: GDA 1994 MGA Zone 56

Scale ratio correct when printed at A3

1:50,000 Date: 30-Mar-22

Data sources: - DNRME, TMR, Translink, Geoscience Australia

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4.5 ASSESSMENT SUMMARY

The corridor assessment against each of the relevant criteria is summarised in Table 4-2. Land constraints that are not applicable to the corridor include resource tenure, railway corridors, protected areas (nature refuge or estates), essential habitat and heritage places.

Table 4-2 Summary of corridor assessment

Constraint / Opportunity	Corridor
Length not co-located with existing transmission corridor (km)	2 km
Strategic Cropping Area intersected (ha)*	1,989
Houses within 500 m (no.)	3
Houses within 1 km (no.)	16
Land parcels impacted (no.) (excluding Powerlink owned land)	72 freehold
Local road crossings (no.)	11
State road crossings (no.)	2
Category B (remnant) vegetation intersected (ha)*	452.3
Category C (high value regrowth) vegetation intersected (ha)*	144
Protected plants trigger area intersected (ha)	39
Waterway crossings (no.)	4
Land affected by floodplain assessment overlay (Q100) intersected (ha)*	179
Wind turbines (Coopers Gap and Wambo) within 1 km corridor (no.)	approximately 27
Length of corridor (km)	approximately 50 km
Potential Bend Points (no.)	6
Access tracks	Existing access tracks can be utilised along majority of corridor
Crossovers of transmission line infrastructure	May require two crossovers of the Calvale-Halys 275 kV transmission line – one at Halys Substation and one where Calvale to Halys diverges from the Tarong-Chinchilla line.

*The impact on this constraint was calculated (in hectares) using the total area of the 1 km wide corridor and therefore does not estimate the lesser level of impact that would result from the construction of the new transmission line within the corridor as the alignment has not been determined.

5 RECOMMENDATION

The outcomes of the corridor assessment against the criteria listed in Table 4-2, are:

- As the corridor utilises the Tarong-Chinchilla line easement for almost its entire length, it minimises potential land use impacts and avoids impacting additional landholders to those already affected by the existing transmission line.
- The visual amenity impacts are considered to be low as there are a limited number of houses identified in the areas surrounding the corridor. As the new transmission line may be located where the existing Tarong-Chinchilla is decommissioned and removed, affected landholders would essentially see a 'like for like' line with a low-moderate increase in scale and intensity of development from the higher voltage line.
- Although the corridor intersects with remnant vegetation, the impact to vegetation will only be an edge effect along the existing Tarong-Chinchilla line easement.
- The Tarong-Chinchilla corridor offers a relatively direct route between the Wambo Wind Farm Substation site and the Halys Substation and has a minimal amount of bendpoints. This is likely to deliver efficient line construction.
- Powerlink will be able to utilise existing access tracks along the majority of the corridor.

The assessment outcomes indicate that the existing corridor is generally suitable for the new transmission line.

5.1 EASEMENT REQUIREMENTS

Easement requirements will be addressed in consultation with stakeholders and landholders as part of determining a final alignment in a later project phase.

Development of the current corridor for the new line would require new wider easements to replace the existing Tarong-Chinchilla line easements, in order to accommodate the new 275 kV transmission line. This would ensure the new transmission line can be positioned predominantly within the existing Tarong-Chinchilla power line corridor, after the existing line is decommissioned and removed, in order to avoid additional conflicts with nearby wind turbines.

Where the existing easements are co-located with the Calvale-Halys line, the existing easements may need to be replaced with new easements which are wider along either the northern or the southern side of the existing corridor. Where the existing easements are co-located with the Western Downs-Halys line, the existing easements may need to be replaced with new, wider easements along the northern side of the existing corridor.

Widening of the existing corridor may require new easements on adjacent land parcels. These adjacent land parcels are nearly all owned by currently affected landowners. Therefore consultation will predominantly be focused on these landholders.

6 LEGISLATIVE AND APPROVAL REQUIREMENTS

A range of planning and environmental approvals may be required at the Commonwealth, State and local level for the development of the proposed transmission line. Applicable electrical, planning and environmental legislation and associated approvals or permits likely to be required are discussed in this section.

6.1 COMMONWEALTH

6.1.1 ENVIRONMENT PROTECTION AND BIODIVERSITY CONSERVATION ACT 1999

The EPBC Act is the Commonwealth's key legislative framework for protecting and managing important environmental values including flora, fauna, ecological communities and heritage places. These values are defined as MNES under the Act. The Act is administered by the Commonwealth Department of Agriculture, Water and the Environment (DAWE) and establishes a process for environmental assessment and approval of proposed actions that have, will have or are likely to have a significant impact on MNES. If a project may cause a significant impact on an MNES, the project must be referred to the Commonwealth Minister for the Environment for assessment of the potential impacts. The Minister will decide whether the project is:

- not a controlled action (the project does not need to be assessed any further)
- not a controlled action 'particular manner' (the project does not need to be assessed any further, providing that the action is undertaken in accordance with conditions that are supplied with the decision)
- controlled action (the project will need to be assessed against the EPBC Act, through one of several mechanisms available depending on the type of project).

Powerlink will need to undertake ecological field surveys and subsequent significant impact assessments to understand the presence of and potential impacts to MNES threatened species and habitats. The findings of the ecological surveys and significant impacts assessments to MNES will determine the requirement for referral to the Commonwealth Minister for the Environment.

6.1.2 NATIVE TITLE ACT 1993

The *Native Title Act 1993* provides for the recognition and protection of traditional rights and interests in land and waters held by the Aboriginal and Torres Strait Islander people under their traditional laws and customs. Native title rights are determined under the common law of Australia. Any acts or dealings in relation to land and waters subject to native title are only valid if they comply with the provisions of the *Native Title Act 1993*.

The eastern section of the study area is covered by a Native Title claim by the Wakka Wakka People #3 (QC2016/003) which has not been determined. Other small Native Title claims are scattered throughout the study area by the Auburn Hawkwood People (QUD2019/006). A determination on this claim was made in November 2019 where it was decided that Native Title exists in parts of the determination area. These claims are not relevant within land over which native title has been expressly extinguished including freehold tenure, land dedicated as road reserve on or before 23 December 1996 and specific State lease land.

Within land over which native title rights exist, Powerlink must comply with the requirements of the *Native Title Act 1993* to secure an easement for the transmission line. Construction of Powerlink's electricity transmission lines is covered by processes under section 24KA or possibly by an ILUA. Section 24KA validates future acts that consist of the

construction and operation of public infrastructure and suspend the native rights over the land for the duration of the easement. Therefore, the legislative requirements under the *Native Title Act 1993* are a low risk to the project.

6.2 STATE

6.2.1 ELECTRICITY ACT 1994

The *Electricity Act 1994* is the principal legislation governing Queensland's electricity industry. It provides a framework for all electricity industry participants to follow to ensure the efficient, economically and environmentally sound supply and use of electricity. Powerlink must comply with the conditions set for transmission authorities under section 31 of the *Electricity Act 1994*. Specifically, it states that the transmission entity must properly account for the environmental effects of its activities under the transmission authority.

Requirements for construction and operation of the electricity network are set out under the *Electricity Act 1994* and subordinate legislation including the *Electricity Regulation 2006*. A number of activities related to the construction and operation of electricity infrastructure are exempt from approval. In particular, the clearing of native vegetation on freehold land is exempt development if the clearing is for operating works for a transmission entity on land subject of a designation for operating works under the *Planning Act 2016* (see section 6.2.3 for details on the process for Infrastructure Designations).

The legislative requirements of the *Electricity Act 1994* are standard to Powerlink projects and therefore pose a low risk to the construction of the transmission line.

6.2.2 ELECTRICITY SAFETY ACT 2002

The *Electricity Safety Act 2002* seeks to prevent the potential death, injury or destruction caused by electricity. The Act regulates electricity works in order to prevent persons from being killed or injured by electricity, and to prevent property from being destroyed by electricity. The transmission line must be designed in compliance with the requirements outlined under the *Electricity Safety Act 2002*. These requirements are standard to Powerlink processes and therefore have a low risk over the project.

6.2.3 PLANNING ACT 2016

The *Planning Act 2016* enables the Planning Minister to designate premises for the development of infrastructure prescribed within the *Planning Regulation 2017*. 'Electricity operating works' are considered 'infrastructure' which is prescribed development under the *Planning Regulation 2017*. The Planning Minister is the only State minister with authority to designate land for infrastructure. The 'Minister's Guidelines and Rules' outlines the process for making ministerial designations. The assessment process involves submission of an environmental assessment report, a minimum 15-day consultation period and a State interest review.

A designation includes requirements about works for the infrastructure (such as the height, shape, bulk, landscaping, or location of works), the use of premises including access and ancillary uses, or lessening the impact of the works or use (such as environmental management procedures). Under section 44 of the *Planning Act 2016*, infrastructure that is designated is considered accepted development and will not require further approvals under the *Planning Act 2016* (with the exception of building work under the *Building Act 1975*). However, this does not exempt any approvals required under other legislation.

A new Infrastructure Designation proposal would be required for construction of the transmission line.

6.2.4 LAND ACT 1994

The *Land Act 1994* governs the allocation and management of land for development including non-freehold, freehold, leasehold and other tenures. The transmission corridor options traverse a mix of freehold tenure and local and State road reserves. The *Electricity Act 1994* provides some exemptions to the *Land Act 1994* for works by transmission entities

such as Powerlink. Transmission entities are entitled to take necessary action in publicly controlled places (such as unallocated State land) to provide or supply electricity under section 101 of the *Electricity Act 1994*, as well as undertake works on road reserves through written agreement from the road authority under section 102.

6.2.5 ACQUISITION OF LAND ACT 1967

The *Acquisition of Land Act 1967* sets out the processes for compulsory and voluntary acquisition of land for a public purpose by a constructing authority. Powerlink may acquire freehold land or register an easement over land for the transmission line. Land may be acquired either by voluntary agreement for easements or other tenures required or, where agreement cannot be reached, by compulsory resumption of land.

6.2.6 ENVIRONMENTAL PROTECTION ACT 1994

The *Environmental Protection Act 1994* is administered by the Department of Environment and Science (DES) and operates as the key legislative framework for environment protection and management in Queensland through a number of mechanisms to monitor and enforce environmental compliance. Section 319 establishes a general environmental duty of care which Powerlink are obliged to meet when undertaking works and operations of their electrical infrastructure. The duty states that an organisation undertaking an activity must not cause, or be likely to cause, environmental harm unless all reasonable and practicable measures to prevent or minimise the harm are taken.

Powerlink may exercise this duty of care through the development of preliminary studies, subsequent environmental assessment reports and project-specific environmental management plans implemented throughout the construction and operational stages of the project.

The *Environmental Protection Regulation 2008* is subordinate to the *Environmental Protection Act 1994* and identifies a number of 'Environmentally Relevant Activities' (ERAs) which have the potential to release contaminates into the environment or cause environmental harm. It is not expected that the development of the transmission line would trigger an ERA requiring an Environmental Authority.

6.2.7 NATURE CONSERVATION ACT 1992

The *Nature Conservation Act 1992* is the primary legislation governing the protection and management of native wildlife, habitat and protected areas, including national parks and nature refuges. The Act is administered by the DES. Where clearing is required in an area containing near threatened, vulnerable or endangered (EVNT) protected plants and supporting habitats, a clearing permit must be obtained from the DES. The protected plants flora survey trigger map identifies high risk areas for protected plants to occur and must be used to determine whether a targeted flora survey is required for a particular area. High risk areas are those in which EVNT flora is known or likely to exist.

The corridor contains small scatters of high risk areas. If clearing is to occur within a high risk area, a targeted flora survey will need to be undertaken in accordance with DES's *Flora Survey Guidelines - Protected Plants* to determine whether protected plants are present. This survey must then be submitted to the DES along with a request to obtain an approval or exemption notice (where no EVNT flora is present).

Although mapping indicates the potential for threatened species to be present in the study area, it is unknown whether EVNT flora would be impacted by clearing within the corridor until field surveys are conducted. If ENVT flora is present and a permit is granted, an offset condition may be required for the clearing activity to counterbalance any impacts and ensure the viability of the protected species affected. Offsets conditioned under a clearing permit are to be in accordance with the *Environmental Offsets Act 2014*.

As with any removal of native vegetation and habitats, there also is inherent risk of impacting animal breeding places of least concern (non-colonial) fauna species. To mitigate this risk, it is a requirement under the NC Act to implement a Species Management Program (SMP) "low risk of impacts". If an animal breeding place for an endangered, vulnerable, near threatened, special least concern or least concern (colonial breeder) fauna species is recorded in areas of potential impact, Powerlink will require a SMP "high risk of impacts" prior to undertaking any construction activities.

6.2.8 VEGETATION MANAGEMENT ACT 1999

The Department of Resources (DoR) administers the *Vegetation Management Act 1999* which seeks to manage native vegetation in Queensland, with the exception of non-woody vegetation regulated under the *Nature Conservation Act 1992*. Regulated Vegetation Mapping identifies categorised areas of remnant vegetation in Queensland and is used to establish whether clearing of native vegetation is considered assessable development requiring a permit.

The corridor crosses areas of native vegetation that may need to be cleared. Under schedule 10 of the *Planning Regulation 2017*, operational work that is the clearing of native vegetation is assessable development unless the clearing is exempt clearing work or accepted development. However, under section 44 of the *Planning Act 2016*, where a Infrastructure Designation is granted, the work would automatically be considered accepted development. As highlighted in section 6.2.1, a similar exemption is also provided under section 112A of the *Electricity Act 1994*.

6.2.9 WATER ACT 2000

The *Water Act 2000* provides the legislative framework for the sustainable use, allocation and management of water resources in Queensland. It is administered by DoR and regulates activities occurring within designated watercourses under the Act. The Watercourse Identification Map categorises water features as either a designated watercourse, drainage feature, downstream limit of a watercourse or lake, and is used to determine the assessment requirements for undertaking activities within a watercourse. Activities including excavating, filling or destroying native vegetation within a watercourse may require approval under the *Water Act 2000* in the form of a riverine protection permit. Powerlink is an approved entity exempt from requiring a permit if the self-assessment guidelines under DoR's 'Riverine protection permit exemption requirements' are followed.

The corridor crosses several designated watercourses. While construction of the transmission line will not require works disturbing a waterway, construction of new maintenance tracks over designated watercourses will need to comply with the exemption requirements. Compliance with the exemption requirements may be achieved through the implementation of a Construction Environmental Management Plan. Where compliance cannot be met, a riverine protection permit would be required from DoR for any works within affected watercourses.

6.2.10 FISHERIES ACT 1994

The *Fisheries Act 1994* governs the management of fisheries, declared fish habitat areas and marine plants and is administered by the Department of Agriculture and Fisheries. Works which may cause disturbance to 'waterways' as defined under the Act can be subject to assessable operational work for waterway barrier works, unless construction complies with the conditions under the 'Accepted development requirements for operational work that is constructing or raising waterway barrier works'.

The Development Assessment Mapping System is used to determine the presence of waterways in an area and their risk level. The corridor options cross a number of waterways of various risk levels. Construction of the transmission line will not require works disturbing a waterway; however, construction of maintenance tracks across waterways will need to comply with the Accepted development requirements. It is not likely that Powerlink would require approval for the works as long as new waterway crossings are built in accordance with the requirements. Should any works within a waterway not comply with the Accepted development requirements, a development permit is ordinarily required under the *Planning Act 2016.* However, assuming an Infrastructure Designation is granted over the project, operational work for waterway barrier works will automatically be considered accepted development not requiring a development permit.

6.2.11 ABORIGINAL CULTURAL HERITAGE ACT 2003

The *Aboriginal Cultural Heritage Act 2003* seeks to provide effective recognition, protection and conservation of Aboriginal cultural heritage. It establishes the processes for managing activities that may cause potential harm to Aboriginal cultural heritage, which is identified through the Aboriginal Cultural Heritage Database and Register and administered by DATSIP.

A search of the DATSIP database has identified a number of records of Aboriginal cultural heritage values within the study area. Powerlink will be responsible for carrying out works in accordance with the Duty of Care Guidelines under the Act by taking all reasonable and practicable measures to ensure the activities do not harm Aboriginal cultural heritage values. The Guidelines categorise activities depending on the nature of the works and likelihood of causing harm. These categories determine the certain obligations that are required to meet the cultural heritage duty of care.

Should the project be considered to pose a high risk to Aboriginal cultural heritage, engagement with the relevant cultural heritage parties for the area is likely to be required. It also may necessitate preparation of a cultural heritage management plan or cultural heritage management agreement. Activities which pose a high risk to Aboriginal cultural heritage which may apply to the project include:

- works in proximity to registered Aboriginal cultural heritage sites or places, or within places with known cultural heritage values
- works within areas with little or no previous ground disturbance (i.e. clearing of remnant vegetation, escarpments)
- works in proximity to water features, such as riparian areas.

6.2.12 TRANSPORT INFRASTRUCTURE ACT 1994

The *Transport Infrastructure Act 1994* regulates the management of the State-controlled road network and is administered by the Department of Transport and Main Roads (TMR). The corridor crosses State-controlled roads, namely, the Bunya Highway and Bunya Mountains Road. Under section 50 of the Act, construction, maintenance and operation of ancillary works and encroachments within State-controlled roads (e.g. placement of a transmission line over the road) can only be undertaken where written approval has been granted from TMR.

6.2.13 STATE PLANNING POLICY

The State Planning Policy (2017) (SPP) sets out the framework of 17 State interests that are relevant to the assessment of development in Queensland. The SPP applies, to the extent relevant, to development applications and designated infrastructure under the *Planning Act 2016* and prevails over all regional and local planning instruments. The relevant state interests are outlined in Table 6-1 along with a description of how each interest relates to the project.

Table 6-1 Summary of applicable SPP State Interests

Relevant State Interest		Application
Economic Growth	Agriculture	The study area is broadly mapped as containing Class A (crop land) and Class B (limited crop land) agricultural land. The project should seek to minimise impacts to agricultural land and Powerlink will need to engage with affected landholders to address any unavoidable land use impacts.
	Mining and Extractive Resources	The corridor does not traverse any Key Resource Areas, MLs or MDLs.
Environment and Heritage	Biodiversity	MSES are identified under SPP mapping, including of concern and endangered regional ecosystems, essential habitat, and protected areas. The corridor does not traverse protected areas; however, regional ecosystems and essential habitat occur within the corridor. The project should seek to avoid or minimise impacts to these State values.
	Cultural Heritage	The corridor avoids National and State heritage places.

Relevant State Interest		Application
	Water Quality	The corridor does not cross high ecological value watercourses.
Safety and Resilience to Hazards	Emissions and Hazardous Activities	The construction of the transmission line may cause nuisance to surrounding sensitive land uses through environmental emissions such as air, odour and noise pollution (although dwellings are likely to be at least 500 m away). These should be managed through a Construction Environmental Management Plan.
	Natural Hazards, Risk and Resilience	The study area is subject to the Queensland Floodplain Assessment Overlay and contains scattered areas of land identified as medium or high potential bushfire hazard. The project would not increase the risk of flood or bushfire hazard on the site or to neighbouring properties. Risks of bushfire to electrical infrastructure can occur as conductive particles from fire can trip the line out. However, given the location and fuel loads, it is a considered a low risk area.
Infrastructure	Energy and Water Supply	The proposed transmission line represents major electricity infrastructure. The location of the infrastructure is to be protected from development that would compromise the integrity of the infrastructure corridor and the efficient delivery and functioning of the infrastructure.
	Transport Infrastructure	The corridor traverses State-controlled roads, including the Bunya Highway and Bunya Mountain Road. The transmission line is to be located and designed so as not to affect the safety or operational integrity of these roads.

6.2.14 REGIONAL PLANS

The study area is subject to two regional plan areas, the Wide Bay Burnett Regional Plan (WBBRP) and the Darling Downs Regional Plan (DDRP).

6.2.14.1 WIDE BAY BURNETT REGIONAL PLAN

The WBBRP was implemented in 2011 as a statutory instrument providing strategies aiming to address economic, social and environmental issues in the region, including identifying strategic infrastructure and service needs and support economic prosperity.

The new transmission line would be consistent with the aim of the WBBRP to promote renewable energy generation, in order to provide reliable energy which supports growth in an economically and ecologically sustainable manner. The WBBRP states that development in regional landscapes needs to be responsibly planned to complement, protect, and enhance landscape values, including areas of significant biodiversity value, rural production, scenic amenity, and landscape heritage. The corridor assessment process has aimed to minimise impacts upon land uses by investigating opportunities for co-location with existing infrastructure.

6.2.14.2 DARLING DOWNS REGIONAL PLAN

The DDRP commenced in 2013 as a statutory plan that sets intentions to enable opportunities for economic growth and diversity in the region, to protect areas of regionally significant agricultural production, and to identify infrastructure outcomes that will support economic growth.

Development of the new transmission line would be consistent with the aim of maximising economic growth through the provision of electricity infrastructure needed to facilitate new energy and resource developments, which accounts for a large percent of the region's economy. A priority outcome sought for electricity infrastructure in the region is to reinforce

electricity generation, transmission and distribution systems in response to forecast industry growth, with consideration of energy efficient efforts. The new transmission line would enable an increasing level of service to the growing energy industry in the region and therefore supports the strategic directions of the DDRP.

6.3 LOCAL

The study area is divided between two LGAs, the South Burnett Regional Council and the Western Downs Regional Council.

LGAs are subject to individual Local Planning Instruments under the *Planning Act 2016*, as well as a range of local laws under the *Local Government Act 2009*. The local government planning schemes and local laws associated with the LGAs are discussed in the following sections.

6.3.1 PLANNING SCHEMES

The granting of an Infrastructure Designation means the construction, operation and maintenance of a transmission line will be accepted development under the *Planning Act 2016* and will not require an approval under the relevant planning schemes. Nonetheless, regard must still be given to the requirements of the planning schemes relating to the land subject to the designation. Through a preliminary assessment of the planning schemes, the corridors would generally be consistent with the intended outcomes sought by the planning schemes.

6.3.1.1 SOUTH BURNETT REGIONAL COUNCIL

Under the South Burnett Regional Council Planning Scheme 2017, the eastern section of the study area is predominately mapped as Rural Zone. The corridor only crosses the Rural Zone.

The Rural Zone Code includes the purpose of providing opportunities for non-rural uses that are compatible with existing and future rural uses and activities, and the character and environmental features of the rural area. A transmission line is defined under the South Burnett Regional Council Planning Scheme as major electricity infrastructure (being 'the use of premises for a transmission grid or supply network…', such as 'Powerlines greater than 66 kV'). Major electricity infrastructure is listed as code assessable development within the Rural Zone Code and therefore would be subject to code assessment without an Infrastructure Designation.

6.3.1.2 WESTERN DOWNS REGIONAL COUNCIL

Under the Western Downs Regional Council Planning Scheme 2017, the western section of the study area is predominately mapped as Rural Zone. The corridor only crosses the Rural Zone.

The Rural Zone Code includes the purpose of providing opportunities for non-rural uses that are compatible with agriculture, the environmental features, and landscape character of the rural area where the uses do not compromise the long-term use of the land for rural purposes. A transmission line is defined under the Western Downs Regional Council Planning Scheme as major electricity infrastructure (being 'all aspects of development for either the transmission grid or electricity supply networks as defined under the *Electricity Act 1994*…', such as 'Powerlines greater than 66 kV'). Major electricity infrastructure is not listed as accepted or code assessable development within the Rural Zone Code and therefore would be subject to impact assessment, without an Infrastructure Designation.

6.3.2 LOCAL LAWS

Local laws under the *Local Government Act 2009* are used to regulate matters specific to LGAs. While the approvals framework for this project gives rise to a number of legislative and regulatory exemptions, the local laws imposed by the relevant LGAs will still apply and may trigger permits required to be obtained for certain activities. The local laws that may apply to the project are provided as follows:

— South Burnett Regional Council Local Law No. 3 – Community and Environmental Management

— South Burnett Regional Council Local Law No. 4 – Local Government Controlled Areas, Facilities and Roads

— Western Downs Regional Council Local Law No. 3 – Community and Environmental Management

— Western Downs Regional Council Local Law No. 4 – Local Government Controlled Areas, Facilities and Roads.

The Community and Environment Management local laws deal with key matters including protection against animals and plant pests, vegetation overgrowth, visual pollution, fire hazards, community safety hazards and noise impacts. The local laws governing Local Government Controlled Areas, Facilities and Roads regulate access to local government controlled areas and prohibit or restrict particular activities on local government controlled areas or roads. The relevant local councils should be consulted in relation to potential impacts to local government controlled roads prior to commencement of construction.

6.4 SUMMARY OF LEGISLATIVE TRIGGERS

Table 6-2 provides an overview of the relevant legislative and approval requirements potentially triggered based on the current level of preliminary investigation. Note that not all approvals may be required and will depend upon subsequent detailed assessments of site-specific impacts and design solutions. Standard Powerlink requirements detailed under the *Electricity Act 1994* have not been listed in Table 6-2.

Table 6-2 Summary of legislative requirements

Legislation	Responsible Authority	Activity	Licence / Permit / Approval
Commonwealth			
Environment Protection and Biodiversity Conservation Act 1999	Department of Agriculture, Water and the Environment	Should there be the potential for Significant Impact on MNES	EPBC Act Referral
State			
Planning Act 2016	Department of State Development, Infrastructure, Local Government and Planning	Electricity operating works	Infrastructure Designation
Acquisition of Land Act 1967	Department of Resources	Easement acquisition across freehold and non-freehold land	Voluntary agreement preferred Compulsory acquisition can be undertaken
Nature Conservation Act 1992	Department of Environment and Science	Potential for clearing protected plants	Clearing permit (if protected plants are identified in subsequent field surveys)

Legislation	Responsible Authority	Activity	Licence / Permit / Approval
		Potential for clearing within a high risk flora trigger area	Exempt Clearing Notification (if no protected plants are identified)
		Clearing habitat of least concern (non-colonial) fauna species	Low-Risk Species Management Program
		Clearing habitat of endangered, vulnerable, near threatened, special least concern or least concern (colonial breeder) fauna species	High-Risk Species Management Program
Vegetation Management Act 1999	Department of Resources	Clearing native vegetation	Land subject to Infrastructure Designation is accepted development (not requiring a development permit for operational works)
Water Act 2000	Department of Resources	Undertaking works within a watercourse which involves excavation, fill or removal of vegetation (Construction of maintenance tracks)	Riverine protection permit (if exemption requirements cannot be met)
Fisheries Act 1994	Department of Agriculture and Fisheries	Waterway barrier works within a waterway (Construction of maintenance tracks)	Land subject to Infrastructure Designation is accepted development (not requiring a development permit for operational works)
Transport Infrastructure Act 1995	Department of Transport and Main Roads	Crossing of State-controlled roads	Agreement required

7 CONCLUSION

WSP was engaged by Powerlink Queensland to assess the current transmission line corridor for the construction of a new double circuit 275 kV high voltage transmission line connecting a substation proposed to be located in the Wambo Wind Farm site to Powerlink's existing Halys Substation.

Based on the results of the assessment process, it was concluded that the current corridor (Tarong-Chinchilla corridor) is suitable for the new transmission line. This was primarily due to it being deemed to have a low level of impact to social, and environmental values, the proposed decommissioning of this section of the existing power line, and likely to be cost-effective and constructible (as it would utilise the existing Tarong-Chinchilla power line corridor). The assessment and selection process was undertaken in compliance with Powerlink's Site Selection, Easements and Sites – Guideline.

The methodology used to conduct the assessment included a desktop-based review of key constraints within a defined study area and along the proposed corridor, identification of key criteria and objectives, and the assessment of the current corridor against the key criteria and objectives. The assessment considered a range of criteria based on the physical, natural and social constraints within the study area and along the Tarong-Chinchilla corridor. In addition, cost and constructability was also considered. It was determined that the current corridor should be taken forward for further planning for the project.