Borumba Pumped Hydro Project - Proposed Woolooga Transmission Corridor

Draft Corridor Selection Report

APRIL 2023

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Executive Summary

This Draft Corridor Selection Report (CSR) has been prepared by Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland (Powerlink), for the proposed Woolooga transmission connection from the Borumba Pumped Hydro Energy Storage (PHES) Project. Powerlink has engaged AECOM Australia Pty Ltd (AECOM) to undertake technical, spatial and mapping analysis to support the preparation of this Draft CSR.

Project background

The Queensland Government has committed to unlock renewable investment and achieve a Renewable Energy Target (RET) of 80% by 2035. In September 2022, the Queensland Government released the Queensland Energy and Jobs Plan (QEJP), identifying the critical role of long duration PHES in Queensland's energy transformation, and more broadly in meeting our global responsibilities to reduce greenhouse gas emissions. The QEJP also outlined the need for the transmission network to evolve to meet the changing electricity system.

As part of delivering on this commitment, the Queensland Government also announced the creation of Queensland Hydro, a publicly owned entity to carry out detailed analytical studies for a PHES facility at Borumba Dam, located near Imbil and south-west of Gympie. Powerlink has been engaged by Queensland Hydro to develop two new transmission lines to connect the PHES to the existing transmission network.

This includes new high voltage transmission lines connecting the PHES at Woolooga in the north and Halys in the south-west. These connections are the first stage in the development of the transmission network required under the QEJP, providing support for load growth, future renewable energy developments in Wide Bay and Central Queensland, and access to high quality renewables in South West Queensland.

The detailed analytical studies for the PHES are considering a facility capable of generating between 1,500 megawatts (MW) to 2,000MW with up to 24 hours of storage. When operational, the facility will have the capacity to supply electricity to up to two million Queensland homes.

This increase in generation capacity will require new transmission connections. This Draft CSR has been prepared on the basis of 500 kilovolt (kV) transmission connections to Powerlink's network for the PHES facility.

Approach to corridor selection

In mid-2022, Powerlink commenced investigations into potential corridor options to connect the PHES facility to the transmission network.

As a key component of the transmission network development process, Powerlink sought community and stakeholder input in July and August 2022, on the Study Area. This engagement included hearing from local councils, Traditional Owners, peak bodies, and the wider community to understand and gain better insights into important community matters and what is happening in the area. These investigations also involved a strategic desktop assessment of legislative frameworks, spatial analysis of land characteristics, environment, heritage and social constraints.

Corridor options considering these constraints were then developed, including three potential transmission corridors 4 kilometres (km) in width, with a sub-option in two of these corridor options. These corridor options were taken to the community for their feedback and input in late 2022 and early 2023.

This Draft CSR builds on the outcomes of the earlier corridor options analysis, by reviewing each of the corridor options based on further assessment of feedback received from community engagement, physical land, environment and heritage values, social impacts, legislative requirements, and technical input from Powerlink in relation to constructability of transmission lines.

Three objectives were identified to inform the approach to corridor selection:

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 for the corridor selection was developed to incorporate:

- the feedback from engagement with landholders, Traditional Owner groups, the local community and other stakeholders
- publicly available spatial data relating to environment, planning and heritage constraints
- technical information provided by Powerlink relevant to the planning and delivery of transmission line infrastructure.

Corridor selection has been undertaken in two phases:

1. corridor selection – selecting which 4km-wide corridor option has the least overall impact across the objectives.
2. corridor refinement – identifying a 1km-wide recommended corridor within the 4km-wide corridor option.

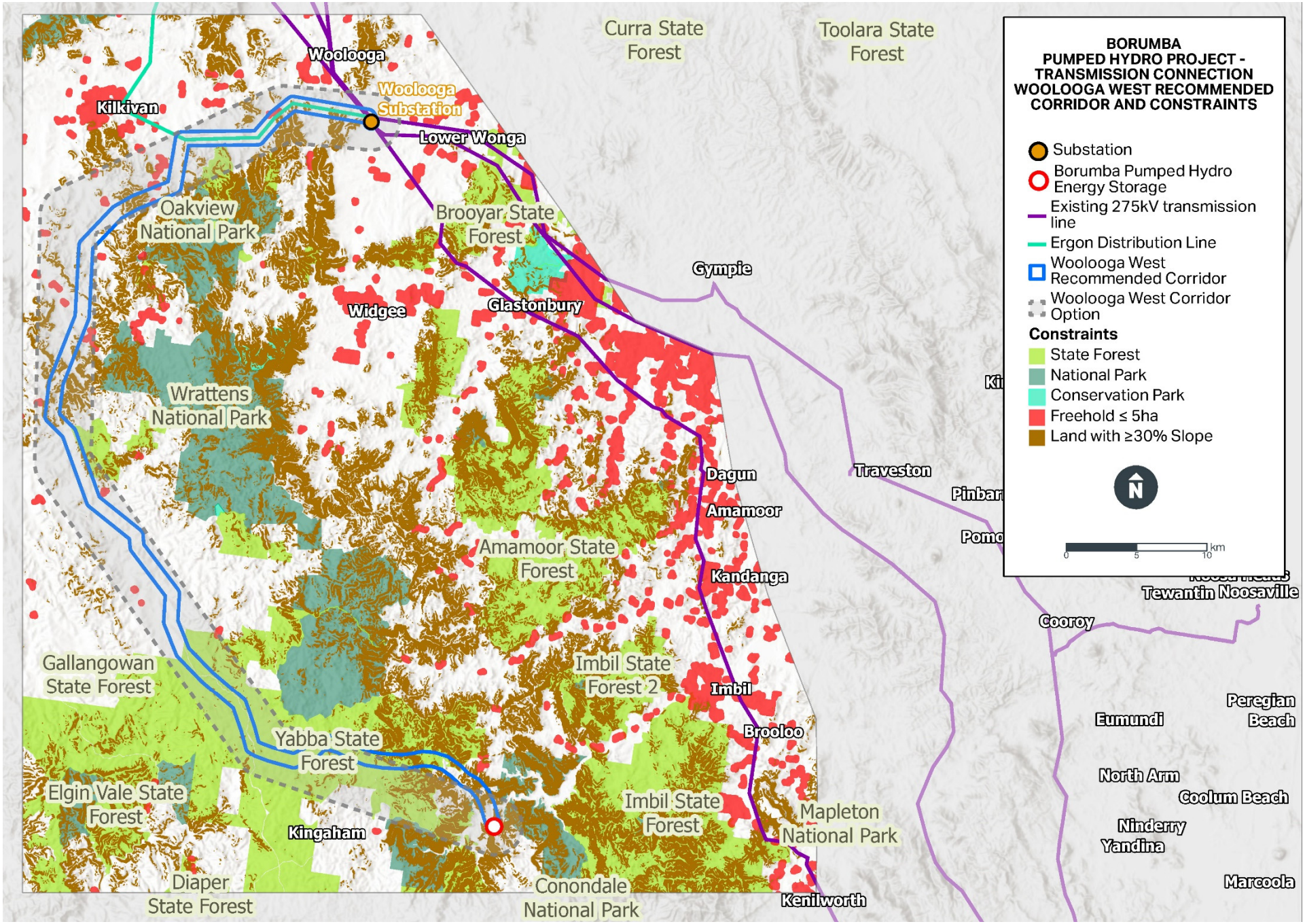
Recommended corridor

The Woolooga West corridor has been selected as the 4km-wide corridor option with the least overall impact across social, environment and economic objectives when compared to the other corridor options.

A recommended 1km-wide corridor has been identified within the selected 4km-wide Woolooga West corridor. Through the corridor selection and refinement processes the 1km-wide recommended corridor:

- reduces the impact on the number of landholders and particularly smaller land parcels
- avoids National Parks
- avoid critical infrastructure and community facilities
- minimises impacts on agriculture, intensive land use and cropping lands
- optimises the use of State-owned land and
- identifies potential to co-locate with existing distribution lines.

Figure 1: 1km-wide recommended corridor – Woolooga West



1.0 Introduction

1.1 Project background

The Queensland Government has committed to unlock renewable investment and achieve a Renewable Energy Target (RET) of 80% by 2035. As part of delivering on this commitment, Queensland Hydro is carrying out detailed analytical studies for a potential Pumped Hydro Energy Storage (PHES) facility at Borumba Dam, located near Imbil and south-west of Gympie.

Land parcels adjoining Borumba Dam were acquired to support a future PHES facility nearly four decades ago. This land is now owned by Queensland Hydro as the delivery entity of the PHES facility.

Detailed analytical studies for the PHES are considering a facility capable of generating between 1,500 megawatts (MW) to 2,000MW with up to 24 hours of storage. When operational, the facility will have the capacity to supply electricity to up to two million Queensland homes.

This increase in generation capacity will require new transmission connections. This Draft CSR has been prepared on the basis of 500 kilovolt (kV) transmission connections to our network for the PHES facility.

The QEJP applies a whole-of-system planning approach, setting out the pathways and targets that will facilitate a low carbon economy in the future and ensure an orderly, least-cost transformation of Queensland's power system.

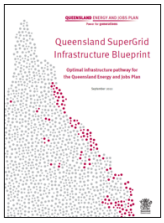
Powerlink will play a critical role in supporting the energy transformation over the coming decade.

Figure 2: Queensland Energy and Jobs Plan

Plan and Blueprint

Three focus areas:

- Clean Energy Economy
- Empowered households and businesses
- Secure jobs and communities



- Queensland SuperGrid Infrastructure Blueprint outlines the infrastructure to enable the decarbonisation of the existing electricity system
- Includes Renewable Energy Zones, Pumped Hydro Energy Storage and High Capacity Transmission

Key targets and objectives

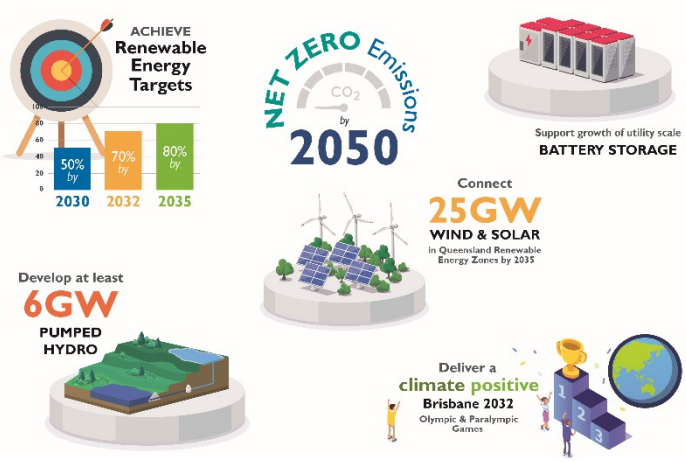
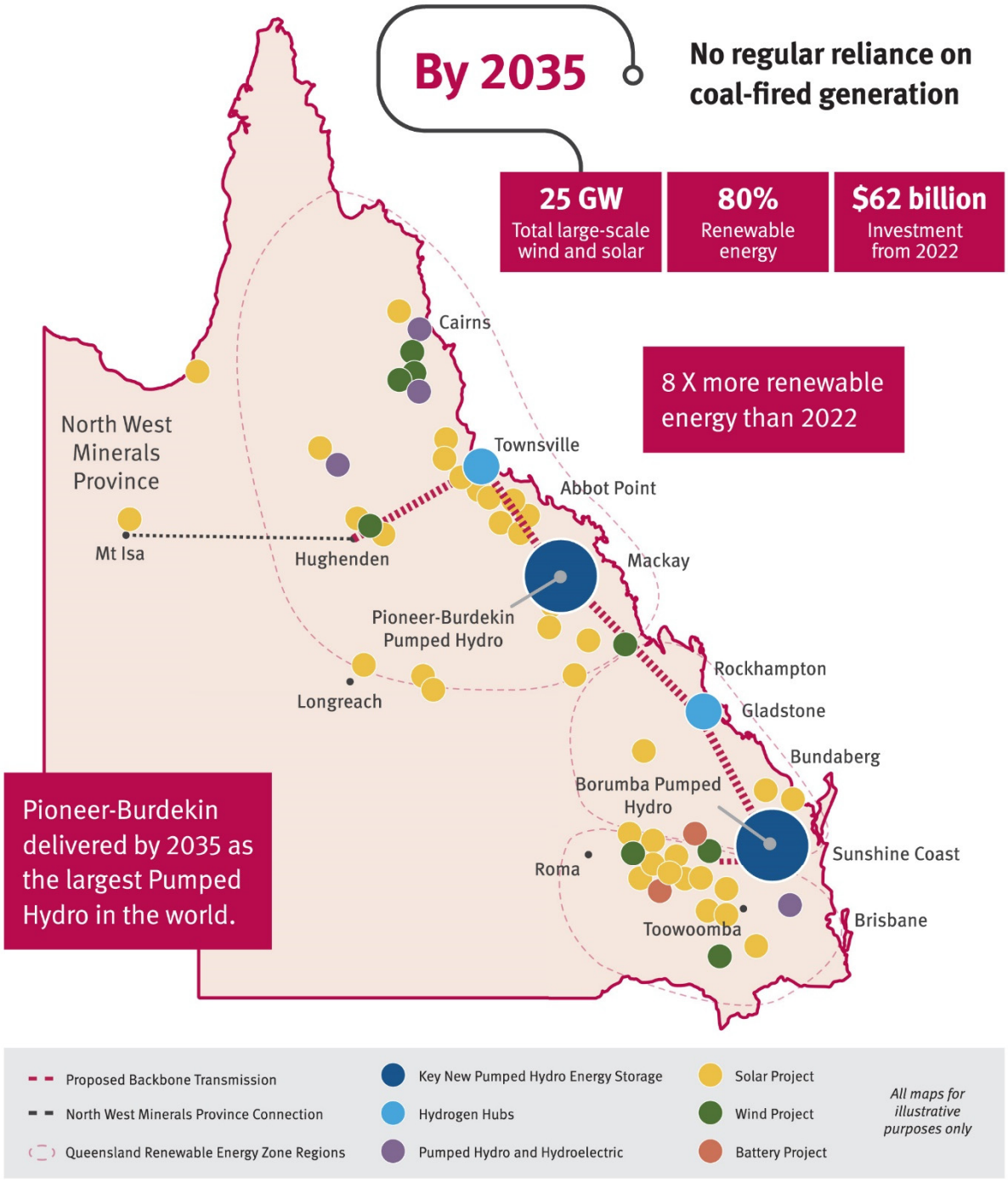


Figure 3: Queensland SuperGrid



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

Projections informed by independent modelling and internal analysis

1.2 Purpose of this report

Powerlink has prepared this Draft Corridor Selection Report (CSR), to undertake an assessment and recommend a transmission corridor from the Borumba PHES Project to the Woolooga Substation. Powerlink has engaged AECOM Australia Pty Ltd (AECOM) to undertake technical, spatial and mapping analysis to support the preparation of this Draft CSR.

The key objective of the corridor selection process is to undertake further assessment of the various corridor options developed and presented to the community to recommend a 1km-wide corridor.

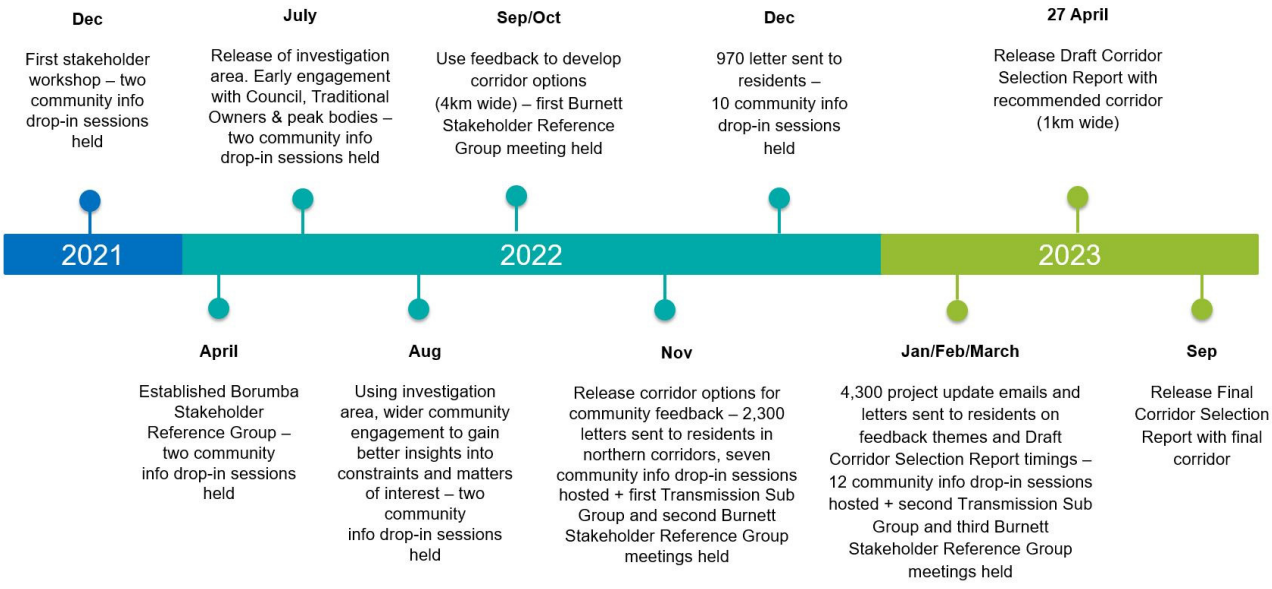
The purpose of this Draft CSR is to document the assessment outcomes as described below:

- consideration of all stakeholder input and feedback in identifying key criteria
- development of objectives, criteria and measures to identify and select a corridor option that has the least overall impact from a social, environmental and economic perspective
- selection of the 4km-wide corridor option, with further refinement to a 1km-wide recommended corridor in consideration of the corridor selection objectives
- review and evaluation of the planning and legislative framework applicable to the 1km-wide recommended corridor.

During the consultation phase of the Draft CSR, the 1km-wide recommended corridor will require further activities to be undertaken as outlined in section 10.

A final 1km-wide corridor will be published in the Final CSR in September 2023. Subsequent phases of the project will include further community engagement, detailed environmental and social impact assessment including targeted investigations, impact assessments and the development of planning, design and construction considerations. Figure 4 provides the timeframe for the corridor selection process and engagement.

Figure 4: Corridor selection process engagement timeline



1.3 Approach

The methodology for the corridor selection was developed to incorporate direct feedback from landholders, the local community and other stakeholders, publicly available spatial data and information relevant to the planning and delivery of transmission line. It has been undertaken in two phases:

1. corridor selection - selecting a 4km-wide corridor option
2. corridor refinement - identifying a 1km-wide recommended corridor within the 4km-wide corridor.

Three objectives were identified to inform the approach to corridor selection and refinement:

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 corridor selection approach seeks to balance the impacts of the recommended corridor across the three objectives identified, ultimately resulting in a recommended corridor with least overall impact across social, environment and economic objectives.

The assessment approach is outlined below.

Objectives

Corridor Selection Approach

Phase 1	Phase 2
• Set objectives to inform the corridor selection and refinement process • Consideration of all stakeholder input and feedback to define criteria and measures • Assessment and analysis of each corridor considering the key criteria and measures • Selection of the 4km-wide corridor option with the least overall impact	• Undertake further analysis on selected 4km-wide corridor option • Refinement process applies the corridor selection objectives and criteria • Seeks to balance the impacts across the identified 1km-wide corridor to get the lowest overall impact • Recommendation of the 1km-wide recommended corridor to take forward for further investigation and community engagement

2.0 Transmission Line Construction Overview

To connect to Woolooga, a double circuit transmission line is required. The final alignment will be located on an easement 70 metres (m) in width. 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 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 renewal activities.

We are committed to working closely with directly affected landholders to understand how they use and manage their property so we can suitably locate transmission towers within the easement and provide sufficient tower height to avoid or minimise impacts on farming or other property operations.

Due to the design and operating requirements of high voltage electricity transmission infrastructure, easements require clearing of vegetation to safely construct and maintain 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 60m x 60m and spans between towers will be around 500m. 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 500kV towers will be around 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 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.

2.2 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.

2.3 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, with tower

assembly work 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.

2.4 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.

2.5 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, and enter the operation and maintenance phase of the project lifecycle.

2.6 Reinstating the site

Powerlink will engage with landholders to determine site and property specific rehabilitation works following completion of construction activities. Dependent 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 Study Area

3.1 Study Area overview

The Woolooga Study Area encompassed 2,533 square kilometres (km2) of land approximately 105km north-west of Brisbane and includes large areas of National Parks (Wrattens National Park and Oakview National Park) and Conservation Park including Brooya State Forest, Amamoor State Forest, Imbil State Forest, Yabba State Forrest and Gallangowan State Forest.

Freehold land parcels vary in size, from small residential lots (less than five hectares) to larger rural land holding. Powerlink electricity transmission lines run from Woolooga Substation in a south-easterly direction and an Energy Queensland electricity distribution line heads west through the Woolooga Substation within the Northern part of the Study Area.

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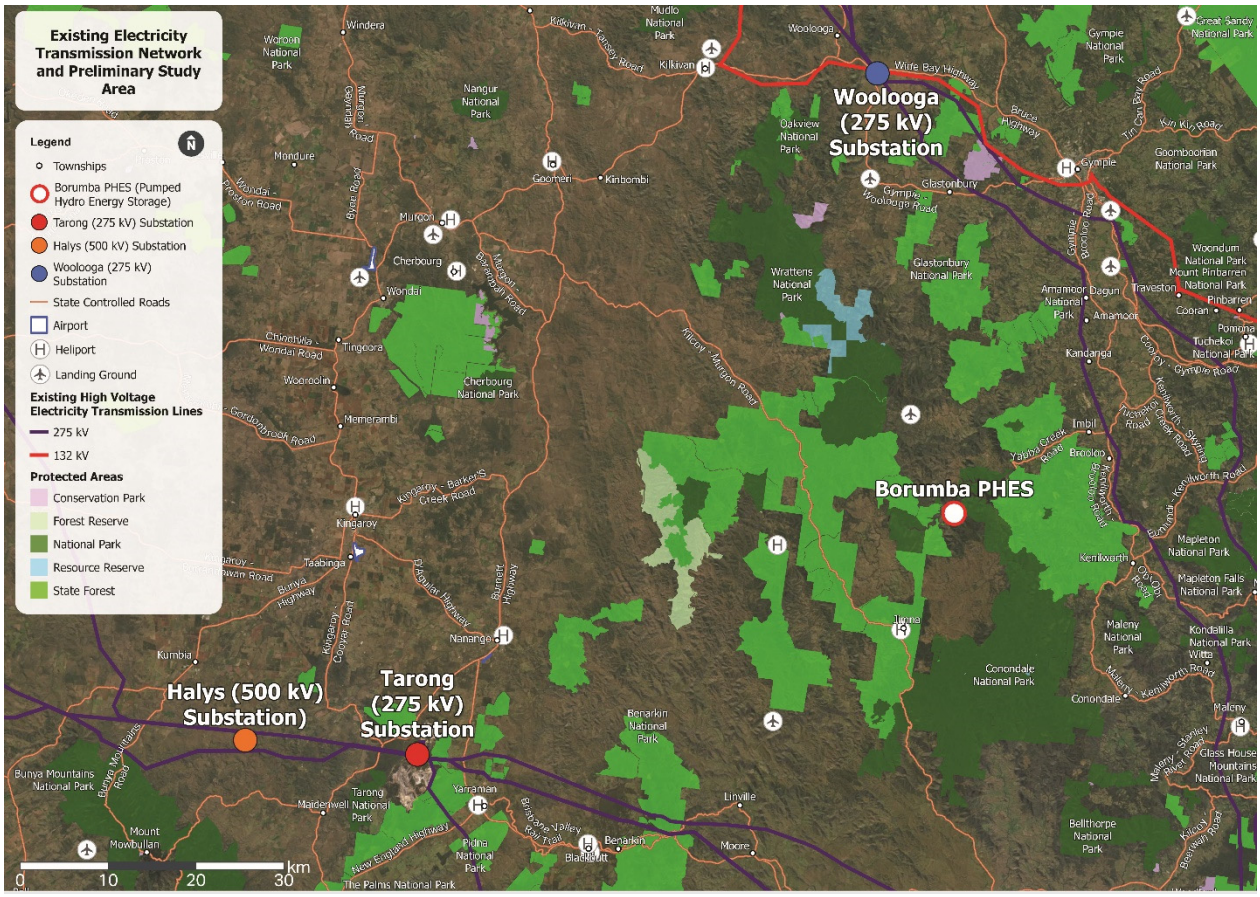
Figure 5: Study Area



Key findings of the Study Area include:

3.1.1 Land use

The Study Area largely intersects the Gympie Regional Council Area, and smaller sections of Somerset and Sunshine Coast Regional Council Local Government Areas.

The land within the Study Area is mostly natural environment-based, such as rural lifestyle and agricultural production (including grazing and plantations), whilst other areas consist of National Park and State Forest areas. Large pockets of strategic cropping areas are located in central and eastern parts of the Study Area, with smaller pockets around the Manumbar area.

Most residences are concentrated around townships and development areas west of Gympie, including Kilkivan, Widgee, Glastonbury, Amamoor and Kandanga. There are other rural residences spread across the remainder of the Study Area, with larger regional lots generally located in the centre and western edge of the Study Area.

3.1.2 Topography

The topography of the Study Area is more elevated in the west associated with Kandanga, Yabba and Brisbane mountain ranges, with elevation ranging from a high of 744m Australian Height Datum (AHD) (in Elgin Vale Forest reserve, adjacent to Kandanga Creek Road) to a low of 33m AHD. There are several major watercourses cutting across the Study Area towards the coast. Difficult terrain is present across various sections due to mountainous areas and valleys.

3.1.3 Flora

The Study Area contains previously cleared land as well as regrowth and remnant native vegetation, much of which is protected within National Parks, State Forests and Forest Reserves. The remnant and regrowth vegetation is widespread across the Study Area. Remnant vegetation supports Endangered, Of Concern and Least Concern vegetation.

Endangered vegetation is associated with the northern edge of Oakview National Park and along riparian areas of creeks. Of Concern vegetation is densely scattered along the edge of Wrattens National Park from Jimmys Scrub State Forest and up and around Oakview National Park towards Woolooga.

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 1.

Table 1: EPBC Act listed threatened ecological communities

Common name	Threatened category	Likelihood
Lowland Rainforest of Subtropical Australia	Critically Endangered	Likely
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Likely
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	May
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Likely
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	May
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	May

The PMST identified 39 EPBC Act-listed threatened flora species with potential to occur within the Study Area listed in in Table 2.

Table 2: EPBC Act listed threatened flora

Scientific name	Common name	Threatened category	Likelihood
Rhodomyrtus psidioides	Native Guava	Critically Endangered	Known
Rhodamnia rubescens	Scrub Turpentine, Brown Malletwood	Critically Endangered	Known
Plectranthus torrenticola	N/A	Endangered	May
Plectranthus nitidus	Nightcap Plectranthus, Silver Plectranthus	Endangered	Likely
Plectranthus omissus	N/A	Endangered	Known
Phebalium distans	Mt Berryman Phebalium	Endangered	Likely
Triunia robusta	Glossy Spice Bush	Endangered	Likely
Macrozamia pauli-guilielmi	Pineapple Zamia	Endangered	Likely
Cossinia australiana	Cossinia	Endangered	Known
Planchonella eerwah	Shiny-leaved Condoo, Black Plum, Wild Apple	Endangered	May
Lepidium peregrinum	Wandering Pepper-cress	Endangered	May
Phaius australis	Lesser Swamp-orchid	Endangered	May
Cycas megacarpa	N/A	Endangered	May
Macadamia tetraphylla	Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut	Vulnerable	Likely
Denhamia parvifolia	Small-leaved Denhamia	Vulnerable	May
Macadamia ternifolia	Small-fruited Queensland Nut, Gympie Nut	Vulnerable	Known
Bosistoa transversa	Three-leaved Bosistoa, Yellow Satinheart	Vulnerable	Known
Rhaponticum australe	Austral Cornflower, Native Thistle	Vulnerable	Likely
Floydia praealta	Ball Nut, Possum Nut, Big Nut, Beefwood	Vulnerable	Known
Fontainea venosa	N/A	Vulnerable	Known

Sarcochilus weinthalii	Blotched Sarcochilus, Weinthals Sarcanth	Vulnerable	Known
Thesium australe	Austral Toadflax, Toadflax	Vulnerable	May
Cadellia pentastylis	Ooline	Vulnerable	May
Acacia grandifolia	N/A	Vulnerable	May
Persicaria elatior	Knotweed, Tall Knotweed	Vulnerable	May
Paspalidium grandispiculatum	Grass	Vulnerable	May
Picris evae	Hawkweed	Vulnerable	May
Sarcochilus fitzgeraldii	Ravine Orchid	Vulnerable	May
Sophora fraseri	N/A	Vulnerable	May
Macadamia integrifolia	Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak	Vulnerable	Known
Dichanthium setosum	Bluegrass	Vulnerable	Likely
Arthraxon hispidus	Hairy-joint Grass	Vulnerable	Likely
Cryptostylis hunteriana	Leafless Tongue-orchid	Vulnerable	May
Haloragis exalata subsp. velutina	Tall Velvet Sea-berry	Vulnerable	May
Cupaniopsis shirleyana	Wedge-leaf Tuckeroo	Vulnerable	Known
Romnalda strobilacea	N/A	Vulnerable	Likely
Samadera bidwillii	Quassia	Vulnerable	Likely
Fontainea rostrata	N/A	Vulnerable	Likely
Baloghia marmorata	Marbled Balogia, Jointed Baloghia	Vulnerable	May

High risk areas for protected plants are mapped over land where plants listed as Endangered, Vulnerable or near threatened under the *Queensland Nature Conservation Act 1992* are known or likely to occur. High risk areas for protected plants are present in the Study Area, especially:

- Oakview National Park
- Wrattens Forest and National Park
- Jimmys Scrub State Forest

- Imbil State Forest
- Amamoor State Forest
- Brooyar State Forest
- Yabba State Forest
- Glastonbury State Forest
- East and West of Lake Borumba
- Amamoor Creek
- Patches scattered through Marys Creek and Scrubby Creek areas.

3.1.4 Fauna

Essential Habitat is mapped where an Endangered, Vulnerable or near threatened species listed under the *Nature Conservation Act 1992 has* been recorded or has potential to occur. There are extensive areas of Essential Habitat throughout the Study Area associated with remnant vegetation.

Mapped Core Koala Habitat Areas and Locally Refined Koala Habitat Areas are present across the Study Area. The Study Area is known to provide habitat supporting plentiful native wildlife such as koalas, owls, bats, wallabies, echidna and platypus, however not all are listed as threatened species.

The PMST report identified 49 EPBC Act-listed threatened and migratory species that have the potential to occur within the Study Area as outlined in Table 3.

Table 3: EPBC Act listed threatened fauna

Scientific name	Common name	Threatened category	Likelihood
Birds			
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	Critically Endangered	May
Anthochaera phrygia	Regent Honeyeater	Critically Endangered	May
Cyclopsitta diophthalma coxeni	Coxen's Fig-Parrot	Critically Endangered	Likely
Lathamus discolor	Swift Parrot	Critically Endangered	Likely
Calidris ferruginea	Curlew Sandpiper	Critically Endangered	May
Rostratula australis	Australian Painted Snipe	Endangered	Likely
Erythrotriorchis radiatus	Red Goshawk	Endangered	Known
Botaurus poiciloptilus	Australasian Bittern	Endangered	Known
Climacteris picumnus victoriae	Brown Treecreeper (south-eastern)	Vulnerable	May
Geophaps scripta scripta	Squatter Pigeon (southern)	Vulnerable	Known

Stagonopleura guttata	Diamond Firetail	Vulnerable	Known
Turnix melanogaster	Black-breasted Button-quail	Vulnerable	Known
Falco hypoleucos	Grey Falcon	Vulnerable	Likely
Hirundapus caudacutus	White-throated Needletail	Vulnerable	Known
Grantiella picta	Painted Honeyeater	Vulnerable	Likely
Calyptorhynchus lathami lathami	South-eastern Glossy Black-Cockatoo	Vulnerable	Known
Fish			
Maccullochella mariensis	Mary River Cod	Endangered	Known
Neoceratodus forsteri	Australian Lungfish, Queensland Lungfish	Vulnerable	Known
Frog			
Mixophyes fleayi	Fleay's Frog	Endangered	Known
Mixophyes iteratus	Giant Barred Frog, Southern Barred Frog	Vulnerable	Known
Mammals			
Dasyurus maculatus maculatus (SE mainland population)	Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (south-eastern mainland population)	Endangered	Known
Petauroides volans	Greater Glider (southern and central)	Endangered	Known
Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory)	Endangered	Known
Dasyurus hallucatus	Northern Quoll, Digul (Gogo-Yimidir), Wijingadda (Dambimangari), Wiminji (Martu)	Endangered	Likely
Nyctophilus corbeni	Corben's Long-eared Bat, South-eastern Long-eared Bat	Vulnerable	May

Petaurus australis australis	Yellow-bellied Glider (south-eastern)	Vulnerable	Known
Potorous tridactylus tridactylus	Long-nosed Potoroo (northern)	Vulnerable	Likely
Petrogale penicillata	Brush-tailed Rock-wallaby	Vulnerable	May
Pseudomys novaehollandiae	New Holland Mouse, Pookila	Vulnerable	May
Chalinolobus dwyeri	Large-eared Pied Bat, Large Pied Bat	Vulnerable	May
Pteropus poliocephalus	Grey-headed Flying-fox	Vulnerable	Known
Macroderma gigas	Ghost Bat	Vulnerable	May
Migratory			
Numenius madagascariensis	Eastern Curlew, Far Eastern Curlew	Migratory	May
Rhipidura rufifrons	Rufous Fantail	Migratory	Known
Tringa nebularia	Common Greenshank, Greenshank	Migratory	May
Actitis hypoleucos	Common Sandpiper	Migratory	Likely
Cuculus optatus	Oriental Cuckoo, Horsfield's Cuckoo	Migratory	Known
Crocodylus porosus	Salt-water Crocodile, Estuarine Crocodile	Migratory	Likely
Symposiachrus trivirgatus	Spectacled Monarch	Migratory (as Monarcha trivirgatus)	Known
Hirundapus caudacutus	White-throated Needletail	Migratory	Known
Myiagra cyanoleuca	Satin Flycatcher	Migratory	Known
Apus pacificus	Fork-tailed Swift	Migratory	Likely
Pandion haliaetus	Osprey	Migratory	Known
Monarcha melanopsis	Black-faced Monarch	Migratory	Known
Calidris acuminata	Sharp-tailed Sandpiper	Migratory	May
Gallinago hardwickii	Latham's Snipe, Japanese Snipe	Migratory	Known
Calidris ferruginea	Curlew Sandpiper	Migratory	May
Calidris melanotos	Pectoral Sandpiper	Migratory	May
Motacilla flava	Yellow Wagtail	Migratory	May

Waterway barrier works with potential to impede fish passage are regulated under the *Fisheries Act 1994 (Qld)* and the *Planning Act 2016 (Qld)*. Barrier works include construction, raising, replacement and some maintenance works on structures such as culvert crossings, bed level and low-level crossings, weirs and dams (both permanent and temporary). The Study Area includes major-risk waterways for waterway barrier works, as well as high, moderate and low risk waterways.

3.1.5 Heritage

A search of the Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships' (DSDSATSIP) cultural heritage database for the Study Area has identified several recorded Aboriginal cultural heritage sites, including artefact scatters, earthen and stone arrangements, scarred trees, painting, burial sites and other cultural sites. Further on-ground surveys will be conducted to confirm the presence of any additional cultural heritage.

A search of the DSDSATSIP cultural heritage database also identifies the following Aboriginal parties within the Study Area:

- Kabi Kabi First Nation Traditional Owners Native Title Claim Group
- Wakka Wakka Native Title Aboriginal Corporation Registered Native Title Body Corporate (RNTBC).

A search of the World Heritage List (WHL), National Heritage List (NHL) and the Commonwealth Heritage List (CHL) identifies no listed heritage places within or near the Study Area.

Queensland Heritage Register (QHR) and Local Heritage Register (LHR) listed heritage places present within the Study Area. The Cultural Heritage Inventory Management System (CHIMS, maintained by the Department of Environment and Science) indicates sites are present throughout the Study Area. Two Queensland Heritage Places are located within the Study Area: the Wodonga House (former) north of Widgee and the Mary Valley Railway Cream Sheds near Amamoor.

Mapping under the non-statutory Register of National Estate (RNE) identified RNE sites corresponding to Conondale Ranges Area near Borumba Dam and Mount Clara Copper Mine Chimney near Black Snake in the west of the Study Area.

3.1.6 Transport

The State-controlled roads that traverse the Study Area include:

- Kilcoy-Murgon Road
- Wide Bay Highway near Woolooga
- Gympie-Woolooga Road near Widgee
- Mary Valley Link Road near Dagun.

Local roads within the Study Area are managed by local councils, including Gympie Regional Council and Somerset Regional Council.

There is one railway line, the Mary Valley Rattler, located on the eastern edge of the Study Area between Gympie and Amamoor. No airports are within the Study Area. The closest airport is the Gympie Aerodrome located 1.5km from the east of the Study Area, at Kybong.

3.2 Study Area engagement

Initial stakeholder engagement regarding the proposed project began in December 2021 and was followed by the release of a Study Area in mid-2022.

In July and August 2022, Powerlink sought input from the community and other stakeholders on the Study Area. This engagement included hearing from local councils, Traditional Owners, peak bodies, and the wider community to understand and gain better insights into important community matters, constraints and what is happening in the area.

Engagement activities at this stage involved:

- establishment of a dedicated project website
- community information drop-in sessions
- presentations to the Borumba Pumped Hydro Stakeholder Reference Group
- elected representative briefings
- project update newsletter/s
- interactive map of Study Area, hosted on the project website
- community survey
- consultation meetings with representatives of Traditional Owner groups
- stakeholder briefings with local organisations
- establishment of two dedicated Stakeholder Reference Groups (Burnett Stakeholder Reference Group and Transmission Sub-Group of Borumba Pumped Hydro Stakeholder Reference Group) and meetings held.

The community information drop-in sessions were advertised via social media (e.g. community Facebook groups), the project website, local government channels, radio and newspaper advertisements, and posters/flyers on community noticeboards in key townships.

As part of the social impact study for the Borumba PHES Project, a community survey was undertaken in August and September 2022, with 327 responses received. Two questions regarding transmission infrastructure were included in the survey with the responses highlighting the following key themes regarding community perspective on the project:

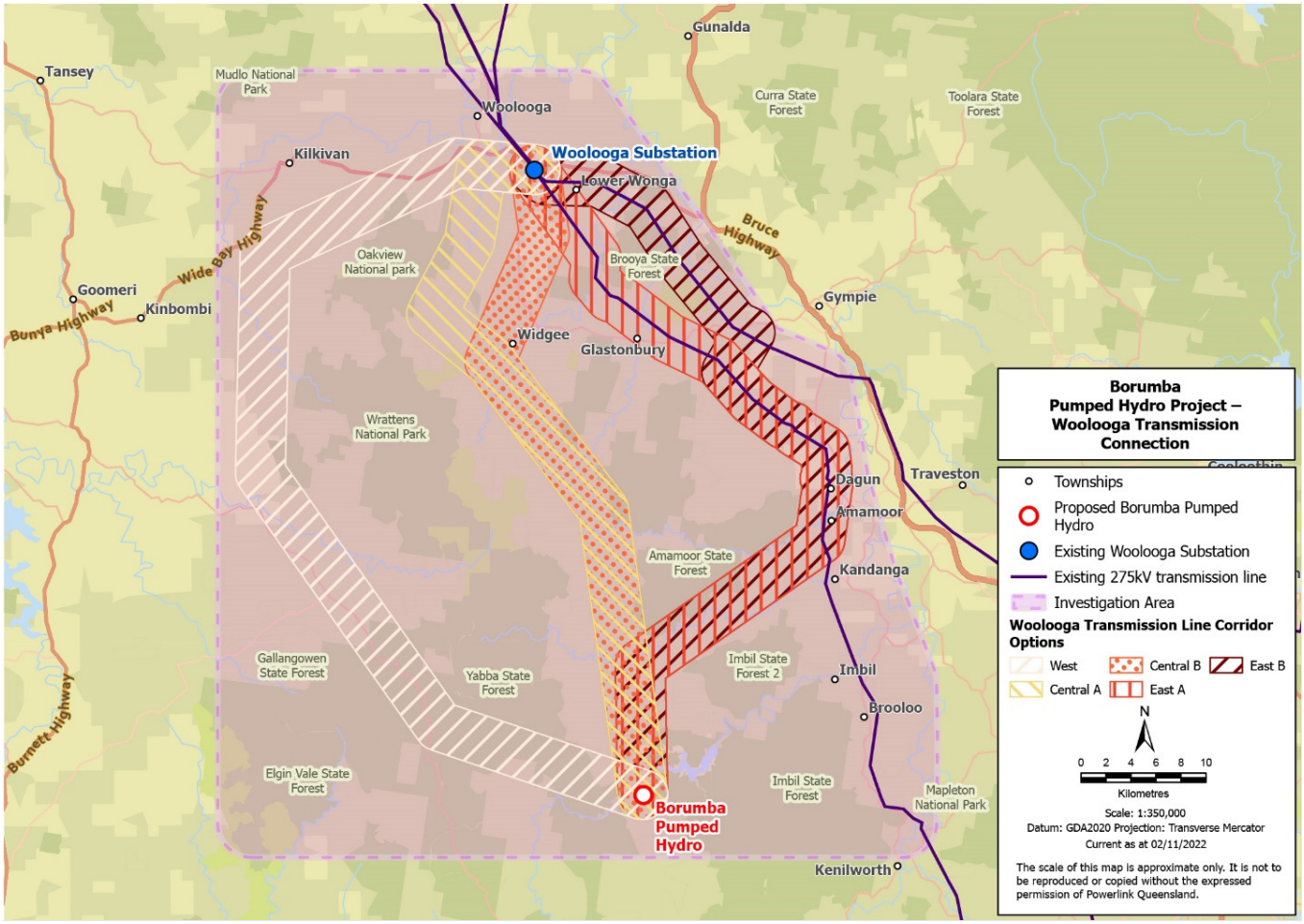
- location of new transmission line with an existing line
- avoid areas of significant Aboriginal and non-Aboriginal cultural heritage
- avoid known recreation and tourism areas
- avoid residential dwellings and key buildings
- mitigation of biosecurity risks
- minimise impacts on highly productive and profitable agricultural land.

This feedback helped shape the initial development of the corridor options.

4.0 Corridor Options

The corridor options were developed based on community feedback, and the identified opportunities and constraints within the Study Area. In November 2022, the transmission line corridor options, shown in Figure 6, were released for further engagement and feedback.

Figure 6: Corridor options – Woolooga



4.1 Corridor option overview

Three 4km-wide corridor options for the transmission line between the Borumba PHES and Woolooga Substation were developed including two sub-options (Table 4).

Table 4: Corridor Options

Woolooga West	This corridor traverses north-west from the proposed pumped hydro facility and is the longest corridor option as it travels up and around Wrattens National Park. The corridor travels through Yabba and Gallangowan state forests. It then follows in a north-east direction, south of the Wide Bay Highway, connecting into Woolooga Substation from the west.
Woolooga Central (with Options A or B)	This corridor is the most direct option, travelling north from the proposed pumped hydro facility between Wrattens National Park and Amamoor State Forest, towards Woolooga Substation. From this corridor, there are two options to connect into Woolooga Substation. Option A heads further west next to Oakview National Park and then connects into Woolooga Substation from the west. Option B veers directly into Woolooga Substation, connecting from the south.
Woolooga East (with Options A or B)	This corridor co-locates with the existing 275kV transmission line between Amamoor and the Woolooga Substation. The corridor travels north from the proposed pumped hydro facility and veers north-east between Amamoor and Imbil state forests to connect to the existing 275kV transmission line between Kandanga and Amamoor. From this corridor, there are two options to connect into Woolooga Substation. Option A is a co-located route into Woolooga Substation and is the most direct option. Option B travels north of Glastonbury and co-locates with another 275kV transmission line for the remaining distance, connecting into Woolooga Substation from the east. A co-location option would still require the acquisition of additional land and the construction of a new transmission line connection. A significant proportion of the co-located area includes rural residential lots of less than 10 hectares in size.

Two of the corridor options, Central and Eastern, consider sub-options A and B. The sub-options comprise of alternative connection directions from Woolooga along the first quarter of the corridor options.

4.2 Corridor options engagement

Powerlink has undertaken extensive engagement on the corridor options, between November 2022 and March 2023, to understand the social, environment and economic factors that may influence the criteria used in the corridor selection process.

In the early phases of our engagement on the corridor options we received feedback on low levels of project awareness. In response to this feedback Powerlink broadened its engagement focus and activities.

Inputs from landholders and the community have been valuable in helping Powerlink to identify a corridor that has the least overall impact across the social, environment and economic objectives of the proposed transmission line. Engagement has included:

- community information drop-in sessions in Jimna, Yarraman, Nanango, Linville, Blackbutt, Kilcoy, Maidenwell, Moore, Kumbia, Kilkivan, Woolooga, Imbil, Manumbar, Widgee, Amamoor, Kandanga, and Gympie. In some cases, these locations were visited multiple times to gather additional feedback
- interactive mapping with proposed corridor options, enabling direct feedback on the corridor options
- landholder letters and emails
- briefings with Stakeholder Reference Groups
- elected representative briefings

- consultation meetings with representatives of identified Traditional Owner groups.

Like earlier engagement phases, the community information drop-in sessions were advertised via social media, the project website, local government channels, various community Facebook groups, radio, newspaper advertisements and posters/flyers on community noticeboards in key townships.

Following the community information drop-in sessions, additional engagement was undertaken in March 2023 to provide further information about the proposed corridor options and seek further feedback. This included sending 2,176 letters to landholders in the Woolooga corridors providing a project update, including the key themes from the community feedback and the release date for the Draft Corridor Selection Report (CSR).

4.2.1 Traditional Owner engagement

Powerlink acknowledges and respects the ongoing connection of Traditional Owners to their traditional lands. While Traditional Owners and First Nation People are welcome at community engagement sessions, a separate engagement process has been undertaken with Traditional Owners likely to be impacted by the proposed corridor selection. The focus of engagement has been the dissemination of study information to allow Traditional Owners to consider and provide feedback on cultural values and constraints that may be impacted by the project.

For the proposed transmission connection into Woolooga, independent engagement has been undertaken with the following Aboriginal parties identified under the *Aboriginal Cultural Heritage Act 2003 (Qld)* (ACH Act):

- Kabi Kabi First Nation Traditional Owner Native Title Claim Group
- Wakka Wakka Native Title Aboriginal Corporation Registered Native Title Body Corporate (RNTBC).

There is also a section of the Study Area where there is no registered Native Title claim. It is anticipated that Traditional Owners will assert authority to speak for all parts of the recommended corridor in accordance with the ACH Act.

4.3 Engagement analysis

Since July 2022, Powerlink has shared information and gathered feedback via:

- 33 community information drop-in sessions, attended by more than 2,000 residents
- 2,060 project update emails and 7,200 letters sent to landholders
- more than 500 digital and hardcopy feedback forms received
- 1,000 comments received and responded to on our online interactive map
- phone calls and emails with landholders
- meetings with local community groups and landholders
- letterbox drops across the wider community in the South Burnett, Somerset and Gympie areas
- briefings with Stakeholder Reference Groups, Traditional Owners, state and local government officials, and representatives from a number of state government departments
- selective site visits with Traditional Owner representatives
- social media channels, and advertisements in local newspapers and other publications, and radio stations
- more than 13,000 visits to the project website.

Feedback received has been grouped into themes to identify key areas of community interest and concern relating to this project. All feedback has been reviewed and considered to determine the constraint, potential impact and necessary action. The below themes have flowed into the corridor selection process and have been referenced in the Multi-Criteria Analysis (MCA).

Property impacts

- Property impacts throughout planning, construction and operation
- Compensation considerations
- Loss of generational ownership
- Amenity impacts and future use
- Loss of productive and developed agricultural land
- Devaluation of land and business operations

Lifestyle impacts

- Visual amenity impacts
- Disruption of key recreational activities
- Changes to lifestyle features that attracts residents and tourists

Wildlife

- Presence of endangered species
- Damage and destruction of wildlife habitats
- Wildlife has a significant value to the community
- Key reason for living in the region and community lifestyle value

State-owned land

- Investigate increased use of State-owned land including State Forests and National Parks
- Areas of cultural significance and connection to country
- Potential for bushfire mitigation

Corridor preferences

- Opportunities around the co-location of corridors
- Avoidance of communities and private properties
- Potential of undergrounding sections of the transmission lines
- Minimising impacts to flood areas
- Overall opposition to project and proposed corridors

Vegetation

- Vegetation clearing and acquisition of offsets
- Impacts to remnant vegetation
- Vegetation management practices

Environment and Heritage

- Environmental impacts including biodiversity
- Conservation management and practices
- Compliance with environmental legislation
- Avoidance of areas with heritage or cultural significance.

Additional themes were also noted in relation to:

- Biosecurity - raising existing issues with the management of Giant Rats Tail Grass (GRT) and Parthenium, Powerlink and contractor compliance with biosecurity regulations, and spread and control of weed and pest species in a new corridor.
- Health - areas of concern include electric and magnetic fields (EMF), perceived health impacts regarding residents living near transmission lines, and the potential for unknown and long-term health impacts.

While these additional themes are important factors they are managed in broader terms throughout the corridor selection process, in particular when selecting a final alignment.

5.0 Corridor Selection Process

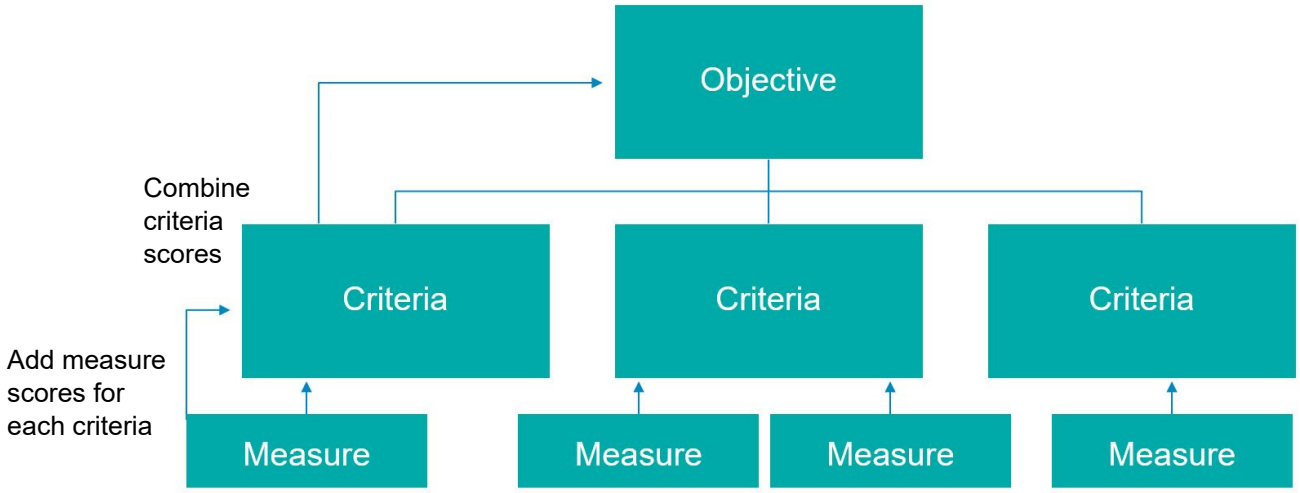
5.1 Methodology

The methodology for assessment considered a Multi-Criteria Analysis (MCA) framework, involving identification of the key corridor selection objectives, development of the key criteria for each objective and the measures required to assess each criteria.

The MCA framework seeks to balance the impacts of the recommended corridor across the three objectives identified, ultimately resulting in a recommended corridor with least overall impact across social, environment and economic objectives.

The overarching process of assessment is shown in Figure 7.

Figure 7: Corridor selection process, adapted from Infrastructure Australia's Multi-Criteria Analysis process



5.2 Objectives

Three objectives were identified to inform the approach to corridor selection and refinement:

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.

5.3 Criteria

To assess each corridor option against the objectives, criteria were identified through analysis of community and stakeholder feedback and spatial mapping. Table 5 outlines the criteria developed for assessing the corridor option and provides a summary of the rationale for the criteria. The table also sets out the relevant community feedback theme and captures the spatial data layers used to support the assessment of criteria against the social, environment and economic objectives.

Table 5: Key criteria and rationale

Criteria	Rationale	Relevant feedback theme	Spatial data
Social			
Strategic cropping and agricultural lands	The *Regional Planning Interests (RPI) Act 2014* regulates impacts from resource and other regulated activities in areas where land is or is likely to be highly suitable for cropping due to a combination of the soil, landscape and climatic features of the land. While the Act does not specifically apply to the activities of the proposed project, due to the value of Strategic Cropping Land to the community and its protection under legislation, land in this category will be considered in the corridor selection process as areas where impact should be minimised to the greatest extent possible. This criteria includes plantation forests, grazing and modified pastures such as legumes and grasses, cropping, hay, perennial and seasonal horticulture for example fruits, herbs, vegetables and flowers, as well as land in transition, which can include land under rehabilitation, abandoned and degraded lands. Dryland agriculture, irrigated plantation forests, grazing modified pastures for example legumes and pastures, irrigated cropping such as hay, cereals, pulses, seasonal and perennial horticulture such as fruits, herbs, vegetables and flowers are also considered.	Property impacts	Areas of strategic cropping land have been obtained from the Queensland spatial data layer Electronic mapping data for Strategic Cropping Land in Queensland under the RPI Act 2014 v3.90. The areas of production from dryland and irrigated agriculture and plantations have been obtained from the Queensland State data *Land use mapping – 1999 to 2017*.
Avoidance of properties <5 hectares (ha)	The mapping of properties less than 5ha in size was considered as a proxy to the impact on landholders, including housing clusters and townships. Given the limited flexibility in impact to these properties in terms of size of land required, visual impact, impact to businesses being run from properties, proximity of infrastructure and impact to access, impact to these areas should be avoided wherever possible, or minimised where avoidance is not possible.	Property impacts Lifestyle impacts Corridor preferences	Land tenure less than 5ha has been identified through spatial data analysis using property information.
State-owned land	The reference to State-owned land has included State Forest, National Parks and Conservations Parks. Early engagement with the community and landholders for the project has indicated a strong preference by some parts of the community for the recommended corridor to be located on State-owned land, avoiding impact to landholders within the area. This community feedback has led to State-owned	State-owned land Property impacts Lifestyle impacts	The 'State-owned land' spatial data includes information maintained by the Department of Resources (DoR)

Table 5: Key criteria and rationale

	land being included in the criteria for the analysis of the corridors. The preference for utilising State-owned land is expected to minimise the impact on other community centres, towns and places of assembly as well as potential new visual impacts from residences, roads and towns. Conversely, feedback from Traditional Owner groups has indicated preferences for areas containing mature native vegetation particularly National Parks, to be avoided. In addition, feedback from some of the community has highlighted the importance of State-owned land including National Park for heritage values, recreational and tourism activities including features such as hiking trails, waterfalls, swimming holes, accommodation and camping grounds. State Forests and timber reserves are set aside for the production of log timber and forest products, which include quarry material, protection of watersheds and soil as well as inherent natural and environmental attributes, and can often allow for ongoing grazing, recreation and tourism activities. A number of State Forests are present throughout the Study Area. It should be noted that while State Forests have been conserved for logging and provision of forestry resources, a number of these reserves are also habitat for a range of threatened species and additionally, can contain mapped essential habitat. Therefore, while State Forests are recommended over National and Conservation Parks, these areas may still trigger assessment for impacts to threatened species and potential approvals for impact to these species and habitats. The opportunities to use State-owned land are considered where a balance can be achieved, taking into consideration our planning approach to avoid impacting these conserved areas where possible.	Corridor preferences Environment and Heritage	comprised of land parcels within the Digital Cadastral Database (DCDB) owned by State government agencies and includes land parcels of State Forest and state land tenure, as well as several parcels of State-owned land.
Number of properties	The mapping of properties in a corridor is important to understand as a proxy for the number of landholders overall. The preference is to minimise the total number of properties impacted, where possible.	Property impacts Lifestyle impacts	Number of properties has been identified through spatial data analysis using property information.
Intensive use	Intensive use includes land used for horticulture (such as production nurseries and shade houses), intensive animal production (such as feedlots, aquaculture, and dairy sheds), manufacturing and industrial (such as grain storage, saw mills	Property impacts Lifestyle impacts	The areas of intensive uses have been obtained from the

Table 5: Key criteria and rationale

	and farm infrastructure), and services (such as wind, solar, gas and water infrastructure, transport, mining and waste treatment). Areas across the corridor options contain intensive uses, however these areas are not the predominant land use. Landholders with intensive use on their properties are often solely supported by these activities, therefore the recommended corridor should avoid these areas where possible or minimise impacts where avoidance is not possible.		Queensland State *Land Use Mapping – 1999 to 2013 South East Queensland NRM* data layer which provides primary use or management objectives for land in South-East Queensland using the Australian Land Use and Management Classification categories.
Environment			
Endangered regional ecosystem (RE) Category A, B, C, R	Endangered regional ecosystems are vegetation communities containing ecosystems where less than 10% remains of the pre-clearing extent across the bioregion or 10% to 30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000ha. Impact to these areas of vegetation should be avoided wherever possible, or minimised where avoidance is not possible.	Wildlife Vegetation Environment and Heritage	Queensland Government spatial data - Vegetation management regional ecosystem map - version 12.02 - By Area Of Interest.
Areas Of Concern (RE) Category A, B, C, R	Of Concern regional ecosystems are vegetation communities containing ecosystems where remnant vegetation is 10–30% of its pre-clearing extent across the bioregion, or more than 30% of its pre-clearing extent remains and the remnant extent is less than 10,000ha. Impact to these areas of vegetation should be avoided wherever possible, or minimised where avoidance is not possible.	Wildlife Vegetation Environment and Heritage	Queensland Government spatial data - Vegetation management regional ecosystem map - version 12.02 - By Area Of Interest.
Least Concern (RE) Category A, B, C, R	Least Concern regional ecosystems are vegetation communities containing ecosystems where remnant vegetation is over 30% of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000ha. Impact to	Wildlife Vegetation	Queensland Government spatial data - Vegetation management regional

Table 5: Key criteria and rationale

	these areas of vegetation should be avoided wherever possible, or minimised where avoidance is not possible.	Environment and Heritage	ecosystem map - version 12.02 - By Area Of Interest.
Essential habitat	Essential habitat is defined under the *Vegetation Management Act 1999* as vegetation containing habitat for Endangered, Vulnerable or near threatened wildlife, which have been afforded protection under the *Nature Conservation Act 1992*. Essential habitat is likely to contain values that are needed to sustain wildlife such as particular vegetation communities, altitude, landscape and regional ecosystems, or where wildlife is known to occur. Due to areas of essential habitat being critical to threatened flora and fauna species, impact to essential habitat should be avoided wherever possible, or minimised where avoidance is not possible.	Wildlife Vegetation Environment and Heritage	Queensland Government spatial data.
National Park, Conservation Parks, and Nature Refuges	<u>National Parks and Conservations Parks</u> These are considered to provide outstanding examples of Queensland's natural environment and heritage, providing habitat for wildlife and opportunities for outdoor recreation activities. These parks are afforded protection under the *Nature Conservation Act 1992* and supported by *Queensland's Protected Area Strategy 2020-2030* and the *Master Plan for Queensland's parks and forests*. Key management principles for National Parks and Conservation Parks include keeping parks as close as possible to their natural state, ensuring that the use of the park is sustainable and nature-based, and protecting the park's natural and cultural resources and values. In addition to the environment and cultural values of National Parks, unavoidable impact to these areas involves a complex and lengthy approvals process requiring negotiation with State agencies and compensatory offsets to be provided. Feedback from some of the community has highlighted the importance of National Parks and Conservation Parks for heritage values, recreational and tourism activities including features such as hiking trails, waterfalls, swimming holes, accommodation and camping grounds. <u>Aboriginal cultural heritage values</u> Aboriginal cultural heritage is defined under the *Aboriginal Cultural Heritage Act 2003* (ACH Act) as anything that is either a significant Aboriginal area in Queensland, a significant Aboriginal object, or significant archaeological or	Property impacts Lifestyle impacts Wildlife Corridor preferences Vegetation Environment and Heritage State-owned land	The National Park, Conservation Park and Nature Refuge areas have been extracted from the 'protected areas estate' spatial layer. Cultural heritage places of significance were obtained from State and local government database searches undertaken by AECOM's cultural heritage team.

Table 5: Key criteria and rationale

	historical evidence of Aboriginal occupation of an area of Queensland. A significant Aboriginal area or object under the ACH Act is considered to be an area or object that is of particular significance to Aboriginal people because of Aboriginal tradition and/or the history, including contemporary history, of any Aboriginal party(s) for the area. In addition, consultation has also identified additional sites and places of cultural value. The Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships (DSDSATSIP) cultural heritage database and register have been established and are maintained in accordance with Part 5 of the ACH Act. The DSDSATSIP database assembles information about known Aboriginal cultural heritage values. Feedback from Traditional Owner groups has indicated preferences for areas containing mature native vegetation particularly National Parks to be avoided. <u>Queensland and Local Heritage Values</u> The *Queensland Heritage Act 1992* (QH Act) provides the framework for assessing the significance of items and places of historical cultural heritage value in Queensland. It makes provision for the conservation of Queensland's cultural heritage by protecting all places and areas listed on the *Queensland Heritage Register* (QHR). Queensland heritage sites were identified and ranked as areas to avoid in the spatial data inputs. Local heritage places are managed under *Part 11 of the QH Act*, local planning schemes and the *Planning Act 2016* and sites of significance are listed on Local Heritage Registers (LHR) which are generally maintained by councils. The *Cultural Heritage Inventory Management Systems (CHIMS)* is a register maintained by the Department of Environment and Science (DES) containing sites of potential cultural heritage throughout Queensland. LHR and CHIMS sites were identified and categorised as areas to avoid. <u>Protected Areas</u> Nature refuges are a part of the Private Protected Area Program in Queensland. The declaration of a nature refuge is a voluntary agreement between a landholder and the Minister to conserve natural and cultural values on the land. Nature refuges are protected under the *Nature Conservation Act 1992* as a class		

Table 5: Key criteria and rationale

	of protection which remains in place even when the land is bought or sold. The declaration places an obligation to conserve the areas significant resources and control the use of the land and resources in conjunction with the landholders' rights to use the land. While it is recognised that Cultural and Heritage values can exist across any land tenure, it is included in this criteria as typically National Parks have greater areas of cultural value due to their undisturbed nature and significance. Overall, given the sensitivities of impacting these highly protected areas, these should be avoided wherever possible.		
Economic			
Corridor length	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. Shorter corridor lengths are considered an opportunity.	Corridor preferences	N/A
Land >30% slope	Steep topography limits vehicle and machinery access and significantly increases the required earthworks at each tower site. Additional easements and access are generally required in steep country and therefore environmental impacts can be increased in these areas, as additional clearing may be required. Land in this category poses a significant constraint to construction of infrastructure and the need to build on this category of land needs to be considered in the context of constructability, cost and time to ensure feasibility. Due to these constraints, the corridor options analysis aims to minimise impact to this land category as far as practicable.	Environment and Heritage Corridor preferences	Land which contains topography of slopes greater than 30% has been identified based on topographic mapping and land contours.
Co-location	In terms of environment and heritage values and the potential for impact, it may be preferable for new transmission infrastructure to be co-located within or directly adjacent to an existing easement. Also, where communities or landholders are already impacted by existing infrastructure, co-location may be preferential over creating new impacts in other areas. Co-location of transmission lines with other linear infrastructure has the potential to minimise impact on land values and make use of existing maintenance points	Property impacts Environment and Heritage Corridor preferences	The location of existing transmission line easements was sourced through Geoscience Australia via the National Electricity Transmission

Table 5: Key criteria and rationale

	and access tracks. Additionally, there may be fewer impacts on farming land, general disruption to landholders due to access both during construction and operationally, reduced biosecurity risk due to fewer new property impacts and less impact on landholder privacy for landholders regarding third party access. Although co-location has advantages, it may not always be feasible due to landholders and community response to an additional easement width for an existing line. The network's overall risks of resilience when assessing corridor options must also be considered. For instance, potential co-location in an area may pose a risk to loss of supply if both lines become unavailable due to local conditions like bushfires, floods, or other natural disasters, which could adversely affect the network. The corridor selection process included spatial data for the locations of existing State-controlled roads, powerlines and easements. Infrastructure corridors and easements can be considered as an opportunity for the project depending on location, direction and width, to make use of existing disturbed corridors where this is acceptable to the community. However, crossing existing infrastructure can have potentially significant impacts to the proposed project given the need to safely traverse and modify existing infrastructure, where considered acceptable to the infrastructure owner. Impacts to the project can involve lengthy lead times for consultation with asset owners, additional design and construction works to modify and relocate infrastructure to accommodate transmission line infrastructure and the associated costs with these requirements. The opportunities to co-locate are considered based on other constraints in the area.		Lines 2016 dataset and used to spatially indicate locations where existing electricity transmission infrastructure is present. Queensland Government spatial data.

5.4 Measures

To assess each corridor option against the criteria outlined in Table 5, a series of measures were developed. The objectives, criteria and measures adopted for the project are summarised within Table 6.

Table 6: Corridor selection assessment parameters

Objectives	Criteria	Measures
Social To consider the use of land and the community livelihood within and adjacent to the corridor options.	**Criteria 1:** Strategic cropping and agricultural lands	Area of corridor with Strategic Cropping Land
		Area of corridor with Agricultural Class A
		Area of corridor with Agricultural Class B
	Criteria 2: Properties (<5 ha in size)	Number of properties less than 5ha in size
	Criteria 3: Use of state-owned land	Area of State-owned land within the corridor
	Criteria 4: Number of properties	Count of properties within the corridor
	Criteria 5: Intensive use	Area of corridor containing Intensive Land Uses
Environment To consider a balanced approach to corridor selection with the least practicable impact on environment and heritage values.	**Criteria 1:** Endangered regional ecosystems	Area of remnant and regrowth Endangered regional ecosystems in the corridor
	Criteria 2: Of Concern regional ecosystems	Area of remnant and regrowth Of Concern regional ecosystems in the corridor
	Criteria 3: Least Concern regional ecosystems	Area of remnant and regrowth Least Concern regional ecosystems in the corridor
	Criteria 4: Essential habitat	Area of Essential Habitat within the corridor
	Criteria 5: National Parks, Conservation Parks and Nature Refuges (ha)	Area of National Park within the corridor
		Area of Conservation Park within the corridor
		Area of Nature Refuges within the corridor
Economic To consider construction and operational factors such as cost at a preliminary level, given the scale of the project.	**Criteria 1:** Corridor length	Length of corridor compared with longest corridor option
	Criteria 2: Land greater than 30% slope within the corridor	Percentage of land greater than 30% slope within the corridor
	Criteria 3: Co-location	Percentage of corridor able to be co-located with 275kV line

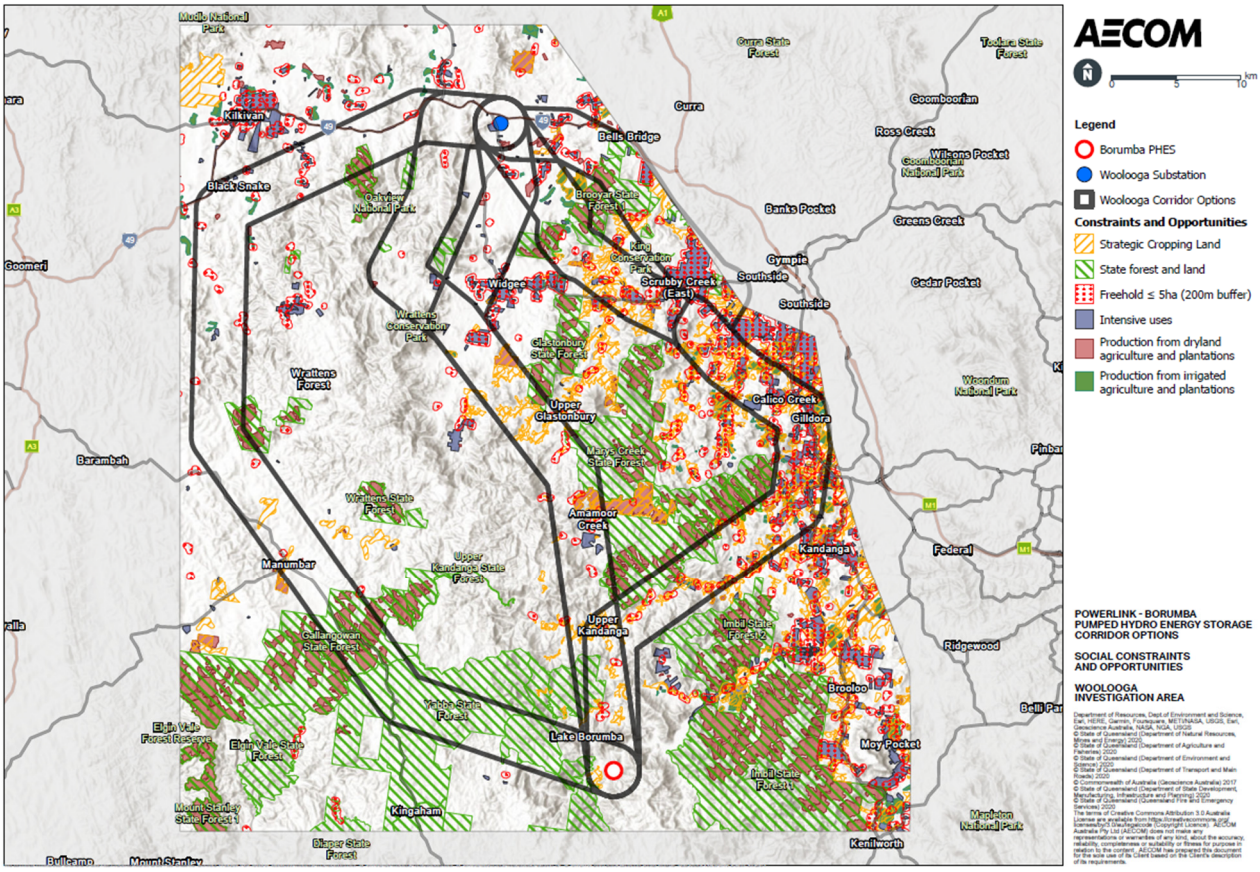
6.0 Corridor Options Analysis

Each of the 4km-wide corridor options were assessed with consideration of social, environment and economic objectives by considering the impact of criteria to identify which corridor provided the least overall impact across the objectives.

6.1 Social

The social criteria were assessed with consideration of the social values relating to the use of land and livelihood for the community within and adjacent to the corridor options. Figure 8 shows the social constraints and opportunities used to compare the corridor options.

Figure 8: Social constraints and opportunities



6.1.1 Agricultural land use

The avoidance of impacts to agricultural land was a key feedback theme from community engagement. Strategic cropping land, production from dryland agriculture and plantations and production from irrigated agriculture and plantations have been used to compare potential impacts to agricultural land between the corridor options.

The area of each corridor overlaying these areas are shown in Table 7.

Table 7: Agricultural land use comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 1: Strategic cropping and agricultural land	ha	1857	2319	2408	6360	5650

All proposed corridor options intersect areas of agricultural land as well as plantations associated with State Forests. The East options have the highest impacts to strategic cropping land.

The West corridor has the lowest potential to impact agricultural land.

6.1.2 Property impacts

The avoidance of townships and impacts to residences was a key feedback theme from the community. Land parcels less than 5ha have been used as a proxy for the locations of housing density as well as townships and associated infrastructure. Avoiding these properties aims to minimise impacts to communities such as visual amenity and loss of land used for recreation or livelihood purposes. A count of individual properties was also used to compare corridor options.

The number of properties and properties less than 5ha in each corridor is shown in Table 8.

Table 8: Number of properties comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 2: Properties <5 ha	Count	28	54	110	840	1207
Criteria 4: Number of properties	Count	457	458	508	2004	2635

The East corridor options intersect significantly larger numbers of small and individual properties due to proximity of townships and developments west of Gympie. The Central (Option B) includes a higher amount of small residences near Widgee.

The West and Central (Option A) options intersect with the fewest numbers of properties and properties less than 5ha.

6.1.3 State-owned land

Feedback from parts of the community has indicated a preference for the transmission line to be located on State-owned land to avoid impact to landholders within the area. The reference to State-owned land has included State Forest, National Parks and Conservation Parks.

Other feedback received highlighted the importance of State-owned land for heritage values, recreational and tourism activities. A number of State Forests are present throughout the Study Area. It should be noted that while State Forests have been conserved for logging and provision of forestry resources, a number of these reserves are also habitat for a range of threatened species and additionally, can contain mapped essential habitat. Therefore, while State Forests are recommended over National and Conservation Parks, these areas may still trigger assessment for impacts to threatened species and potential approvals for impact to these habitats and species.

The use of State-owned land in each corridor is shown in Table 9.

Table 9: State-owned land comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 3: State-owned land	%	27	4	4	7	10

All proposed corridor options intersect some areas of State-owned land.

The West corridor intersects the largest proportion of State-owned land.

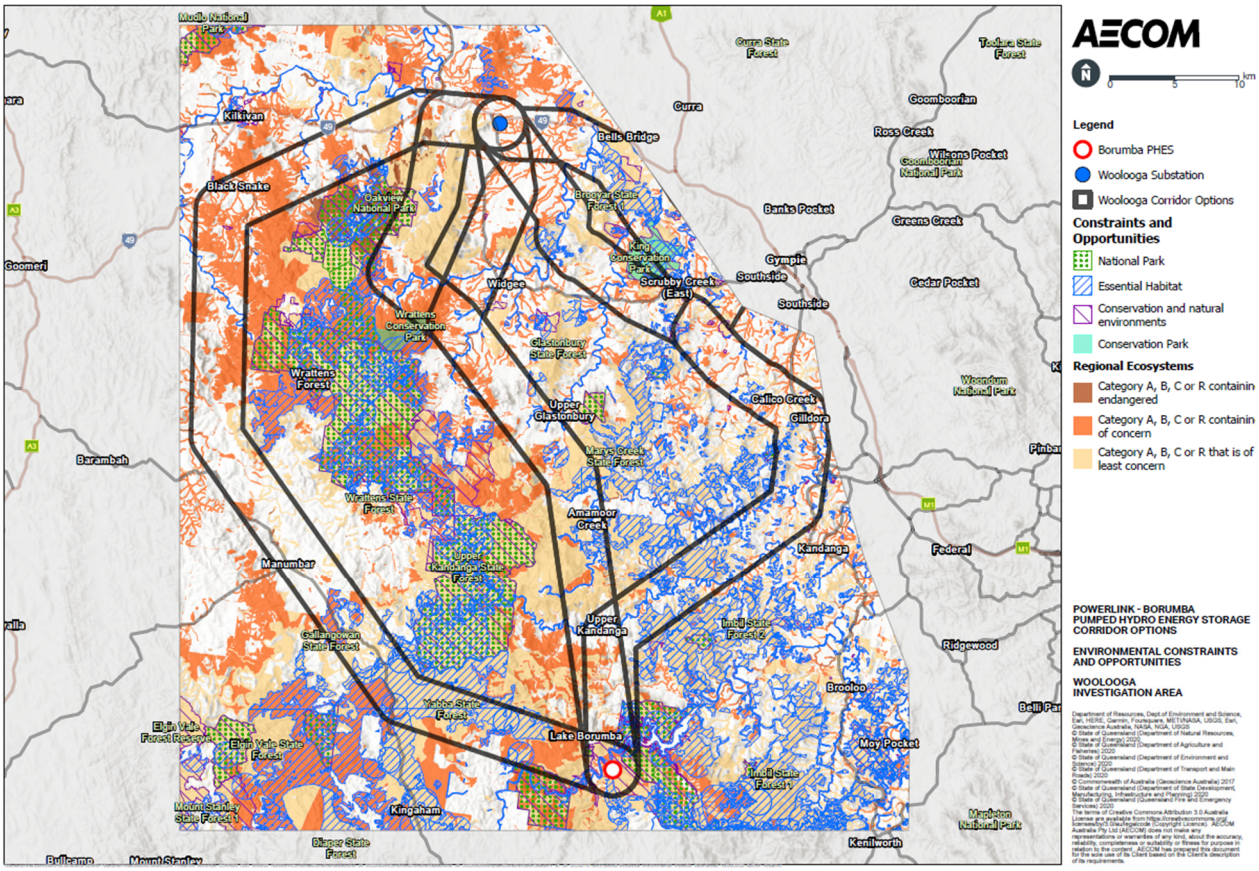
6.2 Environment

The environment criteria were assessed to ensure a balanced approach to corridor selection with the least impact on environment and heritage values where practical.

Environmental criteria were developed based on feedback and accepted importance of vegetation and essential habitat within the corridor such as categories under the *Queensland Vegetation Management Act 1994 (Qld)* and the preference to avoid protected areas managed under the *Queensland Nature Conservation Act 1992 (Qld).* It is noted that while not all environmental values available in spatial format were considered in the first phase of corridor selection, the general presence of vegetation was considered as a proxy to habitat values.

Figure 9 shows the environmental constraints and opportunities used to compare the corridor options.

Figure 9: Environmental constraints and opportunities



6.2.1 National Parks

National Parks provide outstanding examples of Queensland's natural environment and heritage, providing habitat for wildlife and opportunities for outdoor recreation activities. National Parks are afforded protection under the *Queensland Nature Conservation Act 1992* and supported by Queensland's Protected Area Strategy 2020-2030 and the Master Plan for Queensland's parks and forests. Key management principles for National Parks include keeping parks as close as possible to their natural state, ensuring that the use of the park is sustainable and nature-based, and protecting the park's natural and cultural resources and values. In addition to the environment and cultural values of National Parks, unavoidable impact to these areas involves a complex and lengthy approvals process requiring negotiation with state agencies, revocation of the park and compensatory offsets to be provided.

National Parks and Conservation Parks have also been used as a proxy to other recreational and tourism values such as hiking trails, waterfalls, swimming holes, accommodation and camping grounds.

The area of each corridor overlaying these areas are shown in Table 10.

Table 10: National Park comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 5: National Parks	ha	323	694	471	592	592

Being 4km in width, all corridor options intercept with National Park in some areas. The National Parks proximate to the corridors include:

- Wrattens National Park (West and Central options)
- Oakview National Park (West and Central (Option B))
- Conondale National Park (Central and East corridor options).

Avoidance of National Parks was a priority in developing the corridor options.

The West corridor avoids more National Park than the other options.

6.2.2 Protected vegetation

Remnant and regrowth vegetation is present across all corridor options.

Endangered, Of Concern and Least Concern regional ecosystems are all vegetation communities that should be avoided wherever possible, or minimised where avoidance is not possible.

The area of each corridor overlaying these areas are shown in Table 11.

Table 11: Protected vegetation comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 1: Endangered RE (Cat A,B,C,R)	ha	571	476	288	215	175
Criteria 2: Of Concern RE (Cat A,B,C,R)	ha	8891	5151	4515	4113	4067
Criteria 3: Least Concern RE (Cat A,B,C,R)	ha	8377	8664	5993	7238	8998

The West corridor has the most Endangered and Of Concern vegetation. The East corridor options have the least Endangered and Of Concern vegetation.

There is no significant difference in Least Concern vegetation across West, Central and East corridor options, except for Central (Option B) which has the least.

The East options have the lowest overall areas of protected vegetation.

6.2.2.1 Essential habitat

Essential habitat is present across all corridor options.

Essential habitat is defined under the *Vegetation Management Act 1999* as vegetation containing habitat for endangered, vulnerable or near threatened wildlife, which have been afforded protection under the *Queensland Nature Conservation Act 1992*. Essential habitat is likely to contain values that are needed to sustain wildlife such as particular vegetation communities, altitude, landscape and regional ecosystems, or where wildlife is known to occur. Due to areas of essential habitat being critical to threatened flora and fauna species, impact to essential habitat should be avoided wherever possible, or minimised where avoidance is not possible.

The area of each corridor overlaying these areas are shown in Table 12.

Table 12: Essential habitat comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 5: Essential habitat	ha	5470	2074	1713	3624	4926

The Central options have the lowest area of essential habitat.

6.3 Economic

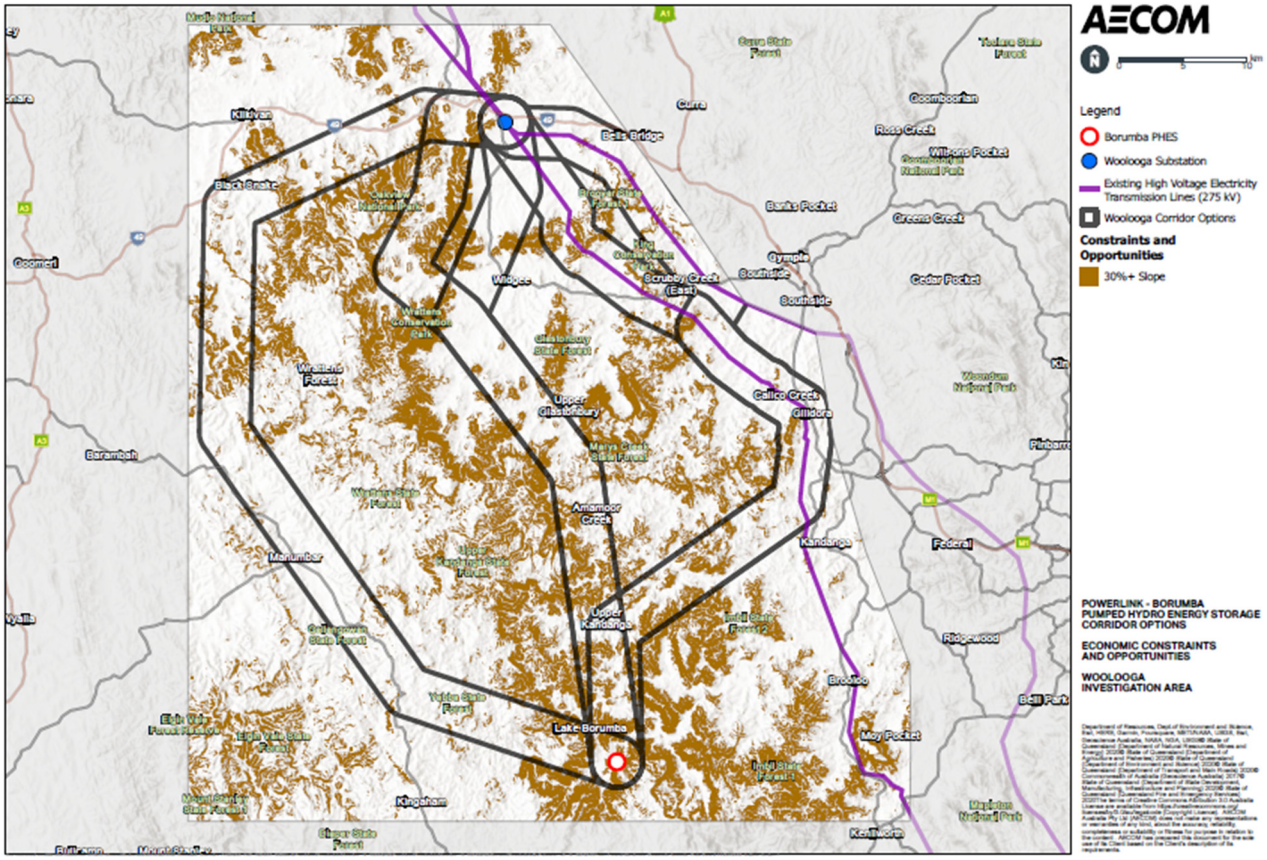
The economic criteria were assessed to ensure construction and operational factors such as cost be considered at a preliminary level, given the scale of project.

Analysis of potential economic factors for each corridor were assessed based on criteria relating to constructability, including length of the overall corridor, presence of difficult terrain and potential to co-locate with existing transmission infrastructure.

Constructability values were generally based on impacts to design or construction and items that were assessed to significantly increase cost to projects. Economic considerations of the corridor options are based on corridor length, difficult terrain and opportunities to co-locate with existing infrastructure.

Figure 10 shows the economic constraints and opportunities used to compare the corridor options.

Figure 10: Economic constraints and opportunities



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 potential upfront and ongoing maintenance costs for the infrastructure.

Steep topography limits vehicle and machinery access and significantly increases the required earthworks at each tower site. Additional easements and access are often required in steep country and therefore environmental impacts can be increased in these areas, for example, as additional clearing for access tracks is required. Land in this category poses a significant constraint to construction and needs to be considered in the context of constructability, cost and time. Due to these constraints, the corridor options analysis aims to minimise impact to this land category as far as practicable.

Co-location of transmission lines with other linear infrastructure aims to make use of existing maintenance points and access tracks. Additionally, co-location potentially reduces the overall number of people and properties impacted.

The area of each corridor overlaying these areas are shown in Table 13.

Table 13: Economic constraints comparison

	Unit	West	Central A	Central B	East A	East B
Criteria 1: Corridor length	km	83	61	54	69	72
Criteria 2: Land >30% slope	%	12	26	20	16	14
Criteria 3: Co-location	km	0	0	0	64	60

The Central corridor options are the shortest in length.

The West and East corridor options have the least amount of difficult terrain.

The East corridor options have the greatest potential to co-locate with existing transmission lines.

6.4 Summary of selected 4km-wide corridor

The corridor analysis resulted in Woolooga West as the selected 4km-wide corridor option. Aiming to achieve a balance across social, environmental and economic objectives, this corridor has the least overall impact when compared to the other corridor options (Refer table 14).

From the Borumba Dam, the West corridor heads north-west and traverses through Yabba and Gallangowan State Forests, and then continues through undulating and cleared grazing land near Manumbar. The West corridor then heads north, in an area west of Wrattens Forest and National Park, to avoid areas of environmental significance. The corridor also captures State-owned land within Jimmys Scrub State Forest.

At Black Snake, south of Kilkivan, the corridor turns in a north-easterly direction through the Oakview State Forest and provides opportunities to co-locate with the existing Energy Queensland distribution line that connects to the Woolooga Substation.

A longer corridor was necessary to avoid townships and populations as well as difficult terrains related to the Central and Eastern corridors.

In summary, the Woolooga West corridor:

- impacts the lowest number of properties, in particular those less than 5ha in size
- includes the greatest opportunity to use State-owned land
- has the least impact on National Parks, which are able to be avoided through refinement to a 1km-wide corridor
- has the least impact on intensive land use (such as feedlots), as well as strategic cropping and agricultural land
- includes an opportunity to co-locate with an existing Energy Queensland distribution line.

Table 14: Assessment of Woolooga 4km-wide corridor options

	Unit	West	Central A	Central B	East A	East B
Social						
Criteria 1: Strategic cropping and agricultural land	ha	1857	2319	2408	6360	5650
Criteria 2: Properties <5 ha	count	28	54	110	840	1207
Criteria 3: State-owned land	%	27%	4%	4%	7%	10%
Criteria 4: Number of properties	count	457	458	508	2004	2635
Criteria 5: Intensive use	ha	343	432	557	2676	3378
Environment						
Criteria 1: Endangered RE (Cat A, B, C, R)	ha	571	476	288	215	175
Criteria 2: Of Concern RE (Cat A, B, C, R)	ha	8891	5151	4515	4113	4067
Criteria 3: Least Concern RE (Cat A, B, C, R)	ha	8377	8664	5993	7238	8998
Criteria 4: Essential habitat	ha	5470	2074	1713	3624	4926
Criteria 5: National Parks	ha	323	964	471	592	592
Economic						
Criteria 1: Corridor length	km	83	61	54	69	72
Criteria 2: Land >30% slope	%	12%	26%	20%	16%	14%
Criteria 3: Co-location	km	0	0	0	64%	60%

7.0 Corridor Refinement Process

7.1 Methodology

The methodology for this phase builds upon the objectives, criteria and measures identified for the project to recommend a 1km-wide corridor for further consultation and investigations.

Planning and legislative frameworks, spatial analysis and community and stakeholder feedback, are factored into this process. Further considerations to identify a least constrained path include:

- Queensland and Local Heritage registered sites
- Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships sites
- protected plant survey trigger area
- wetlands – General Ecological Significance/High Ecological Significance
- airports, heliports and landing strips
- mining lease
- number of crossings (distribution powerlines)
- flood hazard areas
- State-controlled roads and railways.

8.0 1km-wide recommended corridor

The selected 4km-wide corridor has been refined to a 1km-wide recommended corridor. The recommended corridor aligns with least constrained areas identified through spatial analysis.

A summary of key findings and characteristics of the 1km-wide recommended corridor is included below. For further detail please refer to Appendix C for further detail on key considerations.

8.1 Social

8.1.1 Tenure

The 1km-wide recommended corridor is predominantly freehold land and includes areas of State-owned land. Through the refinement, the 1km-wide recommended corridor includes no impacts to National Parks, Conservation Parks and Nature Refuges, which aims to protect high value remnant vegetation and potential habitat and heritage values in those areas. State-owned land comprising State Forest is present within the 1km-wide recommended corridor including Yabba State Forest, Gallangowan State Forest and Jimmys Scrub State Forest.

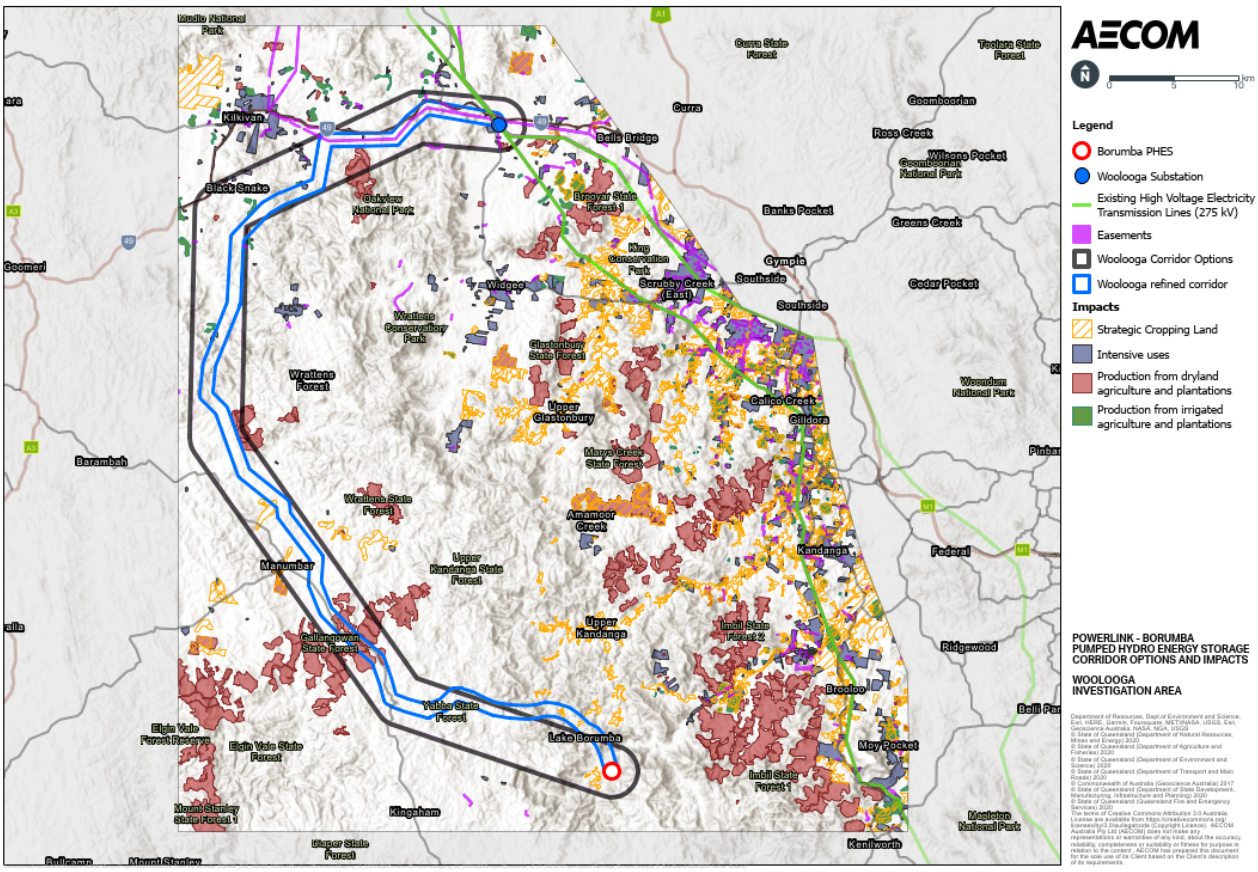
8.1.2 Land use

The 1km-wide recommended corridor intersects the Gympie Regional Council and Somerset Regional Council Local Government Areas.

The potential impact of the transmission line on amenity and productivity of rural communities has been a key issue raised through the engagement process. The 1km-wide recommended corridor has been aligned to minimise intensive use areas associated with closer residential settlement, commercial or industrial uses. The corridor contains 89ha (1.0%) of land which is mapped for intensive land.

To maintain continued agricultural productivity, the recommended corridor minimises the area within mapped strategic cropping land, agriculture and plantations by maximising co-location with State-owned land (State Forest) and an existing Energy Queensland distribution line. The area of strategic cropping land and agricultural lands within the 1km-wide recommended corridor is 382ha (4.3%).

Figure 11: Land use constraints



8.1.3 Property

By using State-owned land and co-locating with the existing Energy Queensland distribution line for 15km of the 88km corridor, the 1km-wide recommended corridor has reduced property impacts. This corridor avoids small rural residential lots (5 freehold properties less than 5ha) to minimise impacts to communities. The total number of freehold properties within the 1km-wide recommended corridor is 129, including lots partially within the corridor.

8.1.4 Resources interests

The 1km-wide recommended corridor avoids interaction with active mining leases.

8.1.5 Transport

There are no airports, heliports or landing strips within the 1km-wide recommended corridor.

State-controlled roads intersecting the refined corridor include:

- Kilcoy-Murgon Road through Yabba State Forest and Gallangowan State Forest
- The Wide Bay Highway between Oakview State Forest and the existing substation at Woolooga. The intent in this area is to align with the existing Energy Queensland distribution line.

8.1.6 Native Title

The 1km-wide recommended corridor intersects the registered Native Title claim area of the Kabi Kabi First Nation Traditional Owners Native Title Claim Group (QC2018/007), the Native Title determination area of the Wakka Wakka People #3 Part A & B (QCD2022/003) and the previously registered claim Wakka Wakka #2 (QC1999/033). Continued engagement with the Native Title parties on the impact of the transmission line on Native Title rights and interests will be addressed in accordance with the *Native Title Act 1993 (Cth).*

8.2 Environment

8.2.1 Flora

The 1km-wide recommended corridor contains previously cleared land as well as regrowth and remnant native vegetation, some of which is within State Forest. This corridor aligns to more non-remnant vegetation in areas previously cleared for other land uses such as agriculture, resources and commercial and residential development.

Within the 1km-wide recommended corridor, remnant vegetation comprises up to approximately 43ha (0.5%) of Endangered vegetation, predominantly located in the riparian areas of creeks within the refined corridor. Patches of contiguous Endangered vegetation have been avoided.

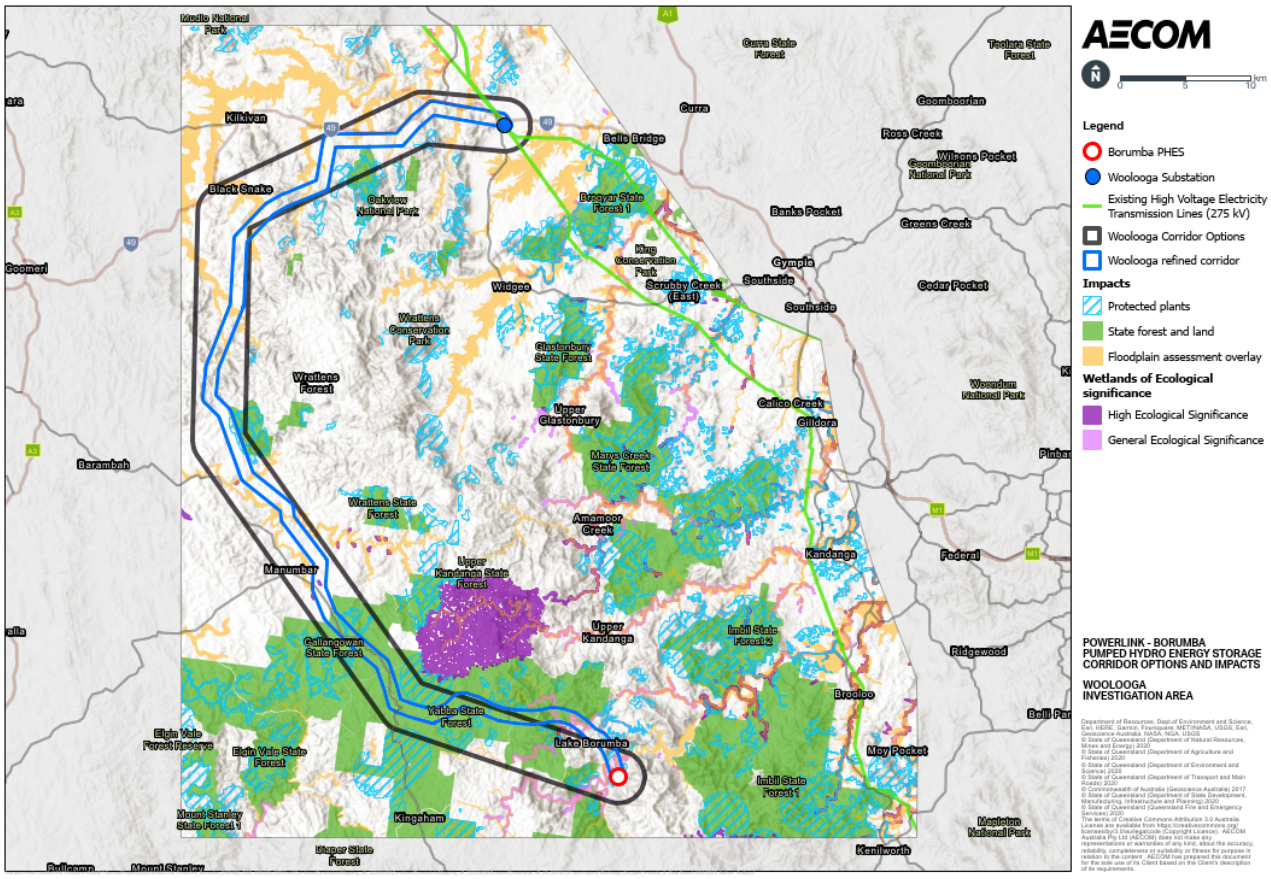
Of Concern vegetation is present in patches from Borumba Dam through Yabba State Forest and Gallangowan State Forest. Near Manumbar, Of Concern vegetation is avoided until Jimmys Scrub State Forest. From Jimmys Scrub State Forest to the north of Oakview National Park, Of Concern vegetation is present consistently through the corridor. In some areas there are further opportunities to avoid, however in others, larger contiguous areas are unavoidable.

Approximately 2,297ha (26%) of Least Concern vegetation is present in the 1km-wide recommended corridor through Yabba State Forest and vegetation values surrounding Borumba Dam. Other smaller patches exist to the north of Oakview National Park.

High risk areas for protected plants are present in the 1km-wide recommended corridor, including Yabba State Forest, Gallangowan State Forest and the edge of Jimmys Scrub State Forest.

The 1km-wide recommended corridor deviates outside the 4km-wide selected corridor to the north from the proposed Borumba PHES to avoid the Kingaham Gorge and waterfall which has been identified as containing significant environment and heritage values.

Figure 12: Protected plants constraints



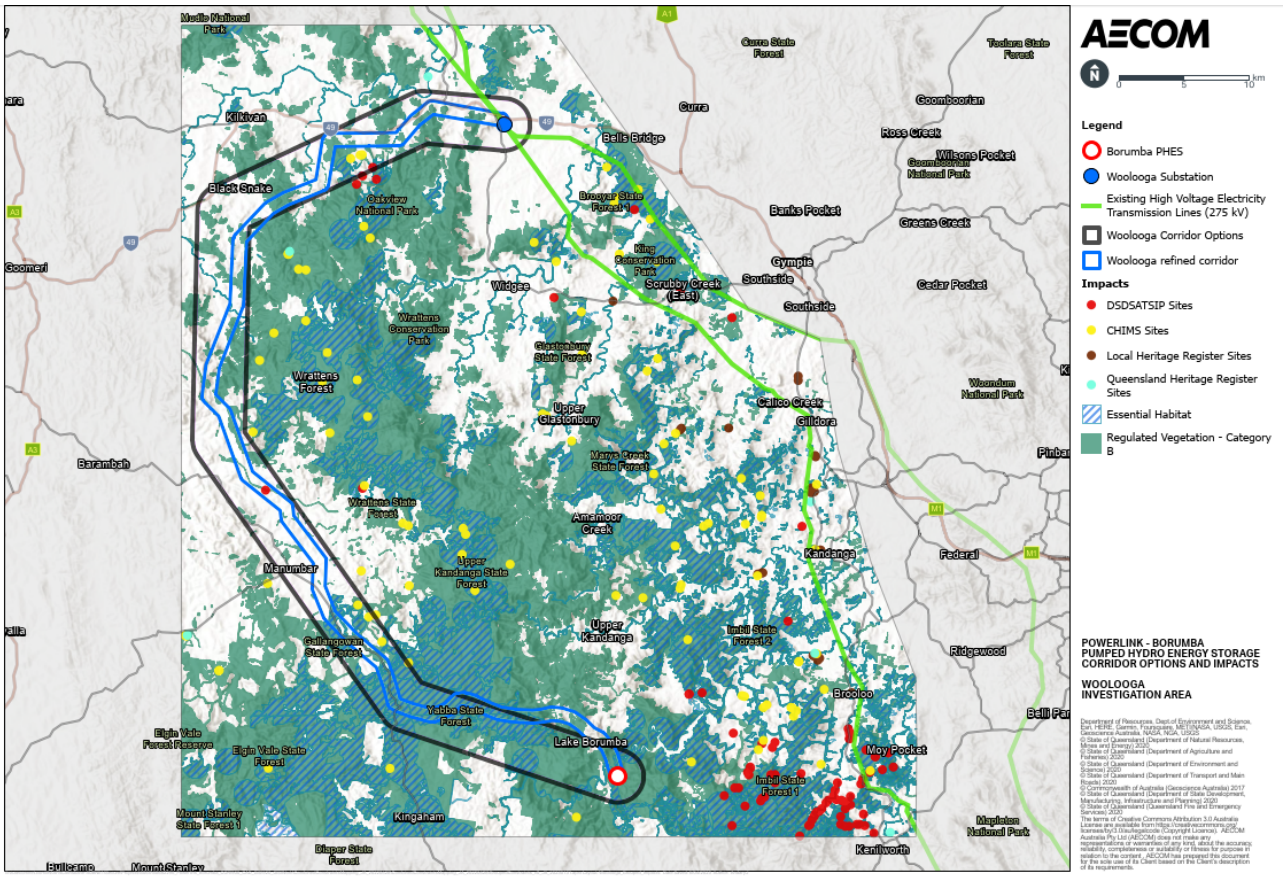
8.2.2 Fauna

There is approximately 1,545ha (18%) of Essential Habitat through the remnant vegetation in the 1km-wide recommended corridor, especially related to the State Forests.

Koala Habitat Areas are present related predominantly to remnant vegetation in the 1km-wide recommended corridor, in State Forests and biodiversity corridors connecting these areas.

The recommended corridor intersects multiple waterways mapped as having potential risk for fish passage.

Figure 13: Heritage and essential habitat constraints



8.2.3 Heritage

Recognising the significant environmental and heritage values, the 1km-wide recommended corridor prioritises previously cleared areas, and avoids alignment to ridgelines, National Parks, remnant native vegetation and waterways.

There is only one site identified on the DSDSATSIP database within the 1km-wide recommended corridor. There are also several areas identified as being of cultural value within the recommended corridor.

8.3 Economic

8.3.1 Topography

The 1km-wide recommended corridor aims to avoid steep terrain where practical. There is 11% of land with slope greater than 30% in the 1km-wide recommended corridor.

8.3.2 Geology

The 1km-wide recommended corridor contains mapped geological features associated with granitoid, volcanics, sedimentary and alluvium deposits, some of which present challenges for design and construction of a transmission line.

8.3.3 Soils

Based on broad soil types mapped by the Australian Soils Classification mapping, the refined corridor has potential to intersect:

- dermosols – well-structured clay to clay loam soils, generally suitable for earthworks, non-dispersive, prone to compaction
- ferrosols – well-structured and drained clay to clay loam soils, high agricultural potential, prone to degradation by erosion and compaction
- rudosols – associated with current and previous watercourses, layered alluvium, vulnerable to erosion
- sodosols – texture contrast soils with impenetrable subsoils, low agricultural potential commonly used for grazing, vulnerable to erosion and dryland salinity when vegetation removed
- vertosols – clay-rich soils, high soil fertility, large water holding capacity, potential for strong cracking and salinity
- tenosols – poor structure and water holding capacity, low agricultural potential commonly used for grazing, prone to erosion on steep slopes

Additionally, acid sulfate soils or potential acid sulfate soils may be present in low-lying areas.

8.3.4 Hydrology

Watercourses and drainage lines cross the 1km-wide recommended corridor in low-lying areas and are associated with potential flood hazards during extreme rainfall events.

The recommended corridor intersects the following watercourses as defined and mapped under the Queensland *Water Act 2000 (Qld)*.

8.3.5 Contaminated land

Contaminated land searches (including searches of the Environmental Management Register and Contaminated Sites Register) will need to be undertaken for land generally associated with mining, power generation, manufacturing, service stations and landfill sites – particularly for properties associated with industrial and commercial activities.

8.3.6 Unexploded ordnance

The 1km-wide recommended corridor crosses an area mapped by the Department of Defence as having slight potential for unexploded ordnance (UXO) within Jimmys Scrub State Forest. This area was the 3rd Australian Armoured Division Tank Range in 1943. Jimmys Scrub is located between Kinbombi Road and Kabunga State Forest.

8.4 Summary of 1km-wide recommended corridor

The location of the 1km-wide recommended corridor has been influenced by feedback received and spatial analysis highlighting environmentally and culturally sensitive areas throughout the corridor, in particular areas surrounding Borumba Dam.

From the Borumba Dam, the corridor extends north and deviates outside the 4km-wide selected corridor to avoid significant environment and cultural values identified through feedback received.

The 1km-wide recommended corridor realigns within the 4km-wide corridor south of Wrattens National Park, traversing State-owned land within Yabba State Forest and along Kilcoy-Murgon Road to minimise potential impacts associated with development of access through the State Forests.

Moving north past Manumbar, the recommended corridor continues through freehold land previously cleared or containing non-remnant vegetation. This aligns to least constrained areas avoiding higher ecological values where possible.

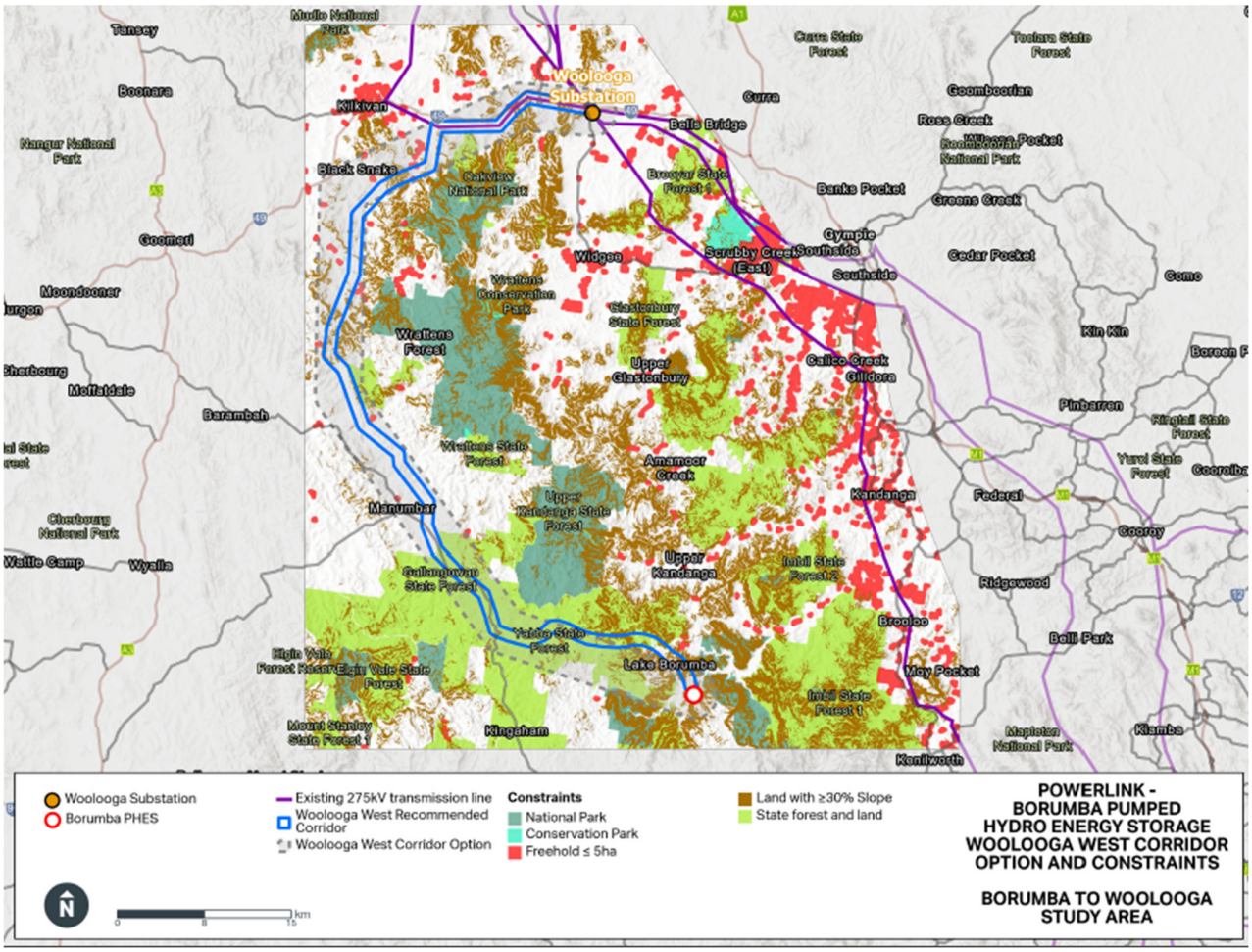
The corridor then aligns within the Jimmys Scrub State Forest within soft wood plantation land which occupies very steep terrain before continuing and incorporating the Kinbombi Road reserve. From Jimmys Scrub State Forest north towards Kilkivan, the corridor is more constrained due to remnant vegetation, difficult terrain and scattered smaller properties. The corridor then aligns where possible within already cleared areas in the Black Snake district. East of Kilkivan, there is an opportunity to co-locate with an existing Energy Queensland distribution line approaching Woolooga Substation.

A summary of the recommended corridor against the corridor selection objectives is captured in Table 15.

Table 15: Assessment of Woolooga 1km-wide recommended corridor

Objective and Criteria	Unit	Recommended corridor option (1 km-wide)
Social		
Criteria 1: Strategic cropping and agricultural land use	ha	382
Criteria 2: Properties <5ha	count	5
Criteria 3: State-owned land	%	27
Criteria 4: Number of properties	count	129
Criteria 5: Intensive use	ha	89
Environment		
Criteria 1: Endangered RE (Cat A,B,C,R)	ha	43
Criteria 2: Of Concern RE (Cat A,B,C,R)	ha	1,757
Criteria 3: Least Concern RE (Cat A,B,C,R)	ha	2,297
Criteria 4: Essential habitat	ha	1,545
Criteria 5: National Park	ha	0
Economic		
Criteria 1: Corridor length	km	88
Criteria 2: Land >30% slope	%	11
Criteria 3: Co-location with 275kV line	km	0

Figure 14: 1km-wide recommended corridor



8.4.1 Further use of State-owned land

Powerlink received feedback from the community to maximise the use of State-owned land within our corridors. The reference to State-owned land includes National Park, State Forest and Conservation Park tenures. Initial community feedback indicated a preference for 100% of the corridor to be State-owned land, however a review of the Study Area demonstrated this was not possible.

In response to community feedback, Powerlink incorporated a new criteria in the corridor selection analysis to understand opportunities to use and maximise State-owned land wherever practical, while ensuring least overall impact across social, environment and economic objectives within the corridor.

Applying the corridor selection process, and incorporating the State-owned land criteria, the 4km-wide West corridor was selected as it had the least overall impact across the social, environment and economic objectives. This corridor presented the greatest opportunity across the corridor options to use State-owned land at 27%. In the refinement of the 4km-wide corridor to a 1km-wide recommended corridor the opportunity to use State-owned land was maintained at 27%.

Powerlink then undertook further investigations with AECOM to assess areas outside of the current corridor to explore potential opportunities to increase use of State-owned land. This analysis lead to the investigation of two scenarios for the 1km-wide recommended corridor that deviated outside of the 4km-wide selected corridor.

The first scenario departed from the original 4km-wide corridor and intersected with the Upper Kandanga State Forest, Wrattens State Forest, Wrattens Forest and adjoining Wrattens National Park Oakview National Park. This resulted in:

- an incremental increase to State-owned land use from 27% to 35%
- a reduction in the number of properties impacted by 30 (23%)
- a significant increase of 266ha (620%) in Endangered vegetation, driven predominantly by intersection with National Parks
- an increase of 440ha (115%) across strategic cropping and agricultural land use, predominantly due to crossing over State Forest plantation areas
- an increase in land with greater than 30% slope of 10% to 21%.

Overall, this scenario revealed significant impacts across most environmental criteria due to its intersection with National Parks, in order to achieve an incremental increase to the use of State-owned land. In addition, the increase in land with greater than 30% slope creates the potential for increased construction risk, more significant environmental impacts due to the scale of required earthworks, and ongoing access constraints.

The second scenario intersected with the Upper Kandanga State Forest, Wrattens State Forest, Wrattens Forest and Gallangowan State Forest, but avoided Wrattens National Park and Oakview National Park. This scenario recognised the broader objective to avoid impacts on National Parks and resulted in:

- an incremental increase to State-owned land use from 27% to 36%
- a minor reduction in the number of properties impacted by 6 (5%)
- an increase of 254ha (14%) in Of Concern vegetation
- an increase of 640ha (168%) across strategic cropping and agricultural land use, predominantly due to crossing over State Forest plantation areas
- an increase in corridor length of 6km (7%).

While avoiding National Parks under this scenario reduced environmental impacts, an incremental increase in use of State-owned land delivered a minor reduction on the number of properties impacted. This scenario also resulted in a material increase in impacts to strategic cropping land and agricultural use, and required an increase in corridor length and associated construction costs.

These scenarios indicate that any further use of State-owned land beyond that in the recommended 1km-wide corridor will achieve an incremental increase in State-owned land, yet have significant impacts on high value environmental areas including National Parks and State Forest.

9.0 Legislative and Approval Requirements

There are a number of potential legislative and approval requirements in order to progress the project. Some of the Local, State and Federal Government approval frameworks are discussed in this section.

9.1 Potential environmental approvals

The 1km-wide recommended corridor requires further investigation from an environmental perspective.

At this scale, the potential for approvals for a transmission line through this corridor can only be provided at a preliminary level. A full list of legislative considerations and other obligations is provided within Appendix B. Potential approvals are identified below and are subject to further corridor refinement, actual infrastructure disturbance locations and further ecological and cultural heritage investigations:

- Ministerial Infrastructure Designation under the *Planning Act 2016 (Qld)*
- *Environment Protection and Biodiversity Conservation Act (EPBC) 1999 (Cth)* referral and potential approval for significant impact on Matters of National Environmental Significance
- clearing permit under the *Nature Conservation Act 1992 (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)
- soil disposal permit under the *Environmental Protection Act (EP Act) (Qld)* to remove contaminated soil for treatment and/or disposal
- riverine protection permit where the Riverine protection permit exemption requirements under the *Water Act 2000 (Qld)* cannot be met.

Offsets are likely to be applicable to some of the approvals above. To determine the likely offset liabilities under the EPBC Act (Cth) and *Environmental Offsets Act (Qld),* field surveys and the following assessments are recommended:

- a significant impact assessment using the *EPBC Act Significant Residual Impact Guidelines Policy Statement 1.1*
- a significant residual impact assessment under the *Queensland Environmental Offsets Policy Significant Residual Impact Guideline: Nature Conservation Act 1992*, and *Environmental Protection Act 1994*.

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 once additional desktop and field investigations have been undertaken. Additionally, where approvals are required, potential offsets will also need to be considered.

For further detail on legislation potentially applicable to the corridor, refer to Appendix B.

10.0 Conclusion and Future Studies

A recommended 1km-wide corridor has been identified within the selected 4km-wide Woolooga West corridor. The assessment used criteria and measures (within the Multi-Criteria Analysis) informed by landholder, community feedback and spatial analysis.

Through the corridor selection and refinement processes the 1km-wide recommended corridor:

- reduces the impact on the number of landholders and particularly smaller land parcels
- avoids National Parks
- avoids critical infrastructure and community facilities
- minimises impacts on agriculture, intensive land use and cropping lands

- optimises the use of State-owned land
- identifies potential to co-locate with existing distribution lines and,
- minimises the overall land required to support new transmission infrastructure.

Following release of the Draft Corridor Selection Report (CSR), additional investigations and feedback from landholders, Traditional Owners and the broader community is needed to finalise the recommended 1km-wide corridor. Powerlink will undertake further engagement and analysis before finalising the 1km-wide corridor.

The final 1km-wide corridor (referred to as a Study Corridor) will be published in the Final CSR to be released in September 2023. Powerlink will continue to work with landholders in the study corridor to undertake detailed technical studies to determine a 70m-wide easement for the final transmission line alignment.

10.1 Future studies

Further desktop and field studies are required to finalise corridor selection in line with the project objectives. These investigations will build understanding of the project constraints, opportunities and required approvals for the recommended corridor. As the 1km-wide recommended corridor is further refined, the project will continue to seek to avoid and/or minimise impacts to landholders and community areas as well as environment, cultural values, agriculture and cropping land values through siting and design.

Social

- Review of consultation feedback - further engagement with stakeholders, particularly affected landholders and Traditional Owner groups, on the recommended corridor to understand use of land, proximity to homes and potential impacts to properties.
- Visual amenity assessment - further assessment of the recommended corridor in relation to visual amenity.
- Strategic cropping, agriculture and intensive uses - further investigation and consideration to avoiding these areas during the next phase of corridor refinement.

Environment, heritage and planning

- Ecology - based on the vegetation present within the 1km-wide recommended corridor, there is potential for the corridor to contain areas of habitat for threatened flora and fauna species, or threatened ecological communities. Further assessment will be undertaken to determine the potential impact to habitat for threatened flora and fauna species. Assessment should comprise a detailed desktop assessment and targeted field surveys.
- Biosecurity matters - further investigation into the potential biosecurity risks is recommended during ecology desktop and field investigations.
- Unexploded ordnance (UXO) - within the 1km-wide recommended corridor, there is one site listed as containing slight potential of UXO presence. It is likely that a future final alignment will intrude into land with UXO potential, therefore specialist advice and the preparation of a detailed UXO Risk Assessment will be required. Additionally, a UXO Management Plan may need to be prepared to manage risk, including the possibility of encountering munitions.
- 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. Whilst acid sulfate soils may pose less of a risk, contamination and dispersive soils may be present. Field investigations including sampling and analysis are recommended and can be combined with geotechnical investigations where appropriate.
- Poor ground conditions - further 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, 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. Waterway crossings may require a tailored design response to ensure minimal damage to vegetation and mitigate risks of damage to tower structures.
- 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.

The corridor selection process has relied on data from publicly available data sources and the feedback of all engagement activities undertaken to date. These have been considered at a regional scale to inform future direction for studies and refinement. No investigations have been undertaken and mapped at the regional scale, and analysis has not occurred at the lot-based/ property specific level. Additional opportunities, constraints and studies may be deemed necessary through the next phases of the project.

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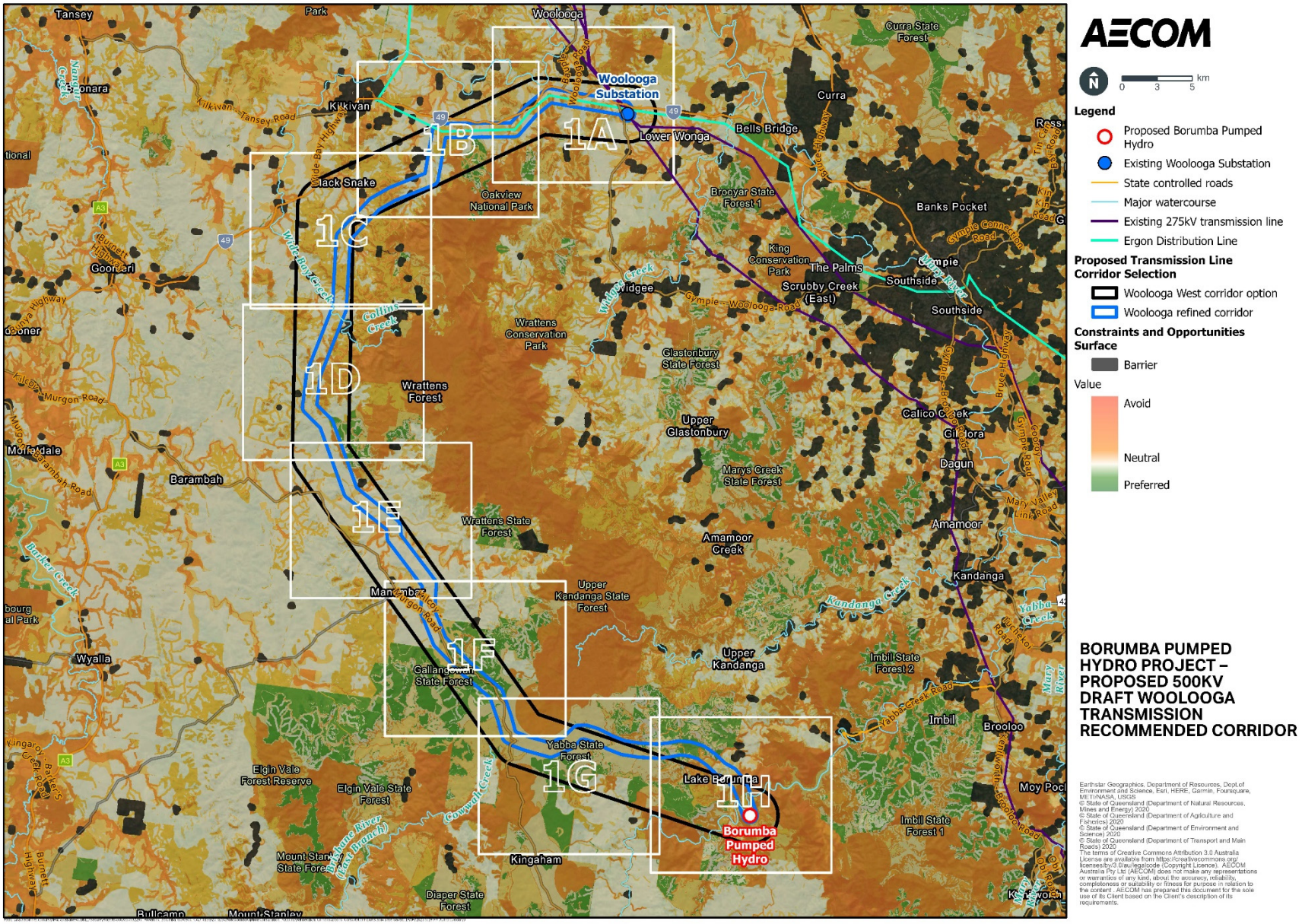
Appendix A


AECOM
N
0 3 5 km
Legend
Proposed Borumba Pumped Hydro
Existing Wooloooga Substation
State controlled roads
Major watercourse
Existing 275kV transmission line
Ergon Distribution Line
Proposed Transmission Line Corridor Selection
Wooloooga West corridor option
Wooloooga refined corridor
Constraints and Opportunities Surface
Barrier
Value
Avoid
Neutral
Preferred
BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR
1A
1B
1C
1D
1E
1F
1G
1H
Wooloooga Substation
Borumba Pumped Hydro
Tansey
Woolooga
Curra
Curra State Forest
Kilkivan
Lower Wonga
Bells Bridge
Jack Snake
Oakview National Park
Brooyar State Forest 1
Banks Pocket
Goomeri
King Conservation Park
The Palms
Gympie
Southside
Scrubby Creek (East)
Widgee
Wrattens Conservation Park
Glastonbury State Forest
Wrattens Forest
Upper Glastonbury
Calico Creek
Dagun
Marys Creek State Forest
Barambah
Wrattens State Forest
Amamoor
Amamoor Creek
Kandanga
Upper Kandanga State Forest
Kandanga Creek
Wyalla
Gallangowan State Forest
Upper Kandanga
Imbil State Forest 2
Imbil
Brooloo
Yabba State Forest
Elgin Vale Forest Reserve
Elgin Vale State Forest
Lake Borumba
Imbil State Forest 1
Kingaham
Mount Stanley State Forest
Diaper State Forest
Bullcamp
Mount Stanley
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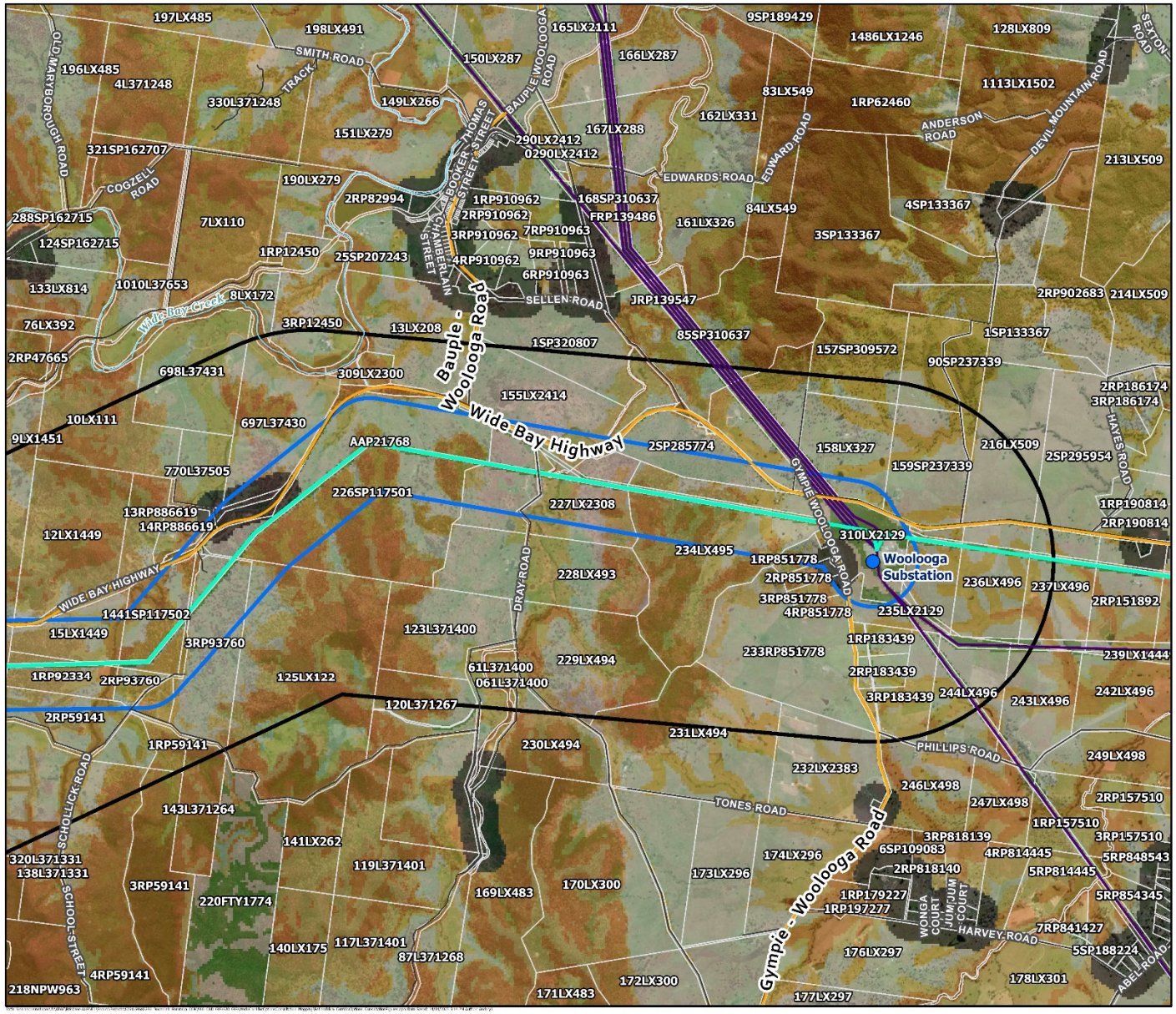


Figure 1A

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR

AECOM

N

0 1 km

Legend

- State controlled roads
- Local roads
- Major watercourse
- Existing 275kV transmission line
- Ergon Distribution Line
- Lot boundary

Proposed Transmission Line Corridor Selection

- Woolooga West corridor option
- Woolooga refined corridor

Constraints and Opportunities Surface

- Barrier
- Avoid
- Neutral
- Preferred

Figure 1B

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR

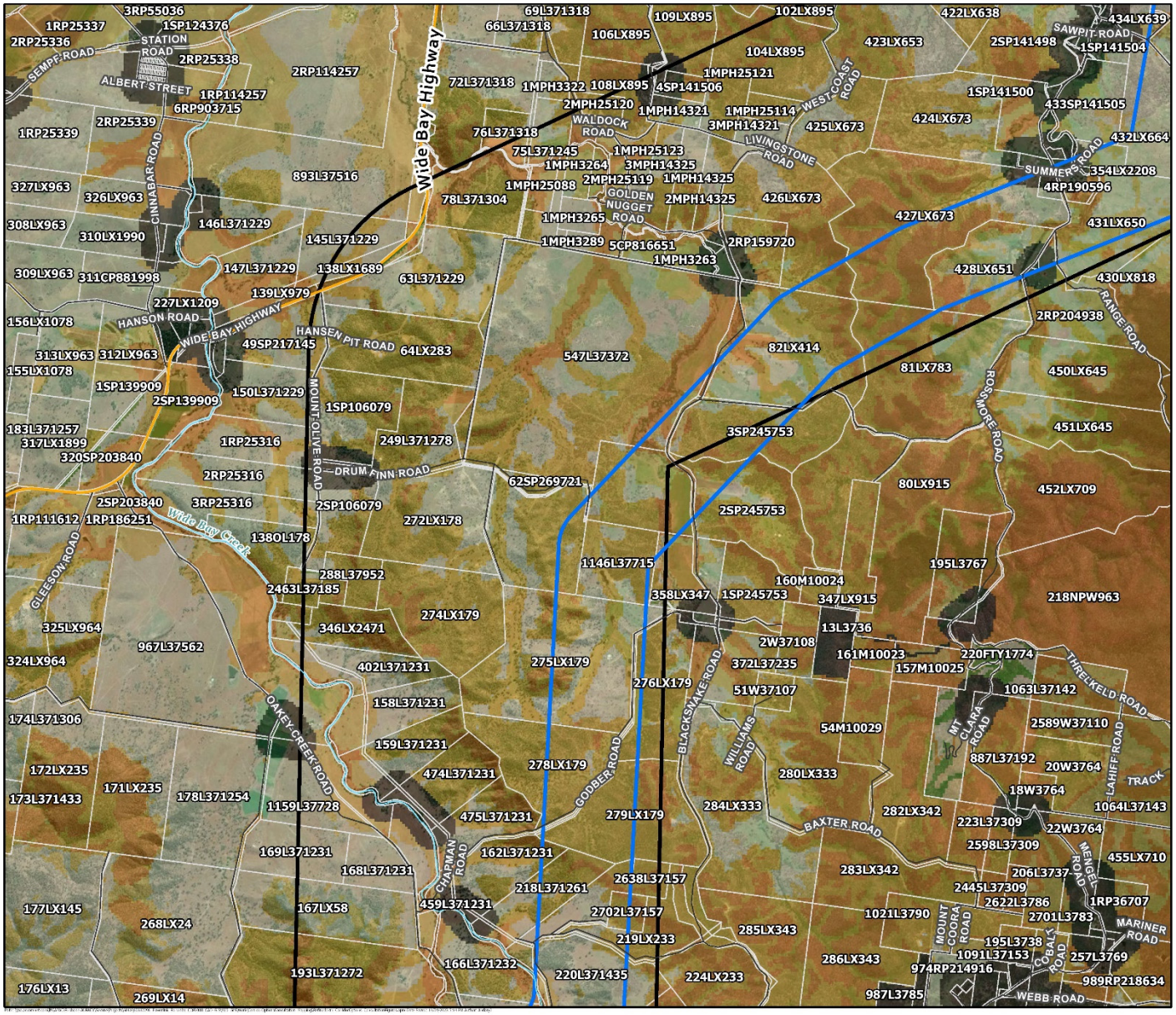


Figure 1C

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR

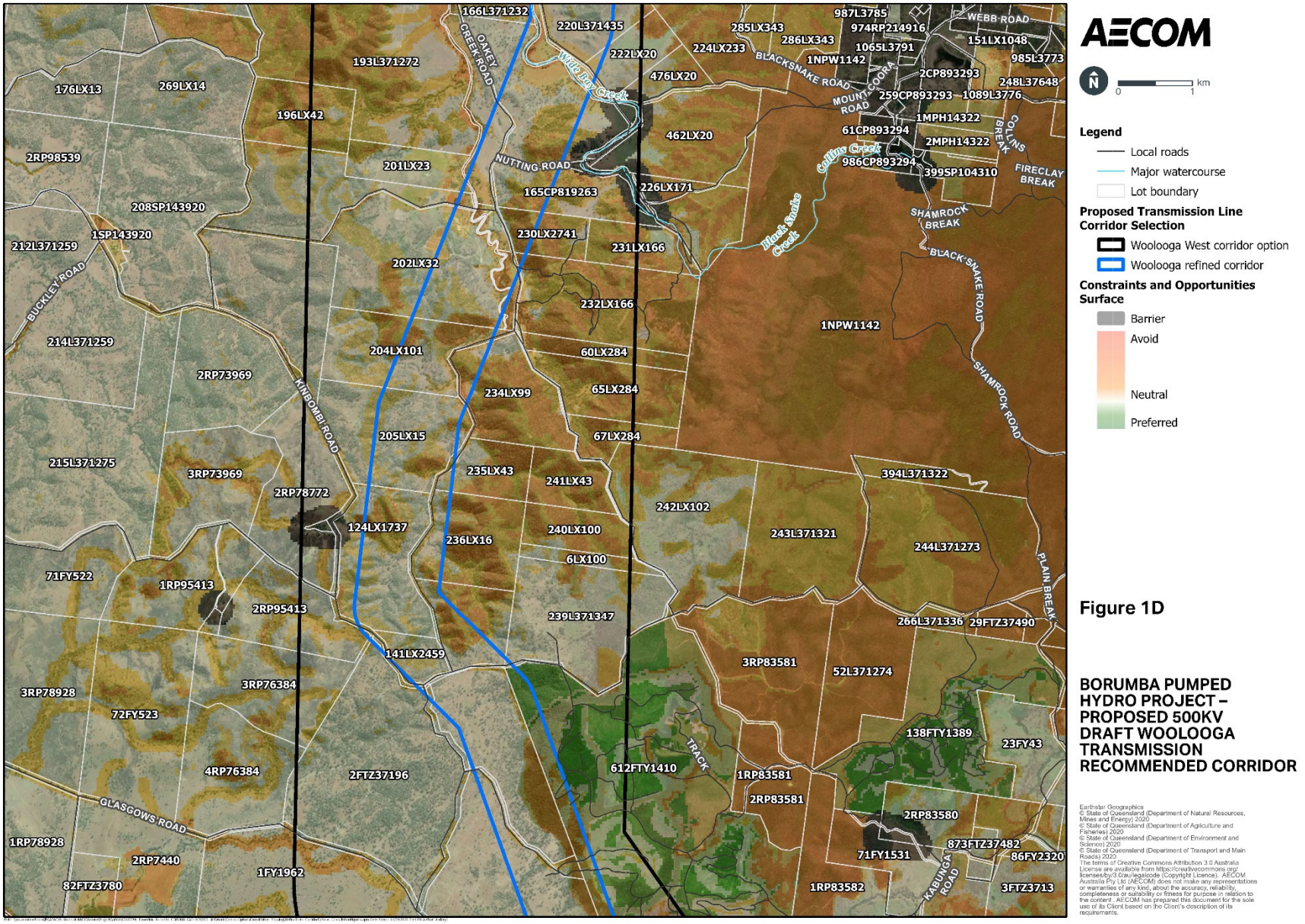
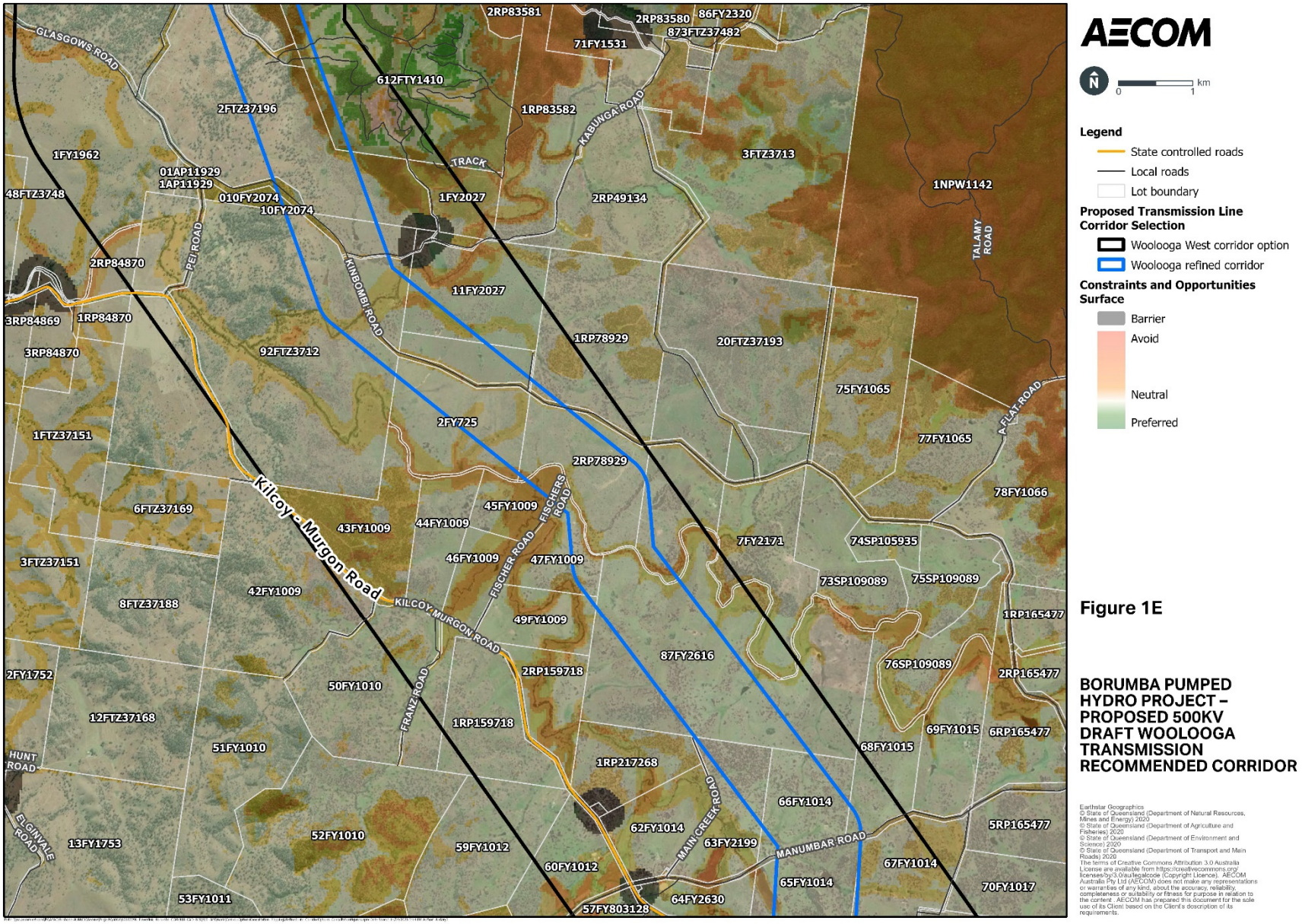


Figure 1D

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR



AECOM

N

0 1 km

Legend

- State controlled roads
- Local roads
- Lot boundary

Proposed Transmission Line Corridor Selection

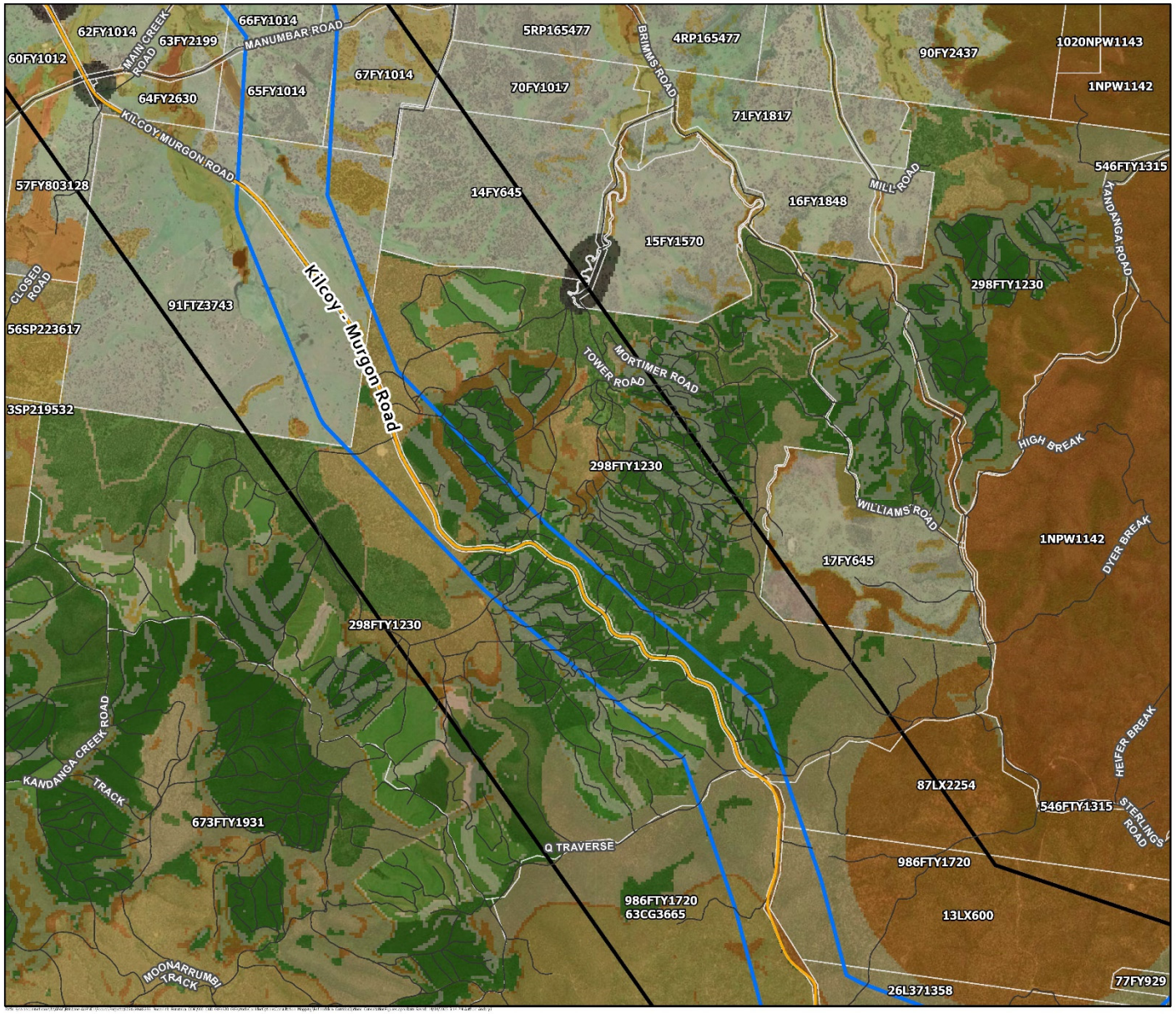
- Woolooga West corridor option
- Woolooga refined corridor

Constraints and Opportunities Surface

- Barrier
- Avoid
- Neutral
- Preferred

Figure 1E

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR



AECOM

N

0 1 km

Legend

- State controlled roads
- Local roads
- Lot boundary

Proposed Transmission Line Corridor Selection

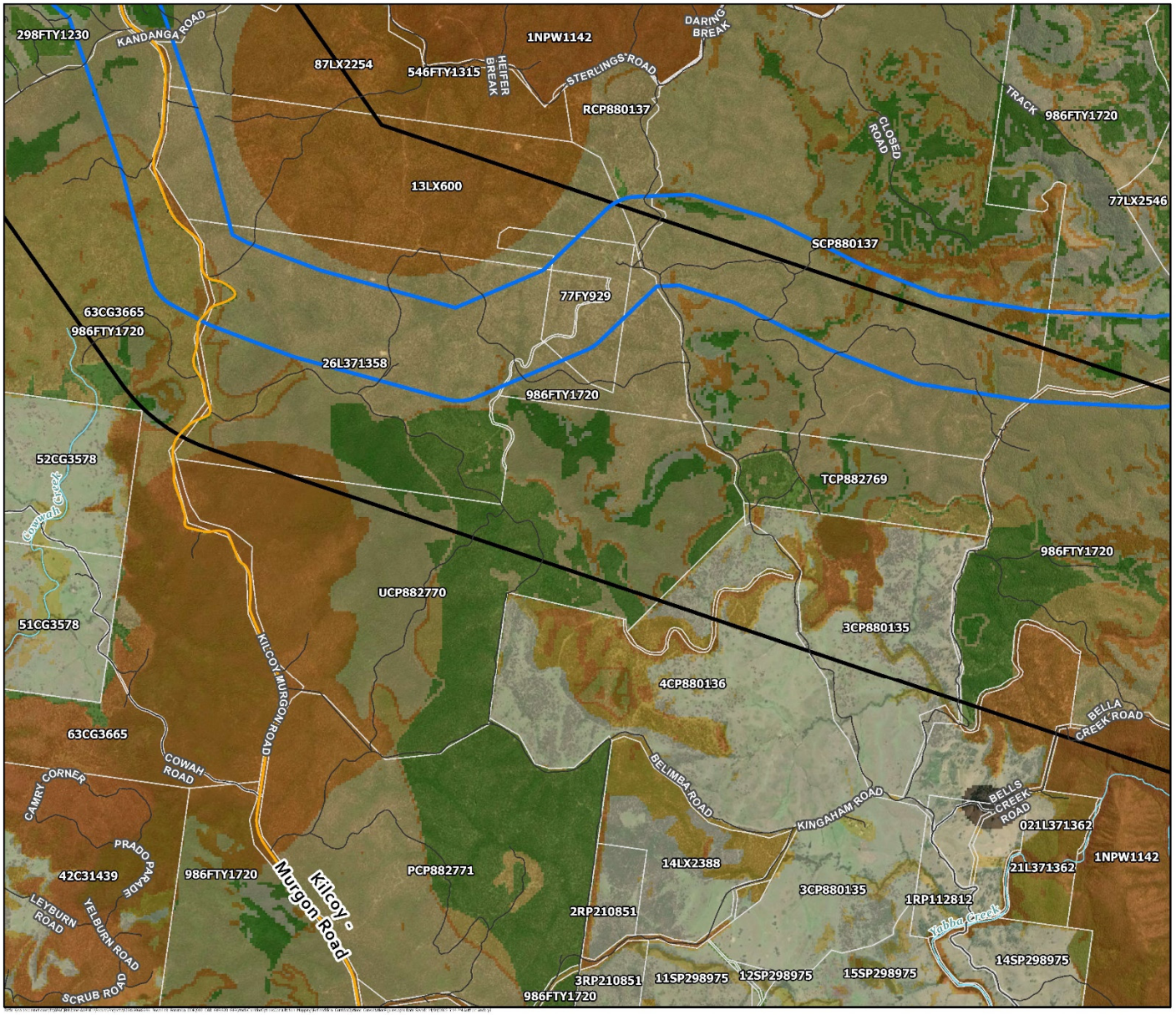
- Woolooga West corridor option
- Woolooga refined corridor

Constraints and Opportunities Surface

- Barrier
- Avoid
- Neutral
- Preferred

Figure 1F

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR



AECOM

N

0 1 km

Legend

- State controlled roads
- Local roads
- Major watercourse
- Lot boundary

Proposed Transmission Line Corridor Selection

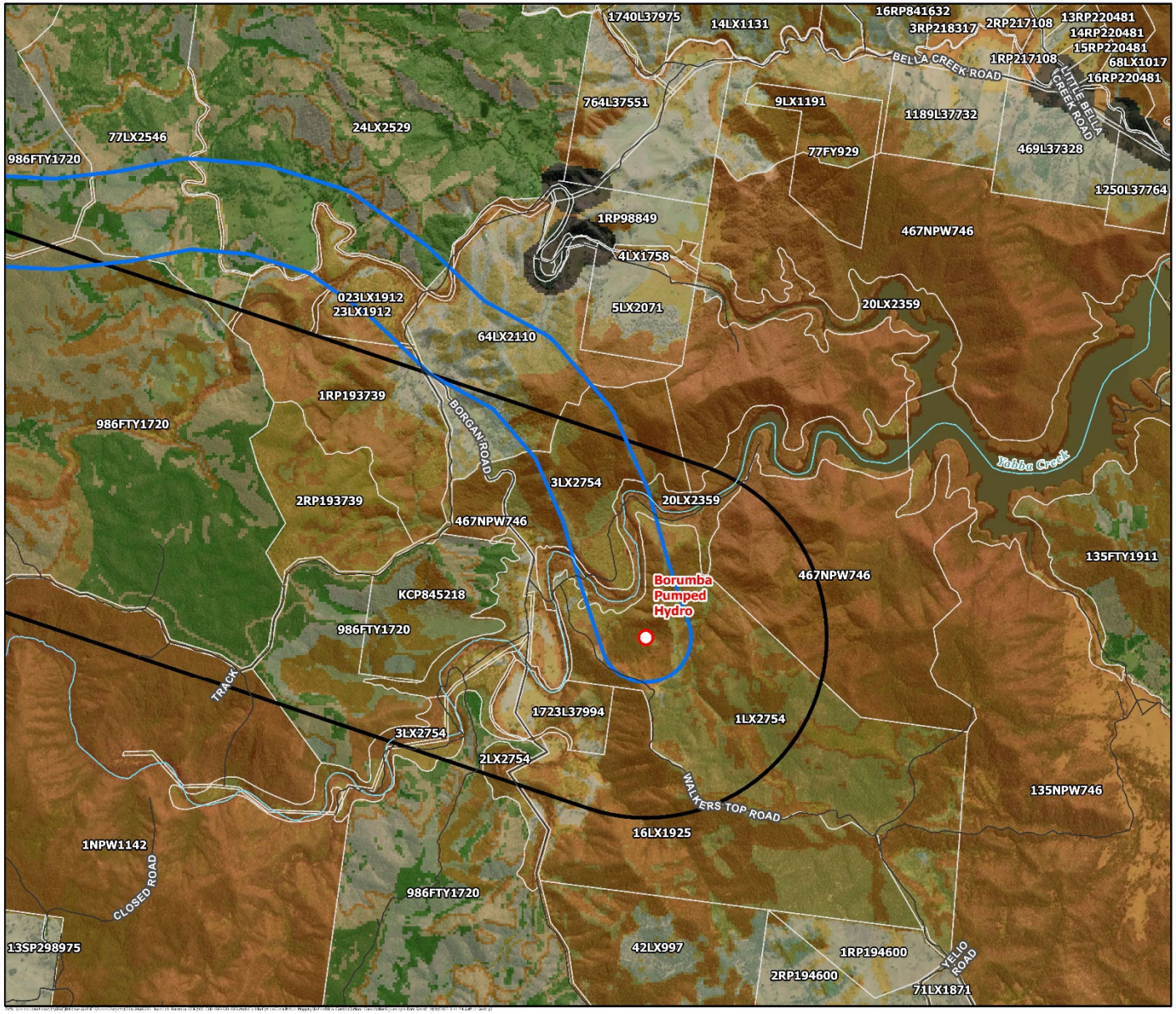
- Woolooga West corridor option
- Woolooga refined corridor

Constraints and Opportunities Surface

- Barrier
- Avoid
- Neutral
- Preferred

Figure 1G

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR



AECOM

N

0 1 km

Legend

- Proposed Borumba Pumped Hydro
- Local roads
- Major watercourse
- Lot boundary

Proposed Transmission Line Corridor Selection

- Woolooga West corridor option
- Woolooga refined corridor

Constraints and Opportunities Surface

- Barrier
- Avoid
- Neutral
- Preferred

Figure 1H

BORUMBA PUMPED HYDRO PROJECT – PROPOSED 500KV DRAFT WOOLOOGA TRANSMISSION RECOMMENDED CORRIDOR

Appendix B

Appendix B Summary of legislative considerations

A summary of legislation potentially applicable to the project is provided below in Table 16 based on the 1km-wide recommended corridor. However, further design and detailed investigations and assessment will be required to confirm the appropriate approval pathway for the project.

Table 16 Summary of legislation

Legislation	Summary
Commonwealth Legislation	
Environment Protection and Biodiversity Conservation Act 1999	The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) is the centrepiece of Commonwealth environmental laws. Broadly, it protects and regulates impacts on the following Matters of National Environmental Significance (MNES): • 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 • A water resource, in relation to coal seam gas development and large coal mining development. Actions that have, will have, or are likely to have a significant impact on MNES and actions by the Commonwealth, or involving Commonwealth land are called controlled actions and require approval under the EPBC Act. The process of assessing and approving a controlled action under the EPBC Act potentially involves three stages, including referral, assessment and approval. At the first stage a person refers a proposed action for determination of whether it is a controlled action. If the proposed action is determined to involve a controlled action it is then assessed in accordance with the EPBC Act before the Minister (or delegate of the Minister) determines whether it can proceed and any conditions that should apply.

Native Title Act 1993	The *Native Title Act 1993* (NT Act) 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. Whilst Native Title has been extinguished (refused recognition) over freehold land, Native Title interests and rights may still exist over a number of tenures including reserves, State Forest and National Parks, land that is or has been subject to lease, waters that are not privately owned, as well as unallocated State land. The NT Act prescribes the statutory process to allow parties to reach agreement about the use of land or waters where Native Title may continue to exist and for State governments and territories to grant interests over that land to both Native Title claimants and non-Native Title parties.
State legislation	
Aboriginal Cultural Heritage Act 2003	The purpose of the *Aboriginal Cultural Heritage Act 2003* (ACH Act) is to provide effective recognition, protection and conservation of Aboriginal and Torres Strait Islander cultural heritage. The ACH Act protects all indigenous cultural heritage in Queensland, whether or not it has been recorded in a database. The ACH Act requires anyone who carries out a land use activity to exercise a duty of care to take all reasonable and practical measures to avoid harming Aboriginal and Torres Strait Islander cultural heritage. Failure to comply with the duty of care is an offence, including unlawfully harming, excavating, relocating, taking away and possessing indigenous cultural heritage.
Biosecurity Act 2014	The *Biosecurity Act 2014* (Biosecurity Act) 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 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 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) 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 as a:

	• Matter of National Environmental Significance (MNES) • Matter of State Environmental Significance (MSES) • Matter 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, the *Environmental Offsets Regulation 2014* (EO Regulation) and the Queensland Environmental Offsets Policy. The desktop assessment has identified that MNES and MSES are potentially present within the Study Area, 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. It is important to note that advice from Queensland Treasury is that the EO Act 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.
Electricity Act 1994	The *Electricity Act 1994* (Electricity Act) sets out the requirements that all electricity industry participants are required to promote a safe, efficient and reliable supply and use of electricity. The Act also requires that the supply of electricity is undertaken in an environmentally sound manner. Under Section 31(b) of the Electricity Act, a transmission entity is required to properly consider the environmental effects of its activities under the transmission authority. Powerlink will be required to implement project specific Environmental Management Plans (EMPs) to comply with requirements of the Electricity Act. The EMPs will be implemented through the construction, operation and maintenance stages of the Project.
Electrical Safety Act 2002	The *Electrical Safety Act 2002* (Electrical Safety Act) seeks to prevent through regulation, the death, injury and destruction that can be caused by electricity. Accordingly, the purpose of the Electrical Safety Act is to establish a legislative framework for: • preventing persons from being killed or injured by electricity • preventing property from being destroyed or damaged by electricity.

Environmental Protection Act 1994	The purpose of the *Environmental Protection Act 1994* (EP Act) is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. 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 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 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. The EP Act 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))* • *Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP (Water and Wetland Biodiversity)).* The EP Act also describes Environmentally Relevant Activities (ERAs) for which an Environmental Authority (EA) is required. Some significant construction activities can trigger the requirement for an ERA.
Fisheries Act 1994	The *Fisheries Act 1994* (Fisheries Act) provides for the use, conservation and enhancement of fisheries resources and fish habitats in Queensland. The Department of Agriculture and Fisheries (DAF) is responsible for development assessment under the Fisheries Act in combination with the Planning Act, along with the conservation and management of fish habitats in Queensland.

	A development under the Fisheries Act can be either an accepted development or assessable development for, relevantly, works involving the construction or raising of waterway barrier works. An accepted development must comply with all the requirements within the relevant accepted development requirements. If the development does not comply, it is assessable development, and a development application must be lodged. The Study Area contains waterways for waterway barrier works. If proposed works by Powerlink traverse mapped waterways, this may require waterway barrier works and therefore trigger a requirement to obtain a development permit for operational works, that is constructing or raising waterway barrier works, unless the works are designed to comply with accepted development requirements under the Fisheries Act.
Forestry Act 1959	The *Forestry Act 1959* (Forestry Act) provides for forest reservations, the management, silvicultural treatment and protection of State Forests, and the sale and disposal of forest products and quarry material, the property of the Crown on State Forests, timber reserves and on other lands; and for other purposes. The Forestry Act is administered primarily by the DAF. State Forests are managed by the Department of Environment and Science (DES) and Queensland Parks and Wildlife Service (QPWS). Areas of State Forest may require revocation to facilitate the provision of infrastructure. This process is regulated under the *Forestry Act 1959* and where the future intent of the revoked area is for a particular purpose other than a tourist purpose or use as a public road, a regulation to revoke all or part of an area may only be made where the Legislative Assembly has passed a resolution requesting the Governor in Council to make the revocation. An application to revoke an area of State Forest should only be undertaken as last resort where no alternative options are available. Revocation of state land will only be considered when it can be demonstrated that it is in the interests of the specific tenure or where there is a net forest production benefit outcome to the QPWS managed area as an outcome. Purposes relevant to the project which may be considered by the state for revocation include: • where there is a mutual benefit to the state and applicant • to enable essential public infrastructure works to be undertaken to support delivery of a specific government commitment.
Nature Conservation Act 1992	The purpose of *the Nature Conservation Act 1992* (NC Act) is the conservation of nature while allowing for the involvement of landholders and indigenous people in the management of protected areas in which they have an interest under Aboriginal tradition or Island custom. A framework is created under the NC Act for the dedication, declaration and management of protected areas, protection of wildlife and its habitat. The clearing regulatory requirements and the list of critically endangered, endangered, vulnerable or near threatened plants are contained in the *Nature Conservation (Plants) Regulation 2020*.

	The Study Area potentially contains protected plants and protected areas, however this will require confirmation during further ecological surveys during the next phase of the project. The clearing of native flora species and native fauna habitat protected under the NC Act. It is recommended that detailed ecological field surveys are undertaken to confirm the requirements of the NC Act, which may include protected plants permits.
Planning Act 2016	The *Planning Act 2016* (Planning Act) establishes a framework and overarching policy for land use planning and development assessment in Queensland. The purpose of the Planning Act is to provide an efficient, effective, transparent, integrated, coordinated and accountable system of land use planning and development assessment to facilitate the achievement of ecological sustainability. The Planning Act and *Planning Regulation 2017* (Planning Regulation) describes the type of development, the level of assessment required for particular development, responsible entity for assessing development, assessment benchmarks, as well as the process for making, assessing and deciding development applications. The Planning Act and Planning Regulation also prescribe the assessment and approval process for the designation of premises for development of infrastructure (an 'infrastructure designation') prescribed within the Planning Regulation. Infrastructure designation is a Ministerial approval pathway, which is commonly used to facilitate electricity distribution and transmission infrastructure. Where an infrastructure designation is obtained, assessable development in relation to the infrastructure is deemed accepted development under the Planning Act, excluding building works under the *Building Act 1975*. This means that when an infrastructure designation is in effect, the development does not require any further development approvals for development normally assessable under the Planning Act, apart from building works. In practice, an infrastructure designation assessment will address the applicable State interests and constraints ordinarily made assessable under the Planning Act (i.e. vegetation clearing, waterway barrier works etc.).
Queensland Heritage Act 1992	The objective of the *Queensland Heritage Act 1992* is to provide for the conservation of Queensland's cultural heritage for the benefit of the community and future generations. The *Queensland Heritage Act 1992* is administered by DES and the Queensland Heritage Council to identify and protect places that have special heritage values to the community and future generations. The *Queensland Heritage Act 1992* conserves and protects Queensland Heritage Places by: • establishing heritage registers • regulating development that may impact on registered places • establishing a process for reporting discoveries of objects that may be of cultural heritage significance. Section 89 of the *Queensland Heritage Act 1992* requires a person to notify DES of an archaeological artefact that is an important source of information about an aspect of Queensland history.

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 and development applications.
Stock Route Management Act 2002	The *Stock Route Management Act 2002* (Stock Route Management Act) provides a framework for management of Queensland's stock routes. Local government authorities are responsible for the day-to-day administration and management of stock routes. The Queensland Stock Route Network Management Strategy has been prepared under the Stock Route Management Act. The strategy is a tool to link legislative principles with decision making, to ensure a consistent approach.
Transport Infrastructure Act 1994	The overall objective of the *Transport Infrastructure Act 1994* (Transport Infrastructure Act) is to provide a regime that allows for and encourages effective integrated planning and efficient management of a system of transport infrastructure. The Act is administered by the Department of Transport and Main Roads (DTMR). Under Section 50 of the Act, the ancillary works and encroachments within State-controlled roads can only be undertaken with the written permission of DTMR. Under Section 33 of the Transport Infrastructure Act, 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, 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) regulates and manages the process and impacts of native vegetation clearing. The objectives of the VM Act include conservation of remnant regional ecosystems, prevention of the loss of biodiversity, maintenance of ecological processes, and conservation of vegetation in areas of high nature conservation value or lands vulnerable to land degradation. The Study Area contains areas of regulated vegetation under the VM Act, classified as Category A (declared), Category B (remnant), Category C (high value regrowth) and Category R (watercourse regrowth). Areas of Category X (non-remnant) vegetation also exist throughout the Study Area. The regional ecosystems (REs) present across the Study Area include Endangered, Of Concern and Least Concern vegetation communities.

	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, an application for operational work, including applications where Department of Resources (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 where 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) provides a framework to deliver sustainable water planning, allocation, management and supply processes to provide for the improved security of water resources in Queensland. The Water Act is supported by the *Water Regulation 2016* and various water resource plans for the defined geographic regions. The Water Act provides a framework for relevant:
	
	• The sustainable management of Queensland's water resources and quarry material by establishing a system for the:
	  ○ Planning, allocation and use of water
	  ○ Allocation of quarry material and riverine protection
	• The sustainable and secure supply and demand management for the south-east Queensland region and other designated regions.
	
	Under the Water Act, water licences or permits are required to take water and to interfere with the flow of water on, under or adjoining land, including interfering with water in aquifers (if determined necessary).

Matters of State Environmental Significance	Matters of State Environmental Significance (MSES) are a component of the biodiversity state interest that is defined under the SPP and *Environmental Offsets Regulation 2014*. MSES includes certain environmental values that are protected under Queensland legislation. MSES are defined as: • Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* • Marine parks and land within a 'marine National Park', 'Conservation Park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* • Areas within declared fish habitat areas that are management A areas or management B areas under the *Fisheries Regulation 2008* • Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the *Nature Conservation (Wildlife) Regulation 2006*

	• Regulated vegetation under the *Vegetation Management Act 1999* that is:
	  ○ Category B areas on the regulated vegetation management map, that are Endangered or Of Concern regional ecosystems
	  ○ Category C areas on the regulated vegetation management map that are Endangered or Of Concern regional ecosystems
	  ○ Category R areas on the regulated vegetation management map
	• Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map
	• Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map
	• Strategic Environmental Areas under the *Regional Planning Interests Act 2014*
	• Wetlands in a wetland protection area of wetlands of high ecological significance shown on the map of Queensland Wetland Environmental Values under the *Environment Protection Regulation 2019*
	• Wetlands and watercourses in high ecological value waters defined in the *Environmental Protection (Water) Policy 2009*, schedule 2
	• Legally secured offset areas.

Regional Plans	The Study Area is subject to the following regional plans: • South East Queensland Regional Plan 2017 (ShapingSEQ) • Wide Bay Burnett Regional Plan 2011. Reference is also made to the Draft Wide Bay Burnett Regional Plan 2022, expected to be released late 2023.
South East Queensland Regional Plan 2017 (ShapingSEQ)	ShapingSEQ is a state planning instrument providing a framework to manage growth, change, land use and development in SEQ and is underpinned by five key themes: grow, prosper, connect, sustain and live. ShapingSEQ was prepared by the Department of Infrastructure, Local Government and Planning (DILGP) in 2017 and guides the future infrastructure planning and investment of 12 Local Government Areas (LGAs) within the region. ShapingSEQ defines the desired future settlement pattern that aims to use land more efficiently, while protecting the values important to the community into the following regional land use classifications: • Urban Footprint • Rural Living Area • Regional Landscape and Rural Production Area. Key themes related to electricity infrastructure in ShapingSEQ include:

	• **Theme 3 – Connect**
	  ○ *Our communities will have secure, high-quality food and water supplies as key elements of the region's sustainability, and will maximise technological advances in energy production, including renewable production and battery storage.*
	• **Theme 4 – Sustain**
	  ○ *SEQ will have reduced greenhouse gas emissions and be more resilient to the projected effects of climate change. SEQ will be carbon neutral and have zero net waste, and the region's food, water and energy supply systems will be flexible, reliable and secure.*
	  ○ *ShapingSEQ seeks to protect regional scenic amenity areas from development that would compromise their value. Regionally significant amenity is mapped to the east of Strategic Area 3 and to the south-east of Strategic Area 4.*

State Government Supported Infrastructure Koala Conservation Policy July 2017 (SGSIKCP)	This policy (SGSIKCP) is to ensure that state activities not regulated through planning schemes or in accordance with the koala assessment benchmarks in Schedule 11 of the *Planning Regulation 2017* meet the same requirements as the *Planning Regulation 2017*, to ensure equitable treatment of state and non-State infrastructure projects. The corridor is not located within the area covered by the SGSIKCP.
Wide Bay Burnett Regional Plan 2011	The Wide Bay region's economic drivers are in the agriculture, fishing and tourism sectors. As the gateway to the southern Great Barrier Reef and Fraser Island, tourism is also an important economic driver. The Wide Bay Regional Plan was prepared by the Department of Local Government and Planning in 2011 and covers the LGAs of Bundaberg Regional Council, Cherbourg Aboriginal Shire Council, Fraser Coast Regional Council, Gympie Regional Council, North Burnett Regional Council and South Burnett Regional Council. The Wide Bay Burnett Regional Plan aims to respond to the variety of distinct challenges facing the region over the next two decades and beyond by guiding and supporting projected growth. The plan recognises that the economy and population comprise an ageing population and workforce, a limited but strong number of economic drivers, and a need to prepare for, and appropriately respond to, the anticipated impacts of climate change. The Wide Bay Regional Plan identifies that energy requirements are escalating due to population growth, industrial development and economic growth. Wide Bay Burnett Regional Plan 2011. Reference is also made to The Draft Wide Bay Burnett Regional Plan 2022, expected to be released late 2023.
Local Laws	The *Local Government Act 2020* (Local Government Act) allows for Councils to create laws for matters that the Council has function or power under the Local Government Act to undertake and to regulate specific matters within their local government area. While the Planning Scheme is exempt where an Infrastructure Designation has been enacted, local laws imposed by each local government authority will still apply and may trigger approvals for certain activities.

Appendix C

Tables 16: Woolooga 1km-wide Recommended Corridor – Key Considerations

Considerations	Summary of 1km-wide recommended corridor	
Opportunity for co-location 275kV	The opportunity to co-locate with Powerlink's existing transmission lines is not present within this corridor. However, the 1km-wide recommended corridor captures an existing Energy Queensland distribution line in the northern portion of the corridor to take advantage of this existing infrastructure easement. This easement is approximately 15km in length which is approximately 18% of the total corridor length.	
Number of crossings (roads and rail)	Local roads will be traversed through this corridor including: • Bella Creek Road • Borgan Road • Kilcoy-Murgon Road (State-controlled) • Sterling Road • Kandanga Road • Kabunga Road • Manumbar Road • Kinbombi Road • Oakey Creek Road • Nutting Road	• Godber Road • Black Snake Road • Rossmore Road • Summers Road • Range Road • Sawpit Road • Sinai Road • Numerous tracks and access roads, particularly associated with Gallangowan State Forest, Jimmys Scrub State Forest There are no rail lines traversed by the corridor.
Flood hazard areas (Ha of moderate or higher risk)	Queensland Globe extreme basin events flood level mapping indicates areas of potential flooding within the recommended corridor, however these types of areas are modelled across the corridor options investigated. The corridor intersects the following watercourses as defined and mapped under the *Water Act 2000*: • Yabba Creek • Kingaham Creek • Wide Bay Creek • Copermine Creek • Fat Hen Creek	The corridor intersects drainage lines as defined and mapped under the *Water Act 2000* at the following approximate locations: • Woolooga Substation • Land surrounding Schollick Road • Land surrounding and draining to Coppermine Creek • Land to the south and draining towards Wide Bay Creek Small unnamed drainage features are present throughout the corridor.

Considerations	Summary of 1km-wide recommended corridor
DSDSATSIP Sites	There is one DSDSDATSIP identified site within the recommended corridor. This location would be a priority for avoidance for future refinement and investigations.
Protected plant survey trigger area	Protected plant survey trigger areas are present within the corridor, however the alignment was selected to avoid these areas to the greatest extent practicable at the 1km scale.
Wetlands – GES / HES	The following wetlands of State significance (High Ecological Significant wetlands (HES), HES Great Barrier Reef (GBR HES) and General Ecological Significance (GES)) are mapped as occurring within the corridor: • south of Butcher's Creek (GBR HES) • associated with Yabba Creek (GES) • associated with a tributary of Lake Borumba (GES) • associated with Kingaham Creek (GES). In addition to the State regulated wetlands, areas of vegetation where wetlands comprise up to 51% of the vegetation type are also present within the corridor.
Unexploded ordnance (UXO)	Department of Defence mapping indicates there is one UXO area of slight potential within Jimmys Scrub State Forest. This area was the 3rd Australian Armoured Division Tank Range in 1943. Jimmys Scrub is located between Kinbombi Road and Kabunga State Forest.
Airports, heliports and landing strips	There are no airports, heliports or landing strips within the1km-wide recommended corridor.
Mining lease	There are no mining leases within the 1km-wide recommended corridor but interfaces with existing exploration tenure.
Strategic cropping and agricultural lands	Two areas of Strategic Cropping Land (SCL) are present within the corridor near Manumbar. The area of SCL and agricultural lands within the 1km-wide recommended corridor is 382ha.
State-owned land	The following areas of State land, comprising both State Forest or State-owned land is present within the corridor: • Yabba State Forest

Considerations	Summary of 1km-wide recommended corridor
	• Gallangowan State Forest • Jimmys Scrub State Forest • Land owned by Department of Resources
Intensive use lands	The corridor contains 89ha of land which is mapped for intensive land. The preference is to avoid in future refinement and investigation.
Number of lots	The total number of freehold properties within the 1km-wide recommended is 129, including lots partially within the corridor.
Proximity to public amenity (townships, town hall, church, schools)	Small properties of less than 5ha have been used as a proxy for the locations of housing clusters as well as townships and associated community infrastructure. Properties smaller than 5ha have been considered as high priority to avoid and buffers of 200m have been applied within the corridor refinement (spatial analysis) process. This buffer is used to better identify small properties and clusters of small properties that may have associated support services.

Appendix D

Acronyms in Woolooga Draft CSR

ABS	Australian Bureau of Statistics
ACH Act	*Aboriginal Cultural Heritage Act 2003*
AHD	Australian Height Datum
BoM	Bureau of Meteorology
CHL	Commonwealth Heritage List
CHIMS	Cultural Heritage Inventory Management System
CSR	Corridor Selection Report
DAF	Department of Agriculture and Fisheries
DCDB	Digital Cadastral Database
DES	Department of Environment and Science
DILGP	Department of Infrastructure, Local Government and Planning
DoR	Department of Resources
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
DSDSATSIP	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships
DTMR	Department of Transport and Main Roads
EA	Environmental Authority
EMF	Electric and magnetic fields
EMP	Environmental Management Plan
EO Act	*Environmental Offsets Act 2014*

EO Regulation	*Environmental Offsets Regulation 2014*
EP Act	*Environmental Protection Act 1994*
EPP (Air)	*Environmental Protection (Air) Policy 2019*
EPP (Noise)	*Environmental Protection (Noise) Policy 2019*
EP Regulation	*Environmental Protection Regulation 2019*
EPP (Water and Wetland Biodiversity)	*Environmental Protection (Water and Wetland Biodiversity) Policy 2019*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
ERA	Environmentally Relevant Activities
GBR	Great Barrier Reef
GES	General Ecological Significance
GRT	Giant Rats Tail Grass
ha	Hectares
HES	High Ecological Significant
km	Kilometres
km2	Square kilometres
kV	Kilovolt
LGA	Local Government Area
LHR	Local Heritage Register
m	Metres
MCA	Multi-Criteria Analysis
MLES	Matter of Local Environmental Significance

MNES	Matter of National Environmental Significance
MSES	Matter of State Environmental Significance
MW	Megawatts
NC Act	*Nature Conservation Act 1992*
NHL	National Heritage List
NT Act	*Native Title Act 1993*
PHES	Pumped Hydro Energy Storage
PMST	Protected Matters Search Tool
QEJP	Queensland Energy and Jobs Plan
QH Act	*Queensland Heritage Act 1992*
QHR	Queensland Heritage Register
QPWS	Queensland Parks and Wildlife Service
RE	Regional ecosystem
RET	Renewable Energy Target
RNE	Register of National Estate
RNTBC	Registered Native Title Body Corporate
RPI Act	*Regional Planning Interests Act 2014*
SCL	Strategic cropping land
SCR	State-controlled road
SGSIKCP	*State Government Supported Infrastructure Koala Conservation Policy July 2017*
SMP	Species Management Program

SPP	State Planning Policy
UXO	Unexploded ordnance
VM Act	*Vegetation Management Act 1999*
WHL	World Heritage List