OCTOBER 2024

Theodore Wind Farm – Connection Project

Draft Corridor Selection Report

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Acknowledgement of Country

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

How to provide feedback on the Draft Corridor Selection Report

This Draft Corridor Selection Report (CSR) identifies a recommended corridor for the Theodore Wind Farm Connection Project that builds on RWE Renewables Australia's (RWE) initial planning activities undertaken.

We welcome feedback from landholders, Traditional Owner groups, the community and other stakeholders on the DCSR, with comments invited on the report by **5pm Friday 29 November 2024.**

Feedback can be provided in the following ways:

In-person:	Community information drop-in sessions between 14-16 November 2024 (see website for locations and times)
Phone:	07 3898 4919
Email:	**theodore@powerlink.com.au**
Website:	www.powerlink.com.au/theodore

Executive summary

This Draft Corridor Selection report (DCSR) has been prepared by Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland (Powerlink), for the proposed Theodore Wind Farm Connection Project (the project).

Project consultants WSP Australia Pty Ltd (WSP), were engaged by RWE Renewables Australia (RWE) to undertake technical, spatial and mapping analysis to support the preparation of this DCSR.

Project Background

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

Powerlink has been engaged by RWE to connect their wind farm to the network, requiring a new double circuit 275 kilo-volt (kV) transmission line to be established connecting the wind farm to Powerlink's proposed Mt Benn Substation.

For this project, Powerlink will integrate the work previously carried out by RWE with Powerlink's processes to continue with the corridor selection process, to identify a recommended 1km-wide corridor, and undertake further engagement activities before finalising a 1km-wide corridor.

Theodore Wind Farm

Theodore Wind Farm is a proposed 1.1GW wind farm located in the Banana Shire region of Queensland, approximately 20km east of Theodore, in Central Queensland. RWE is undertaking this renewable generation project.

RWE's wind farm is proposed to comprise up to 170 wind turbines and a battery energy storage system with an initial output of approximately 1,100 megawatts (MW) of renewable energy. Energy generated by the proposed wind farm will provide low-cost clean energy to Queensland households.

Approach to corridor selection

In conjunction with the development of the wind farm project, RWE undertook preliminary desktop analysis and investigations into transmission corridor alternatives from a landholder, environment and constructability perspective, leading to a preferred corridor.

Building upon the earlier corridor analysis undertaken by RWE, Powerlink carried out technical assessments on the corridor alternatives and preferred corridor to ensure suitability for accommodating the proposed transmission line. Powerlink's assessment of RWE's preferred corridor ensure that social, environmental and economic objectives of the connection project achieved a balanced overall outcome. Through this process and for the purposes of this DCSR, the recommended corridor reflects the preferred corridor identified by RWE.

The DCSR outlines the process used to determine the recommended corridor and identifies further engagement activities and detailed studies required to establish a final 1km-wide corridor. Subsequent

stages of work will involve the identification of a 60m-wide easement alignment within this 1km-wide corridor, within which the proposed transmission line will be constructed.

Project objectives are the high-level value-based considerations that are used during the corridor selection process. The key objectives considered as part of this project are:

Social

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

Environment

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

Economic

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

The methodology used for the corridor selection included using publicly available information, as well as technical and spatial data, to identify constraints and opportunities from a social, environmental and economic perspective. These constraints and opportunities were used to assess a 1km-wide recommended corridor that, on balance, achieves the project objectives.

Feedback from the community will help to inform the decisions required to finalise the corridor selection.

Recommended transmission corridor

The 1km-wide recommended corridor has been selected following assessment of RWE's preferred corridor to ensure that social, environmental and economic objectives of the connection project achieved a balanced overall outcome. . Through this process and for the purposes of this DCSR, the recommended corridor reflects the preferred corridor identified by RWE.

Several corridor alternatives were originally explored by RWE for a transmission line between the proposed Theodore Wind Farm and the proposed Mt Benn Substation.

Powerlink subsequently undertook a desktop review of existing and current data to identify physical, natural, social and economic characteristics, to further assess the corridor alternatives and preferred corridor to ensure suitability of the recommended corridor. Information sources included topographic maps, satellite imagery, local government planning schemes, government digital web mapping (e.g. Queensland Globe and GeoRes Globe) and various database searches.

The corridor identification and selection process identified and considered opportunities and constraints from an economic, environmental and social perspective, in addition to identifying a recommended corridor for further investigation.

Through the corridor selection process, the 1km-wide recommended corridor:

- provides a relatively direct route between the proposed Theodore Wind Farm and the proposed Mt Benn Substation
- includes a minimal numbers of properties
- seeks to avoid significant impacts on agriculture, cropping and grazing lands
- is located a considerable distance from existing townships and major highways,

- identifies potential to co-locate with existing distribution powerlines and other proposed renewable energy projects in the area

The recommended corridor equally manages the constraints and opportunities, ultimately resulting in a corridor which aims to balance the project objectives.

The recommended corridor identified within this DCSR is shown in Figure 1.

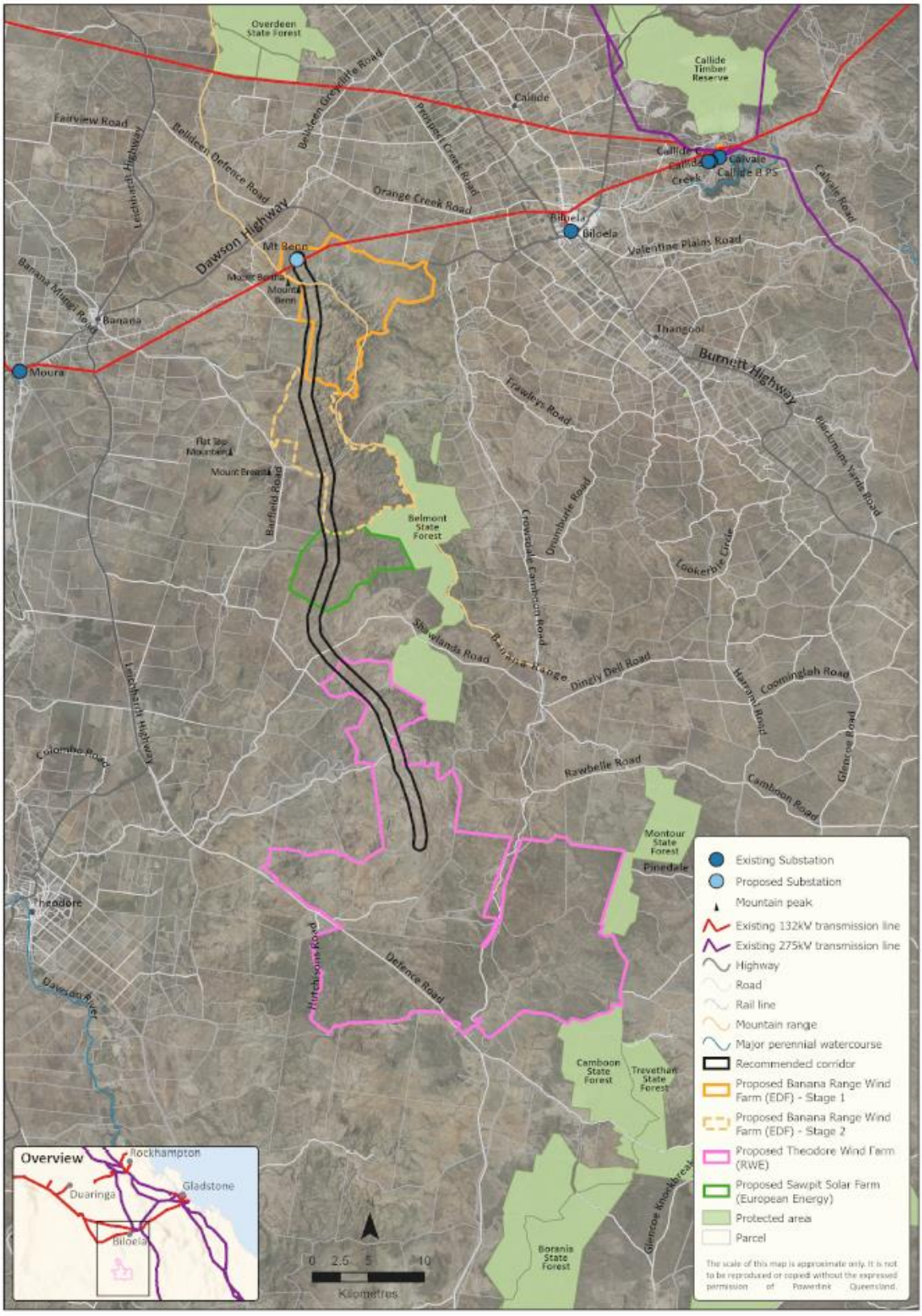


Figure 1 Recommended Corridor

1.0 Introduction

1.1 Strategic context

The Queensland Government has committed to unlocking renewable investment and achieving a Renewable Energy Target (RET) of 80% by 2035. The Queensland Energy and Jobs Plan (QEJP) applies a whole-of-system planning approach, setting out the pathways and targets that will facilitate a low carbon economy in the future and ensure an orderly, least-cost transformation of Queensland's power system. The QEJP outlines having 25GW of new and existing large-scale wind and solar generation by 2035.

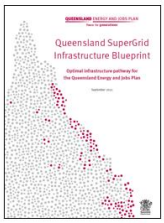
Powerlink will play a critical role in supporting the energy transformation over the coming decade.

Figure 2: Queensland Energy and Jobs Plan

Plan and Blueprint

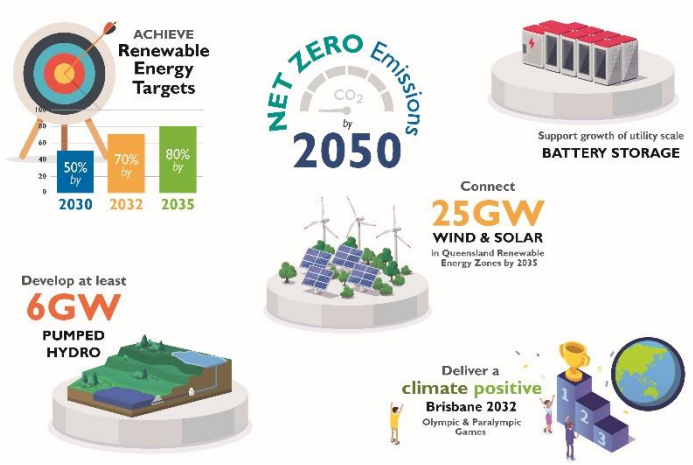
Three focus areas:

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



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

Key targets and objectives



Powerlink manages the connections process by which renewable energy projects can connect to the electricity grid under the National Electricity Rules (NER) (Chapter 5).

This process requires the formal lodgement of a connection application which is submitted and accepted under NER. Following commercial negotiations and discussions, Powerlink may provide an Offer to Connect.

RWE have submitted a connection application to Powerlink to commence the connection process. This has enabled the creation of a formal project for Powerlink to engage publicly on.

1.2 Project Background

The Theodore Wind Farm is a proposed 1.1GW wind farm located in the Banana Shire region of Queensland, approximately 20km east of Theodore, or 400km north-west of Brisbane. RWE is undertaking this renewable generation project.

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

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

- a double circuit 275kV transmission line between Powerlink's proposed Mt Benn Substation and the proposed Theodore Wind Farm.

RWE has engaged Powerlink to complete corridor selection and design of the transmission connection required.

1.3 Purpose of this report

Powerlink has prepared this DCSR to identify a recommended corridor between the proposed Theodore Wind Farm and proposed Mt Benn Substation. The Mt Benn Substation was initially proposed as part of Powerlink's Banana Range Wind Farm Connection Project and has become a common connection to both projects.

This report identifies and considers opportunities and constraints from an environmental, social and economic perspective and confirms the suitability of a recommended corridor for feedback and further investigation. Where avoidance is not possible, the project will aim to minimise and/or mitigate impacts associated with identified constraints.

WSP was engaged to undertake technical, spatial, and mapping analysis to support the preparation of this DCSR, which builds upon the earlier investigation and desktop analysis undertaken by RWE.

The purpose of this report is to:

- describe the process undertaken to identify and assess constraints and opportunities to select a recommended corridor that minimises and balances the social, environmental, and economic considerations
- provide an overview of the planning and legislative framework applicable to the recommended corridor
- outline the next steps to progress the project.

A final 1km-wide corridor will be published in the Final Corridor Selection Report (FCSR) in early 2025.

Subsequent phases of the project will include further engagement, detailed environmental and social impact assessment including targeted surveys, impact assessments and the development of planning, design and construction considerations.

1.4 Engagement

With the release of the DCSR, landholders, Traditional Owner groups, the wider community and other stakeholders are invited to provide feedback on the recommended 1km-wide corridor.

Feedback is important to guide Powerlink's corridor selection processes and will be taken into account as part of Powerlink's consideration of the location of the final corridor, with a particular focus on land use, local constraints, improvements and future development plans. Based on this feedback, some realignments of sections of the identified recommended corridor may be required.

The final 1km-wide corridor will be narrowed down further to a 60m-wide easement alignment. Powerlink will keep working closely with landholders, Traditional Owner groups, the wider community and other stakeholders, while also completing field and site investigations, to determine the most appropriate final alignment.

Powerlink is committed to genuine and meaningful engagement, which will form a critical part of this project. Further details on our commitment to engaging on this project can be viewed on the Powerlink website – powerlink.com.au/theodore.

2.0 Transmission Line Construction Overview

2.1 Overhead Transmission line

If approved, the overhead transmission line will be a 275kV double circuit line, constructed predominantly with steel lattice towers and some steel poles, pending constraints. The line will be located on an easement, approximately 60m wide. Transmission infrastructure is generally located either at the centre of the easement or offset from existing towers when co-located with an existing transmission line.

Easements provide legal access over land to construct, operate and maintain energy infrastructure and to regulate certain activities on the easement area, allowing Powerlink to provide a safe, reliable and secure power supply. Landholders continue to own and be responsible for the land on which the easement is located, including land management and other general land maintenance activities. In some instances, rules around activities that can and cannot be undertaken on our easements are outlined in the registered easement terms and conditions on property titles, along with the rights of both the landholder and Powerlink. In addition to registered conditions, there are also other rules based on:

- safety for the public, our employees and contractors
- the risk of damage to property
- the safe operation of the overhead transmission line, underground cable or other assets
- access to the line or associated infrastructure for any future works, including maintenance, upgrading or refit activities.

We are committed to working closely with directly affected landholders to understand how they use and manage their property. We do this to ensure we can suitably locate transmission towers within the easement and provide sufficient tower height to avoid or minimise impacts on property operations. This includes our ongoing commitment to work with landholders to ensure access requirements both on and off the easement, are suitably managed and protocols are implemented throughout construction and as part of the full project life cycle of the infrastructure.

Due to the design and operating requirements of high voltage electricity transmission infrastructure, easements require clearing of vegetation to safely construct and maintain transmission towers and lines. Where possible, Powerlink does not clear the entire easement but rather minimises vegetation clearing for the safe and reliable operation of transmission line. When designing the transmission line, mitigation measures such as selective tower placement and spanning to decrease the amount of required vegetation clearing will be used, particularly in sensitive environments.

Tower pads will be approximately 40m x 40m and spans between towers will be up to 450m on flat land. Tower heights will be dependent on terrain, topography and land use of the final alignment with shorter towers likely on higher ground and taller towers within low points of the corridor. It is likely that 275kV towers will be up to 60m in height. Generally, the steps involved in building a transmission line include:

- preparing the site
- installing the foundations
- assembling the transmission towers and equipment
- stringing the transmission line

- testing and commissioning
- reinstating the site.

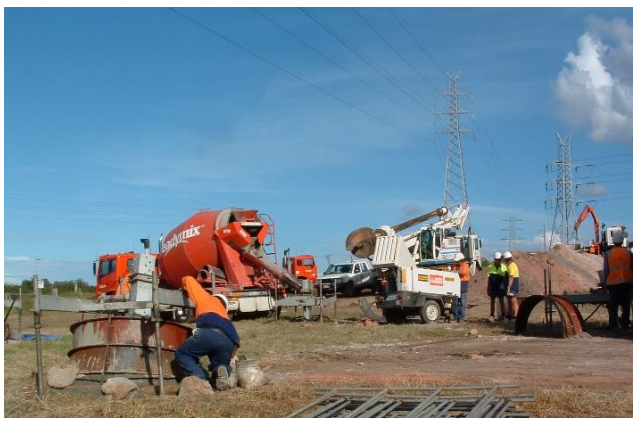
More detail on each step is outlined below.

2.1.1 Preparing the site

Following comprehensive field visits to sample or test soil, vegetation and water, and undertake other detailed investigations, the exact position of each transmission tower is marked on-ground. Vegetation clearing is then undertaken to make way for tower pads, lay-down areas and access tracks. Clearing is required to ensure the line can operate safely and reliably. Various clearing methods may be used based on existing land use, environmental considerations, maintenance requirements and landholder preferences. To minimise vegetation clearing, existing access tracks are used wherever possible. We will continue to use access tracks beyond construction activities to facilitate safe and streamlined access to towers during operation and maintenance.

2.1.2 Installing the foundations

Based on findings from geotechnical investigations completed prior to construction, the construction crew commences work to install suitable foundations at each tower site. A large boring machine is generally used to excavate foundations which can be around 8m to 12m deep. Steel is inserted to reinforce foundations and tower leg stubs are held in place, while concrete is poured into the excavation. Final steelwork is then completed, with the foundation column finishing slightly above ground level.



2.1.3 Assembling the structures and equipment

Fabricated and galvanised steel components for lattice towers are sorted and bundled ahead of being delivered to tower sites. Usually, this delivery takes place with a semi-trailer, and tower assembly work is completed adjacent to a tower's final location. Specialist crews methodically piece together the towers, with smaller assembled sections lifted with a crane and bolted into place until the tower is fully erected.

2.1.4 Stringing the transmission line

Machinery such as helicopters, semi-trailers, cranes and light 4WD vehicles are on-site to string the transmission line. Normally, stringing takes place in 5km to 10km sections at a time. Prior to stringing, large drums of conductor (transmission line wires) are delivered to locations along the line route. A draw wire is run between the assembled towers and used to pull the conductor along a section of line. Helicopters may be used to pull the draw wire. The conductor is fed through the line section and tensioned from the ground using winches. Equipment is then repositioned to the next stringing section to repeat the process until the conductor is strung across all towers.

2.1.5 Testing and commissioning

After a new transmission line is assembled, strung and ready to be energised, a series of thorough inspections and commissioning tests are carried out. This ensures the line is ready to be put into service safely and reliably as it enters the operation and maintenance phase of the project lifecycle.

2.1.6 Reinstating the site

Powerlink will engage with landholders to determine site and property specific rehabilitation works following completion of construction activities. Depending on the type and level of on-ground works completed, crews reinstate the tower site area and surrounding environment to ensure appropriate rehabilitation occurs. This helps to stabilise soil and encourage vegetation re-establishment to occur, preventing erosion. This stage also includes reinstating farm infrastructure that may have been impacted during construction works, and remediating paddocks and other grazing areas to enable recommencement of farming activities. Installation of identification signs on towers and anti-climb barriers are installed for safety purposes. Access tracks are finalised to allow ongoing access for future maintenance as required.

Powerlink continues to engage with landholders once a transmission line enters the operation and maintenance phase to undertake a range of activities periodically as required, including:

- routine inspections on easements and infrastructure
- vegetation management to maintain safety clearances
- minor works for infrastructure, replacement of parts and emergency repair of damage
- access track management
- installing or replacing tower signage
- installing or replacing anti-climbing barriers on towers.

3.0 Corridor Selection Process

3.1.1 Methodology

Planning and legislative frameworks, along with technical and spatial analysis, have been factored into the corridor selection process. Three objectives have been used to inform the approach to corridor selection; social, environment and economic.

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

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

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

In addition to the preliminary investigation undertaken, Powerlink has considered the following matters to identify the least impactful location of the proposed new infrastructure:

- tenure
- key resource areas
- strategic cropping land
- watercourses/waterways and flooding
- regional ecosystems
- protected areas
- known heritage values
- corridor length
- corridor slope
- existing infrastructure

Table 3-1 shows the considerations of the abovementioned matters in relation to the assessment of the corridor.

Table 3-1 Corridor selection criteria considerations

Criteria	Measure
Social To consider the use of land and community livelihood within and adjacent to corridor alternatives	
Criteria 1: Tenure and zoning	Number of freehold land parcels intersected
	Number of landholders directly impacted
	Number of residential dwellings within the corridor

Criteria	Measure
	Number of land parcels with tenures other than freehold
	Land other than rural zone intersected
Criteria 2: Key Resource Areas	Area of key resource areas
Criteria 3: Strategic Cropping Land	Area of strategic cropping land
Environment To consider a balanced approach to corridor selection with the least practicable impact on environment and cultural heritage values.	
Criteria 4: Watercourses/waterways and flooding	Number of watercourse intersections
	Area within flood mapping
Criteria 5: Vegetation and protected areas	Area of threatened ecological communities
	Area of remnant and regrowth Endangered regional ecosystems
	Area of remnant and regrowth Of Concern regional ecosystems
	Area of remnant and regrowth Least Concern regional ecosystems
	Area of regrowth vegetation
Economic To consider construction and operational factors such as cost at a preliminary level, given the scale of the project.	
Criteria 6: Corridor length	Length of corridor
	Number of bend points
Criteria 7: Slope	Area of corridor with slope 10-20%
	Area of corridor with slope >20%
Criteria 8: Existing infrastructure	Number of low voltage distribution infrastructure (i.e. Ergon Energy) crossings within corridor
	Crossings of formed roads
	Length of formed roads

The corridor selection approach considers the constraints and opportunities across the recommended corridor based on the objectives and criteria identified, ultimately resulting in a recommended corridor.

Where avoidance is not possible, the project will aim to minimise and/or mitigate impacts associated with these constraints.

Initial constraints identified to inform the corridor selection include:

- the Banana Range and Belmont State Forest to the east present significant topographical and environment constraints in addition to collectively forming part of a broader area of protected vegetation
- areas further to the west with established agricultural and grazing potential, comprising favourable soil types
- areas further to the west and north-west characterised by smaller lot sizes which have the potential to more significantly impact existing residences.

Similarly, opportunities that could improve project outcomes were also identified and include:

- overall corridor length (to reduce impacts, construction activities and costs);
- the potential to co-locate transmission infrastructure with known proposed renewable energy projects (to reduce possible physical and social impacts)
- use of areas of diminished capabilities such as land with lower agricultural and grazing potential due to unfavourable soil types
- use of areas of existing disturbance such as land with poorer habitat, existing roads, tracks, property boundaries and other utility services (to reduce environmental and property impacts).

3.2 Corridor Selection

3.2.1 Preliminary Investigations

This project seeks to identify a corridor suitable for the purposes of accommodating a double circuit 275kV transmission line that will connect the proposed Theodore Wind Farm with Powerlink's proposed Mt Benn Substation.

Preliminary investigations undertaken by RWE explored the broader region including parts of Theodore, Castle Creek, Tarramba, Banana, Prospect and Biloela as a first step in narrowing the area of investigation needed.

Within this area, key natural and built features include:

- Banana Range and Belmont State Forest
- topographical features including Mt Bertha, Mt Benn, Mt Breast and Flat Top Mountain
- Banana Creek, Lonesome Creek, Castle Creek and their associated tributaries including Tarramba Creek and Sawpit Creek
- Dawson Highway and Leichardt Highway
- existing 132kV Powerlink transmission line
- proposed renewable energy developments
- Moura Coal Rail Line.

Desktop spatial data identified further significant constraints for a new transmission line corridor as follows.

This area is naturally bounded by the Banana Range, Belmont State Forest and surrounding forested areas located to the east which present significant topographical constraints in addition to collectively forming part of a broader area of protected vegetation. Corridor alternatives were considered on the eastern side of the range, however the additional distance required for the transmission line, together with the increased complexities of construction and access, to avoid impacts to these naturally significant areas would have been impractical.

Specifically, pushing into these locations creates further substantial constraints, significant environmental impacts and increased economic impacts due to the cost associated with increased transmission line lengths and the terrain/constructability difficulties associated with such undulating topography. As such, investigations into viable corridor alternatives were limited to the west of the range.

To the west exists the Leichardt Highway, a prominent tourist route throughout the region, together with the existing township of Banana which exists to the north-west. Smaller land sizes and residential land uses comprise much of the township and outskirts, and collectively present a high social and visual constraint to the project when compared with more open, larger land parcels used for farming or rural purposes. Given this, ensuring a considerable separation distance from Banana was also a key consideration for narrowing the area of investigation.

In addition to the above, freehold land parcels vary in size throughout the locality with larger rural land holdings characterising much of the area adjacent to the Banana Range. These larger land holdings diminish closer to the west towards the Leichardt Highway and north-west towards Banana and thus were an important consideration in the identification of a corridor. A critical consideration was to limit the impact of the project upon as few residents and properties as possible.

Bordering the locality to the north are a range of physical features including Powerlink's existing 132kV transmission line, together with the Moura rail line and Dawson Highway. Further, given the physical location of the proposed Mt Benn Substation being south of the rail line and highway, the exploration of corridor alternatives further to the north and north-west were not considered practical, particularly given the location of the existing 132kV transmission line and the potential to co-locate additional transmission infrastructure as a means of further reducing the social and economic footprint of the project.

The conclusions of the above broader region and desktop analysis identified a more refined area of focus for the proposed corridor. In particular, several of the natural and physical constraints identified throughout the locality, including but not limited to the Banana Range, Belmont State Forest, highways and rail line, created distinct boundaries to the investigation area and thus the corridor selection process that was adopted for this project.

Subsequently, considerations for identifying a corridor were focused on areas west of the Banana Range, south of the Moura rail line and east of the Leichardt Highway, with careful consideration given to the number, type and current land uses of any impacted properties. Further, emphasis was also placed on those parcels already earmarked for renewable energy projects as a means of co-locating such infrastructure.

3.2.2 Characteristics of the Broader Area

Topography

Difficult terrain is present across various sections of the broader area due to mountainous areas and valleys.

The topography predominantly features low-lying agricultural and grazing lands within the west in addition to the presence of several watercourses including Castle Creek, Lonesome Creek and Banana Creek, before transitioning to more undulated elevated land to the east which is heavily characterised by the Banana Range (which includes the Belmont State Forst) and associated features including Mt Benn.

Topography is a key consideration in the identification of a potential transmission corridor due to associated constructability issues. Steep slopes not only limit vehicle access but increase the extent of earthworks required at each structure location and increase the number of transmission towers to maintain the height of the transmission conductors above ground level.

The topographical constraints identified within this DCSR are shown in Figure 3.

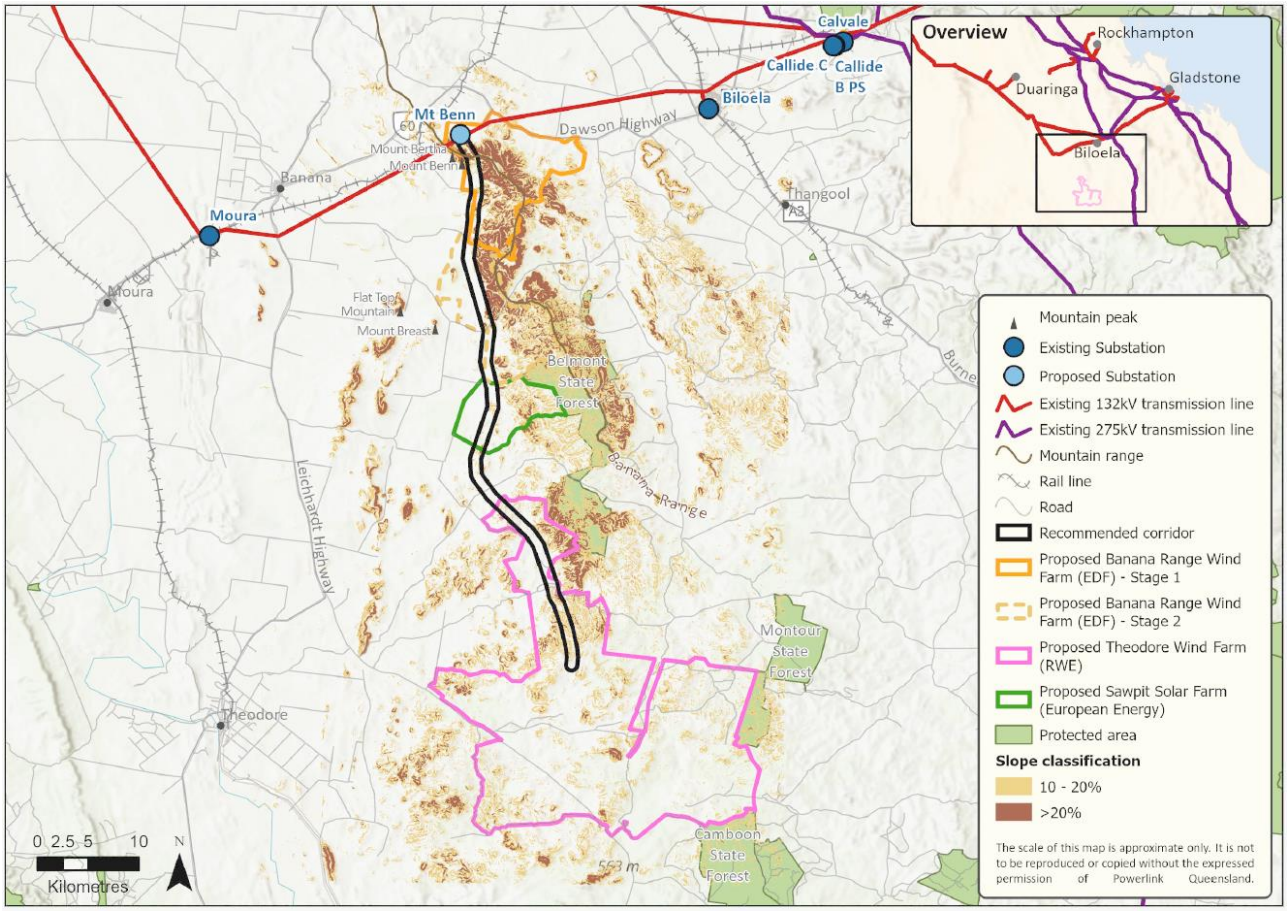


Figure 3 Topography

Land uses

The project is located within the Banana Shire Council Local Government Area (LGA).

Under the Banana Shire Council Planning Scheme, the broader investigation area is identified within the Rural Zone, the intent of which is to preserve land for agricultural purposes and protect the rural character and amenity of the region. It also recognises 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 uses predominately comprise grazing with broadacre cropping found further to the west which reflects the large area of Strategic Cropping Land (SCL) also present. The SCL areas identified, broadly correspond to land identified as Class A under the agricultural land classification scheme (Guidelines for Agricultural Land Evaluation in Queensland (DSITI & DNRM, 2018)) and are defined as land that is suitable for a wide range of current and potential crops and worthy of protection from development due to their suitability for crop production.

Due to the intensive use of the area for cropping, not all cropping land could be avoided. However, the areas of strategic cropping land that do occur are limited and mainly comprise isolated pockets. Given this, there is opportunity to locate the transmission line outside areas of Strategic Cropping Land and reduce the impact of the transmission line on crop production in the area. The recommended corridor has sought to largely avoid impacts to SCL.

A variety of landscape features are present throughout the area including arable plains and steep vegetated terrain associated with the Banana Range and sporadic mountain locations including Mt Bertha and Mt Benn which collectively contribute to the undulating topography and thus the high visual amenity and rural setting that characterises much of the broader area.

Residential properties are sparsely dispersed throughout with only one residence being located within the recommended corridor.

No major highways or railways intersect with or are located within close proximity of the recommended corridor. The undulating terrain that comprises much of the broader area may assist with reducing the overall visual presence of the transmission line, as direct line of sight from such prominent surrounding highways will be reduced.

In addition to the Thedore Wind Farm, renewable energy projects are proposed within the broader area and include the Banana Range Wind Farm and the Sawpit Solar Farm. Whilst not a key consideration in the corridor selection process, the uniqueness of three potential renewable energy projects being located within close proximity, warranted further consideration in this instance to ensure a coordinated and integrated approach to corridor selection.

In this regard, emphasis was placed on the potential to co-locate the corridor with already proposed renewable energy projects to reduce the physical, environmental and social impacts of the transmission corridor.

The land use constraints identified within this DCSR are shown in Figure 4.

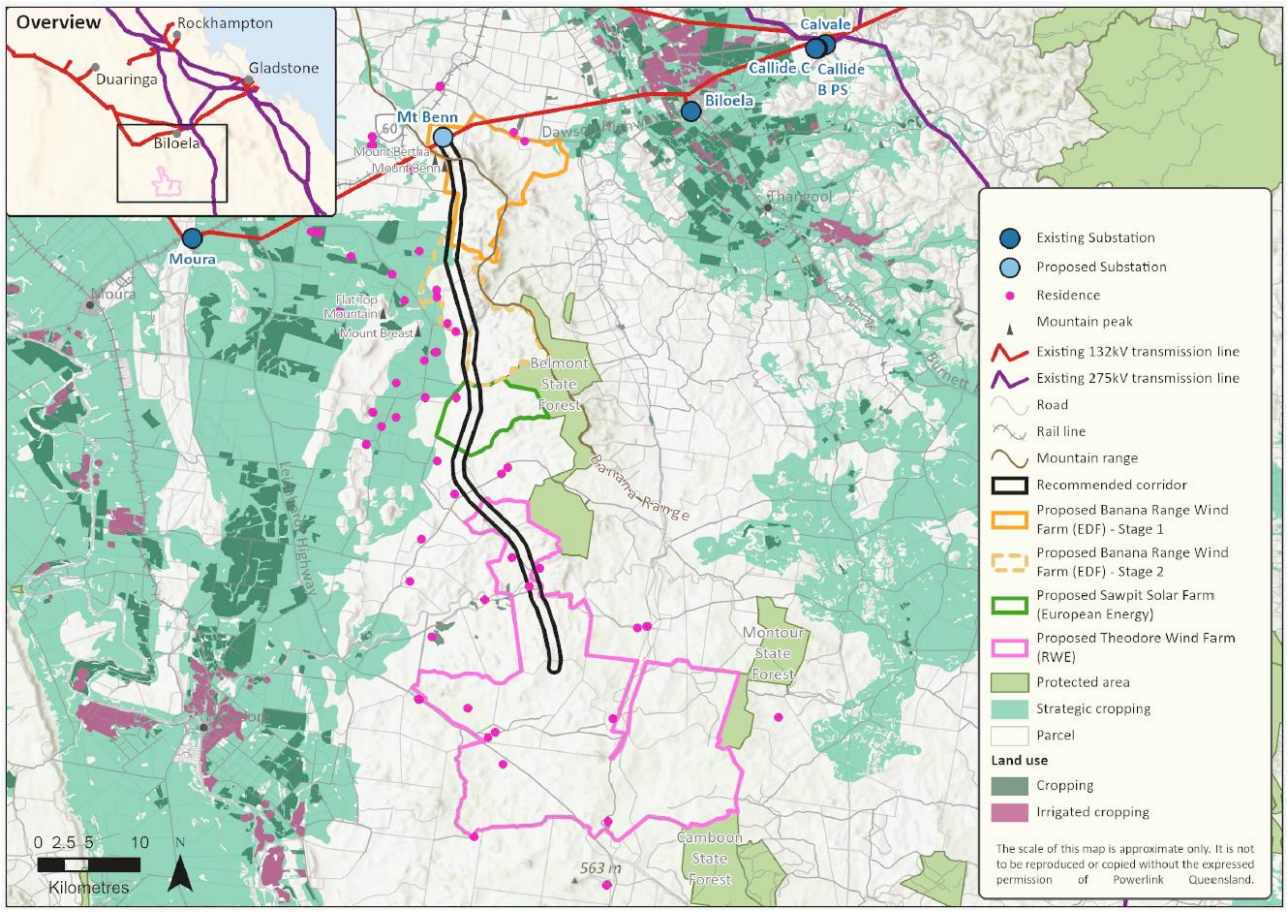


Figure 4 Land Uses

Natural areas

While low-lying land was preferred as being more suitable for the project, there are a range of topographical constraints present within the area as a result of the project being situated at the foothills of the Banana Range, which also contains the Belmont State Forest. These significant topographical features provide a natural eastern boundary to the investigation area and also require the identification of a corridor to carefully consider associated areas of both protected unprotected vegetation

The area contains cleared land as well as regrowth and remnant native vegetation, much of which is found along the foothills of the Banana Range, on the eastern side of the recommended corridor. The identified remnant vegetation is predominantly a mix of Of-concern and Least Concern regional ecosystems. Further west, there are only limited areas containing environmental significance due to the area being predominantly used for grazing and agriculture purposes.

The Protected Matters Search Tool (PMST) identifies Matters of National Environmental Significance protected under the Commonwealth (Cth) Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). An ecological community is a naturally occurring vegetation community. Its structure, composition and distribution are determined by environmental factors such as soil type, position in the landscape, altitude, and climate and water availability. EPBC Act listed threatened ecological communities are listed in in Table 3.2.

Table 3-2 EPBC Act listed threatened ecological communities

Common name	Regional Ecosystem Identifier	Threatended category	Likelihood
Brigalow	11.12.21	Endangered	Likely
	11.3.1	Endangered	Unlikely
	11.9.1	Endangered	Likely
	11.9.5	Endangered	Likely
Coolibah-Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	-	-	Unlikely
Poplar Box Grassy Woodlands on Alluvial Plains	11.3.2	Of-concern	Likely
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	11.3.11	Endangered	Unlikely
	11.9.4a	Of-concern	Likely
Weeping Myall Woodlands	11.3.2	Of-concern	Likely

In addition to the above, the PMST report also identified the following flora and fauna species as occurring within the area:

- 10 EPBC Act-listed threatened flora species
- 27 threatened fauna species (including three classified as Critically Endangered and 10 as endangered)
- 13 migratory species (including one classified as Critically Endangered).

The PMST identified EPBC Act-listed threatened flora and fauna species with the potential to occur within the area are listed in Table 3-3.

Table 3-3 EPBC Act listed threatened flora and fauna communities

Scientific name	Common name	Threatened category	Likelihood
FLORA SPECIES			
Arthraxon hispidus	Hairy-joint Grass	Vulnerable	Likely
Cadellia pentastylis	Ooline	Vulnerable	Likely
Cossinia australiana	Cossinia	Endangered	Likely
Dichanthium queenslandicum	King Blue-grass	Endangered	Known to occur
Dichanthium setosum	Bluegrass	Vulnerable	Likely
Leuzea australis (syn. *Rhaponticum australe*)	Austral Cornflower, Native Thistle	Vulnerable	May
Polianthion minutiflorum	N/A	Vulnerable	May
Solanum dissectum	N/A	Endangered	Likely
Solanum johnsonianum	N/A	Endangered	Known to occur
Xerothamnella herbacea	N/A	Endangered	Known to occur
FAUNA SPECIES			
Birds			
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable	May
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	May
Erythrotriorchis radiatus	Red Goshawk	Endangered	May
Falco hypoleucos	Grey Falcon	Vulnerable	May
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Vulnerable	May
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	Likely

Scientific name	Common name	Threatened category	Likelihood
Grantiella picta	Painted Honeyeater	Vulnerable	Known to occur
Hirundapus caudacutus	White-throated Needletail	Vulnerable	May
Neochmia ruficauda	Star Finch (eastern), Star Finch (southern)	Endangered	Likely
Rostratula australis	Australian Painted Snipe	Endangered	Likely
Stagonopleura guttata	Diamond Firetail	Vulnerable	May
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	May
Mammal			
Dasyurus hallucatus	Northern Quoll	Endangered	Likely
Macroderma gigas	Ghost Bat	Vulnerable	May
Nyctophilus corbeni	Corben's Long-eared Bat, South-eastern Long-eared Bat	Vulnerable	May
Petauroides volans	Greater Glider (southern and central)	Endangered	Known to occur
Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Vulnerable	Likely
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Endangered	Likely
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Foraging, feeding or related behaviour may occur within area
Reptile			
Delma torquata	Adorned Delma, Collared Delma	Vulnerable	May
Denisonia maculata	Ornamental Snake	Vulnerable	Known

Scientific name	Common name	Threatened category	Likelihood
Egernia rugosa	Yakka Skink	Vulnerable	Known
Elseya albagula	Southern Snapping Turtle, White-throated Snapping Turtle	Critically Endangered	May
Furina dunmalli	Dunmall's Snake	Vulnerable	May
Hemiaspis damelii	Grey Snake	Endangered	Likely
Rheodytes leukops	Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver	Vulnerable	Likely
Snail			
Adclarkia dawsonensis	Boggomoss Snail, Dawson River Snail, Dawson Valley Snail	Critically Endangered	May
Migratory			
Actitis hypoleucos	Common Sandpiper	Migratory	May
Apus pacificus	Fork-tailed Swift	Migratory	Likely
Calidris acuminata	Sharp-tailed Sandpiper	Vulnerable	May
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	May
Calidris melanotos	Pectoral Sandpiper	Migratory	May
Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile	Migratory	Likely
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	Migratory	May
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Vulnerable	May
Hirundapus caudacutus	White-throated Needletail	Vulnerable	May
Monarcha melanopsis	Black-faced Monarch	Migratory	May
Motacilla flava	Yellow Wagtail	Migratory	May
Myiagra cyanoleuca	Satin Flycatcher	Migratory	Known to occur

Scientific name	Common name	Threatened category	Likelihood
Rhipidura rufifrons	Rufous Fantail	Migratory	Known to occur

Several unavoidable hydrological constraints were also identified due to the presence of major waterways such as Castle Creek, Lonesome Creek and Banana Creek. These waterways are generally of high ecological significance, being bordered by remnant vegetation, wetlands and areas of regrowth vegetation.

As the project is unable to avoid crossing these waterways, investigations into the possibility of crossing at locations where clearings have already occurred are optimal. Further, whilst low-lying land is more likely to be affected by acid sulphate soils and flooding constraints, these issues may be adequately overcome during the design and construction phase. Similarly, footings can be designed to be located within most geology and soil types and do not constrain the investigations.

In addition to the need to minimise impacts to dense vegetation, corridor selection also largely endeavours to avoid land at risk of increased bushfire intensity.

The natural areas identified within this DCSR are shown in Figure 5.

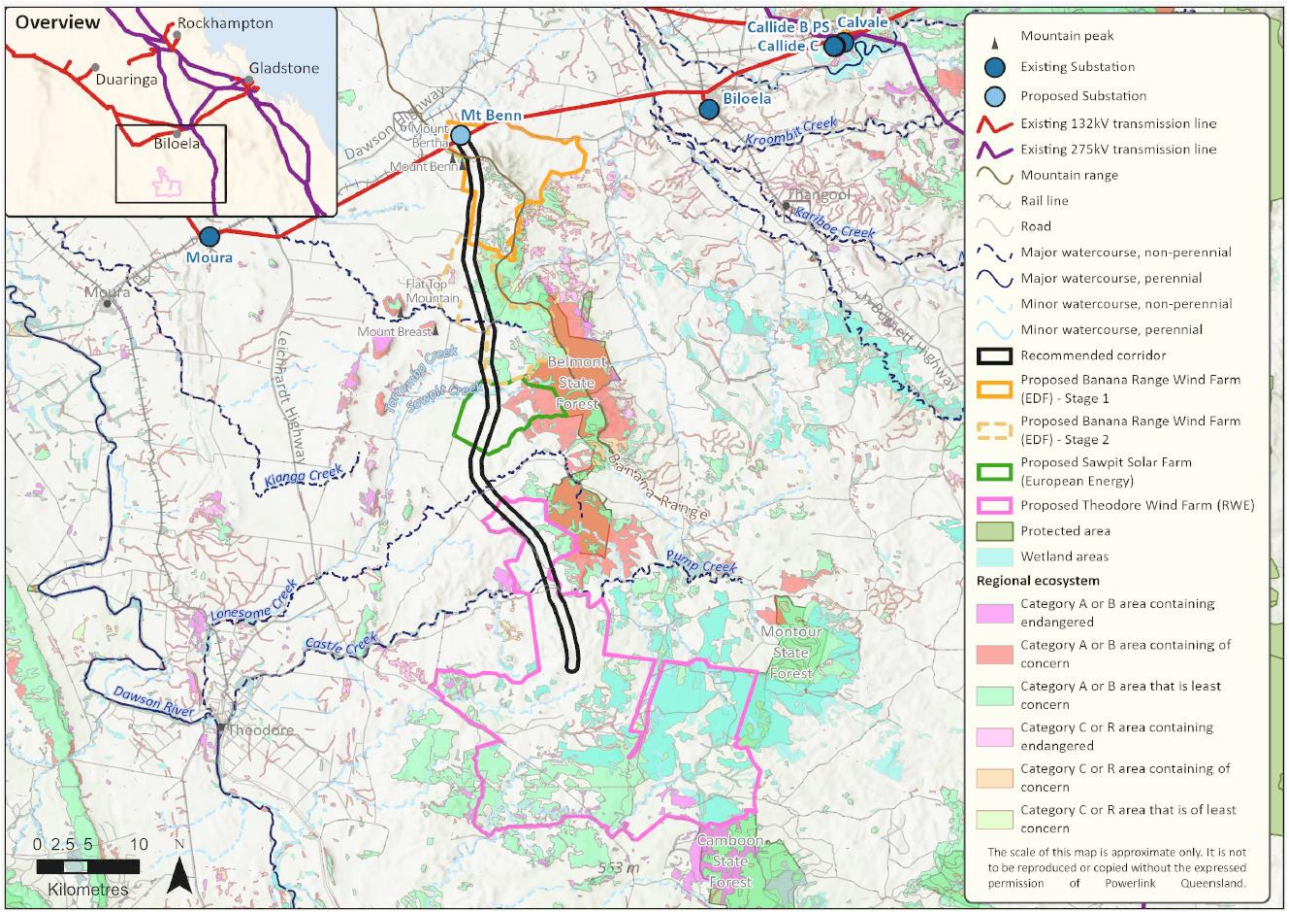


Figure 5 Natural Areas

Indigenous Cultural Heritage

A search of the Aboriginal and Torres Strait Islander Cultural Heritage (ATSICH) Database and Register identified the Gaangalu Nation People and Wulli Wulli People as the cultural heritage parties for the recommended corridor.

The search results also indicated that no Aboriginal or Torres Strait Islander cultural heritage site points or polygons have been recorded within the Project Area. Nonetheless, unregistered Indigenous cultural heritage sites are likely present and will be identified during consultations and further cultural heritage investigations with the Gaangalu Nation People and Wulli Wulli People.

Non-Indigenous Cultural Heritage

A search of the following heritage databases was conducted to identify the presence of non-Indigenous cultural heritage places within the recommended corridor:

- World Heritage List
- National Heritage List
- Commonwealth Heritage List
- Queensland Heritage Register
- Banana Shire Planning Scheme 2021 (Heritage Overlay Map).

The search results indicate that there are no non-Indigenous cultural heritage places located within the Project Area.

Existing Infrastructure

Existing infrastructure has the potential to impact the design and cost of the project, due to the potential need to relocate assets to maintain suitable offsets for safety and operational purposes. Relocating existing infrastructure may also adversely affect other surrounding land uses and is likely to increase costs associated with the project.

Access to roads for construction machinery is critical to the efficient construction of energy infrastructure. State controlled roads are not located within the recommended corridor area. Local roads, which are managed by Banana Shire Council, are present throughout the area. Whilst not an impediment to corridor selection, access to the local road network is crucial in the construction and ongoing maintenance of the transmission line and therefore did not constrain the project.

The Moura Rail System is located within the northern part of the investigation area and runs in a north-east direction, however does not impact the recommended corridor.

Ergon Energy high voltage cables and powerlines which provide critical connections to rural properties, exist within and adjacent to the recommended corridor. An existing 132kV Powerlink transmission line and easement extend along the north-western boundary of the investigation area which together with the Dawson Highway and Moura Railway, created a physical boundary to corridor alternatives to the north. However, it is noted that crossing electricity infrastructure presents only design issues and was not a significant consideration.

No airstrips exist within the broader investigation area however smaller airstrips not identified on mapping tools may be identified upon further site and project investigations.

There are eight granted exploration permits (*Mineral Resources Act 1989*) which comprise four exploration permits for coal and four exploration permits for minerals other than coal which exist within the broad investigation area and which impact the recommended corridor. In addition, while there have been some active prospects for copper and gold, many occurrences are listed as abandoned. There are no listed petroleum or mining leases. In this instance, the exploration permits did not affect the corridor selection process.

3.2.3 Recommended Corridor

Taking into consideration the significant constraints identified during preliminary investigations, a recommended corridor was identified. The recommended corridor is shown in Figure 6.

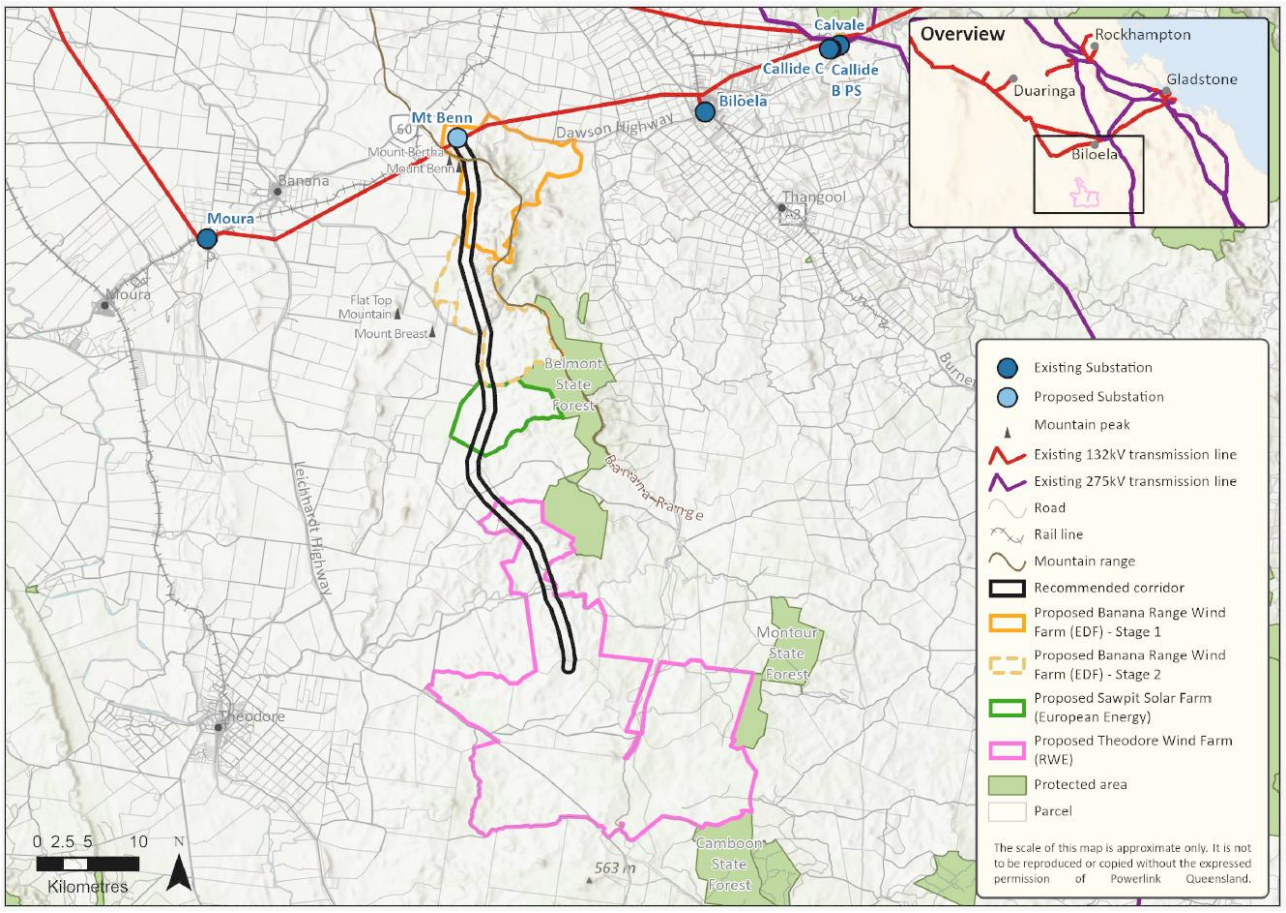


Figure 6 Recommended transmission line corridor

This recommended corridor was identified based on the following:

- provides a relatively direct route between the proposed Theodore Wind Farm and the proposed Mt Benn Substation.
- includes a minimal number of properties
- seeks to avoid significant impacts on agriculture, cropping and grazing lands
- is located a considerable distance from major highways and existing townships such as Banana
- identifies has potential to co-locate with existing distribution powerlines and other proposed renewable energy projects in the area.

Agriculture remains one of the main industries within the Banana Shire with both irrigation and dryland farming being undertaken to grow a range of produce including lucerne, cotton, sorghum, wheat, legumes

and herbs. Due to the intensive use of the area for cropping, not all cropping land could be avoided. However, the areas of strategic cropping land that do occur are limited and mainly comprise isolated pockets. Opportunities to reduce this further will be considered during the design phase of the project.

Whilst the corridor does include areas of wetlands, there are no mapped wetland areas that traverse the full width of the corridor. In addition, areas of regional ecosystems intersect the corridor though the mapped vegetation does not traverse the full width of the corridor. Opportunities to reduce these impacts further will be considered during the design phase of the project.

A summary of the quantitative criteria considered in the identification of the recommended corridor are identified in table 3-4. Further, a more informed summary of the quantitative criteria considered has been provided within table 3-5.

Table 3-4 Summary of quantitative criteria considered within the recommended corridor

Criteria	Recommended Corridor
Social criteria	
Criteria 1: Tenure and Zoning	
Number of freehold land parcels intersected	16
Number of landholders directly impacted	12
Number of residential dwellings within the corridor	1
Number of land parcels within tenures other than freehold (no.)	1
Land other than rural zone intersected (ha)	0.0
Criteria 2: Key Resource Areas	
Area of corridor within key resource areas (ha)	0.0
Criteria 3: Strategic Cropping Land	
Area of corridor within strategic cropping land (ha)	197.8
Environment criteria	
Criteria 4: Watercourses/waterways and flooding	
Number of watercourse intersections	5
Area within flood mapping (ha)	54.8

Criteria	Recommended Corridor
Criteria 5: Vegetation and protected areas	
Threatened ecological communities (ha)	14.1
Category B (remnant) least concern Regional Ecosystem (RE) (ha)	335.3
Category B (remnant) of concern RE (ha)	51.0
Category B (remnant) endangered RE (ha)	0.4
Category C (high-value regrowth vegetation) RE (ha)	7.2
Category R (reef regrowth watercourse vegetation RE) (ha)	14.3
Economic criteria	
Criteria 6: Corridor length and bend points	
Length of corridor (km)	55.4
Number of bend points (estimate only)	17
Criteria 7: Slope	
Slope 10-20% (% of corridor)	20%
Slope >20% (% of corridor)	6%
Criteria 8: Existing infrastructure	
Low voltage distribution infrastructure (i.e. Ergon Energy) crossings corridor (no.)	3
Crossings of formed road (no.)	2
Length of formed roads within corridor (km)	3.6

Table 3-5 Summary of considered criteria associated with the recommended corridor

Assessment Criteria	Recommended Corridor Assessment Outcome
Social	
Land use and zoning	The recommended corridor is located within the Rural Zone under the *Banana Shire Planning Scheme 2021*. The placement of the corridor within the rural zoning is more preferential to the placement within residential or open space zoned land because of the social impacts resulting from easement acquisition within a residential zoned area and amenity impacts associated with changing open parkland to a substation. Further, areas used for grazing activities including broadacre cropping are more common further to the west which reflects the flatter topography. As such, the recommended corridor is not envisaged to significantly impact current grazing activities and will avoid areas used for cropping purposes.
Property requirements	The recommended corridor is predominantly located on freehold land with only one of the 16 properties being leasehold title. In addition, whilst there are 16 properties within the recommended corridor, there are 12 property owners, reducing the corridor's potential social and amenity impact.
Affected stakeholders	The recommended corridor is located in a rural area and currently impacts one dwelling. Given the current width of the recommended corridor is 1km, there is opportunity in the design of the final easement alignment to ensure minimal impact upon this dwelling. The recommended corridor is located over land that is earmarked for the proposed Theodore Wind Farm, the proposed Banana Range Wind Farm and potentially the proposed Sawpit Solar Farm, maximising the ability to co-locate with future renewable energy infrastructure and significantly reducing the overall social and economic impact of the project.
Visual amenity	Based on desktop analysis, the recommended corridor impacts minimal receptors due to its location. Further, the topography of the area is such that advantage can be taken of elevated locations for the placement of towers. Using the network of ridges provides the opportunity to develop access tracks and construction laydown areas that avoids the steeper section of the corridor, in addition to lessening the overall visual footprint of the project given the topography. Methods to reduce visual amenity impacts will be considered in the design component of the project.

Assessment Criteria	Recommended Corridor Assessment Outcome
Environment	
Environment values	The recommended corridor contains cleared land as well as regrowth and remnant native vegetation, much of which is found along the foothills of the Banana Range. Native woody vegetation within the corridor is also identified under the regulated vegetation management map as being comprised of several regulated vegetation categories defined by the *Vegetation Management Act 1999* (VM Act) including: Regional ecosystems are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil regulated under the VM Act. Regional ecosystems within the recommended corridor include a range of Endangered, Of Concern and Least Concern communities. Certain REs listed in Queensland also correspond to Threatened Ecological Communities (TECs) listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999, and are also found to exist within the recommended corridor. Although these regional ecosystems may not need to be cleared in their entirety within each corridor, impacts could be expected where vegetation is removed for establishment of transmission structures or for access tracks. Further, opportunities exist for the transmission line to navigate around several areas of regional ecosystems to prevent the need for disturbance or removal. This will be determined in the detailed design phase. Site investigations will be undertaken to date validate the desktop assessments.
Heritage	Based on the search results of both Indigenous and non-Indigenous cultural heritage databases, there are no existing cultural heritage values recorded within the recommended corridor. Further consultation and engagement with the identified cultural heritage parties - the Gaangalu Nation People and Wulli Wulli People - will be undertaken by Powerlink to determine the extent and nature of other Indigenous cultural heritage values that may be present within the recommended corridor.
Waterways	Surface water features cross the recommended corridor, generally flowing west to the Dawson River. Given the logistical requirements of the project, many of these water features cannot be avoided. These major waterways include Castle Creek, Lonesome Creek and Banana Creek together with a range of associated tributaries including Tarramba Creek and Sawpit Creek. These waterways are generally of high ecological significance, being bordered by remnant vegetation, wetlands and areas of regrowth vegetation. The impacts upon waterway crossings can generally be managed, but may require specific design responses to address the presence of riparian vegetation, increased flood and erosion risk and potential changes in elevation. Such design responses may increase the number of transmission structures required, their respective height or

Assessment Criteria	Recommended Corridor Assessment Outcome
	the level of erosion prevention measures required, thus increasing costs, but importantly lessening the overall impact upon the waterway and the associated ecological attributes.
Wetlands	Small areas of wetlands are sporadically located throughout the recommended corridor, many of which are associated with the mapped waterways. Inland wetlands provide important breeding and feeding habitats for many plants and animals and as such disturbance to wetlands should be avoided if possible. Similarly to waterways, the impacts upon wetlands can generally be managed, but may require specific design responses to avoid such critically impact areas.
Economic	
Corridor Length	The recommended corridor is approximately 55.4km in length and represents a relatively direct route possible between the proposed Theodore Wind Farm and the proposed Mt Benn Substation. Longer corridors generally indicate a requirement for more materials, greater areas of disturbance, longer construction times and maintenance over infrastructure life. Corridor length has been used as a proxy to compare for potential upfront and ongoing maintenance costs for the infrastructure. The preference is for shorter corridor lengths.
Strategic Cropping Land	Strategic Cropping Land (SCL) are areas that are, or are likely to be, highly suitable for cropping due to a combination of the land's soil, climate and natural features. Other criteria used to define SCL include water availability, infrastructure for transporting or processing produce and legal constraints The recommended corridor largely avoids mapped areas of SCL which is more commonly associated with extensive areas of low-lying land currently used for agricultural production further to the west. While the presence of the project within SCL may have limited impacts due to the transmission lines being located above ground level, the location of transmission structures and the need to maintain a cleared access track may reduce use of the easement for agriculture in some areas. Consequently, corridors affecting a smaller extent of SCL were considered the most favourable. Further, the recommended corridor is located amongst steeper and more undulating terrain which is characteristic of rudosol soils which are poorly developed (shallow and stony) and are not conducive to cropping. Importantly, the recommended corridor intersects larger areas of rudosol soils and passes over steeper terrain, which severely reduces the impact upon SCL, as such soil types are not generally favoured for agricultural purposes.

Assessment Criteria	Recommended Corridor Assessment Outcome
Bend Points	The number of bend points is a proxy measure of the cost of the transmission line. It is assumed that the greater number of bends, the higher the cost of construction. Whilst the recommended corridor was identified to contain a higher number of bend points than other potential corridor alternatives, the overall length of the recommended corridor was found to be the shortest of all the alternative corridors considered by RWE, lessening the cost implications associated with a greater number of bend points. In addition, as the Recommended Corridor is located within close proximity to the Banana Range, it has more frequent bend points to follow the base of the range and navigate around areas of higher elevation. Ultimately, the additional number of bend points associated with the terrain of the recommended corridor did not by itself, have a material impact on the selection of the recommended corridor.
Slope	Steep topography limits vehicle and machinery access and significantly increases the required earthworks at each tower site. Additional easements and access routes are generally required in steep country and with potential for environmental impacts. As the Recommended Corridor is located within close proximity to the Banana Range, the route does encounter more undulating topography than areas further to the west. Despite this, the corridor selection process adopts a balanced approach and equally considers all assessing criteria in determining a recommended corridor. In this instance, a shorter and more direct corridor route that maximised co-location opportunities with proposed renewable energy projects, and reduced overall social and visual amenity impacts, was considered more beneficial to the project than slope alone. Contrary to the above, there are also opportunities to refine tower locations to benefit from ridge top locations to increase the distance between towers.
Existing Infrastructure	Access to roads for construction machinery is critical to the efficient construction of energy infrastructure. The recommended corridor does not cross any state controlled roads or existing rail lines. Whilst local roads are present within the corridor alternatives explored, the recommended corridor crosses the least number. Importantly though, whilst not an impediment to corridor selection, access to the local road network does assist in the construction and ongoing maintenance of the transmission line. The recommended corridor has the least number of crossings required over existing Ergon Energy high voltage cables and powerlines which are currently used to provide critical connections to rural properties.

Assessment Criteria	Recommended Corridor Assessment Outcome
	An existing 132kV Powerlink transmission line and easement extends along the north-western boundary of the investigation area and will assist in co-location opportunities in connecting the transmission line to the proposed Mt Benn Substation. No airstrips exist within the broader investigation area however smaller airstrips not identified on mapping tools may be identified upon further site and project investigations.

3.2.4 Alternative corridor investigations

As part of their initial project planning activities, RWE investigated the following corridor alternatives:

1. A central corridor to the west of Mt Benn

   Investigations concluded that whilst this option contained many outcomes as favourable as the identified recommended corridor, particularly in relation to environmental and economic outcomes, this option would have still resulted in impacts to additional properties and landholders.

   In addition, given the proximity of proposed renewable energy projects within the area, it was preferred to maximise the co-location opportunities with other large-scale infrastructure, afforded by the identified recommended corridor.

2. A corridor to the west of Flat Top Mountain

   Investigations identified that whilst the environmental outcomes were found to be better with this option (when taking into account opportunities to avoid impacts during the detailed design phase), there were greater impacts upon existing agricultural land uses (including mapped areas of Strategic Cropping Land) and wetlands, along with the most waterway crossings.

   Critically, this option was the longest and impacted the largest number of properties and landholders, and thus had the potential to result in the most social impacts and disruption to existing land uses.

4.0 Legislative and Approval Requirements

There are a number of potential legislative and approval requirements in order to progress the project. Some of the State and Federal Government approval frameworks are discussed in this section. Potential approvals are subject to final corridor refinement, actual infrastructure disturbance locations and further ecological and cultural heritage investigations, but however, may include:

- *Environment* Protection and Biodiversity Conservation Act 1999 (EPBC Act) (Cth) Referral and potential approval for significant impact on Matters of National Environmental Significance (MNES)
- Ministerial Infrastructure Designation under the Planning Act 2016 (Planning Act) (Qld) for electricity operating works
- Clearing permit for the clearing of protected plants under the Nature Conservation Act 1992 (NC Act) (Qld)
- Species Management Program (SMP) under the Nature Conservation (Animals) Regulation 2020 (Qld) for the tampering of active breeding places where impact cannot be avoided (Low Risk SMP required for impact to Least Concern species/High Risk SMP is required for impact to colonial breeders, near threatened, Vulnerable, Endangered and Critically Endangered species).

Prior to the future construction of the project, further assessment of the project's potential legislative obligations should be undertaken once the corridor is further refined, and additional desktop and field investigations have been undertaken.

A full list of legislative considerations and other obligations required for the project is provided within Appendix A.

5.0 Conclusion and Next Steps

Following release of the DCSR, additional investigations and feedback from landholders, Traditional Owner groups, the wider community and other stakeholders is needed to finalise the 1km-wide corridor. Powerlink will undertake further engagement and analysis before finalising this corridor.

Community-based engagement sessions are planned to discuss the recommended corridor and associated corridor selection process. These sessions will be held throughout the local region, to help facilitate the provision of feedback. Further information is available on our website (powerlink.com.au/theodore) and feedback on this DSCR is open until **5pm 29 November 2024.**

The final 1km-wide corridor will be published in the Final CSR to be released in early 2025. Powerlink will continue to work with landholders to undertake detailed technical studies to determine a 60m-wide final easement alignment.

5.1 Future studies and engagement

Further investigations are required to support the approval process for the project under state legislation. These additional investigations will assist with the continued refinement to avoid and/or minimise impacts to landholders and surrounding community areas, as well as environment, cultural values and agricultural areas through siting and design.

Social

Landholder and community consultation - engagement with stakeholders, particularly impacted and surrounding landholders and Traditional Owner groups, on the recommended corridor to understand use of land, proximity to homes and potential impacts to properties.

Social and economic impact assessment – investigations to identify potential social and economic impacts from the construction and operation of the project.

Environment, heritage and planning

Ecology – further assessment, including targeted field surveys of the recommended corridor to identify areas that contain habitat for threatened flora and fauna species, or threatened ecological communities. The assessment will also determine the potential impact to habitat for threatened flora and fauna species.

Biosecurity matters - further investigation into the potential biosecurity risks will be undertaken prior to construction.

Heritage studies - further investigations are required to identify any potential risk to Aboriginal and Non-Aboriginal heritage values.

Economic

Land, geology and soils - contaminated land, acid sulfate soils or dispersive soils can pose construction issues due to the need to implement specialist management or design practices and/or treatment. Field investigations including sampling and analysis will be undertaken as part of geotechnical investigations.

Poor ground conditions - geotechnical investigations to identify problematic soils and geology such as hard rock, which can pose constructability difficulties, or substantially increase project costs due to specialist

design required and/or additional construction materials and foundations, as well as access and easements to be provided.

Flood potential - further investigation into the potential for flooding within the corridor will be required to understand the risk to the project both during construction and operation.

Crossings and bends - further investigation to confirm the minimum number of interfaces for the corridor with other infrastructure such as roads, rail, pipelines and other identified values is required to understand where these asset types are located and options for the final alignment. The number of potential bends and associated impacts to the project can be assessed and further refined during the next phase.

As the project progresses, Powerlink remains committed to engaging with landholders, Traditional Owner groups, the community and other stakeholders to share information on project milestone and seek feedback to inform project decision-making.

6.0 References

Banana Shire. (2021, June 23). *Banana Shire Planning Scheme 2021.* https://www.banana.qld.gov.au/planning-scheme

DAF. (2017). Accepted development requirements for operational work that is the removal, destruction or damage of marine plants. Brisbane, Queensland: DAF, Queensland Government. Retrieved from https://www.daf.qld.gov.au/__data/assets/pdf_file/0005/1258394/daf-adr-marine-plants.pdf

DAF. (2018). Accepted development requirements for operational work that is constructing or raising waterway barrier works. Brisbane: Queensland Government.

DAF. (2023). What is a waterway barrier work? Retrieved 16 July, 2024, from https://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/what-is-a-waterway-barrier-work

DAF. (2023). What is not a waterway barrier work? Retrieved 16 July, 2024, from https://www.daf.qld.gov.au/business-priorities/fisheries/habitats/policies-guidelines/factsheets/what-is-not-a-waterway-barrier-work

DATATSIPCA. (2021). Aboriginal and Torres Strait Islander Cultural Heritage Database and Register. Retrieved 16 July, 2024, from https://culturalheritage.datsip.qld.gov.au/achris/public/application-for-advice/home DCCEEW. (2023)

Protected Matters Search Tool. Retrieved 9 July 2024, from https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool

Department of Defence. (2024). UXO Map, 1.0.2.21. Retrieved 16 July 2024, from https://uxo-map.defence.gov.au/

DES. (2020). Flora Survey Guidelines - Protected Plants, Version 2.01. Brisbane, Queensland: Department of Environment and Science, Queensland Government. Retrieved from https://www.des.qld.gov.au/policies?a=272936:policy_registry/gl-wl-pp-flora-survey.pdf

DES. (2023). WildNet database. Retrieved 16 July, 2024, from https://www.qld.gov.au/environment/management/environmental/environmental-reports-online

Department of Resources. (2023). Request a vegetation map or property report. Retrieved 16 July, 2024, from https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form

DRDMW. (2023). Riverine protection permit exemption requirements, WSS/2013/726, Version 2.03 2/06/2023. Brisbane, Queensland: DRDMW, Queensland Government. Retrieved from https://www.resources.qld.gov.au/?a=109113%3Apolicy_registry%2Friverine-protection-permit-exemption-requirements.pdf

DSDILGP. (2023a). Development Assessment Mapping System. Retrieved 16 July, 2024, from https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/?accordions=SARA%20DA%20Mapping

DSDILGP. (2023b). State Planning Policy Interactive Mapping System. Retrieved 16 July, 2024 from https://spp.dsdip.esriaustraliaonline.com.au/geoviewer/map/planmaking

DSITI & DNRM. (2018). Guidelines for Agricultural Land Evaluation in Queensland, Second Edition. Brisbane, Queensland: Department of Science, Information Technology and Innovation (DSITI) and the Department of Natural Resources and Science, Information Technology and Innovation (DSITI) and the Department of Natural Resources and Mines (DNRM), Queensland Government.

National Native Title Tribunal. (2023, September 30). Native Title Vision. Retrieved 16 July, 2024, from http://www.nntt.gov.au/assistance/Geospatial/Pages/NTV.aspx

Queensland Government. (2023a). Queensland Globe. Retrieved 16 July, 2024, from https://qldglobe.information.qld.gov.au

Appendix A

Summary of legislative considerations

A summary of legislation potentially applicable to the project is provided below in Table A-1 below. Further design and detailed investigations and assessment will be required to confirm the appropriate approval pathway for the project.

Table A-1 Summary of legislation

Legislation	Summary
Commonwealth legislation	
Environment Protection and Biodiversity Conservation Act 1999	The EPBC Act (Cth) is the centrepiece of Commonwealth environmental laws. It provides a legal framework to protect, and manage nationally, and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as Matters of National Environmental Significance (MNES). MNES include: The world heritage values of a declared world heritage property; The national heritage values of a declared national heritage place; The ecological character of a declared Ramsar wetland (wetlands of international importance); Listed threatened species and ecological communities; Listed migratory species; Nuclear actions (including uranium mining); Commonwealth marine areas; The Great Barrier Reef Marine Park; and A water resource, in relation to coal seam gas development and large coal mining development. The EPBC Act is administered by the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) 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 DCCEEW 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 further; Not a controlled action 'particular matter': the project does not need to be assessed further, providing the action is completed in accordance with conditions that are supplied with the decision; and A controlled action: the project will need to be assessed against the EPBC Act, through one of several processes available. Ecological investigations and subsequent significant impact assessment will be completed to understand the presence of, and potential impacts on, MNES. Outcomes of these investigations

Legislation	Summary
	will determine the requirement for referral to the Commonwealth Minister for the Environment.
Native Title Act 1993	The *Native Title Act 1993* (Native Title Act) (Cth) establishes a national framework for the protection and recognition of Native Title, including by conferring on Indigenous people who hold (or claim to hold) Native Title rights and interests in respect of any land or waters, the right to be consulted with and in some cases to participate in decisions about activities proposed to be undertaken. The recommended corridor intersect two native title claims: Wulli Wulli People #3Claim Area (QCD2017/011); and Gaangalu Nation People Claim Area (QCD2024/001). Under the Native Title Act (Cth), Native Title cannot be claimed on freehold land as it is extinguished over the area. Where the corridor intersects roads that were declared as roads on or before 23 December 1996, Native Title is extinguished and is not required to be considered. On land where native title exists, Powerlink must comply with the requirements of the Native Title Act (Cth) to secure an easement for the transmission line. Construction of the transmission line is covered by processes under section 24KA or possibly by an Indigenous Land Use Agreement. 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 (Cth) are low risk to the project.
State legislation	
Aboriginal Cultural Heritage Act 2003	The *Aboriginal Cultural Heritage Act 2003* (Qld) is administered by Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts (DTATSIPCA) and aims 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 the Cultural Heritage Duty of Care Guidelines. 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 may also 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, or within proximity to registered Aboriginal cultural heritage sites or places; Works in areas with little or no previous ground disturbance; and Works in proximity to water features. Powerlink is in the process of undertaking engagement with the relevant parties to discuss the project and its potential impacts.

Legislation	Summary
Acquisition of Land Act 1967	The *Acquisition of Land Act 1967* (Qld) is administered by Department of Resources (DoR) and 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.
Biosecurity Act 2014	The *Biosecurity Act 2014* (Biosecurity Act) (Qld) is administered by the Department of Agriculture and Fisheries (DAF) and provides a biosecurity system framework which aims to minimise biosecurity risk, and facilitate responses to biosecurity impacts, to ensure the safety, and quality of agricultural inputs, and to align the state's management of biosecurity risk and other requirements for plant and animal responses to biosecurity risk with federal and international obligations. The Biosecurity Act also aims to manage emerging endemic, and exotic pests, and diseases as well as the transfer of diseases between humans and animals and contaminants in carriers. Under the Biosecurity Act, a general biosecurity obligation is placed on all persons to undertake all reasonable and practicable measures to prevent or minimise biosecurity risk. Additionally, the movement of biosecurity matter must comply with movement restrictions associated with each relevant biosecurity zone, and biosecurity instrument permits are required for the movement of biosecurity matter which cannot comply with movement restrictions.
Environmental Offsets Act 2014	The purpose of the *Environmental Offsets Act 2014* (EO Act) (Qld) is administered by Department of Environment, Science and Innovation (DESI) and is to counterbalance the significant residual impacts of particular activities on prescribed environmental matters through the use of environmental offsets. Prescribed environmental matters are described under the EO Act (Qld) as a MNES, Matters of State Environmental Significance (MSES) and Matters of Local Environmental Significance (MLES). An environmental offset may be required as a condition of development approval, where following consideration of avoidance and mitigation measures, a prescribed activity is likely to result in a significant residual impact on a prescribed environmental matter. Once the administering authority has decided that a prescribed activity is required to provide an offset, the environmental offset is required to be delivered in accordance with the EO Act (Qld), the *Environmental Offsets Regulation 2014* and the Queensland Environmental Offsets Policy. The desktop assessment has identified that MNES and MSES are potentially present within the recommenced corridor, however this will need to be confirmed during future phases of the project through field surveys. To avoid duplication between jurisdictions, state and local governments can only impose an offset condition in relation to a prescribed activity if the same, or substantially the same impact, or substantially the same matter has not been subject to assessment under the EPBC Act (Cth). It is important to note that advice from Queensland Treasury is that the EO Act (Qld) does not apply to the designation of premises for development of infrastructure, however the designation decision can still apply compensatory measures/requirements akin to an offset.

Legislation	Summary
Electricity Act 1994	The *Electricity Act 1994* (Qld) is administered by the Department of Energy and Climate, requires that all electricity industry participants must ensure a safe, efficient, and reliable supply of electricity, as well as ensure that the supply of electricity is carried out in an environmentally sound manner. Section 31 of the *Electricity Act 1994* (Qld) states that the transmission entity must properly account for the environmental effect of its activities under the transmission authority. Powerlink holds a transmission licence in Queensland and is required to develop its network to meet the security, and reliability standards of the National Electricity Rules, the *Electricity Act 1994* (Qld) and the terms of its transmission licence. The legislative requirements of the *Electricity Act 1994* (Qld) are standard to Powerlink projects and pose a low risk to the construction and operation of the transmission line.
Electrical Safety Act 2002	The *Electrical Safety Act 2002* (Qld) is administered by the Department of State Development and Infrastructure and seeks to regulate electricity works to prevent death, injury or destruction caused by electricity. The transmission line must be designed in compliance with the requirements outlined under the *Electricity Safety Act 2002* (Qld). These requirements are standard to Powerlink processes and are considered to have a low risk to the project.
Environmental Protection Act 1994	The *Environmental Protection Act 1994* (EP Act) (Qld) is administered by Department of Environment, Science and Innovation (DESI) and aims to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future. The EP Act regulates activities that will or may have the potential to cause environmental harm and prescribes several mechanisms to ensure that objectives are met. The two primary environmental duties that apply to everyone in Queensland are: General environmental duty – a person must not carry out any activity that causes, or is likely to cause environmental harm, unless all reasonable and practicable measures to prevent or minimise the harm have been taken. Environmental harm is defined in Section 14 of the EP Act (Qld) as any adverse effect, or potential adverse effect (whether temporary or permanent and of whatever magnitude, duration or frequency) on an environmental value and includes environmental nuisance. Duty to notify of environmental harm – a person must inform the administering authority and landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm that is not authorised. The EP Act (Qld) also provides the power to administering authorities to order the actions to be taken to improve environmental performance, conduct audits, and environmental evaluations of activities, approve environmental management programs and impose penalties or prosecute persons for non- compliance with the requirements of the EP Act (Qld). The EP Act (Qld) is supported by the following subordinate legislation: *Environmental Protection Regulation 2019 (EP Regulation);* *Environmental Protection (Air) Policy 2019 (EPP (Air));* *Environmental Protection (Noise) Policy 2019 (EPP (Noise)); and*

Legislation	Summary
	Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP (Water and Wetland Biodiversity)).
Fisheries Act 1994	The *Fisheries Act 1994* (Fisheries Act) (Qld) is administered by DAF and governs the management of fisheries, declared fish habitat areas and marine plants. Works which may cause disturbance to 'waterways' as defined under the Fisheries Act (Qld) 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'. Should any works within a waterway not comply with the accepted development requirements, a development permit is ordinarily required under the Planning Act 2016 (Qld). However, if the project is granted an Infrastructure Designation, operational work for waterway barrier works will be considered accepted development and will not require a development permit.
Land Act 1994	The *Land Act 1994* (Qld) is administered by the Department of Resources (DoR) and governs the allocation and management of land for development. The *Electricity Act 1994* (Qld) provides exemptions to the *Land Act 1994* (Qld) for works by transmission entities. 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* (Qld), as well as undertake works on road reserves through written agreement from the road authority under section 102.
Nature Conservation Act 1992	The *Nature Conservation Act 1992* is administered by DESI and is the primary legislation governing the protection and management of native wildlife, habitat and protected areas in Queensland. 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 endangered, vulnerable, threatened or near threatened flora is known or likely to exist. Where clearing is required in an area containing a protected plant species, a clearing permit must be obtained from DESI.
Planning Act 2016	The *Planning Act 2016* (Qld) is administered by the Department of Housing, Local Government, Planning and Public Works and establishes a system of land use planning and development assessment prescribed under the Planning Regulation 2017 (Planning Reg). The proposed project is considered 'Electricity Operating Works', which is considered 'infrastructure' and therefore prescribed development under the Planning Reg. Under the *Planning Act 2016* (Qld), the Planning Minister is the only minister with the power to designate land for infrastructure. The 'Minister's Guidelines and Rules' outlines the process for making a ministerial designation. An approval for a Ministerial Infrastructure Designation (MID) will require submission of an environmental assessment report that 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* (Qld), infrastructure that is designated is considered accepted development and will not require further approvals under the *Planning*

Legislation	Summary
	Act 2016 (Qld); with the exception of building work approval under the *Building Act 1975* (Qld). A MID will be required for construction of the transmission line.
State Planning Policy	The State Planning Policy (SPP) identifies matters of State interest requiring protection and enhancement. The SPP is at the top of the planning hierarchy in Queensland and is the overarching policy for all other regional and local planning instruments. The SPP States that the SPP applies to the extent relevant, when designating premises for infrastructure under the Planning Act 2016 and development applications.
Transport Infrastructure Act 1994	The *Transport Infrastructure Act 1994* (Qld) is administered by the Department of Transport and Main Roads (DTMR) and regulates the management of state-controlled road networks across Queensland. Under section 50 of the *Transport Infrastructure Act 1994* (Qld), 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 completed where written approval has been granted from the DTMR. Under section 33 of the *Transport Infrastructure Act 1994* (Qld), written approval is required from the DTMR to carry out road works on a State-controlled Road (SCR) or interfere with a SCR or its operation. This may include where road works to a Council Road interferes with a SCR or its operations. Under section 62 of the *Transport Infrastructure Act 1994* (Qld), written approval is required from DTMR to locate a permitted access on a SCR. A decision of access approval may include conditions or restrictions on the location or use of the permitted road access, type or number of vehicles to use the permitted road access location. Under the *Transport Infrastructure (Rail) Regulation 2006* permission from the railway manager (Queensland Rail) is required to take over dimensional road loads across Queensland Rail infrastructure (e.g. rail level crossings and rail bridges).
Vegetation Management Act 1999	The *Vegetation Management Act 1999* (VM Act) (Qld) is governed by the DoR and seeks to manage native vegetation across Queensland. 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. Clearing of any relevant remnant or regulated regrowth vegetation constitutes operational work under schedule 10 of the *Planning Regulation 2017*, which will require development approval unless a vegetation clearing code or exemption applies. Under Section 22A of the VM Act (Qld), an application for operational work, including applications where DoR is a concurrence agency, cannot be accepted as properly made unless the Chief Executive is satisfied that the development is for a relevant purpose. Exemptions exist for electricity infrastructure were associated with an infrastructure designation. Any infrastructure designation or development application will need to demonstrate that Powerlink has sought to reduce the impacts of vegetation clearing through the hierarchy of avoid, minimise and mitigate. Where a significant residual impact remains, an offset, or compensatory measures may be required.
Water Act 2000	The *Water Act 2000* (Water Act) (Qld) is administered by the Department of Regional Development, Manufacturing and Water, and provides a legislative framework for the

Legislation	Summary
	sustainable use, allocation, and management of water resources in Queensland and regulates activities occurring within designated watercourses under the *Water Act 2000* (Qld). 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* (Qld) 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.
Regional Plans	The recommended corridor and site are subject to the Central Queensland Regional Plan 2013. The plan was implemented in 2013 to provide policy responses to resolve the region's most important issues affecting its economy and the liveability of its towns. The plan specifically provides direction to resolve competing state interests relating to the agricultural and resources sectors, and to enable the growth potential of the region's towns. The plan's regional policies address the emerging regional issues of land use competition between the agricultural and resources sectors, and the need to protect areas required for the growth of towns. The plan also discusses other state interests relevant to land use planning in the region, including housing and liveable communities, economic growth, environment and heritage, and hazards and safety. The transmission line and substation are consistent with the intent of the plan, to provide continued distribution capacity for the region.
Local Laws	The project is located within Banana Shire Council Local Government Area. Local Government Areas are subject to individual Local Planning Instruments under the Planning Act (Qld), as well as a range of local laws under the *Local Government Act 2009* (Qld). Local laws under the *Local Government Act 2009* (Qld) are used to regulate matters specific to LGAs, particularly relating to pests and weeds, use of local government roads and nuisances such as noise and dust. While the approvals framework for this project gives rise to 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: Local Law No. 3 (Community and Environmental Management); and Local Law No. 4 (Local Government Controlled Areas, Facilities and Roads). Once the land becomes designated as part of the MID process, development relevant to the designation becomes accepted development under the local planning scheme, and, further planning approval is not required. However, the Minister may have regard to the local government assessment framework and decisions may be influenced by zoning, land-use intent, and local ordinances and by-laws. Additionally, the local council will be consulted with during the MID process with regards to impacts on local government-controlled roads, prior to the commencement of construction.

Appendix B

Acronyms in DCSR

ATSICH	**Aboriginal and Torres Strait Islander Cultural Heritage**
Biosecurity Act	The Biosecurity Act 2014
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DCSR	Draft Corridor Selection Report
DESI	Department of Environment, Science, and Innovation
DSITI	Department Science, Information Technology and Innovation
DNRM	Department of Resource Management
DoR	Department of Resources
DTMR	Department of Transport and Main Roads
DTATSIPCA	Department of Treaty, Aboriginal and Torres Strait Islander Partnerships, Communities and the Arts
EO Act	*Environmental Offsets Act 2014*
EP Act	*Environmental Protection Act 1994*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
Ergon Energy	Energy Queensland
Fisheries Act	*Fisheries Act 1994*
ha	*Hectare*
km	*Kilometre*
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
Native Title Act	Native Title Act 1993
NER	National Electricity Rules
NC Act	*Nature Conservation Act 1992*
MID	Ministerial Infrastructure Designation
Planning Act	*Planning Act 2016*
Powerlink	Powerlink Queensland
PMST	Protected Matters Search Tool
SCL	Strategic Cropping Land
SMP	Species Management Program
SPP	State Planning Policy
RE	Regional Ecosystem
Renewable Energy Target	RET

REZ	Renewable Energy Zone
RWE	RWE Renewables Australia
SMP	Species Management Program
TECs	Threatened Ecological Communities
QEJP	Queensland Energy and Jobs Plan
VM Act	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*
WSP	WSP Australia Pty Ltd