Banana Range Wind Farm Connection Project

Ministerial Infrastructure Designation Assessment Report

Powerlink Queensland

62094 | 149,515

13 October 2025

We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

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Acronyms

Acronym	Definition
ABS	Australian Bureau of Statistics
AC	alternating current
ACH Act	*Aboriginal Cultural Heritage Act 2003*
ACM	Asbestos containing materials
Acquisition of Land Act	*Acquisition of Land Act 1967*
AEP	Annual Exceedance Probability
AHD	Australian Height Datum
ALC	Agricultural Land Classification
ANZECC	Australian and New Zealand Environment and Conservation Council
ARMCANZ	Agriculture and Resource Management Council of Australia and New Zealand
ARPANSA	Australian Radiation Protection and Nuclear Safety Agency
ASC NEPM	*National Environmental Protection (Assessment of Site Contamination) Measure 1999*
ASS	Acid Sulfate Soils
ATSI	Aboriginal and Torres Strait Islander
Biosecurity Act	*Biosecurity Act 2014*
Biosecurity Regulation	*Biosecurity Regulation 2016*
BoM	Bureau of Meteorology
BRWF	Banana Range Wind Farm
BSC	Banana Shire Council
BTEXN	Benzene, Toluene, Ethylbenzene, and Xylene
CEMP	Construction Environmental Management Plan
CHMA	Cultural Heritage Management Agreements
CHMP	Cultural Heritage Management Plan
CLR	Contaminated Lands Register
COPCs	contaminants of potential concerns
CSR	Corridor Selection Report
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DETSI	Department of the Environment, Tourism, Science and Innovation
DLGWV	Department of Local Government, Water and Volunteers
DNRMMRRD	Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development
DPI	Department of Primary Industries
DSDILGP	Department of State Development, Infrastructure, Local Government and Planning
DSDIP	Department of State Development, Infrastructure and Planning
DTMR	Department of Transport and Main Roads
DWATSIPM	Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism

Acronym	Definition
EA	Environmental Authority
EDF	EDF Renewables Australia
Electrical Safety Act	*Electrical Safety Act 2002*
Electrical Safety Regulation	*Electricity Safety Regulation 2013*
Electricity Act	*Electricity Act 1994*
ELF	extra low frequency
EMF	Electric and magnetic fields
EMP	Environmental Management Plan
EMR	Environmental Management Register
EO Act	*Environmental Offsets Act 2014*
EO Regulation	*Environmental Offsets Regulation 2014*
EP Act	*Environmental Protection Act 1994*
EP Regulation	*Environmental Protection Regulation 2019*
EPBC Act	*Environment Protection and Biodiversity Conservation Act 1999*
EPC	Exploration Permit Coal
EPM	Exploration Permit Mineral
EPPs	Environmental Protection Policies
EPP (Air)	*Environmental Protection (Air) Policy 2019*
EPP (Noise)	*Environmental Protection (Noise) Policy 2019*
EPP (Water and Wetland Biodiversity)	*Environmental Protection (Water and Wetland Biodiversity) Policy 2019*
ERA	Environmentally Relevant Activity
ERP	Estimated Resident Population
EVNT	Endangered, Vulnerable or Near Threatened
EVs	Environmental Values
EWP	Environmental Work Plan
Fisheries Act	*Fisheries Act 1994*
GBR	Great Barrier Reef
GBRWHA	Great Barrier Reef World Heritage Area
GDE	Groundwater Dependent Ecosystems
GTIA	Guide to Traffic Impact Assessment
ha	hectares
HES	High Ecological Significance
IAPP	International Association for Public Participation
IAR	Initial Advice Request
ICNIRP	International Commission in Non-Ionizing Radiation Protection
IEEE	Institute of Electrical and Electronics Engineers
IMS	interactive mapping system
IPCC	Intergovernmental Panel on Climate Change
IRPA	International Radiation Protection Association

Acronym	Definition
JBS&G	JBS&G Australia Pty Ltd
KBR	Kellogg Brown & Root Pty Ltd
KRA	key resource area
Land Act	*Land Act 1994*
LCA	Local Catchment Area
LGA	Local Government Area
LGR	Local Government Roads
Local Government Act	*Local Government Act 2009*
LORs	Limit of Reporting
MGR	Ministers Guidelines and Rules
MID	Ministerial Infrastructure Designation
MID Assessment Report	Ministerial Infrastructure Designation Assessment Report
MLES	Matters of Local Environmental Significance
MNES	Matters of National Environmental Significance
MRI	magnetic resonance imaging
MSES	Matters of State Environmental Significance
MSPs	Maintenance Service Providers
MW	Megawatt
Native Title Act	*Native Title Act 1993*
NC Act	*Nature Conservation Act 1992*
NEMP	PFAS National Environmental Management Plan
NER	National Electricity Rules
NHMRCA	National Health and Medical Research Council of Australia
OCPs	Organochlorine pesticides
OPPs	Organophosphorus pesticides
PAHs	Polycyclic aromatic hydrocarbons
PCBs	Polychlorinated Biphenyls
PFAS	Per- and poly-fluoroalkyl substances
PFOS	Perfluorooctanesulfonic acid
Planning Act	*Planning Act 2016*
Planning Regulation	Planning Regulation 2017
Planning Scheme	*Banana Shire council Planning Scheme 2021*
PMF	Probable Maximum Flood
PMST	Protected Matters Search Tool
Powerlink	Powerlink Queensland
PPL	Pipeline Licence
P&G Act	Petroleum *and Gas (Production and Safety) Act 2004*
Queensland Heritage Act	*Queensland Heritage Act 1992*
RAP	Reconciliation Action Plan

Acronym	Definition
RCA	Regional Catchment Area
REs	Regional Ecosystems
Regional Plan	*Central Queensland Regional Plan 2013*
REZ	Renewable Energy Zone
RWG	RAP Working group
SARA	State Assessment and Referral Agency
SCL	Strategic Cropping Land
SCR	State Controlled Road
SDAP	State Development Assessment Provisions
SDP	Soil Disposal Permit
SECR	Social and Economic Context Review
SIA	Significant Impact Assessment
SIMP	Social Impact Management Plan
SMP	Species Management Program
Soil Conservation Act	*Soil Conservation Act 1986*
SPP	State Planning Policy
SRI	Significant Residual Impact
TEC	Threatened Ecological Communities
TIA	Traffic Impact Assessment
TNSP	Transmission Network Service Provider
Transport Infrastructure Act	*Transport Infrastructure Act 1994*
TRH	Total Recoverable Hydrocarbons
UXO	Unexploded Ordnance
VIA	Visual Impact Assessment
VM Act	*Vegetation Management Act 1999*
Water Act	*Water Act 2000*
WMP	Waste Management Plan
WoN	Weeds of National Significance
WQO	Water Quality Objectives
WWBW	Waterway barrier work

Executive summary

Project overview

This Ministerial Infrastructure Designation (MID) Assessment Report has been prepared by JBS&G Australia Pty Ltd (JBS&G) on behalf of Queensland Electricity Transmission Corporation Limited, trading as Powerlink Queensland (Powerlink), in support of a request to the Minister for State Development, Infrastructure and Planning (DSDIP) (the Minister) for the designation of a premises for the proposed Banana Range Wind Farm (BRWF) Connection Project (the Project). This request seeks the development of infrastructure '(7) electricity operating works' in accordance with Schedule 5 of the *Planning Regulation 2017* (Qld) (Planning Regulation).

Environment and planning approval for the Project is being sought via the MID process under the *Planning Act 2016* (Qld) (Planning Act). To obtain a MID, an Infrastructure Entity is required to prepare a MID Assessment Report that considers the potential environmental, social and economic impacts associated with the construction, operation and maintenance of the Project.

Project justification and feasible alternatives

Powerlink is a leading Australian provider of high-voltage electricity transmission network services and are currently needing to reinforce their transmission network in the Gladstone area over the next ten years to ensure ongoing reliable and secure electricity supply to the region, as the largest load centre outside of south-east Queensland.

In addition to Powerlink's role in developing and operating the high voltage network and associated infrastructure, Powerlink also provides electricity transmission services, including connecting electricity generation projects to the transmission network.

EDF Renewables Australia (EDF) has engaged Powerlink to connect the BRWF to the transmission network. Once built, it will provide an important connection into the Calvale Substation, supplying renewable energy into the Gladstone region. This transmission connection also provides opportunity for other renewable energy projects, such as the Theodore Wind Farm Connection, to link with the new infrastructure (subject to planning and environmental approvals).

Project description

Powerlink will deliver a new 44km transmission line to connect the BRWF to the broader transmission network. The BRWF Connection Project involves constructing a new 275kV transmission line from a new substation proposed at the BRWF project site at the northern foothills of the Banana Range (about 20km west of Biloela), to Powerlink's existing Calvale Substation, near Callide Power Station. Additionally, to support the new transmission line, upgrade works are required to occur at the existing Calvale Substation.

As such, the Project will include:

- a 44km 275kV double circuit transmission line from the existing Calvale Substation to the proposed BRWF Project (via the proposed Mount Benn Substation);
- a 275kV substation proposed on Lot 47 on SP232217 (the proposed Mount Benn Substation); and
- an expansion of the Calvale Substation to accommodate three (3) additional diameters.

Environmental assessment

The Minister's Guidelines and Rules (Chapter 7) illustrate the process required for environmental assessments to make a MID application. In this MID Assessment, potential environmental impacts that could occur during any stages of the Project– including design, construction, operation, maintenance and decommissioning— have been considered. These include:

- identification of environmental values relevant to the Project;
- assessment of the potential impacts on these environmental values from the Project; and
- identification of suitable avoidance, mitigation, or management measures for these potential impacts.

To demonstrate mitigation and management measures, this MID Assessment Report includes an Environmental Management Plan (EMP) for the relevant construction elements of the Project. The Assessment also considers the cumulative environmental and social impacts of this project with concurrent projects in Banana Shire.

Environmental management

Powerlink is committed to the protection of the environment, which includes avoiding, minimising, mitigating and managing adverse environmental impacts from its activities. Every Powerlink individual is responsible and accountable for environmental management, and Powerlink's leaders are active role models of this commitment. The mitigation and management measures for this Project have been proposed in line with Powerlink's standard environmental controls. Additional measures have been proposed where required to provide further mitigation and management measures specifically for the Project.

Planning and approval requirements

Various Commonwealth, State and local legislation and policy apply to the development of the Project. Powerlink have undertaken a self-assessment against the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Significant Impact Guidelines and have identified that the Project is not expected to have a significant impact on any Matters of National Environmental Significance (MNES). However, a referral to the Department of Climate Change, Environment, Energy and Water (DCCEEW) is being submitted to obtain confirmation from the Commonwealth Department on this assessment. As the Project is being assessed under the MID process under the Planning Act, a range of typical approvals under this Act will no longer apply, as a MID makes the development an 'accepted development'. Approvals outside of the Planning Act have been identified and will be obtained by Powerlink or it's contractor in the subsequent stages of the Project.

Community and stakeholder consultation

Powerlink aim to connect with relevant stakeholders to ensure a comprehensive, transparent, responsive, and sensitive approach to Project delivery. The Project's proximity to residential, cultural, and commercial interests makes the need for an effective engagement plan imperative to the Project's success. Powerlink commenced preliminary engagement in 2022 with landholders, Traditional Owner groups and other key stakeholders throughout the Corridor Selection Phase, as well as throughout the Environmental Assessment Phase.

Conclusion

This assessment report has identified that the Project has the potential to impact a range of environmental, social and economic values in the MID corridor and surrounds, both positively and in ways that may pose challenges. However, through the implementation of design mitigation, project specific mitigation and management measures, these potential impacts can be minimised and mitigated.

1. Introduction

1.1 Purpose of this report

This Ministerial Infrastructure Designation (MID) Assessment Report has been prepared by the Queensland Electricity Transmission Corporation Limited, trading as Powerlink, in support of a request to the Minister for the designation of a premises for the proposed Banana Range Wind Farm (BRWF) Connection Project (the Project). This request seeks the development of infrastructure '(7) electricity operating works' in accordance with Schedule 5 of the *Planning Regulation 2017* (Qld)(Planning Regulation).

This report provides an overview of the proposed infrastructure associated with the Project, along with an assessment of matters a designator must be satisfied with, pursuant to Section 36 of the *Planning Act 2016* (Qld) (Planning Act) and Chapter 7 of the Minister's Guidelines and Rules 2016 (MGR).

1.2 Proposed infrastructure designation

Infrastructure Designation is a planning process under Chapter 2, Part 5 of the Planning Act that allows the Minister to designate premises for certain types of infrastructure for particular infrastructure entities. The process provides infrastructure entities a streamlined, whole-of-government response on a request for infrastructure.

The three statutory instruments which support the Infrastructure Designation function are:

- Planning Act, which includes provisions for making, amending, extending, or repealing Infrastructure Designations.
- Planning Regulation, which identifies the types of infrastructure that may be designated.
- MGR, which includes the processes for making or amending MIDs (Chapter 7 of the MGR).

As identified above, the Planning Regulation describes the types of infrastructure which may be designated by the Minister. Schedule 5, Part 2, Item 7 of the Planning Regulation specifies 'electricity operating works' as infrastructure that may be designated through the MID process, which is the case for this Project.

Section 36(1) of the Planning Act then sets out criteria that needs to be satisfied in order for a MID to be made –

1. *To make a designation, a designator must be satisfied that—*
    a. *the infrastructure will satisfy statutory requirements, or budgetary commitments, for the supply of the infrastructure; or*
    b. *there is or will be a need for the efficient and timely supply of the infrastructure.*

The Project achieves the requirements of Section 36(1) of the Planning Act as it provides a long-term and stable supply of electricity from the proposed Callide Renewable Energy Zone (REZ) (as described further in Section 3.1) (which is inclusive of the BRWF), to the wider electricity grid.

Section 36 (2) of the Planning Act identifies that –

> *The Minister must be satisfied that adequate environmental assessment, including adequate consultation, has been carried out in relation to the development that is the subject of the designation.*

This MID Assessment Report has been prepared to address the requirements of Section 36(2) of the Planning Act. Chapter 7 of the MGR sets out the process for environmental assessment and consultation required as part of making a MID application. Table 1-1 provides an overview of the MID process, along with the current Project status.

Table 1-1 Stages of the MID process

Stage	Commentary	Status
1. Initial Advice Request (IAR)	An IAR was submitted to the former Department of State Development, Infrastructure, Local Government and Planning (DSDILGP), now Department of State Development, Infrastructure and Planning (DSDIP) on 23 May 2022 to seek pre-lodgement advice. Pre-lodgement advice was received on the 1 June 2022 which included a summary of relevant matters to be considered within the MID Assessment Report, as well as providing recommendations for technical reports to be prepared to support the MID Assessment Report. This included: • Hydrology Report. • Ecological Assessment. • Visual Impact Assessment (VIA). • Traffic Impact Assessment (TIA). • Bushfire Management Plan (if required). • Electromagnetic Interference Assessment.	Complete
2. Preliminary Stakeholder Engagement	• Powerlink have undertaken preliminary stakeholder engagement with directly affected, and surrounding landholders throughout the Corridor Selection Phase of the Project, including: ○ July 2022: Drop-in sessions to provide the community with an overview of the study area, proposed project, timeframes, and project approval processes (prior to the Draft Corridor Selection Report (CSR) being released for public comment); ○ September 2022: Drop-in sessions discuss the proposed corridor options (prior to the Draft CSR being released for public comment); ○ November 2022: Drop-in sessions following the release of the Draft CSR, allowing the community to share their comments on the Draft CSR and proposed corridors; and ○ 14 November 2022 and 20 January 2023: The Draft CSR was available online for public comment. • Further information relating to stakeholder engagement and proposed future engagement is provided in Section 6. • The Final CSR, which was amended following release of the Draft CSR based on stakeholder engagement was released on the 30 March 2023; and • The Draft and Final CSR's can be found on Powerlink's website: https://www.powerlink.com.au/projects/banana-range-wind-farm-connection-project.	Complete
3. Endorsement to lodge a MID Proposal	Following preliminary stakeholder engagement and prior to seeking a MID, the entity (Powerlink) wrote to the then Minister of DSDILGP (now Minister of DSDIP) seeking their endorsement to lodge an MID Proposal (endorsement request). The endorsement request was submitted by Powerlink to the Minister on 23 May 2022 and the endorsement receipt was received on 1 June 2022.	Complete

Stage	Commentary	Status
	Powerlink undertook a follow up meeting with the Department on the 18 June 2025 which identified that the endorsement request received in 2022 was still valid as a result of there being no material change in project scope,	
4. Lodgement of a MID Proposal	Following receipt of the endorsement to lodge an MID Proposal, the entity is required to prepare material identified in Schedule 3 of the MGR, along with any additional information identified as required within the pre-lodgement advice. This MID Assessment Report has been prepared in accordance with Chapter 7 of the MGR and provides the information specified within Schedule 3 and the pre-lodgement advice.	Current step
5. Consultation by the Minister	Following receipt of the MID Proposal, the Minister will commence consultation with the local government and landowners, and will invite submissions on the MID.	Future step
6. Consultation by the Entity	A Consultation Strategy is included within Section 6 of this MID Assessment Report. Powerlink will be responsible for undertaking public consultation in accordance with this strategy.	Future step
7. Consideration of submissions	Following completion of consultation, the Minister will give Powerlink a copy of any submissions received. After consideration of the submissions, Powerlink is to provide the Minister with evidence of consultation undertaken, a summary of the matters raised in the submissions, and how these matters have been addressed.	Future step
8. State Agency comments	While consultation is being undertaken, DSDIP will seek comment on the MID Proposal from other State Agencies. Following completion of consultation, the Minister will give Powerlink a copy of any submissions received from State Agencies.	Future step
9. Change to the Proposal	If any change is made to the MID Proposal (that is considered to warrant additional consultation), either as a consequence of a submission made during the consultation period, or another circumstance, or where the Minister determines that that consultation was not adequately completed, further consultation may be required.	Future step (if required)
10. Decision by the Minister	If the Minister agrees to designate the premises, the Minister will publish a gazette notice about the MID Proposal. Powerlink, the local government Banana Shire Council (BSC) and affected parties will be notified of the Minister's decision, including any requirements.	Future step

1.2.1 Ministerial Infrastructure Designation Assessment Report process

For the purposes of this MID Assessment Report, '*environment*' is defined in Section 8 of the *Environmental Protection Act 1994* (Qld) (EP Act) as –

> *(a) ecosystems and their constituent parts, including people and communities; and*
>
> *(b) all natural and physical resources; and*
>
> *(c) the qualities and characteristics of locations, places, and areas, however large or small, that contribute to their biological diversity and integrity, intrinsic or attributed scientific value or interest, amenity, harmony, and sense of community; and*
>
> *(d) the social, economic, aesthetic, and cultural conditions that affect, or are affected by, things mentioned in paragraphs (a) to (c).*

This MID Assessment Report considers the potential environmental impacts relevant to the Project, through design, construction, operation, maintenance, and decommissioning phases and includes:

- identification of environmental values relevant to the Project;
- assessment of the potential impacts on these environmental values; and
- identification of suitable avoidance, mitigation, or management measures for these potential impacts.

Chapter 7, Part 1 of the MGR provides the framework for making an MID application and Schedule 3 identifies the required material to be provided to the Minister regarding the MID the entity is seeking. This MID Assessment Report provides the relevant information as requested in Chapter 7, Part 1 of the MGR, as identified in Table 1-2.

Table 1-2 Information required as per Schedule 3 of the MGR

	Required information	Relevant section
1	The boundary of the entity's proposal and the cadastral description of all land affected by the proposal.	Section 2 Appendix A
2	A site and locality description of the entity's proposal.	Section 2
3	Plans, drawings, elevations, images, and perspectives of the entity's proposal that are suitable for assessment and for communicating the scale, intensity, and nature of the proposal to members of the public during consultation.	Section 2 Section 6
4	Any existing uses on the premises that would be subject to the entity's proposal.	Section 5.11
5	Information about: • existing uses on adjoining sites; • the type of infrastructure proposed relative to the Planning Regulation; • approval(s) history for the site; and • the intended outcomes of any proposed amendment to uses on the site.	Section 5.11 Section 2 Section 5.11
6	Acknowledgement of any adverse impacts on surrounding properties and how these impacts are proposed to be managed.	Section 5.11 Section 5.13
7	Acknowledgement of any off-site impacts such as traffic, noise, infrastructure capacity and how these impacts are proposed to be managed.	Section 5
8	Acknowledgement of any construction impacts and how these impacts are proposed to be managed.	Section 5
9	Any works and land affected outside the boundary of the site that would be subject to the entity's proposal.	Section 5.11 Section 5.13

Required information		Relevant section
10	Acknowledgement of relevant state interests and planning instruments and how they relate to the entity's proposal.	Section 4
11	Outcomes of any initial stakeholder engagement highlighting if changes were made to the earlier proposal as a result of stakeholder feedback.	Section 6
12	A proposed consultation strategy.	Section 2.3
13	Plans and technical reports to address any of the matters identified above.	Section 5 Hydrology Report (Appendix E) Ecological Assessment Report (Appendix F) Visual amenity assessment (Section 5.12) Photomontage (Appendix G) Social and Economic Context Review (SECR) (Appendix H) Traffic Impact Assessment (Appendix I) Electromagnetic Interference Assessment (Section 5.18) Bushfire Management Plan (Section 5.19)
14	If the entity does not have acquisition powers under the *Acquisition of Land Act 1967* (Qld) (Acquisition of Land Act) and is proposing an MID over premises not owned by the entity, the entity must give an assurance to the Minister that the entity will have access to the premises the subject of the proposed MID, in order to construct and operate the infrastructure. This may include written landowner consent or a contractual agreement. If the entity is the trustee or lessee of the premises, the entity must give an assurance to the Minister that the proposed infrastructure is consistent with the purpose of the trust or lease.	Not applicable Powerlink has powers under the Acquisition of Land Act to secure appropriate tenure, which will primarily consist of easements and other authorities to occupy land, where not on land already in Powerlink's ownership.
15	If the entity is the trustee or lessee of the premises, the entity must give an assurance to the Minister that the proposed infrastructure is consistent with the purpose of the trust or lease.	Not applicable

1.2.2 Pre-lodgement advice

Powerlink received pre-lodgement advice from the former DSDILGP (now DSDIP) on the 1 June 2022. A summary of the pre-lodgement advice, and cross references to where this advice has been addressed within this MID Assessment Report is provided in Table 1-3.

Table 1-3 DSDILGP (now DSDIP) pre-lodgement advice

Item	Advice	Response
1	**Infrastructure entity overview of proposal** Prior to lodging the MID Proposal, the preferred alignment for the proposed transmission line will need to be confirmed.	Refer to Section 2 for the preferred alignment.
2	**Agriculture** The MID Proposal should address potential impacts to areas of good quality agricultural land and provide management/mitigation measures where necessary. The MID Proposal should address provisions relating to important agricultural areas contained within the State Planning Policy (SPP).	Refer to Section 5.11.

Item	Advice	Response
3	**Amenity** Where the proposed development passes through areas mapped as being of scenic amenity value, the MID proposal should be supported by a VIA, an Electromagnetic Interference assessment, and an assessment of general amenity impacts.	Refer to Sections 5.12 and 5.18.
4	**Biodiversity** The MID proposal should be supported by an Ecological Assessment that assesses the impacts of and recommends measures that compensate for the environmental impacts. Where mitigation measures (including offsets) are proposed, the Ecological Assessment should clearly demonstrate that impacts to Matters of State Environmental Significance (MSES) have first been avoided and minimised.	Refer to Sections 5.7, 5.8, 5.9, and 5.10.
5	**Waterway barrier works (WWBW)** The MID proposal should provide details on any new/upgraded crossings of waterways providing for fish passage. Should these components constitute WWBW, the Ecological Assessment should address any impacts to fish passage and provide adequate mitigation measures. Plans for any WWBW should be provided, or confirmation that any barriers proposed can meet the Accepted Development Requirement for WWBW.	Refer to Section 5.4.
6	**Flooding** The MID proposal should be supported a Hydrology Report to ensure the proposed development can be protected from flooding impacts and to demonstrate that the development will not increase risk to natural hazard.	Refer to Section 5.4.
7	**Mines** The MID proposal should address mining tenements and potential hazards from abandoned mines.	Refer to Section 5.11.
8	**State owned land** The MID proposal should clearly identify any works proposed within State land.	Refer to Section 5.11.
9	**Bushfire** If warranted, the MID proposal should be supported by a Bushfire Management Plan that assesses bushfire risk and recommends mitigation measures.	Refer to Section 5.19.
10	**External works** An analysis of potential external works and land dedications should be provided as part of the MID proposal.	External works are not yet confirmed. Powerlink has commenced discussions with the relevant authorities but these discussions are in their infancy.
11	**State transport infrastructure** The MID proposal should be supported by a TIA (prepared in accordance with Department of Transport and Main Roads (DTMR) Guide to Traffic Impact Assessments [GTIA]) which address impacts on the safety and efficiency of the State transport infrastructure from construction traffic and recommends any necessary mitigation measures for impacts resulting from the proposed development.	Refer to Section 5.16.
12	**Recommended technical reporting** It is recommended that the entity consider the following matters when preparing the MID proposal:	Traffic impact assessment (Appendix I)

Item	Advice	Response
	• Traffic impact assessment. • Ecological assessment. • Hydrology report. • Bushfire management plan (if required). • Visual impact assessment. • Electromagnetic interference assessment.	Ecological assessment report (Appendix F) Hydrology report (Appendix D) Bushfire risk (Section 5.19) Visual amenity assessment (Section 5.12) and Photomontages (Appendix G) Electric and magnetic fields assessment (Section 4.18)

1.3 Project proponent

The owner, developer, operator, and maintainer of the Project is:

Powerlink Queensland
33 Harold Street, Virginia
PO Box 1193, Virginia QLD 4014
Telephone: (07) 3860 2111, Facsimile: (07) 3860 2100
Website: https://www.powerlink.com.au/

Powerlink Queensland is the registered business name of the Queensland Electricity Transmission Corporation Limited (ABN: 82 078 849 233), a Queensland Government Owned Corporation. It was established under the *Government Owned Corporations Act 1993* (Qld) and is a Transmission Entity under the *Electricity Act 1994* (Qld) (Electricity Act). Powerlink owns, operates, and maintains Queensland's high voltage electricity transmission network. As a Transmission Network Service Provider in the national electricity market, Powerlink's primary role is to provide a secure and reliable network to transport high voltage electricity from generators to electricity distribution networks. These networks are owned by Energex and Ergon Energy (Ergon Energy Queensland), which supply electricity to nearly 4 million Queenslanders. Powerlink also transports electricity directly to large Queensland customers such as mines, gas producers, industrial smelters, rail network operators, and to New South Wales via the Queensland/New South Wales Interconnector.

Powerlink's operations are guided by the Electricity Act and the *Electrical Safety Act 2002* (Qld) (Electrical Safety Act). The Electricity Act sets out the requirement which all electricity industry participants must follow to ensure a safe, efficient, and reliable supply of electricity. It also requires the supply of electricity to be 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 its transmission authority. The 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; and preventing property from being destroyed or damaged by electricity. The design of the Project will satisfy the requirements of the Electrical Safety Act.

2. Project description

2.1 Proposed development

Powerlink is progressing works to deliver a new transmission line, approximately 44 km in length, to connect the BRWF to the broader transmission network.

EDF Renewables is a developer, owner and operator of utility scale grid connected renewable generation and energy storage projects. It is developing the BRWF project west of Biloela in Central Queensland which comprises up to 41 wind turbines with a power output of approximately 230 megawatt (MW)

The BRWF project has received approval at both State and Federal levels in accordance with the Planning Act (including State Code 23 Wind Farm Development) and the EPBC Act. Construction is expected to commence in 2026 with operation planned from 2028. The expected operational lifespan of the BRWF is then 50 years.

The BRWF Connection Project involves constructing a new 275kV transmission line from a new substation proposed at the BRWF project site at the northern foothills of the Banana Range (about 20km west of Biloela), to Powerlink's existing Calvale Substation, near Callide Power Station. Additionally, to support the new transmission line, upgrade works are required to occur at the existing Calvale Substation.

As such, the BRWF Connection Project (the 'Project') comprises the following main components:

- a 44km 275kV double circuit transmission line from the existing Calvale Substation to the proposed BRWF Project (via the proposed Mount Benn Substation);
- a 275kV substation proposed on Lot 47 on SP232217 (the proposed Mount Benn Substation); and
- an expansion of the Calvale Substation to accommodate 3 additional diameters.

The Project will also include a number of ancillary works, including construction of access tracks and laydown areas to facilitate construction. A full breakdown of the infrastructure proposed is detailed in Table 2-1 and Sections 2.1.1 and 2.1.2.

Table 2-1 Project components

Project components	Clearing requirements
Substation (Calvale)	• Extension of approximately 85m along the southwest boundary of the existing Calvale substation • The existing Calvale substation comprises of 275kV and 132kV switchyards. The 275kV switchyard currently comprises 7 diameters, and this project seeks to extend the switchyard platform to allow for ultimate expansion of up to 10 diameters, including all civil works and earth grid extensions. • Establish two additional diameters to connect the new 275kV double circuit transmission line as shown in Figure 2-3A. • Relocate the existing helipad
Substation (Mount Benn)	• Approximately 500m x 300m footprint to allow for the construction of the new Mount Benn Substation • Construction of a 275kV substation that will comprise 3 diameters (to allow for the connection of the new 275kV double circuit transmission line as shown in Figure 2-3) with future expansion for another 5 diameters
Transmission Line	• 50m wide clearing in the mid-span which can be determined from Power Line Systems - Computer Aided Design and Drafting (PLS-CADD) and violation vegetation • 24m wide clearing in the areas between tower pad and mid-span clearing • Areas of no clearing (where vegetation can be spanned) – air gap between top of vegetation and bottom of conductor must be a minimum of 1.5 times the height of the vegetation (trees must be at mature height).
Tower Pads	40m x 40m
Access Tracks	10m maximum clearing width
Laydown areas	60m x 60m
Batching plants	60m x 200m^2
Conductor brake and winch sites	60m x 50m
Conductor and earth wire brake and winch sites	40m x 40m

2.1.1 Transmission line

A 275kV double circuit above ground transmission line is required to connect the Theodore Wind Farm to the Powerlink transmission network. Details of the transmission line are outlined in the following subsections.

Aerial structures

Support structures are used to keep the high voltage conductors separate from each other and provide appropriate clearances from the ground and other obstacles. The requirements for minimum clearance between energised conductors and various types of obstacles are specified in the *Electricity Safety Regulation 2013* (Qld) (Electricity Safety Regulation), which is subordinate legislation to the Electrical Safety Act.

Structures are fabricated in a range of heights to allow optimum height to be provided at each site. The distance or span between structures and their height is determined by multiple factors including topography, average temperatures, sensitive environmental areas, clearance requirements and structure loading limits. Typically, shorter structures are found on elevated areas such as hills, with taller structures in gullies, or where additional clearance is required over a mid–span obstacle such as a road.

Various designs of conventional self-supporting towers have been used in Queensland for over 50 years and are the standard form of support structure for high voltage construction observed throughout the state. For self-supporting towers, individual components are fabricated from galvanised steel angle sections (members) and steel plate and are assembled onsite. Individual foundations support the four legs of the tower. Either structure type can be raised or lowered in height to ensure appropriate ground clearance, towers in 1m increments.

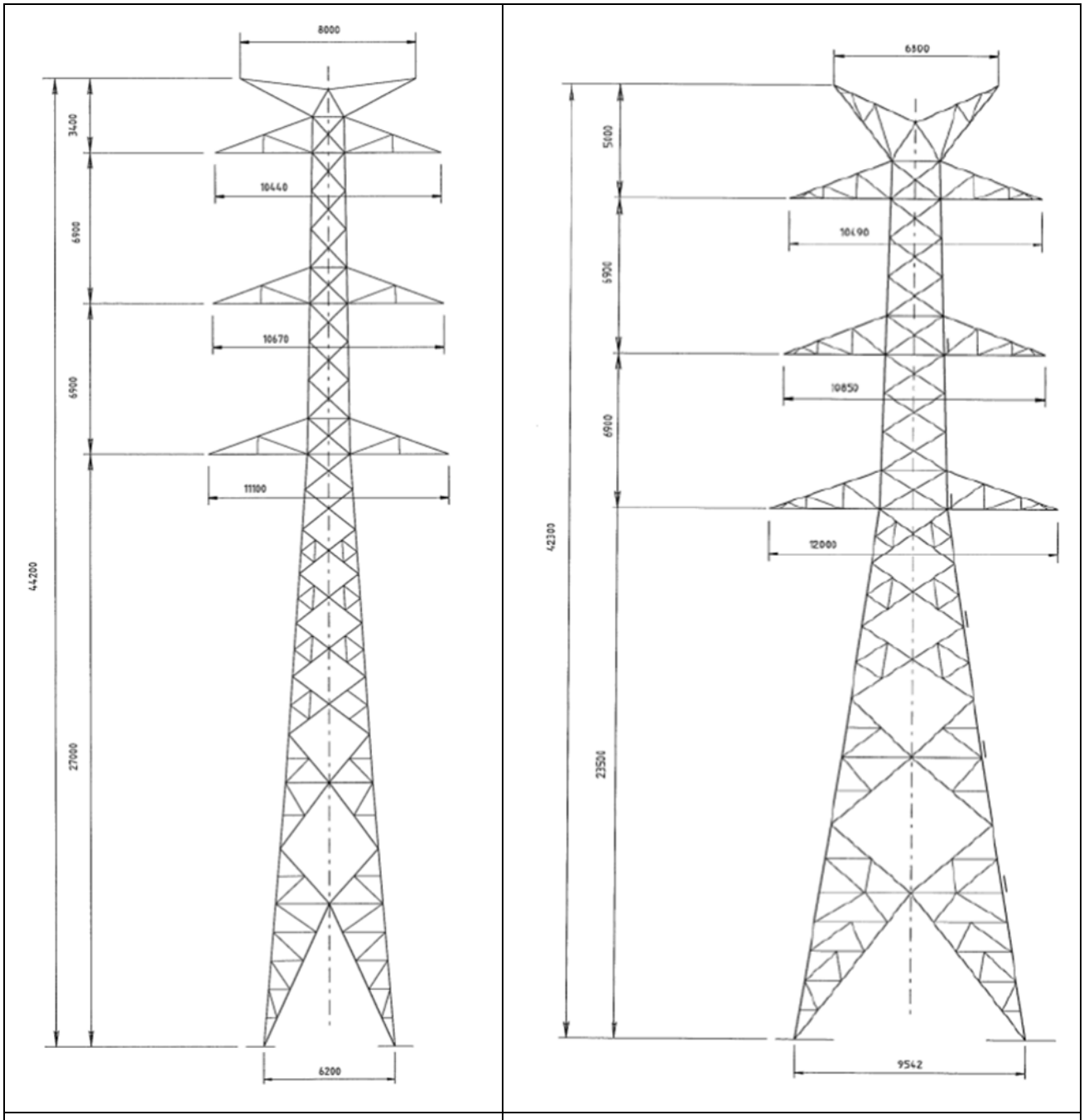
Treatments can be applied to the galvanised surfaces of the towers to reduce visual impact where necessary.

Structure duties

There are two specific duties of structures - suspension and tension.

- Suspension structures:
    - Suspension structures are used where the transmission line follows a straight line or has a very small deviation angle (up to 2 degrees). They are designed to carry the weight (vertical load) of the conductors and transverse (horizontal) load from wind on the conductors. Features of the suspension structures are relatively light construction, with cross–arms on each side of the upper part of the structure (superstructure) and insulator strings supporting the conductors.
- Tension structures:
    - Tension structures are characterised by a 'heavier' appearance due to the larger steel section sizes and conductors 'terminated' onto the cross–arms using insulators in a near horizontal orientation. Tension structures are designed to carry the weight (vertical load) of the conductors, and transverse (horizontal) load from wind on the conductors and conductor and earth wire tension loads. These structures are required at all changes in direction of the line greater than two degrees or where termination sites have been predetermined to facilitate line construction and operation. These structures are designed to withstand high longitudinal loading on the structure, which cannot be accommodated by the lighter suspension structures. Tension structures are also used in conductor 'uplift' positions. Conductor uplift is a term used to describe the loading condition where in the absence of sufficient vertical loading, the suspension insulator string will swing unacceptably close to the body of the tower under certain loading conditions, thus reducing electrical clearance. This situation can occur on a structure located at the base of a hill or steep terrain and is resolved by using a tension structure with its different insulation configuration even though the loading conditions would not normally require one at this location. Another use is for terminations at the end of the line.

A suite of structures may be designed for a particular project to cover a range of angle duties. For example, an intermediate type may be designed for angles up to 40 degrees and a 'heavy duty' type provided for angles up to 90 degrees and termination positions. An outline of a typical self-supporting double circuit suspension and tension tower is shown in Figure 2-1.



Typical suspension structure	Typical tension structure

Figure 2-1 Outline of typical self-supporting double circuit suspension and tension structures

Conductors, earth wires, insulators and fittings

Conductors

For double circuit configuration, each structure will support 12 individual conductors, configured in three pairs of twin conductors and two smaller diameter earth wires.

Earth wires

Overhead earth wires provide protection to the conductors from direct lightning strikes to safely dissipate earth fault currents and are also used as a support for optical fibre cables for communication purposes.

Insulators and fittings

Insulators are used to provide a connection between conductors and structures and to provide electrical insulation between the high voltage electricity and the (earthed) structure. The length of insulators in a string is determined by line voltage, clearance requirements and environmental (e.g. pollution) considerations. For this Project, insulators will be ceramic disc type. Special galvanised steel or aluminium fittings connect both the line end of the insulator to the conductors and the tower end to the structure.

A typical insulator string is shown in Figure 2-2.

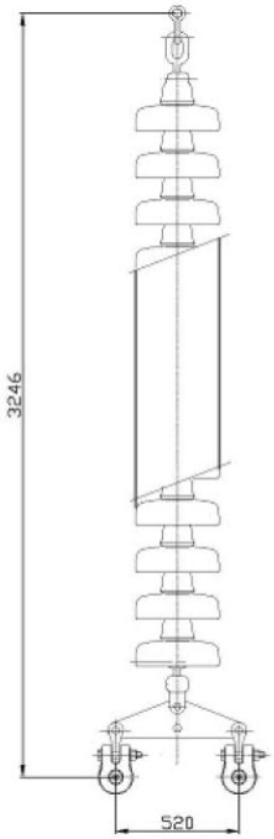


Figure 2-2 Typical insulator string

Telecommunications

Other than optical fibre cables for communication purposes, no telecommunication infrastructure will be incorporated into the design of the Project.

Easements and access

Easement

For the majority of cases, Powerlink transmission lines are constructed on easements. An easement is a registered interest in a parcel of land providing Powerlink with a right of way allowing the transmission line to be built, operated and maintained on part of a property with ownership of the land remaining with the landholder. Restrictions are placed on activities permitted on an easement to maintain public safety and ensure the line can operate reliably. Compensation is paid to directly affected landholders in accordance with the heads of compensation in the Acquisition of Land Act.

Easement width is determined by the size and type of line, and the need to maintain safe electrical clearance between the high voltage conductors and any object or structure adjacent to the line under all conditions. This includes safe electrical clearance to vegetation in and adjacent to the easement. For a 275kV transmission line, a 60m wide easement will be acquired.

Access tracks

Heavy vehicle access to the transmission line is required during construction and for ongoing operation and maintenance. Access tracks will be approximately 10m wide. In steeper terrain or where creeks or gullies intersect the easement, tracks may need to detour off the easement. Where access is generally available from adjacent public roads, limited access track construction to the structure site is normally all that is required for both construction and maintenance activities. In all cases, maximum use is made of existing public and privately owned roads and tracks.

Access tracks are shown in Appendix B.

2.1.2 Substation

Fencing

Security fences with locked gates will be installed around the substation site to restrict unauthorised access in accordance with regulatory standards. This will be in the form of a 2.4m high chain wire security fence, topped with several strands of barbed wire. The site will be unattended unless maintenance of the substation is being carried out. A security fence will define the overall boundary of the site and the balance of the land acquired will provide a buffer zone.

The general substation arrangement of Calvale Substation and the proposed Mount Benn Substation is shown in Figure 2-3A and Figure 2-3B and Appendix B.

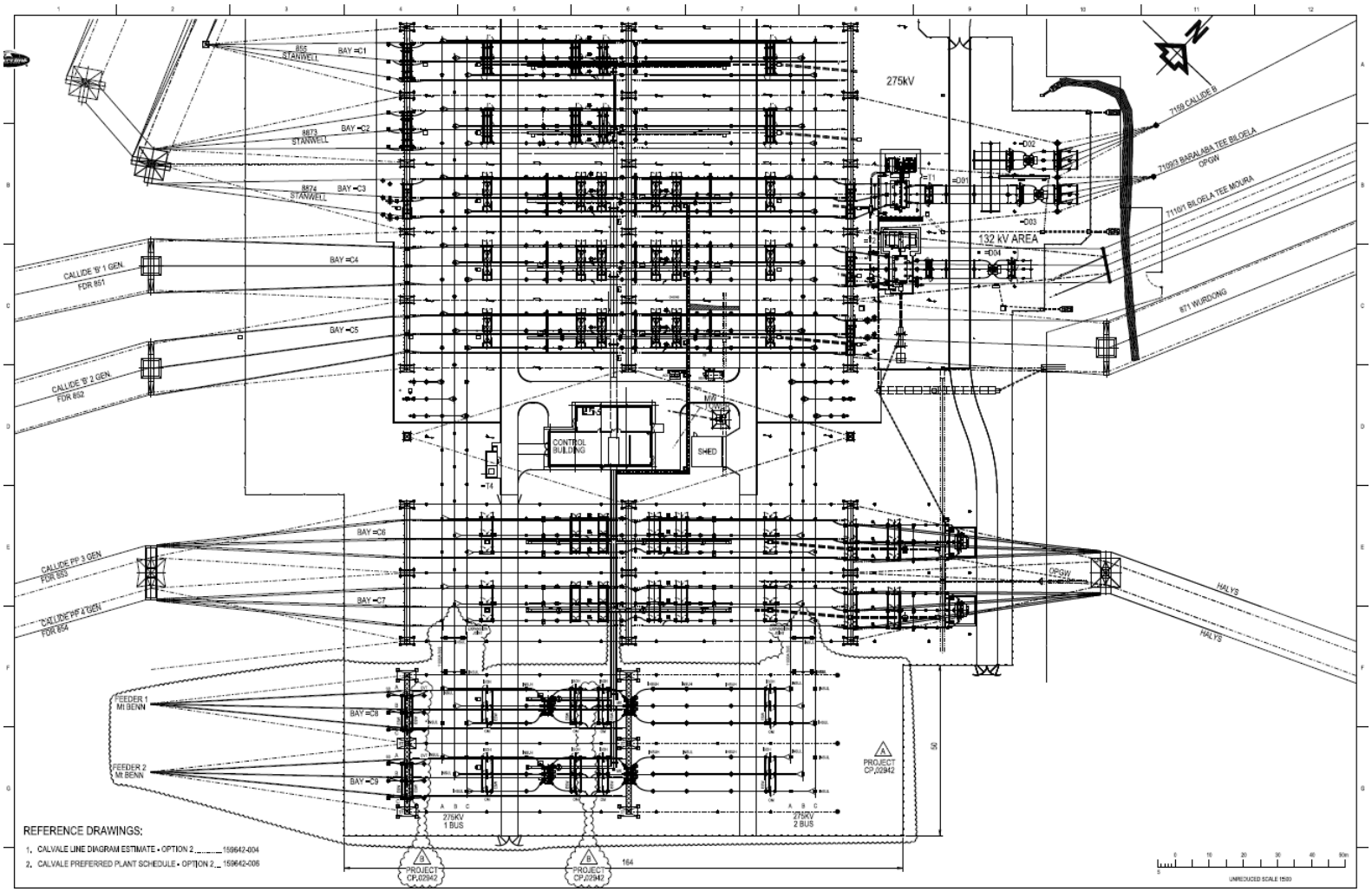


Figure 2-3A Substation general arrangement (Calvale Substation expansion)

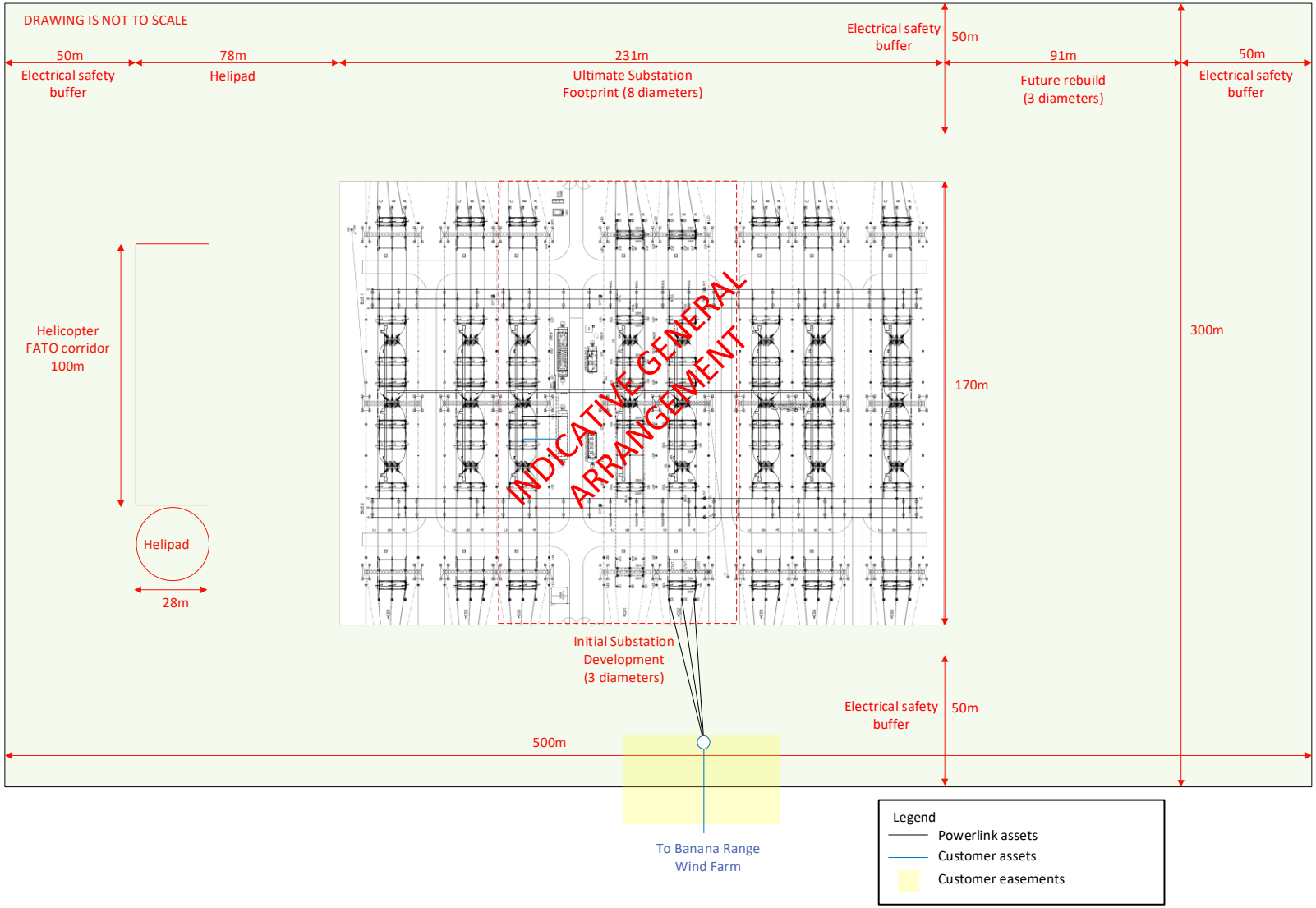


Figure 2-3B Substation general arrangement (the proposed Mount Benn Substation)

Civil works

Site access

A gravel access road and space for parking will be provided at the proposed Mount Benn substation site to allow maintenance staff access under all weather conditions. Access to the substation will utilise an internal road to be constructed as part of the BRWF and connect to the Dawson Highway. The access road will be up to 10m wide and provide enough space for maintenance and emergency vehicles that may need to access the site.

Roads into and around the substation site and hard standing and pavement areas will be constructed, suitable for anticipated weight of plant, vehicles and equipment and amount of traffic anticipated over the life of the substation. The internal roads within the substation will be bitumen finished, and external access roads gravel finished. All other areas of the substation yard will be covered with crushed rock.

The existing site access road will be maintained for the Calvale Substation.

Cable ducts

Underground cable trenching within the substation includes cable trenches, cable pits and conduits as required for multicore cables.

Drainage

Substation platform surface runoff will filter though the crushed rock surface layer and be collected by open drains around the platform perimeter to suitably sized secondary containment ponds. The collected surface water will run into drainage pits, piped to the edges of the platform and discharged through headwalls with aprons to dissipate the energy of the water. Oil and water separators will be installed as part of drainage. A first flush diversion system will be installed to mitigate the risk of releasing sediments and contaminants from the area. Automated oil detection and separation systems may be utilised. The need for drainage works shall be kept to the minimum and care taken also to minimise damage to natural drainage channels and soil erosion. The drainage system will be largely influenced by the final substation platform level relative to the surrounding natural ground surfaces and associated grades.

Aerial structures

Aerial structures comprise of galvanised tubular steel acting as:

- strain beams for terminating the transmission line conductors; and
- poles for supporting aerial earth wires over the substation.

Gantry structures

Gantry structures are of steel construction and are used to support high voltage conductors throughout the substation that interconnect sections of electrical equipment. Requirements for minimum clearance between energised conductors and various types of obstacles are specified by the Electricity Safety Regulation. The distance between structures and their height is determined by the equipment layout and these clearance requirements.

Support structures

Support structures are used to maintain ground clearance to the various items of electrical equipment. Support structures at the substation will be of conventional fabricated steel and tubular steel construction.

Busbars

Busbars act as high-capacity connectors between pieces of equipment. They are made of tubular aluminium.

Major electrical equipment and switchgear

Electrical equipment is grouped into:

- primary plant involved in the transformation, switching and isolation of high voltage electricity;
- secondary systems associated with the protection, metering and control of the primary plant; and
- communication systems linking the automated control and signalling equipment in the substation to remote control facilities as well as voice and data communications facilities.

Fire protection system

Fire protection in equipment rooms will be principally through passive protection, such as fire-retardant cabling, dispersal of equipment, and fireproof cabinets. The installation of transformers and other equipment will be designed where possible to eliminate the requirement for fire water deluge systems. Where technically feasible, fire-resistant transformer oil will be used to prevent the escalation of transformer faults into fire. Gaseous fire suppression will be considered during the safety in design risk assessment processes and only installed if warranted.

Other facilities

The substation site will have an allowance for a small maintenance facility that will consist of a dust-free building with an internal cubicle that includes amenities, an office and a hardstand for the loading and unloading of storage. It will also incorporate an unsealed helicopter landing area. Additional areas may be required for hazardous substance enclosures or fuel storage areas or tanks. Any storage shed will typically be a 'slab on ground' portal frame design with Colorbond® type walls.

Buildings

The proposed substation will contain the following buildings:

- an air–conditioned combined demountable control/communications building;
- an air–conditioned demountable amenities building; and
- a storage shed on a concrete slab.

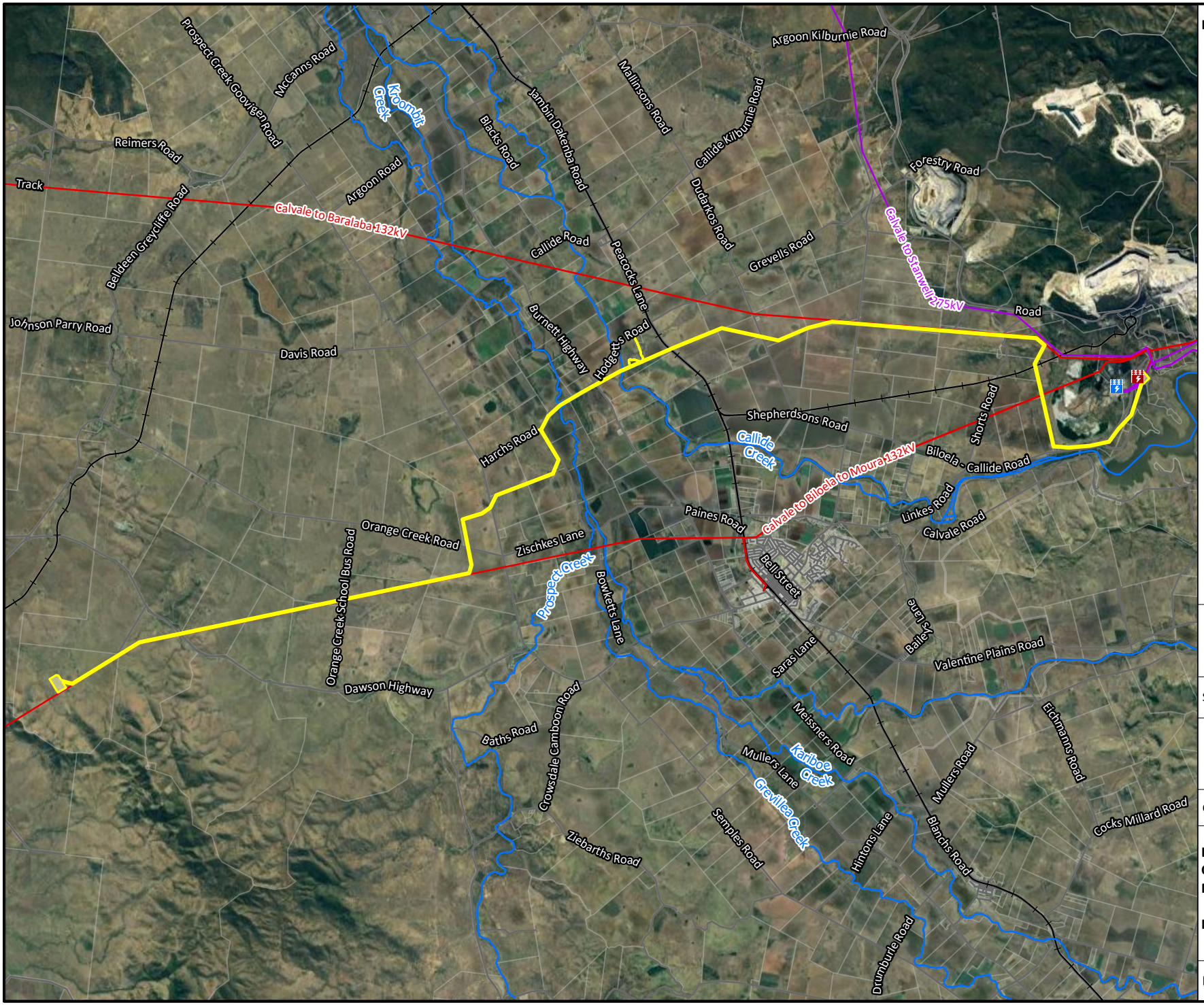
The proposed substation will include a site office building which is likely to include office space, a kitchenette and ablutions facilities. Reticulated water supply is not available at the proposed substation location and is not proposed to be extended to the site. Rainwater tank(s) will be provided at the substation site for general use excluding drinking water. Water tanks will be enclosed and provided with first flush devices in order to improve quality of rainwater caught and stored on site for use.

2.2 Site description

For the purposes of approval via the MID process, an MID corridor has been established which encompasses the recommended corridor and substation sites identified within the CSR.

The MID corridor can be seen in Figure 2-4.

All properties (including lot on plans, easements rail corridor and street details) intersected by the Project are provided in Appendix A.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Calvale Substation
- Callide Power Station
- Existing 132kV Transmission Line
- Existing 275kV Transmission Line
- Cadastre
- MID Corridor

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MID CORRIDOR

FIGURE 2-4

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_001
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

2.3 Construction methodology

2.3.1 Overhead transmission line

Construction

Construction of a transmission line involves a series of field activities which are broadly grouped as follows:

- site survey and set out;
- flora and fauna surveys;
- mobilisation, including establishment of accommodation camps, laydowns and offices;
- installation of gates, grids, clean down bays and access tracks;
- vegetation clearing;
- tower site benching;
- foundation installation;
- structure assembly and erection;
- conductor and earth wire stringing;
- road crossings;
- watercourse crossings;
- laydown areas;
- site reinstatement; and
- demobilisation.

Site survey and set out

Following cadastral survey of the easement, the location of the transmission line (within the easement) is then set out. Structure sites are marked and orientated using design information. Structure locations are based on the technical characteristics of the structures and conductors, topographical constraints, landholder requirements and environmental considerations.

Easement boundaries will be identified and marked prior to vegetation clearing.

Flora and fauna surveys

To inform the planning of the transmission line and assessment of Project impacts ecological field surveys identifying vegetation communities, flora species and habitat within the recommended corridor have been undertaken. The results of these field surveys are presented in Chapters 5.7 (Flora), 5.8 (Fauna) and 5.9 (Matters of national environmental significance) of this MID Assessment Report .

A pre-construction weed survey will be undertaken prior to construction activities commencing. The survey will cover the entire alignment plus 60m wide easement, substation sites and access tracks.

Vegetation clearing

The amount of vegetation clearing required is dependent on terrain, vegetation type and significance, and landholder requirements (where feasible). The aim is to clear vegetation sufficient to meet Powerlink's safety, reliability and operational requirements for the transmission line (Plate 1).

In non–sensitive areas, the most effective and efficient clearing method for large scale clearing is by bulldozer, often fitted with a 'stick rake' or 'tree spear' to push over larger trees or use of a mega-mulcher. Timber of commercial value may be recovered prior to clearing. Depending on land use, landholder requirements, environmental constraints and maintenance requirements, cleared vegetation may be dealt with in the following ways:

- chipped or mulched on site and used for easement revegetation;
- stacked and windrowed - any stacked and windrowed vegetation must be placed in a manner which does not concentrate overland flow or create erosion; and
- stacked and burnt - any burning of cleared vegetation may only occur in accordance with a permit from the Queensland Fire and Emergency Services, and so as not to create any additional hazard to the surrounding environment or transmission line.

In sensitive areas, such as steep or erosion prone terrain, near watercourses or other environmentally sensitive areas, alternative methods of clearing such as hand clearing (chainsaw) or the use of a fella-buncher (or excavator with cutting attachment) may be appropriate. These techniques are more labour intensive and time consuming than other mechanical means but achieve the desired clearing outcome. In steep terrain or environmentally sensitive areas, trees may be cut above ground level, felled along the contour, and allowed to decompose naturally or mulched. In areas where hand clearing is required, stump heights will be discussed and agreed with the landholder. Where visual impacts are identified, lower vegetation is typically retained along road corridors to provide a visual screen. In these areas, supplementary planting of suitable species may be used to improve screening.

Chemical treatment may also be used for selective treatment of incompatible vegetation while minimising ground disturbance. The method is mostly suitable for regrowth vegetation and may be through stump injection, cut stump, or overall spray technique.

Appropriate clearing methods for various areas are selected with input from property owners and advisory bodies and carried out in accordance with the requirements specified in the Project EMP (refer Appendix C).

Specific clearing considerations for the Project are detailed in Section 5.7 (Flora) and 5.8 (Fauna).

Plate 1 Site set out and vegetation clearing

Access track development

Where access tracks do not exist, but where access is critical for construction purposes, Powerlink will typically get the landowners permission to create access tracks. Vegetation and soil disturbance is kept to an absolute minimum and any environmental damage that may occur is reinstated upon completion of construction. In planning access, Powerlink will consider the terrain and ensure that access is gained along contours so as to prevent any likely impacts associated with soil erosion. Where fences need to be opened, these will be opened with the relevant owner's consent and the fences reinstated upon completion of the construction.

Laydown areas

Laydown and staging area requirements are yet to be determined by Powerlink. Where laydown and staging areas are proposed outside of the easement, they will be subject to applications and assessment by the relevant State and/or local regulators.

Foundation installation

Geotechnical assessments are undertaken prior to construction to determine the appropriate foundation type for each structure. Bored foundations are often used and are shown on Plate 2 and Plate 3 . Alternative foundation types (i.e. mass concrete, micro-piles, mini-piles) are used in situations where ground conditions are not suitable for bored foundations.

The choice of foundation type is dependent on the specific nature of the soil and rock and takes into account soil/concrete friction strength, water levels, soil bearing capacity, construction constraints, rock levels, and soil properties.

Construction of tower foundations usually consists of the following steps:

- setting out;
- excavation/boring;
- leg stub/base set up;
- placement of reinforcing steel/concreting;
- concreting of excavated foundations; and
- installation of earthing.

Setting out involves the placement of temporary pegs on site to mark the location of the excavation. Dimensions of foundations are determined by structure type and height and soil conditions at the site.

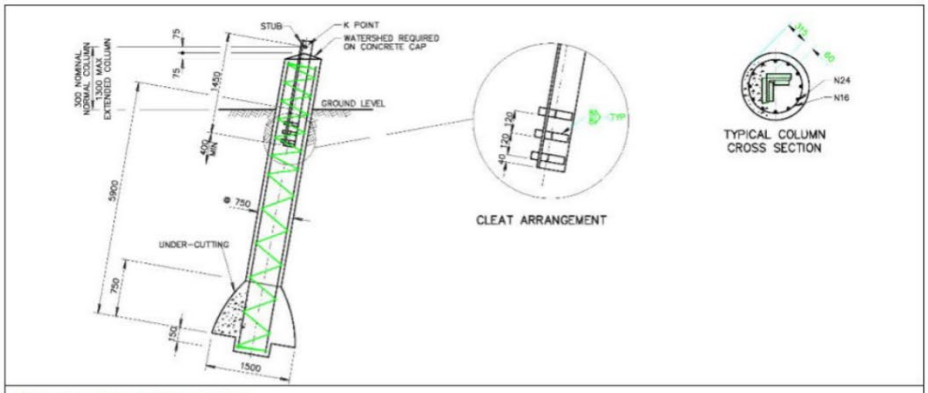
Excavation of bored foundations may be by truck mounted auger, backhoe or track mounted excavator. The excavation is bored at the same inclination as the structure leg. In unstable ground conditions, the excavation may be stabilised by the insertion of a steel 'liner' in a bored foundation and shoring or timbering for a mass concrete foundation. Although dependent upon the geology of the surrounding soil, foundations are typically excavated to approximately 8–12m.

Micro or mini piles involve small diameter 50-300mm diameter drilled holes which are designed to have a centrally placed steel reinforming member. Subject to ground conditions, the foundation design and the size of the drilling equipment being used, a range of piles, from 3-12 are drilled per leg. These small and grouped piles are then bonded and tied back into a pile cap and/or column forming a tower leg foundation. Micro or mini pile foundations are the preferred foundation for difficult drilling conditions including hard rock, saturated and collapsing soils.

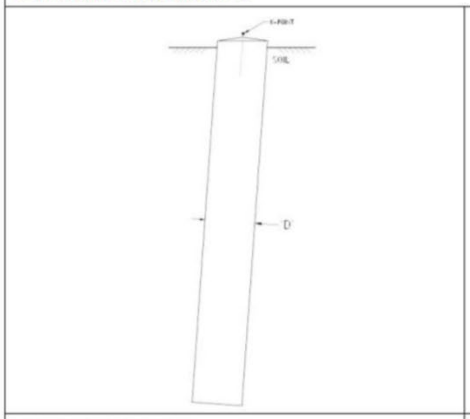
Leg stub setup is the process of placing an extension of the tower leg (the 'stub') in the correct position and inclination within the excavation, in preparation for concreting in place. A temporary jig or template is used to hold the stub firmly in place in the correct horizontal and vertical alignment and is removed after concreting. Reinforcing steel is required in tower foundations, with the amount varying with tower and foundation type. Temporary formwork is also used for the foundation column above ground (bored foundations) and above the base (mass concrete foundations). Concrete is placed in accordance with normal construction procedures and formwork removed after an appropriate curing time.

Backfilling of mass concrete foundations is completed using the excavated material, if suitable, or imported fill. Surplus material is spread evenly about the site or removed, depending on quantity and suitability.

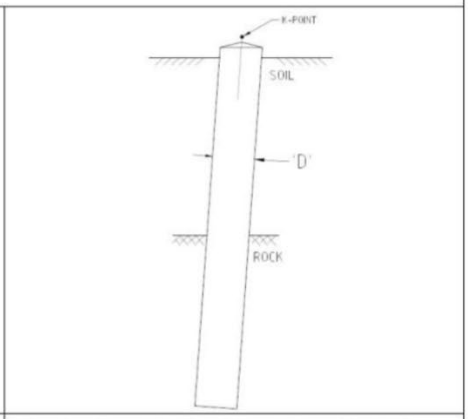
Plate 2 Foundation installation



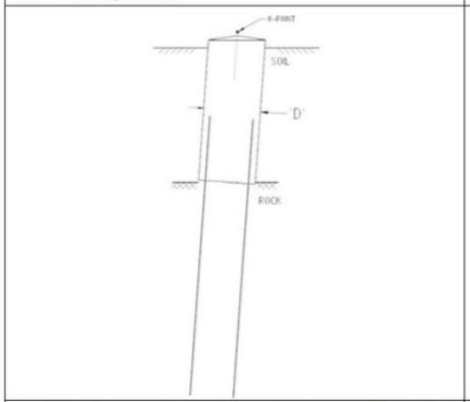
Bored undercut foundation



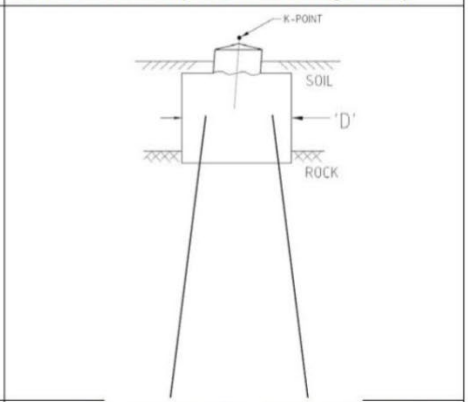
Bored straight side



Bored rock socket (low to hard strength rock)



Bored rock anchor (medium to hard strength rock)



Bored rock anchor (medium to hard strength rock)

Plate 3 Typical bored foundation types

Structure assembly and erection

The term 'structure assembly and erection' refers to a sequence of activities from delivery to site, preassembly, erection, tightening and inspection tower components of each structure.

Steel for lattice towers is fabricated, galvanised, sorted and bundled ready for delivery at a contractor's facility off site and transported to the final location in two or more pieces, typically by semi-trailer. Preassembly of the tower is usually carried out adjacent to its final site and involves assembly of several sections, which will allow convenient erection in the following stage.

Where practical, bolts holding the members together are tightened at this stage. Larger or heavy towers may require the use of a small mobile crane at this stage to move members and sections about the site. A large mobile crane (Plate 4) is used to erect the tower in sections with a work crew installing and tightening all bolts and checking that the structure is complete.

Plate 4 Transmission conductor drums and mobile crane utilised in structure erection

Conductor and earth wire stringing

Depending on constraints, terrain, and access, conductor and earth wire stringing is usually carried out in sections of varying lengths of up to 10km between termination structures. Existing infrastructure such as buildings, roads and fences may require hurdling which is a method that adopts a protective barrier to prevent contact and potential damage. Additionally, existing distribution and transmission feeders which intersect the transmission line may require other electrical entity works to facilitate stringing. This may include but is not limited to:

- undergrounding existing distribution feeders;
- supply of additional generation to impacted feeders;
- network outages; and
- live line hurdling which involves the installation of a portable undercrossing protective barrier.

The conductor and earth wire stringing process requires the use of specialised equipment and is briefly described as follows:

- A powerful winch (puller) is set up at one end of the stringing section, and a braking device (tensioner) at the other. These designated 'brake and winch' sites are typically 60m x 50m and predominately on-easement. There are some instances, where off-easement brake and winch sites have been identified due to topographical constraints and constructability requirements. These brake and winch sites are generally cleared and stripped of the topsoil layer, which is stockpiled separately and used for rehabilitation of the site at completion of stringing. Off-easement brake and winch sites are not currently proposed for this Project.
- Specially designed pulleys (stringing sheaves) are fixed at each conductor and earth wire attachment point on each structure in the section.

- Multiple high strength, non–rotating steel winch ropes are threaded continuously through the corresponding sheave on each structure between the winch and the tensioner. This is often facilitated by threading light polypropylene ropes through the sheaves as they are installed. These ropes are used to pull the winch rope through the sheaves at each structure without the requirement for a worker to climb the structure.
- For each stringing section for each conductor and earth wire, individual winch ropes will be runout.
- The conductors (electrical cables) are then pulled out under tension through the stringing sheaves on each structure and through to the winch. The tension in the winch ropes is continuously monitored to avoid over tensioning. Workers carry out visual checks through the stringing section to ensure that the conductor run out proceeds smoothly and wires remain clear of all obstructions.
- At the completion of the run out of all conductors and earth wires, they are attached to structures or temporary anchorages.
- Conductor and earth wire tensions are adjusted to give the design sag (i.e. the correct ground clearance).
- Conductors are clamped in final positions at the end of insulator strings at each suspension structure and are terminated on insulator strings at each tension structure.
- Conductor spacers are installed between sub–conductors (sometimes from a helicopter).
- Earth wires are clamped or terminated as required at each structure earth wire peak.
- Equipment is repositioned and the above process is repeated for subsequent stringing sections.

A variation of the above process uses a helicopter to undertake the direct run-out of conductor and/or earth wire (Plate 5). It is similar to the above process but differs in that no steel winch rope is used.

Plate 5 Stringing sheaves and helicopter stringing

Road crossings

Where the transmission line crosses road reserves, approval will be sought from the relevant road authority under section 102 of the Electricity Act.

Watercourse crossings

Where possible, structures will be located 50m from watercourses. Where the transmission line crosses watercourses, previously cleared tracks for existing crossings will be preferentially used to minimise new watercourse crossings. Where new crossings are required, the construction methodology will be dependent upon the size of the watercourse. However, these are generally developed in line with Planning Act accepted development requirements for operational work that is constructing or raising WWBW.

The construction of bed-level crossings typically involves the excavation of the crossing bed to an appropriate depth to provide a stable base. The excavation is then lined with a heavy-duty geo-fabric and filled with aggregate using a combination of rock sizes up to 150mm to lock the rock into place. In some instances where it is not practical to undertake excavation works due to unfavourable soil properties, alternative solutions may be required. This may include, but may not be limited to:

- installation of bog mats; and
- installation of geomaterials.

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 (Plate 6). This ensures the line is ready to be put into service safely and reliably as it enters the operation and maintenance phase of the Project lifecycle.

Plate 6 Testing and commissioning

Site reinstatement

Reinstatement will be undertaken progressively during construction, where practicable, and Powerlink will ensure that all disturbed areas impacted from construction are reinstated at the end of the Project (Plate 7). The short-term goal of reinstatement is the stabilisation of soils to provide a suitable matrix for vegetation establishment to aid in preventing erosion. Reinstatement also includes the replacement of topography, topsoil, and fences where disturbed.

Plate 7 Site reinstatement

Operation and maintenance

Operation

After completion of construction and commissioning of the transmission line, the amount of activity on site decreases substantially. During operation, normal practice is for maintenance staff to carry out scheduled inspections of the line, easement, and access tracks on average twice per year.

These inspections (patrols) are either by vehicle, drones or helicopter. It is estimated that vehicles or drones will be used for this Project. Additional inspections may be required to perform such activities as emergency repairs. Powerlink maintains access tracks suitable for dry weather 4WD vehicles use.

Maintenance - Structures, conductors and fittings

Structures, conductors and fittings are inspected for any signs of unusual wear, corrosion or damage. Transmission lines are designed for a 50-year in-service life and are very reliable under most conditions. Maintenance staff normally conduct a detailed visual inspection about once every two to three years.

Provision may be made for some structure and conductor maintenance tasks to be carried out from a helicopter, with the line either energised or de-energised. Typically, insulators are replaced every 25 years with the majority of the remaining equipment designed to last the life of the line.

Maintenance - Easements

Inspection of the easements is carried out on each scheduled line patrol, with the main aim to record the type, density and height of vegetation regrowth. Additional matters of interest include new under-crossings (e.g. distribution powerlines), or other activity or construction within the easement which may affect operation or maintenance of the line.

Powerlink's policy is for the landholder to be contacted prior to any vegetation control work on a property and the landholder's agreement obtained regarding the treatment method to be employed. This is particularly important if herbicides are involved for withholding periods for meat production.

Easement vegetation management is important to ensure the safe operation of the transmission line. Vegetation management is undertaken in accordance with Powerlink's standards and procedures.

Three techniques for vegetation management are employed:

- mechanical;
- hand clearing; and
- chemical (herbicides).

The technique adopted for each area takes into account a number of issues such as landholder requirements, type of regrowth, terrain and the local environmental conditions. Mechanical clearing is usually by a tractor driven slasher, or similar vehicle, and is suitable for shrubs and smaller trees. It is limited to relatively flat and accessible terrain due to the type of vehicle used.

Hand clearing is labour intensive but allows the vegetation clearing to be quite selective and ensures that disturbance to non-target species is minimised. Hand clearing can be employed in areas where vehicle access is not available. Lopping of larger trees is also an option near urban or in visually sensitive areas.

Chemical treatment may be used for selective treatment of incompatible vegetation while minimising ground disturbance. The method may be through stump injection, cut stump or overall spray technique and is mostly suitable for regrowth vegetation.

Maintenance - Access tracks

Maintenance of access tracks is required to ensure that vehicle access to structure sites is available for inspections and structure maintenance. Techniques employed should be appropriate for the area. For example, a grader may be required in hilly terrain where some reshaping of drainage is necessary, but a slasher could be preferred in open grasslands.

The work should minimise disturbance to natural groundcover, thus reducing erosion potential and subsequent maintenance requirements. Maintenance of access provided by others is undertaken in consultation with the appropriate authority.

Decommissioning

Typically, a transmission line has a 50-year operational life. After this time, it may:

- be replaced with a transmission line designed for the revised environmental constraints and electrical system requirements at the time.
- if the line were no longer required, be dismantled and the easements may be surrendered to the property owner.

At the time when the transmission line is decommissioned, it will be de-energised, dismantled and removed.

Dismantling and removal of the transmission line

The process of dismantling and removal of the transmission line is staged and includes the following:

- Lowering the overhead conductors and earth wires to the ground and cutting them into manageable lengths to roll onto drums or reels. These are removed from the site and sold as scrap metal. Some minor damage to vegetation results, but other clearing is not normally required for this operation.
- Removing insulators and line hardware from structures at the site and disposal at a waste facility that is authorised to accept the waste.
- Dismantling towers in manageable sections and removing from site. The steel is usually sold as scrap metal. Steel poles are cut into pieces small enough to be handled and transported, then removed from site.
- Demolition of foundations is normally carried out as follows:
    - the ground surrounding each foundation (tower leg/holding down bolts and encasing concrete) is excavated to a depth of approximately 600mm below the natural surface level;
    - the concrete is broken away and the tower leg or holding down bolts and reinforcing steel is cut off about 500/600mm below ground;
    - demolished concrete and steel are removed from site for disposal or recycling at a waste facility that is authorised to accept the waste; and
    - the excavation is backfilled and compacted with suitable (imported, if necessary) material.

In specific situations such as cultivation, some variation would be necessary. For example, foundations may be cut off deeper (to avoid any potential interference with ploughing machinery) and backfilled with better quality soil.

Environmental management, easement restoration and rehabilitation

Given the typical operational life span of a transmission line is 50 years, it is considered unnecessary at this stage to identify specific environmental management, easement restoration and rehabilitation measures which will be undertaken at the time of decommissioning.

It is expected that legislative frameworks, regulatory provisions and best practice strategies with regard to environmental management will continually improve. Therefore, identifying and committing to current environmental management standards for decommissioning works would not be contemporary at the time of decommissioning.

Powerlink is committed to employing environmental management strategies during the decommissioning phase which meet or exceed legislative, regulatory and best practice requirements current at the time. All necessary permits and/or approvals which are required to undertake decommissioning works will be sought and received prior to decommissioning works commencing. Broad environmental management strategies that will be employed during decommissioning are discussed below:

- Soils – both temporary and permanent erosion and sediment control strategies and/or devices will be implemented during decommissioning works to ensure that transmission line structure sites are left as stable landforms. Surface stabilisation (e.g. mulching or grass seeding) may be undertaken where necessary to ensure that large scale erosion does not occur and sites are returned to the equivalent surrounding landscape where practical and feasible. All excavations made to remove structure footings to a depth of 600mm below ground level will be filled and covered over.
- Water quality – as for construction phase works, water quality protection measures will be implemented during decommissioning works. For access tracks across drainage lines and/or watercourses, the access tracks will be removed if not required by the landholder after decommissioning. Associated water structures will also be removed, and the bed and bank profiles will be returned to the surrounding waterway profile.
- Air quality – decommissioning works will involve land surface disturbance, excavation, use of machinery and possibly clearing of vegetation regrowth. These activities have the potential to cause impacts to local air environments and nuisance to sensitive receivers. Therefore, as for construction phase works, management measures to reduce the occurrence, duration and intensity of potential air quality impacts will be implemented.
- Noise – as with air quality considerations, decommissioning works will involve activities which have the potential to impact on local acoustic quality and sensitive receivers. Therefore, management measures will be implemented to reduce actual or potential acoustic impacts. All decommissioning works will comply with operational hours specified by relevant authorities and legislation.
- Infrastructure – during decommissioning, assets will be dismantled and/or cut on site into manageable sections which can be loaded and removed from the easement. The decommissioning process will generate traffic on local roads comprising standard vehicles utilised for staff movement; trucks and heavy vehicles for collection of dismantled assets; and heavy vehicle movements to deliver and remove machinery required to undertake decommissioning works. Whilst traffic movements associated with decommissioning are not expected to exceed those associated with construction works, traffic management on local roads will be employed where required.
- Vegetation – clearing of vegetation regrowth along sections of easements and access tracks may be required to gain appropriate access to transmission line assets.

- Easement rehabilitation – should the easements no longer be required, passive rehabilitation such as natural regrowth of vegetation over the easements would be allowed and encouraged. Active rehabilitation including planting of native, endemic species, including control of significant weed infestations may be undertaken..
- Access track rehabilitation – access tracks not required by landholders would be allowed to passively rehabilitate. In some circumstances, light scarifying and seeding may be undertaken to promote vegetative regeneration.
- Waste – decommissioning of the transmission line will result in waste material including cleared vegetation, steel, concrete, cable, insulators, conductors etc. Where recycling facilities for these waste materials exist at the time of decommissioning, these waste materials will either be re-used or recycled. If no recycling facilities exist, waste materials will be disposed of in accordance with regulatory requirements.

Decommissioning Management Plan

Prior to decommissioning of the transmission line, a Decommissioning Management Plan will be prepared. This will provide detail regarding the proposed decommissioning works, environmental risks associated with decommissioning, and management and mitigation measures. This plan will utilise environmental management strategies, practices and technologies current at the time of decommissioning to comply with regulatory provisions and to appropriately manage environmental issues.

2.3.2 Proposed Mount Benn Substation and Calvale Substation Expansion

The substation general arrangements for both Mount Benn Substation and Calvale Substation Expansion are provided in Appendix B.

Construction

Construction of the proposed Mount Benn Substation and Calvale Substation Expansion will involve a series of field activities including:

- a detailed site survey to allow detailed structure and substation design;
- vegetation clearing;
- earthworks and levelling for the substation platform and access road;
- site fencing;
- installation of a site drainage system;
- installation of a substation cable trench and conduit system;
- installation of the substation earthing mat;
- installation of the substation structure and building foundations;
- buildings, structure and electrical equipment erection;
- conductor and earth wire stringing; and
- site rehabilitation.

Geotechnical investigation

Geotechnical assessments are undertaken prior to construction to determine to allow for the detailed design of the substation. This typically involves the use of a large truck mounted drilling rig.

Vegetation clearing

The area affected by the construction of the built elements of the substation must be fully cleared.

Earthworks

A level surface is required for the construction of the substation therefore the initial stage of construction is earthworks, usually by a cut and fill process to bench the pad, the extent of which will depend on the site profile. Earthworks for the site comprises compacted fill approximately 1m above surrounding ground level. Fill may be required to be imported to meet specification requirements.

Platform surfacing

A 100mm thick platform road base surface will be laid as part of initial earthworks. This will extend up to 3m outside the future compound fence alignment all around the site, excluding the future roads. A final 100mm thick platform of additional road base surfacing finish covering the same area will be laid after completion of civil works. A further 100mm thick gravel surface will be placed within the compound after completion of civil works. If space permits, excavated spoil material is to be mounded with the available mulch onsite and used as a planting bund for landscaping around the periphery of the site. Surplus clean fill material will be removed from site and appropriately disposed.

Civil works

This phase of the work involves the installation of the substation security fencing, drainage, roads, cable trenches, substation earthing and installation of structure foundations. The substation copper electrical earthing mat will be installed across the site at a depth of approximately 600mm. The disturbed soil will then be compacted and covered to prevent erosion.

Drainage work consists of the installation of all drains, pits and culverts necessary to control the flow of stormwater from the site.

It is expected that structure foundations will be one of two main types, broadly described as bored and excavated. Bored concrete foundations are used in most situations whilst excavated foundations are used where pad type footings are required.

Isolated concrete plinths and foundations will then be constructed to support the site infrastructure. Concrete for foundations will be supplied from the nearest commercial batching plant and poured in accordance with normal construction procedures. Formwork will be removed after an appropriate curing time. Other foundation requirements such as those for the control and communications buildings are normally completed at this time.

Structure and building erection

The steel for the lattice and tubular structures will be fabricated, galvanised, sorted and bundled ready for delivery at a factory or workshop off site. Preassembly of the structures will be carried out on site and will involve assembly of the individual members into a number of sections, which will allow convenient erection by a mobile crane.

The demountable control building and amenities building will both be of a transportable prefabricated building design with ‘colorbond’ walls and roofing. They will be delivered complete to site and installed on their foundations using a mobile crane. The storage shed will typically be galvanised metal walls and roofing.

Erection of landing beams, gantry structures, conductors and busbars

Once all strain beams, gantry and support structures have been erected, the busbars and high voltage electrical equipment will be placed in position and all electrical connections made. Cables that carry the control and protection signals to the control equipment located in the bay buildings will be laid and all connections made. Conductors are strung between the high–level gantries and connections made to the high voltage equipment. The final connection to be made is that of the incoming transmission lines.

Operation and maintenance

After the completion of construction and commissioning of the substation, the amount of activity on site will decrease substantially as the substation is designed to be monitored and controlled remotely. For safety and security reasons, only authorised personnel are permitted access to substation compound. Regular security checks will also be carried out. Remotely controlled operational cameras will be installed as remote video monitoring of the substation enables a quick response to issues.

Facilities exist for manual and emergency site control, should this be necessary. Maintenance staff will carry out routine inspections of the substation and detailed maintenance of all plant and equipment at regular intervals. Additional inspections may be required as a result of equipment failure, damage, modifications and upgrades.

During the routine inspections, the substation and items of plant will be inspected for signs of unusual wear, corrosion or damage. Faults and defects will be reported to maintenance staff who will rectify any problems identified.

Substation equipment is designed with a service life in excess of 40 years with refurbishment scheduled every 15 years and is very reliable under most conditions. Apart from the detailed visual inspections that maintenance staff undertake, routine maintenance will be carried out periodically depending on the type and make of the item of plant concerned.

Vegetation regrowth control within the substation compound and under the incoming power supply transmission lines will be undertaken to maintain electrical safety clearances between the conductors and vegetation.

Decommissioning

The design life of the substation is typically around 40 years. However, after that time it would be reasonable to expect that replacement or refurbishment work would occur to bring the equipment to the required level of performance and reliability. If the substation were ever considered no longer necessary, it would be removed, and remediation works undertaken.

Dismantling and removal of the substation

Decommissioning the substation would involve removal of all substation structures, equipment and associated infrastructure. The process of dismantling and removal of the substation would include:

- removal of transformers and static containments units;
- dismantling of all above ground structures (aerial structures, gantry structures, busbars etc.); and
- removal of footings to typically 1m below ground level (with the lower end of the footing remaining in place).

Environmental management, site restoration and rehabilitation

Any decommissioning works would be undertaken in accordance with legislative, regulatory and best practice requirements current at the time that decommissioning is undertaken. General decommissioning environmental management principles employed by Powerlink are discussed in Section 2.3.

Decommissioning Management Plan

Prior to decommissioning of the substation, a Decommissioning Management Plan which provides detail regarding the proposed decommissioning works, environmental risks associated with decommissioning and management and mitigation measures will be prepared. This plan will utilise environmental management strategies, practices and technologies current at the time of decommissioning to comply with regulatory provisions and to appropriately manage environmental issues which may be associated with decommissioning of the substation.

3. Project justification and feasible alternatives

3.1 Project justification

Powerlink needs to reinforce its transmission network in the Gladstone area over the next ten years. This is important to ensure an ongoing reliable and secure electricity supply to the region, as the largest load centre outside of south-east Queensland.

The area's role in the wider power system is changing significantly. The eventual retirement of the Gladstone Power Station and the potential for electrification of local industry, will result in the need to supply electricity from alternative sources to power the local. Powerlink is currently planning for a critical program of transmission upgrades, to ensure the safety and reliability of the electricity network as the region prepares for changes in how and where electricity is generated and increasing demand on the network.

In addition to developing and operating the high voltage network and associated infrastructure, Powerlink also provides electricity transmission services. This can include connecting large industry and also electricity generation projects (such as wind, solar farms, battery storage and others) to the transmission network.

As the Transmission Network Service Provider (TNSP) in Queensland, Powerlink operates under the National Electricity Rules (NER) which define Powerlink's obligation to connect generation projects to Queensland's electricity network. This means that Powerlink is obligated to connect any proponent (such as a generator) to the transmission network, provided they meet the relevant technical and regulatory requirements.

The Banana Range Wind Farm project has now met these requirements and EDF has engaged Powerlink to connect the BRWF to the transmission network. Once built, it will provide an important connection into the Calvale Substation, supplying renewable energy into the Gladstone region. This transmission connection also provides opportunity for other renewable energy projects, such as the Theodore Wind Farm Connection, to link with the new infrastructure (subject to planning and environmental approvals).

3.2 Feasible alternatives

Powerlink has undertaken studies to identify alternative feasible alternatives for the connection requirements of the BRWF to the Calvale Substation. The alignment presented within this MID Assessment Report has been identified as having the lowest overall impacts based on a range of environmental, social, and economic factors.

A CSR was prepared in March 2023 which identified a preferred corridor for the construction and operation of the proposed BRWF Transmission Connection. The CSR is available to view on Powerlink's website at https://www.powerlink.com.au/projects/banana-range-wind-farm-connection-project.

The objective of the CSR was to examine a range of corridor options to connect the BRWF to the electricity transmission network and determined the most feasible solution is to construct a new 275kV double circuit transmission line from Powerlink's existing Calvale Substation (near Callide Power Station) to the proposed Mount Benn Substation. Other potential connection options considered by Powerlink included:

- utilising the existing Calvale to Biloela to Moura 132kV transmission line which traverses the BRWF site; and
- replacing the existing 132kV line with a new single 275kV circuit from Calvale Substation to the proposed Mount Benn Substation.

The CSR identified a Study Area for the transmission line, which wrapped around the town of Biloela and encompassed an area of approximately 28,000 hectares (ha) between the proposed Mount Benn Substation and Powerlink's existing Calvale Substation.

Key features of the Study Area include:

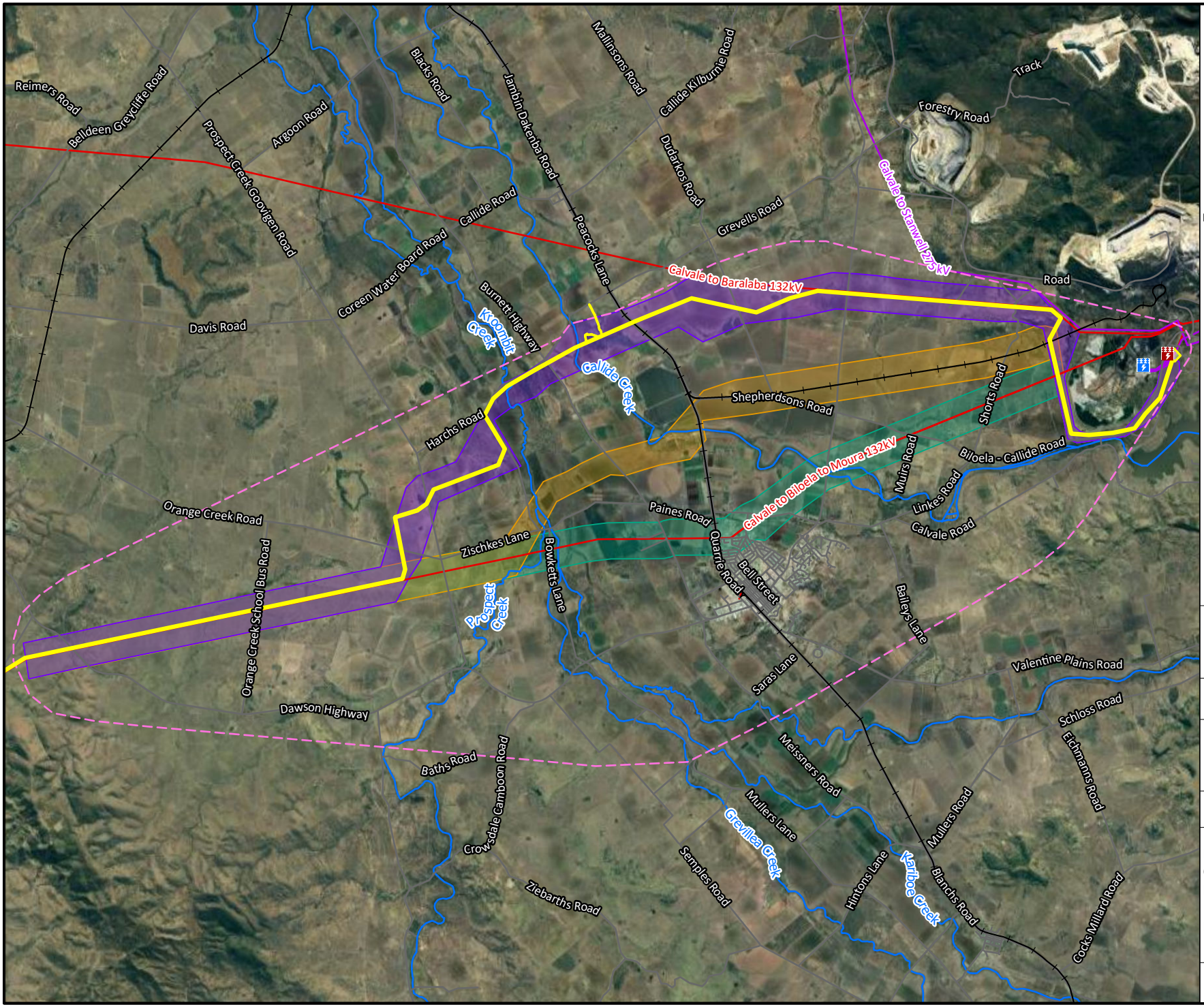
- The Burnett and Dawson Highways.
- The Callide Power Station and Calvale Substation.
- Moura Railway line.
- Several high voltage transmission lines from the power station including the Calvale to Stanwell 275kV transmission line, Calvale to Biloela to Moura 132kV transmission line, and Calvale to Baralaba 132kV transmission line.
- Wallumbilla to Gladstone to Rockhampton Branch Pipeline – Jemena QLD Gas Pipeline Pty Ltd.
- Residential and rural residential dwellings within and nearby, Biloela.
- Significant cropping land from Kroombit and Grevillea Creeks extending east to the Callide Power Station.
- Significant grazing land generally west of Kroombit and Grevillea Creeks, with further grazing areas toward the top of the Study Area (to the North) and south-west of Callide Dam.
- Existing airfields (private).
- Extensive Strategic Cropping Land (SCL) as defined under the *Regional Planning Interests Act 2014* (Qld) areas covering the majority of the Study Area from near Callide Power Station west to Prospect.

Review of the Study Area identified three potential corridor options, following analysis of the environmental, social, and physical characteristics of the Study Area, as well as feedback from the early stakeholder engagement process. The corridors comprised:

- Northern 1 option (partially co-located with existing Calvale to Baralaba 132kV and Calvale to Moura 132kV transmission lines);
- Northern 2 option (partially co-located with the existing Calvale to Moura 132kV transmission line); and
- Central option (predominantly co-located with the existing Calvale to Moura 132kV transmission line).

The corridor options were assessed within the CSR, using a quantitative analysis, and ranking against each assessment criteria. Further analysis was then undertaken based on qualitative issues relating to the magnitude of impact and/or the potential for impacts to be mitigated. Using this approach, the benefits, and disadvantages of the corridor options against each criterion were considered and discussed, culminating in a recommended corridor being identified: Northern Corridor 1.

Northern Corridor 1, while slightly longer than the other two corridors, has the lowest social impact, given it contains the least number of land parcels and houses and intersects the lowest percentage of areas of SCL, compared to both Northern Corridor 2 and Central Corridor. This has been confirmed through field inspections which identified existing house locations and current land use. Powerlink is very mindful that cultivation/cropping will still be affected by a transmission line located in Northern Corridor 1, however will work closely with all landholders to understand their operations and where possible, locate the transmission line within their property to minimise impacts (noting other environmental and social factors will also need to be considered).



Legend

- Road
- Railway
- Watercourse (Water Act)
- Calvale Substation
- Callide Power Station
- Existing 132kV Transmission Line
- Existing 275kV Transmission Line
- MID Corridor
- Study Area

Proposed Corridors

- Northern Corridor 1
- Northern Corridor 2
- Central Corridor

Powerlink Queensland

Scale 1:142,000

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

PROJECT ALTERNATIVES

FIGURE 3-1

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_002
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

4. Regulatory framework

4.1 Commonwealth legislation

4.1.1 *Environment Protection and Biodiversity Conservation Act 1999*

EPBC Act is the Australian Government's central piece of environmental legislation which is administered by Commonwealth (DCCEEW). The Act provides a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places — defined in the EPBC Act as MNES.

MNES include:

- Listed threatened species and communities.
- Listed migratory species.
- Ramsar wetlands of international importance.
- Commonwealth marine environment.
- World heritage properties.
- National heritage places.
- The Great Barrier Reef Marine Park.
- Nuclear actions.
- A water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act is administered by the DCCEEW and establishes a process for environmental assessment and approval of proposed actions that have, will have, or are likely to have a significant impact on MNES.

If a project may cause a significant impact on an MNES, the project must be referred to DCCEEW for assessment of the potential impacts. The Minister will decide whether the project is:

- not a controlled action: the project does not need to be assessed further;
- not a controlled action 'particular matter': the project does not need to be assessed further, providing the action is completed in accordance with conditions that are supplied with the decision; and
- a controlled action: the project will need to be assessed against the EPBC Act, through one of several processes available.

An assessment against the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance has been undertaken within Section 5.9

Based on the assessments undertaken and presented within this MID Assessment Report, in particular within Section 5.9, the Project will not result in significant impacts on assessed MNES as assessed against the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. An EPBC Referral is being submitted for the Project with the recommendation to DCCEEW being that the Project does not result in a significant impact.

4.1.2 *Native Title Act 1993*

Native title is defined under the *Native Title Act 1993* (Native Title Act). Native title rights and interests are rights and interests in relation to land or waters held by Aboriginal peoples or Torres Strait Islanders under their traditional laws and customs and recognised by the common law of Australia.

Native title rights may exist regardless of whether there is a native title claim or determination in relation to the relevant land or waters and may be exclusive or non-exclusive rights. Non-exclusive rights may co-exist with the rights of others, such as a pastoral leaseholder. Any acts or dealings in relation to land and waters that affect native title must comply with the Native Title Act in order to be validly done.

Under the Native Title Act, native title cannot be claimed on freehold land as it is extinguished over the area. Where the corridor intersects roads that were declared as roads on or before the 23 December 1996, native title is extinguished and is not required to be considered. Powerlink have completed a review of the MID Corridor where native title is extinguished (refer to Section 5.11).

To the extent that native title exists or may exist in the area of the MID Corridor, Powerlink will comply with the requirements of the Native Title Act for securing an easement for the transmission line and substation. Powerlink typically complies with Section 24KA of the Native Title Act, which applies to facilities for services to the public, for its transmission line easements. Under Section 24KA, native title is not extinguished, but is 'suppressed' while the easement remains in place.

4.2 State planning legislation

4.2.1 Planning Act 2016 and Planning Regulation 2017 (Qld)

The Planning Act is administered by DSDIP and establishes a system of land use planning and development assessment prescribed under the Planning Regulation. The proposed project is considered 'Electricity Operating Works', which is considered as 'infrastructure' and is therefore prescribed development under the Planning Regulation.

Under the Planning Act, the Planning Minister is the only minister with the power to designate land for infrastructure. The 'Minister's Guidelines and Rules' outlines the process for making a ministerial designation.

An approval for an infrastructure designation will require submission of an MID Assessment Report that includes requirements about works for the infrastructure (such as the height, shape, bulk, landscaping, or location of works), the use of premises including access and ancillary uses, or lessening the impact of the works or use (such as environmental management procedures).

Under section 44 of the Planning Act, infrastructure that is designated is considered accepted development and will not require further approvals under the Planning Act with the exception of building work approval under the *Building Act 1975* (Qld). However, this does not exempt any approvals required under other legislation.

A MID will be required for construction of the Project.

Works undertaken prior to the MID Approval or outside the approved MID Corridor will need to consider approvals triggered under the Planning Act and Planning Regulation, including but not limited to:

- Material change of use on a premises on the Environmental Management Register (EMR) or Contaminated Land Register (CLR).
- Material change of use for an Environmentally Relevant Activity (ERA).
- Operational work for WWBW.

- Operational work for taking or interfering with water.
- Operational work for clearing native vegetation.
- Development for removing quarry material from a watercourse.
- Operational work that involves construction of a category 2-3 levee.
- Operational work that is high impact earthworks in a wetland protection area.
- Material change of use, reconfiguring a lot and operational works triggered under Planning Scheme.

4.3 Other relevant state legislation

4.3.1 Aboriginal Cultural Heritage Act 2003 (Qld)

The *Aboriginal Cultural Heritage Act 2003* (Qld) (ACH Act) is administered by Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism (DWATSIPM) and aims to provide effective recognition, protection, and conservation of Aboriginal cultural heritage.

It establishes the processes for managing activities that may cause potential harm to Aboriginal cultural heritage, which is identified through the Aboriginal and Torres Strait Islander Cultural Heritage Database and Register and *the Cultural Heritage Duty of Care Guidelines*.

A search of the Department's Cultural Heritage Database identified that the cultural heritage party over the MID corridor is the Gaangalu Nation People. The search identified that there are no recorded sites located within the MID corridor, however, six are present within 1km of the MID corridor.

Powerlink have an existing Cultural Heritage Management Agreement in place with the Gaangalu Nation People in accordance with Part 3, s23(3)(a)(iii) of the ACH Act (i.e. "another agreement"). Powerlink will continue to engage with the Gaangalu Nation People through the delivery of this Project.

4.3.2 Acquisition of Land Act 1967 (Qld)

The Acquisition of Land Act is administered by the Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD) and sets out the processes for compulsory and voluntary acquisition of land by a constructing authority.

Powerlink's first preference is to negotiate acquisition of land wherever possible and will make all reasonable attempts to reach voluntary agreement for easements and other tenure required for the Project. Powerlink has established processes for the acquisition of land and easements by both negotiation and compulsory means and seeks to provide fair and reasonable support for landholders impacted by these processes, including access to independent expert advice relating to their compensation claim as early in the process as possible.

Powerlink may acquire freehold land or register an easement over land for the transmission line. Land required for the Project may be acquired either by voluntary agreement for easements or other tenures required or, where agreement cannot be reached, by compulsory resumption of land.

Temporary occupation

Under s37 of the Acquisition of Land Act, land that is not owned by Powerlink and temporary occupation (e.g. laydown areas etc) on that land is required a constructing authority may temporarily occupy and use any land for the purpose of constructing, maintaining or repairing any works. A construction authority may also take stone, gravel, earth, and other material; deposit

material; form and use temporary roads; manufacture bricks or other materials; and erect workshops, sheds, and other buildings of a temporary nature.

Powerlink would need to confirm activities meet the requirements in Schedule 1 (Part 12) of the Acquisition of Land Act and provide written notice to landowners and compensation can be payable in some circumstances.

4.3.3 Biosecurity Act 2014 (Qld)

The *Biosecurity Act 2014* (Qld) (Biosecurity Act) is administered by the Department of Primary Industries (DPI) and provides a biosecurity system framework which aims to minimise biosecurity risk, and facilitate responses to biosecurity impacts, to ensure the safety, and quality of agricultural inputs, and to align the state's management of biosecurity risk and other requirements for plant and animal responses to biosecurity risk with federal and international obligations. The Biosecurity Act also aims to manage emerging endemic, and exotic pests, and diseases as well as the transfer of diseases between humans and animals and contaminants in carriers.

Under the Biosecurity Act, a general biosecurity obligation is placed on all persons to undertake all reasonable and practicable measures to prevent or minimise biosecurity risk. Additionally, the movement of biosecurity matter must comply with movement restrictions associated with each relevant biosecurity zone, and biosecurity instrument permits are required for the movement of biosecurity matter which cannot comply with movement restrictions.

Biosecurity matters relevant to the Project are discussed in Section 5.10.

4.3.4 Environmental Offsets Act 2014 (Qld)

The purpose of the *Environmental Offsets Act 2014* (Qld) (EO Act) is to establish a framework for environmental offsets to counterbalance the significant residual impacts of particular activities on prescribed environmental matters through the use of environmental offsets and is administered by Department of the Environment, Tourism, Science and Innovation (DETSI).

Prescribed environmental matters are described under the EO Act as a MNES, MSES and Matters of Local Environmental Significance (MLES). Prescribed environmental matters that are applicable to the MID Corridor are discussed in Section 5.9.

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* (Qld) (EO Regulation) and the *Queensland Environmental Offsets Policy*.

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.

The Infrastructure Designation process under the Planning Act is not considered a prescribed activity for the purposes of providing an offset under the EO Act. The Project will however be considered a prescribed activity for a protected plant within the meaning of the *Nature Conservation Act 1992* (Qld) (NC Act).

4.3.5 Electricity Act 1994 (Qld)

The Electricity Act is administered by the Queensland Treasury. The Queensland Treasury requires that all electricity industry participants must ensure a safe, efficient, and reliable supply of electricity, as well as ensure that the supply of electricity is carried out in an environmentally sound manner.

Section 31 of the Electricity Act

Section 31 of the Electricity Act states that the transmission entity must properly account for the environmental effect of its activities under the transmission authority. Powerlink hold a transmission licence in Queensland and is required to develop its network to meet the security, and reliability standards of the National Electricity Rules, the Electricity Act and the terms of its transmission licence.

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

Section 102 of the Electricity Act

Under Section 102 of the Electricity Act, Powerlink may do any of the following things on a road, with written agreement from the road authority:

(a) build or remove, or alter (other than for maintenance or repair), its electric lines or other works;

(b) maintain, repair or alter for maintenance or repair, its electric lines or other works;

(c) stop obstruction or potential obstruction to, or interference or potential interference with, its electric lines or other works.

The Project intercepts with both local controlled roads and State controlled roads (SCRs). Therefore, written agreement from DTMR and BSC will be required for works on these roads.

Section 107 of the Electricity Act

Under Section 107 of the Electricity Act Powerlink as an electricity entity may build, alter or remove works on a railway or break up a railway only if it has the railway operator's written agreement.

The MID Corridor intercepts with the following railway land:

- Aurizon Moura System, Callide Mine Balloon Loop for mining purpose.
- Aurizon Moura System, Callide Mine Branch for mining purpose.

The Project will require the stringing of transmission line over the above rail corridors, which constitutes 'works[1]' in accordance with the Electricity Act. Therefore, Powerlink will require third party written agreement (referred to as a Wayleave) from Aurizon to undertake the above 'work'.

Wayleave will also be required for any of the following activities:

- access for temporary non-invasive activities, such as visual inspection, surveying, soil sampling etc;
- access for construction work;
- permanent or temporary removal and/or installation of infrastructure on, under or above Aurizon Network land or infrastructure;
- use of Aurizon Network private level crossings or access roads; and
- new Aurizon Network infrastructure or modifications to our infrastructure.

[1] "Works" are anything used for, or in association with, the generation, transmission or supply of electricity under the Electricity Act. *Example of works*—electric lines and associated equipment, apparatus, electrical equipment, buildings, control cables, engines, fittings, lamps, machinery, meters, substations and transformers if they are used for, or in association with, the generation, transmission or supply of, electricity

Section 17 of the Electricity Regulation 2006

Under Section 17 of the *Electricity Regulation 2006* Powerlink as an electricity entity may may clear, lop or prune trees growing on non-freehold land if it is necessary to do so to build, maintain or operate an electric line or works on the land; and the entity holds the benefit of an easement, licence or other agreement in relation to the line or works. The above applies to any clearing required on non-freehold land.

4.3.6 Electrical Safety Act 2002 (Qld)

The Electrical Safety Act is administered by DSDIP and seeks to, and regulates electricity works to prevent death, injury or destruction caused by electricity. The transmission line must be designed in compliance with the requirements outlined under the Electricity Safety Act. These requirements are standard to Powerlink processes and therefore have a low risk over the project.

4.3.7 Environmental Protection Act 1994 (Qld)

The EP Act is administered by DETSI and aims to protect Queensland's environment, while allowing for development that improves the total quality of life, both now and in the future.

General Environmental Duty and duty to notify

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.

Powerlink will comply with the general environmental duty as a result of the design and mitigation measures informed by this MID Assessment Report; standard Powerlink management procedures; and a Project-specific EMP. Management procedures and the EMP will be implemented throughout the construction and operational stages of the Project.

Subordinate legislation

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)); and
- *Environmental Protection (Water and Wetland Biodiversity) Policy 2019* (EPP (Water and Wetland Biodiversity)).

Soil disposal permit

Where land is located on the EMR or CLR and material (above investigation criteria) is proposed to be removed off site, a Soil Disposal Permit (SDP) from DETSI would be required.

Environmental authority

ERAs are prescribed within Schedule 2 of the EP Regulation and include industrial or other activities with the potential to release emissions which impact on the environment and surrounding land uses activities. ERA's are not proposed as part of the operation of the Project, however, could be triggered for certain activities required during construction, such as ERA 8 chemical storage, ERA 16 extracting and screening, ERA 63 Sewage treatment.

Regulated waste

The EP Regulation prescribes requirements for the management of regulated waste. Any regulated waste generated by the project will be tracked, transported and disposed of in accordance with legislative requirements.

4.3.8 Fisheries Act 1994 (Qld)

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

Construction of the transmission line will not require works that disturb a waterway, however, construction of access/maintenance tracks may require crossings of waterways. Where existing approved crossings cannot be utilised, works will need to comply with the Accepted development requirements. Should any works within a waterway not comply with the Accepted development requirements, a development permit is ordinarily required under the Planning Act. However, if the project is granted an Infrastructure Designation, operational work for waterway barrier works will be considered accepted development, for those aspects covered within the MID approval, and will not require a development permit.

For those aspects of the Project outside the MID approval, required for construction that might cause a waterway obstruction either compliance with the Accepted development requirements in accordance with the *Queensland Accepted Development Requirements for Operational Work that is Constructing or Raising Waterway Barrier Works* or a development permit under the Planning Act would be required. These are aspects are currently unknown, therefore will need to be considered during detailed design and construction.

Waterways intersected by the MID that are legislated under the Fisheries Act are identified in Section 5.4.1.

4.3.9 Land Act 1994 (Qld)

The *Land Act 1994* (Qld) (Land Act) is administered by the DNRMMRRD and governs the allocation and management of land for development. The Electricity Act provides exemptions to the Land Act for works by transmission entities. Transmission entities are entitled to take necessary action in publicly controlled places (such as unallocated State land) to provide or supply electricity under Section 101 of the Electricity Act, as well as undertake works on road reserves through written agreement from the road authority under Section 102 (refer to Electricity Act above).

Powerlink has begun consultation with local and State controlled road authorities.

4.3.10 Local Laws

The Project is located within BSC Local Government Area (LGA). LGAs are subject to individual Local Planning Instruments under the Planning Act, as well as a range of local laws under the *Local Government Act 2009* (Local Government Act).

Local laws under the Local Government Act are used to regulate matters specific to LGAs, particularly relating to pests and weeds, use of local government roads and nuisances such as noise and dust. While the approvals framework for this Project gives rise to legislative and regulatory exemptions, the local laws imposed by the relevant LGAs will still apply and may trigger permits required to be obtained for certain activities.

Under Section 102 of the Electricity Act Powerlink must obtained written agreement from BSC (refer to Section 4.3.5) to undertake works on local government-controlled roads.

BSC will be consulted with during the MID process with regards to impacts on local government-controlled roads, prior to the commencement of construction.

4.3.11 Nature Conservation Act 1992 (Qld)

The NC Act is administered by DETSI and is the primary legislation governing the protection and management of native wildlife, habitat, and protected areas within Queensland.

Protected plants

The protected plants flora survey trigger map identifies high risk areas for protected plants to occur and must be used to determine whether a targeted flora survey is required for a particular area. High risk areas are those in which endangered, vulnerable, threatened or near threatened flora is known or likely to exist.

Where clearing is required in an area containing a protected plant species, a protected plant clearing permit must be obtained from DETSI.

Species Management Programs (SMP)

Removal of native vegetation and habitats has the risk of impacting on animal breeding places. To mitigate risk and impacts, a SMP is required. Where impacts to least concern (non-colonial) species is expected, a low risk SMP is required. If an animal breeding place for an endangered, vulnerable, near threatened, special least concern or least concern (colonial breeder) fauna species is recorded in areas of potential impact then a high risk SMP is required.

4.3.12 Transport Infrastructure Act 1994 (Qld)

The *Transport Infrastructure Act 1994* (Qld) (Transport Infrastructure Act) is administered by DTMR and regulates the management of SCR networks across Queensland. Where construction and/or maintenance access to SCR are required, approvals are to be obtained under the following sections:

- Under Section 33 of the Transport Infrastructure Act, written approval is required from the DTMR to carry out road works on a 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 50 of the Transport Infrastructure Act, construction, maintenance, and operation of ancillary works and encroachments within SCRs (e.g. placement of a transmission line over the road) can only be completed where written approval has been granted from DTMR.

- 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.

The Project intercepts SCRs and will require the stringing of transmission line over these roads. Other works may be required during construction that are currently unknown. These works will need to be considered further during detailed design and construction. Where required approval from DTMR will need to be obtained.

4.3.13 Vegetation Management Act 1999 (Qld)

The *Vegetation Management Act 1999* (Qld) (VM Act) is governed by the DNRMMRRD and seeks to manage native vegetation across Queensland. Regulated Vegetation Mapping identifies categorised areas of remnant vegetation in Queensland and is used to establish whether clearing of native vegetation is considered assessable development requiring a permit. Vegetation regulated under the VM Act is discussed in Section 5.7.

Clearing of any relevant remnant or regulated regrowth vegetation constitutes operational work under Schedule 10 of the Planning Regulation, 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 DNRMMRRD is a concurrence agency, cannot be accepted as properly made unless the Chief Executive is satisfied that the development is for a relevant purpose. However, if the Project is granted an Infrastructure Designation, operational work for clearing vegetation will be considered accepted development and will not require a development permit.

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. Measures to reduce impact from vegetation clearing and aspects are discussed further in Section 5.7 and 5.9.

Powerlink will be developing some access tracks and will utilise brake and winch sites that will be off easement. Any clearing for the construction of access tracks or to allow for brake and winch sites is to be undertaken in accordance with the exempt clearing work under the Vegetation Management Framework, for example clearing of Category X vegetation on freehold land and clearing of vegetation on non-freehold land under Section 17 of the *Electricity Regulation 2006*. Where clearing is not undertaken under the Vegetation Management Framework development approvals may be required.

4.3.14 Water Act 2000

The *Water Act 2000* (Qld) (Water Act) is administered by the Department of Local Government, Water and Volunteers (DLGWV), and provides a legislative framework for the sustainable use, allocation, and management of water resources in Queensland and regulates activities occurring within designated watercourses under the Water Act.

The Watercourse Identification Map categorises water features as either a designated watercourse, drainage feature, downstream limit of a watercourse or lake and is used to determine the assessment requirements for undertaking activities within a watercourse.

All watercourses/waterways intersected by the Project, including their Water Act identification are summarised in Table 5-7.

Riverine protection permit

Activities including excavating, filling, or destroying native vegetation within a watercourse may require approval under the Water Act in the form of a riverine protection permit. Powerlink is an approved entity exempt from requiring a permit if the self-assessment guidelines under DLGWV's Riverine protection permit exemption requirements are followed.

Operational work

There are a number of activities that trigger approval under Schedule 10 of the Planning Reg for works in a watercourse, including:

- Operational work for taking or interfering with water under the Water Act.
- Operational work for moving quarry material from a watercourse or lake under the Water Act.
- Operational work for levees.

However, if the Project is granted an Infrastructure Designation, operational work for watercourse related development will be considered accepted development.

Quarry material allocation

If quarry material is required to be used for productive purposes, then a quarry material allocation (in addition to a development permit under the Planning Act) would need to be sought from DLGWV for the extraction of required materials.

A sales permit, under the *Forestry Act 1959* (Qld) is also required where ownership of the quarry material is reserved to the State and it is removed from the land.

4.4 State planning instruments

State planning instruments set out the state and regional planning interests critical to responsible land use planning and development across Queensland. The state government sets out the state and regional planning matters to be preserved and protected (the state interests). It uses two types of instruments, or tools, to do this:

- the SPP interactive mapping system (IMS); and
- the regional plans.

4.4.1 State Planning Policy

The 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 applies to the extent relevant, when designating premises for infrastructure under the Planning Act and development applications.

The SPP expresses the State's interests in land use planning and development. A state interest is defined under the Planning Act as an interest that the Planning Minister considers:

- affects an economic or environmental interest of the State or a part of the State; and
- affects the interest of ensuring that the purpose of the Act is achieved.

In accordance with Chapter 2, Part 5, Section 36 of the Planning Act, the designator must have regard to 'all planning instruments that relate to the premises'. When deciding the designation of land for infrastructure, the designator must have regard to the relevant parts of the SPP as shown in Table 4-1 and in Part B of the SPP.

Table 4-1 Application of the SPP with regards to designation (as per Figure 3 of the SPP)

Application of the SPP for designating premises for infrastructure	
Application of the SPP	Designating premises for infrastructure
Who is responsible	State and Local Government
Parts of the SPP that are applicable to the extent relevant	
Part A: Introduction and Context Part B: Application and Operation Part C: Purpose and Guiding Principles	✓
Part D: State Interest Statements	✓
Part E: State Interest Policies and Assessment Benchmarks	✓
Part F: Glossary	✓
Part G: Appendix 1 (Categories of Mapping Layers)	✓
Part G: Appendix 2 (Stormwater Management Design Objectives)	✓

Part C (Purpose and Guiding Principles) of the SPP

The SPP outlines the guiding principles and state interests that underpin the delivery of local and regional plans, and development that will advance the social, economic and environmental needs of Queenslanders. The guiding principles should be read in conjunction with each state interest, and are as important as the state interests expressed in the SPP, and include outcomes focused, integrated, efficient, positive, and accountable.

The above guiding interests have been considered as part of the assessment of each State interest and as such, have not been individually addressed.

Part D (State Interest Statements) and Part E (State Interest Policies and Assessment Benchmarks) of the SPP

There are 17 state interests that fall under five broad themes; Liveable communities and housing, Economic growth, Environment and heritage, Safety and resilience to hazards, and Infrastructure. Part E of the SPP lists the state interests' policies and assessment benchmarks.

Table 4-2 demonstrates the list of State interests indicated in the state planning policy and their applicability to the proposed development and provides statements how the proposed development has been assessed against each state interest and policy and assessment benchmark where relevant.

Table 4-2 SPP interests and relevant triggers

Theme	State Interest	Relevant triggers	Relevance to the Project
Liveable communities and housing	**Housing supply and diversity** Diverse, accessible and well-serviced housing, and land for housing, is provided and supports affordable housing outcomes	N/A	The proposal is for a new transmission line and as such, this State Interest has no relevance to the proposed designation.
	Liveable communities Liveable, well-designed and serviced communities are delivered to support wellbeing and enhance quality of life	N/A	Whilst not applicable, the proposal complies with the intent as it minimises impacts on housing.
Economic growth	**Agriculture** The resources that agriculture depends on are protected to support the long-term viability and growth of the agricultural sector.	Triggers: Important agricultural areas, Agricultural land classification (Class A and B) and stock route network	Potential impacts and mitigation measures have been discussed in Section 5.11.2.
	Development and construction Employment needs, economic growth, and a strong development and construction sector are supported by facilitating a range of residential, commercial, retail, industrial and mixed-use development opportunities.	N/A	N/A
	Mining and extractive resources Extractive resources are protected and mineral, coal, petroleum and gas resources are appropriately considered to support the productive use of resources, a strong mining and resource industry, economical supply of construction materials, and avoid land use conflicts where possible.	N/A	The proposal does not involve a resource activity and is not located within proximity to a key resource area. Therefore, this State Interest has no relevance to the proposed designation. Identification of mines within proximity to the proposal are discussed in Section 5.11.2.
	Tourism Tourism planning and development opportunities that are appropriate and sustainable are supported, and the social, cultural and natural values underpinning tourism developments are protected.	N/A	The proposal does not involve a tourism related activity. Therefore, this State Interest has no relevance to the proposed designation.

Theme	State Interest	Relevant triggers	Relevance to the Project
Environment and heritage	**Biodiversity** Matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological processes.	Triggers: MSES Wildlife Habitat (endangered or vulnerable), MSES Wildlife Habitat (special least concern animal), MSES Regulated Vegetation (Category B), MSES Regulated Vegetation (Category C), MSES Regulated Vegetation (Category R), MSES Regulated Vegetation (Essential Habitat), MSES Regulated Vegetation (Intersecting a watercourse),	Potential impacts and mitigation measures have been discussed in 5.9.1 and Section 5.9.2.
	Coastal environment The coastal environment is protected and enhanced, while supporting opportunities for coastal-dependent development, compatible urban form, and maintaining appropriate public use of and access to, and along, state coastal land.	N/A	The proposal does not involve works within a coastal zone. Therefore, this State Interest has no relevance to the proposed designation.
	Cultural heritage The cultural heritage significance of heritage places and heritage areas, including places of Aboriginal and Torres Strait Islander cultural heritage, is conserved for the benefit of the community and future generations.	N/A: The ongoing nature of determining cultural heritage is acknowledged.	Potential impacts and mitigation measures have been discussed in Section 5.14.2 and Section 5.15.2
	Water quality The environmental values and quality of Queensland waters are protected and enhanced.	Triggers: Water resource catchments	Potential impacts and mitigation measures have been discussed in Section 5.4.2.
Safety and resilience to hazards	**Emissions and hazardous activities** Community health and safety, and the natural and built environment, are protected from potential adverse impacts of emissions and hazardous activities. The operation of appropriately established industrial development, major infrastructure, and sport and recreation activities is ensured.	Triggers: High pressure gas pipeline	Potential impacts and mitigation measures have been discussed in Section 5.11.2.

Theme	State Interest	Relevant triggers	Relevance to the Project
	Natural hazards, risk and resilience The risks associated with natural hazards, including the projected impacts of climate change, are avoided or mitigated to protect people and property and enhance the community's resilience to natural hazards.	Triggers: Flood hazard area (Level 1 – Queensland floodplain assessment overlay), Flood hazard area (Local Government flood mapping area), Bushfire prone area	Potential impacts and mitigation measures have been discussed in Section 5.4.2.
Infrastructure	**Energy and water supply** The timely, safe, affordable and reliable provision and operation of electricity and water supply infrastructure is supported, and renewable energy development is enabled.	N/A	The proposal does not involve the alteration of any existing water supply arrangements. The proposal will cross existing Powerlink transmissions lines, however, as the works are being undertaken by Powerlink, all works will be undertaken in accordance with Powerlink's existing requirements.
	Infrastructure integration The benefits of past and ongoing investment in infrastructure and facilities are maximised through integrated land use planning.	N/A	N/A
	Transport infrastructure The safe and efficient movement of people and goods is enabled, and land use patterns that encourage sustainable transport are supported.	Triggers: SCR, railway corridor,	Access to the MID corridors will be via existing SCRs and local council roads, as well as construction of new access roads.
	Strategic airports and aviation facilities The operation of strategic airports and aviation facilities is protected, and the growth and development of Queensland's aviation industry is supported.	N/A	The Project is not identified as being near a strategic airport. The Project is however, near a private aviation facility. No impacts to this facility are anticipated based on the distance from the proposed development to the facility. Therefore, this State Interest has no relevance to the proposed designation.
	Strategic ports The operation of strategic ports and priority ports is protected and their growth and development is supported.	N/A	The proposed site is not identified as being near a strategic port. Therefore, this State Interest has no relevance to the proposed designation.

4.4.2 Regional planning

The MID corridor is located within the boundaries of the *Central Queensland Regional Plan 2013* (Regional Plan). The purpose of the plan is to identify the State's interest in land use planning for the region. Specifically, the plan identifies:

- Regional outcomes for the region.
- Regional policies for achieving the regional outcomes.
- The State's intent for the future spatial structure of the region, including Priority Agricultural Areas, Priority Living Areas and priority outcomes of infrastructure.

Chapter four of the Regional Plan includes the regional outcomes and policies that align with and advance the achievement of the state's interest in relation to:

- supporting the long-term viability and growth of the agricultural sector;
- maximising the productive use of key mining resources; and
- providing for liveable communities.

The Project is located within the Priority Agricultural Area and forms part of the priority outcomes for electricity infrastructure.

As a connection to a renewable energy development within the Callide REZ, the Project is generally consistent with a number of the Regional Plan outcomes and policies and will support the delivery of power to the resources and agricultural industries. Potential impacts on communities, agricultural and resource land uses and recommended mitigation measures are detailed in Section 5.11 Land use.

The Project is consistent with the priority outcomes for electricity infrastructure of the Regional Plan, to provide investment in transmission/distribution systems where and when they are needed in response to forecast growth with consideration of energy efficiency efforts and continued distribution capacity for the region and to provide for reliability and security of electricity supply to support regional growth.

The Regional Plan is currently being reviewed by DSDIP. At the time of drafting this MID Assessment Report, the draft was unavailable, and therefore no assessment has been undertaken against the objectives of the plan.

4.5 State development assessment provisions

The State Assessment and Referral Agency (SARA) assesses development applications triggered under the Planning Act against the State Development Assessment Provisions (SDAP). SDAP defines the state's interest in development assessment and includes the assessment benchmarks or matters SARA will assess an application against. In accordance with Chapter 3, Part 1, Section 44 of the Planning Act, development on a designated site is accepted development and removes the requirement for development assessment against the SDAP.

The SDAP matters that intersect with the Project that would be applicable to the Project, if not accepted development are identified in Table 4-3.

Table 4-3 Relevant SDAP matters intersected by Project

Matter of interest	State code	Relevant section of MID Assessment Report
State transport corridors Triggers: • SCR • Railway corridor • Area within 25m of a railway corridor • Area within 25m of a SCR • Future busway corridor • Area within 100m of a SCR intersection • Planned upgrade for SCR • Public passenger transport facility, future public passenger transport facility and Limited access roads	State Code 1: Development in a SCR environment State code 2: Development in a railway environment	Potential impact and mitigation measures related to State transport corridor is outlined in Section 5.16.2.
Removing quarry material Triggers: • Operational work for high impact earthworks in a Great Barrier Reef wetland protection area	State code 9: Great Barrier Reef wetland protection areas	Potential Impact and mitigation measure related to Great Barrier Reef wetland protection areas is outlined in Section 5.11.2.
Watercourse under the Water Act Triggers: • Works within a watercourse defined under the Water Act	State code 10: Taking or interfering with water State code 15: Removal of quarry material from a watercourse or lake	Potential Impact and mitigation measure related to watercourses under the Water Act is outlined in Section 5.4.2.
Native vegetation clearing Triggers: • Regulated vegetation management map (Other vegetation categories) • Vegetation management coastal and non-coastal bioregions and sub-regions • Essential habitat • Regulated vegetation management map (Category A and B extract) • Vegetation management regional ecosystem map.	State code 16: Native vegetation clearing	Potential impact and mitigation measures related to Native vegetation is outlined in Section 5.7.
Fish habitat area Triggers: • Queensland waterways for WWBW.	State code 18: Constructing or raising WWBW in fish habitats	Potential Impact and mitigation measure related to Queensland waterways for WWBW is outlined in Section 5.4.2.

4.6 Local planning framework assessment

The MID Corridor is located within BSC and as such falls under the *Banana Shire council Planning Scheme 2021* (Planning Scheme). In accordance with Chapter 3, Part 1, Section 44 of the Planning Act, development on a designated site is accepted development and removes the requirement for development assessment against the local categorising instrument. While the designation results in the development being exempt from assessment against the Planning Scheme, consideration must still be given to its provisions.

Zoning under the Planning Scheme is predominantly rural zoning. The Project is located within the Rual zone and Industry zone north of Callide Dam. Further information on land use and zoning adjacent and to the Project is summarised in Section 5.11. Under the Part 3 of the Planning Scheme the proposed electricity infrastructure would be defined as:

- 'Major electricity infrastructure', being: (a) means the use of premises for a transmission grid or supply network.
- 'Substation' to as part of a transmission grid or supply network to—(i) convert or transform electrical energy from one voltage to another; or (ii) regulate voltage in an electrical circuit; or (iii) control electrical circuits; or(iv) switch electrical current between circuits.

4.7 Summary of legislation

A summary of legislation potentially applicable to the Project is provided in Table 4-4. Aspects of the Project outside the MID approval that may be required for construction are currently unknown and therefore additional legislation may be applicable beyond the list in Table 4-4.

Table 4-4 Summary of legislation

Legislation	Responsible authority	Requirement	Applicability
Commonwealth			
EPBC Act	DCCEEW	An EPBC Act referral is required to be submitted when a project may potentially significantly impact MNES protected under the EPBC Act (refer to Section 4.1.1).	**Required for the MID** Ecological surveys conducted and determined no significant impact for the MID. An EPBC Act Referral will be submitted to DCCEEW for assessment.
Native Title Act	National Native Title Tribunal (NNTT)	The Native Title Act provides for the recognition of native title and establishes ways in which certain future dealings may proceed and to set standards for those dealings. Any acts or dealings in relation to land and waters subject to native title are only valid if they comply with the Native Title Act (refer to Section 4.1.2).	**Required for the MID** The Project is located entirely within the registered native title claim of the Gaangalu Nation People (QC2012/009). To the extent that native title exists or may exist in the area of the MID Corridor, Powerlink will comply with the requirements of the Native Title Act for securing an easement for the transmission line and substation. Construction of the transmission line is covered by processes under Section 24KA. Section 24KA validates future acts.
State			
ACH Act	DWATSIPM	Should the Project be considered to pose a high risk to Aboriginal cultural heritage, engagement with the relevant cultural heritage parties for the area is likely to be required (refer to Section 4.3.1).	**Required for the MID** Engagement with the relevant parties is being undertaken by Powerlink.
Acquisition of Land Act	DNRMMRRD	Under s37 of the Acquisition of Land Act, a constructing authority may temporarily occupy and use any land for the purpose of constructing, maintaining or repairing any works claims (refer to Section 4.3.2).	**Applicable for construction** Temporary occupation under s37 of the Acquisition of Land Act.
Planning Act / Planning Regulation	DSDIP	Designation of premises for development of infrastructure (electricity operating works)	**Required for the MID** Addressed within this report.
VM Act	SARA/DETSI	Development permit - operational work vegetation clearing (refer to Section4.3.13).	**Not required for the MID**

Legislation	Responsible authority	Requirement	Applicability
Fisheries Act	SARA/DPI	Development permit - operational work waterway barrier work (refer to Section4.3.8).	**Not required for the MID**
EP Act	SARA/DETSI	Development permit - material change of use on a premises on the CLR or EMR (refer to Section4.3.7).	**Not required for the MID**
EP Act	SARA/DETSI	Development permit - material change of use for an ERA (refer to Section 4.3.7).	**Not required for the MID**
EP Act/ EP Regulation/ EPP (Water and Wetland Biodiversity)).	SARA/DETSI	Development permit—operational work that is high impact earthworks in a wetland protection area (refer to Section 4.3.7).	**Not required for the MID**
Water Act	SARA/DNRMMRRD	Development permit - operational work for taking or interfering with water for moving quarry material from a watercourse or lake for levees (refer to Section 4.3.14).	**Not required for the MID**
EP Act	DETSI	ERA 8 chemical storage ERA 16 extracting and screening and ERA 63 Sewage treatment (refer to Section 4.3.7).	**Potentially applicable during construction** Environmental authority
EP Act	DETSI	Where soils are removed from land listed on the EMR or CLR which exceed investigation thresholds (refer to Section4.3.7).	**Potentially applicable during construction** SDP, Duty to Notify of contamination to DETSI, EMR/CLR listing and removal via an SDP/as regulated waste
Water Act	DNRMMRRD	Removing quarry material from a watercourse (refer to Section 4.3.14).	**Potentially applicable during construction** Riverine Quarry Material Allocation Notice
Water Act	DNRMMRRD	Excavation, fill and / or removal of vegetation within a watercourse (refer to Section 4.3.14).	**Potentially applicable during construction** Riverine Protection Permit or compliance with the Riverine Protection Permit Exemption Requirements
EO Act	DETSI	Residual impacts on MSES (refer to Section 4.3.4).	**Required for the MID** Environmental offsets

Legislation	Responsible authority	Requirement	Applicability
NC Act	DETSI	Clearing within a high-risk flora trigger area where protected plants are identified (refer to Section 4.3.11). Clearing within a high risk flora trigger area where no protected plants are identified (refer to Section 4.3.11).	**Required prior to construction** Completion of a Flora Survey for high-risk areas on the flora survey trigger map with the whole MID Corridor to inform the requirement for either an Exempt Clearing Notification or Protected Plant Clearing Permit.
NC Act	DETSI	When undertaking activities which impact on fauna species listed under the NC Act (refer to Section4.3.11).	**Required prior to construction** Development of a high-risk SMP for interfering with a threatened animal's breeding place under the NC Act to be obtained prior to construction works. The high-risk SMP is to be drafted to include threatened species recorded within the survey area (i.e., Macleay's Fig-parrot (vulnerable under the NC Act; Qld; MSES) and Diadems Leaf-nosed Bat (near threatened under the NC Act; Qld; MSES).
Electricity Act	Queensland Rail	Works on railway land (refer to Section 4.3.5).	**Potentially applicable during construction** Section 102 Electricity Act – written agreement with the relevant rail authority.
Transport Infrastructure Act	DTMR	Undertaking works within a SCR corridor (refer to Section 4.3.12).	**Potentially applicable during construction** Written agreement with DTMR.
Biosecurity Act	DPI	Required for the movement of biosecurity matter not complying with the movement restrictions associated with each relevant biosecurity zone(refer to Section 4.3.3).	**Required prior to construction** Obtain a Biosecurity Instrument Permit from Biosecurity Queensland where Electric Ant movement restrictions apply.

Legislation	Responsible authority	Requirement	Applicability
Local			
Planning Scheme / Planning Act/Planning Regulation	BSC/SARA	Development permit material change of use, operational works, reconfiguring a lot, plumbing and drainage work or building work - assessable under the local government planning scheme (refer to Section 4.6).	**Not required for the MID**
Local Government Act	BSC	Work in a local road corridor (refer to Section 4.3.10).	**Potentially applicable during construction** Section 102 Electricity Act – written agreement with Banana Regional Council.

5. Environmental assessment

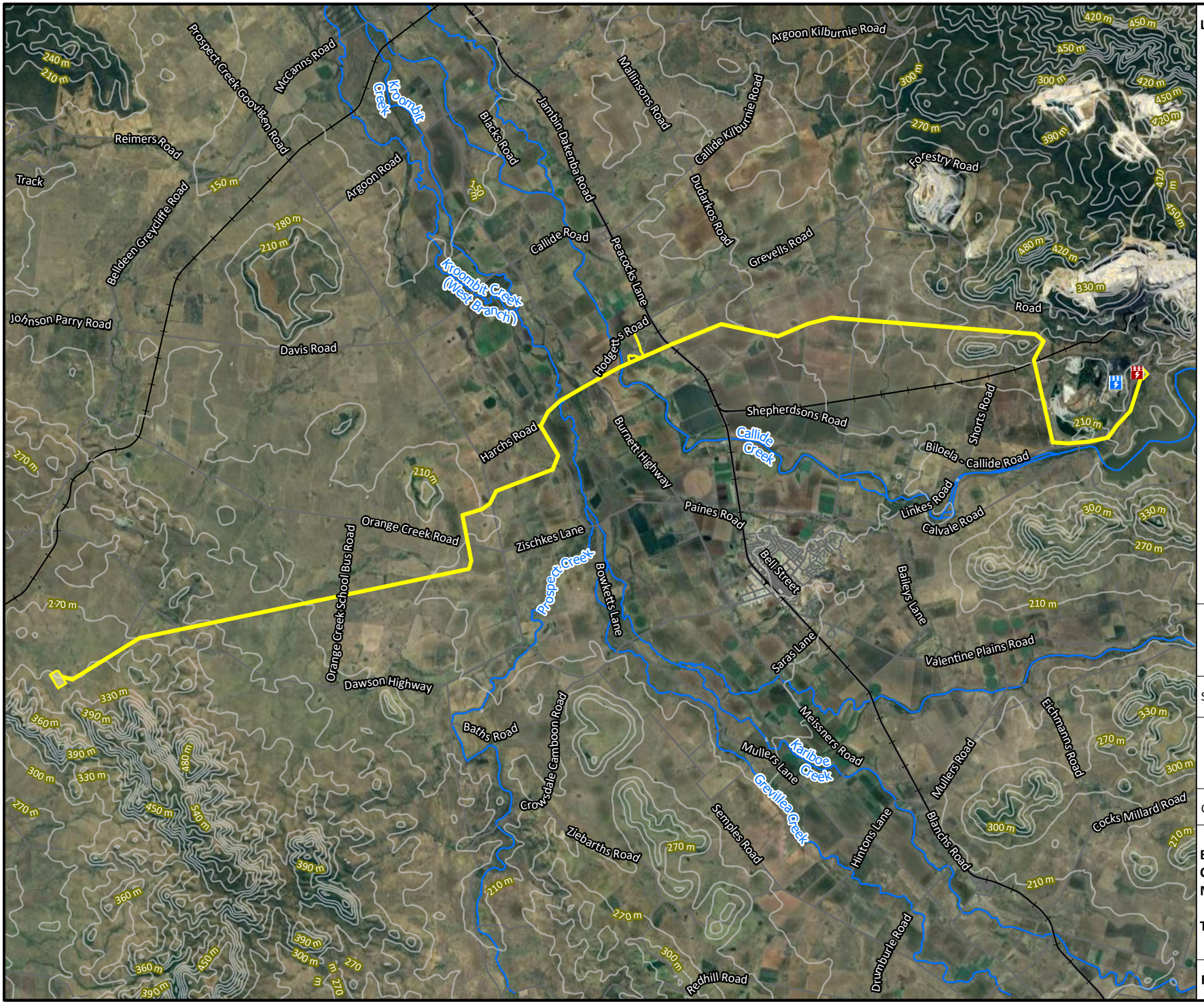
5.1 Land

5.1.1 Existing environment

Topography

The topography of the MID Corridor undulates greatly across the Corridor, as shown in Figure 5-1.

Elevation of the MID Corridor is generally at 240m Australian Height Datum (AHD) at the proposed connection point into Calvale Substation. The MID Corridor then traverses to the south and west of the Callide Power Station where it dips to 190m AHD before its incline to 280m AHD near Shorts Road. The MID Corridor then gently undulates across cropping land before reaching its lowest point of 160m AHD near Kroombit Creek and the Burnett Highway. Following this, it then gradually increases until it reaches the proposed location of the proposed Mount Benn Substation, which forms part of the Banana Range, including Mount Bertha and Mount Benn, where it has an elevation between 270-280m AHD (Queensland Globe, 2023).



Legend

- Road
- Railway
- Watercourse (Water Act)
- Calvale Substation
- Callide Power Station
- MID Corridor
- Elevation Contours

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

TOPOGRAPHY

FIGURE 5-1

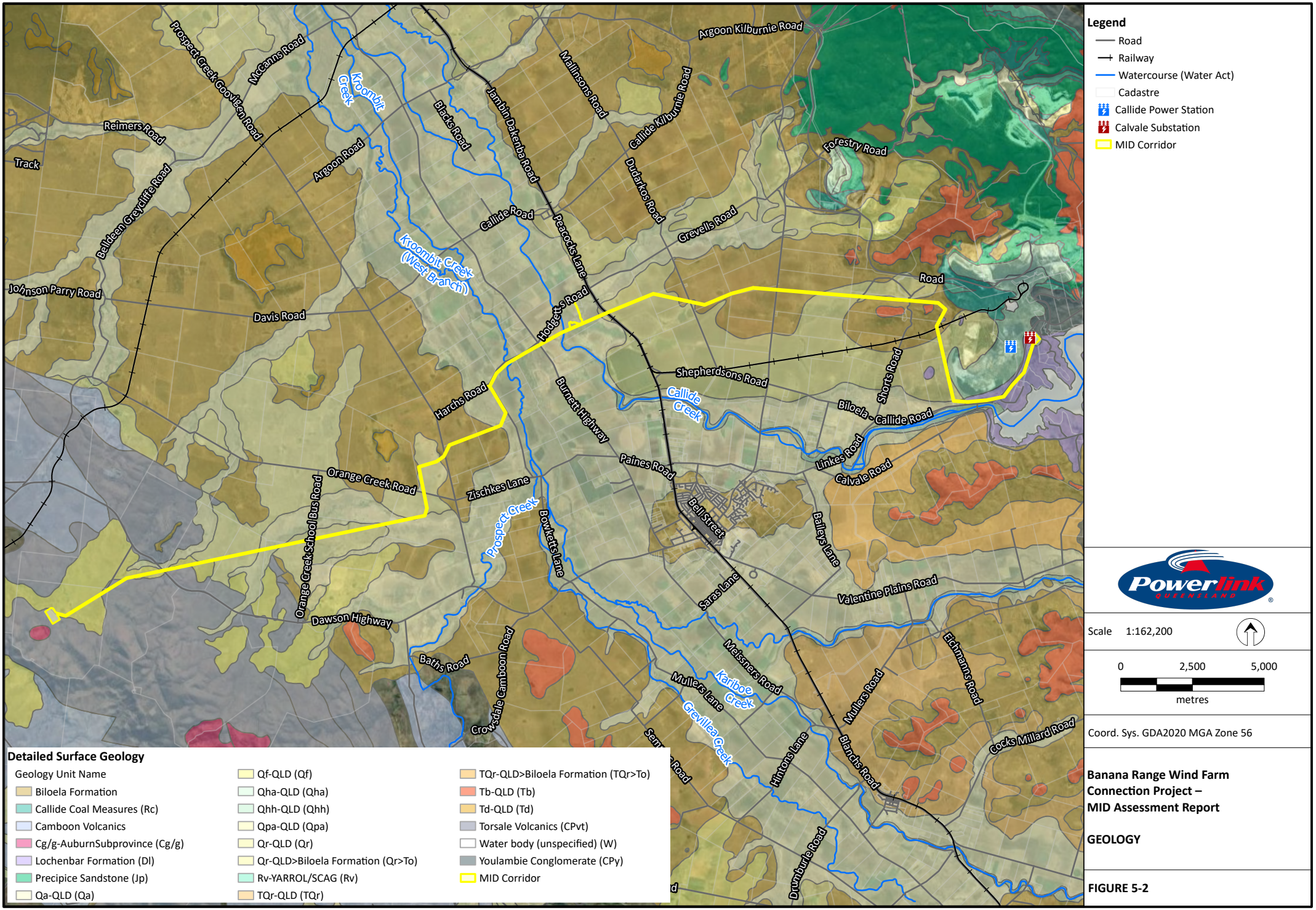
File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_004
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

Geology

Regional geology units, as mapped on Queensland Globe, present within the MID Corridor are described in Table 5-1 and shown in Figure 5-2.

Table 5-1 Surface geology units (1:100k) within the MID Corridor

Geology unit	Lithological summary	Dominant rock	Location along the MID Corridor
Qhh-QLD	Gravel, sand and silt and man-made deposits generally associated with land-fill or mining	Man-made deposits	Located around Tower CB1.
Lochenbar Formation	Fine to medium-grained feldspatholithic sandstone and siltstone , fine to medium locally amygdaloidal locally porphyritic andesite, siltstone	Mixed volcanic and sedimentary rocks	Located between Towers: • CB1 and CB11; and • CB21.
Qr-QLD>Biloela Formation	Clay, silt, sand, gravel, and soil: colluvial and residual deposits	Colluvium	Located between Towers: • CB13-CB18A; • CB26; • CB29-CB32; • CB44; • CB45B-CB50; and • CB45-CB67.
Biloela Formation	Mudstone, siltstone, oil shale, carbonaceous mudstone, and sandstone; minor lignite, coal and limestone	Arenite-mudrock	Located between Towers: • CB19-CB25; • CB27-CB28; • CB33-CB43; • CB45; and • CB68-CB72.
Qa-QLD	Clay, silt, sand and gravel; flood-plain alluvium	Alluvium	Located between Towers: • CB51-67; • CB78; • CB80-CB81; and • CB92-CB93.
Qpa-QLD	Clay, silt, sand and gravel; flood-plain alluvium on high terraces	Alluvium	Located between Towers: • CB73-CB77; • CB79; • CB82-CB91; and • CB94-CB97.
Qf-QLD	Clay, silt, sand and clayey to sandy gravel; alluvial fans, sheetwash and floodout sheets	Alluvium	Located between Towers: • CB98-CB100; • CB103-CB105; • CB109-CB114; and • Proposed Mount Benn Substation.
Torsdale Volcanics (CPvt)	Minor volcanilithic conglomerate and sandstone	Felsites	Located between Towers: • CB 101-CB102; • CB106-CB109; and • Proposed Mount Benn Substation.



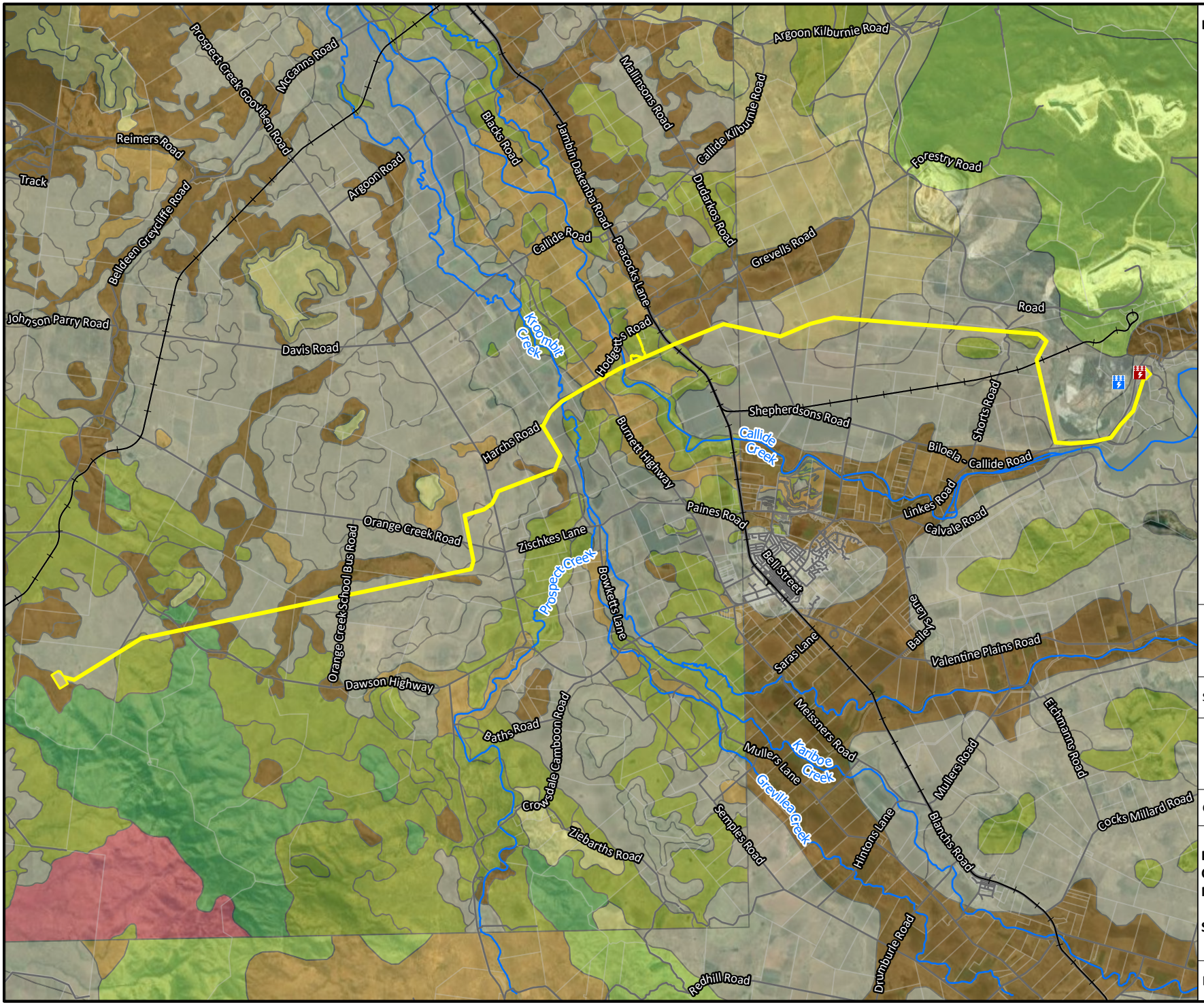
File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_005
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

Soils

A search of the Australian Soil Classification on Queensland Globe identified that the MID Corridor is almost entirely within vertosol soils, however, also comprises dermosols, kurosols, sodosols, chromosols and tenosols. A summary of the soil types found across the MID Corridor is provided in Table 5-2 and shown in Figure 5-3.

Table 5-2 Soil types within the proposed MID Corridor

Soil type	Concept	Locality
Vertosol	Very deep (>1.5m), black, cracking clay soil with weakly to well-developed normal gilgai. The surface soil is coarse self-mulching, and the lower subsoil is strongly sodic (ESP>15) and saline (EC 0.8-1.5dS/m). Alkaline soil reaction trend; formed on Quaternary alluvium.	Located at the existing Callide Substation and between Towers: • CB1 - CB23; • CB25 -CB34; • CB43 - CB47; • CB59 - CB67; • CB70 –CB92; • CB94 – CB99; • CB105 - CB106; • CB108 - CB 114; and • The proposed Mt Benn Substation.
Dermosol	Very deep (>1.5m), black, non-cracking clay soil with a 0.1-0.2m thick, silty light or silty light medium clay topsoil that overlies a blocky structured, silty light medium or medium clay subsoil. Buried sandy soil horizons sometimes occur between 0.3-1.3m; neutral or alkaline soil reaction trend.	Located between Towers: • CB22 - CB26; • CB50 – CB53; • CB55 – CB56; and • CB105 – CB109.
Kurosol	Brigalow plains, commonly gilgaied, in the centre and north.	Located between Towers CB35 and CB43.
Sodosol	Very deep (>1.5m), brown or grey, sodic duplex soil with a moderately thick to thick (0.1-0.5m), clay loamy topsoil that has a sporadically bleached A2 horizon, that overlies a light medium or medium clay, prismatic structured subsoil. Mainly an alkaline soil reaction trend.	Located Transmission Towers between: • CB48 – CB50; • CB68 – CB69; • CB92 – CB93; • CB100 – CB104; and • the proposed Mt Benn Substation.
Chromosol	Hardsetting and crusting, very deep (>1.5m), black or brown, duplex or gradational soil, with a 0.1-0.35m thick fine sandy or silty clay loamy topsoil that overlies a black or brown, fine sandy light medium to medium clay subsoil. Buried soil materials are usually present below 0.3m. Callide has a neutral or alkaline soil reaction trend and is formed on unconsolidated Quaternary alluvium.	Located Transmission Towers between: • CB54; and • CB57-CB58.
Tenosol	Shallow to moderately deep (0.3-0.7m), stony, uniform sand to clay loamy soil with an acid to neutral soil reaction trend, that is formed on acid volcanic rocks. The surface soil either directly overlies weathered rock or has a pale, sporadic or conspicuously bleached subsurface horizon and/or a dark brown or yellow brown, B2 horizon that overlies weathered rock.	Located around CB101.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Dominant Soil Type

- Chromosol
- Dermosol
- Ferrosol
- Kandosol
- Kurosol
- Rudosol
- Sodosol
- Tenosol
- Vertosol

Powerlink QUEENSLAND

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

SOILS

FIGURE 5-3

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_006
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

Acid sulfate soils

Acid Sulfate Soils (ASS) are soils which contain metal sulphides that, when exposed to oxygen, can produce sulfuric acid, potentially resulting in impacts to water quality, aquatic flora and fauna, and infrastructure such as concrete, iron and steel. ASS forms where there is a combination of waterlogged and/or oxygen free conditions, a source of sulphate, and the presence of organic matter and metals. Many coastal plains have a layer of ASS below the current soil. Coastal areas lower than 5m AHD are likely to have ASS present. ASS can also be found buried beneath newer soils at elevations below 20m AHD.

A review of the Queensland Globe ASS mapping indicates that no potential ASS occurrence is mapped within and adjacent to MID Corridor. This is reflective of the Project being located at an elevation range between 160 and 280m AHD where ASS is unlikely to be present (CSIRO, 2013; Queensland Government, 2023).

Soil conservation plans

Soil conservation plans are approved under the *Soil Conservation Act 1986* (Qld) (Soil Conservation Act) and identify how runoff can be controlled and guided through a property to minimise erosion and generally show drainage and topography, land use, existing infrastructure and applicable protection measures. There are two types of plans which are legislated under the Soil Conservation Act, being; property plans and project plans. Additionally, there are non-statutory plans which have not been approved under the Soil Conservation Act and have been created voluntarily.

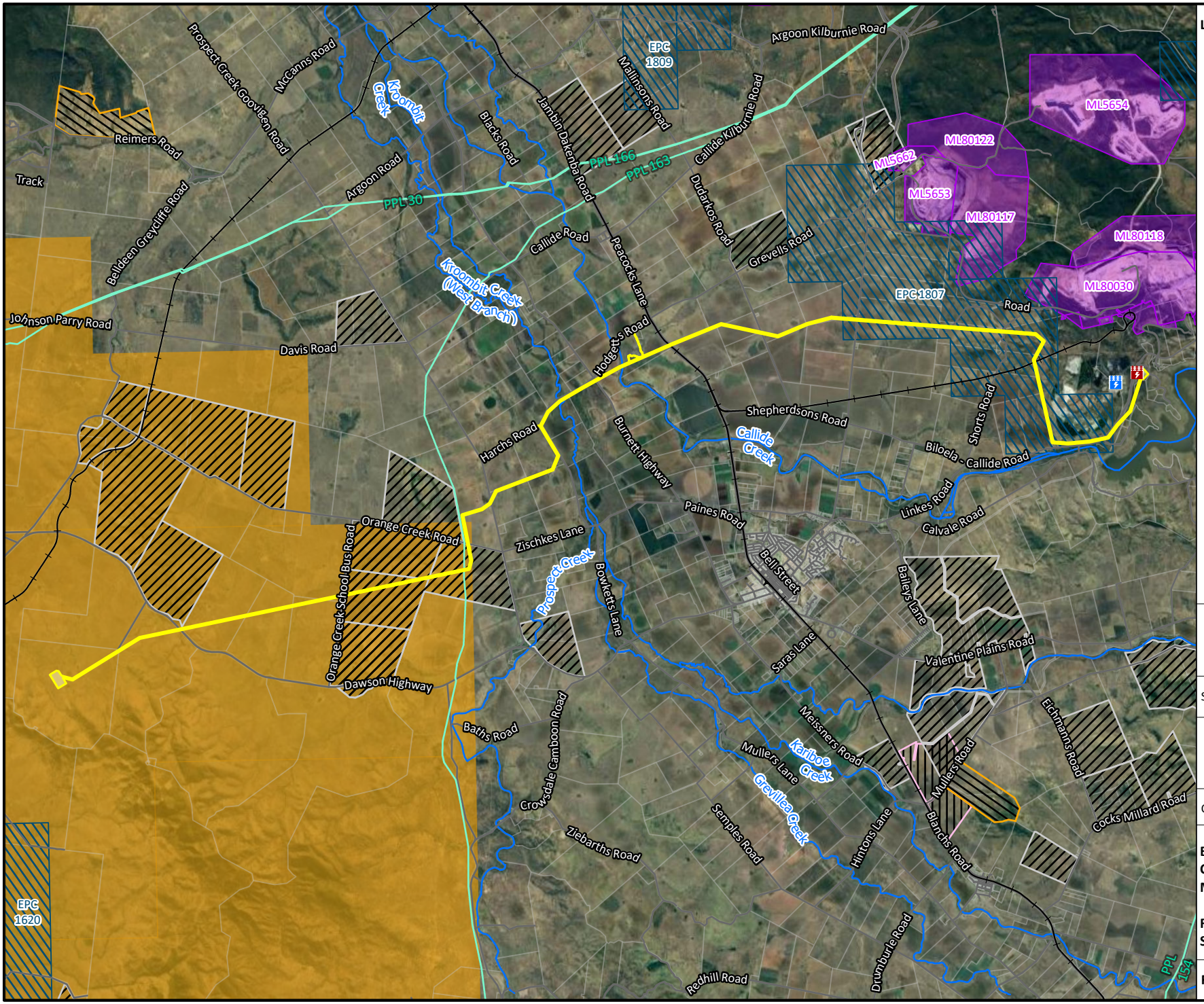
The MID Corridor intersects four properties that are covered by non-statutory soil conservation plans.

Resource interests

Resource interests in Queensland are generally governed under the Petroleum *and Gas (Production and Safety) Act 2004* (Qld) (P&G Act) and the *Mineral Resources Act 1989* (Qld).

While the Project does not intersect any resource interests governed by the P&G Act, it does intersect a Pipeline Licence (PPL) under the P&G Act, held by Australia Pacific LNG Gladstone Pipeline Pty Ltd (PPL163). The Project also intersects two exploration permits, one for coal (Batchfire Callide Pty Ltd (EPC1807)) and one for minerals other than coal (Anglogold Ashanti Australian Limited (EPM28294)) granted under the *Mineral Resources Act 1989*. The MID Corridor is also located within an Exploration Permit Geothermal application area (Australis Energy Pty Ltd (EPG2044)) under the *Geothermal Exploration Act 2004* (Qld).

The location of these resource interests is shown in Figure 5-4.



File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_007
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Unexploded ordnance

Unexploded Ordnance (UXO) includes any sort of military ammunition or explosive ordnance which has failed to function as intended. UXO can be found in most States and Territories of Australia, with the Department of Defence maintaining a record of sites affected or suspected of being affected. A search of the Department of Defence UXO Mapping (Department of Defence, 2024)[2] did not identify any land subject to potential UXO along within the MID Corridor.

Contaminated land

A search of the EMR/CLR Register was completed for the MID Corridor which identified three lots intersected by the MID Corridor recorded on the EMR Register, as identified in Table 5-3.

Table 5-3 EMR listed lots intersected by the MID Corridor

Lot and Plan	Address	Land Use	Notifiable Activity / Hazardous Contaminant
1/RP615528	959 Biloela Callide Road, Mount Murchison, QLD 4715	Calvale Power Station and Mine	• Petroleum product or oil storage • Chemical storage • Coal fired power station • Waste storage, treatment or disposal • Hazardous contaminant (Asbestos materials found: Chrysotile Asbestos & Organic Fibres Detected, Amosite Asbestos Detected, Synthetic Mineral Fibres Detected)
43/RN1261	Callide Dam, Biloela, QLD 4715	Callide Dam	• Landfill • Petroleum product or oil storage
43/SP266150	Callide Dam, Biloela, QLD 4715	Callide Dam	• Landfill • Petroleum product or oil storage

Additionally, a limited desktop search of online Government databases was undertaken to identify any areas of environmental concern. While this document does not represent a Contaminated Land Investigation Document which would be certified by a Contaminated Land Auditor and submitted to DETSI, searches were undertaken in consideration of the overall project objectives as well as guidance made or approved by DETSI, inclusive of the Queensland Auditor Handbook for Contaminated Land and the *National Environmental Protection (Assessment of Site Contamination) Measure 1999*, as amended 2013 (the ASC NEPM) and the PFAS National Environmental Management Plan (NEMP) 2.0, 2020.

ERAs are prescribed within Schedule 2 of the EP Regulation and include industrial or other activities with the potential to release emissions which impact on the environment and surrounding land uses activities.

A search was performed on QLD Globe within a 1km radius of the MID Corridor to identify the surrounding Environmental Authorities (EA) to conduct an ERA, which identified those listed in Table 5-4.

[2] Department of Defence UXO Mapping; https://uxo-map.defence.gov.au/

Table 5-4 EAs within proximity to the Project

EA Number	ERAs	Permit Type	Holder	Location
Intersected by the MID Corridor				
EPPR00536313	ERA08 - Chemical Storage ERA 14 - Electricity generation ERA 60 - Waste disposal ERA 62 - Resource recovery and transfer facility operation ERA 63 - Sewage Treatment	Prescribed ERA	CS Energy Limited	1/RP615528, 4SP103557 located near the existing Calvale Substation
EPSX00254613	Non-scheduled, mining activity – Exploration Permit Coal (EPC)	Resource Activity	Batchfire Callide Pty Ltd	EPC188, between CB22 and CB25
EPSX01731013				EPC1807, between CB7 and CB45B
P-EA-100215074	Non-scheduled, mining activity – Exploration Permit Mineral (EPM)	Resource Activity	Anglogold Ashanti Australia Limited	EPM28294, located from CB74 to CB114 and near the proposed Mt Benn Substation.
P-EA-100639231	Geothermal Activity - Geothermal Exploration (EPG)	Resource Activity	AUSTRALIS ENERGY PTY LTD	EPG2044 Located between CB25-CB114 and near the proposed Mt Benn Substation.
EPPR00770213	ERA 16 Extraction and Screening	Prescribed ERA	DTMR	43/PM375, located between CB102 and CB109, near proposed Mt Benn Substation
EPPR00707213	ERA 14 - Electricity generation ERA 62 - Resource recovery and transfer facility operation	Prescribed ERA	CALLIDE POWER MANAGEMENT PTY. LIMITED	1/RP615528 4SP103557
Within 1 km of the MID Corridor				
EA0001684	ERA 63 - Sewage Treatment	Prescribed ERA	BSC	1/SP266150, located approximately 500 m south of the Project.
EPML00720413	Resource activity Schedule 3 Ancillary 63 - Sewage Treatment	Resource Activity	BATCHFIRE CALLIDE PTY LTD	ML80030 ML5641 ML80093 ML80117
EA0001385	Resource Activity	Resource Activity	BATCHFIRE CALLIDE PTY LTD	MDL3032 Located approximately 800m north of the Project.

Per- and poly-fluoroalkyl substances (PFAS) contamination represents an emerging issue in Australia and across the globe. Commercial mining activities and generation of electricity are commonly associated with point sources of PFAS contamination. This is due to the on-site firefighting systems / drills commonly installed / undertaken on these sites. A review of surrounding land use activities was undertaken to identify potential areas where PFAS contamination may be present. The MID Corridor passes through several lots which have known PFAS impacts attributed to the CS Energy power station and nearby Callide Mine. These impacts are documented in a report by Epic (2022).

Historical aerial photographs obtained via QImagery[3] and Nearmap[4] were reviewed in order to identify potential areas and activities of concern with respect to contamination. Summarised findings from the aerial review have been included in Table 5-5.

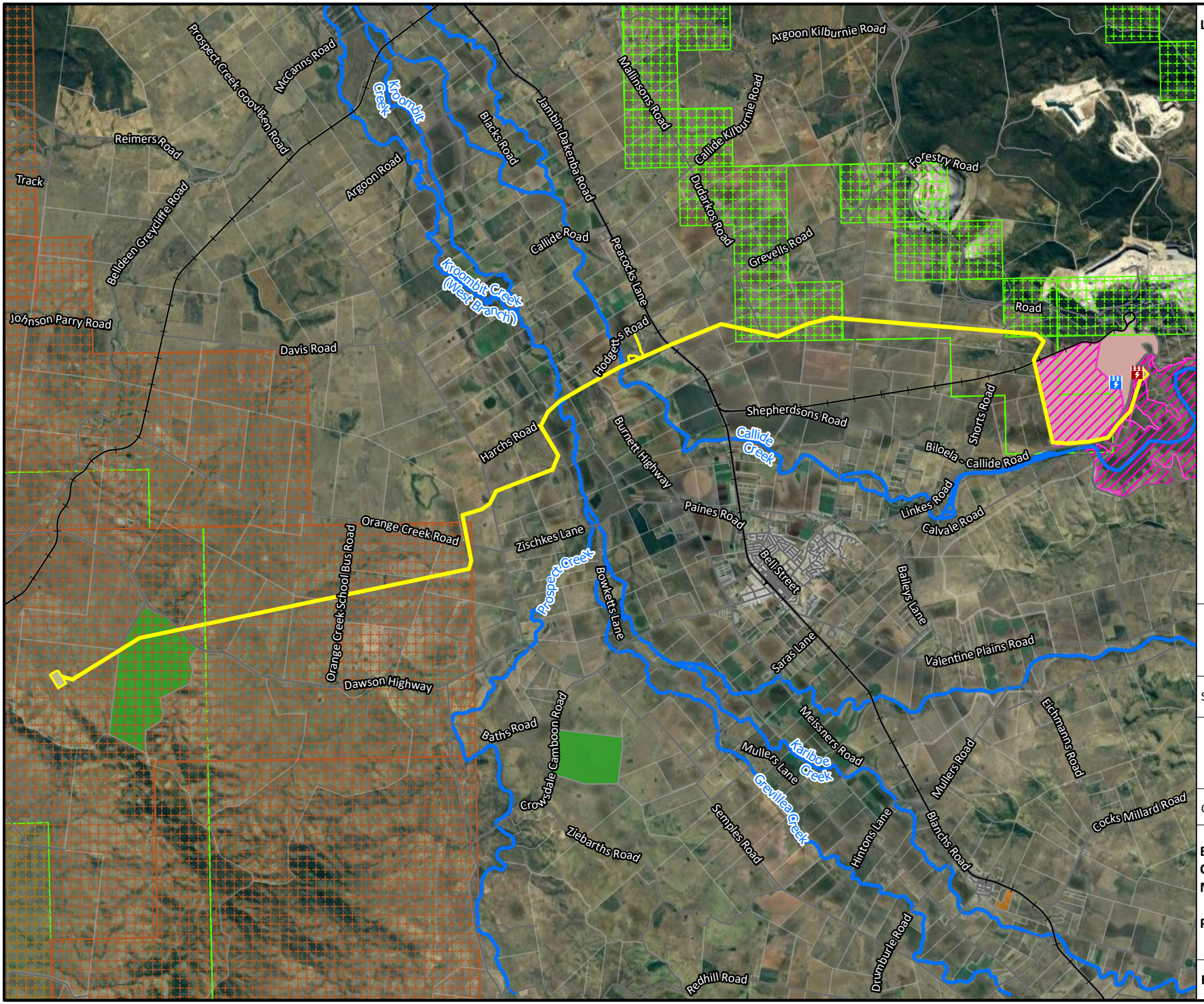
Table 5-5 Summary of historical aerial photograph observations

Date	Observations
1958 (black and white)	Historical aerials from 1958 only included images for land east of Prospect Creek Goovigen Road. Land use in these images appeared to include predominantly agricultural uses with sparse, potential farmhouses, dams and rural structures associated with agriculture. Many of the lots on or near the proposed development appeared to include cropping land, highlighting the risk of historical pesticide use. Images also highlighted livestock and grazing activities increasing the risk of contamination from cattle dips. the Callide Timber reserve also appeared to indicate mining activities as far back as 1958 and highlights legacy risk associated with hydrocarbons, solvents, heavy metals and PFAS contaminants associated with mining activities.
1965 (black and white)	Available historical aerials included the entire proposed corridor area. Land use on and around the proposed development area seemed to remain largely unchanged. The mine identified in the 1958 images appeared to have been expanded and the Callide Power station A was visible in its present-day location.
1977 (black and white)	Land use on and around the proposed development area seemed to remain largely unchanged. The Callide mine once again appeared to have expanded significantly.
1984 (black and white)	Land use on and around the proposed development area seemed to remain largely unchanged. The Callide power station B was now viewable in its present-day location and the Callide mine once again appeared to have expanded significantly and included the additional mine site to the northwest of the first.
1994 (Black and white for images west of Prospect Creek Goovigen Road)	Land use around power station B appeared to have intensified with significant changes to landform around the power station which included the storage of large volumes of water in engineered lakes. Other land use along the corridor remained largely unchanged.
2012	A small range of images on Nearmaps were available in the region surrounding the proposed development. In the 2012 images it was identified that mining operations around the powerplant and norward towards the Callide Timber Reserve appeared to have expanded significantly. Other land use along the proposed development appeared to remain largely unchanged. What appeared to be another, smaller mine, was also identified at the western most point of the proposed development, approximately 3.5km north of Lot 43 PM375.

[3] https://qimagery.information.qld.gov.au/, accessed 05 August 2025.
[4] https://apps.nearmap.com/account/dashboard, accessed 05 August 2025.

In summary, historical land use on and around the MID Corridor has generally appeared to have been restricted to agriculture, mining and power generation activities. These highlight the following contaminants of potential concerns (COPCs) relating to activities observed on or close to the MID Corridor:

- Total Recoverable Hydrocarbons (TRH), Benzene, Toluene, Ethylbenzene, and Xylene (BTEXN), Polycyclic aromatic hydrocarbons (PAHs), Polychlorinated Biphenyls (PCBs) Per- and Polyfluorinated Substances (PFAS) and Heavy metals associated with mineral processing, metallurgical laboratories, mining and extractive industries.
- Asbestos containing materials (ACM) and heavy metals associated with the construction / demolition of structures on or around the development area.
- Organochlorine pesticides (OCPs), Organophosphorus pesticides (OPPs) traditionally used in livestock dips and broadacre cropping activities.
- Fly ash (fly ash can comprise of sulfates, metals, total dissolved solids, selenium), PFAS, TRH, BTEXN, PAHs, PCBs, ACM and Heavy metals, generally associated with electricity generation/power stations.
- PFAS contamination may be present in areas of commercial mining activities and generation of electricity.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Environmental Authroity Register - Relevent Activity (ERA)

- EAR 08
- ERA 14
- ERA 16
- ERA 60
- ERA 62
- ERA 63
- Non-Scheduled; Mining Activity - Exploration Permit Coal (EPC)
- Non-Scheduled; Mining Activity - Exploration Permit Mineral (EPM)
- Environmental Management Register

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

POTENTIALLY CONTAMINATED LAND

FIGURE 5-5

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_008B
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.1.2 Potential impacts

Proposed activities that involve soil disturbance, such as vegetation clearing, excavation and civil earth works, have the potential to impact on land, including potential impacts to topography, soils, resource interests and contaminated land. A description of the potential impacts is provided in the following subsections.

Construction phase

Topography

Construction of the Project may involve cut and fill earthworks to allow for the establishment of substation pads and foundations, transmission line structure foundations and access tracks. Most transmission line structures are in generally flat terrain, however, where steep terrain is encountered, cut and fill earthworks will be undertaken to establish safe working areas for assembly and erection of structures.

Earthworks associated with tower construction is anticipated to be 40 m x 40 m in size and as such, cut and fill areas are expected to be relatively small and discrete, with no major changes to landscape anticipated, as such, impacts to topography from the construction of the Project are anticipated to be low.

Soils - erosion

Any activity which exposes the ground surface, such as vegetation clearing or earthworks, may potentially result in soil erosion or other soil management issues, if not appropriately managed.

The MID Corridor is located on erosion prone soils (rudosols and vertosols) and as such, construction activities have the potential to result in erosion due to the dispersive nature of the soils. Alluvial soils on the banks and approaches to watercourses are generally of a loamy sand nature and are considered to be prone to erosion when disturbed. Additionally, the MID corridor intersects four properties that are covered by non-statutory soil conservation plans.

The erosion of topsoil, considered to be the most productive part of the soil profile, has the potential to impact on the surrounding land use, which is predominantly cropping and grazing, if not appropriately managed. Where topsoil is lost, this may lead to a reduced ability of the soil to store water and nutrients, result in higher runoff rates, and the exposure of subsoil. The deposition of eroded soil also has the potential to impact on local waterways through siltation and a potential reduction in water quality, as eroded soils may contain nutrients, fertilisers, herbicides, or pesticides. Erosion also has the possibility of impacting on cropping potential of land.

Soils - compaction

Soil compaction may occur where construction traffic, including heavy machinery, traverses over access tracks or surrounding land. Impacts from soil compaction can include (Queensland Government, 2022):

- poor root growth which can reduce crop yield through poor water and nutrient uptake;
- difficulties with soil cultivation and seedbed preparation;
- a decrease in water entering the soil, either as rain or irrigation;
- a decline in soil structural stability;
- a decline in fertiliser efficiency; and
- a soil that requires more horsepower (and fuel) to cultivate.

This can have serious impacts to the Project and its surrounds as most of the land around the Project is used for cropping and includes land mapped as Strategic Cropping Areas (Class A and B). As such, compaction impacts may result in reduction of availability of functional land for cropping.

Acid sulfate soils

ASS, when disturbed, can generate large amounts of sulfuric acid, iron, aluminium, and heavy metals which can result in impacts on the environment and infrastructure. The Project is situated in an area that has low to extremely low probability of ASS occurring. As such, the impacts associated with ASS are expected to be negligible.

Resource interests

Infrastructure within a resource interest may result in impacts to the functionality or operating of the operations. The MID Corridor is proposed on CS Energy's Callide Mine site, however it is proposed along the boundary of the Callide Mine property, to the south of the site's waste containment facility and is not likely to impact on future resource areas for the mine. There is the potential that towers constructed within proximity to the waste containment facility walls may result in structural integrity issues to the facility walls.

As such, where infrastructure is proposed to cross or traverse a resource interest, consent from the respective authority holder may be required.

Unexploded ordnance

No UXO are recorded as present within the Project. As such, the impacts associated with UXO are expected to be negligible.

Contaminated land

The Project intersects a number of properties that contain, or have the potential to contain, contaminated material which may be disturbed during the construction of the Project. Earthworks may result in the disturbance of contaminated material, resulting in offsite migration of contaminated materials and impacts to the surrounding environment.

Of concern, is levels of PFAS recorded on CS Energy's property and adjacent properties and the potential interactions the Project has within these areas. These impacts are documented in a report by Epic (2022).

A Geotechnical Investigation Report was completed by PTG Consulting in February 2025 to investigate the five potential tower locations located within CS Energy's property. The report identified that all shallow surface soils analysed were not contaminated with any analysed PFAS substance with no detectable PFAS concentrations above the laboratory LORs to depths of 0.5m, noting all Limit of Reportings (LORs) were below relevant available criteria established in the *PFAS NEMP 2.0* (HEPA 2020). A deeper sample reported detection of Perfluorooctanesulfonic acid (PFOS) at 1.5m which was below the most stringent health-based investigation levels for residential with garden accessible soils (HIL A) criteria, also the relevant commercial industrial land use (HIL D) criteria and ecological guideline values for soil regarding ecological direct exposure and ecological indirect exposure as per the PFAS NEMP 2.0.

The MID Corridor intersects a number of properties that have granted EAs in place. There is the potential that the Project will result in impacts to the operation of these EAs. In particular, the MID Corridor intersects a property (Lot 43 on PM375) which holds an EA utilised by DTMR for extraction and screening. Additionally, the MID Corridor intersects a number of lots that hold EAs, majority of which are associated with mining activities (CS Energy hold an EA for chemical storage, electricity generation, waste disposal, resource recovery and transfer facility operation and sewage treatment and Callide Power Management hold an EA for a resource recovery and transfer facility operation).

These EAs are for activities that have a high potential for contamination which may result in construction impacts for the project, particularly relating to any soil removal and disposal.

Additionally, there is the potential that the Project will impact on future resource areas for the EAs, particularly for the exploration permits held by Batchfire Callide Pty Ltd, Anglogold Ashanti Australia Limited and Australis Energy Pty Ltd.

Construction of the Project may also require an EA for certain activities, in particular, ERA 8 chemical storage, ERA 16 extracting and screening, ERA 63 Sewage treatment. Undertaking these activities can result in impacts to air quality, the noise environment and water quality if not appropriately managed.

The chemicals used during construction will include electrical equipment transformer oil, lubricants, oils, minor quantities of solvents and acids, degreasers, and domestic cleaning agents. The accidental release of these materials during storage use or transport has the potential to result in land contamination. The management of these materials is discussed in Chapter 5.17.

Unexploded ordnance

No UXO are recorded as present within the Project. As such, the impacts associated with UXO are expected to be negligible.

Operation and maintenance phase

Topography, soils and acid sulfate soils

Operational and maintenance phase activities will include ad-hoc maintenance vehicles traversing along the easement and maintenance activities on the transmission line structures and at the substation via helicopter and/or vehicles. Activities are likely to be minor in nature and not result in a significant impact to topography or soils.

Resource interests

No impacts to resource interests are expected during operation and maintenance phases of the Project. However, if works within the resource interest area result in interactions with the transmission line infrastructure, Powerlink will engage with the authority holder to identify appropriate actions and gain consent.

Contaminated land

Chemicals used during operation and maintenance will be minimal and limited to chemicals required for maintenance activities and will likely include transformer oil, lubricants, minor quantities of solvents and acids, degreasers, and domestic cleaning agents. The management of these materials is discussed in Section 5.17.

Decommissioning phase

Topography, Soils and Acid Sulfate Soils

Transmission life infrastructure generally has a design life of approximately 50 years. After this period, infrastructure may either be replaced or decommissioned. Activities that may result in air quality impacts during the decommissioning phase include:

- vegetation clearing where required to access structures;
- vehicle and plant movement over the easement and on access tracks;
- exhaust emissions associated with vehicles and machinery; and
- ground disturbance for the facilitation of rehabilitation of easement, transmission structures and substation location (where the infrastructure is not replaced).

Potential impacts to soils from decommissioning activities are expected to be low, localised, and short-term and will result in improvement to the area through the removal of infrastructure and re-instatement of previous land uses.

Resource interests

Infrastructure within a resource interest may result in impacts to the functionality or operating of the resource interests. Decommissioning of the Project will result in infrastructure being removed from the resource interest areas and will result in a net benefit to the resource interest areas, however, will likely have short term impacts to operations during the decommissioning phase. Where infrastructure that is being decommissioned interferes with a resource interest, consent from the respective authority holder may be required to allow for decommissioning work to avoid impacting on the operations of the resource interest.

Contaminated land

Chemicals used during operation will be minimal and limited to chemicals required for maintenance activities and will likely include transformer oil, lubricants, minor quantities of solvents and acids, degreasers, and domestic cleaning agents. The management of these materials is discussed in Section 5.17.

5.1.3 Mitigation measures

Potential impacts to land will be managed during all phases of the Project in accordance with Powerlink's standard environmental controls as outlined in the EMP for the Project (Appendix C), and the project specific mitigation measures will include, but are not limited to, the following:

Soil management

- Powerlink will engage with owners of properties with soil conservation plans to identify appropriate mitigation measures required that are specific to the properties to manage soil erosion.

Contaminated land

- Geotechnical and contaminated lands investigations prior to construction to identify areas of concern relating to geotechnical stability, soil erosivity and contamination. Should contamination be confirmed within the areas of ground disturbance, on-site remediation of contaminated soil is considered best practice, with removal of contaminated soil for treatment or disposal off-site only to be carried out when that option is not practicable.
- Suitable construction methods outlined in the Geotechnical Investigation Report are to be implemented to manage the risk of contaminated material, including PFAS, during construction, including:
    - Minimal disturbance and handling of soils to maintain soil structural stability and prevent erosion by reducing surface water flows.
    - Manage potentially sodic and dispersive soil media, as required, which may require amelioration with gypsum to prevent dispersion and maintain soil structure during and following construction.
    - Use of erosion and sediment controls to prevent soil loss during and following disturbance.
- Commercial mining activities and generation of electricity are commonly associated with point sources of PFAS contamination. The EMP for the operation of the Project will require consideration of the potential PFAS occurrence and provides management strategies in accordance with regulatory guidelines.

5.2 Climate

5.2.1 Existing environment

The Bureau of Meteorology (BoM) operates a network of monitoring stations around Australia that have long-term climatic data available for analysis. The closest BoM station to the MID Corridor is Thangool Airport (Station ID: 039089) (located approximately 15km south of the MID Corridor (- 24.49, 150.57)).

Climate data across the MID Corridor is consistent with a warm subtropical climate, with hot to warm temperatures all year round and generally experiences wet summers and dry winters. Mean minimum and maximum temperatures have been collected at the station since 1992. Yearly mean maximum temperature recorded at the Station is for 33.7 degrees Celsius (°C) and is for January at 33.7°C and the mean minimum temperature is recorded in July at 5.7°C.

Mean annual rainfall has been collected at the station since 1929. Mean annual rainfall is 656.6 mm, with most rain falling within the summer months (between December and February). Highest mean rainfall is recorded in January (94.4mm) and the lowest mean rainfall is recorded in August (23.1mm). Mean 9 a.m. humidity is recorded at its highest in June (73%) while mean 3 pm humidity is recorded at its highest in February (50%). It is recorded at its lowest in October for 9 am (57%) and in September for 3 pm (34%). Wind direction has been recorded at the station since 1 November 1996 up to 10 August 2022 and notes that annual 9 am and 3pm wind is generally east/south-easterlies, however 3 pm has greater variation in other wind directions as displayed in Figure 5-6.

Table 5-6 Climate data for Thangool Airport (Station ID: 039089)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Mean max. temperature (°C)	33.7	33.1	32.1	29.6	26.2	23.5	23.2	25.0	28.1	30.5	31.9	33.1	29.2
Mean min. temperature (°C)	19.7	19.7	18.0	14.1	10.0	7.1	5.7	6.4	9.9	13.6	16.3	18.6	13.3
Mean rainfall (mm)	94.4	93.0	64.4	33.1	37.7	30.9	28.3	23.1	24.9	58.5	75.5	93.4	656.6
Mean no. of days of rain > 1mm	6.4	6.0	4.9	3.1	2.9	2.9	2.9	2.4	2.5	5.1	5.5	6.2	50.8
Mean 9 a.m. relative humidity (%)	63	69	66	66	68	73	70	64	59	57	58	63	65
Mean 3 p.m. relative humidity (%)	44	50	42	42	41	44	40	36	34	35	39	44	41
Mean 9am wind speed (km/hr)	9.9	9.9	10.8	9.9	7.2	6.6	5.8	7.2	8.6	10.3	9.8	9.7	8.8
Mean 3pm wind speed (km/hr)	11.2	10.6	11.5	10.5	9.4	9.7	10.1	10.6	11.0	11.5	10.9	10.6	10.6

Key: red = highest value, blue = lowest value

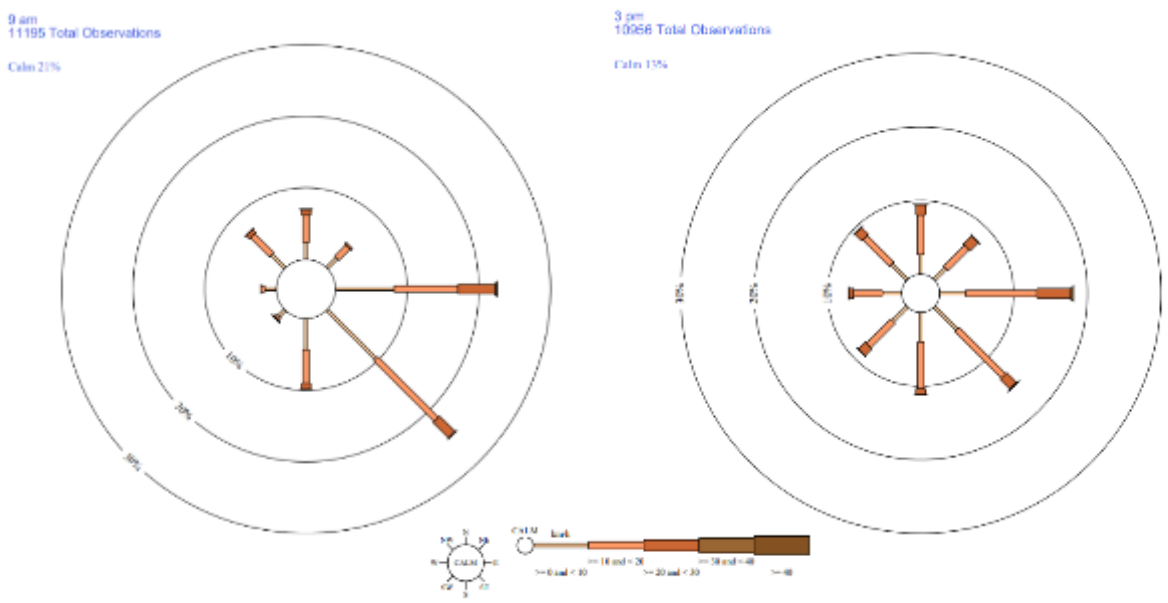


Figure 5-6 Annual wind roses for Thangool Airport (Station ID:039089) (left: 9 am, right: 3 pm) (BoM, 2023)

5.2.2 Potential impacts

All project phases

Extreme climatic conditions

Extreme weather or atypical climatic conditions have the potential to adversely affect the Project during all stages of its lifecycle. Their occurrence during construction and operation may result in construction activities or operation of the Project ceasing, damage to infrastructure or the environment and supply of electricity to the grid, and result in subsequent maintenance requirements.

Extreme climatic conditions - Droughts

Droughts are an increasingly common occurrence in Australia and affect grazing and agricultural land most significantly. Prolonged periods of water shortage can have negative impacts on vegetation growth, erosion, and overall land quality.

A review of the Queensland Drought Situation Maps generated by DETSI indicated that, as of 1 June 2023, the Project is in an area that is not drought-declared and has been drought free for 7- 12 months. The 'Long Paddock' Initiative has recorded the Banana region as being drought declared between 30-50 % of the time since 1964 (Queensland Government, 2023). It is likely that during the Project's life cycle, the region will experience drought conditions, likely more than once, and the risks associated with this should therefore be considered. The BSC has established a management plan that addresses droughts.

Extreme climatic conditions - Cyclones

Tropical cyclones generally develop from tropical lows between November and April, and can cause damaging winds, flood–producing rainfall, and coastal storm surges. The MID Corridor is located outside of regions where tropical cyclones are more likely to occur and as such, the risk associated with tropical cyclones is considered low.

Extreme climatic conditions - Thunderstorms

Thunderstorm activity is a common meteorological occurrence in southeast Queensland, particularly during the summer months and can result in environmental, social, or economic impacts, especially severe storms that include heavy rains, strong winds, hail, and flash flooding. Data from BoM indicates the region experiences between 20-25 days of thunderstorms each year (BoM, 2005) (Figure 5-7).

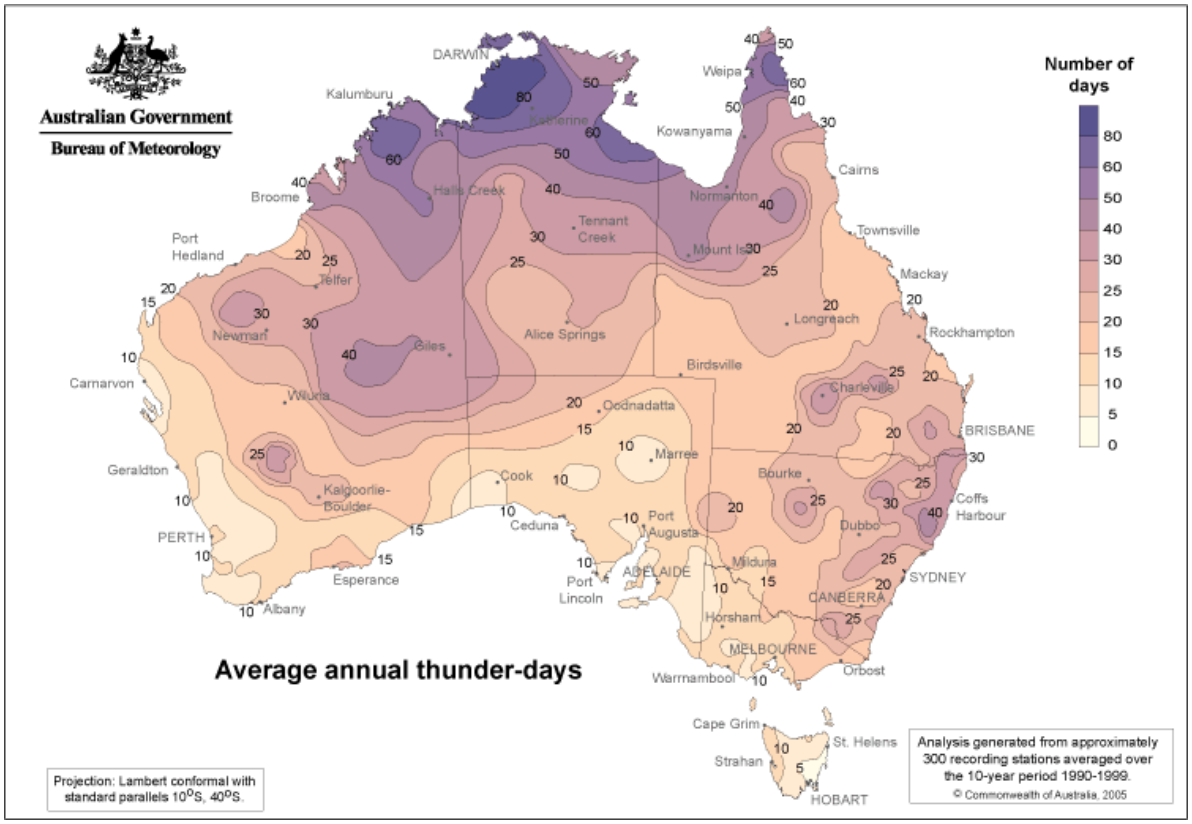


Figure 5-7 Average annual thunder days across Australia

Extreme climatic conditions - Flooding

Rainfall across Queensland varies considerably both spatially and based on time of the year, with increased rainfalls experienced during the summer months in the region of the MID Corridor. Impacts from flood events can include damage to infrastructure, increased erosion, general land degradation and impacts to cropping and livestock, along with road closures or restricted access to properties.

The BSC lies within the Dawson River Catchment which, during widespread rainfall and severe storms, experiences significant flooding, with historical flooding occurring during the December 2010/January 2011, 2013 ex-Tropical Cyclone Oswald, and in 2015 by Tropical Cyclone Marcia (BSC, 2020 & BSC, 2023). BSC have undertaken an ongoing flood study since 2015 which has included analysing flood related data for the catchment, developing a model to simulate flood patterns, and using this information to test future flood scenarios with flood mitigation measures implemented. A simulation of a flood event around Biloela can be seen here - banana.qld.gov.au/downloads/file/4666/biloela-100yccmp4.

Consequently, the flood risks associated with the project are considered high. Flooding impacts have been discussed further within Section 5.4.

Climate change

The Intergovernmental Panel on Climate Change (IPCC) has prepared an assessment of projected climate change for Australia and New Zealand, with the report identifying that the observed changes in temperature for the region between 1960 and 2019 has been 0.3-0.4°C per decade (Figure 5-8).

Historical climatic data indicates that the MID Corridor is located within a tropical climate which has historically experienced a range of extreme weather. The electricity transmission infrastructure will be designed and constructed to reasonably withstand severe weather events. Other impacts to be considered are those associated with flooding such as soil erosion and land degradation, which can lead to reduced or limited access to areas of the Project for construction and maintenance.

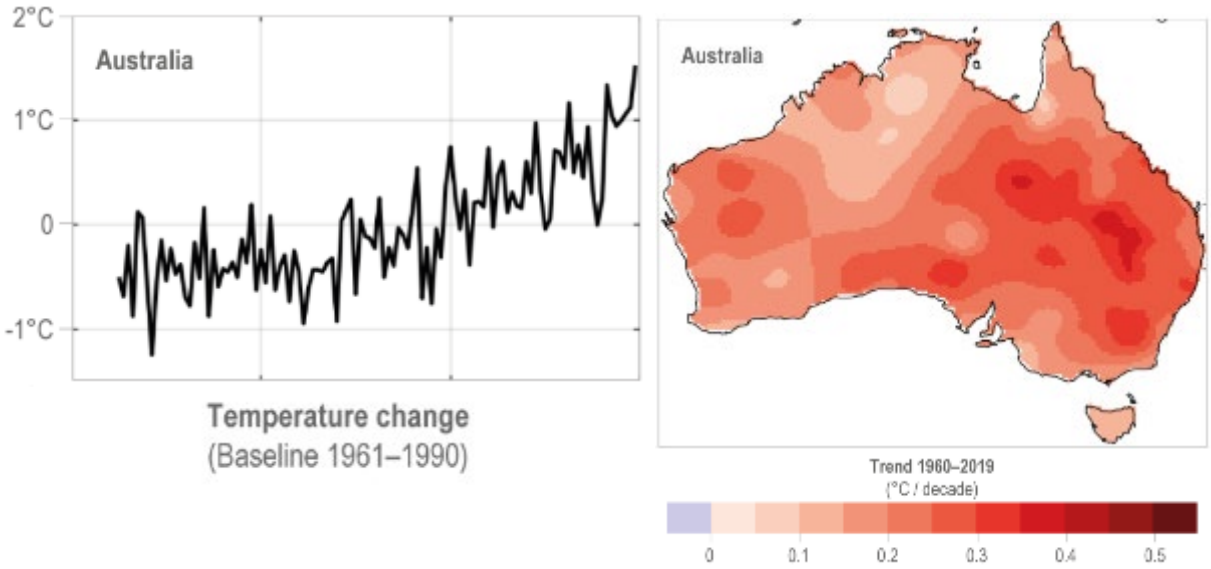


Figure 5-8 Observed temperature changes in Australia (IPCC, 2022)

5.2.3 Mitigation measures

The electricity transmission and substation infrastructure will be designed and constructed to reasonably withstand severe weather events. Design will need to consider potential impacts from flooding, such as soil erosion, instability, and land degradation.

Potential impacts to land and water as a result of climatic changes will be managed in accordance with Powerlink's standard environmental controls as outlined in the EMP for the Project, as detailed in Appendix C, and will include, but is not limited to, the following:

- Erosion will be monitored during both construction and during routine service maintenance in areas around Project-related infrastructure and erosion mitigation measures implemented where erosion is identified, including those detailed in Section 5.2.3.
- Flooding impact mitigation measures ad detailed in Section 5.4.3.
- Dust control measures as detailed in Section 5.3.3.
- Implementation of bushfire emergency response procedures during construction, including:
    - Fire hazard warnings associated with weather patterns and fire risk are issued by BoM and the Queensland Rural Fire Service. Daily checking of fire hazard warnings will be undertaken, and construction crews made aware of the fire warnings (e.g., through pre-starts).

- Procedures guiding the response to emergency and fire situations, and requests from emergency management authorities, will be documented and communicated where applicable to Project location.
- Firefighting equipment must be kept on site when hot works are being undertaken. Personnel must be trained in the use of the equipment.
- All mobile plant must have a tested and tagged fire extinguisher available where practicable.
- Burning of vegetation is prohibited unless a permit is obtained by a local fire authority and Powerlink prior to any burning.
- Designated smoking areas are to be identified with cigarette butt bins for safe disposal.
- All work should be consistent with the mitigation measures documented in the Powerlink documents 'On-Site Fire Prevention Procedure' and 'ASM-PLN-A3285085 - Bushfire Mitigation Procedure'.

5.3 Air quality

5.3.1 Existing environment

Relevant air quality legislation and criteria

Relevant Legislation and Policy instruments considered in the assessment of air quality are the EP Act, EPP(Air) and *National Environment Protection (Ambient Air Quality) Measure* (Commonwealth) (Air Quality NEPM).

The EP Act regulates ERAs under the EP Regulation which are permitted under an EA. There are several Environmental Protection Policies (EPPs) published under the EP Act that govern the requirement for management of environmental issues such as noise, air, and water. These policies determine objectives to be achieved in various environments with reference to sensitive receptors. The EPP (Air) was considered as part of this assessment.

Environmental values

Environmental values (EVs) relating to air relevant to the Project are defined under the EPP(Air) and include:

- the qualities of the air environment that are conducive to protecting the health and biodiversity of ecosystems;
- the qualities of the air environment that are conducive to human health and wellbeing;
- the qualities of the air environment that are conducive to protecting the aesthetics of the environment, including the appearance of buildings, structures and other property; and
- the qualities of the air environment that are conducive to protecting agricultural use of the environment.

Local emission sources and existing air quality

Background levels of the region are likely to be affected by anthropogenic activities such as agricultural activities, operation of the Callide Power Station and Mine, local traffic, and local industry. Natural sources of particulate matter are also significant contributors to existing levels of particulate matter including bushfires, windblown dust, pollens, and grass seeds.

Ambient air quality monitoring

DETSI operate a network of ambient air quality monitoring stations across Queensland which monitor for controlled pollutants in areas with large population bases or heavy industry adjacent to residential areas. The closest station to the MID Corridor is at Bluff School (23°34'55.5"S 149°04'25.5"E), approximately 160km from the MID Corridor (Queensland Government, 2025).

The daily maximum hourly average (µg/m³ (1hr avg)) for last three month consolidated daily data (start as 09 January 2025) is recorded as ‘good’ and ‘fair’ air quality category. Over the three months period, there were five days that exceed the guideline for Particle PM_{10} which is 100µg/m³ (1hr avg). However, these are observed to be outliers. The detail consolidate hourly average date is shown in Plate 8.

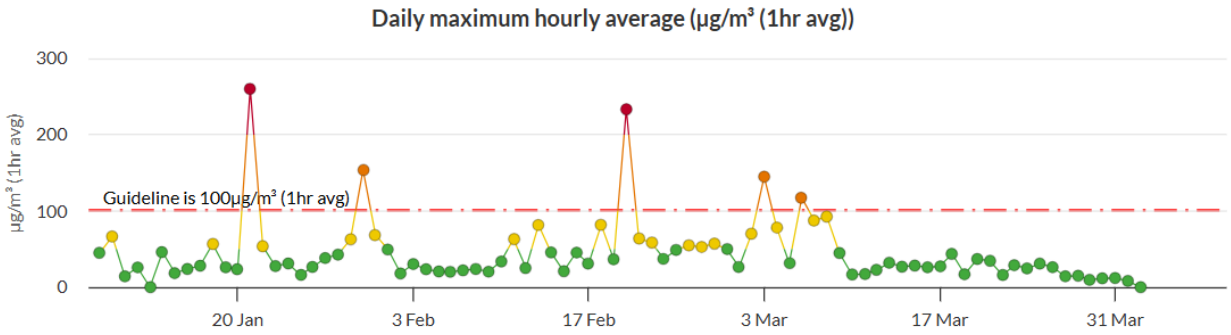


Plate 8 Daily maximum hourly average for the three months period between January and March 2025

The daily maximum running average (µg/m³ (24hr avg)) for last three month consolidated daily data (start as 09 January 2025) is mostly recorded as 'good' and 'fair' air quality category with the exception of one record which is recorded on 3 March 2025 with the daily maximum running average of 52.3 µg/m³ (24hr avg). The guideline for Particle PM_{10} is 50µg/m³ (24hr avg).

The daily maximum running average consolidate data is detailed in Plate 9.

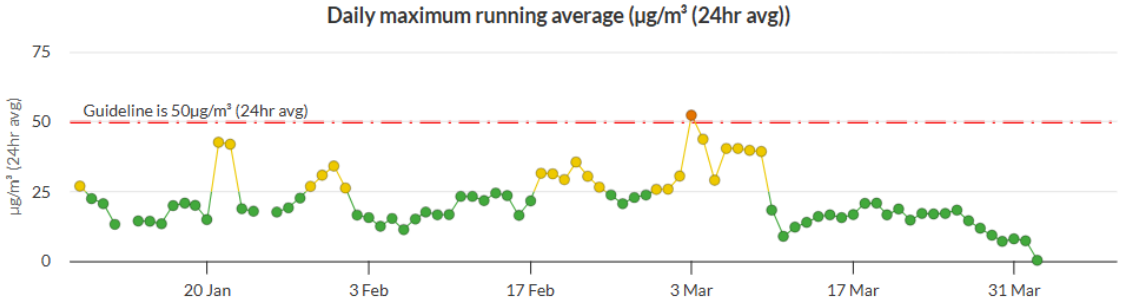


Plate 9 Daily maximum running average data for the three months period between January and March 2025

National Pollutant Inventory

The National Pollutant Inventory (NPI), regulated by the Australian Government tracks pollution across Australia, from information provided by all major polluters in their annual reports of emissions to air. The NPI has emission estimates for 93 toxic substances and the source and location of these emissions. These substances have been identified as important due to their possible effect on human health and the environment.

A NPI listed site search conducted for the Project which shows the following facilities as located within 5km of the MID Corridor.

- Callide Power Station and Plant– combustion of fossil fuels to produce electricity, located on Coal Road Biloela (0.7km from the MID Corridor).
- Callide coal mining - coal mining, Old Coal Road Biloela (1.8km from the MID Corridor).
- Bettafield Piggery - pig farming, Gladstone Road Biloela (4.5km from the MID Corridor).
- Teys Australia Biloela - Meat processing and rendering plant, Callide Highway Biloela (3.5km from the MID Corridor).
- Overflow – Beef Cattle Feedlot, Bowketts Lane Biloela (4km from the MID Corridor).

- Bileola Depot – Hydrocarbon storage and distribution, 7 Thangool Road Biloela (3km from the MID Corridor).
- Yalkara Quarry – Hard Rock (Andesite) Quarrying, Lot 22 Orange Creek Road Orange Creek (5km from the MID Corridor).

None of the above listed facilities are intersected by the MID Corridor. The closest facility to the MID corridor is Callide Power Plant which is located approximately 700m from tower CB2.

Sensitive receptors

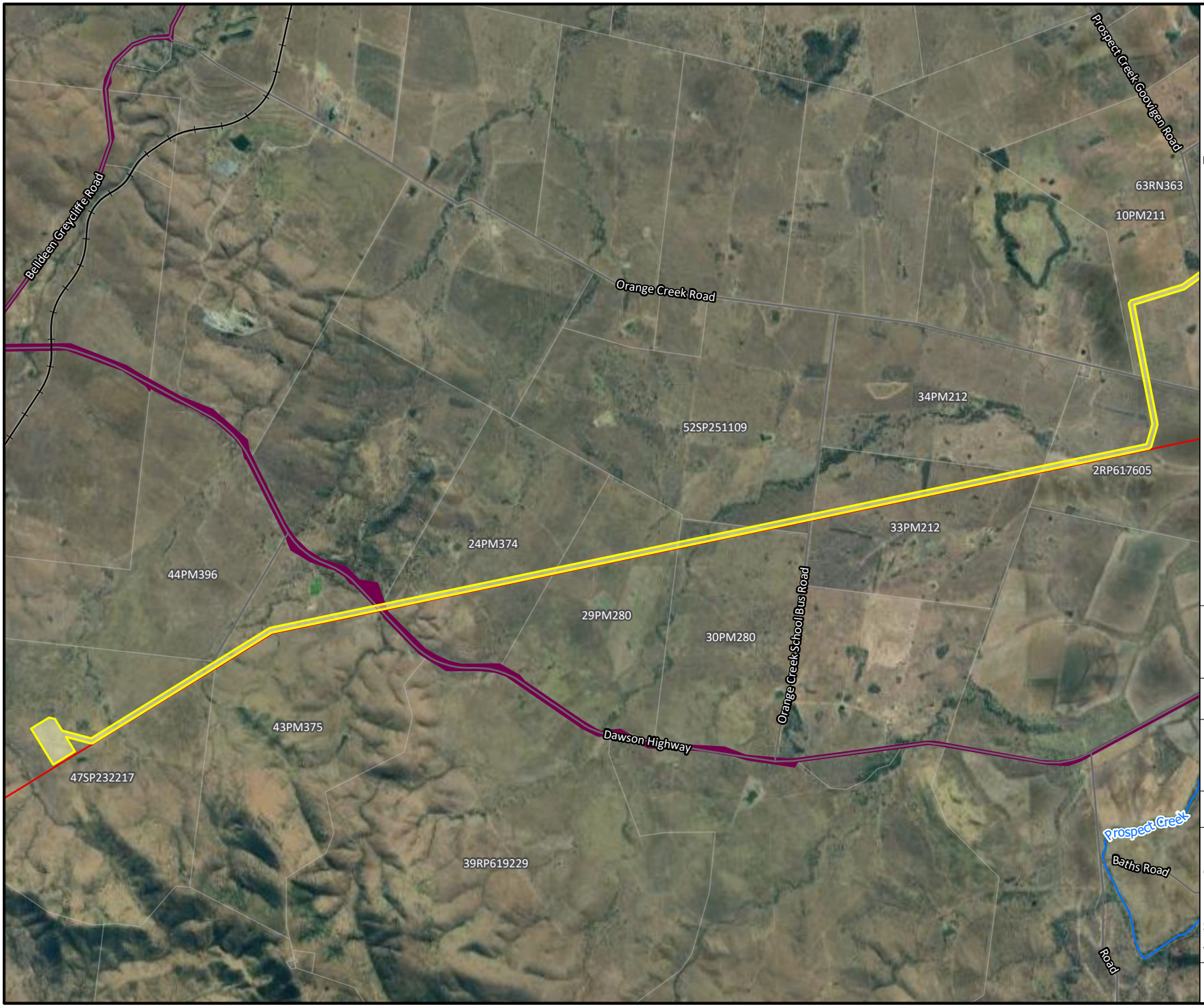
Sensitive receptors identified within proximity to the MID Corridor have been identified in accordance with the sensitive receptors that are defined under the EPP (Noise) (in the absence of the EPP (Air) defining sensitive receptors), and include:

- Residences.
- Libraries and education institutions (including childcare centres, kindergartens, schools and playgrounds.
- Hospitals, surgeries and other medical institution.
- Commercial and retail activities.
- Protected and critical areas under the NC Act and marine parks under the *Marine Parks Act 2004* (Qld).
- Parks and gardens that are open to the public.

A review of the MID Corridor identified nine homesteads a within a 500m buffer area. In addition to the above, other key receptors of relevance include:

- Fitzy's Airfield and a secondary local airfield off Shepherdsons Road.
- Mount Murchison Nature Refuge.
- Callide Timber Reserve.
- Aurizon Moura System Rail Line.
- Stock Routes (424BANA along Biloela Callide Road and along the Dawson Highway and 430BANA along the Burnett Highway).

Sensitive receptors within 500m of the MID Corridor and other key receptors are shown on Figure 5-9.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Existing 132kV Transmission Line
- MID Corridor

Key Receptors

- Stock Route

Scale 1:61,000

0 1,000 2,000

metres

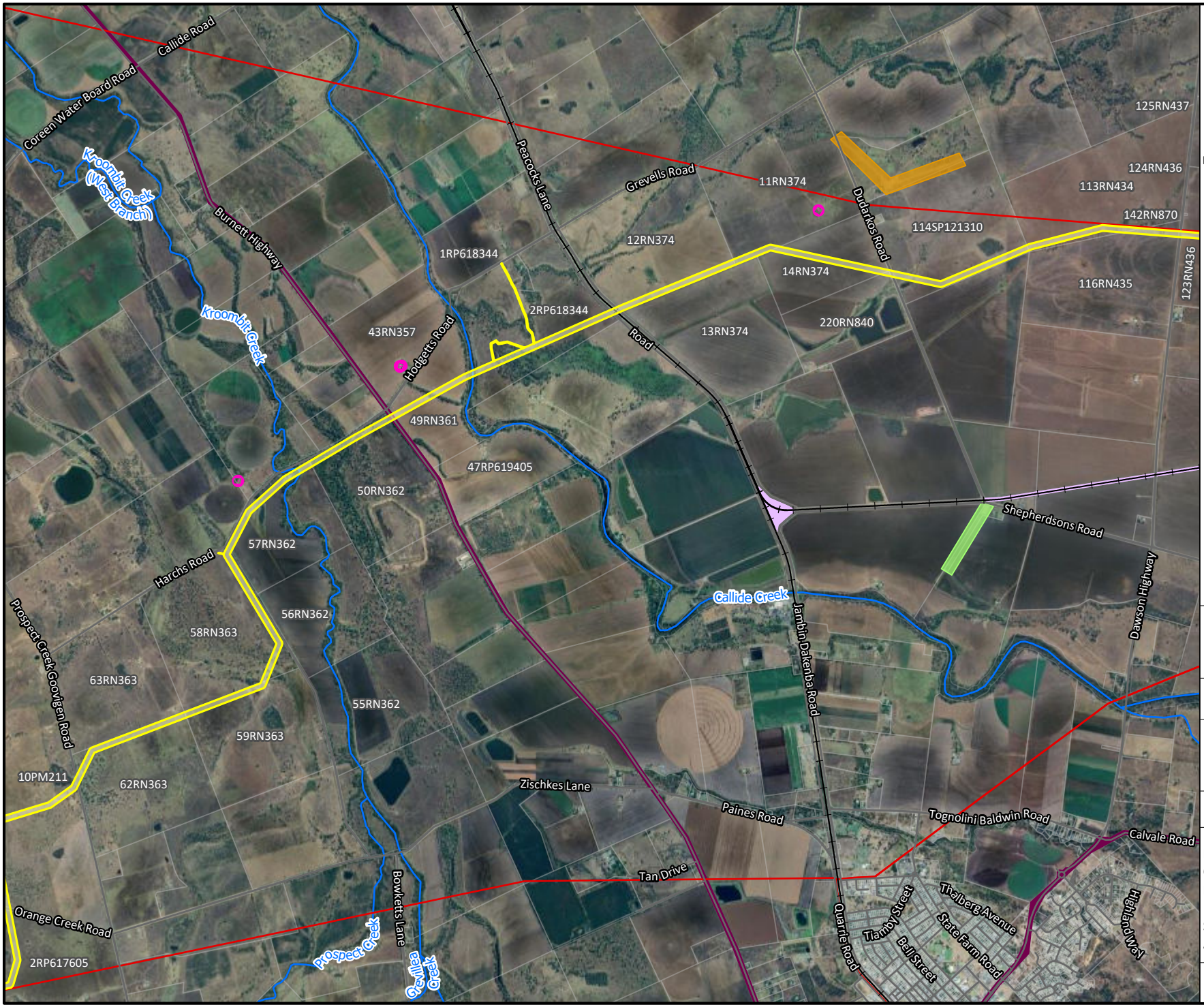
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

SENSITIVE RECEPTORS AND OTHER KEY RECEPTORS

FIGURE 5-9A

File Name: 62094_MID_003_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Existing 132kV Transmission Line
- MID Corridor

Key Receptors

- Aurizon Moura System Line
- Stock Route
- Local Airfield
- Fitzy's Airfield
- Homesteads (within 500m of Alignment)

Powerlink Queensland

Scale 1:54,000

0 1,000 2,000

metres

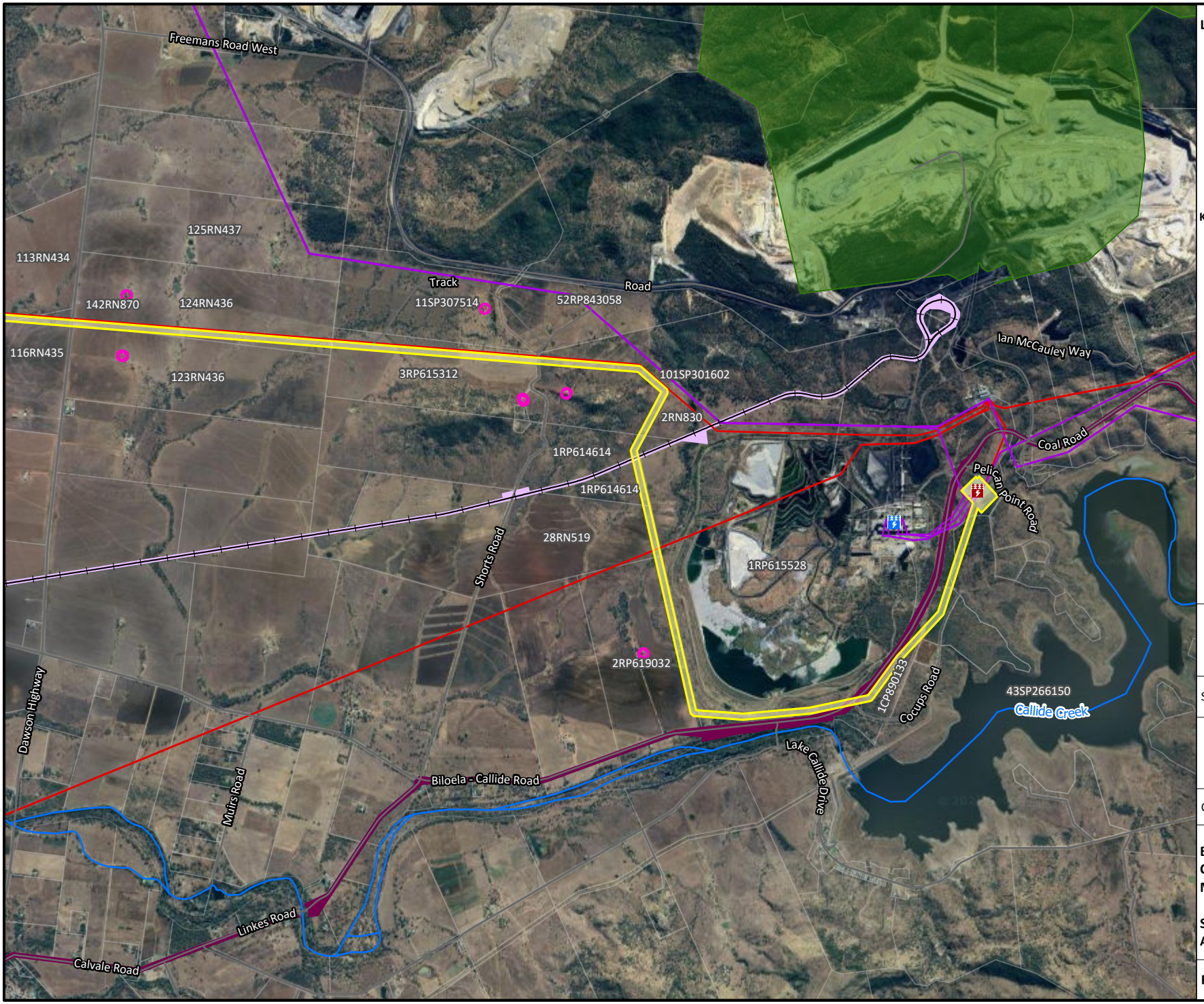
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

SENSITIVE RECEPTORS AND OTHER KEY RECEPTORS

FIGURE 5-9B

File Name: 62094_MID_003_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Existing 132kV Transmission Line
- Existing 275kV Transmission Line
- Callide Power Station
- Calvale Substation
- MID Corridor

Key Receptors

- Aurizon Moura System Line
- Stock Route
- Homesteads (within 500m of Alignment)
- Mount Murchison Nature Refuge and Callide Timber Reserve

Powerlink Queensland

Scale 1:51,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

SENSITIVE RECEPTORS AND OTHER KEY RECEPTORS

FIGURE 5-9C

File Name: 62094_MID_003_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.3.2 Potential impacts

Air quality impacts are expected during the construction phase of the project, associated with earthworks and machinery, however, these impacts are expected to be localised and short-term in nature and as such, will not result in on-going impacts to the quality of the air environment that is conducive to the health and biodiversity of ecosystems or human health, or to the aesthetics of the environment or use of land for agricultural uses. Air quality impacts from operation and maintenance activities are expected to be minimal. These impacts are described further below.

Construction phase

Impacts to local air quality that may occur during construction will most likely be associated with the following activities:

- site preparation such as vegetation clearing, topsoil stripping, chipping/mulching, and ground surface levelling;
- transmission structure and substation foundation construction;
- stockpiling of excavated materials and wind erosion of these stockpiles;
- movement of vehicles and machinery on access tracks or work sites, particularly on unsealed surfaces; and
- exhaust emissions from vehicles and machinery.

Vegetation clearing will occur to establish the transmission line easement, the proposed Mount Benn Substation and the Calvale Substation expansion, as well as to establish new access tracks. Construction will be conducted in a staged approach with the minimum area of disturbed ground exposed at any one time. Where the MID Corridor approaches sensitive receptors, air quality impacts are possible from construction dust. This has been assessed further in this section.

Operation and maintenance phase

Potential impacts to air during operation and maintenance are expected to be negligible and will be associated with maintenance activities such as:

- vegetation management within the easement;
- movement of maintenance vehicles and machinery over access tracks and the easements; and
- exhaust emissions from vehicle and machinery.

As with the construction phase, potential air quality impacts from maintenance activities are expected to be low, localised, and short-term. Inspections and maintenance are likely to require only a small workforce with a set number of vehicles and pieces of equipment

Decommissioning phase

Activities that may result in air quality impacts during the decommissioning phase may include:

- vegetation clearing where required to access structures;
- vehicle and plant movement over the easement and on access tracks;
- exhaust emissions associated with vehicles and machinery; and
- ground disturbance for the facilitation of rehabilitation of easement, transmission structures and substation location (where the infrastructure is not replaced).

As with the construction and operation/maintenance phases, potential air quality impacts from decommissioning activities are expected to be low, localised, and short-term.

5.3.3 Mitigation measures

The EPP (Air) management hierarchy gives priority to avoiding emissions where reasonable to do so. Where this is not possible, emissions reduction and management are required to be best practice. Potential impacts to air will be managed in accordance with Powerlink's standard environmental controls as outlined in the EMP for the Project (Appendix C), and the project specific air quality mitigation measure will include, but is not limited to, the following:

Dust management

- Limit dust-producing work on windy days when possible or water down of dusty work sites to minimise dust generation.
- Watering of stockpiles (located near sensitive uses) to maintain a moisture content that minimises dust generation or alternatively temporarily cover stockpiles.
- Avoid burning cleared vegetation whenever possible. If burning obtain relevant approvals prior.
- Disturbed areas and bare earth should be stabilised or revegetated as soon as practical to minimise wind-blown dust.

Vehicle and machinery emissions management

- Ensure stationary plant, construction vehicles and equipment (especially diesel motors) are working correctly and maintained as per manufacturers recommendations.
- Emissions controls on diesel engine machinery are maintained and operated to manufacturer specifications (in particular deNOx and fine particle filters) and comply with best practice emissions control standards.
- Shut down plant and equipment idling for excessive periods (i.e longer than 5 minutes) where possible.
- Avoid or minimise queuing in roadways approaching worksites or adjacent to sensitive receptors.

5.4 Hydrology

A hydrological assessment has been undertaken for the Project, titled Hydrology Report Banana Range Wind Farm Connection by Water Technology Pty Ltd 6 December 2023 which is included in Appendix E. A summary of the findings of the hydrology report is presented below.

5.4.1 Existing environment

Surface water

The Project falls within the Fitzroy Basin catchment and Dawson River sub-basin. The Fitzroy catchment is the largest region in the Great Barrier Reef catchment area at 15,549,409 ha and predominantly contains land uses of grazing (78%), conservation and natural environments (8%), forestry (6%), and dryland cropping (5%). A review of the Reef Water Quality Report Card 2020 determined the overall inshore marine condition of the catchment to be improving (C Rating), with water quality condition improvements (B Rating), and no changes occurring to seagrass (D Rating) and coral (D Rating) conditions (AQG, 2022).

The MID corridor traverses two major watercourses, Callide Creek and Kroombit Creek with a number of tributaries of Callide Creek, Kroombit Creek and Orange Creek are also traversed by the Project. Additionally, Lake Callide is located directly east and south of the MID corridor near the Callide Substation. No watercourses are intercepted by the proposed Mt Benn Substation.

A survey of the watercourses was conducted concurrently with the ecology survey which identified watercourses within the MID corridor were ephemeral, and at the time of surveying (May and July) were in a seasonal dry state, with pocket and riffle systems, indicating highly episodic flows (Figure 5-10). It is anticipated that these watercourses experience high flows during the wet season.

Figure 5-10 Kroombit Creek (top left), Callide Creek (top right), unnamed tributary of Kroombit Creek (bottom right) and unnamed tributary of Callide Creek (bottom left)

Water Act watercourses

The Water Act provides a legislative framework for the sustainable use, allocation, and management of water resources in Queensland and regulates activities occurring within designated watercourses under the Act. The Watercourse Identification Map categorises water features as either a designated watercourse, drainage feature, downstream limit of a watercourse or lake and is used to determine the assessment requirements for undertaking activities within a watercourse. Further detail on approval requirements under the Water Act is provided in Section 4.3.14.

Callide and Kroombit Creeks are both mapped watercourses under the Water Act. These creeks also contain a number of branching tributaries that are classed as unmapped watercourses under Water Act.

Queensland waterways for waterway barrier works

Waterway barrier works are regulated under the Fisheries Act and the Planning Act and are barriers to fish movement, including partial barriers, that are installed across waterways. Barrier works include construction, raising, replacement and some maintenance work on structures such as culvert crossings, bed level and low-level crossings, weirs, and dams (both permanent and temporary). To help define the limits of waterways for the purpose of managing impacts of waterway barriers on fish passage, waterways are broken into four categories; low, moderate, high and major risk waterways. Further detail on approval requirements for waterway barrier works is provided in Section 4.3.8.

Callide and Kroombit Creeks are mapped as major-risk waterways for waterway barrier works. These creeks also contain a number of branching tributaries that are classed as low, moderate, and major-risk waterways.

All watercourses/waterways intersected by the MID Corridor, including their waterway barrier work listing, Water Act identification and stream order, are summarised in Table 5-7 and presented on Figure 5-12 and Figure 5-13.

Table 5-7 Watercourses/waterways intersected by the MID Corridor

Watercourse name	WWBW (Fisheries Act (Qld)) listing	Water Act (Qld) listing	Stream order	Location	Closest Project Infrastructure
Unnamed tributary of Callide Creek	Moderate	N/A	N/A	-24.3619, 150.6014	CB13
Unnamed tributary of Callide Creek	Unmapped	Unmapped	1	-24.3618, 150.5993	CB13, CB15, CB17
Unnamed tributary of Callide Creek	Unmapped	Unmapped	1	-24.3618, 150.5993	CB13
Unnamed tributary of Callide Creek	Moderate	Unmapped	2	-24.3281, 150.5630	CB30
Unnamed tributary of Callide Creek	Moderate	Unmapped	1	-24.3277, 150.5575	CB33
Unnamed tributary of Callide Creek	Low	Unmapped	1	-24.3270, 150.5499	CB34
Unnamed tributary of Callide Creek	Low	Unmapped	1	-24.3255, 150.5296	CB38
Unnamed tributary of Callide Creek	Low	Unmapped	1	-24.3295, 150.5098	CB44
Unnamed tributary of Oaky Creek	Low	Unmapped	1	-24.3291, 150.5101	CB44

Watercourse name	WWBW (Fisheries Act (Qld)) listing	Water Act (Qld) listing	Stream order	Location	Closest Project Infrastructure
Unnamed tributary of Oaky Creek	Unmapped	Unmapped	1	-24.3337, 150.4764	CB51
Callide Creek	Major	Mapped watercourse	5	-24.3380, 150.4656	Between CB54 and CB55
Unnamed tributary of Kroombit Creek	Moderate	Unmapped	1	-24.3415, 150.4583	CB57
Unnamed tributary of Kroombit Creek	Moderate	Unmapped	2	-24.3444, 150.4525	Between CB58 and CB59
Kroombit Creek	Major	Mapped watercourse	6	-24.3470, 150.4473	Between CB60 and CB61
Unnamed tributary of Kroombit Creek	Moderate	Unmapped	1	-24.3497, 150.4432	CB62
Unnamed tributary of Kroombit Creek	Major	Unmapped	4	-24.3667, 150.4435	CB67
Unnamed tributary of Kroombit Creek	Low	Unmapped	1	-24.3676, 150.4419	CB67
Unnamed tributary of Kroombit Creek	Low	Unmapped	1	-24.3742, 150.4195	CB73
Unnamed tributary of Kroombit Creek	Low	Unmapped	1	-24.3866, 150.4171	CB75 – CB76
Unnamed tributary of Kroombit Creek	High	Unmapped	3	-24.3963, 150.4100	CB80
Unnamed tributary of Kroombit Creek	High	Unmapped	3	-24.4036, 150.3651	CB92
Unnamed tributary of Kroombit Creek	Low	Unmapped	1	-24.4048, 150.3599	CB92
Unnamed tributary of Kroombit Creek	Moderate	Unmapped	2	-24.4054, 150.3561	CB93
Unnamed tributary of Kroombit Creek	Low	Unmapped	1	-24.4061, 150.3539	CB94-CB95
Unnamed tributary of Orange Creek	Low	Unmapped	1	-24.4088, 150.3368	CB100
Unnamed tributary of Orange Creek	Low	Unmapped	1	-24.4100, 150.3307	CB102
Unnamed tributary of Orange Creek	Low	Unmapped	1	-24.4107, 150.3272	CB102
Unnamed tributary of Orange Creek	Low	Unmapped	1	-24.4160, 150.3074	CB107
Unnamed tributary of Orange Creek	Low	Unmapped	1	-24.4168, 150.3059	CB108
Unnamed tributary of Orange Creek	Moderate	Unmapped	2	-24.4228, 150.2953	Mount Benn Substation
Orange Creek	Unmapped	Unmapped	1	-24.4252, 150.2917	Mount Benn Substation

Wetlands

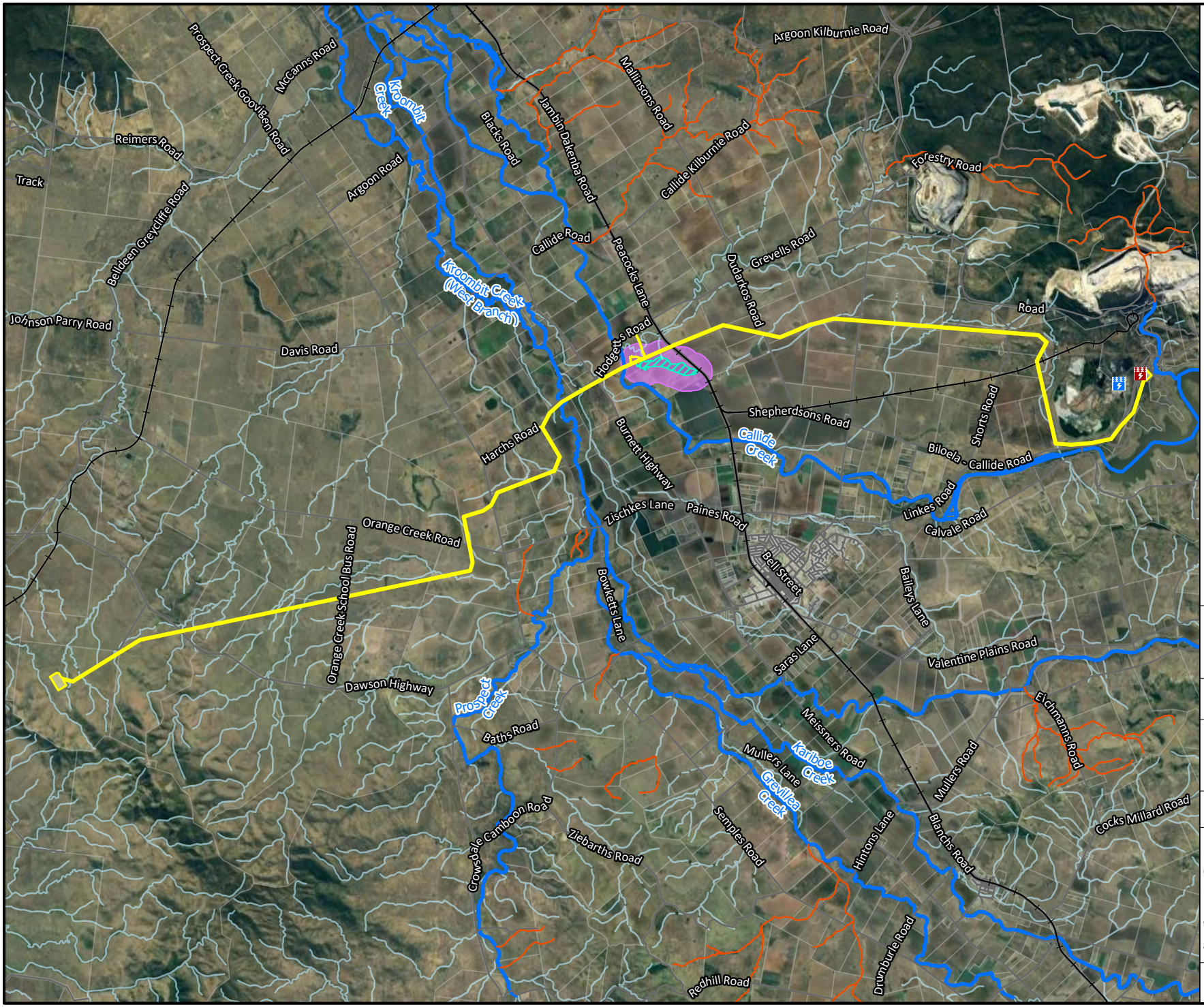
A review of the high ecological significance (HES) wetlands or watercourses, and Great Barrier Reef (GBR) wetland protection areas defined under the EP Regulation, which are considered an MSES prescribed environmental matter under the EO Act, was undertaken using Queensland Globe. This review identified one wetland of high ecological significance (containing a GBR wetland protection buffer area) within the central portion of the survey area, near CB53 and CB54. Mapped wetlands are shown on Figure 5-12.

The mapped HES wetland within the central section of the MID corridor was verified as being consistent with its mapped status as a HES wetland (Figure 5-11); satisfying the definition of a wetland through periodic/intermittent inundation, containing identified wetlands plants that require periodical inundation, and having a substratum that was not soil, that was saturated with water, or covered by water at some point in time.

There was an additional small wetland to the west of the mapped HES wetland that potentially meets the definition for a HES wetland (Figure 5-11). This wetland was observed in a dry state but contained plants that require periodic inundation including *Cyperus sp.* and *Marsilea mutica*. The canopy was dominated by *Eucalyptus tereticornis* and lacked a sub-canopy. It was confirmed by the property owner that the wetland is generally inundated with water at a depth of 0.2-1m and is host to a range of aquatic bird and amphibian species. Figure 5-11 presents the observed dry conditions of the mapped HES wetland, and the additional unmapped wetland within the MID corridor.

The location of these within proximity to the MID Corridor are shown on Figure 5-14.

Figure 5-11 Mapped wetland of HES (left) and potential wetland of HES (right)



Legend

- Road
- Railway
- Watercourse (Water Act)
- Drainage Feature (Watercourse Identification Map)
- Approximate Unmapped Watercourse
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Wetland Protection Trigger Area
- MSES High Significance Wetland

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

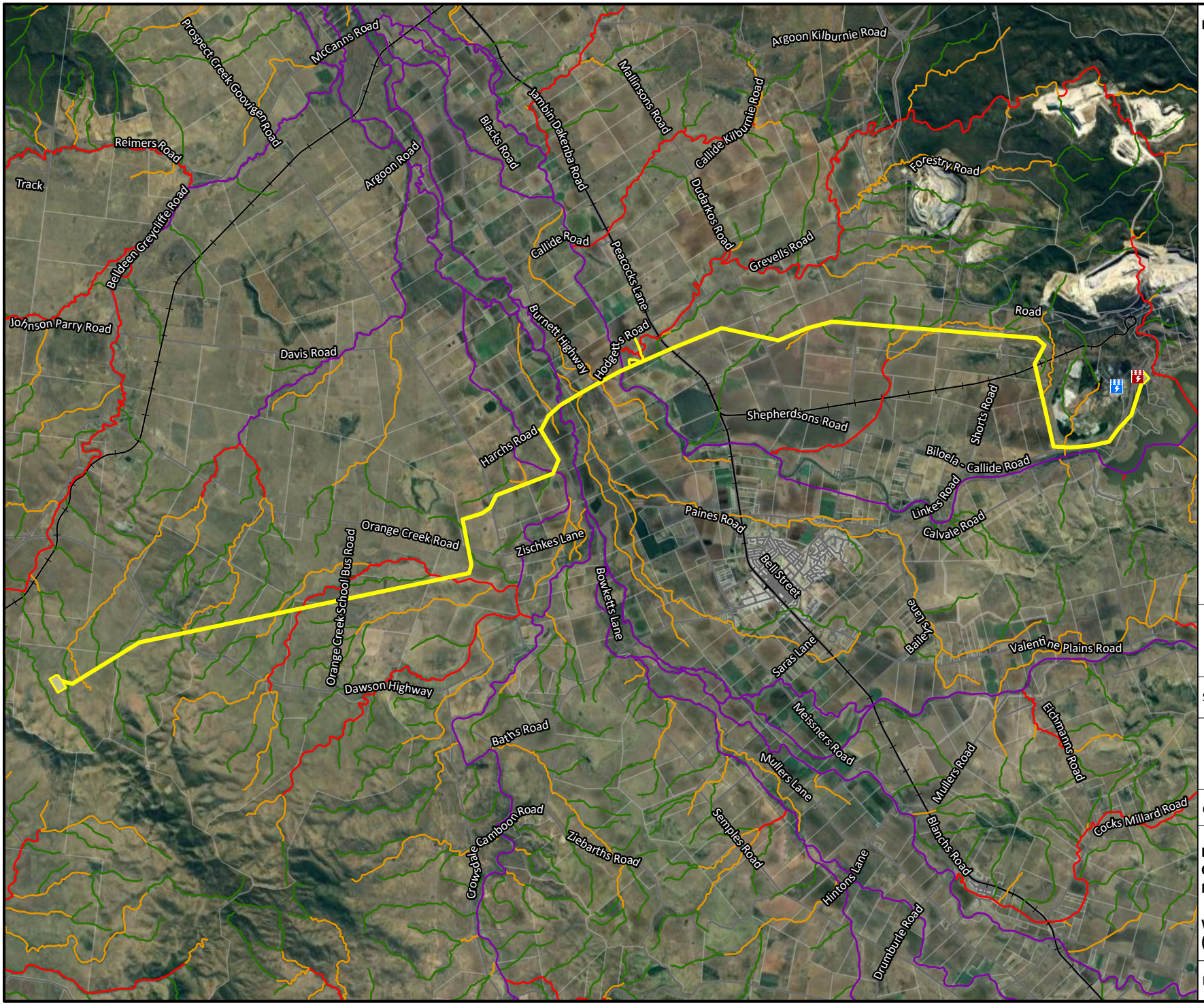
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

WATERCOURSES (WATER ACT (QLD)) AND MAPPED WETLANDS

FIGURE 5-12

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_009
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Waterway Barrier Works

- Low
- Moderate
- High
- Major

Scale 1:162,200

0 2,500 5,000

metres

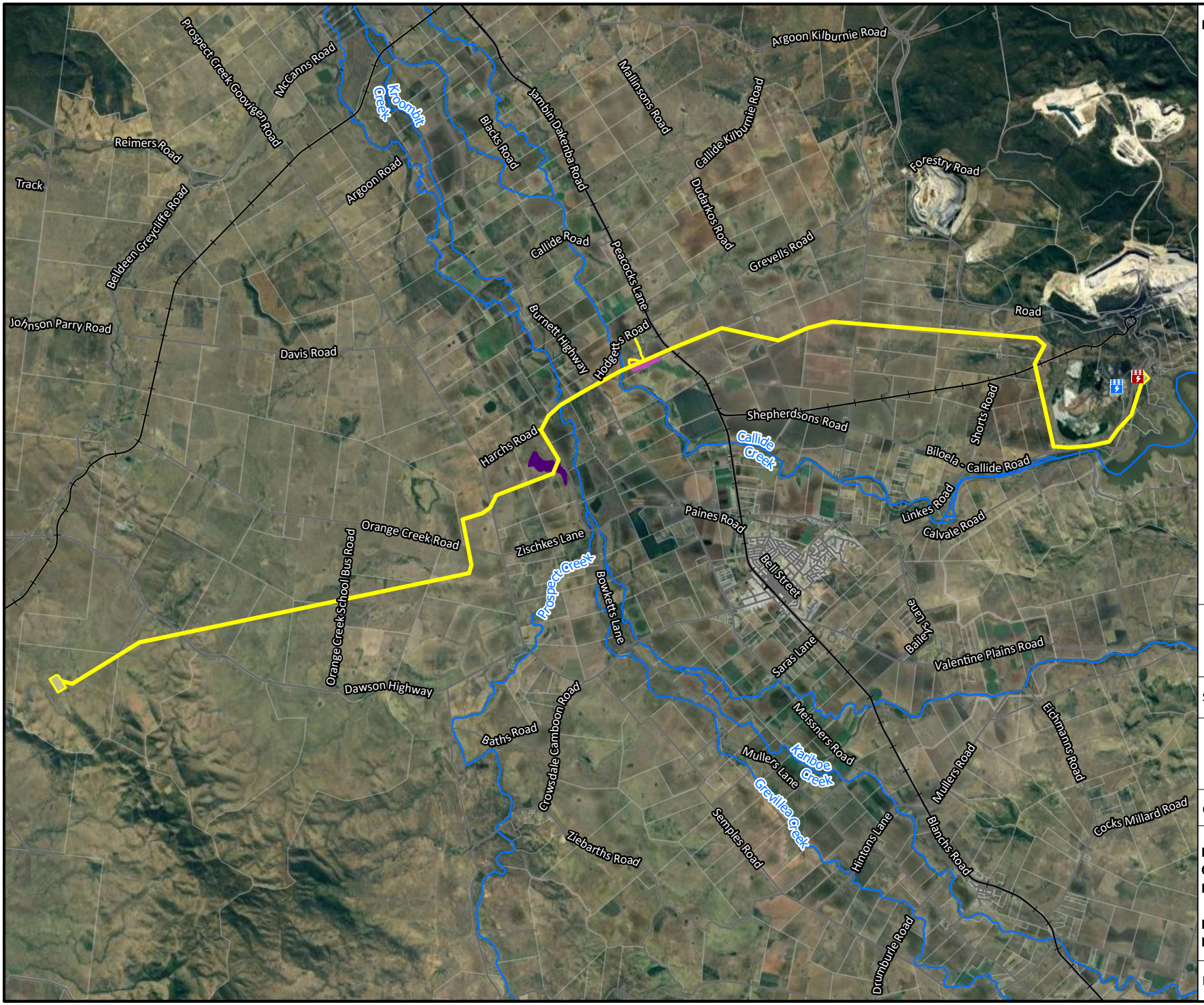
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

WATERWAYS (FISHERIES ACT (QLD))

FIGURE 5-13

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_010
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Unmapped Wetland
- Ground Truthed Extent of Wetland (Trend Environmental, 2023)

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

LOCATION OF GROUND-TRUTHED HES WETLANDS

FIGURE 5-14

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_020
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Environmental values

EVs are the qualities that make water suitable for supporting aquatic ecosystems and human uses, requiring protection from the effects of habitat alteration, waste releases, contaminated runoff and changed flows. This ensures healthy aquatic ecosystems and waterways that are safe for community use. The EVs of waters are protected under the (EPP (Water and Wetlands). The policy sets water quality objectives (WQOs), which are physical and chemical measures of the water (i.e. pH, nutrients, salinity etc.) to achieve the EVs set for a particular waterway or water body. EVs define the suitable uses of the water (i.e. aquatic ecosystems, human consumption, industrial use etc.).

Schedule 1 of the EPP (Water and Wetlands) lists rivers and catchments where EVs have been determined and issued by the regulatory authority. The Project is located within the EPP (Water and Wetland Biodiversity) Callide Creek Catchment Environmental Values and Water Quality Objectives (Basin No. 130 (part), including all waters of Callide Creek Catchment within the Dawson River Sub-basin) and is located within the Callide Creek and tributaries zone.

EVs prescribed for the Callide Creek and tributaries EV Zone (for developed and undeveloped areas and groundwater) are provided in Table 5-8.

Table 5-8 Environmental values for Callide Creek catchment waters

	Aquatic ecosystems	Irrigation	Farm supply/use	Stock water	Human consumer	Primary recreation	Secondary recreation	Visual recreation	Drinking water	Industrial use	Cultural and spiritual values
Callide Creek and tributaries – developed areas	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Callide groundwaters	✓	✓	✓	✓	✓	✓	✓	✓	✓	-	✓
Callide – undeveloped areas	✓	-	-	✓	✓	✓	✓	✓	✓	-	✓

Water quality

Water quality data for the region is limited, with no available Government water quality information available. Relevant WQOs for the Project are outlined within the EPP (Water and Wetlands) Water Plan, as well as within *Australian and New Zealand Environment and Conservation Council (ANZECC) & Agriculture and Resource Management Council of Australia and New Zealand (ARMCANZ) 2000 guidelines*.

The Plan provide water quality objectives for human use environmental values. As the Project intersects waters that have human use environmental values, the water quality objectives set out in each plan are to be considered during the construction and operation phases of the Project. Where more than one EV applies to a given water (for example aquatic ecosystem and recreational use), the adoption of the most stringent WQO for each water quality indicator will then protect all identified EVs. Objectives for the Callide Creek catchment waters (including Callide, Kariboe, Kroombit, Scoria creeks, Don and Dee rivers) are provided in Table 5-9.

Table 5-9 Water quality objectives to protect human use environmental values applicable to surface waters in proximity to the proposed Project[5]

Management intent	Water quality indicators													
	Dissolved Oxygen (DO)	pH	EC Base flow	EC high flow	Ammonia N	Oxidised N	Organic N	Total nitrogen	FRP	Total phosphorus	Sulfate	Chlorophyll a	Turbidity	Suspended solids
	% saturation		µS/cm		mg/L								NTU	mg/L
Aquatic ecosystem—moderately disturbed	85-100	6.5–8.5	<1150	<600	<20	<60	<420	<500	<20	<50	<20	<5.0	<50	<30

Notes:

DO: dissolved oxygen, FRP: Filterable Reactive Phosphorous, Chl-a: Chlorophyll-a, TSS: Total Suspended Solids, nd: no (or insufficient) data

Units % saturation: percent saturation, µg/L: micrograms per litre, NTU: nephelometric turbidity units, m: metres, mg/L: milligrams per litre.

[5] Environmental Protection (Water) Policy 2009 Callide Creek Catchment Environmental Values and Water Quality Objectives Basin No. 130 (part), including all waters of Callide Creek Catchment within the Dawson River Sub-basin September 2011 https://environment.des.qld.gov.au/__data/assets/pdf_file/0034/88774/fitzroy_callide_creek_wqo_290911.pdf

Flooding and inundation

Regional flooding

The Banana Shire Council local government area lies within the Dawson River Catchment, with the town of Biloela located between Callide Creek and Kroombit Creek. The majority of Biloela itself is located outside of the floodplain from most flood events. The greatest flooding impacts on Biloela towns originate from Kroombit Creek via Washpool Gully. Due to its location, Biloela can also become isolated as roads become flooded.

A Hydrology report has been conducted (Appendix E) and relies upon data from The *Banana Shire Flood Study* prepared for Banana Shire Council by Kellogg Brown & Root Pty Ltd (KBR) in 2017 (KBR, 2017). This study included detailed flood modelling within the Callide River and Kroombit Creek floodplains. The extent of the model covers the following tower structure of the project which are shown in Figure 3-1 of Appendix E:

- CB7 to CB16, and
- CB43 to CB71.

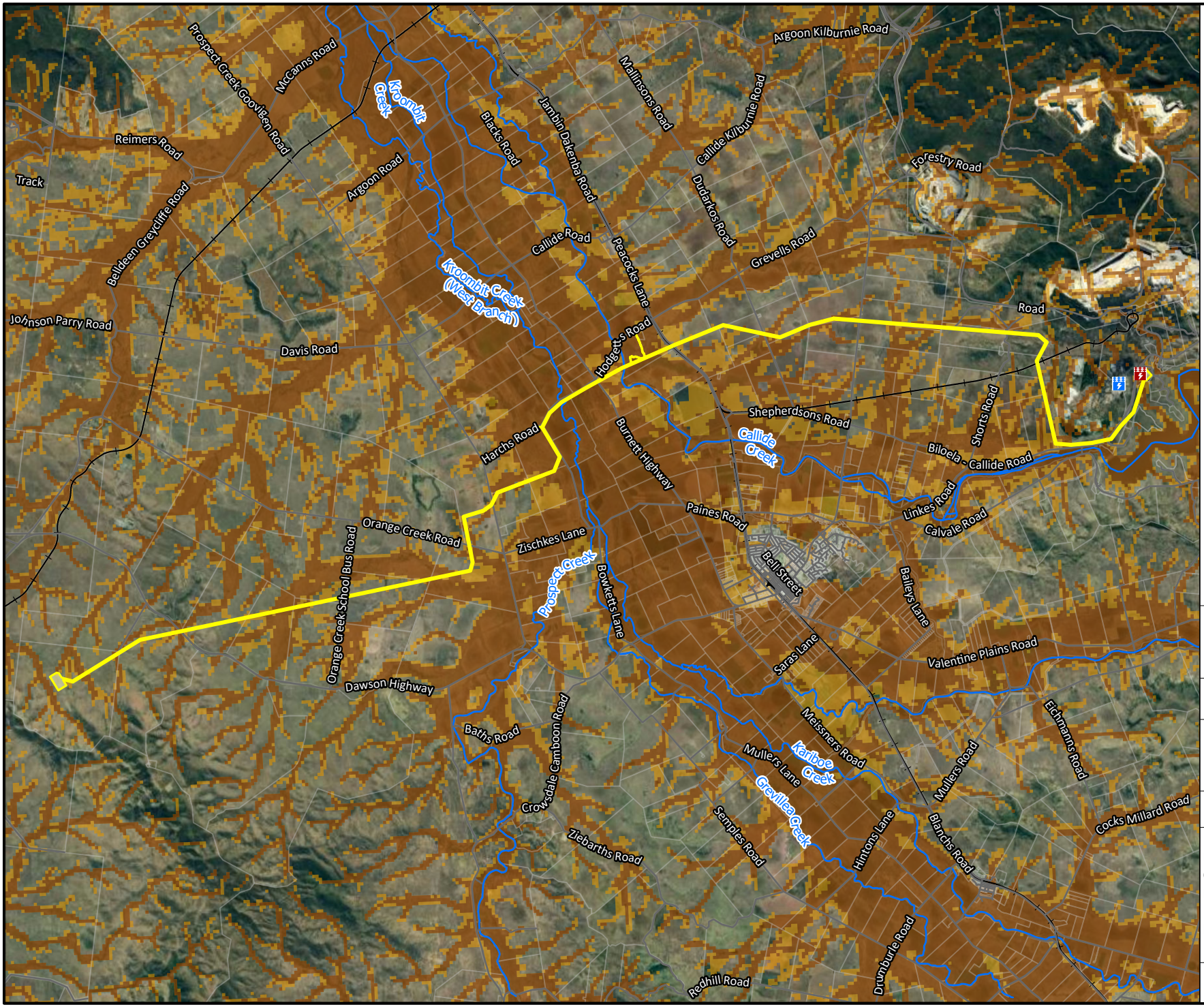
Tower structures CB50 through to CB67 are affected by flooding of the Kroombit Creek/Callide Creek floodplain under the 10%, 1% and 0.2% Annual Exceedance Probability (AEP) events, while CB43 through to CB49 are outside of the flood extent.

The Hydrology report (Appendix E)also provides the flood depths, velocities and hazard extracted from the flood study model results at these tower structure locations to inform the design based on the flood hazards classification detailed in Table 3-2 of Appendix E. It is noted that several towers are located in flood hazard category H5 and particular consideration would be required for the design of these towers to ensure they can withstand the modelled flood depths and velocities. One tower 'CB59' is located in hazard category H6 in the 0.2% AEP event and as such, further consideration of the location of this tower will be undertaken during the detail design phase to reduce its hazard and vulnerability to failure. For example, moving approximately 30m along the alignment to the south-west would reduce its 0.2% AEP hazard category from H6 to H5.

Local catchment flooding

As stated in the Hydrology report (Appendix E), no detailed flood modelling for local catchment outside of the Banana Shire Flood Study Model Extent (KBR, 2017) was available at the time of reporting. Basin level flood modelling undertaken for the *Flood Mapping for the Fitzroy River Basin* (KBR, 2015) from the former Department of Resources FloodCheck application was used to obtain Indicative flood extents for the 'extreme' event (Probable Maximum Flood (PMF)) and detailed in Figure 4-1 and 4-2 of Appendix E. PMF event represents the largest conceivable flood that could occur at a location.

The FloodCheck information identifies several tower structures that may be affected by local flood events however, the proposed BRWF Substation is located outside the extreme flood extent provided in FloodCheck. Further investigation would be required to confirm the flooding extents and depth, and to estimate velocity and flood hazard at these locations as the FloodCheck information only provides indicative flood extents and depths based on hydraulic modelling with a very coarse resolution of 100m.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Fitzroy Basin Flood Extent

- Extreme Peak (100m)
- Peak (100m/100yr)

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FLOODING

FIGURE 5-15

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_011
Reference: ESRI Topographic Basemap - Accessed Imagery: 10/10/2025

5.4.1.2 Groundwater

The MID corridor is traversed by a low density of registered groundwater bores (both active and inactive). There are twenty active groundwater bores within five kilometres of the MID corridor.

Review of this data suggests that groundwater depth varies along the MID Corridor, with water levels near the Callide Substation generally higher than those further along the MID Corridor. Levels at each bore is generally consistent over the monitoring periods. For example, Bore 13030238 is located along Callide Creek, 680m south of proposed transmission tower CB13 and has had its water levels recorded since 1986. Water levels have varied slightly; however, water levels have generally been consistent over this time, with a slight decline over the entire monitoring period.

Table 5-10 Groundwater bores

Bore No.	Location	Aquifer Detail			Water levels (m bgl)
		Top/Bottom	Lithology	SWL*	
13030238 Drilled: 11/06/1963 (abandoned)	-24.3682, 150.5985	-	-	-	-13.68 (24/11/1986) -12.38 (06/01/2022)
13030137 Drilled: 29/04/63 (abandoned)	-24.3461, 150.4476	9.10/11.60	Gravel, sand	-3.80	-6.80 (29/09/15)
13030772 Drilled: 26/05/03 (in use)	-24.3537, 150.4397	15.00/17.10	Gravel	-14.38	-8.88 (16/05/23)

*at point of drilling

A Geotechnical Investigation Report was completed by PTG Consulting in February 2025 to investigate the five potential tower locations located within CS Energy's property. The report identified that groundwater was not detected in the location of the proposed two towers and can be managed during construction utilising suitable construction methods as outlined in Section 5.4.3.

5.4.3.Groundwater dependent ecosystems

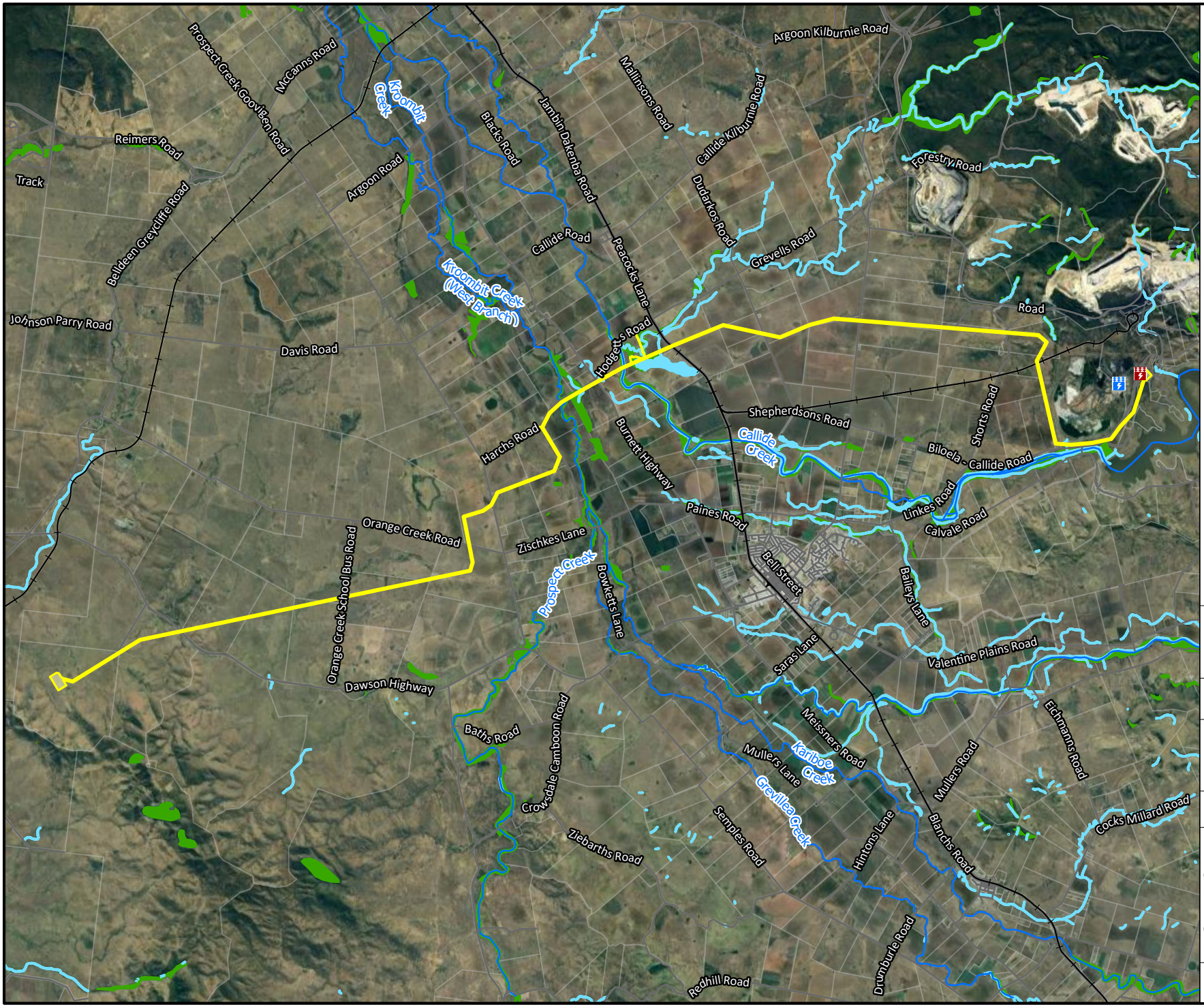
A review of the Queensland Spatial layers for Groundwater Dependent Ecosystems (GDEs) was undertaken. The dataset outlines the following GDE:

- surface expression GDEs;
- terrestrial GDEs; and
- subterranean GDEs.

A number of Surface expression and terrestrial GDEs are located along the MID Corridor, with the locations detailed in Table 5-11.

Table 5-11 GDEs intersected by the MID Corridor

Type of GDE	Location
Surface expression GDE	CB12A, CB51, CB52 – CB54, between CB56 and CB57, CB59
Terrestrial GDE	CB52 – CB55, CB58 – CB61



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Terrestrial Groundwater Dependent Ecosystem
- Aquatic Groundwater Dependent Ecosystem

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

GROUNDWATER DEPENDENT ECOSYSTEMS

FIGURE 5-16

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_016
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.4.2 Potential impacts

Infrastructure associated with the Project has the potential to impact on the hydrology of the area, including movement of water, and impacts to water quality. Potential impacts during construction, operation and decommissioning are summarised below.

Construction phase

Surface water

Hydrology impacts that may occur during construction will most likely include:

- Water quality impacts relating primarily to erosion and sediment issues, as well as from accidental spills of fuel, oil, or other chemicals from the undertaking of the following activities:
    - Vegetation clearing;
    - Excavation of foundations; and
    - Stormwater runoff from the construction site, including access tracks, which could be high in suspended solids or contain contaminants.
- Potential impacts to groundwater as a result of foot excavation for transmission line structures (typically 8-12m).
- Changes to flooding and stormwater flow paths as a result of the construction of the Project.

Water quality

The proposed Project may impact on downstream water quality via following key mechanisms:

- Increased concentrations of suspended solids, nutrients and metals associated with the erosion of disturbed areas.
- Introduction of contaminants from chemicals and fuels used for the construction and maintenance of the proposed transmission line and substation

Any disturbance that involves the clearing of vegetation or earthworks should be carefully considered to ensure the Project does not result in increased sediment loads and associated pollutants from entering the downstream receiving environment.

The introduction of contaminants to the MID corridor for the construction of the project infrastructure poses a risk of these contaminants ending up in the receiving environment. Local storage of chemicals and fuels within the MID corridor will increase this risk along with concrete batching and associated materials.

Fish passage

The Project intersects a number of waterways that are mapped waterways for waterway barrier works. Construction activities may require the construction of waterway crossings to allow for the movement and transport of infrastructure to work areas which may result in impacts to fish passage and movement within waterways.

Construction of the transmission line or substation will not require works that disturb a waterway, however, construction of access/maintenance tracks may require crossings of waterways. Where existing approved crossings cannot be utilised, works will need to comply with the accepted development requirements. Should any works within a waterway not comply with the Accepted development requirements, a development permit is ordinarily required under the Planning Act. However, the Project will be granted through MID process, operational work for waterway barrier works will be considered accepted development and will not require a development permit.

Regardless, any access/maintenance tracks requiring construction across a waterway will be designed with consideration of the accepted development requirements.

Flooding

It is noted that several towers are located in flood hazard category H5 and particular consideration would be required for the design of these towers to ensure they can withstand the modelled flood depths and velocities. One tower 'CB59' is located in hazard category H6 in the 0.2% AEP event and as such, further consideration of the location of this tower will be undertaken during the detailed design phase to further investigate and mitigate against potential hazards and vulnerability to failure. For example moving approximately 30m along the alignment to the south-west would reduce its 0.2% AEP hazard category from H6 to H5.

Construction around waterways and floodplains will be undertaken outside of high-rainfall event periods so as to not impact on or change flooding or stormwater flow paths.

Groundwater

Footing depths for transmission structures are expected to be in the order of 10m. Given groundwater depths in the MID corridor have been recorded as below 10m, (e.g. Register groundwater bore 13030701 has recorded with aquifer top as 7.00m and bottom 10.00m and water level has been measured with the range between -10.88m and -10.95m). Therefore, the interference with groundwater may occur during construction. Any groundwater that enters footing sumps may be exposed to pollutants associated with construction, including small amounts of hydrocarbons associated with construction machinery, excess sediment, concrete slurry, or fine particles.

Operation and maintenance phase

Surface water quality

Minimal impacts to water quality will occur during operation and maintenance phases due to the limited activities expected. Impacts may occur, such as:

- vegetation maintenance activities resulting in erosion and sediment run off;
- use of herbicides to control vegetation regrowth causing impacts to water quality; and
- accidental fuel or chemical spills associated with maintenance activities on structures or at the substation causing impacts to water quality.

Flooding

The proposed Project may increase the volume of runoff generated from disturbed areas (including project infrastructure like the proposed sub-station) due to an increase in impervious area throughout the MID corridor. However, the Project will result in a small change in catchment land use in relation to the overall catchment size and is therefore unlikely to significantly increase the magnitude in peak discharges from the MID corridor.

As the proposed infrastructure is spread throughout the MID corridor, there will be large areas of undisturbed forest and grassland dispersed throughout the site. These undisturbed areas will reduce the impact of the proposed development by slowing runoff and allowing it infiltrate into soil downstream of impervious areas, particularly during smaller, more frequent runoff events.

Water quality

The introduction of contaminants to the MID corridor for the maintenance, operation and decommissioning of the project infrastructure poses a risk of these contaminants ending up in the receiving environment. Local storage of chemicals and fuels within the MID corridor will increase this risk along with concrete batching and associated materials. Therefore, relevant guidelines and

standards governing the storage and use of hazardous materials and waste removal should be followed to reduce this risk.

Decommissioning phase

Decommissioning, dismantling, and removing transmission lines, structures, and the substation as the end of their design life have the potential to impact on hydrology, such as increased erosion and sediment runoff and reduction in water quality, including from the following activities:

- vehicle and machinery movement over access roads and existing easement; and
- ground surface levelling or grading for rehabilitation of the easement.

Potential impacts associated with decommissioning activities are expected to be localised and short-term and will result in a net improvement of the environment as a result of removal of infrastructure and rehabilitation of the MID corridor.

5.4.3 Mitigation measures

Potential impacts to hydrology will be managed in accordance with Powerlink's standard environmental controls as outlined in the EMP for the Project (Refer to Appendix C), and the project specific mitigation measure will include, but is not limited to:

Flooding

- A flood assessment is undertaken for the sections of the MID Corridor outside the Banana Shire Flood Study model extent to confirm tower locations affected by flooding and provide flood information to inform the design.
- A flood impact assessment is completed to demonstrate that the development will not increase risk to natural hazard.
- Any disturbance that involves the clearing of vegetation or earthworks should be carefully considered to ensure the project does not result in increased sediment loads and associated pollutants from entering the downstream receiving environment. Appropriate erosion and sediment control measures should be implemented.

Water quality and erosion and sediment control

- Any spillages of fuel or chemical will be cleaned up immediately and in accordance with the requirements of the EMP.
- Herbicides are to be undertaken by appropriate licensed operators with equipment approved for weed spraying operations.
- Relevant guidelines and standards governing the storage and use of hazardous materials and waste removal should be followed to reduce this risk.

Groundwater management

- Suitable construction methods are to be implemented to manage the risk of contaminated material during construction of the foundation systems for heavily loaded and or movement intolerant structures (i.e. transmission poles and towers), including comprising pile foundations on rock and lighter loaded structures on high level pad and strip footings supported on natural soils.
- If groundwater is present during construction of transmission tower footings, dewatering may need to occur within the excavated area until the construction of footings is completed.
- Water accumulated in the sumps will be monitored for contaminants of concern. Any contaminated waters will be treated or removed. In accordance with Powerlink's standard

environmental control ESC4 of the EMP (Appendix C), a dewatering method is to be prepared and implemented for the Project. The objective of this dewatering method is to prevent contamination of land; surface waters or groundwater's by establishing suitable protocols to treat or remove contaminated water from the site.

Waterway barrier works

- Where possible, place structures at least 50m from waterways.
- Utilise previously cleared access tracks where possible.
- Design any new waterway crossings in accordance with the Accepted Development Requirements, as detailed in Section 4.3.8.
- Utilise temporary construction tracks for construction, in accordance with the Accepted Development Requirements, and then decommission following construction, returning the bed and bank profiles to their original state.

5.5 Noise and vibration

5.5.1 Existing environment

Noise sensitive receptors

Environmental values relating to noise relevant to the Project are defined under the EPP(Noise) and include:

- the qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems; and
- the qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following—
    - sleep;
    - study or learn;
    - be involved in recreation, including relaxation and conversation; and
- The qualities of the acoustic environment that are conducive to protecting the amenity of the community.

Noise sensitive receptors are defined under the EPP(Noise) and have been identified within Section 5.3.1.

Existing noise sources

The following existing noise sources are present within and surrounding the MID Corridor:

- operations from the Callide Power Station and Mine;
- local industry;
- local farming operations; and
- vehicle movements along major highways.

Background noise would be typical of a rural environment with natural noise sources and intermittent contributions from nearby industrial sources and road traffic noise.

5.5.2 Potential impacts

The noise character of the MID corridor will not be significantly impacted by the construction and operation of the transmission line. During the construction phase, elevated noise levels for periods of time during the day can be expected when erecting the structures and stringing the lines, as well as from plant and machinery travelling to and working within the easement. These impacts will be localised and of short duration. During operation and maintenance phases, noise impacts will be limited and restricted to ad hoc maintenance activities and vehicles traversing along the easement.

These impacts are described further below.

Construction phase

Noise impacts that may occur during construction will most likely be associated with the following activities:

- Site preparation works such as vegetation clearing, topsoil stripping, chipping/mulching, and earthworks.
- Excavation and installation of foundations for the transmission structure and substation.

- Stockpiling of excavated materials and wind erosion of these stockpiles.
- Movement of vehicles and machinery on access tracks or work sites, particularly on unsealed surfaces.
- Exhaust emissions from vehicles and machinery.
- Erection of transmission line structures involving cranes.
- Assembly of equipment and infrastructure within the substation from mechanical and electrical tools.
- Helicopter noise associated with aerial stringing of lines between transmission line structures.

During construction, elevated noise levels are anticipated at locations close to work areas and/or in the vicinity of access roads and as such, sensitive receptors in proximity to these work areas and/or access roads may experience elevated noise levels during construction. However, these are unlikely to be significant due to the limited nature of the proposed works, the length of the works, and the distance to sensitive receptors.

Vibration impacts that may occur during construction will most likely be associated with piling and the use of vibratory rollers for construction of structure footings. Vibration impacts will be temporary and short-term in nature. Where vibratory activities are likely to cause an impact on a sensitive receptor, additional mitigation measures will be put in place.

Construction will be undertaken in stages, and this, on top of the proposed mitigation measures in Section 5.3.3 and the Project's EMP (Appendix C), will result in any localised and short-term impacts only.

Operation and maintenance phase

The operational and maintenance phase of the Project will have minimal impacts on ambient noise levels, with expected noises resulting from:

- wind on the lines and transmission line structures (whistling);
- corona discharge (buzzing, crackling, or humming) from transmission line and substation;
- maintenance vehicles traversing along the easement; and
- maintenance activities on the transmission line structures and at the substation via helicopter and/or vehicles.

Noise from wind effects is expected to be incidental and should only occur during periods of higher wind speeds. Corona discharge may cause noise emissions such as a crackling sound, which is due to ionisation of air at the surface of the conductors and generally occurs during periods of wet weather or high levels of humidity.

It is noted that although corona discharge noise may cause a nuisance to sensitive receptors, however the incremental increase to the surrounding acoustic environment is not expected to be significant. Further, it should be noted that modern transmission line design which uses bundled conductors produces much less corona discharge noise than older lines, which have a single conductor per phase. Corona noise from the proposed transmission line is therefore expected to be less than that currently experienced from the existing line and unlikely to be noticeable at the closest sensitive receptors.

Aerial maintenance activities are expected to occur once every twelve months and will result in occasional brief noise emissions. As maintenance inspections are already undertaken for the existing 132kV transmission line, the noise generated is likely to be similar to that already experienced.

5.5.2.2 Decommissioning phase

Decommissioning, dismantling, and removing transmission lines, structures, and the substation as the end of their design life have the potential to generate noise impacts, including from the following activities:

- vehicle and machinery movement over access roads and existing easement;
- dismantling of transmission line structures with cranes, manual tools and power tools;
- dismantling of substation infrastructure using manual and power tools; and
- ground surface levelling or grading for rehabilitation of the easement.

Potential noise impacts associated with decommissioning activities are expected to be localised and short-term, and similar in occurrence and magnitude to potential impacts associated with the construction phase activities.

5.5.3 Mitigation measures

The EPP (Noise) management hierarchy gives priority to avoiding emissions where reasonable to do so. Where this is not possible, emissions reduction and management are required to be best practice.

Potential impacts to noise will be managed in accordance with Powerlink's standard environmental controls as outlined in the EMP for the Project (Appendix C), and the project specific noise and vibration mitigation measure will include:

- Plant to be regularly maintained and repaired or replaced if it becomes noisier and non-tonal reversing alarms to be used where practicable.

5.6 Protected areas

5.6.1 Existing environment

Protected areas represent areas that are protected for the conservation of natural and cultural values as well as areas managed for production of forest resources, including timber and quarry material.

State-listed protected areas are defined under the NC Act as an area set aside for conservation for natural or cultural values and are defined under Section 14 of the Act and include; national parks, conservation parks, resource reserves, special wildlife reserves, nature refuges and coordinated conservation areas.

The MID Corridor does not intersect any Commonwealth Protected Areas or any protected areas under the NC Act.

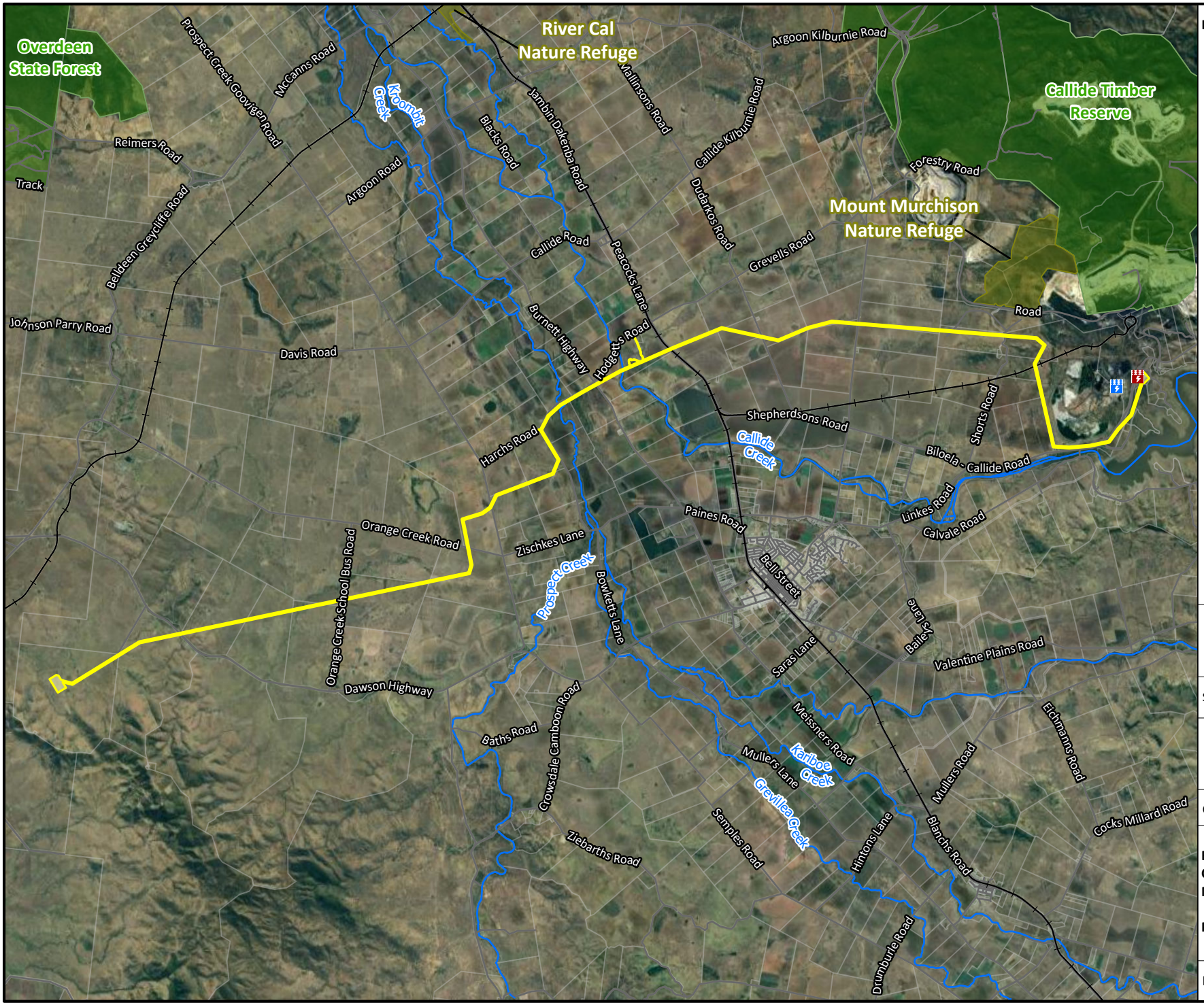
The Mount Murchison Nature Refuge and Callide Timber Reserve are located approximately 1km and 1.5km respectively northeast of the project. The Project will not impact on these protected areas. These protected areas are shown on Figure 5-17.

5.6.2 Potential impacts

The project does not affect any protected areas and as such, no impacts are expected.

5.6.3 Mitigation measures

As no impacts to protected matters are expected, no mitigation measures are proposed.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Protected Area
- Nature Refuges

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

PROTECTED AREAS

FIGURE 5-17

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_019
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.7 Flora

An Ecological Assessment Report has been undertaken for the Project which is included in Appendix F. A summary of the findings of the ecology assessment, relevant to flora, is presented below.

As a result of calculating impacts applicable to the EPBC Act Referral, a number of terms have been developed and used within the Ecological Assessment Report, specifically, disturbance footprint, project area and area of interest. For consistency, these terms have also been used within this MID Assessment Report. Definitions of these terms are provided below:

- **MID Corridor:** The area to be approved under the MID under Chapter 2, Part 5 of the Planning Act which encompasses the recommended corridor (60 m easement), a 275kV substation proposed on Lot 47 on SP232217 (the proposed Mount Benn Substation) and an expansion of the Calvale Substation to accommodate 3 additional diameters as shown on Figure 2-4.
- **Disturbance Footprint:** The clearing extent associated with works for the transmission line, substation and access tracks. This disturbance footprint will be cleared of all vegetation prior to construction of the transmission line. The width varies along the length of the transmission line to accommodate transmission tower benching and foundations, temporary assembly and erection zones, mid span additional sag and swing of conductors, and access tracks. Most of the disturbance footprint where conductor sag is likely to interact with vegetation is 24m wide, while tower locations are 40m wide to accommodate a tower size of 40 x 40m. Some midspan sections are up to 50m wide to ensure electrical safety in areas of maximum sag and swing (ie veg removal). Access tracks within the disturbance footprint will be cleared to a maximum width of 10m. The disturbance footprint will be the 'impact area' for the purpose of assessing significance of impacts to MNES and MSES.
- **Project area:** The area surveyed by ecologists (either directly or indirectly), which was generally taken to be a 350m buffer area (larger in some areas) around the disturbance footprint. The project area was used to adequately capture ecological values adjacent to the disturbance footprint to evaluate impacts upon ecological values.
- **Area of Interest:** The broader locality within which the Project is located (i.e., Biloela), which acted as the buffer area for desktop searches. The area of interest is typically considered to be a 20km buffer area, which provides context to the MNES and MSES within the project area.

5.7.1 Existing environment

Desktop assessment results

Threatened Ecological Communities

An EPBC Act Protected Matters Search Tool (PMST) report (updated 1 September 2025) identified MNES that are known to occur or may occur within the area of interest (20km buffer), including six Threatened Ecological Communities (TECs).

A determination of the likelihood of presence of the TECs was undertaken by reviewing whether any of the corresponding REs listed within the DCCEEW Conservation or Listing Advice were mapped within the Survey area (refer to Appendix A of Appendix F). Based on these, four of the TECs were considered likely to occur within the project area due to the mapped presence of corresponding regional ecosystems (REs) as shown in Table 5-12.

Table 5-12 Threatened Ecological Communities

TEC	Status[1]	Presence	Corresponding REs[2]
Brigalow (*Acacia harpophylla* dominant and codominant)	EN	Likely to occur	RE11.3.1, RE11.9.5 and RE11.11.14 mapped in the project area
Coolabah - Black Box Woodlands of the Darling Riverine Plains and Brigalow Belt South Bioregions	EN	Unlikely to occur	No corresponding REs mapped in the project area
Lowland Rainforest of Subtropical Australia	CE	Unlikely to occur	No corresponding REs mapped in the project area
Poplar Box Grassy Woodland on Alluvial Plains	EN	Likely to occur	RE 11.3.2 mapped in the survey area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	EN	Likely to occur	RE 11.3.8 mapped in the survey area
Weeping Myall Woodlands	EN	Likely to occur	RE 11.3.2 mapped in the survey area

1 EPBC Act: EN = Endangered

2 These REs will only be considered TEC if they meet the description and benchmarks within the relevant Conservation or Listing Advice.

Note: TECs that are unlikely to be present in the survey area due to lack of suitable REs have been greyed out.

Regional ecosystems

In Queensland, vegetation is described and mapped by the Queensland Herbarium as REs. REs are vegetation communities within a bioregion that consistently associate with a particular combination of geology, landform and soil (Neldner et al., 2023a).

REs mapped within the project area and within the MID Corridor have been provided in Table 5-13, along with a calculation of their mapped extent within the project area and within the MID corridor.

The total project area is 1,896.77ha, containing:

- 1,659.5ha of desktop mapped Category X (non-remnant) areas; and
- 237.27ha of desktop mapped Category B (remnant), Category C (high-value regrowth) or Category R (GBR reef watercourse) vegetation.

The total MID corridor is 288.18 ha, containing:

- 258.19ha of desktop mapped Category X (non-remnant) areas; and
- 29.99ha of desktop mapped Category B (remnant), Category C (high-value regrowth) or Category R (GBR reef watercourse) vegetation.

Most of the project area was mapped as non-remnant vegetation. These areas have previously been cleared to support pastoral and cropping land. There are however some mapped scattered small patches of Category B (remnant), Category C (high-value regrowth) and Category R (Reef regrowth watercourse vegetation) vegetation throughout the project area (Map 6, Appendix G). These areas are mapped as least concern, of concern or endangered REs (Map 7, Appendix G). The mapped REs are present as both homogenous polygons as well as heterogenous/mixed polygon REs.

Table 5-13 Regional Ecosystems mapped within the MID corridor and Project area

RE	Category[1]	Description	Biodiversity Status[2]	VMA Class[2]	Project area (ha)[3]	MID corridor extent (ha)[3]
11.3.1	C	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains.	EN	EN	2.44	0.68
11.3.2	C	*Eucalyptus populnea* woodland on alluvial plains	OC	OC	11.87	1.04
11.3.4	B C	*E. tereticornis* and/or *E. spp*. Woodland on alluvial plains.	OC	OC	35.46	4.09
11.3.25	B	*E. tereticornis* or *E. camaldulensis* woodland fringing drainage lines.	OC	LC	58.84	4.07
11.8.3	B	Semi-evergreen vine thicket on Cainozoic igneous rocks	OC	OC	1.43	0
11.9.1	C	*Acacia harpophylla-E. cambageana* woodland to open forest on fine-grained sedimentary rocks	EN	EN	16.78	0.27
11.9.4a	B	Semi-evergreen vine thicket or *A. harpophylla* with a semi-evergreen vine thicket understorey on fine-grained sedimentary rocks	E	OC	1.72	0
11.9.5	C	*Acacia harpophylla* and/or *C.cristata* open forest to woodland on fine-grained sedimentary rocks.	EN	EN	50.6	7.95
11.11.10	C	*E. melanophloia* woodland on deformed and metamorphosed sediments and interbedded volcanics.	OC	OC	48.33	11.86
11.11.14	B	*Acacia harpophylla* open forest on deformed and metamorphosed sediments and interbedded volcanics	EN	EN	3.18	0
11.12.1	B	*Eucalyptus crebra woodland on igneous rocks*	NC	LC	0.12	0
11.12.21	B	*Acacia harpophylla open forest on igneous rocks. Colluvial lower slopes*	EN	EN	2.0	0
Non-remnant	X	-	-	-	1,659.50	258.19
Water	-	-	-	-	4.52	0
				Total	**1,896.79**	**288.15**

1 Regulated Vegetation Category: Category B (remnant vegetation), Category C (high-value regrowth)

2 Biodiversity and VMA Status: EN = Endangered, OC = Of Concern, NC = No Concern

3 Area calculated from State-mapped RE Mapping

Legend

- Railway
- Road
- Cadastre
- MID Corridor

Regional Ecosystem Mapping

- Endangered Vegetation (Category A,B,C or R)
- Non-Remnant Vegetation (Category A,B,C or R)

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MAPPED REGIONAL ECOSYSTEMS

FIGURE 5-18A

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_021_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Regional Ecosystem Mapping

- Endangered Vegetation (Category A,B,C or R)
- Non-Remnant Vegetation (Category A,B,C or R)

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MAPPED REGIONAL ECOSYSTEMS

FIGURE 5-18B

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_021_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Regional Ecosystem Mapping

- Of Concern Vegetation (Category A,B,C or R)
- Least Concern Vegetation (Category A,B,C or R)
- Endangered Vegetation (Category A,B,C or R)
- Non-Remnant Vegetation (Category A,B,C or R)

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

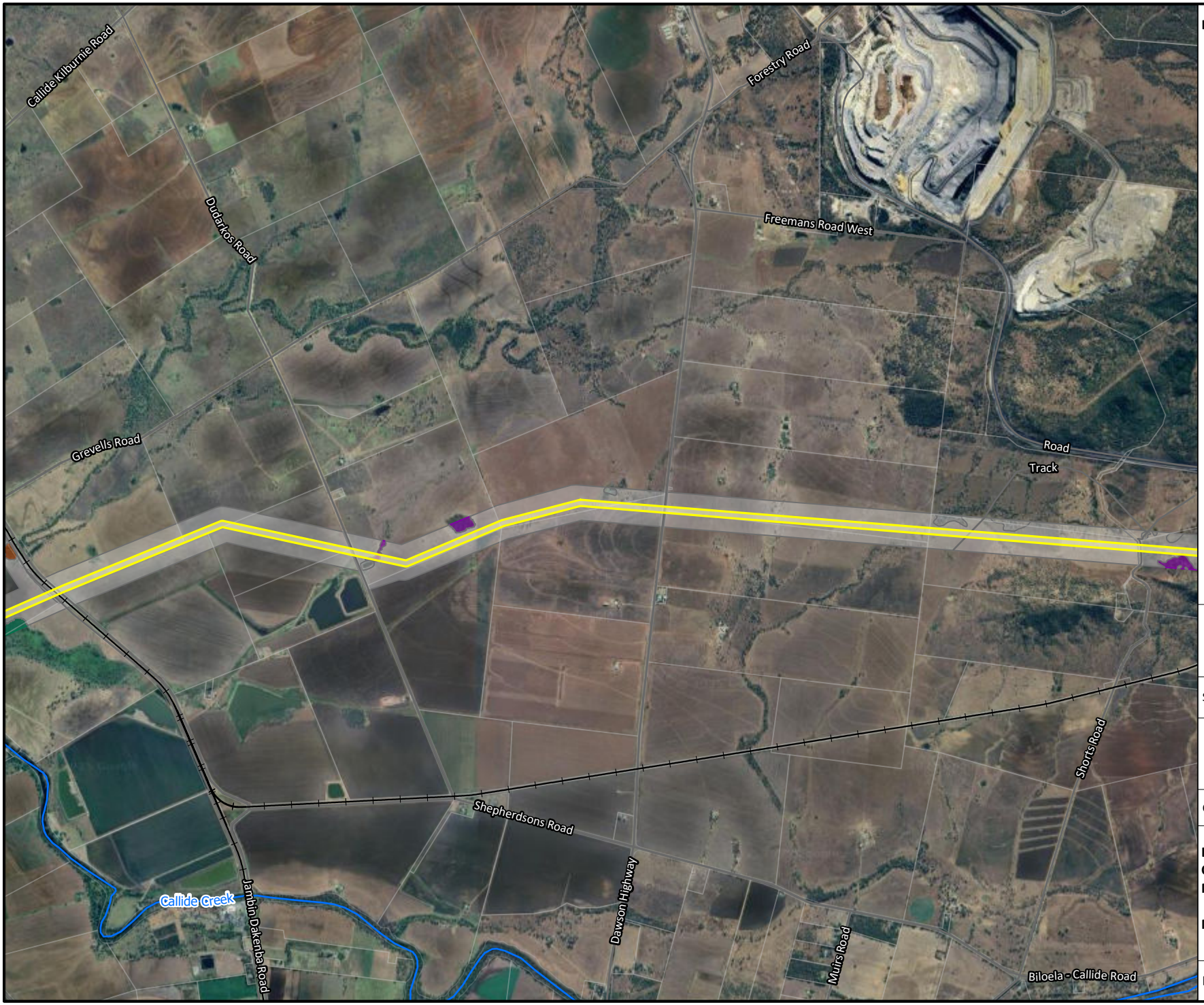
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MAPPED REGIONAL ECOSYSTEMS

FIGURE 5-18C

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_021_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Regional Ecosystem Mapping

- Of Concern Vegetation (Category A,B,C or R)
- Least Concern Vegetation (Category A,B,C or R)
- Endangered Vegetation (Category A,B,C or R)
- Non-Remnant Vegetation (Category A,B,C or R)

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MAPPED REGIONAL ECOSYSTEMS

FIGURE 5-18D

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_021_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Regional Ecosystem Mapping

- Of Concern Vegetation (Category A,B,C or R)
- Least Concern Vegetation (Category A,B,C or R)
- Endangered Vegetation (Category A,B,C or R)
- Non-Remnant Vegetation (Category A,B,C or R)

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

MAPPED REGIONAL ECOSYSTEMS

FIGURE 5-18E

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_021_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Threatened flora species

The EPBC Act PMST report (updated 1 September 2025) identified MNES that are known to occur or may occur within the area of interest (20km buffer), including 17 flora species.

The likelihood of occurrence assessment for the project area revealed six threatened flora species as likely to occur or may occur. These species were identified from both the EPBC Act PMST Report and the WildNet conservation significant species records database, then refined based on habitat suitability and records from the field surveys.

Table 5-14 Commonwealth and State listed flora species considered likely to, or may occur

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Likelihood of Occurrence[3]
Xerothamnella herbacea	-	EN	EN	May occur
Acacia pedleyi	Pedley's Wattle	EN	-	Likely to occur
Samadera bidwillii	Quassia	VU	VU	Likely to occur
Solanum dissectum	-	EN	EN	Likely to occur
Solanum elachophyllum	-	EN	-	Likely to occur
Solanum johnsonianum	-	EN	EN	Likely to occur

1 QLD Status (NC Act): EN = Endangered, VU = Vulnerable, LC = Least Concern

2 EPBC Act Status: EN = Endangered, VU = Vulnerable

3 Data in the 'likelihood of occurrence' column corresponds to information provided in Appendix A of Appendix F

Note: - = no common name exists

Protected flora survey trigger mapping

The flora survey trigger map identifies high-risk areas where threatened or near threatened native plants (protected under the NC Act) are present or are likely to be present. The eastern extent of the project area contains 'high-risk' areas for protected plants on the flora survey trigger map (Figure 5-19). Due to this high-risk mapping, there is a requirement for a protected plant flora survey to be conducted prior to construction of the transmission line.

Essential habitat

Essential habitat is defined under the VM Act as habitat for endangered, vulnerable or near threatened wildlife (protected wildlife; EVNT) prescribed under the NC Act. The project area intersects some areas of essential habitat mapping (Figure 5-19).

This essential habitat mapping corresponds to habitat for the endangered *Cycas megacarpa*, and the Southern Snapping Turtle (*Elseya albagula*). These essential habitat areas intersect Category C (high-value regrowth areas) and have a total area of 0.87ha within the project area.

Corridors and connectivity

Connectivity areas are considered an MSES prescribe environmental matter under the EO Act. A review of the Terrestrial Biodiversity and Aquatic Conservation Values Report identified riparian corridors, and state and regional corridor buffers intersecting the central section of the project area associated with Kroombit Creek and Callide Creek (Figure 5-19).

These connectivity corridors provide critical functions for threatened species persistence in otherwise fragmented landscapes. They represent the remaining linkages, as adjacent land has been extensively cleared for agriculture. In this context, the identified corridors function as refuges and movement pathways that allow threatened species to disperse, access resources, and maintain genetic exchange between isolated populations. Without these linear features, opportunities for movement would be severely constrained, heightening the risk of localised population decline and reducing resilience to environmental pressures such as fire, drought, and climate change.

Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Flora Survey Trigger Map
- Vegetation Management - Essential Habitat

Conservation Corridors (Biodiversity Planning Assessment)

- Regional
- State

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

ESSENTIAL HABITAT AND CONNECTIVITY AREAS

FIGURE 5-19

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_022
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Field assessment results

Ground-truthed vegetation communities

Vegetation within the project area has been categorised into vegetation communities, including cleared areas/exotic grasslands, Eucalypt dominant woodland to open forest, Brigalow dominant woodland to open woodland, Eucalypt dominant riparian associated woodland, ephemeral wetlands, regrowth areas and farm dams (Figure 5-20). The description of the field-verified vegetation communities, corresponding REs, suitable habitat for threatened flora and fauna species, and the potential to conform to a listed TEC are described in Table 5-15.

Table 5-15 Field verified vegetation communities within the MID corridor

Vegetation Community Descriptions	
Cleared areas / exotic grasslands	
Description of vegetation community	Present in non-remnant areas and road verges. The community was characterised by a high density of weeds including *Megathyrsus maximus* (Guinea Grass), *Chloris gayana* (Rhodes Grass) and *Melinis repens* (Red Natal Grass). This vegetation community generally lacked a tree layer; however, supported a low density of native and introduced paddock trees (e.g., *Leucaena leucocephala*; *Leucaena*) and/or shrubs of varying heights in some areas.
Corresponding REs	None identified.
Threatened flora suitable habitat	Limited potential to provide suitable habitat for threatened flora species.
Threatened fauna suitable habitat	Where old growth Eucalypt paddock trees were present containing mistletoe, these may provide foraging habitat for the Painted Honeyeater (*Grantiella picta*). Where an abundance of native grasses occur near remnant or regrowth woodland, these could provide foraging or dispersal habitat for the Squatter Pigeon.
Potential to conform to a TEC	None.
Photograph	

Vegetation Community Descriptions	
Eucalypt dominant woodland to open forest	
Description of vegetation community	This vegetation community was characterised by a dominance of Myrtaceous species in the canopy including *Eucalyptus crebra* (Narrow-leaved Ironbark), *E. tereticornis, E. melanophloia, Corymbia tessellaris* (Moreton Bay Ash) and *E. cambageana*, as well as some isolated stands of *Brachychiton populneus* (Kurrajong). The canopy height ranged between 16-26 m, with an average canopy cover between 40-60%. The understorey comprised rejuvenating canopy species of Eucalyptus, Acacia and Corymbia. The groundcover was typically dominated by native species including *Themeda triandra* (Kangaroo Grass), *Bothriochloa ewartiana* (Desert Bluegrass) and *Heteropogon contortus* (Black Spear Grass). Weed species were present, including L. camara and M. maximus.
Corresponding REs	RE11.11.10, RE11.3.6, RE11.3.2
Threatened flora suitable habitat	Open woodlands and forests providing suitable habitat for *Samadera bidwillii.*
Threatened fauna suitable habitat	Where old growth hollow-bearing trees are present, these may provide denning habitat for hollow dependent mammals, such as the Greater Glider *(Petauroides volans).* Open canopy and mid-canopy perches may be used by arboreal mammals, such as the Koala. Where an abundance of mistletoe occurs, this provides foraging habitat for the Painted Honeyeater. Squatter Pigeon may occur where predominantly native groundcover is present. Areas with rocky outcrops have the potential to host small reptiles, such as Collared Delma.
Potential to conform to a TEC	None
Photograph	

Vegetation Community Descriptions	
Brigalow dominant open forest to woodland	
Description of vegetation community	There were scattered patches of Brigalow throughout the survey area. This vegetation community was dominated by a canopy of *Acacia harpophylla* with a mix of *Eucalyptus cambageana,* or *Casuarina cristata* ranging from 7-20m with a shrubby midstorey containing Acacia spp. The groundcover consisted of encroaching weedy grass species from the adjacent pastoral land and an abundance of leaf litter.
Corresponding REs	RE11.3.1, RE11.4.9b, RE11.9.1, RE11.9.5, RE11.11.14
Threatened flora suitable habitat	Canopy structure and dense leaf litter provides shaded areas suitable for *Xerothamnella herbacea, Solanum dissectum* and *Solanum johnsonianum.*
Threatened fauna suitable habitat	Squatter Pigeon may occur where predominantly native groundcover is present. Where an abundance of mistletoe occurs, this provides foraging habitat for the Painted Honeyeater.
Potential to conform to a TEC	Brigalow TEC
Photograph	

Vegetation Community Descriptions	
Eucalypt dominant riparian associated woodland	
Description of vegetation community	Predominantly had a canopy of *E. tereticornis, E. populnea,* and *E. camaldulensis*, with a midstorey of *Melaleuca bracteata* (Black tea-tree) and *Acacia* spp. Groundcover predominantly natives including *Dichanthium sericeum* (Silky Bluegrass) and *Cymbopogon refractus* (Barbed Wire Grass). Weeds present including *Dolichandrea unguis-cati.*
Corresponding REs	RE11.3.25, RE11.3.4, RE11.3.2
Threatened flora suitable habitat	Alluvial woodlands provide habitat for *Samadera bidwillii.*
Threatened fauna suitable habitat	Where old growth hollow-bearing trees are present, these may provide denning habitat for hollow dependent mammals, such as the Greater Glider. Open canopy and mid-canopy perches may be used the Koala. Where an abundance of mistletoe occurs, this provides foraging habitat for the Painted Honeyeater. Squatter Pigeon may occur where predominantly native groundcover is present. Waterways provide foraging habitat for reptile turtle species (Southern Snapping Turtle), as well as foraging and roosting habitat for migratory and marine birds.
Potential to conform to a TEC	None.
Photograph	

Vegetation Community Descriptions	
Ephemeral wetlands	
Description of vegetation community	This vegetation community appeared ephemeral due to the lack of water during survey events, however contained common species for wetland areas including *Fimbristylis ferruginea* (Rusty Sedge), *Cyperus* sp. and *Marsilea mutica* (Nardoo). There was a lack of sub-canopy with the dominant canopy species being *E. tereticornis.*
Corresponding REs	RE11.3.27
Threatened flora suitable habitat	Nil
Threatened fauna suitable habitat	Where old growth hollow-bearing trees are present, these may provide denning habitat for hollow dependent mammals, such as the Greater Glider. Open canopy and mid-canopy perches may be used the Koala. Where an abundance of mistletoe occurs, this provides foraging habitat for the Painted Honeyeater. Squatter Pigeon may occur where predominantly native groundcover is present. Foraging and roosting habitat for migratory and marine birds.
Potential to conform to a TEC	None.
Photograph	

Vegetation Community Descriptions	
Regrowth vegetation	
Description of vegetation community	This vegetation community is Category X (non-remnant) however native vegetation is regrowing, tracking toward Category C (high-value regrowth) vegetation. Typically occurred along road verges.
Corresponding REs	None
Threatened flora suitable habitat	Marginal suitable habitat for threatened flora due to previous disturbance and edge effects.
Threatened fauna suitable habitat	Habitat forms part of foraging mosaic for threatened species, especially if connected to suitable habitat for them.
Potential to conform to a TEC	None.
Photograph	

Vegetation Community Descriptions	
Farm dam	
Description of vegetation community	Aquatic habitat associated with agricultural farm dams. Typically associated with a lack of riparian habitat and cover.
Corresponding REs	None
Threatened flora suitable habitat	None
Threatened fauna suitable habitat	Marginally suitable habitat for migratory shorebirds and waders.
Potential to conform to a TEC	None.
Photograph	

Legend

- Railway
- Road
- Cadastre
- MID Corridor

Vegetation Communitites

- Brigalow open woodland
- Cleared areas
- Farm Dam

Powerlink Queensland

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED VEGETATION COMMUNITIES

FIGURE 5-20A

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_5_20_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Vegetation Communitites

- Brigalow open woodland
- Cleared areas

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED VEGETATION COMMUNITIES

FIGURE 5-20B

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_5_20_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Vegetation Communitites

- Eucalypt dominant riparian associated woodland
- Brigalow open woodland
- Cleared areas
- Ephemeral wetlands
- Farm Dam
- Regrowth vegetation

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

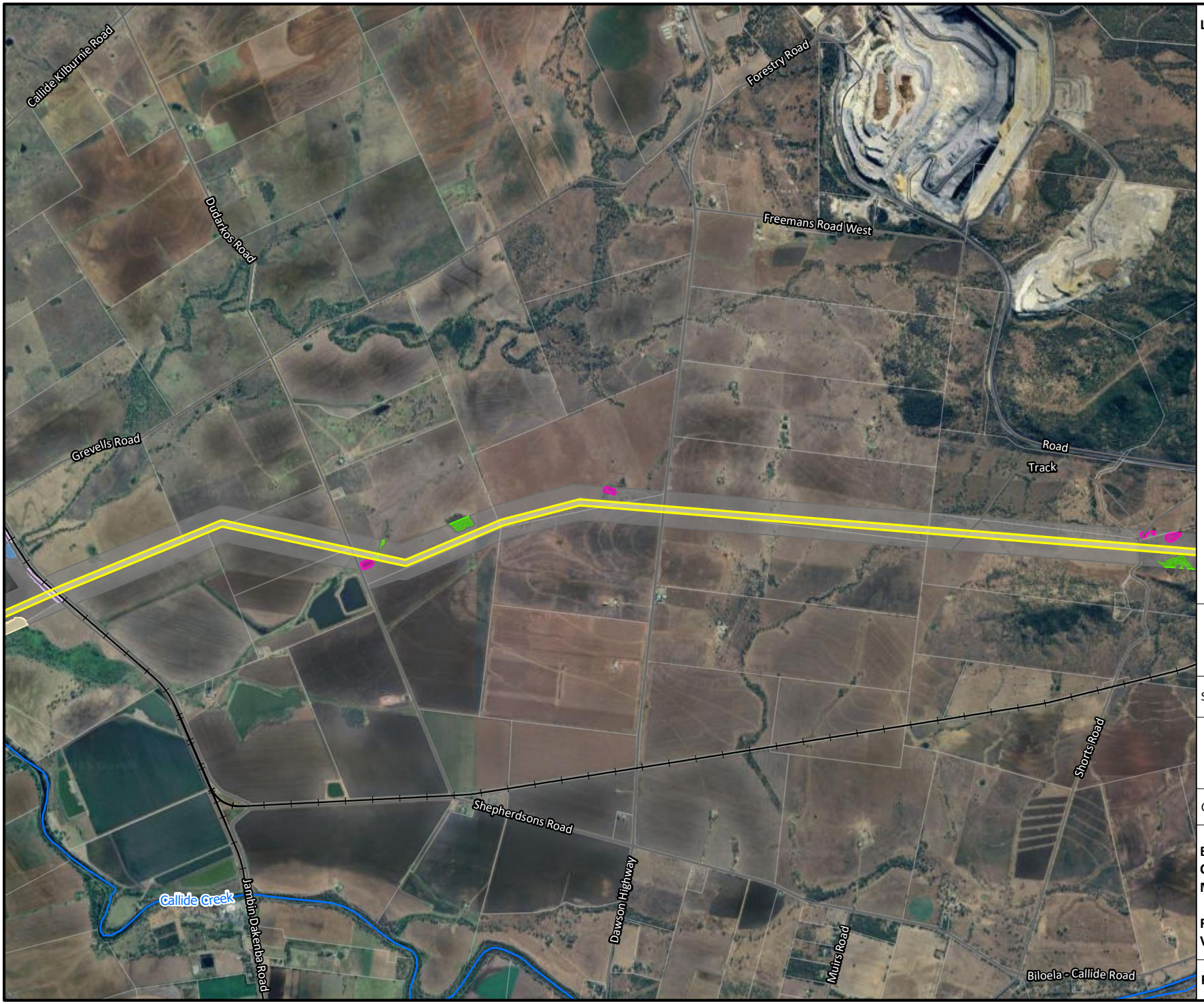
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED VEGETATION COMMUNITIES

FIGURE 5-20C

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_5_20_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025



Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Vegetation Communitites

- Eucalypt dominant riparian associated woodland
- Brigalow open woodland
- Cleared areas
- Ephemeral wetlands
- Farm Dam
- Regrowth vegetation

Powerlink Queensland

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED VEGETATION COMMUNITIES

FIGURE 5-20D

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_5_20_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Legend

- Railway
- Road
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Vegetation Communitites

- Eucalypt dominant riparian associated woodland
- Brigalow open woodland
- Cleared areas
- Farm Dam
- Eucalypt dominant woodland to open forest
- Water

Powerlink Queensland

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED VEGETATION COMMUNITIES

FIGURE 5-20E

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_MapSeries_v1 / 62094_MID_5_20_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Field validated regional ecosystems

The project area consisted predominantly of cleared grazing and cropping land, which coincides with the mapped non-remnant vegetation areas on Figure 5-18. The field survey assessed the Category B (remnant), C (high-value regrowth) and R (reef regrowth watercourse) regulated vegetation within the project area using the Quaternary survey methodology, as per the *Methodology for surveying and mapping regional ecosystems and vegetation communities* (Neldner et al., 2023b).

A total of 215 Quaternary surveys were undertaken throughout the project area (refer to Map 5 in Appendix G of Appendix F for survey effort and locations). The Quaternary surveys identified deviations from the mapped vegetation communities within the Category B (remnant) and C (high-value regrowth) areas of the project area.

Table 5-16 details the remnant REs that were identified throughout the project area and MID corridor and the calculated area extents these REs cover within the project area and MID corridor.

Table 5-16 Regional Ecosystems mapped within the MID corridor

RE	Category[1]	Description	Biodiversity Status[2]	VMA Class[2]	Field verified extent (ha)[3]	
					Project area	MID corridor
11.3.1	B and C	*Acacia harpophylla* and/or *Casuarina cristata* open forest on alluvial plains.	EN	EN	14.37	0.24
11.3.2	C	*Eucalyptus populnea* woodland on alluvial plains	OC	OC	10.97	0.33
11.3.4	B	*E. tereticornis* and/or *E. spp*. Woodland on alluvial plains.	OC	OC	20.06	0.99
11.3.6	B	*Eucalyptus melanophloia* woodland on alluvial plains	OC	LC	11.02	2.38
11.3.25	B	*E. tereticornis* or *E. camaldulensis* woodland fringing drainage lines.	OC	LC	47.89	0.28
11.3.27	B and C	Freshwater wetlands. Vegetation is variable.	OC	LC	28.43	1.47
11.4.9b	B	*A. harpophylla, E. thozetiana* (sometimes *E. cambageana)* open forest to woodland	EN	EN	3.77	0
11.9.1	B	*Acacia harpophylla-E. cambageana* woodland to open forest on fine-grained sedimentary rocks	EN	EN	8.08	0
11.9.5	C	*Acacia harpophylla* and/or *C.cristata* open forest to woodland on fine-grained sedimentary rocks.	EN	EN	5.13	0
11.11.10	C	*E. melanophloia* woodland on deformed and metamorphosed sediments and interbedded volcanics.	OC	OC	32.08	2.04
11.11.14	B	*A. harpophylla* open forest on deformed and metamorphosed	EN	EN	2.31	0

RE	Category[1]	Description	Biodiversity Status[2]	VMA Class[2]	Field verified extent (ha)[3]	
					Project area	MID corridor
		sediments and interbedded volcanics.				
Non-remnant	X	-	-	-	1711.41	97.76
Water	-	-	-	-	1.26	0
				Total	**1,896.78**	**105.49**

1 Regulated Vegetation Category: Category B (remnant vegetation), Category C (high-value regrowth)

2 Biodiversity and VMA Status: EN = Endangered, OC = Of Concern

Threatened Ecological Communities

Patches of field verified Brigalow open woodland vegetation within the project area was identified as having potential to conform to the EPBC listed endangered Brigalow *(A. harpophylla* dominant and co-dominant) TEC (hereon referred to as Brigalow TEC).

An assessment has been undertaken within the Ecological Assessment Report (Section 5.1.3 of Appendix F) to confirm if the Brigalow open woodland vegetation communities conformed to the key diagnostic characteristics and the condition thresholds contained in the Approved Conservation advice for the Brigalow *(A. harpophylla* dominant and co-dominant) TEC. This assessment identified that sections of the ground-truthed Brigalow open woodland vegetation community conformed to both the key diagnostic criteria and the condition thresholds to be considered Brigalow TEC. The REs that conformed to the TEC included RE11.3.1, RE11.4.9b, RE11.9.5, and RE11.11.14.

The disturbance footprint however avoids all patches of TEC through design mitigations. As such, there will be no direct impacts to Brigalow TEC as a result of the Project.

Poplar Box Grassy Woodland on Alluvial Plains TEC, Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions TEC and Weeping Myall Woodlands TEC were identified as part of the desktop assessment as likely to occur within the project area due to the mapped presence of corresponding REs. Field-verification however, confirmed that no REs in the project area conformed to the description, key diagnostic criteria or condition thresholds for these TECs. Hence, none occurred within the project area or MID corridor.

Legend

- Road
- Railway
- Cadastre
- MID Corridor
- Brigalow TEC

Ground-truthed REs

- 11.3.1

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED RES AND TECS

FIGURE 5-21A

File Name: 62094_MID_023_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor
- Brigalow TEC

Ground-truthed REs

- 11.3.1
- 11.4.9b
- 11.9.1

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

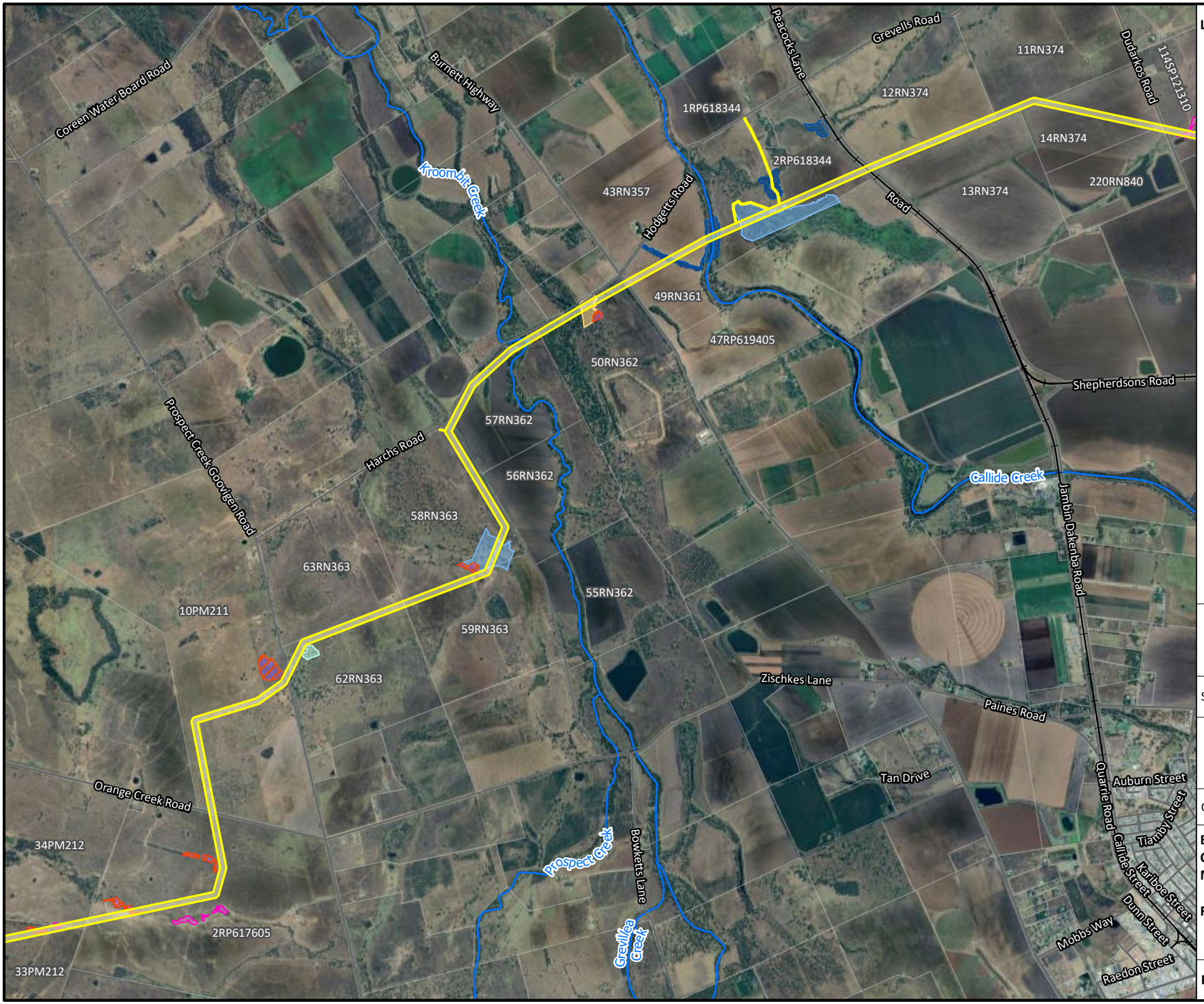
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED RES AND TECS

FIGURE 5-21B

File Name: 62094_MID_023_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- MID Corridor
- Brigalow TEC

Ground-truthed REs

- 11.3.1
- 11.3.2
- 11.3.25/11.3.4
- 11.3.27/11.3.4
- 11.4.9b
- 11.9.1

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

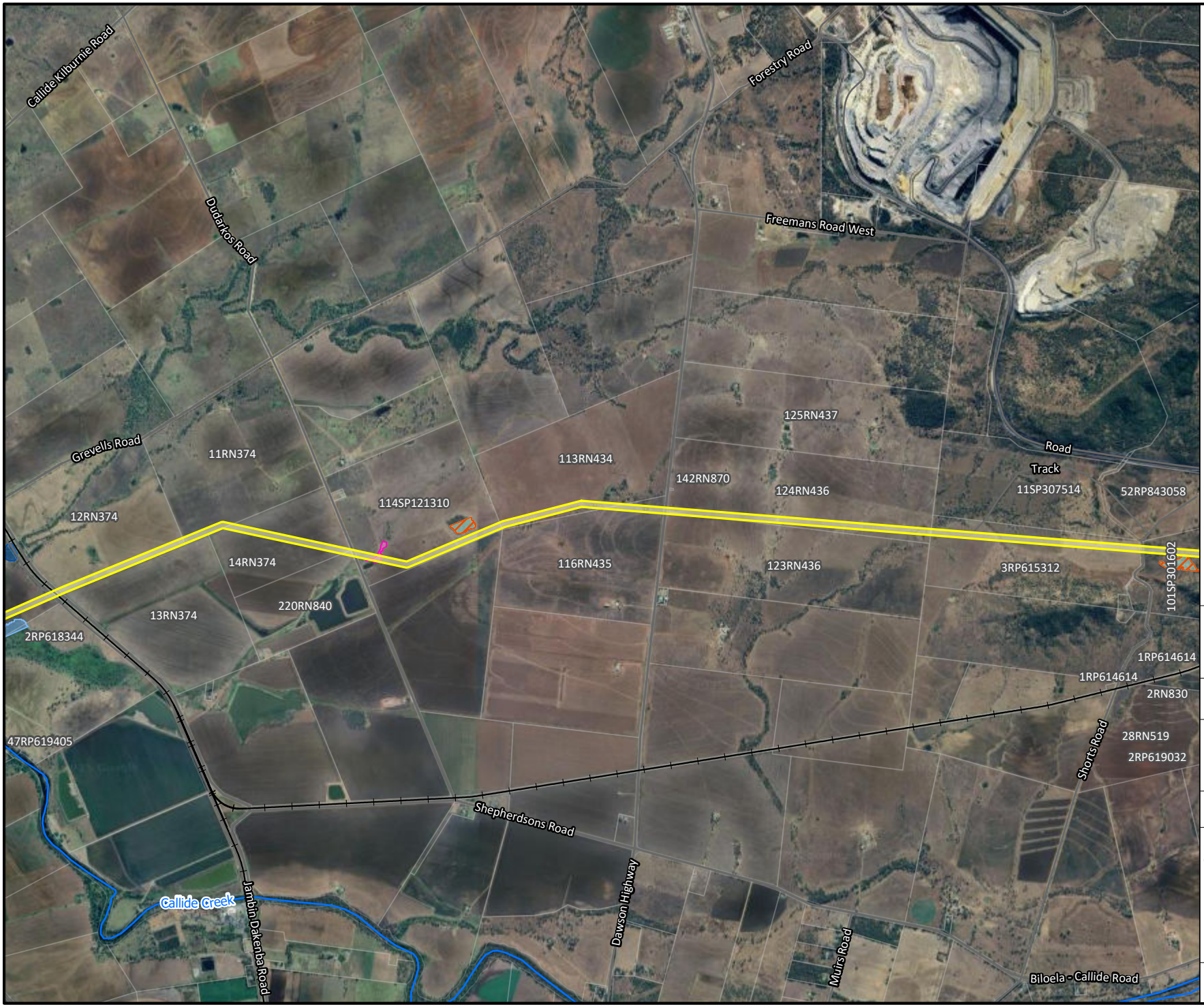
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED RES AND TECS

FIGURE 5-21C

File Name: 62094_MID_023_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- MID Corridor
- Brigalow TEC

Ground-truthed REs

- 11.3.1
- 11.3.25/11.3.4
- 11.3.27/11.3.4
- 11.9.1

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED RES AND TECS

FIGURE 5-21D

File Name: 62094_MID_023_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Brigalow TEC

Ground-truthed REs

- 11.11.10
- 11.3.1
- 11.3.2
- 11.3.25/11.3.4
- 11.9.1

Powerlink QUEENSLAND

Scale 1:50,000

0 1,000 2,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED RES AND TECS

FIGURE 5-21E

File Name: 62094_MID_023_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 09/10/2025

Threatened flora species

Both native and introduced flora species were incidentally recorded throughout the project area. A full list of flora species recorded has been listed in Appendix C within Appendix F. There was a total of 162 flora species identified, consisting of 80 native species, and 82 introduced species.

There were no threatened flora species recorded during the field assessment.

Suitable habitat for threatened flora species

While there were no threatened flora species identified during the field surveys, some threatened flora species, identified as likely to occur, or may occur within the likelihood of occurrence assessment have suitable habitat available within the project area. These species, and the vegetation communities within the project area that may provide suitable habitat have been described in Table 5-17.

The suitable habitat areas within the disturbance footprint were meandered to confirm presence/absence of these six threatened flora species. Meanders were conducted in accordance with the *Flora Survey Guidelines – Protected Plants* (DES, 2020). None of the threatened plant species listed in Table 5-17 were verified during these meanders. Hence, it was considered unlikely they occur within the disturbance footprint.

Table 5-17 Threatened flora species with suitable habitat verified within the MID corridor

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Suitable habitat in the Project area and MID corridor
Xerothamnella herbacea	-	EN	EN	Brigalow dominant open forest to woodland
Acacia pedleyi	Pedley's Wattle	EN	-	Eucalypt dominant woodland to open forest
Samadera bidwillii	Quassia	VU	VU	Eucalypt dominant riparian associated woodland
Solanum dissectum	-	EN	EN	Brigalow dominant open forest to woodland
Solanum elachophyllum	-	EN	-	Brigalow dominant open forest to woodland
Solanum johnsonianum	-	EN	EN	Brigalow dominant open forest to woodland

1 QLD Status (NC Act): EN = Endangered, VU = Vulnerable

2 EPBC Act Status: EN = Endangered, VU = Vulnerable

Note: - = no common name exists

Corridors and connectivity

Much of the vegetation through which the MID corridor traverses is fragmented and isolated, surrounded by pastoral and cropping land, and defined further by major roads. These roads and pastoral/cropping land greatly impact the fauna habitat connectivity values of the MID corridor. While this is the case, the fragmented and isolated remnant patches of vegetation form part of the limited remaining stands of vegetation within the Banana Range area, traversing between Overdeen State Forest and Kroombit Tops National Park. In this regard, whilst isolated and fragmented, the vegetation is likely to provide an important passage for fauna, providing dispersal opportunities within the project area. Additionally, the fragmented and isolated vegetation strands within the project area are anticipated to provide important stepping-stone habitat for a range of birds and bat species, which are likely to contribute towards the mosaic of foraging resources throughout the region.

The MID corridor traverses through vegetation associated with two major watercourses, Callide and Kroombit Creeks, and a large tract of vegetation to the north of Lake Callide in the eastern part of the project area. These vegetated areas would provide important fauna movement opportunities for the region, connecting isolated remnant patches with larger intact areas of habitat. The watercourses within the MID corridor would also provide important aquatic fauna movement to upstream and downstream reaches of these streams.

5.7.2 Potential impacts

Infrastructure associated with the Project has the potential to impact on flora and vegetation communities in the area. Potential impacts during construction and operation are summarised below.

Construction

Potential construction impacts include:

- Vegetation clearing, resulting in the following impacts:
    - Direct loss of vegetation communities from clearing of endangered and of concern REs and clearing endangered or of concern REs that intersect wetland or watercourses.
- Increased edge effect pressure which can result in weed invasion throughout the corridor and surrounding areas, and the introduction and spread of fauna pest species. Weeds also compete with native vegetation communities and threaten the biodiversity values of remaining communities.
- Modification of watercourses and wetlands, potentially impacting water quality and loss of aquatic habitats.
- Changes in hydrology of wetlands due to vegetation clearing.
- Increased potential for sedimentation and erosion due to soil exposure.
- Increased bushfire hazard risk during construction from potential ignition sources such as increased vehicle movements, heavy machinery operations and from construction activities (e.g., welding).

Vegetation clearing

Vegetation clearing is required throughout the disturbance footprint to support construction and maintenance activities along the easement, as well as to reduce bushfire hazard risk. This clearing is expected to result in impacts to MNES and MSES, through a reduction in the condition of remaining habitat.

Impact area calculations for each prescribed matter (MNES and MSES) are provided in Table 5-13 and Table 5-16.

The total area of the MID corridor is 105.49ha, of which, 7.73 ha (7.34%) regulated native vegetation that will be cleared. The balance of the footprint is predominantly cleared agricultural land and existing infrastructure (e.g., roads). As a result, impacts to fauna are expected to be localised to vegetation patches directly affected by clearing, rather than broadscale across the disturbance footprint.

Edge effects

Edge effects refer to changes in population or community structure that occur at habitat boundaries, and they are often more pronounced in small or fragmented habitat patches. Vegetation clearing within the project area is expected to increase pressure on remaining habitat through weed invasion and the introduction or spread of pest fauna species. Weeds compete with native vegetation, reduce

habitat condition, and diminish biodiversity values, while pest fauna can displace native species through predation and competition.

Numerous introduced flora species were recorded as dominant throughout much of the project area, including Guinea Grass, Rhodes Grass, Red Natal Grass, and Leucaena. Several species listed as restricted matter under the Biosecurity Act and as WoNs were also present, including Lantana, Cat's Claw Creeper, Opuntioid Cacti, Parthenium Weed, and Prickly Acacia.

Watercourse and wetland modification

Clearing of riparian vegetation has the potential to reduce the ecological integrity of watercourses and wetlands by impacting water quality and diminishing instream aquatic habitat.

Sedimentation and erosion

Construction activities involving clearing, excavation, and filling will disturb land surfaces, increasing the risk of erosion. Exposed soils can be mobilised by stormwater and transported into watercourses and wetlands. Nutrient pollution is also a concern, as nutrients such as phosphorus readily bind to eroding sediment particles and can be carried to sensitive downstream environments, including waterbodies and wetlands.

Sediment deposition can degrade aquatic habitats and water quality by increasing turbidity, reducing water depth, and promoting algal growth. In addition to sediments and nutrients, construction activities can generate other pollutants if not managed appropriately. These include pesticides, fertilisers, hydrocarbons (e.g., oils, fuel, hydraulic fluids) from construction vehicles, and general waste, all of which have the potential to enter watercourses and wetlands and cause significant ecological impacts.

Bushfire hazard

The project area contains scattered areas mapped as medium to high bushfire hazard potential. The risk of bushfire is elevated during both the construction and operational phases of the transmission line. During construction, potential ignition sources include increased vehicle movements, operation of heavy machinery, and activities such as welding. During operation, bushfire risk may arise from interactions between powerlines, vegetation, and fauna, which can act as ignition sources and lead to unmanaged fires if not effectively managed.

Operation

Potential impacts to MNES and MSES during operation and maintenance include:

- Increased potential for weed invasion, which can compete with native vegetation communities and threaten the biodiversity values of remaining communities.
- Increased bushfire hazard risk from powerlines, which could result in unmanaged fires.

5.7.3 Mitigation measures

Powerlink have implemented the hierarchy of management principles in the planning and development of this project, which includes avoid, minimise, mitigation, remediate then offset. These principals are described below:

- **Avoidance**: Designing the MID Corridor to avoid direct impacts to ecological values (e.g., avoid vegetation clearing where practical).
- **Minimise**: Minimise direct and indirect impacts where they cannot be completely avoided.
- **Mitigate**: Implement mitigation and management measures during construction and operation to reduce direct and indirect cumulative impacts.

- **Remediate**: Actively rehabilitate impacted areas where possible to promote long term recovery to achieve stabilisation of soil.
- **Offset**: Provide suitable offsets for activities that result in a Significant Residual Impact (SRI) to ecological values after all other management principles have been implemented.

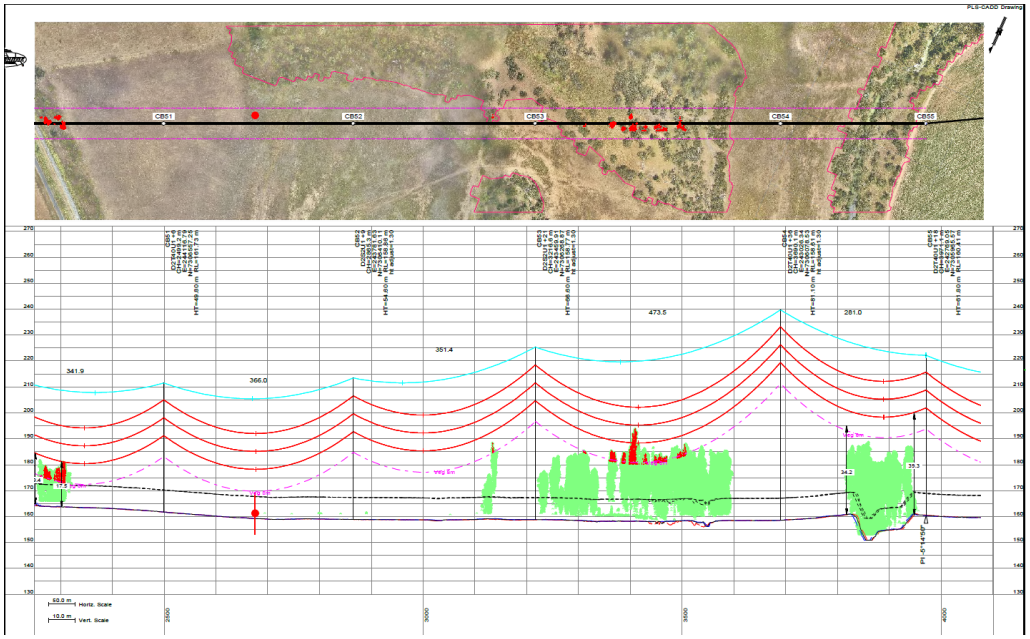
The following sections describe how impacts on ecological values from the project will be managed through the hierarchy of management principles approach.

Table 5-18 Impact management for flora

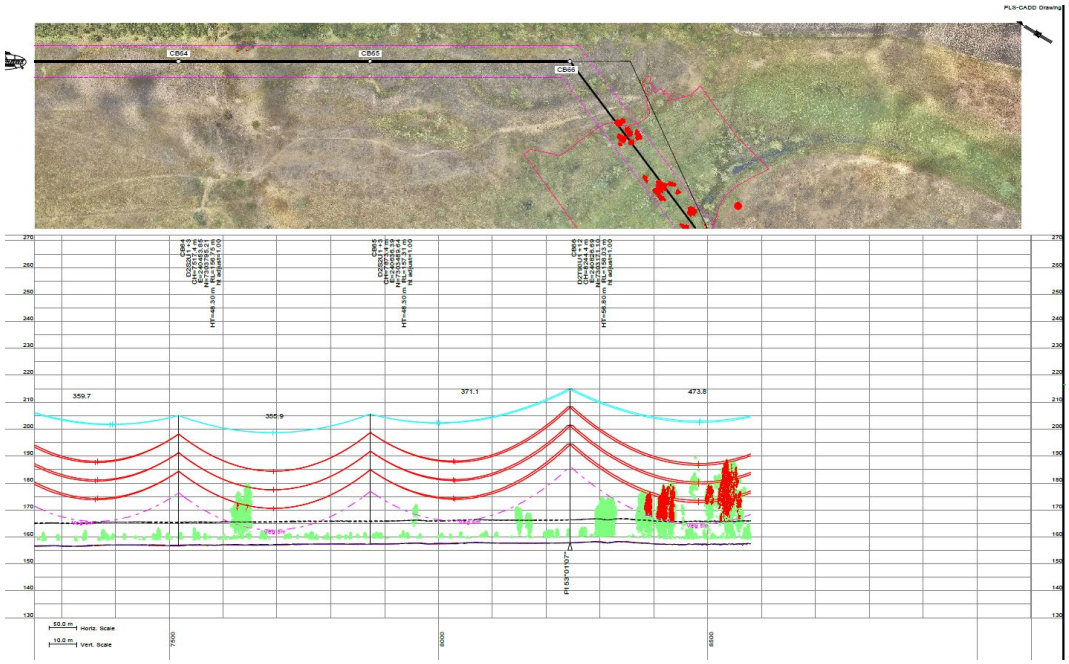
Management Principle	Measure
Avoidance	Findings from the Corridor Selection Report (JBS&G, 2022) and ecological field surveys have contributed to multiple changes in the placement of the transmission line corridor and refinement of the disturbance footprint to avoid impacts to MNES and MSES. Throughout the survey period, our ecologists have had numerous meetings and conversations with Powerlink personnel to clarify the verified ecological values and constraints, and discuss opportunities to avoid, minimise and mitigate impacts through changes to the position of the corridor, changes to clearing widths and tower placement, while also balancing landholder approval and expectations. There are several issues that have prevented any further avoidance measures being implemented, including landholder resistance, proximity to households, and technical constraints (e.g., accounting for conductor sag and swing, and bushfire hazard risk) which significantly inhibit broad design flexibility around isolated patches of remnant vegetation. Where it has not been feasible to entirely avoid areas of ecological value, location changes and design adjustments (e.g., adjusting tower heights) have been implemented where possible to minimise impacts. Avoidance measures were the priority to reduce impacts. Key avoidance measures implemented to date have included: • Selection of the most feasible route for the corridor based on the Corridor Selection Report (JBS&G, 2022), which considered a range of social, environmental, and physical factors identified from desktop and field-based analysis, and engagement with landholders, the wider community, and other stakeholders. • Aligning the corridor through cleared non-remnant areas wherever possible to avoid clearing remnant vegetation, areas constituting Brigalow TEC, and HES wetland areas. • Co-locating infrastructure corridors where possible to avoid additional edge effects. • Reducing the disturbance footprint width wherever feasible to avoid clearing native vegetation, while also accounting for conductor sag and swing and bushfire hazard risk. • Utilisation of existing access tracks where available. Further impacts will be avoided during construction by: • Micro-siting tower positions.
Minimisation	Where full avoidance of ecological values has not been feasible, corridor location changes and design adjustments have been implemented to minimise impacts, including: • Micro-sighting of each individual tower is planned to occur pre-construction, which looks at the on-ground conditions, and adjust the location as required to minimise impacts. • Tower structures have been located >50m from watercourses and wetlands where possible. Towers have been located outside of the riparian vegetation to reduce impacts to these sensitive areas. • Refining the location of the corridor through narrower wetland areas with less canopy cover to avoid significant clearing and habitat fragmentation. • Significant design changes have occurred within the vicinity of the mapped HES wetland area, the potential HES wetland and Callide Creeks, including: ○ Raising towers CB53, CB54 and CB55 on the fringe of the mapped HES wetland and Callide Creek to their maximum height to span the majority of vegetation within the wetland and watercourse extent, to minimise vegetation impacts.

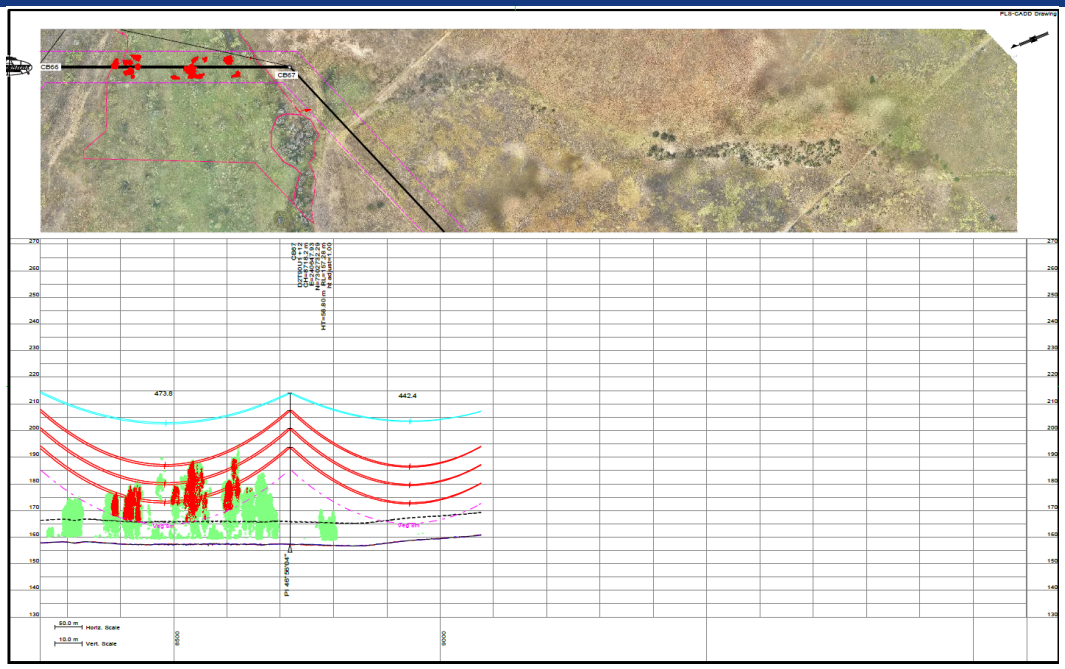
Management Principle	Measure

The figure below (courtesy of Powerlink) provides the plan and profile for CB51 to CB55 illustrating the increase in tower heights in order to span the majority of existing vegetation and minimise the need for clearing. Areas shaded green show where vegetation is present beneath the alignment, while the red markers identify specific locations where vegetation will need to be cleared and maintained to achieve safe clearance distances and ensure compliance with transmission line operating requirements. By raising tower heights, the design reduces the extent of vegetation disturbance, confining clearing to only the critical locations shown in red, while maintaining the integrity of the surrounding vegetation wherever possible.



- Raising towers CB66 and CB67 on the fringe of the potential HES wetland to their maximum height to span some of the vegetation within the wetland extent, to minimise vegetation impacts. Figures below (courtesy of Powerlink) provides the plan and profile for CB64-67.



Management Principle	Measure
	
Mitigation	Once avoidance and minimisation strategies have been implemented, mitigation and management measures have been proposed to reduce direct and indirect cumulative impacts during construction and operation. Mitigation measures planned to be implemented include: • Exclusion areas will be delineated to avoid unauthorised disturbance to native vegetation communities, wetlands and threatened species habitat and communities. • Weeds will be monitored throughout the life of the construction phase with management and control strategies provided in the Construction Biosecurity Management Plan, which allows Powerlink to undertake a risk-based approach to managing the risk of spreading or introducing biosecurity matters because of its activities. A Pre-construction weed survey of the disturbance footprint will be undertaken to inform the development of the Construction Biosecurity Management Plan. • All construction measures will be documented within a Construction Environmental Management Plan which will be prepared by the construction contractor, in consultation with Powerlink, which will include mitigation measures such as management of dust, noise, and light impacts; management of erosion through erosion and sediment control measures; topsoil management; chemical storage, spill containment and management requirements; traffic management including speed restrictions; weed and seed washdown requirements for machinery and vehicles; designated construction working hours etc. • Bushfire risk will be managed throughout the life of the Project. The risk will be reduced through the implementation of several safety strategies, including having vegetation cleared throughout the project area to avoid vegetation interaction with powerlines and provide adequate buffers from nearby vegetation stands (i.e., firebreaks). Operation and maintenance of the Project will be undertaken in accordance with Powerlink's Bushfire Mitigation Plan. • Regular routine monitoring and maintenance will take place throughout the life of the Project to manage erosion, vegetation regrowth and bushfire hazard risks.
Remediation	When construction activities have been completed, each tower site will be rehabilitated to ensure the soil is stable and provides a matrix for vegetation establishment to prevent erosion. Rehabilitation also includes the replacement or reinstallation of farm infrastructure that may have been removed and remediation of paddocks affected by construction activities to allow farming activities to recommence.

Management Principle	Measure
Offset	The infrastructure designation process under the Planning Act 2016 (Qld) is not considered a prescribed activity for the purpose of providing an offset under the EO Act. Therefore, as the Project will be subject to approval under the infrastructure designation process, offsets for significant residual impacts to MSES do not apply under the Planning Act. The Project would however be considered a prescribed activity for the taking of a protected plant within the meaning of the NC Act, however none were detected within the clearing impact area or disturbance footprint. Accordingly, no significant impact is anticipated, and offsets are not required. Regardless of no offsets being required for impacts to MSES, the avoid, minimise, mitigate approach to the Project has been employed to reduce impacts on MSES.

5.8 Fauna

An ecological assessment has been undertaken for the Project which is included in Appendix F. A summary of the findings of the ecology assessment, relevant to fauna, is presented below.

The terminology identified in Section 5.7 has also been used within this Section.

5.8.1 Existing environment

Desktop assessment results

Threatened fauna species

The EPBC Act PMST report (updated 1 September 2025) identified MNES that are known to occur or may occur within the area of interest (20km buffer), including 31 fauna species.

The likelihood of occurrence assessment for the project area revealed eleven threatened fauna species and three migratory species as likely to occur or may occur. These species were identified from both the EPBC Act PMST Report and the WildNet conservation significant species records database, then refined based on habitat suitability and records from the field surveys.

Table 5-19 Commonwealth and State listed flora species considered likely to, or may occur

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Likelihood of Occurrence[3]
Birds				
Hirundapus caudacutus	White-throated Needletail	VU	VU, Mi, M	Likely to occur
Geophaps scripta scripta	Squatter Pigeon (southern)	VU	VU	Recorded
Grantiella picta	Painted Honeyeater	VU	VU	Recorded
Calidris acuminata	Sharp-tailed Sandpiper	SLC	VU, Mi, M	May occur
Mammals				
Dasyurus hallucatus	Northern Quoll	LC	EN	May occur
Phascolarctos cinereus	Koala	EN	EN	Recorded
Petauroides Volans	Greater Glider (southern/central)	EN	EN	May occur
Tachyglossus aculeatus	Short-beaked Echidna	SLC	-	Recorded
Reptiles				
Elseya albagula	Southern Snapping Turtle	CR	CE	May occur
Denisonia maculate	Ornamental Snake	VU	VU	May occur
Delma torquate	Collared Delma	VU	VU	May occur
Migratory species				
Apus pacificus	Fork-tailed Swift	SLC	M, Mi	May occur
Gelochelidon nilotica	Gull-billed Tern	SLC	M, Mi	May occur
Hydroprogne caspia	Caspian Tern	SLC	M, Mi	May occur

1 QLD Status (NC Act): CR= Critically Endangered, EN = Endangered, VU = Vulnerable, LC = Least Concern, SLC = Special Least Concern

2 EPBC Act Status: EN = Endangered, VU = Vulnerable, M = Marine, T= Terrestrial, W= Wetland, Mi = Migratory

3 Data in the 'likelihood of occurrence' column corresponds to information provided in Appendix A of Appendix F

State-listed threatened wildlife habitat

Modelled habitat mapping for threatened species provides an indication of where state-listed threatened species habitat is likely to occur which could potentially cause constraints to the Project. The MSES modelled habitat suitability mapping based on current vegetation community mapping identified minimal areas of wildlife habitat for state-listed endangered or vulnerable wildlife, or special least concern species throughout the project area (Figure 5-19).

The extent that wildlife habitat was mapped is the far eastern extent of the MID corridor, south of the CS Energy Power Station.

Field assessment results

Threatened fauna species

A total of 99 fauna species were observed during the field surveys, comprising the following:

- One amphibian;
- 72 bird species;
- 22 mammal species; and
- Four reptile species.

From the recorded fauna species, Table 5-20 contains and Figure 5-22 shows, the threatened species that were recorded during the field assessment. No listed migratory species were recorded during the field assessment.

Table 5-20 Observed threatened species within/near the MID corridor

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Suitable habitat	Observation description
Geophaps scripta scripta	Squatter Pigeon	VU	VU	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland • Ephemeral wetlands	Observed approximately 800m south of the project area in the eastern section, on two occasions.
Grantiella picta	Painted Honeyeater	VU	VU	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland • Brigalow dominant open forest to woodland • Ephemeral wetlands	Two records; feeding on mistletoe near Brigalow open woodland, and in E. camaldulensis community associated with HES wetland
Phascolarctos cinereus	Koala	EN	EN	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland	Signs observed on *E. tereticornis* in Kroombit Creek. Scat recorded in eastern part of project area.

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Suitable habitat	Observation description
				• Ephemeral wetlands	
Tachyglossus aculeatus	Echidna	SLC	-	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland • Brigalow dominant open forest to woodland • Regrowth areas	Species recorded within riparian habitat of Callide Creek.

1 QLD Status (NC Act): VU = Vulnerable, EN = Endangered

2 EPBC Act Status: VU = Vulnerable, EN = Endangered

Suitable habitat for threatened and migratory fauna species

Some threatened, migratory or special least concern fauna species that were considered likely to occur or may occur during the likelihood of occurrence assessment, whilst not detected during the field survey, have suitable habitat verified within the project area. These threatened species, and the vegetation communities within the MID corridor that may provide suitable habitat have been described in Table 5-21.

Table 5-21 Threatened fauna species considered likely to occur on the basis of suitable habitat verified within the MID corridor

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Suitable habitat
Threatened Species				
Hirundapus caudacutus	White-throated Needletail	VU	VU	• Eucalypt dominant woodland to open forest • Alluvial woodlands • Ephemeral wetlands
Calidris acuminata	Sharp-tailed Sandpiper	SLC	VU, Mi, M	• Ephemeral wetlands
Dasyurus hallucatus	Northern Quoll	LC	EN	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland
Petauroides volans	Greater Glider (southern/ central)	EN	EN	• Eucalypt dominant woodland to open forest • Eucalypt dominant riparian associated woodland • Ephemeral wetlands
Elseya albagula	Southern Snapping Turtle	CR	CE	• None, aquatic species associated with instream habitat only.
Denisonia maculata	Ornamental Snake	VU	VU	• Brigalow dominant woodland to open forest
Delma torquata	Collared Delma	VU	VU	• Eucalypt dominant woodland to open forest

Scientific Name	Common Name	QLD Status[1]	EPBC Status[2]	Suitable habitat
				• Eucalypt dominant riparian associated woodland
Migratory Species				
Apus pacificus	Fork-tailed Swift	SLC	M, Mi	• Eucalypt dominant woodland to open forest • Alluvial woodlands • Ephemeral wetlands
Gelochelidon nilotica	Gull-billed Tern	SLC	M, Mi	• Ephemeral wetlands
Hydroprogne caspia	Caspian Tern	SLC	M, Mi	• Eucalypt dominant riparian associated woodland • Ephemeral wetlands

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Powerlink QUEENSLAND

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1A

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1B

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Threatened Species Observation

- Koala (scratches)

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1C

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Threatened Species Observation

- Koala (scat)
- Koala (scratches)

Powerlink Queensland

Scale 1:30,000

0 500 1,000
metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1D

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Powerlink QUEENSLAND

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1E

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Koala Habitat

- Dispersal
- Climate Refugia

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

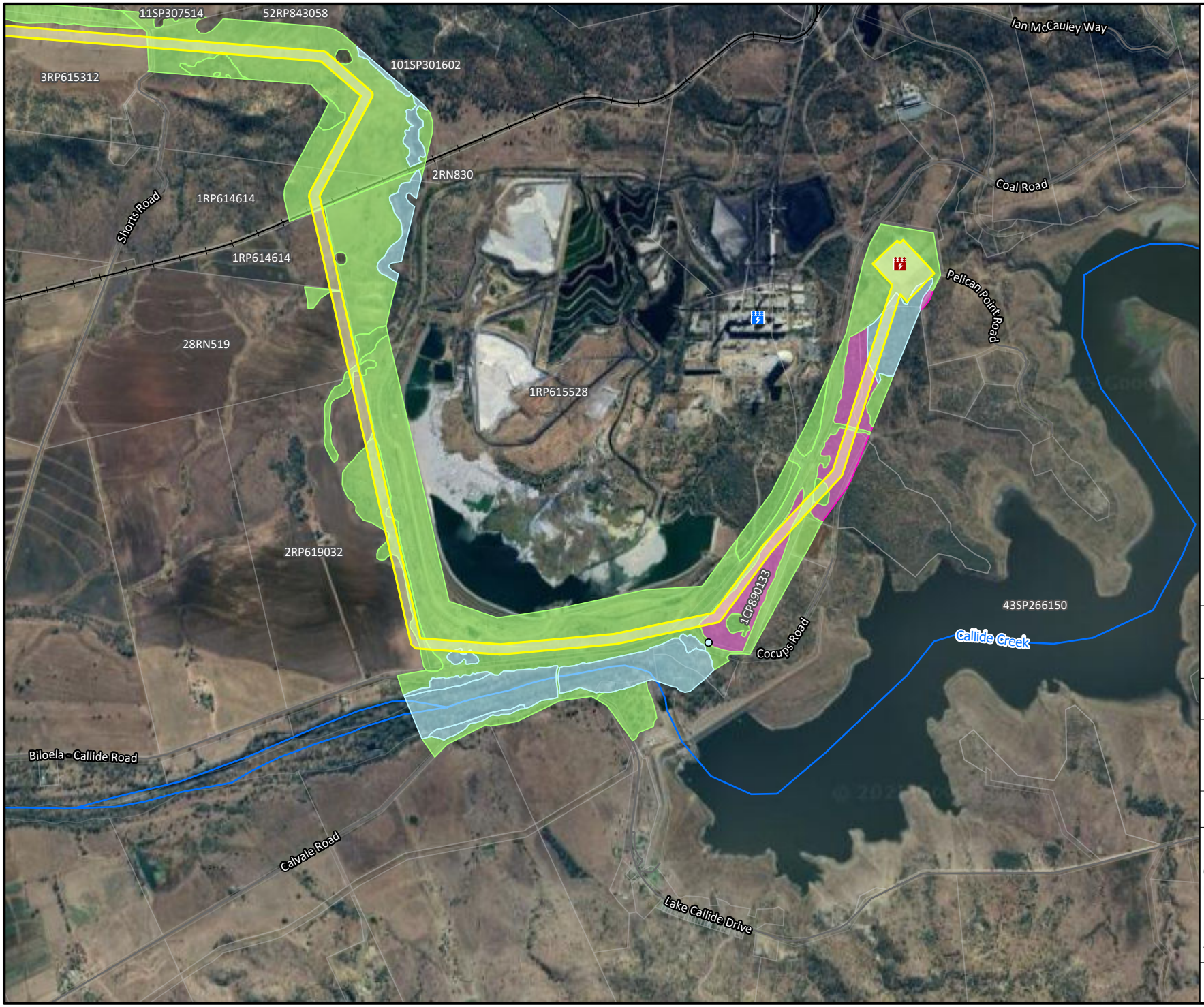
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1F

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Koala Habitat

- Breeding foraging and dispersal
- Dispersal
- Climate Refugia

Threatened Species Observation

- Koala (scat)

Powerlink QUEENSLAND

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED KOALA HABITAT AND RECORDS

FIGURE 5-22-1G

File Name: 62094_MID_025_1_Koala_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2A

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2B

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Threatened Species

- Painted honeyeater

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2C

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Threatened Species

- Painted honeyeater

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2D

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

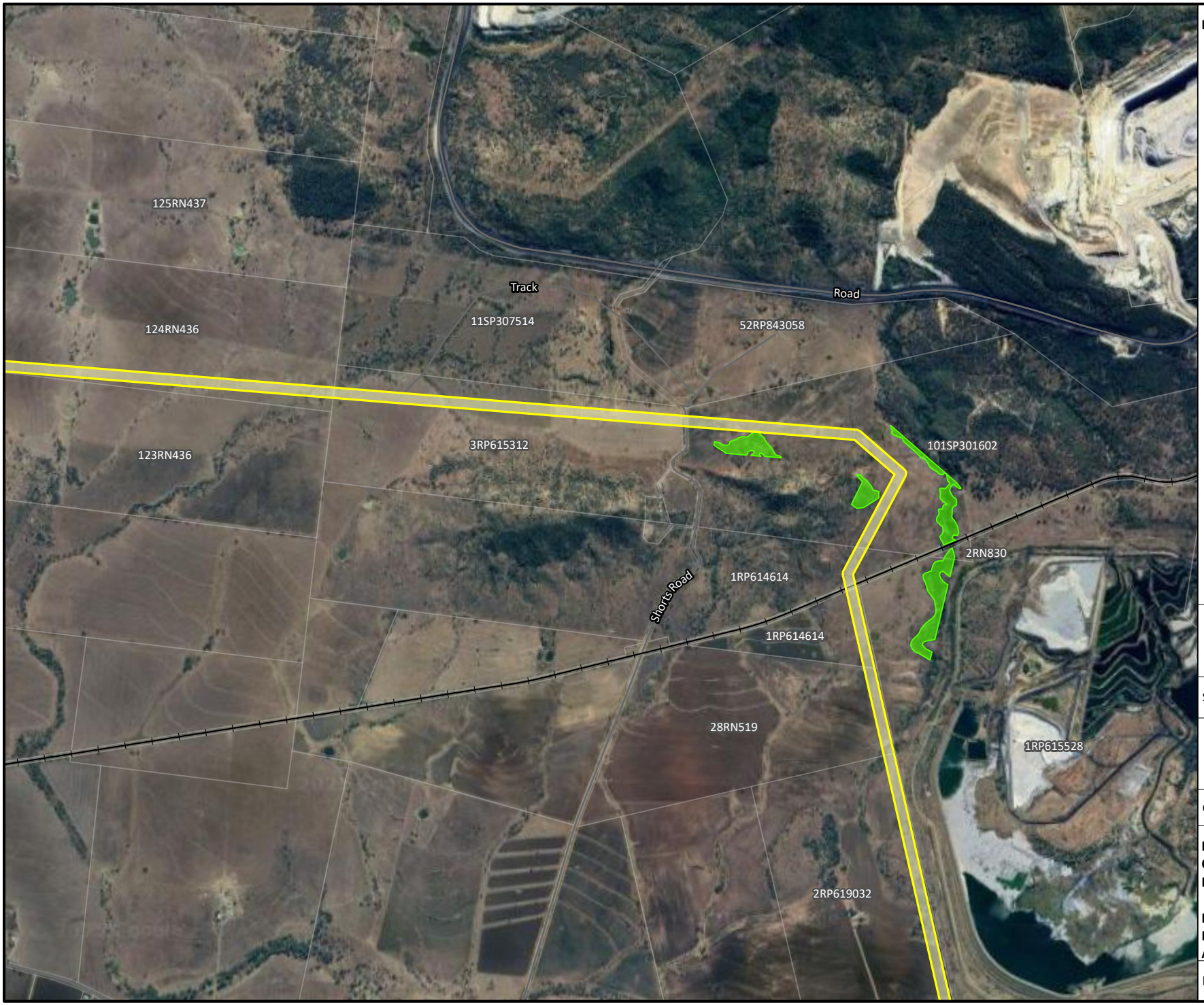
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2E

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Cadastre
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2F

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Painted Honey-Eater Habitat

- Foraging and dispersal habitat

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED PAINTED HONEY-EATER HABITAT AND RECORDS

FIGURE 5-22-2G

File Name: 62094_MID_025_2_PHE_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Dispersal
- Foraging

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3A

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Foraging

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3B

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Foraging

Powerlink QUEENSLAND

Scale 1:30,000

0 500 1,000

metres

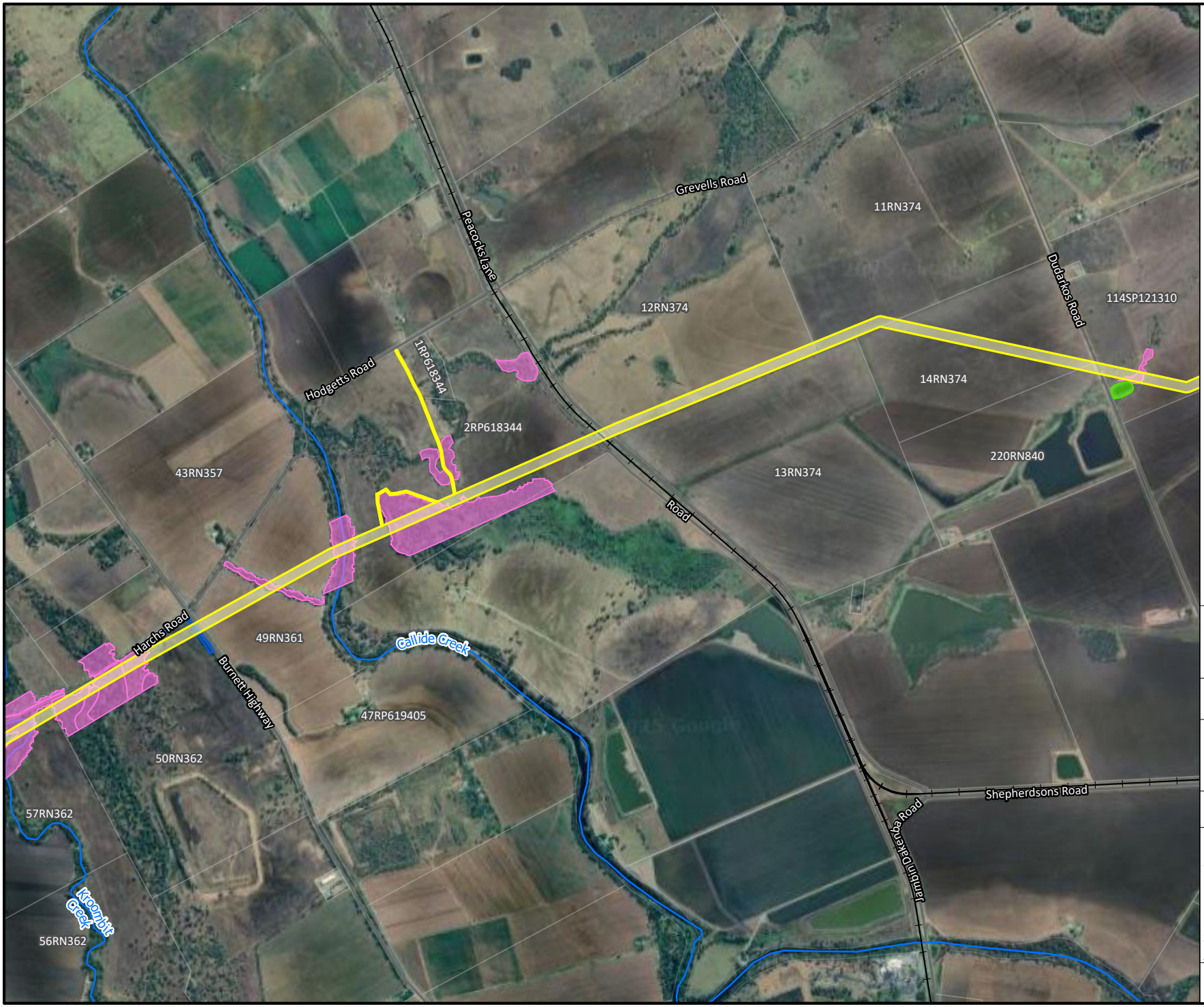
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3C

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Dispersal
- Foraging

Powerlink QUEENSLAND

Scale 1:30,000

0 500 1,000
metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3D

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Dispersal

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3E

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Legend

- Road
- Railway
- Cadastre
- MID Corridor

Squatter Pigeon Habitat

- Breeding
- Dispersal
- Foraging

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

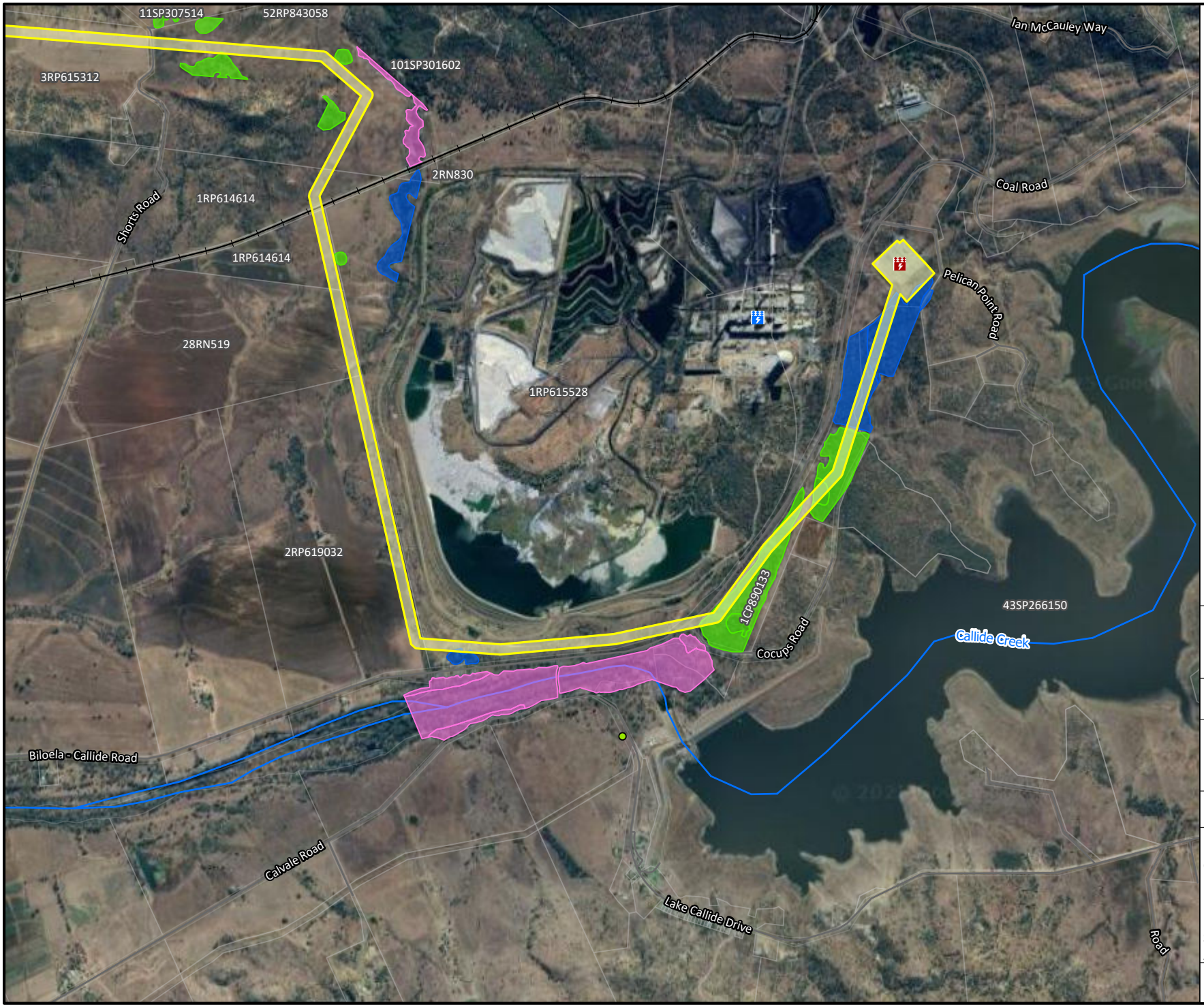
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3F

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Threatened Species

- Squatter pigeon

Squatter Pigeon Habitat

- Breeding
- Dispersal
- Foraging

Powerlink Queensland

Scale 1:30,000

0 500 1,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

FIELD VERIFIED SQUATTER PIGEON HABITAT AND RECORDS

FIGURE 5-22-3G

File Name: 62094_MID_025_3_SP_MapSeries
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.8.2 Potential impacts

Infrastructure associated with the Project has the potential to impact on fauna in the area. Potential impacts during construction and operation are summarised below.

Construction

Potential construction impacts include:

- Vegetation clearing, resulting in the following impacts:
  - Direct loss of threatened fauna species habitat including:
    - Removal of potential foraging and dispersal habitat for the White-throated Needletail.
    - Removal of breeding, foraging and dispersal habitat for the Squatter Pigeon.
    - Removal of foraging and dispersal habitat for the Painted Honeyeater.
    - Removal of foraging and dispersal habitat for the Sharp-tailed Sandpiper.
    - Removal of denning and refuge habitat and foraging and dispersal habitat for the Northern Quoll.
    - Removal of breeding and foraging, climate refugia, and dispersal habitat for the Koala
    - Removal of likely and current denning and foraging habitat, and potential future denning and foraging habitat for the Greater Glider.
  - Removal of marginal breeding and foraging habitat for the Collared Delma.
  - Direct loss of migratory fauna species habitat including dispersal and foraging habitat for the Fork-tailed Swift, Gull-billed Tern and Caspian Tern.
- Increased fragmentation of habitat, reducing connectivity between fauna habitats.
- Direct fauna impacts including:
  - Removal of actual or potential animal breeding places.
  - The loss of microhabitat features such as tree hollows, hollow logs, leaf litter and rocky areas.
  - Noise, lighting, and vibration disturbances that could potentially disturb breeding and roosting fauna.
  - Increased risk of predation due to increased clearing providing access to predators.
  - Potential for fauna injury or mortality from clearing works.
- Increased edge effect pressure which can result in weed invasion throughout the corridor and surrounding areas, and the introduction and spread of fauna pest species. Weeds also compete with native vegetation communities and threaten the biodiversity values of remaining communities.
- Modification of watercourses and wetlands, potentially impacting water quality and loss of aquatic habitats.
- Changes in hydrology of wetlands due to vegetation clearing.
- Increased potential for sedimentation and erosion due to soil exposure.

- Increased bushfire hazard risk during construction from potential ignition sources such as increased vehicle movements, heavy machinery operations and from construction activities (e.g., welding).

Vegetation clearing

Vegetation clearing is required throughout the disturbance footprint to support construction and maintenance activities along the easement, as well as to reduce bushfire hazard risk. This clearing is expected to result in minor impacts to MNES and MSES, through the direct loss of threatened and migratory species habitat and microhabitat features; disturbance or removal of potential breeding places; potential injury and mortality of threatened, conservation significant (i.e., special least concern) and migratory species; and a reduction in the condition of remaining habitat.

The total area of the MID corridor is 105.49ha, of which, 7.73ha (7.34%) regulated native vegetation that will be cleared. The balance of the footprint is predominantly cleared agricultural land and existing infrastructure (e.g., roads). As a result, impacts to fauna are expected to be localised to vegetation patches directly affected by clearing, rather than broadscale across the disturbance footprint.

Given the Project's linear nature, impacts are discrete and typically confined to patch edges or small components of larger vegetation areas. The disturbance footprint has been designed to avoid and minimise impacts to MNES and MSES by reducing easement width to the minimum necessary for conductor sag and swing and adjusting tower heights to further limit clearing. Consequently, vegetation clearing is not expected to result in adverse impacts on habitat connectivity for mobile fauna species. No restrictive barriers (e.g., fencing) are proposed (with the exception of the substation), ensuring movement of listed threatened and conservation-significant species confirmed within the project area (Squatter Pigeon, Painted Honeyeater, Koala and Short-beaked Echidna) will not be hindered. While minor reductions in connectivity between surrounding vegetation patches may occur, these will not be of a scale likely to disconnect habitat or prevent fauna passage.

The MNES and MSES with the largest area of impact (within the disturbance footprint) are:

- Painted Honeyeater foraging and dispersal habitat (8.3ha)
- White-throated Needletail foraging and dispersal habitat (7.73ha)
- Short-beaked Echidna habitat (8.3ha)
- Koala climate refugia habitat (5.69ha)
- Greater Glider likely and current denning and foraging habitat (5.45ha)
- Fork-tailed Swift foraging and dispersal habitat (5.69ha)
- Caspian Tern foraging and dispersal habitat (5.45h).

A significant impact assessment for all identified MNES and MSES has been completed in Appendix F to assess the significance of these direct impacts, as well as and indirect impacts likely from the construction, operation and maintenance of the Project.

Direct fauna impacts

Direct impacts to fauna may occur through the removal of suitable habitat, including the loss of actual or potential breeding sites and microhabitat features such as tree hollows, hollow logs, leaf litter and rocky areas. Additional impacts may arise from noise, lighting and vibration disturbance affecting breeding or roosting fauna; increased predation risk due to greater access for predators following clearing; and potential injury or mortality of fauna during clearing activities.

The greatest risk of direct impact is expected during vegetation clearing for construction. While many diurnal and mobile species are likely to disperse ahead of clearing, less mobile species,

including nocturnal, sensitive, or breeding individual, are more vulnerable to disturbance or mortality.

Further impacts to fauna may result from construction, maintenance, and operation of the Project, including:

- Dust, light and noise activity is increased during construction, which may impact on adjacent vegetation communities and fauna presence.
- Once constructed, the powerlines have the potential to injure or cause mortality in flying species, such as birds and bats, due to collision or electrocution. Powerlines are generally built within the average bird's flight path but can be hard for birds to see.
- The use of the maintenance tracks has the potential to result in injury or death to fauna by vehicle strike.

Edge Effects

Edge effects refer to changes in population or community structure that occur at habitat boundaries, and they are often more pronounced in small or fragmented habitat patches. Vegetation clearing within the project area is expected to increase pressure on remaining habitat through weed invasion and the introduction or spread of pest fauna species. Weeds compete with native vegetation, potentially reducing habitat condition and diminishing biodiversity values, while pest fauna can displace native species through predation and competition.

Pest fauna species identified within the project area included Cane Toads, European Rabbits, Feral Cats, Domestic Dogs, and Feral Pigs.

Watercourse and wetland modification

Clearing of riparian vegetation has the potential to reduce the ecological integrity of watercourses and wetlands by impacting water quality and diminishing instream aquatic habitat. Riparian vegetation contributes directly to aquatic habitat through inputs of organic matter such as fallen trees, leaf litter, and branches, while submerged roots and logs provide essential shelter and spawning sites for native fish. The loss of these features can lead to a reduction in available feeding, hiding, and breeding sites, ultimately decreasing the diversity and abundance of aquatic fauna.

Sedimentation and erosion

Construction activities involving clearing, excavation, and filling will disturb land surfaces, increasing the risk of erosion. Exposed soils can be mobilised by stormwater and transported into watercourses and wetlands. Sediment deposition can degrade aquatic habitats and water quality by increasing turbidity, reducing water depth, smothering fish spawning sites, and promoting algal growth. In addition to sediments and nutrients, construction activities can generate other pollutants if not managed appropriately. These include pesticides, fertilisers, hydrocarbons (e.g., oils, fuel, hydraulic fluids) from construction vehicles, and general waste, all of which have the potential to enter watercourses and wetlands and cause significant ecological impacts.

Collision and Electrocution Risk

Transmission lines present a potential hazard to avifauna and other flying species through collision with overhead wires and, less commonly, electrocution from contact with conductors. Large, fast-flying, or flocking bird species, as well as nocturnal species with limited visibility, are most at risk of collision, particularly in areas where lines cross open habitats, wetlands, or known movement corridors. While electrocution risk is generally low for native fauna due to the spacing of conductors on high-voltage transmission lines, it remains a potential impact for species that perch or attempt to land on structures. Such incidents can result in direct mortality or injury and may cumulatively contribute to population declines if occurring in areas of high ecological value or migratory pathways.

Noise, Dust and Light Disturbance

Construction and maintenance activities associated with transmission lines can generate elevated levels of noise, dust, and artificial lighting, which may temporarily disturb fauna within adjacent habitats. Noise and vibration from machinery and vehicle movements can disrupt communication, foraging, or breeding behaviour in sensitive species. Dust emissions may reduce vegetation quality by coating foliage and altering photosynthesis, indirectly affecting foraging resources. Artificial lighting during night works has the potential to disorient nocturnal species, attract insects, and alter predator–prey interactions. While these impacts are generally localised and temporary, they can reduce habitat quality and deter fauna use of areas in proximity to construction activities.

Operation

Potential impacts to MNES and MSES during operation and maintenance include:

- Increased potential for weed invasion, which can compete with native vegetation communities and threaten the biodiversity values of remaining communities.
- Powerlines present a risk to fauna, particularly birds and bats, in the form of potential injury or mortality from collisions. The presence of powerlines may also result in behavioural avoidance of nearby suitable habitat. Such behaviours include avoiding nesting or foraging resources.
- Increased bushfire hazard risk from powerlines, which could result in unmanaged fires.
- Potential direct impacts to fauna through injury or mortality from any maintenance vegetation clearing required throughout the life of the Project.

5.8.3 Mitigation measures

As discussed in Section 5.7.3, Powerlink have implemented the hierarchy of management principles in the planning and development of this project, which includes avoid, minimise, mitigation, remediate then offset. Table 5-22 describe how impacts on fauna from the project will be managed through the hierarchy of management principles approach.

Table 5-22 Impact management for flora

Management Principle	Measure
Avoidance	As per the avoidance measures provided in Table 5-18, as well as: • Refining the location of the corridor through riparian areas to avoid the loss of potential Greater Glider habitat trees (e.g., micro-siting towers and the alignment as a priority through degraded areas where less large trees with hollows occur).
Minimisation	As per the minimisation measures provided in Table 5-18.
Mitigation	Once avoidance and minimisation strategies have been implemented, mitigation and management measures have been proposed to reduce direct and indirect cumulative impacts during construction and operation. Mitigation measures planned to be implemented include: • Prior to construction the disturbance footprint will be surveyed for animal breeding places, and should they be present and have the potential to be tampered with during construction, a Species Management Program will be obtained to appropriately manage breeding places. Exclusion zones will be established around known active breeding places and these will be managed appropriately in accordance with the approved Species Management Program. • Direct impacts to fauna to be managed during clearing works through the engagement of a Fauna Spotter Catcher who is suitably qualified to deal with Koalas to undertake pre-clearance surveys to detect, remove and relocate fauna, and supervise clearing works to capture any dispersed fauna and manage fauna injuries or deaths. Any

Management Principle	Measure
	microhabitat features (e.g., hollow logs) will be relocated to adjacent areas of undisturbed vegetation where practical, so habitat features are not unnecessarily lost. • Clearing within Koala habitat will utilise staged clearing techniques, whereby habitat trees will be cleared strategically so all Koalas occupying the area have time to move out of the area on their own accord. This ensures appropriate habitat links are maintained with the adjacent area so the Koala can safely move outside the disturbance footprint. • Koalas present within the project area during clearing works will be managed in accordance with the *Nature Conservation (Koala) Conservation Plan 2017* (Qld), NC Act , and *Nature Conservation (Animals) Regulation 2020* (Qld) as follows: o If a Koala is observed within the clearing area, a 30m buffer of vegetation around the Koala tree, in addition to a corridor of vegetation to the nearest vegetated area will be retained until the Koala moves out of the project area on its own accord. o No felling of any trees that have the potential to fall on or near the tree the Koala is residing in. o Monitoring the Koala's location and its visible stress levels. If the Koala is appearing visibly stressed and agitated, the clearing front will be moved away from the animal. o The Koala will be allowed to self-relocate of its own volition. o Koalas will not be interfered with unless they have been injured. • If Collared Delma is confirmed in the disturbance footprint during clearing works, clearing works will cease until Fauna Spotter Catchers have completed an additional pre-clearance survey to remove and relocate all individuals. Any suitable boulders and rock piles will also be salvaged and recreated in an adjacent suitable area so that microhabitat is retained. • Pest animals will be monitored throughout the life of the construction phase with management and control strategies provided in the Construction Biosecurity Management Plan, which allows Powerlink to undertake a risk-based approach to managing the risk of spreading or introducing biosecurity matters because of its activities. A Pre-construction weed survey of the disturbance footprint will be undertaken to inform the development of the Construction Biosecurity Management Plan. • Powerlink's BRWF project EMP includes mitigation measures to be implemented during construction. Such measures involve management of dust, noise, and light impacts; management of erosion through erosion and sediment control measures; topsoil management; chemical storage, spill containment and management requirements; traffic management including speed restrictions; weed and seed washdown requirements for machinery and vehicles; designated construction working hours etc..
Remediation	As per the remediation measures provided in Table 5-18.
Offset	As per the offset measures provided in Table 5-18.

5.9 Matters of Environmental Significance

An ecological assessment has been undertaken for the Project which is included in Appendix F. A summary of the findings of the ecology assessment, relevant to MNES and MSES, is presented below.

The terminology identified in Section 5.7 has also been used within this Section.

5.9.1 Matters of National Environmental Significance

Under the EPBC Act, actions that have, or are likely to have a significant impact on a MNES requires approval from the Australian Government Minister for the Environment. The Minister will decide whether assessment and approval is required under the EPBC Act. The EPBC Act covers 9 matters, including:

- World Heritage Properties.
- National Heritage Places.
- Wetlands of International Importance (Ramsar Wetlands).
- Nationally threatened species and ecological communities.
- Migratory species.
- Commonwealth Marine Areas.
- The Great Barrier Reef Marine Park.
- Nuclear Actions (including uranium mines).
- Water Resources (that relate to coal seam gas development and large coal mining development).

Table 5-23 outlines the MNES that are applicable to the Project, based on the desktop review of ecological values within the Project area.

Table 5-23 Applicable MNES for the Project

Matters of National Environmental Significance	Relevance
World Heritage Properties	**Not Present**
National Heritage Places	**Not Present**
Wetlands of International Importance (Ramsar Wetlands)	**Not Present**
Threatened Ecological Communities	**Applicable –** Eleven patches of the Brigalow TEC are present within the Project area; however, all patches of the TEC have been avoided by design of the disturbance footprint.
Nationally Threatened Species	**Applicable** – • No MNES threatened flora species or supporting habitat were recorded within the Project area. • Three nationally threatened fauna species G*eophaps scripta scripta* (Squatter Pigeon), *Grantiella picta* (Painted Honeyeater), and *Phascolarctos cinereus* (Koala) were recorded within the Survey area, two of which were recorded within the Project area, including *Grantiella picta* (Painted Honeyeater) and *Phascolarctos cinereus* (Koala).

Matters of National Environmental Significance	Relevance
	• Additionally, while not recorded within the Project area, five other nationally threatened species had suitable habitat recorded within the Project area and as such, may be present.
Migratory Species	**Applicable –** No migratory species were recorded within the Project area, however suitable habitat for three migratory species were identified.
Commonwealth Marine Areas	**Not Present**
The Great Barrier Reef Marine Park	**Not Present**
Nuclear Actions (including uranium mines)	**Not Present**
Water Resources (that relate to coal seam gas development and large coal mining development)	**Not Present**

Note: MNES that are not applicable to the Project have been greyed out.

Nationally Threatened Ecological Communities

Brigalow (Acacia harophylla dominant or co-dominant) TEC

Brigalow TEC is an endangered ecological community protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 48 of Appendix F).

A total of eleven patches of TEC were verified within the Project area (Map 12 in Appendix F). Each patch was less than 4ha in size, mostly surrounding by non-remnant vegetation with no connectivity to other remnant or regrowth vegetation. The exception to this being RE 11.11.14 patches in the eastern part of the Project area, which were connected by mixed eucalypt dominant woodland.

All eleven patches of Brigalow TEC within the project area were avoided by design of the disturbance footprint, hence no direct impacts to Brigalow TEC are expected from the Project.

With no direct impacts to the Brigalow TEC proposed, the Project is unlikely to result in a reduction to the extent of the ecological community. In addition, the Project will implement mitigation measures to manage indirect impacts to the adjacent patches, including:

- Weed and pest management through implementation of a Construction Biosecurity Management Plan.
- Implementation of a Bushfire Mitigation Plan to reduce bushfire hazard risk, effectively reducing the frequency and intensity of fires if they occur.

Nationally Threatened Species

Northern Quoll, Dasyurus maculates

The Northern Quoll is an endangered species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 49 and Map series 14, Appendix F).

No Northern Quolls were recorded within the disturbance footprint during targeted surveys. Although marginally suitable denning and foraging habitat is present, the Project has been designed to minimise clearing extents and will not introduce barriers to fauna movement. Given its linear nature, the Project is therefore unlikely to lead to a long-term decrease in the size of a population, should one occur in the area.

The significant impact assessment (SIA) undertaken for the Northern Quoll identified a direct impact of 2ha of potential denning and refuge habitat and 4.64ha of foraging and dispersal habitat within a total disturbance footprint of 105.49ha. These areas represent a very small proportion (0.01 and 0.02% respectively) of the available habitat in the area of interest, and clearing has been minimised through project design.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Koala, Phascolarctos cinereus

The Koala is an endangered species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 50 and Map series 14, Appendix F).

Signs (scratches and scats) of the Koala were recorded during field surveys however no direct sighting of a Koala was recorded, suggesting a population does occur but likely in very low densities. This is likely the result of high habitat fragmentation throughout the project area.

The SIA undertaken for the Koala identified a direct impact of 2.04 ha of breeding and foraging habitat, 5.69 ha of climate refugia and 80.77ha of dispersal habitat (e.g., shrublands or grasslands with emergent koala food trees, shelter or paddock trees) within MID corridor. This dispersal only habitat is non-remnant vegetation, is highly degraded due to historical clearing and agriculture and provides a very low abundance of koala food trees.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Greater glider, Petauroides volans

The Greater glider is an endangered species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 51 and Map series 14, Appendix F).

No evidence of the Greater Glider was recorded within the project area during field surveys. Also, no records of the Greater Glider occur in adjacent areas of the project area, with the nearest record being from the Kroombit Tops National Park, approximately ~25km to the southeast of the project area

The SIA undertaken for the Greater Glider identified a direct impact of approximately 5.45ha of likely and current denning habitat and 2.04ha of potential and future denning habitat within the 105.49ha MID corridor.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

White-throated needletail*, Hirundapus caudacutus*

The White-throated needletail is a vulnerable species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act

Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 52 and Map series 14, Appendix F).

This species was not recorded within the project area during field surveys, however, given its widespread distribution and the occasional adjacent record, it could not be discounted that the remnant and regrowth REs within the project area provide suitable foraging habitat for the species and provides dispersal opportunities for the species throughout the region.

There is an approved Conservation Advice for this species, however there is no listed important populations for the species. While this is the case, an ecologically significant proportion of a population is defined as 100 individuals (Commonwealth of Australia, 2015). Based on the highly fragmented nature of the foraging and dispersal habitat within the disturbance footprint, and the lack of roosting habitat for the species, it is considered unlikely an ecologically significant proportion of a population would occur.

The SIA undertaken for the White-throated needletail identified a direct impact of 7.73ha of foraging and dispersal habitat for the species within the disturbance footprint. This extent of impact to foraging and dispersal habitat however represents 0.02% of available habitat within the area of interest.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Squatter pigeon, *Geophaps scripta scripta*

The Squatter pigeon is a vulnerable species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 53 and Map series 14, Appendix F).

One squatter pigeon was observed approximately 800m south of the project area in the easter section, on two occasions. An important population for the Squatter Pigeon is defined as the southern boundary of its known distribution. The population within the project area, due to its location, would not be considered an important population for the Squatter Pigeon.

The SIA undertaken for the Squatter pigeon identified a direct impact of 2.46ha of breeding habitat, 3.84ha of foraging habitat and 1.52ha of dispersal habitat within the disturbance footprint. This extent represents minute areas in the context of the area of interest - 0.03% of the total breeding habitat, 0.49% of the total foraging habitat and 0.01% of the total dispersal habitat.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Painted honeyeater*, Grantiella picta*

The Painted Honeyeater is a vulnerable species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 54 and Map series 14, Appendix F).

The species was sighted on two occasions within the project area during field surveys. Only one known historical record of the Painted Honeyeater exists for the area of interest, from 2017 near the township of Biloela. This suggests that the species may only occur in the region when mistletoes are fruiting but occurs at very low densities.

Habitat critical for survival of the species is defined as breeding habitat, and foraging habitat where mistletoes are present. The SIA undertaken for the Painted honeyeater identified a direct impact of 8.3 ha of foraging and dispersal habitat within the 105.49ha disturbance footprint. This extent represents 0.01% of the total foraging and dispersal habitat available within the area of interest.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Sharp-tailed sandpiper, *Calidris acuminata*

The Sharp-tailed sandpiper is a vulnerable species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 55 and Map series 14, Appendix F).

This species was not recorded within the project area during field surveys, however, given its was recorded on one occasion in 2024 near Lake Callide. There is no listed important populations for this species. While this is the case, an ecologically significant proportion of a population (1%) is defined as 850 individuals (Hansen et al., 2016). Based on the highly fragmented nature of the foraging and dispersal habitat within the disturbance footprint, and the lack of records for the species, it is considered unlikely an ecologically significant proportion of a population would occur within the disturbance footprint.

The SIA undertaken for the Painted honeyeater identified a direct impact of approximately 1.47ha of foraging and dispersal habitat within the 105.49ha disturbance footprint. This extent represents 0.12% of the total foraging and dispersal habitat available within the area of interest

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Collared delma, *Delma torquata*

The Collared delma is a vulnerable species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 56 and Map series 14, Appendix F).

No Collared delma have been recorded within the project area to date despite extensive targeted searches for the species.

It is considered that occurrence of important habitat for the species is surrogate for an important population. Based on the results of targeted surveys to date, it is anticipated that the project area will not contain an important population for the species as:

- The species has not been detected despite extensive targeted and supplementary searches.
- The project area lacks contiguous suitable habitat, with the exception of the eastern part of the project area, however the REs in the eastern part of the project area have no previous records of the species and is subject to threats from cattle grazing.

The SIA undertaken for the Collared delma identified a direct impact of 1.96ha of marginally suitable habitat within the 105.49ha disturbance footprint. This impact area represents 0.06% of available marginal habitat for the species within the area of interest

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Migratory species

Fork-tailed swift, *Apus pacificus*

The Fork-tailed swift is a migratory species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 57 and Map series 14, Appendix F).

This species was not recorded during field surveys, however, given its widespread distribution, it could not be discounted that the remnant and regrowth REs within the project area provide suitable foraging habitat and dispersal opportunities for the species.

The SIA undertaken for the Fork-tailed swift identified a direct impact of 5.69ha of available habitat within the 105.49ha disturbance footprint. This impact area represents 0.06% of available habitat which is negligible for an aerial species, especially considering the sparse records in the area of interest

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Caspian tern, *Hydroprogne caspia*

The Caspian tern is a migratory species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 58 and Map series 14, Appendix F).

This species was not detected during field surveys, however given its widespread distribution, and records within Lake Callide to the south of the Project area, it could not be discounted that the species may occur within the Project area at least on occasion.

The SIA undertaken for the Caspian tern identified a direct impact of 5.45ha of available habitat within the disturbance footprint Which represents on <0.01% of habitat for the Caspian Tern throughout the area of interest.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Gull-billed tern*, Gelochelidon nilotica*

The Gull-billed tern is a migratory species protected under the EPBC Act. The Ecological Assessment Report provides an assessment against the significant impact criteria in the EPBC Act Environmental Offsets Policy's Significant Impact Guideline and determines whether the project is likely to have a significant impact on this ecological community (Table 58 and Map series 14, Appendix F).

This species was not detected during field surveys, however given its widespread distribution, and records within Lake Callide to the south of the Project area, it could not be discounted that the species may occur within the Project area at least on occasion.

The SIA undertaken for the Gull-billed tern identified a direct impact of 1.47ha of available habitat within the disturbance footprint which represent on 0.12% of habitat for the Gull-billed Tern throughout the area of interest.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Impact areas on MNES

The total area of each verified MNES habitat within the project area is provided in Table 5-24.

Table 5-24 also provides the habitat areas within the MID corridor, as well as for the disturbance footprint and area of interest, and a calculation of the percent (%) of the disturbance footprint impacted compared to the area of interest (20km buffer).

Table 5-24 Impact areas on MNES

Species	Presence	Habitat Type	Disturbance Footprint (ha)	Area of Interest (ha)	% impacted
TEC					
Brigalow TEC	Recorded	-	0	3,354	0
Threatened species					
White-throated Needle Tail	May occur	Roosting and foraging	0	36,979	0
		Foraging and dispersal	7.73	35,241	0.02
Squatter Pigeon	Recorded	Breeding	2.46	8,425	0.03
		Foraging	3.84	785	0.49
		Dispersal	1.52	17,030	0.01
Painted Honeyeater	Recorded	Foraging and dispersal	8.3	67,366	0.01
Sharp-tailed Sandpiper	May occur	Foraging and dispersal	1.47	1,200	0.12
Northern Quoll	May occur	Denning and refuge	2.0	38,940	0.01
		Foraging and dispersal	4.64	27,987	0.02
Koala	Recorded	Breeding and foraging	2.04	58,383	<0.01
		Climate refugia	5.69	8,852	0.06
		Dispersal	80.77	205,607	0.04
Greater Glider	May occur	Likely and current denning and foraging	5.45	25,989	0.02
		Potential future denning and foraging, including dispersal habitat	2.04	41,247	<0.01
Collared Delma	May occur	Marginal Breeding and foraging	1.96	9,059	0.06
Migratory species					
Fork-tailed Swift	Likely	Foraging and dispersal	5.69	9,350	0.06
Gull-billed Tern	May occur	Foraging and dispersal	1.47	1,200	0.12
Caspian Tern	May occur	Foraging and dispersal	5.45	71,105	0.01

Significant impact assessment to MNES

The *Significant Impact Guidelines 1.1* (DoE, 2013) provides the criteria to determine whether a SI is likely to MNES. This criterion has been used within the Ecology Assessment (Table 41 of Appendix F) and is reflective in the summary of the outcomes of the SIA assessment provided in Table 5-25 below.

After considering potential impacts, avoidance, mitigation and minimisation measures, and the significant impact criteria provided, it is not expected there will be an significant impact on any MNES within the disturbance footprint.

Table 5-25 SI Assessment for MNES within the Disturbance Footprint

Ecological Value	EPBC Status	Assessment of SI
Threatened Ecological Communities		
Brigalow TEC	EN	Unlikely
Listed Threatened Species		
Northern quoll (*Dasyurus maculatus*)	EN	Unlikely
Koala (*Phascolarctos cinereus)*	EN	Unlikely
Greater glider (*Petauroides volans)*	EN	Unlikely
White-throated needletail (*Hirundapus caudacutus*)	VU	Unlikely
Squatter pigeon (*Geophaps scripta scripta)*	VU	Unlikely
Painted honeyeater (*Grantiella picta)*	VU	Unlikely
Sharp-tailed sandpiper (*Calidris acuminata)*	VU	Unlikely
Collared delma (*Delma torquata)*	VU	Unlikely
Fork-tailed swift (*Apus pacificus)*	Mi	Unlikely
Caspien tern (*Hydroprogne caspia)*	Mi	Unlikely
Gull-billed tern (*Gelochelidon nilotica)*	Mi	Unlikely

5.9.2 Matters of State Environmental Significance

MSES are defined under Schedule 2 the *Environmental Offsets Regulation 2014* (EO Regulation) and include certain values protected under Queensland Legislation, including under the following Acts:

- EP Act;
- EO Act.
- Fisheries Act;
- *Marine Parks Act 2004*;
- NC Act;
- *Regional Interests Planning Act 2014*; and
- VM Act.

Section 14 of the EO Act states that an offset condition may be imposed if the prescribed activity will, or is likely to, have a SRI on a prescribed environmental matter. Schedule 1 of the EO Regulation specifies prescribed activities. The Infrastructure Designation process under the Planning Act is not considered a prescribed activity for the purposes of providing an offset under the EO Act. Regardless, Powerlink have employed the mitigation hierarchy (avoid, minimise, mitigate) to minimise impacts on MSES through:

- a Corridor Selection Process (refer to Section 3) which has identified the most preferable option based on environmental, social and economic factors; and
- employing suitable mitigation measures through design and construction through implementation of the EMP (Mitigation measures provided in Section 5 and Appendix C).

Table 5-26 Applicable MSES for the Project

Prescribed Matters		Verification
Regulated Vegetation	Prescribed REs that are endangered REs	The disturbance footprint had mapped Category B (remnant), Category C (high-value regrowth) and Category R (reef regrowth watercourse vegetation) vegetation present.

Prescribed Matters		Verification	
		Field-verification confirmed that all vegetation patches in the disturbance footprint were of remnant or regrowth status (Category B or C respectively). Prescribed REs that are endangered REs only include areas of Category B (remnant vegetation). There was some discrepancy between desktop mapped areas and field-verified mapped areas for Category B endangered REs. Both calculations are provided.	
		Desktop mapped areas: 4.57ha (Map 7, Appendix G in Appendix F)	Field-verified areas: 0.24ha (Map 12, Appendix G in Appendix F)
	Prescribed REs that are of concern REs	Prescribed REs that are of concern REs only include areas of Category B (remnant). There was some discrepancy between desktop mapped areas and field-verified areas for Category B of concern REs. Both calculations are provided.	
		Desktop mapped areas: 7.06ha (Map 7, Appendix G in Appendix F)	Field-verified areas: 3.36ha (Map 12, Appendix G in Appendix F)
	Prescribed REs that intersect with an area shown as a wetland on the vegetation management wetlands map	0.61ha of Category B of concern RE11.3.4 intersects wetland areas, based on ground-truthed extents. Desktop mapped extent is 0.46ha (Map 7, Appendix G in Appendix F).	
	Prescribed REs that are areas of essential habitat on the essential habitat map for an EVNT plant or animal	Nil. No Category B essential habitat areas were mapped present throughout the project area (Map 7, Appendix G in Appendix F).	
	Prescribed RE that is located within a defined distance from the defining banks of a relevant watercourse or drainage feature	0.37ha of Category B of concern RE11.3.4 intersects watercourses based on ground-truthed extent (Map 10, Appendix G in Appendix F).	
Connectivity Areas	Prescribed REs that contain an area of land that is remnant vegetation required for ecosystem functioning (a connectivity area)	Nil To assess the extent of potential connectivity impacts, the DESI Landscape Fragmentation and Connectivity Tool was used. This tool was applied using the variable project area. The tool determined that any impact on connectivity areas was NOT significant. It defined that the reduction in core remnant vegetation at a local scale was not significant at 0.29% and that a change from core to non-core remnant vegetation at the site scale was also NOT significant.	
Wetlands and Watercourses	A wetland in a wetland protection area (WPA or a wetland of HES on the map of referrable wetlands	Impacts to field-verified extent for mapped HES wetland (Map 8, Appendix G in Appendix F): • 5.10ha of WPA (includes four tower locations) • 0.61ha within the HES wetland (no tower locations).	

Prescribed Matters		Verification
		• Impacts to field verified extent for unmapped HES wetland (Map 8, Appendix G in Appendix F): • 5.25ha of WPA (includes four tower locations) • 0.85ha within the unmapped HES wetland area (no tower locations).
Protected Wildlife Habitat	An area that is shown as a high-risk area on the flora survey trigger map, that contains plants that are endangered or vulnerable	High-risk areas were mapped within the eastern project area (Map 9, Appendix G in Appendix F and in Figure 5-19). No protected plants were identified within this area during flora survey completed in accordance within the *Flora Survey Guidelines – Protected Plants* (Department of Environment and Science, 2020). Hence, there is nil area of this prescribed matter.
	An area not shown as high risk on the flora trigger map, but contains plants that are endangered or vulnerable	No protected plants were identified throughout the rest of the project area during field surveys, hence, there is nil area of this prescribed matter.
	A habitat for an endangered wildlife or vulnerable wildlife or special least concern animal	Wildlife habitat is mapped within the project area, within the eastern extent, which represents 0.35ha within the disturbance footprint (total within the project area is 41.72ha) Field-verification confirmed there was 8.3ha of Short-beaked Echidna habitat within the disturbance footprint. An SRI assessment has been completed in Appendix F.

Threatened Species – Short-beaked Echidna, *Tachyglossus aculeatus*

The Short-beaked Echidna, *Tachyglossus aculeatus,* is listed as special least concern under the NC Act. The Ecological Assessment Report provides an assessment against the threshold criteria in the *Significant Residual Impact Guideline for matters of state environmental significance and prescribed activities assessable under the Sustainable Planning Act 2009* (SDIP, 2014) and determines whether the Project is likely to have a significant residual impact on this species.

This species was recorded near Callide Creek in the centre part of the project area during field surveys. As a result, it is likely that the species occurs within the disturbance footprint at least on occasion, either for breeding, foraging or dispersal.

The SIA undertaken for the Short-beaked echidna identified a direct impact of 8.3ha of habitat is present within the disturbance footprint.

Based on the outcomes of the SIA, the Project is unlikely to result in a significant impact on the species.

Connectivity areas

DETSI has developed a Landscape Fragmentation and Connectivity Tool that assists in identifying and quantifying a significant impact on connectivity for an impact area. The measure of impact significance is determined based on a change in size and configuration of remnant vegetation areas and the level of fragmentation that will result at the local scale (5 km radius), giving regard to the regional scale (20km radius).

The tool determined that the project impacts on connectivity are not deemed significant, as detailed in Table 5-27.

Table 5-27 Landscape Fragmentation and Connectivity Tool Results

Impact Criteria	Assessment
Significance test one	Area of core at the local scale (pre impact): 1,365.47ha Area of core at the local scale (post impact): 1,361.49ha Per cent change of core at the local scale (post impact): 0.29%
Significance test two	The number of core remnant areas occurring on the site: 2 The number of core remnant areas remaining on the site post impact: 2 Only core polygons greater than or equal to 1ha are included)
Result	This analysis determined that any impact on connectivity areas is NOT SIGNFICANT (A significant reduction in core remnant at the local scale is FALSE and a change from core to non-core remnant at the site scale is FALSE).

Significant impact assessment to MSES

The *Significant Residual Impact Guideline (DEHP, 2014)* provides the criteria to determine whether an SRI is likely to MSES. This criterion has been used within the Ecological Assessment Report (Table 57 of Appendix F) and is reflective in the summary of the outcomes of the SIA assessment provided in Table 5-28.

The outcome of the SRI assessment for each identified MSES has been provided in Table 5-26. After considering potential impacts, avoidance, minimisation, mitigation and remediation measures, and the state SRI criteria provided within the *Significant Residual Impact Guideline*, the Project will likely have an SRI on the following MSES:

- Regulated vegetation, for:
    - potentially 3.6ha of prescribed endangered and of concern REs (based on ground-truthed presence);

0.37ha of prescribed REs that are located within a defined distance of the defining banks of a watercourse; and 0.61ha of a mapped HES Wetland (5.10ha of the WPA); and 0.85ha of the unmapped HES Wetland (5.25ha of the WPA).

Table 5-28 Summary of the SRI Assessment for MSES within the disturbance area

Matters of State Environmental Significance	Relevance
Regulated Vegetation	
Prescribed REs that are 'endangered' or 'of concern'	An SRI is considered likely. The linear infrastructure clearing for the Project is expected to result in clearing of 3.6ha of combined endangered and of concern REs (based on field-verified data). The width of clearing (being mostly 24m) does not meet the width thresholds in State Code 16 (10m in dense and mid-dense vegetation structures, 20m in sparse and very sparse, and 25m in grassland).
Prescribed RE that intersect with a mapped wetland area	An SRI is not considered likely. While the Project will result in a linear width of clearing that is 24m or more, resulting in the permanent removal of an of concern RE11.3.4 (sparse) within 20m of the defining bank of a mapped wetland, the Project will not trigger the area threshold (2 ha of sparse ecosystem) for an SRI (0.61ha proposed), and the Project will not result in clearing of more than 25% of the vegetation located within 50m of the defining bank of a defined wetland (Map 8, Appendix A).

Matters of State Environmental Significance	Relevance
Prescribed RE that is located within a defined distance from the defining banks of a relevant watercourse or drainage feature	An SRI is anticipated due to the permanent removal (with no rehabilitation proposed) within the defined distance of a stream order 2 or higher.
Connectivity Areas	
Prescribed regional ecosystems that contain an area of land that is remnant vegetation required for ecosystem functioning (a connectivity area)	An SRI is not considered likely. The DETSI Landscape Fragmentation and Connectivity Tool determined that any impact on connectivity areas was NOT significant. It defined that the reduction in core remnant vegetation at a local scale was not significant at 0.29%, and that a change from core to non-core remnant vegetation at the site scale was also NOT significant.
Wetlands and Watercourses	
A wetland in a wetland protection area (WPA or a wetland of HES on the map of referrable wetlands	An SRI is considered likely. Riparian vegetation within the mapped HES wetland will be cleared. Impact area of the HES wetland is 0.61ha, while the impact area of the WPA is 5.10ha. For the unmapped wetland, the impact area will be 0.85ha, while the impact area within a set WPA would be 5.25ha.
Protected Wildlife Habitat	
A habitat for an endangered or vulnerable wildlife or special least concern animal	The Project is unlikely to have an SRI on the Short-beaked Echidna as potential impacts to its habitat will not result in a long-term decrease in the size of the population, reduce the extent of the species, fragment the population, result in genetically distinct populations of disrupt significant breeding, feeding or nesting sites for this species.

Note: MSES that are not applicable to the Project have not been included in the table.

5.10 Biosecurity

An ecological assessment has been undertaken for the Project which is included in Appendix F.

A summary of the findings of the ecology assessment, relevant to MNES and MSES, is presented below.

The terminology identified in Section 5.7 has also been used within this Section.

5.10.1 Existing environment

Biosecurity zones

Biosecurity Zones are areas that have legal movement restrictions placed on them to limit the spread of pests and diseases throughout the State. The Queensland Biosecurity Manual (DAF, 2023) sets out the risk minimisation requirements for movement of biosecurity carriers to be followed in compliance with the *Biosecurity Regulation 2016* (Qld) (Biosecurity Regulation).

The MID corridor is located within the following Biosecurity Zones including:

- Cattle tick infested zone - This zone regulates livestock movement into cattle tick free areas.
- Sugarcane biosecurity zone 4 - This zone regulates the movement of Sugarcane plant material between zones and requires Sugarcane machinery to be cleaned and inspected if being moved between zones.
- State Grape Phylloxera exclusion zone - This zone regulates movement from Grape Phylloxera risk zones into exclusion zones.

Cattle tick infection zone

The Project is entirely mapped within the cattle infested zone. This zone is the part of the state where cattle ticks are present. Regulated movement controls for livestock moving outside the area allow the cattle industry to control and limit the spread of cattle tick to minimise the impact on the industry. Any cattle ticks found in the Queensland cattle tick-free zone must be reported to Biosecurity Queensland.

Sugarcane biosecurity zone 4

The Project is entirely mapped within the Sugar Cane Biosecurity Zone 4 (Rockhampton to Victoria Point). This zone regulates the movement of Sugar Cane plant material between zones and requires Sugar Cane machinery to be cleaned and inspected if being moved between zones.

State Grape Phylloxera exclusion zone

The Project is entirely mapped within the State Grape Phylloxera exclusion zone. Phylloxera is a serious pest of grapevines. It causes significant production losses and grapevine death. Movement restrictions are in place to help prevent the introduction of phylloxera into Queensland. Queensland has a nationally recognised Phylloxera Exclusion Zone in central inland Queensland to protect the state's main table grape production areas. Grape phylloxera is prohibited matter under the Biosecurity Act and must be report to Biosecurity Queensland immediately.

Fire ant zone

Fire ant biosecurity zones are in place to help prevent fire ants from spreading through human assisted movement. Moving material which may harbour fire ants (for example, soil, hay, mulch, manure, quarry products, turf and potted plants) is regulated under the Biosecurity Act.

The Project is not located within fire ant biosecurity zone under the national fire ant eradication program.

5.10.1.2 Pest flora and fauna species

Desktop assessment results

The search of the Queensland WildNet species database identified 41 flora species records that are introduced to Queensland. Some of these species are listed as restricted invasive plants Category 3 under the Biosecurity Act and/or Weeds of National Significance (WoNS). These include:

- *Cryptostegia grandiflora* (Rubber Vine), listed as Category 3 restricted invasive plant under the Act;
- *Dolichandrea unguis-cati* (Cat's Claw Creeper), listed as Category 3 restricted invasive plant under the Act, and a WoNS;
- *Lantana camara* (Lantana), listed as Category 3 restricted invasive plant under the Act, and a WoNS;
- *Lantana mointevidensis* (Creeping Lantana), listed as Category 3 restricted invasive plant under the Act, and a WoNS; and
- *Opuntis stricta* (Opuntiod Cactus), listed as Category 3 restricted invasive plant under the Act, and a WoNS.

The search of the Queensland WildNet species records database identified seven fauna species that are introduced to Queensland (WildNet Species List provided in Appendix E), including:

- Cane Toad *(Rhinella marina).*
- Common Starling *(Sturnus vulgaris).*
- European Cattle *(Bos taurus).*
- European Rabbit *(Oryctolagus cuniculus)*.
- House Sparrow *(Passer domesticus).*
- Northern Mallard (*Anas platyrhynchos).*
- Rock Dove *(Columba livia).*

The European Rabbit is the only species from the database, listed as a restricted invasive terrestrial animal under the Biosecurity Act.

Field assessment results - weeds

Terrestrial weeds were present within the Project area in variable densities and were most prevalent in cleared areas, road verges, and along the edges of native vegetation communities. Most of the vegetation communities throughout the project area were observed to have high densities of weed cover, while weeds were observed in medium to low densities in vegetation communities were native species dominated the canopy and sub-canopy.

Table 5-29 lists the introduced species that were recorded within the project area that are considered restricted invasive plants under the Biosecurity Act and WoNs. There were eleven introduced species that are restricted under the Act, eight of which were also WoNs.

Table 5-29 Terrestrial weeds observed within the Project area

Scientific name	Common name	Biosecurity Act category	WONS listing
Asparagus aethiopicus	Ground asparagus	Restricted – Category 3	Listed
Asparagus africanus	Ornamental asparagus	Restricted – Category 3	Listed
Bryophyllum delagoense	Mother of millions	Restricted – Category 3	-

Scientific name	Common name	Biosecurity Act category	WONS listing
Celtis sinensis	Chinese elm	Restricted – Category 3	-
Dolichandra unguis-cati	Cat's Claw creeper	Restricted – Category 3	Listed
Lantana camara	Lantana	Restricted – Category 3	Listed
Lantana montevidensis	Creeping lantana	Restricted – Category 3	-
Opuntia stricta	Prickly pear	Restricted – Category 3	Listed
Opuntia tomentosa	Velvety tree pear	Restricted – Category 3	Listed
Parthenium hysterophorus	Parthenium weed	Restricted – Category 3	Listed
Vachellia farnesiana	Prickly acacia	Restricted – Category 3	Listed

Field assessment results - pests

Five introduced terrestrial fauna species were recorded during the field assessment, including Cane Toad (*Rhinella marina*), Cow (*Bos sp.*), Domestic Dog (*Canis familiaris*), European Rabbit (*Oryctolagus cuniculus*), and Feral Pig (*Sus scrofa*). Of these, the European Rabbit and Feral Pig are classed as restricted invasive terrestrial animals listed under the Biosecurity Act.

There were no aquatic invasive animal species observed during the field surveys.

5.10.2 Potential impacts

Introduction of weeds

Weeds can result in damage to natural landscape, agricultural lands, and waterways and can contribute to land degradation and reduction in farm productivity.

The project will require the movement and transport of vehicles and machinery to facilitate the construction phase of the project. Where machinery and vehicles are contaminated with weed material, there is the potential for the introduction and/or spread of weeds to weed free locations or areas with existing minimal infestations.

Additionally, importation and use of contaminated soils and materials that contain weed material also have the potential to introduce and/or spread weeds to the Project area.

Edge effects

Where vegetation clearing is required to facilitate construction of the Project, there is potential that the clearing results in edge effects to retained vegetation, including promoting the growth of different vegetation types and allowing the intrusion of invasive and introduced species.

Introduction of pest fauna species

While the Project activities (particularly vegetation clearing) have the potential to disperse pest animal species out of the areas of disturbance and across the surrounding landscape, it is highly likely that pest animal species recorded in the Project area already occupy habitats in the locality. Therefore, the risk of the Project resulting in the establishment of these pest animal species in areas where they are currently absent is assessed as low.

5.10.3 Mitigation measures

Measures to minimise biosecurity risks for the Project are outlined within the Project's EMP (Appendix C) and the project specific biosecurity mitigation measure include, but is not limited to:

- Established roads and tracks will be utilised where practicable, with slashing and gravelling to be considered in areas of high-volume traffic.

- Appropriate disposal of material potentially contaminated with biosecurity matter shall be undertaken in accordance with Biosecurity Act requirements.
- Obtain appropriate approvals (i.e. Biosecurity Instrument Permits) where works require the movement of materials containing a biosecurity matter (or a carrier) outside of a biosecurity zone.

5.11 Land use

5.11.1 Existing environment

Tenure

Land tenure within the MID Corridor is predominantly freehold with some easements, road reserves and unallocated state land throughout with a total of 38 land parcels (consisting of freehold and land lease) and 17 easement parcels being intersected. The project also traverses 18 road parcels. All easements and road parcels intersected by the Project area are detailed in Appendix A and the location of these parcels are shown in Figure 5-23. Forms of land tenure traversed by the Project are outlined in Table 5-30.

Table 5-30 Tenure along the proposed Project area

Land tenure type	Details
Freehold	Freehold land Project area is used for a variety of rural uses.
Lands Lease	Land immediately adjacent to the Project, specifically located between 5 and CB6 is lands lease.
Reserve	Land across the existing Callide Power Station, specifically described as Lot 42 Plan RN1108 is reserve.
Unallocated State land	Land within the immediate bed and banks along Callide Creek is unallocated State land.
Road reserves	Road reserve within the Project area is overseen by the relevant road manager including local roads (BSC) and SCRs (DTMR).
Rail corridor	Moura System Callide Mine Balloon Loop traversed between CB19 and CB20 and Moura System Callide Mine Branch is traversed between CB50 and CB51 are within lands lease

As detailed previously, the proposed tenure arrangement for the Project will be a combination of existing land parcels in Powerlink's ownership, new and/or widened easements and appropriate authority approval were traversing road and rail corridors.

Native title

Native title is defined under the Native Title Act and is discussed in Section 4.1.2. The Project is located entirely within the registered native title claim area of the Gaangalu Nation People (QC2012/009).

Powerlink have completed a review of the MID Corridor where native title is extinguished (refer to Table 5-31).

The recommended site for the substations are located entirely within freehold land and as such, native title has been wholly extinguished. The recommended corridor, whilst mostly located within either freehold tenure or road reserve, has certain areas (such as the crossing of Callide Creek), that intersects with land where native title continues to exist. In accordance with the Native Title Act, Powerlink Queensland will undertake the necessary engagement with the relevant native title party prior to undertaking any works in these areas.

Table 5-31 Banana Range - Native Title Extinguishment Analysis

Item	Name	Lot/Plan	Extinguishment of Native Title	Evidence of Extinguishment
1	Calvale – Mountain View Study Corridor	11/RN374	Yes	Evidence of freehold title on 1/08/1994
2	Calvale - Mountain View Study Corridor	62/RN363	Yes	Evidence of freehold title on 13/03/1980
3	Calvale - Mountain View Study Corridor	2/RN830	Yes	Evidence of a perpetual lease commencing in 1995 in the previous title dated 10/12/1996, which is a scheduled interest under section 21(9) of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
4	Calvale - Mountain View Study Corridor	1/RP615528	Yes	Evidence of freehold title on 07/03/1983
5	Calvale - Mountain View Study Corridor	1/RP614614	Yes	Evidence of freehold title on 28/07/1981
6	Calvale - Mountain View Study Corridor	3/RP615312	Yes	Evidence of freehold title on 24/02/1982
7	Calvale - Mountain View Study Corridor	101/SP301602	Yes	Evidence of freehold title on 14/04/1994
8	Calvale - Mountain View Study Corridor	2/RP618344	Yes	Evidence of freehold title on 15/01/1986
9	Calvale - Mountain View Study Corridor	58/RN363	Yes	Evidence of a perpetual lease selection under the *Land Act 2010*, which is a scheduled interest under section 26 of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
10	Calvale - Mountain View Study Corridor	2/RP619032	Yes	Evidence of freehold title on 9/11/1987
11	Calvale - Mountain View Study Corridor	52/SP251109	Yes	Evidence of an agricultural farm under the *Land Act 1962*, which is a scheduled interest under section 25 of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
12	Calvale - Mountain View Study Corridor	123/RN436	Yes	Evidence of freehold title in 1971 and a prickly pear-related interest, which is a scheduled interest under section 30 of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
13	Calvale - Mountain View Study Corridor	113/RN434	Yes	Evidence of a perpetual lease selection under the *Land Act 2010*, which is a scheduled interest under section 26 of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.

Item	Name	Lot/Plan	Extinguishment of Native Title	Evidence of Extinguishment
14	Calvale - Mountain View Study Corridor	34/PM212	Yes	Evidence of freehold title on 12/12/1972
15	Calvale - Mountain View Study Corridor	12/RN374	Yes	Evidence of freehold title on 17/11/1993
16	Calvale - Mountain View Study Corridor	33/PM212	Yes	Evidence of a prickly pear-related interest, which is a scheduled interest under section 30 of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
17	Calvale - Mountain View Study Corridor	2/RP617605	Yes	Evidence of freehold title on 7/02/1985
18	Calvale - Mountain View Study Corridor	10/PM211	Yes	Evidence of freehold title on 12/12/1972
19	Calvale - Mountain View Study Corridor	43/SP266150	Yes	Evidence of freehold title on 21/12/1973
20	Calvale - Mountain View Study Corridor	43/PM375	Yes	Evidence of freehold title on 01/08/1996
21	Calvale - Mountain View Study Corridor	24/PM374	Yes	Evidence of freehold title on 31/08/1992
22	Calvale - Mountain View Study Corridor	29/PM280	Yes	Evidence of freehold title on 18/09/1992
23	Calvale - Mountain View Study Corridor	30/PM280	Yes	Evidence of freehold title on 18/09/1992
24	Calvale - Mountain View Study Corridor	57/RN362	Yes	Evidence of freehold title on 27/02/1962
25	Calvale - Mountain View Study Corridor	59/RN363	Yes	Evidence of freehold title on 19/02/1962
26	Calvale - Mountain View Study Corridor	220/RN840	Yes	Evidence of freehold title on 2/12/1960
27	Calvale - Mountain View Study Corridor	14/RN374	Yes	Evidence of freehold title on 3/02/1983
28	Calvale - Mountain View Study Corridor	116/RN435	Yes	Evidence of freehold title on 24/02/1993
29	Calvale - Mountain View Study Corridor	50/RN362	Yes	Evidence of freehold title on 29/09/1993
30	Calvale - Mountain View Study Corridor	49/RN361	Yes	Evidence of freehold title on 18/02/1983
31	Calvale - Mountain View Study Corridor	114/SP121310	Yes	Evidence of freehold title on 21/05/1974
32	Calvale - Mountain View Study Corridor	28/RN519	Yes	Evidence of freehold title on 24/11/1992
33	Calvale - Mountain View Study Corridor	1/CP890133		Evidence of public work (Calvale Substation) on the land which was constructed prior to 1996. Any act that consists of the construction or establishment of a public work that commenced to be constructed or established on or before 23 December 1996 is a PEPA under section 23B (7). However, this will only extinguish native title in

Item	Name	Lot/Plan	Extinguishment of Native Title	Evidence of Extinguishment
				the areas necessary for, or incidental to, the construction, establishment and operation of the work.
34	New	1/SP234060	Yes	Evidence of a perpetual lease commencing in 1995 in the previous title dated 10/12/1996, which is a scheduled interest under section 21(9) of the NTA and therefore is a PEPA under section 23B(2)(c)(i) as it took place before 1996.
35	Parent property for Mt Benn Substation Site	44/PM396	Yes	Evidence of freehold title on 16/12/1975

Zoning, character and amenity

Central Queensland Regional Plan 2013

The MID Corridor is situated within the Regional Plan. The Project is mapped within the Priority Agricultural Areas and forms part of the priority outcomes for electricity infrastructure.

Priority Agricultural Areas are strategic areas of the most regionally significant agricultural production. Within these areas, agriculture is the priority land use. Any other land uses that seek to operate in those areas must co-exist with the priority land use.

Banana Shire Council Planning Scheme

The MID Corridor is located entirely within the BSC LGA.

Zoning under the *Banana Shire Planning Scheme 2021* is mostly rural zoning. Rural land uses generally consists of grazing as well as intensive cropping. The project is located within the Rual zone and Industry zone north of Callide Dam.

The intent of the rural zoning is to preserve land for agricultural purposes and protect the rural character and amenity of the region. It also recognises the need to provide opportunities for compatible non-rural uses and for areas to be managed for their contribution to the economy, landscape character and ecological values.

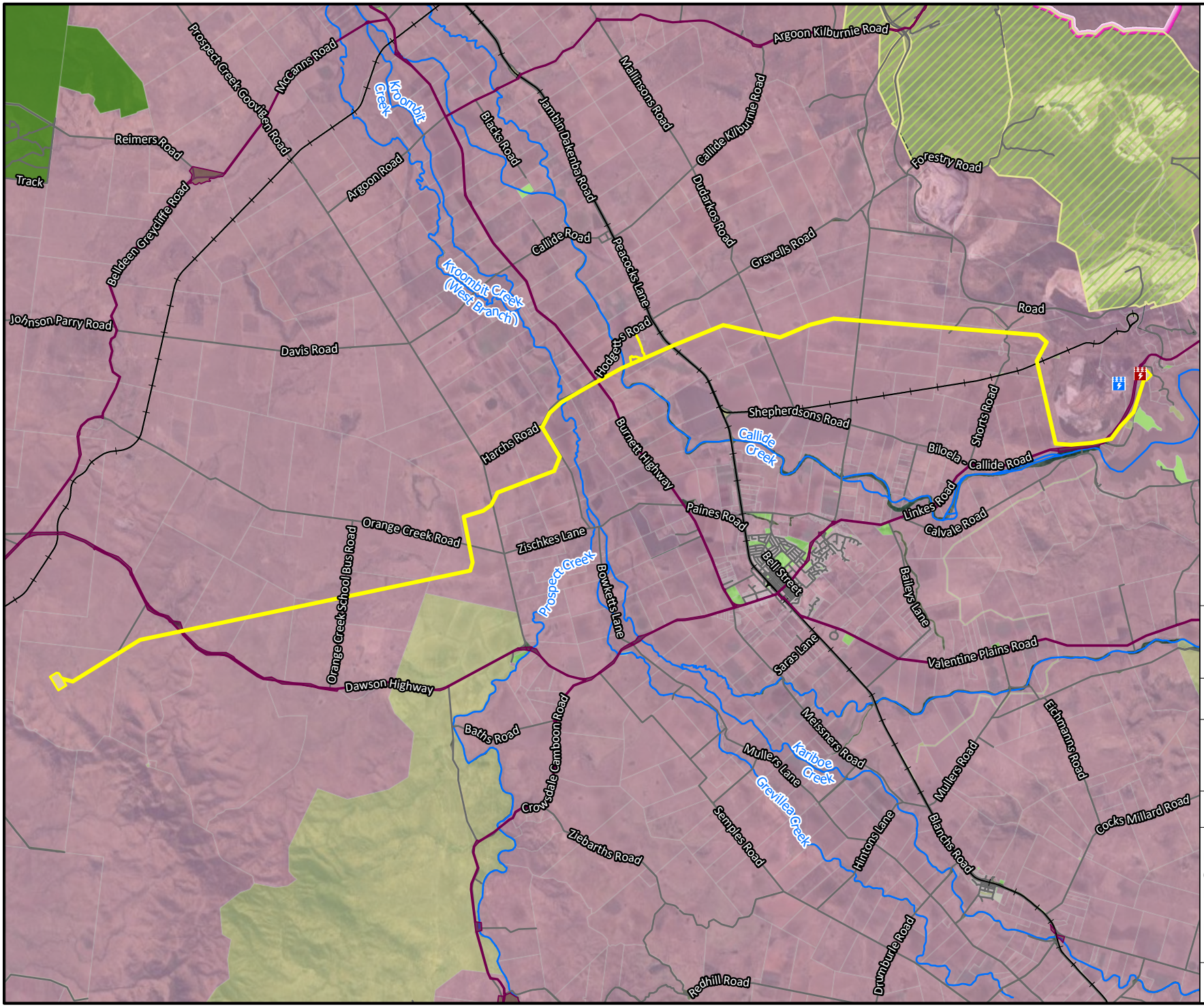
The intent of the industry zoning is to provide for a variety of industry activities and other uses and activities that support industry activities; and do not compromise the future use of premises for industry activities.

The existing amenity of the area can be defined as elements including air, noise and visual amenity which have been assessed separately within this MID Assessment Report.

Land use

In line with the zoning of the MID Corridor, majority of the land intersected by the MID Corridor is utilised for rural purposes, in particular, grazing, and both dryland and irrigated cropping. Land to the east of Kroombit Creek is mostly utilised for cropping, while land to the west is generally grazing land, as can be seen on Figure 5-24.

Land proximal to the existing Callide Power Station is utilised for mining, utilities, transport and communication and Lake Callide is mapped as Reservoir/dam land use.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor
- Stock Route

Land Tenure

- Freehold
- Lands Lease
- Profit à Prendre
- Reserve
- State Forest
- State Land
- Timber Reserve

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

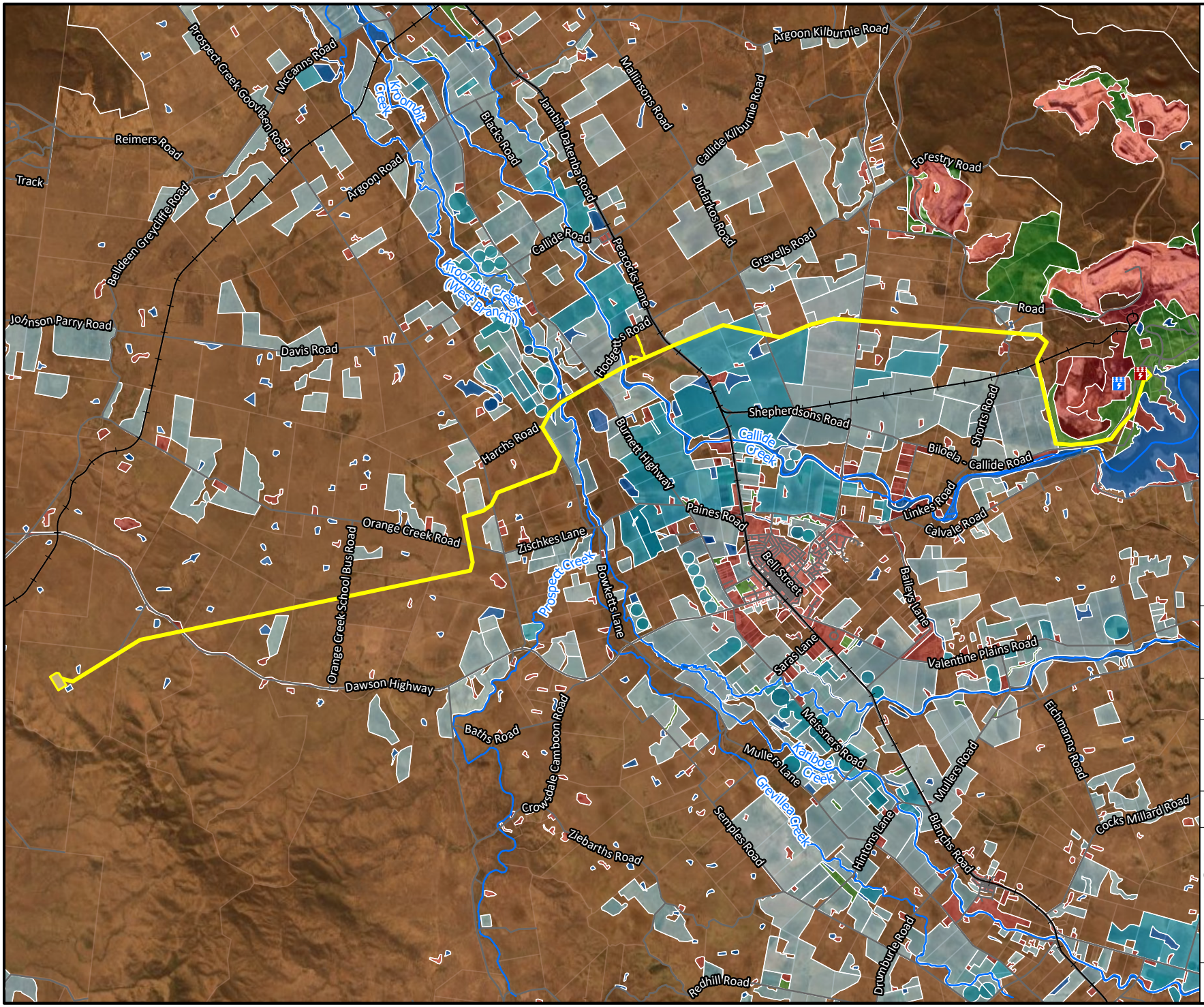
Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

LAND TENURE

FIGURE 5-23

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_012
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Land Use (QLUMP, 2019)

- Conservation and natural environments
- Intensive uses
- Production from dryland agriculture and plantations
- Production from irrigated agriculture and plantations
- Production from relatively natural environments
- Water

Powerlink Queensland

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

LAND USE

FIGURE 5-24

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_013C
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

Agricultural land

Agricultural land classification

Agricultural Land Classification (ALC) are based on the suitability of land for specified agricultural uses and rates the ability for land to maintain a sustainable level of productivity. The factors used to assess ALC include soil, topography and climatic limitations (Queensland Government, 2025). The ALC is used to inform local government planning schemes and regional plans as required for the agricultural state interest provisions of the State Planning Policy. ALC is also used to identify strategic cropping land.

Types of agricultural land classes include:

- Class A: Crop land that is suitable for a wide range of current and potential crops with nil to moderate limitations to production;
- Class B: Limited crop land that is suitable for a narrow range of current and potential crops due to severe limitations but is highly suitable for pastures. May be suitable for cropping with engineering or agronomic improvements;
- Class C: Pastureland that is suitable only for improved or native pastures due to limitations which preclude continuous cultivation for crop production; and
- Class D: Non-agricultural land and land not suitable for agricultural uses due to extreme limitations (i.e., undisturbed land with significant conservation values, steep slopes, shallow soils, poor drainage, or is an urbanised area).

Majority of the MID Corridor intersects Class A and C, with a small portion intersecting Class B as shown on Figure 5-25.

SPP (Agriculture State Interest)

The MID Corridor intersects the following SPP agriculture State interests:

- Priority agricultural areas.
- Stock route network.
- Important agricultural areas.
- Agricultural land classification - class A and B.

Priority Agricultural Areas comprise the region's strategic areas containing highly productive agricultural land uses. In these areas, priority agricultural land uses are the land use priority.

Stock routes are a key component of achieving growth in agricultural production and facilitating a strong agricultural industry.

Important agricultural areas are identified in the Queensland Agricultural Land Audit, SPP IMS or identified by a local government as an area that has all the requirements for agriculture to be successful and sustainable, is part of a critical mass of land with similar characteristics, and is strategically significant to the region or the state.

Agricultural land classification - class A and B means the land shown on the SPP IMS as ALC Class A and Class B or identified by a local government in a local planning instrument as ALC Class A or Class B land, based on a localised study. Stock routes

The *Stock Route Management Act 2002* (Qld) defines stock routes as 'a road or route ordinarily used for travelling stock or declared under a regulation to be a stock route'. The Queensland stock route network is mainly used for moving stock, pasture for emergency agistment and long-term grazing.

The Project area intersects two stock routes along the Biloela Callide Road/Dawson Highway (424BANA) and the Burnett Highway (430BANA). Both are considered minor and unused but are open (Figure 5-23).

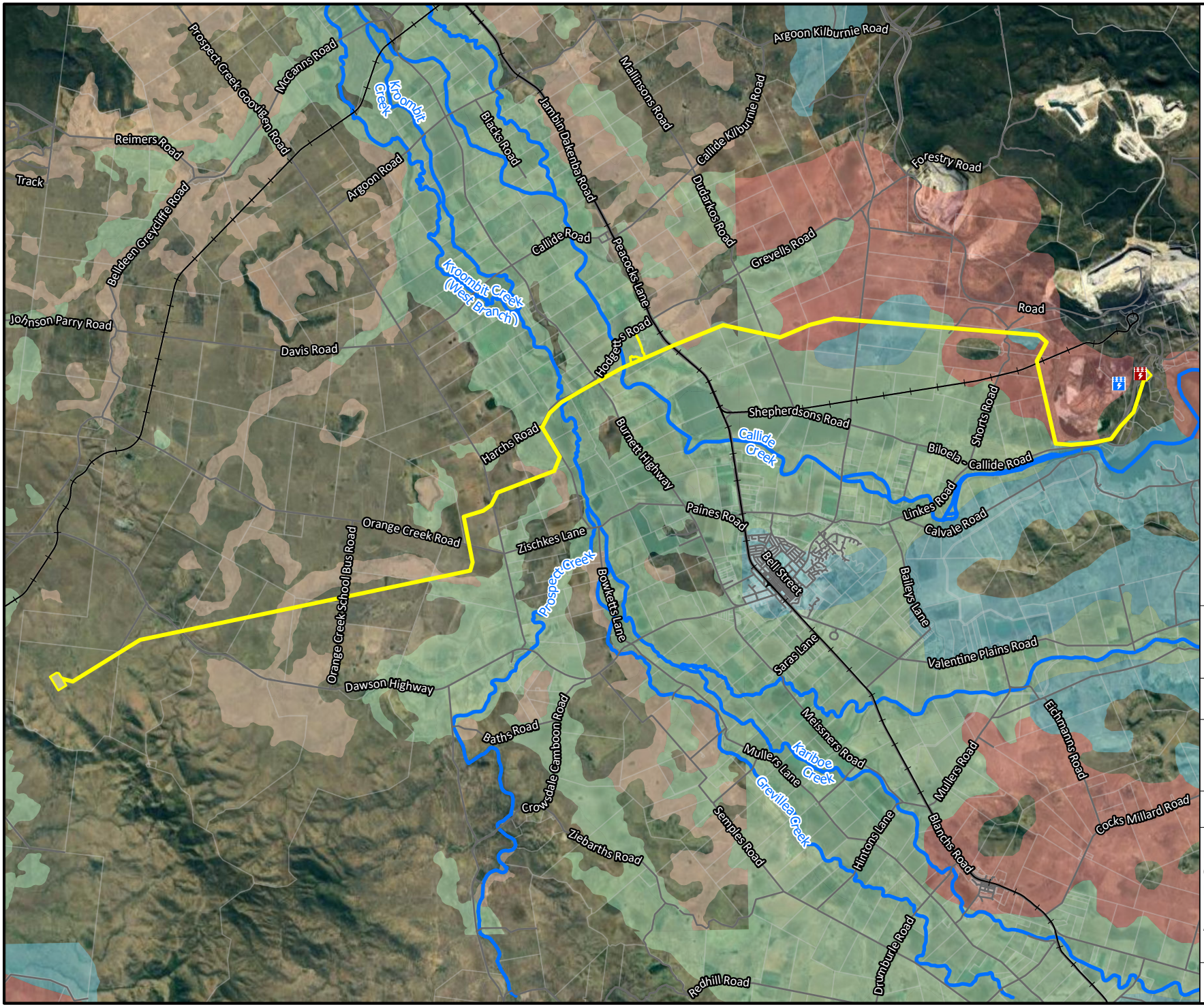
Resource interests

Resource interests is discussed in Section 5.1. The MID corridor does not intersect any resource interests governed by the P&G Act, it does intersect a PPL under the P&G Act, held by Australia Pacific LNG Gladstone Pipeline Pty Ltd (PPL163). The Project also intersects two exploration permits, one for coal (Batchfire Callide Pty Ltd (EPC1807)) and one for minerals other than coal (Anglogold Ashanti Australian Limited (EPM28294)) granted under the *Mineral Resources Act 1989*. The MID Corridor is also located within an Exploration Permit Geothermal application area (Australis Energy Pty Ltd (EPG2044)) under the *Geothermal Exploration Act 2004*. The location of these resource interests are shown in Figure 5-4.

A review of SPP IMS spatially shows matters of state interest. A review of SPP IMS identified no key resource area (KRA) is mapped along the MID corridor. Yalkara KRA (No.102) is located approximately 2km north of the site and its Yalkara KRA transport route traverse MID corridor specifically between CB75 and CB76. Yalkara KRA transport route connects Yalkara KRA (No.102) and Prospect Creek KRA (No.105) which is located approximately 5.7km south of MID corridor.

Tourism

Tourism and recreation opportunities exist around the Project area. With access to these areas via the major SCRs in the region, including Biloela Callide Road, the Dawson Highway and the Burnett Highway.



Legend

- Road
- Railway
- Watercourse (Water Act)
- Cadastre
- Callide Power Station
- Calvale Substation
- MID Corridor

Agricultural Land Classes

- Landclass A1
- Landclass A1/C1
- Landclass B
- Landclass C1/A1

Powerlink QUEENSLAND

Scale 1:162,200

0 2,500 5,000

metres

Coord. Sys. GDA2020 MGA Zone 56

Banana Range Wind Farm Connection Project – MID Assessment Report

AGRICULTURAL LAND CLASSIFICATION

FIGURE 5-25

File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_013B
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.11.2 Potential impacts

Design and construction

Potential impacts on land use from the Project are associated with construction and maintenance activities and may include:

- loss or fragmentation of agricultural land;
- disturbance to agricultural operations; and
- disturbance of rural amenity values.

Agricultural land and operations

Short-term construction impacts are likely for both cropping land and grazing land during the construction phase of the Project, including reduced ability to utilise or farm fields. These impacts will, however, cease once construction is complete.

Most landowners along the MID Corridor have a historical family-based connection to their properties and agricultural businesses. As such, the operation of the Project has the potential to create ongoing impacts on existing farming operations and will likely lead to the loss of a small area of Class A and B agricultural land associated with the transmission line structures and new access tracks. In most instances, cropping activities can continue to occur around and within the transmission easement, however, impacts to manoeuvrability and function of farm machinery may occur.

Where possible, the MID Corridor has been co-located with the existing Calvale to Biloela to Moura 132kV transmission line and the Calvale to Baralaba 132kV transmission line in order to minimise impacts on agricultural land. Co-location of infrastructure minimises impacts on existing land by:

- confining vegetation clearing to one corridor through properties, instead of multiple corridors;
- using one track to access both infrastructure;
- minimising potential for introduction and dispersal of weed and pest species;
- minimising the requirement to reconfigure farm infrastructure; and
- reducing fragmentation of farming operations.

Rural character and amenity

Where possible, the MID Corridor has been co-located with existing electrical infrastructure to minimise impacts on land use, character, and amenity of the area. Impacts to amenity have been discussed within:

- Section 5.3 (Air Quality).
- Section 5.5 (Noise and Vibration).
- Section 5.11.3 (Visual Amenity).

Stock routes

No transmission structures are proposed within a stock route and as such will not impact on the functionality of the stock route network. Additionally, given that the stock routes are minor and unused, any potential impacts, such as closures to allow movement and installation of towers during construction can be managed through consultation with Banana Shire Council.

Native title

Any acts or dealings in relation to land and waters that affect Native Title must comply with the Native Title Act in order to be validly done. To the extent that Native Title exists or may exist in the area of the Project, Powerlink will comply with the requirements of the Act for securing an easement for the transmission line. Powerlink typically complies with section 24KA of the Native Title Act, which applies to facilities for services to the public, for its transmission line easements. Under section 24KA, Native Title is not extinguished but is 'suppressed' while the easement remains in place.

Tourism

Tourism and recreation opportunities exist around the Project area, with access to these areas via the major SCRs in the region, including Biloela Callide Road, the Dawson Highway and the Burnett Highway. Construction activities will see an increase in vehicles traversing these roads, as detailed in Section 5.16, which may see an increase in travel times during the construction period, however no impacts to safety of these roads are anticipated.

Resource

The MID Corridor does not include land mapped as KRA however, Yalkara KRA transport route traverse MID corridor specifically between CB75 and CB76 which connects Yalkara KRA (No.102) and Prospect Creek KRA (No.105). The Project within this area may result in impacts to the transport of resource materials, as well as potential construction-related stability impacts on the transmission line structures within the extractive resources transport route. Operation and maintenance.

Impacts anticipated with operation and maintenance activities will be limited to impacts to land use and agricultural operations during periods of maintenance and inspections. Maintenance activities and inspections are undertaken on a semi-regular basis and will involve liaison with the landholder prior to entry.

Decommissioning

Decommissioning activities will see the land returned to the landholder, and as such, returned to its previous land use, resulting in beneficial impacts on the land.

5.11.3 Mitigation measures

Through the landholder and stakeholder engagement and infrastructure design processes, Powerlink has considered the existing land use associated with the Project to reduce and mitigate impacts where possible. Powerlink will continue to collaborate with landholders through the Project.

Construction and operation of the Project will be managed in accordance with Powerlink's standard environmental controls outlined within the EMP (Appendix C). Key mitigation includes the following:

- Co-locating the Project with existing electricity infrastructure where possible.
- Co-locating the Project with property boundaries where possible to minimise impacts on property operations.
- Remediation of disturbed work areas at structure locations in agreement with landholders and in line with the EMP.
- In the event that stock routes need to be utilised in coincidence with planned construction activities, Powerlink will work in with the stock route manager to avoid and minimise any work activities that will impact the mustering and movement of stock.

Powerlink will continue to consult with landholders in relation to the following:

- Designated construction access tracks will be planned and prepared in liaison with landholders.
- Property access protocols will be developed for implementation during the construction phase which will include information on access tracks, fencing, and gates that can be used as well as the need to keep gates closed for stock control.
- Where the Project access may require improvement to existing landholder infrastructure, addition or replacement will be provided for items such as gates, grids, culverts or signage to mitigate impacts on access and infrastructure to the properties.

5.12 Visual amenity

5.12.1 Existing environment

A visual amenity study area has been established at a distance of seven kilometres from the MID Corridor. The study area was defined based on the overall height of the transmission structures and the distance at which they will be visible but will no longer be a visually noticeable feature in views.

To determine landscape character, features and sensitivity, the review of existing conditions identified state and local planning policy, land use, topography and the presence of vegetation and water bodies. The review also identified features such as dwellings, public lookouts, tourist attractions, and key roads within the study area.

The predominant land use within the study area is farming, a land-use and zone where the provisions recognise the potential for offsite amenity impacts and seeks to protect these uses from encroachment through incompatible uses.

Major roads and tourist routes within the study area are limited to the Dawson Highway at the west, Burnett Highway, roughly central and Jambin- Dakenbah Road to the east.

5.12.2 Potential impacts

Public viewing locations include elevated lookouts, vantage points along the road network or sites where views of national parks, reserves, and areas identified for their landscape values.

Views from townships and urban areas

Views from the majority of townships within the study area are confined to the edges of townships or across recreation reserves where cleared sports fields allow views over grassed playing fields and beyond towns. The transmission lines will not be a dominant feature from these areas due to the scale and extent of vegetation in most views of the Project.

Views of the proposed route from most areas within nearby townships and communities will be screened by vegetation and buildings. Therefore, the overall visual impact will be Nil to Negligible from most areas.

Views from highways and major roads

The overall visual impact from highways and major roads would be Low. This is partly due to distance and, therefore, visual prominence of the Project and the short duration of views brought about by screening or filtering and travelling speeds. From most locations where the Project would be visible, project towers will be added to views that include nearby poles, towers, buildings, and other structures, which are more prominent or noticeable than structures along the proposed route.

Views from local roads

The visual impact from local roads ranges from Negligible to Low. The assessment of Low to Negligible is where views are over landscapes or areas with low sensitivity to visual change or where there will be few viewers.

Views from individual dwellings in farming areas

The overall visual impact from rural residential areas would be dependent on proximity, outlook and orientation of the dwelling, existing screening provided by vegetation in and around the dwelling and the nature of views.

Impacts would range from high to nil. A high level of visual impact would be a structure or structures positioned in views considered sensitive or private open space, close to the dwelling, and views that include features in the surrounding landscape. An overall impact of low may be where structures are a background element in a sensitive view, an outlook that is a service or utility function or partially screened or filtered by existing vegetation, topography, or farming structures.

Visual impacts

A number of photomontages have been prepared from key viewpoints including from:

- Mount Murchison State School, Dawson Highway.
- Burnett Highway.
- Dawson Highway (near Orange Creek School Bus Road).

These can be seen in Appendix G.

5.12.3 Mitigation measures

Recommended measures to mitigate and manage the effects on landscape and visual values during all phases of the Project are set out below:

- Micro-siting of towers to avoid tower placement in key view lines or taking advantage of existing screening provided by vegetation, built form or topography.
- Offering landscape screening where the visual impact from residential dwellings within 1.5km of the transmission route, where impacts cannot be suitably mitigated or reduced through micro-siting.

5.13 Social and economic

A Social and Economic Context Review (SECR) was completed for the Project by Ethos Urban (2025) Appendix H) that provides a high-level overview of potential social and economic considerations related to the Project. A summary of the findings of the report are presented below. High level social and economic impacts and recommended mitigation measures are discussed below.

5.13.1 Existing environment

Community profile

The SECR included a review of the Australian Bureau of Statistics (ABS) Census of Population and Housing to identify key socio-economic and demographic characteristics of the community within and surround the MID Corridor. The assessment considered two study areas:

- The '**Local Catchment Area (LCA)**' representing the immediate community surrounding the MID Corridor and is represented by the towns and suburbs including Banana, Orange Creek, Dakenba, Mount Murchison and Biloela. There were 6,500 residents within the LCA at the time of the 2021 census.
- The '**Regional Catchment Area (RCA)**' representing the broader community and economy and is defined as the area in which the proposed Project will service. This area is defined as the Banana Shire LGA. There were 14,510 residents within the RCA at the time of the 2021 census.

Key findings of the demographic analysis undertaken for the SEIA were as follows:

- A higher share of Aboriginal and Torres Strait Islander (ATSI) residents, accounting for 5.6% of the LCA population and 5.8% of the RCA population. This compares to 4.9% of ATSI residents in Queensland overall.
- A slightly lower median age of 36.6 years in the LCA and 38.4 years in the RCA, compared to the Queensland median of 38.6 years.
- A slightly higher income profile where individuals in the LCA earn a median annual income of around $45,510, and $44,670 in the RCA, compared to the Queensland median of $41,020.
- The LCA has a lower dwelling occupancy rate of 84.8% and 81.6% in the RCA, compared to 90.7% throughout Queensland. This implies that more dwellings are vacant within the LCA.
- A higher proportion of LCA residents are occupied in activities that would align with the Project's workforce needs, noting the 15.5% of labourers, 19.0% of technicians and trades workers, and 14.9% of machinery operators and drivers in the LCA. Collectively, these occupations account for 49.4% of resident workers in the LCA and 45.5% in the RCA, compared to 31.1% in Queensland.

Key trends that occurred between the 2016 and 2021 Census were outlined in the SECR and include:

- An increase in the share of ATSI residents by +1.5 percentage points (ppt) in the LCA and +1.8ppt in the RCA, compared to a +0.9ppt increase in Queensland.
- A decline in occupancy rate in the LCA by -2.2 percentage points (ppt), compared to a +1.2 ppt increase in Queensland.
- The population is getting older, with the median age increasing by 3.3-years from 33 to 33.6 years old in the LCA, and a 2.4-year increase in the RCA, compared to a 1.6 increase in Queensland.

Business and employment trends

Business structure

ABS Business Count data for June 2024 show that BSC LGA includes approximately 300 construction, manufacturing and transport/warehousing related businesses, representing 12% of all businesses located in LGA compared to 28% for Queensland. This data indicates a low presence of businesses with potential to service the Project and local supply opportunity may be constrained by the capacity.

Importantly, the data highlights the dependency of the Agricultural, Forestry and Fishing sector to The BSC LGA's economy, noting it accounts for 62% of all businesses, compared to 8% for Queensland. It will therefore be important that the construction and operation of the Project minimises impacts on this key sector.

Labour force participation

As of December 2024, BSC LGA had a labour force of 9,350 persons and an unemployment rate of 3.4%, based on information from the Australian Government Small Area Labour Markets. In total, 320 residents are unemployed in the LGA, but also highlights a comparatively tight labour market, noting the Queensland unemployment rate is much higher at 4.0%.

The construction phase of the Project has the potential to provide new job opportunities locally and regionally. There may be opportunities for local people, First Nations people and job seekers aligning with relevant policies e.g. Powerlink's Diversity, Equity and Inclusion Strategy and Reconciliation Action Plan (RAP)) to secure project work.

While some opportunities will exist locally, the specialised nature of the work and short duration of the construction phase makes local workforce participation more challenging.

Key affected communities

Considering the outcomes of the social and economic profile within the study areas, the following individuals and communities are likely to be impacted by the proposed Project:

- The most sensitive receivers include twelve rural residential properties around Biloela that are within 500m of the MID Corridor, with the closest being 250m.
- The local Indigenous community, noting the area is within the registered native title claim area of Gaangalu Nation People.
- Students, staff and families attending the Mount Murchison State School which is located approximately 800m south of the MID Corridor.
- Community and other accommodation use located within proximity to the Project alignment, such as Biloela Showground, Discovery Parks – Biloela, Camp Illawong Scout Camp, Queensland Heritage Park and other open space and recreation areas, and tourism and accommodation providers.

Consultation feedback

Key findings from the consultation and engagement sessions undertaken by Powerlink are detailed in Section 6 of Appendix H. A summary of the key findings have been provided below:

- Impacts to landholder farming operations including biosecurity, loss of productivity, irrigation systems such as centre pivots and travelling irrigators, and electrical safety concerns.
- Landholders' proximity to the Project.
- Visual impacts of the transmission line.

- Loss of property values for surrounding landholders.
- Permanent removal of areas from production and associated loss of revenue.
- Protection of endangered vegetation.
- Perceived health effects from Electric and Magnetic Fields (EMFs).
- Potential impacts to transport routes, airstrip and aviation facilities within or nearby the potential corridors.
- Impacts to major development plans on some properties, including other renewable generation projects.
- Concerns about the lack of engagement between the renewable energy sector and agricultural sector and general commentary about poor community consultation.

Major projects and developments

A review of major projects and developments in the region shows that there is significant investment in the renewable energy and transmission connection space that is either planned, approved or underway, including the Calvale to Calliope River Transmission Line Reinforcement Project, the Theodore Wind Farm and associated connection project and a number of other wind and solar farms proposed in the Theodore, Biloela and Callide region. These are further detailed in Section 5.22.

Future socio-economic profile

Population forecasts to 2036 for the Regional Catchment have been prepared using the Queensland Government's Statistician's Office and rebased to the latest Estimated Resident Population (ERP) (2024) released by the ABS. The Regional Catchment's population is forecasted to decline with an average annual rate of 0.1% and the resident population is trending towards a more elderly community including strong growth in residents aged 65 years and over with a significant decline in children aged below 20 years between 2025 and 2036.

While official population projections indicate subdued future growth, this contrasts with recent historical experience of strong population growth across the region over the last few years. Indeed, official population projections estimated that 14,530 persons would be living within the Regional Catchment in 2026 a decline from the 2021 estimate of 15,660 persons. By contrast, according to the latest ABS ERP, the population growth actually increased by around 460 persons.

Overall, this indicates the high degree of uncertainty attached to forecasting population growth across regional areas. Population growth across regional areas tends to be volatile and tied to local and broader economic conditions and prospects of the region. During the COVID-19 period, much of regional Australia experienced an increase in population growth as persons migrated from the cities and urban areas to regional areas.

Population trend between 2025 and 2036 across Regional Catchment is shown in Figure 5-26.

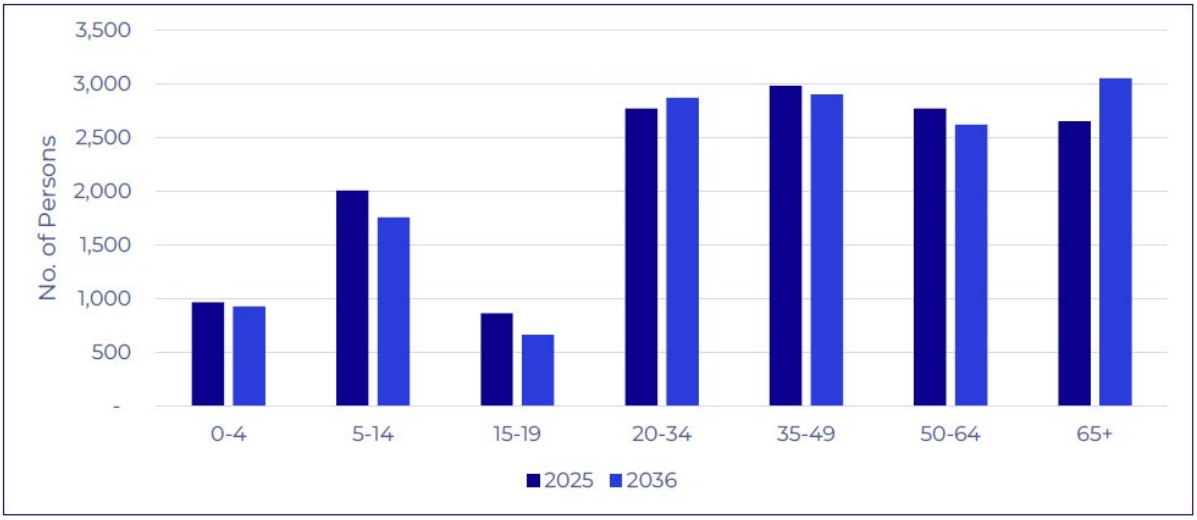


Figure 5-26 Population projection by age (2025-2036) - No. of persons

Source: Australian Bureau of Statistics, Queensland Statistician's Office (June 2023 Population Projections)

Likely social environment change

In view of the forecast population decline, the RCA is expected to undergo only a moderate change, with a slight decrease in the resident population (230 persons between 2025 – 2036), focused on those aged below 20 years (-590 persons). As noted, the RCA is projected to experience a strong increase in those aged 65+ (+400 persons).

The forecast decline in the population is relatively marginal and is unlikely to have a substantial impact on power supply needs. An ageing population living in more rural areas will mean that secure power supply is needed to encourage ageing in place, social connection and even online services like telehealth appointments. The population will still require secure and resilient power supply as natural disasters and extreme weather events become more prevalent because of the warming climate. Having a reliable and well-connected electricity grid is one of many solutions to improving resilience of an ageing community in an area at risk from extreme weather.

5.13.2 Potential impacts

The high level social and economic considerations arising from SECR are following:

- Potential impacts on local Indigenous people, such as workforce participation, housing and accommodation, local business and industry procurement, health and community wellbeing, and engagement.
- The need for ongoing transparent and regular communication with the local community and other key stakeholders to ensure social license for the Project.
- Potential for construction impacts (if not appropriately managed) that may cause impacts on local community, such as noise and vibration, changes to air quality, increased vehicle traffic and how they might affect social and business services (schools, accommodation providers, recreational activities).
- Potential impacts to farming communities and livelihoods through disruption to activities during construction and any ongoing constraints (e.g. removal of productive areas, reduced biosecurity) associated with the Project's operations.
- Potential visual impacts of the Project on communities and rural properties both during construction and once operational.

- Potential for cumulative impacts associated with multiple concurrent construction projects and the establishment in the landscape of further operating renewable energy infrastructure.
- Opportunity for local and regional economic benefits from the construction and operation of the Project include new investment and obs.

Construction phase impacts

Economic output

Construction phase of the Project has the potential to benefit businesses and workers within the local economy and community. Powerlink are committed to seeking local and First Nations business participation within the supply chain. This may be construction related or more broader.

The increased number of workers within the local area during construction of the proposed development may result in a range of flow on effects due to an increase in economic activity. This increase in economic activity has the potential to benefit local businesses and the community overall.

Furthermore, it is understood that Powerlink will seek to provide capable and competitive local suppliers with fair and reasonable opportunities to supply and contribute to the Project (where available), noting there are construction, manufacturing and transport/warehousing related businesses in BSC LGA.

Employment

While some opportunities will exist locally, the nature of the work (i.e. technical/formal qualifications) and short duration of the construction phase makes local workforce participation challenging.

Overall, workforce opportunities from the Project during construction may benefit people and businesses locally and regionally. To ensure this benefit is experienced, Powerlink and the supply chain should apply strategies and planning to deliver on local and First Nations workforce participation outcomes.

Community change

Project might have potential for construction impacts (if not appropriately managed) that may cause impacts on the community, such as noise and vibration, changes to air quality, increased vehicle traffic and how they might affect social and business services (schools, accommodation providers, recreational activities). These aspects are discussed further below.

Amenity impacts

Changes to local amenity such as noise and vibration, dust and air quality may result from construction activities including, vehicle movements, earthworks and excavations and establishment of construction zones. This may impact some people's wellbeing and local surroundings. Further discussion on the impacts on air quality and noise and vibration are provided in Sections 5.3 and 5.5.

There is also a potential visual impact of the Project on communities and rural properties both during construction and once operational.

This would include the presence of construction machinery and infrastructure, trenching works, and construction traffic.

In addition, there is potential impacts to farming communities and livelihoods through disruption to activities during construction and any ongoing constraints such as removal of productive areas, reduced biosecurity associated with the Project's operations

Consultation with residents found that natural environment, green spaces and agricultural productive area are highly valued with some landowners and local community expressing concerns about the potential loss of trees and green space and removal of productive area due to construction. The final corridor has been refined to an easement alignment of 60m wide in greenfield areas and 40m where co-location is planned to occur with existing transmission lines. Powerlink has worked with landholders to find an alignment that enables greater coexistence with property uses and our infrastructure. The final corridor prioritises co-location with existing transmission infrastructure. The approach can have several benefits compared to separate corridors, including minimising impacts on cropping land by limiting the impacts to one area, and the ability to use existing access tracks for maintenance. Approximately 45 percent of the new line is co-located with existing transmission infrastructure.

Overall, changes to local character and visual amenity during construction may be experienced by people in the LCA due to their proximity to the proposal. People in the RCA are unlikely to be impacted by changes to the local character and visual amenity as a result of the Project.

Traffic, transport and access

Construction of the Project will be undertaken in stages over two (2) years. It is expected that construction workers would access the site in the morning and exit in the afternoon to travel to their homes or accommodation in the evening.

Increased light and heavy vehicle movements may result in disruptions and delays for people travelling along the roads associated with the alignment of the transmission line. This disruption may be experienced as inconvenient for some road users and could cause frustration. However, as construction activities would move progressively along the alignment, disruptions are expected to be temporary and relatively localised.

Overall, traffic, transport and access impacts may be experienced by people in the LCA due to their proximity to the proposal. People in the RCA unlikely to be impacted by traffic generated by the Project.

Further discussion on the impacts on traffic and transport is provided in Sections 5.16.

Property and land use

Construction of the Project has the potential to result in changes to property access and management for landholders along the proposed easement. Construction of Project will directly affect 38 land parcels consisting of freehold and land lease, of which 35 parcels have been identified as freehold properties. The remaining parcels are a mix of road parcels and land lease.

Changes to property and land use may result in increased requirements for landholders to engage with project staff and to provide access to their properties to manage project activities. This time, along with responding to other property management changes, may reduce the time available for regular agricultural or property maintenance activities. This additional investment of time and property maintenance may disrupt day-to-day activities and may result in flow on reduction in property productivity. The impact of construction on productivity of properties would largely depend on the existing activities undertaken in the area under the proposed new easement.

Overall, property and land use impacts are most likely to be experienced by people in the LCA who are in close proximity to the Project, with particularly pronounced impact to the private landholders discussed above. People in the RCA are unlikely to be impacted by property and land use impacts as a result of the proposal.

Operational phase impacts

Amenity impacts

Overall, air quality and noise and vibration impact during operation are unlikely to be experienced by most people in the locally and regionally.

The environment in and around the Project already features views of the existing transmission line and associated infrastructure. The final corridor prioritises co-location with existing transmission infrastructure. This approach can have several benefits compared to separate corridors, including minimising impacts on cropping land by limiting the impacts to one area, and the ability to use existing access tracks for maintenance. Approximately 45 percent of the new line is co-located with existing transmission infrastructure. However, there is a potential visual impact of the Project on communities and rural properties especially in the area does not co-locate with existing transmission infrastructure.

Property and land use

Most of the land disturbed during the Project's construction would be reinstated during the Project's operation. During operation, a new easement would be maintained for the life of the Project. Generally, landholders would be able to resume pre-construction activities within the easement. There may, however, be some restrictions on vegetation heights or the types of activities or infrastructure that can be undertaken within the new easement which is outlined in further detail in Powerlink's Activities on an easement brochure.

Overall, property and land use impacts during operation may be experienced by people in the LCA due to their proximity to the Project. Relocation of infrastructure during operation are most likely to benefit people in close proximity to the proposal in the LCA. People in the RCA are unlikely to be impacted by property and land use impacts as a result of the proposal

Health and community wellbeing

Given that the Project involves the replacement of an existing transmission line, it is anticipated that the provision of operational jobs supported by the transmission line currently will remain unchanged as a result of the Project.

In addition, there are potential opportunities for local and regional economic benefits from the operation of the Project including new investment and improved energy security for business and industry.

5.13.3 Mitigation measures

Social Impact Assessment and Management Plan

Powerlink is undertaking a Social Impact Assessment and developing a Social Impact Management Plan (SIMP)due for completion mid-2026.

The SIMP will outline management measures aligned with the following five key matters: workforce management, housing and accommodation, local business and industry procurement, health and community wellbeing, and community and stakeholder engagement.

As a part of the Social Impact Assessment process, engagement was undertaken, and included engagement with stakeholders to:

- understand stakeholder and community insights, interests and concerns regarding the proposed Project; and
- identify and understand potential social impacts and opportunities as well as ways in which these can be avoided, managed, mitigated or for opportunities, enhanced.

The first of two rounds of engagement was completed with relevant stakeholders July 2025. The second round of engagement is expected to be undertaken November 2025.

During round one engagement, stakeholders shared insights across all five key matters. For example delivering local and Indigenous business and workforce opportunities, enabling good workforce management such as reducing the use of local medical services, managing demand on housing and short-term accommodation providers, and delivering lasting benefits for communities.

Reconciliation Action Plan

Powerlink launched it's RAP in 2021 to start their reconciliation journey and initiatives. Powerlink is committed to creating sustainable opportunities for First Nations people by fostering a culturally and socially inclusive environment to enable equitable participation through access to employment opportunities, professional development and retention. Powerlink will continue to support improved economic outcomes through our supplier diversity and culturally appropriate community partnerships and engagement.

The RAP outlines a number of opportunities including:

- improve employment outcomes by increasing Aboriginal and Torres Strait Islander recruitment, retention, and professional development;
- increase Aboriginal and Torres Strait Islander supplier diversity to support improved economic and social outcomes;
- develop First Nations Wellbeing initiatives that support the Cultural, Mental, Spiritual and Physical Health for Aboriginal Staff and Torres Strait Islander staff;
- establish and maintain an effective RAP Working group (RWG) to drive governance of the RAP;
- provide appropriate support for effective implementation of RAP commitments;
- build accountability and transparency through reporting RAP achievements, challenges and learnings both internally and externally; and
- continue our reconciliation journey by developing our next RAP.

Powerlink is committed to embedding the RAP initiatives and opportunities for First Nations people and to continue to foster relationships, respect and opportunity through the Project's construction and operation.

5.14 Indigenous cultural heritage

5.14.1 Existing environment

A search of the DWATSIPM Cultural Heritage Database and Register was undertaken on the 8 May 2025 for the MID Corridor and a 1km buffer from the centre of the MID Corridor.

Six cultural heritages sites were identified, including artefact scatters, isolated finds and a scarred/carved tree. None of these are intersected by the MID Corridor. The closest recorded site is approximately 180m from the overhead transmission component of the MID Corridor (Figure 5-27).

The database identified that the cultural heritage party for the area are the Gaangalu Nation People (QCD2024/001 PRC).

A single approved cultural heritage management Plan (CHMP) for APLNG project (CLH000759) is present within MID Corridor specifically between CB70 and CB84. This CHMP was approved between Origin Energy and Gangulu People on 18 August 2010.

No Designated Landscape Areas, Registered Cultural Heritage Study Areas and National Heritage Areas (Indigenous values) is recorded within 2km of the MID corridor.

5.14.2 Potential impacts and mitigation measures

There is potential that ground disturbance works associated with the Project may disturb unknown Aboriginal Cultural Heritage. Over most of the MID Corridor, the risk of encountering indigenous heritage values is considered medium due to the mostly undisturbed nature of the existing land use, particularly in areas utilised for cattle grazing or along waterways. In areas associated with the existing line, or near mining or cultivation areas, the risk is considered low.

Key areas of high risk for potentially encountering indigenous heritage values include where the MID corridor crosses Callide Creek and other minor watercourses.

Section 23 of the ACH Act requires that a person who carries out an activity must take all reasonable and practicable measures to ensure the activity does not harm Aboriginal cultural heritage (the Cultural Heritage Duty of Care).

A person is taken to have complied with the Duty of Care if they are:

- In compliance with gazetted Aboriginal Cultural Heritage Duty of Care Guidelines.
- Under an approved Cultural Heritage Management Plan (CHMP) developed under Part 7 of the Cultural Heritage Acts.
- Under a native title agreement or another agreement with an Aboriginal or Torres Strait Islander party that addresses cultural heritage.

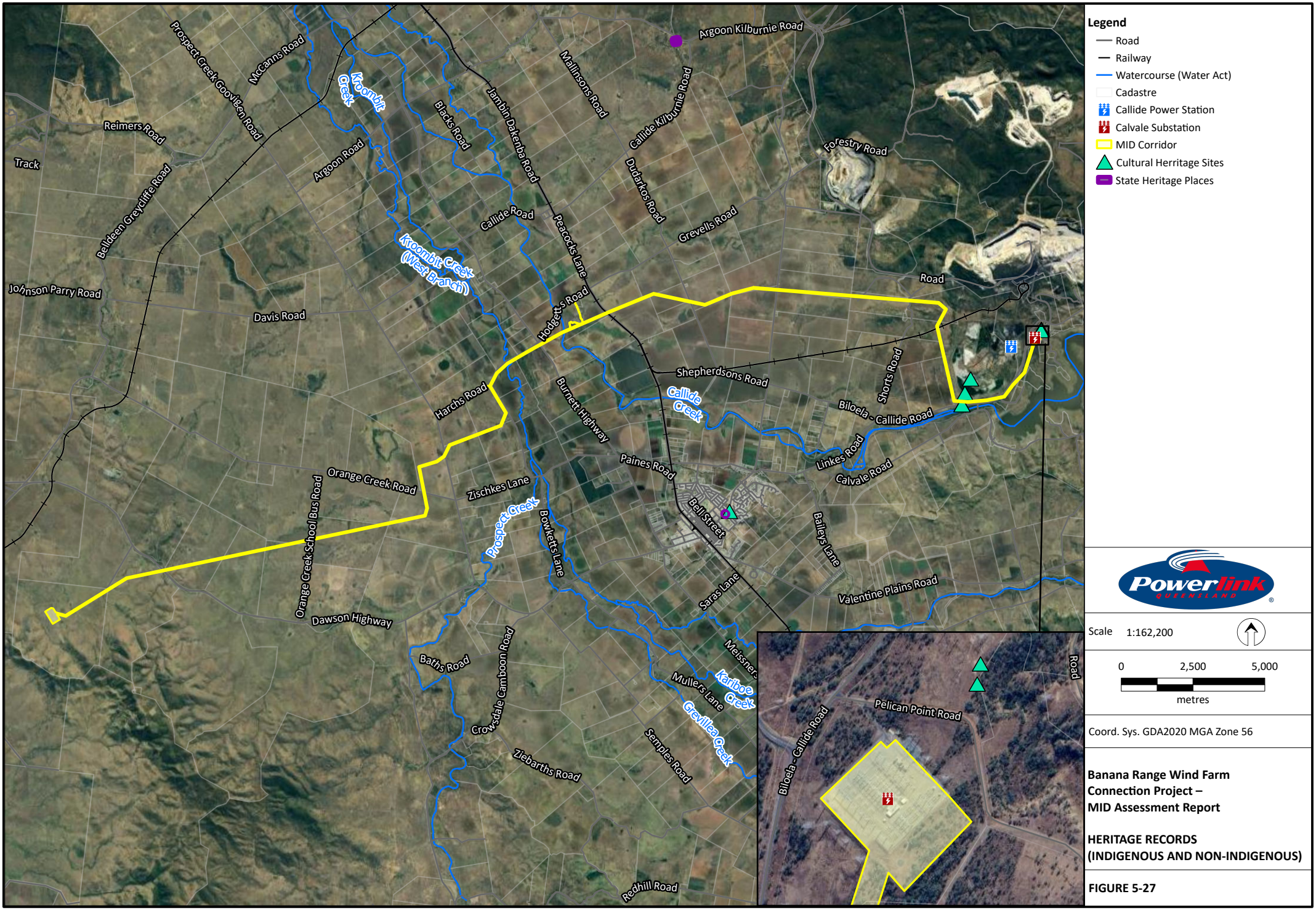
Powerlink Queensland intends to address any Aboriginal cultural heritage risks and meet its Duty of Care through the implementation of the existing Cultural Heritage Management Agreement (CHMA) with the Gaangalu Nation People, in accordance with Part 3, s23(3)(a)(iii) of the ACH Act (i.e. “another agreement”). Engagement with the Gaangalu Nation People is discussed further in Section 6.

On-site cultural heritage surveys have been undertaken by representatives of the Gaangalu Nation People for majority of the MID Corridor, with remaining areas to be completed prior to construction. Powerlink have an existing CHMA in place with GNP, however, ongoing discussions with Gaangalu Nation People will continue, including in relation to the potential for updates to the CHMA.

The procedures for the discovery human remain when carrying out development work will be managed during construction and include notifying the Queensland Police immediately. Queensland

Police will determine if the remains are related to a criminal investigation. If the remains are likely to be Aboriginal or Torres Strait Islander human remains, they must be reported to the DWATSIPM.

Operation and maintenance will result in no additional ground disturbance to what was undertaken during the construction phase and as such, potential impacts to Aboriginal Cultural Heritage associated with the operation and maintenance phases of the Project are considered unlikely.



File Name: 62094_BananaRangesWindFarm_MIDAssessmentReport_v1 / 62094_MID_017
Reference: ESRI Topographic Basemap - Accessed Imagery: 13/10/2025

5.15 Non-indigenous cultural heritage

5.15.1 Existing environment

A desktop review of historical heritage was undertaken which included a review of the following:

- World, National and Commonwealth Heritage Registers.
- Queensland Heritage Register.
- BSC Local Planning Scheme 2021.

Searches of the above registers and Planning Scheme indicated that no registered historical heritage places are present within the MID corridor. A wider search of 10km was undertaken and identified one place as present, being Greycliffe Homestead (48 Gladstone Road, Biloela), recorded on the Queensland Heritage Register and is located approximately 8km south of the Project, within the town of Biloela.

5.15.2 Potential impacts and mitigation measures

There are no registered heritage places within the MID Corridor, and therefore there are no impacts to proposed known heritage values. There is still some potential for the Project to impact on unidentified archaeological artefacts under the *Queensland Heritage Act 1992* (Qld) (Queensland Heritage Act) if discovered during construction. An archaeological artefact means any artefact that is evidence of an aspect of Queensland's history, whether it is located in, on or below the surface of land.

The Project will not impact on any registered heritage places, and while the likelihood is low, the Project will still implement mitigation measures to manage any unexpected finds.

In the event any heritage site or place is located, including archaeological artefacts that are important source of information about an aspect of Queensland's history, new find procedures will be implemented in accordance with the Queensland Heritage Act. This includes:

- stop works;
- contact DETSI immediately and provide details about the find;
- submit the online form Notification of a discovery; and
- not disturb the site of the find for 20 working days unless DETSI give written permission.

Additionally, Powerlink will implement the management of non-indigenous cultural heritage risks through their Cultural Heritage Management Framework. This undertaking an assessment of risk posed by activities conducted by Powerlink staff, Contractors and Maintenance Service Providers (MSPs) is to be made by Powerlink's cultural heritage practitioners prior to the activity. Non-indigenous cultural heritage constraints are documented within PQ Connect, Environmental Work Plans (EWP's) and Cultural Heritage Implementation Documents.

The procedures for the discovery of human remains when carrying out development work will be managed during construction and include notifying the Queensland Police immediately. Queensland Police will determine if the remains are related to a criminal investigation. If the remains are historical, they will be reported to DETSI.

Operation and maintenance will result in no additional ground disturbance to what was undertaken during the construction phase and as such, impacts from the operation and maintenance phases of the Project are considered unlikely.

5.16 Traffic and transport

A TIA in accordance with the GTIA (TMR, 2018) was undertaken by Point 8 (2023) to assess traffic-related impacts created by the Project. The TIA has considered the transmission line from the existing Calvale Substation to the proposed Mount Benn Substation; however, it does not consider the expansion of the Calvale Substation. Construction requirements for the expansion to the Calvale Substation are considered minor and short-term in nature and unlikely to result in a significant impact to the surrounding road network. The TIA is included in Appendix H.

5.16.1 Existing environment

Key State Controlled Roads

There are four key SCRs that will interface with the transmission line, all of which are owned and managed by DTMR. Details of the key roads, including the road form, speed limit and road classification are outlined in Table 5-32.

No traffic survey data has been captured for any of the proposed impacted road networks.

Table 5-32 SCR Road Network Details

Road Name	Road Description	Road Classification
Biloela Callide Road	• Two-lane, two-way • Undivided carriageway • 100 km/hr speed limit	District road (future)
Bruce Highway	• Four-lane, two-way • Divided carriageway • 100 km/hr speed limit	State Strategic Road
Burnett Highway	• Two-lane, two-way • Undivided carriageway • 100 km/hr speed limit	State Strategic Road
Dawson Highway (West)	• Two-lane, two-way • Undivided carriageway • 100 km/hr speed limit	Regional Road

Biloela Callide Road

The MID Corridor crosses Biloela Callide Road near the intersection with Cocups Road (coordinates -24.360992, 150.614953). Towers will run in proximity to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h;
- Biloela Callide Road is a District Road;
- The existing intersection with Cocups Road is a priority-controlled give-way intersection; and
- The existing intersection is located on the outside of a horizontal curve at the bottom of a dip.

Photo 1 shows an example of the road environment.

Photo 1 Typical cross section for Biloela Callide Road (eastbound)

Burnett Highway

The MID Corridor crosses the Burnett Highway near the four-way intersection with Hodgetts Road and Harchs Road (coordinates -24.342100, 150.457318). Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h;
- Burnett Highway is a State Strategic Road;
- The existing intersection with Hodgetts Road and Harchs Road is a four-way priority-controlled give-way intersection; and
- The existing intersection is located along a flat stretch of road with good sight distance in either direction.

Photo 2 shows an example of the road environment.

Photo 2 Typical cross section for Burnett Highway (northbound)

Dawson Highway

The proposed transmission line crosses the Dawson Highway twice. This particular location is approximately 21km to the west of the township of Biloela (coordinates -24.326070, 150.538936).

Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h;
- Dawson Highway is a Regional Road;
- An existing property access is located within the western verge;
- The road corridor on approach is windy and undulating;
- The proposed Mount Benn Substation will likely utilise this access for its permanent access road; and
- The access point is located in the middle of a 1.2km straight section with good sight distance in both directions.

Photo 3 shows an example of the road environment.

Photo 3 Typical cross section for Dawson Highway (westbound)

Dawson Highway (East)

The proposed transmission line crosses the Dawson Highway twice. This particular location is approximately 9km to the east of the township of Biloela (coordinates -24.410844, 150.326673). Towers will run perpendicular to the roadway to the east and west of this location. The surrounding road network has the following characteristics:

- Posted speed limit of 100km/h;
- Dawson Highway is a Regional Road;
- An existing property access is located within the western verge;
- The road corridor on approach is straight, with a slight crest to the south; and
- The access point is located in the middle of a long straight section with good sight distance in both directions.

Photo 4 shows an example of the road environment.

Photo 4 Typical cross section for Dawson Highway (East) (northbound)

Key local controlled roads

There are six Local Controlled Road (LCR) that intersect with the MID corridor as following:

- Jambin Dakenba Road;
- Dudarkos Road;
- Prospect Creek Goovigen Road;
- Orange Creek Road;
- Shorts Road; and
- Orange Creek School Bus Road.

None of the above listed LCR are mapped as active transport corridor under SPP IMS. In addition, no future busway corridor, future state controlled transport tunnel, future SCR are mapped within the MID corridor.

5.16.2 Potential impacts

Construction

Intersection delay

An assessment of intersection delay in accordance with GTIA Part C, Section 11, has been undertaken for all impacted intersections. Across all SCR interfaces, the current traffic volumes at each intersection are well below the capacity of an unsignalised priority-controlled intersection. Whilst some traffic generation will occur from the construction activities, it is expected these volumes will be low and will only occur for a short period of time. Therefore, no intersection delay is expected to occur across all sites.

No intersection delay assessment has been undertaken for Local Government Roads (LGRs).

Road link capacity

An assessment of road link capacity (between intersections) in accordance with GTIA Part C, Section 12 has been undertaken. Across all site locations that interface SCRs, minimal impact on the road link capacity is expected. Whilst the existing volumes are low and there is a potential for construction traffic to exceed 5% of the existing volumes, the total traffic volumes expected to be experienced by the road corridors are still well below their capacity. Additionally, the majority of traffic volumes generated by the development will be in the construction phase which will be for a relatively short period of time, with negligible traffic impacts thereafter. Therefore, the development is not expected to have an impact on the existing network.

Operation

Due to the nature of the Project, the operational phase is expected to generate limited traffic in the form of periodic maintenance access and activities. As such, the operational phase is expected to have a negligible impact on link capacity, intersection operation, heavy vehicle routes, active or public transport networks and general road safety.

Decommissioning

Decommissioning activities are anticipated to have similar impacts to traffic and road use to the construction phase of the project.

5.16.3 Mitigation measures

Recommended measures to mitigate and manage the effects on traffic and transport prior to and during construction include:

- Undertake an investigation into an advanced warning signage scheme for all SCR interfaces.
- Accesses to sites 3 (referred as Dawson Highway [west]) and 4 (referred as Dawson Highway [east]) are to be designed and installed in accordance with TMR Standard Drawing 1807.
- Undertake an investigation into reducing the posted speed on approach to all SCR interfaces during the construction phase.

A schedule of overarching guideline for traffic management principles have been provided in Table 5-33. This schedule is to provide DTMR and BSC with an understanding of the potential traffic impacts that may occur as a result of the proposed development construction. This schedule may help to appropriately construct the Project with respect to the safety of the road network users and assist in creating safe construction processes.

Table 5-33 Temporary Traffic Management Principles

Work activity	Management principles
Legislative compliance	• Traffic management is to comply with the relevant AGTTM Part 3 and AS 1742.3 standards and guidance. • Ensure workers preparing or implementing traffic management are appropriately qualified.
Works need to be completed in close proximity to the roadway	• Ensure two-way flow is maintained. • Ensure minimum lane widths are provided. • Provide adequate worker protection (such as barriers). • Ensure B-double vehicle manoeuvring is maintained at all times. • Avoid static long-term detours
Works need to be conducted on both sides of the road concurrently	• Ensure two-way flow is maintained. • Ensure minimum lane widths are provided. • Provide adequate worker protection (such as barriers). • Ensure B-double vehicle manoeuvring is maintained at all times. • Avoid static long-term detours.
Works to be conducted in or across the roadway	• Ensure no greater than 15 mins delay is incurred as a result of the works. • Undertake works at night where possible. • Provide short-term detours or side tracks where possible.
Works need to be conducted off the roadway	• Maintain minimum sight distance requirements for access. • Maintain minimum turn warrant design specifications for access.
Site compliance	• Ensure regular safety inspections are undertaken of the site. • Ensure accurate documentation of traffic management arrangements is undertaken.
Oversize or overmass vehicle transport	• Ensure relevant permits and loading/unloading plans are organised.

Due to the low traffic numbers to be generated during operation, no mitigation measures are proposed for operation.

5.17 Hazards, health and safety

This section describes, and summarises, the potential environmental hazards associated with the construction, operation, maintenance and decommissioning phases of the Project.

5.17.1 Methodology

A desktop risk assessment has been carried out using information available at the time of preparing the MID Assessment Report and has included a review of a number of datasets, including:

- BSC Local Disaster Management Plan and Adverse Events Plan
- BSC Planning Scheme
- Powerlink Policies (EMPs, Emergency Response Plans and Asset Management Strategy); and
- Climate Data from BoM.

The risk assessment includes an evaluation of key hazard, health and safety impacts relevant to the project and proposed mitigation measures.

For the purposes of this assessment, hazards and risks can be defined as:

- Hazard: A source of potential harm or an existing situation with a potential to cause loss, harm to people or damage to property and environment; and
- Risks: The chance of something happening that will have an impact on objectives and is often specified in terms of an event or circumstance and the consequences that may flow from it.

Effective environmental management requires activities with potential to cause environmental impacts to be identified and managed to an acceptable level based on 'As Low as Reasonably Practicable' principles. An environmental risk assessment has been conducted for the Project to inform planning for the proposed activities, support this MID Assessment Report, and enable the Proponent to meet the objectives for environmental regulation.

The risk assessment has been prepared in accordance with the following risk matrix, adopted from the Victorian EPA guideline *Assessing and controlling risk: A guide for business*[6]*:*

- inherent risk and residual risk are assessed using the risk matrix identified in Table 5-34;
- likelihood for the purpose of risk assessment is outlined in Table 5-35;
- consequence for the purpose of risk assessment is outlined in Table 5-36; and
- risk ratings are compared against Table 5-37 to determine if the level of risk is acceptable, or whether additional controls need to be implemented to manage and lower the risk.

Table 5-34 Risk matrix

	Consequence				
Likelihood	**Low**	**Minor**	**Moderate**	**Major**	**Severe**
Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Low	Medium	Medium

[6] Victorian EPA Publication *1695.1: Assessing and controlling risk: A guide for business,* available at: https://www.epa.vic.gov.au/about-epa/publications/1695-1

Table 5-35 Likelihood rating of impact occurring

Likelihood	Description
Certain	Expected to happen regularly under normal circumstances
Likely	Expected to happen at some time
Possible	May happen at some time
Unlikely	Not likely to happen in normal circumstances
Rare	Could happen but probably never will

Table 5-36 Consequence rating of the harm impact could cause

Consequence	Description
Low	No or minimal environmental impact, or no health and wellbeing impacts.
Minor	Low environmental impact / low potential for health and wellbeing impacts.
Moderate	Medium level of harm to health and wellbeing or the environment over an extended period of time.
Major	Serious environment harm / high-level harm to health and wellbeing.
Severe	Permanent or long-term serious environmental harm / life threatening or long-term harm to health and wellbeing.

Table 5-37 Description of risk ratings

Risk Level	Description
Extreme	Totally unacceptable level of risk. Stop work and/or take action immediately.
High	Unacceptable level of risk. Controls must be put in place to reduce to lower levels.
Medium	Can be acceptable if controls are in place. Attempt to reduce to low.
Low	Acceptable level or risk. Attempt to eliminate risk but higher risk levels take priority.

5.17.2 Hazard risk assessment

The risk identification presented within this section is based on a desktop study only. Technical studies undertaken as part of the MID Assessment Report have been incorporated where applicable.

The key hazards associated with the project, including their impact and proposed mitigation measures, have been included in Table 5-38.

Table 5-38 Preliminary hazard and risk identification

Hazard	Risk	Inherent risk			Mitigation	Residual risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Erosion Construction activities resulting in exposed earth	• Instability to transmission line structures and substation foundations • Loss of service delivery • Damage to neighbouring properties/infrastructure	Likely	Moderate	High	Refer to mitigation measures in Section 5.1.	Possible	Minor	Medium
Contaminated land Excavation of contaminated land from sites listed on the EMR/CLR	• Contamination of watercourses or non-contaminated areas through placement of contaminated fill material	Likely	Major	High	Refer to mitigation measures in Section 5.1.	Unlikely	Minor	Low
Weather Natural weather events, including storms, droughts, flooding, high winds	• Transmission line structural failure and loss of service delivery • Loss of access to infrastructure and inundation of construction areas • Damage to neighbouring properties/infrastructure	Likely	Moderate	High	Refer to mitigation measures in Section 5.2 and 5.4.	Unlikely	Moderate	Medium
Dust Construction activities, such as earthworks activities, vegetation clearing and stockpiling, resulting in dust generation	• Poor visibility • Respiratory irritation • Impacts on crops and surrounding vegetation health	Possible	Moderate	Medium	Refer to mitigation measures in Section 5.3.	Unlikely	Minor	Low

Hazard	Risk	Inherent risk			Mitigation	Residual risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Noise and vibration Construction activities, such as ground disturbance activities or installation of infrastructure, resulting in noise and vibration	• Nuisance and disturbance to surrounding sensitive land uses	Possible	Moderate	Medium	Refer to mitigation measures in Section 5.5.	Unlikely	Minor	Low
Vegetation clearing Construction activities, including ground disturbance.	• Loss of vegetation communities and fauna habitat • Increased edge effects • Modification of watercourses and wetlands from changes in water quality • Increased sedimentation from cleared areas • Potential for impacts to unknown heritage artefacts	Likely	Moderate	High	Refer to mitigation measures in Section 4.7 and 4.8.	Unlikely	Moderate	Medium
Weed infestation Movement of construction vehicles through the MID corridor	• Spread of WoNs and other weeds, resulting in impacts to neighbouring properties	Likely	Major	High	Refer to mitigation measures in Section 5.10.	Unlikely	Minor	Low
Traffic Increased traffic volume resulting from construction activities	• Increased number of larger vehicles on roads, increasing potential for traffic accidents	Possible	Moderate	Medium	Refer to mitigation measures in Section 5.16.	Unlikely	Minor	Low

Hazard	Risk	Inherent risk			Mitigation	Residual risk		
		Likelihood	Consequence	Risk		Likelihood	Consequence	Risk
Bushfire Fire outbreak from construction / bushfire in surrounding areas	• Transmission line structural failure and loss of service delivery • Potential for flammable goods to escalate risk of encroaching bushfire • Injuries / fatality • Damage to neighbouring properties/infrastructure	Possible	Moderate	Medium	Refer to mitigation measures in Section 5.19.	Unlikely	Minor	Low
Dangerous Goods and Hazardous Substances Transportation, handling and storage	• Loss of containment • Pollution of stormwater and soils • Health impacts	Possible	Moderate	Medium	Undertake works in accordance with Powerlink's standard environmental controls within Appendix C.	Unlikely	Minor	Low
EMF Increased EMF from construction of the transmission line	• Health impacts from prolonged exposure to EMF • Interference with television or radio reception.	Possible	Moderate	Medium	Refer to mitigation measures in Section 4.17.	Unlikely	Minor	Low
Waste Creation of waste during construction	• Inappropriate waste handling resulting in contamination of soils and waterways and impacts to neighbouring properties	Possible	Moderate	Medium	Refer to mitigation measures in Section 5.20.	Unlikely	Minor	Low

5.17.3 Dangerous goods and hazardous substance management

Chemicals used during construction, operation and decommissioning phases are likely to include fuels, lubricants, oils, degreasers and domestic cleaning agents.

All dangerous goods will be transported by licensed transporters in accordance with the *Australian Code for the Transport of Dangerous Goods by Road and Rail*.

Standard procedures for the storage, containment, disposal and spill response for potentially hazardous materials will be managed in accordance with *AS 1940:2017 Storage and Handling of Flammable and Combustible Liquids* and *AS 3780:2023 Storage and Handling of Corrosive Substances*. The storage and handling, including first aid and clean up response of these chemicals will be incorporated into the Emergency Response Plan for the Project. Spill management requirements include:

- assess spill (extent and potential to migrate offsite, fire hazard potential, type and volume);
- isolate the spill (prevent further spillage, blocked drains and prevent access to the area);
- notification of the spill;
- clean up and remediation; and
- restock spill kit(s).

5.18 Electric and magnetic fields

5.18.1 Background information regarding electric and magnetic fields

Electric and magnetic fields occur almost everywhere, can exist independently of each other, and can result from both natural sources and human activity. Naturally occurring electric fields result from charged particles in the atmosphere and storm activity, and the electric field strength can vary quite quickly as a result of lightning discharges. The earth's natural magnetic field varies with latitude, and some rocks and minerals are also naturally magnetic.

Unlike most natural electric and magnetic fields, those relevant to transmission lines alternate at the frequency of the alternating current (AC) power transmission system. These fields alternate in magnitude and direction 50 times per second (50 hertz [Hz]). Although they may occur simultaneously at the same place, the electric and magnetic fields exist independently of one another. These power–frequency fields are commonly referred to as extra low frequency (ELF) EMFs).

Household electrical wiring and common appliances (electric blankets, televisions, hairdryers, computers, etc.) all produce ELF EMF. Background magnetic fields in the home are usually around 0.1 microtesla (µT) and background electric fields in the home can be up to 20 volts per metre (V/m) (ARPANSA, 2018). The electric field produced by any source outside the home will be attenuated considerably by the structure of the home, as all common building materials are sufficiently conducting to screen fields (World Health Organization, 2007).

EMFs should not be confused with electromagnetic radiation. EMFs are fundamentally different in their physical nature and in the way they interact with the body (NZ Ministry of Health, 2013). Electromagnetic radiation is a term used to describe the movement of electromagnetic energy through the propagation of a wave (e.g. radio waves, microwaves). This wave is composed of electric and magnetic waves which oscillate (vibrate) in phase with, and perpendicular to, each other (Energy Networks Association, 2016). This is in contrast to EMF, where the electric and magnetic components are essentially independent of one another. EMFs around power lines and electrical appliances are not a form of radiation (NZ Ministry of Health, 2013).

5.18.2 Sources of power frequency electric and magnetic fields

Electric fields

EMFs are produced by all transmission lines, distribution systems, wiring and equipment that use AC electricity. An electric field will exist around any conductor that is energised from the power supply, whether there is any load connected to it. The strength of power frequency electric fields depends primarily on the voltage of the system and also on the distances of the point of measurement from the energised conductor and from nearby earthed objects.

High voltage transmission lines may generate fields of several thousand V/m, whereas fields from lower voltage distribution lines will be in the order of hundreds of V/m, and home appliances several tens of V/m or less.

It is important to note that the electric field strength falls quickly with increasing distance from the voltage source. It is also relatively easy to shield electric fields. Trees, shrubs, buildings, human skin and even clothes will shield electric fields.

Magnetic fields

Magnetic fields are produced by, and proportional to, the flow of alternating electric current through conductors. The strength and direction of the field will change with the AC at 50 Hz.

Transmission line magnetic fields are affected by variables such as line loading, line design, and wire height above ground (Energy Networks Association, 2006). The strength of the magnetic field also decreases rapidly with distance from the source, but it is not practical to provide shielding for magnetic fields (unlike the simple shielding that is possible for electric fields).

However, the magnetic fields generated by the individual conductors in an AC power system can partly cancel each other, depending on their configuration relative to each other. This cancelling effect is greater when the conductors are closer together. It is for this reason that the magnetic field directly above an underground cable buried 1 to 1.5m deep can be as high as or higher than the field directly below an equivalently loaded line some 10m overhead. However, the field strength from the underground cable will usually fall off faster with increasing distance because of the closer proximity of the conductors to one another.

Magnetic fields are measured using a gaussmeter, in a unit of µT or milligauss (mG). 1 µT is equivalent to 10mG. Typical magnetic fields, measured at normal user distance from common household appliances, some overhead lines and associated infrastructure are outlined in Table 5-39. The data in Table 5-39, from the Energy Networks Association, shows that power frequency magnetic fields are not just associated with high voltage transmission lines but are found everywhere in modern society with its almost universal reliance on electricity (Department of Energy and Water Supply, 2017).

Table 5-39 Typical magnetic field ranges (Energy Networks Association, 2016)

Item	Range of Measurements in µT
Electric stove	0.2 – 3
Refrigerator	0.2 – 0.5
Electric kettle	0.2 – 1
Toaster	0.2 – 1
Television	0.02 – 0.2
Computer	0.2 – 2
Electric blanket	0.5 – 3
Hair dryer	1 – 7
Pedestal fan	0.02 – 0.2
Substation (at fence)	0.1 – 0.8
Distribution line (under line)	0.2 – 3
Distribution line (10 m away)	0.05 – 1
Transmission line (Under line)	1 -20
Transmission line (edge of easement)	0.2 - 5

EMF guidelines

There are a handful of international guidelines for EMF that are used to confirm whether EMF measurements are safe for the surrounding environment, these include the International Radiation Protection Association (IRPA) Guidelines which have been adopted within the National Health and Medical Research Council of Australia (NHMRCA) Guidelines.

5.18.3 Existing environment

Potential sources of EMF currently along the MID Corridor include Powerlink's existing Calvale to Biloela to Moura 132kV transmission line and existing Callide Substation. Proposed new sources of EMF will include the Proposed transmission line and Mt Benn Substation. No other material sources of EMF are in close proximity to the Proposed Alignment.

5.18.4 Potential impacts

Estimated EMF associated with the Project

Powerlink have undertaken an EMF assessment for a similar project in scale and intensity to this Project. The assessment considered a new 275kV double circuit transmission line co-located with a 132kV line and were modelled at full load (Powerlink, 2018).

Electric field

Where the proposed transmission line is co-located with the 132kV line, it was calculated that the maximum expected combined electric field would be approximately 2,700V/m. The electric field at the edge of the proposed 60-metre-wide transmission line easement was estimated to be approximately 158V/m (Figure 5-28) (Aecom, 2018). This is significantly below internationally recognised EMF guidelines for established health effects, which is 5,000V/m.

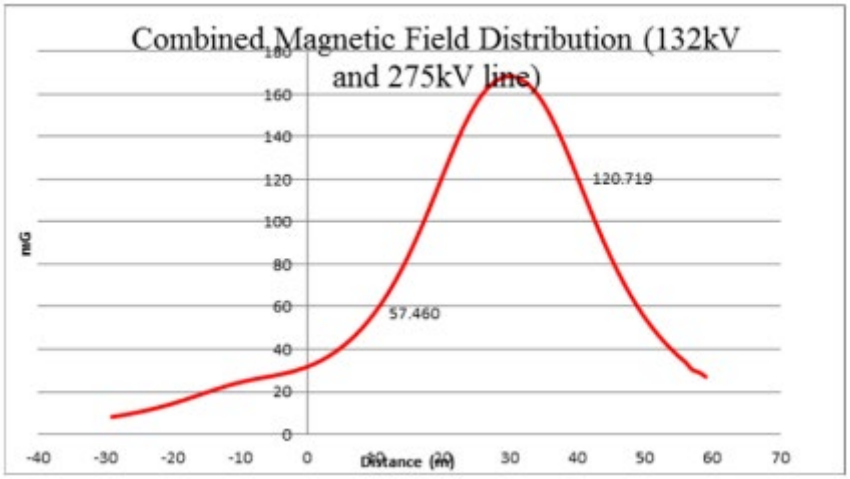


Figure 5-28 Estimated electrical field for a 275kV co-located with a 132 kV (Aecom, 2018)

Magnetic field

Where the proposed transmission line is co-located with the 132kV line, it was calculated that the maximum expected combined magnetic field would be approximately 170mG. The magnetic field at the edge of the 60m wide transmission line easement was estimated to be approximately 28mG (Figure 5-29). This is significantly below internationally recognised EMF guidelines for established health effects, which is 200mG.

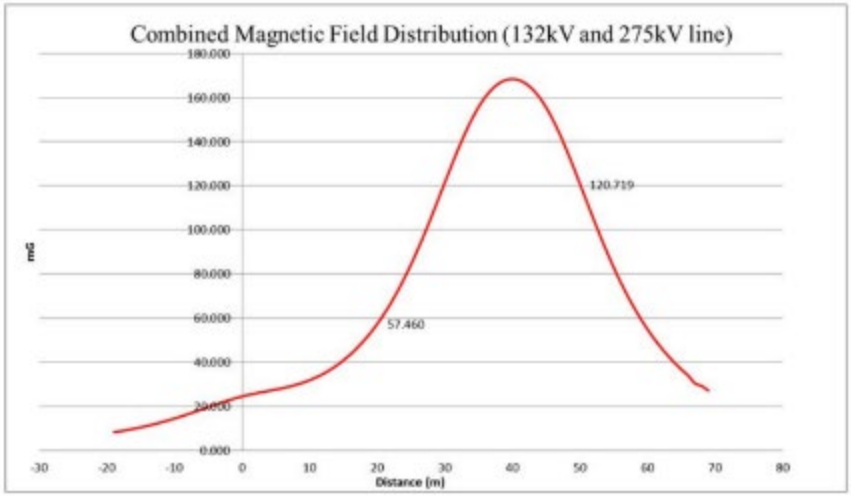


Figure 5-29 Estimated magnetic field for a 275 kV co-located with a 132 kV (Aecom, 2018).

Health

Research

The Australian Radiation Protection and Nuclear Safety Agency (ARPANSA) is a Commonwealth Government agency charged with the responsibility for protecting the health and safety of people and the environment from EMF.

Research into EMF and health is a complex area involving many disciplines, from biology, physics and chemistry to medicine, biophysics and epidemiology. Research on EMFs and health has been conducted for over 40 years, including over 2,900 studies at a cost of more than $490 million internationally (Energy Networks Association, 2016).

The research has generally focused on the magnetic fields with two main areas of research, epidemiology and laboratory studies. Both areas would need to provide links between EMFs and adverse health effects for causality to be accepted by health authorities.

- Epidemiology (population): This research looks at statistics to see if there are patterns of disease in large groups of people. The difficulty with large statistical studies is that they take several years to produce meaningful results and even then, there are different opinions about how the results should be interpreted. There may be other factors in the study which could complicate the interpretation of the results. Scientists generally agree that epidemiological studies aren't strong enough by themselves to establish that adverse health effects exist.
- Laboratory: In the laboratory researchers have studied animal cells, as well as human volunteers under controlled circumstances to see if EMFs have any effects. There have been many hundreds of these studies, and scientists look for results which can be successfully repeated in different laboratories. In over 40 years of research there have been no such consistently reproducible results for exposures below the guidelines.

It is well accepted by scientists that no one study considered in isolation will provide a meaningful answer to the question of whether or not EMF can contribute to adverse health effects. In order to make an informed conclusion from all of the research, it is necessary to consider the science in its totality. All of the research is reviewed periodically by expert panels which are established by national or international bodies with the purpose of trying to determine whether or not human exposure to EMF is related to adverse health effects.

General research findings

There is no established evidence that exposure to magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects (ARPANSA, 2015). Generally, homes that are more than 50 m from a high voltage powerline are not expected to have higher than typical magnetic fields. For substations and transformers, the magnetic fields at distances of 5-10 m away are generally indistinguishable from typical background levels in the home (ARPANSA, 2015).

The following provides advice from credible public health authorities regarding the potential health impacts from EMF.

- ARPANSA: There is no established evidence that ELF EMF is associated with long term health effects. There is some epidemiological research indicating an association between prolonged exposure to higher-than-normal ELF magnetic fields (which can be associated with residential proximity to transmission lines or other electrical supply infrastructure, or by unusual domestic electrical wiring), and increased rates of childhood leukaemia. However, the epidemiological evidence is weakened by various methodological problems such as potential selection bias and confounding. Furthermore, this association is not supported by laboratory

or animal studies and no credible theoretical mechanism has been proposed (ARPANSA, 2018).

- World Health Organisation: Despite the feeling of some people that more research needs to be done, scientific knowledge in this area is now more extensive than for most chemicals. Based on a recent in-depth review of the scientific literature, the World Health Organisation concluded that current evidence does not confirm the existence of any health consequences from exposure to low level electromagnetic fields (World Health Organization, 2018).
- US National Cancer Institute: Studies have examined associations of these cancers with living near power lines, with magnetic fields in the home, and with exposure of parents to high levels of magnetic fields in the workplace. No consistent evidence for an association between any source of non-ionizing EMF and cancer has been found. There was no evidence that electrical utility workers who were exposed to pulsed electromagnetic fields produced by power lines were more likely to develop brain tumours or leukaemia than the general population (National Cancer Institute, 2016).
- Health Canada: There have been many studies on the possible health effects from exposure to EMFs at ELFs. While it is known that EMFs can cause weak electric currents to flow through the human body, the intensity of these currents is too low to cause any known health effects. Some studies have suggested a possible link between exposure to ELF magnetic fields and certain types of childhood cancer, but at present this association is not established (Government of Canada, 2016).

EMF Guidelines for established health effects

The two internationally recognised exposure guidelines are:

- International Commission in Non-Ionizing Radiation Protection (ICNIRP) 2010; and
- International Committee on Electromagnetic Safety, Institute of Electrical and Electronics Engineers (IEEE) 2002.

ARPANSA aligns with the ICNIRP guidelines for the protection of people from exposure to ELF EMF, which recommends a magnetic field public exposure limit is 200 µT (2,000 mG). The IEEE Standard recommends a magnetic field public exposure limit is 904 µT (9,004 mG).

Magnetic field exposure limits are intended to prevent the occurrence of synaptic effects perceived as magneto-phosphenes in the sensitive retinal tissue. While this phenomenon is not itself considered an adverse health effect, it is related to synaptic effects in specialised neural tissue, and since similar effects could possibly occur elsewhere in the central nervous system, particularly the brain, expert groups have advised that exposure involving the head should be below this level (Energy Networks Association, 2016).

Electric field exposure limits are intended to protect against synaptic effects (ICNIRP, 2010) and micro-shocks (IEEE, 2002), with both organisations reporting a public exposure limit of 5000 V/m. Micro-shocks may involve a spark discharge that occurs either immediately before making contact with a grounded conductor, or when a grounded person touches a charged isolated conductor. The public exposure level is similar to that experienced from spark discharges when touching, for example, a door handle after acquiring static from crossing a carpet or getting out of a car seat (Energy Networks Association, 2016).

The Powerlink Queensland technical assessment estimated that both the electric field and magnetic field strength for the co-located lines would be well below the relevant internationally recognised guidelines administered by the ICNIRP.

Interference with implanted medical devices

There are no known instances of adverse effects on pacemaker users around power lines, or in other areas where exposure limits comply with the ICNIRP reference levels for the public (NZ Ministry of Health, 2013). A very small proportion of cardiac pacemakers have been found to be sensitive to 50/60 Hz electric and magnetic fields close to the ICNIRP limits for public exposure and it is most likely that they will revert to a fixed pacing mode, which poses no immediate threat to the wearer (NZ Ministry of Health, 2013).

Users of implanted medical devices such as pacemakers and defibrillators are typically issued with warnings regarding the effects of electric and magnetic fields including those from electric arc welders and magnetic resonance imaging (MRI) devices. The United Kingdom's Department of Health's Medicines and Healthcare Products Regulatory Agency does not consider that transmission line EMFs constitute a significant hazard to the operation of pacemakers (Department of Energy and Climate Change, 2011)

Corona ion discharge

In addition to the 50 Hz electric fields themselves, there is a related phenomenon known as corona. Corona is a localised electrical discharge which can occur due to very high localised electric fields in the vicinity of sharp edges on energised conductors and fittings. Corona leads to the generation of ions in the air, as well as audible and radio frequency noise. Transmission lines are designed as far as possible to prevent corona but some level of corona generally remains. In Australia most transmission and distribution lines are designed to have surface voltage gradients under normal operating conditions which are much less than the levels where corona ions are formed (Energy Networks Association, 2009).

These ions attach to pollutants in the air and drift away from the power line for distances possibly up to few kilometres. It has been postulated by physicist Denis Henshaw that these ions may be inhaled or deposited on the skin of a person nearby and could lead to enhanced pollutant absorption to people living near powerlines with possible health impacts.

Henshaw's theoretical mechanisms involving corona ions and pollutant particles have not been proven by health studies on real populations near transmission lines. The following provides a summary of the findings of relevant studies.

- National Radiological Protection Board UK (and subsequently confirmed by the World Health Organization): It seems unlikely that corona ions would have more than a small effect on the long-term health risks associated with particulate air pollutants, even in the individuals who are most affected (NPRB, 2004) (World Health Organization, 2007).
- Bracken Study: Based on this study, AC transmission lines appear to have a minor impact on potential long-term exposure to space charge (ions and/or charged aerosols) beyond the ROW (right of way) (Bracken, 2005).
- Queensland University of Technology: The research has shown that large sections of overhead high voltage transmission lines in South-East Queensland are essentially corona-free. The resulting ion concentrations are rarely high enough to be of any concern with regards to health effects. Both air ion and charged particle concentrations decrease rapidly with distance from the lines and merge with background values within a distance of about 200m from the lines (Fatokun, 2008) (Jayaratne, 2008).

Potential exposure to Project EMF

The advice of recognised health authorities is that whilst a causal link has not been established between human health and exposure to power frequency electric and magnetic fields, prudent avoidance should be exercised in relation to EMF exposure because of as yet unanswered questions, especially in some childhood epidemiological studies. Powerlink has adopted the policy of prudent avoidance in response to this issue and this is consistent with the above advice. For the current

Project, it has been possible to select a MID Corridor which is remote from frequented locations, and this is entirely consistent with the application of prudent avoidance.

It is not expected that any persons other than Powerlink employees or contractors would spend any significant periods of time adjacent to or close to the transmission infrastructure. As the Project traverses rural properties, it is likely that landholders engaged in land management or agricultural activities will spend time in or occasionally cross under the Powerlink Queensland transmission line. Such persons may be subjected temporarily to a higher ELF magnetic field than they might experience in their home, but such exposure will be well within the limits in current international health guidelines.

Other potential impacts

Induction in adjacent metal objects

The electric field generated by a transmission line can induce a charge in a sufficiently large metal object that is insulated from the earth. A person touching it could discharge the object to earth and experience 'microshock'. Powerlink will assess the potential for such situations and propose mitigation measures for any objects near the transmission line that may be affected.

There is also the possibility that a transmission line could cause interference with the operation of an electric fence running parallel to the line for a sufficient distance. The inductive coupling between the transmission line and the fence wire could induce currents and voltages in the fence wire that could interfere with the equipment generating the pulses on the fence. Powerlink will provide mitigation measures to assist the owner of any electric fence installation that might be adversely affected.

Coupling between the transmission lines and other conductive infrastructure running parallel to them could result in induced voltages and currents, especially in the event of fault conditions. Conductive infrastructure, such as pipelines and rail, are present along the MID Corridor. As such, Powerlink provide mitigation measures to assist the owner of any conductive infrastructure that might be adversely affected.

Potential impacts on crops and livestock

In more than 50 years of operating high voltage transmission lines across Queensland, Powerlink and its predecessor have no known instance of detrimental effects on crops or livestock from exposure to EMF.

The United Kingdom's National Policy Statement for Electricity Networks Infrastructure states that there is little evidence that exposure of crops, farm animals or natural ecosystems to transmission line EMFs has any agriculturally significant consequences (Department of Energy and Climate Change, 2011).

The Australian Government National Standard for Organic and Bio-Dynamic Produce (Edition 3.7, 2016) does not mention powerlines, electric or magnetic fields (Department of Agriculture and Water Resources, 2016). Section 1.25.2 of the Standard states that "Bio-dynamic Preparations are to be stored in a suitable container away from fumes, electricity, contamination sources." The Project is not located within close proximity of any known storage areas and is therefore not considered to impact on organic or bio-dynamic certification.

Radio and television interference

The corona discharges from points of high local electric field strength on transmission lines, can generate high–frequency fields in a broad band in the radio spectrum from a few hundred kilohertz (kHz) up to several megahertz (MHz). These radio frequency fields may cause interference with radio broadcast reception at locations near the transmission line. There should not be any significant problem if the correct line hardware design is used.

This form of interference is also subject to statutory limits imposed in accordance with Australian Standards. The proposed transmission line will be designed to meet these standards. In the event that corona–induced interference becomes a problem, Powerlink will arrange to undertake any necessary remedial work.

Overhead transmission lines may also cause some degree of shielding of radio and television signals for receivers near the line, which may cause reception difficulties in areas of weak signal strength. Powerlink will assist people experiencing reception problems caused by the transmission line by providing advice and, if necessary, signal amplification equipment.

5.18.5 Mitigation measures

Powerlink has adopted the policy of prudent avoidance with regards to EMF, and the following mitigation measures are proposed to reflect this.

- Should radio or television interference be identified, Powerlink can assist people experiencing reception problems caused by transmission line by providing advice and, if required, signal amplification equipment.
- Powerlink will assess the potential for induced charge in proximal metal objects and propose mitigation measures for any objects in or near the easement that may be affected.
- Where the possibility that a transmission line could cause interference with the operation of an electric fence running parallel to the line, Powerlink will provide mitigation measures to assist the owner of any electric fence installation that might be adversely affected.
- In the event that corona–induced interference becomes a problem, Powerlink will arrange to undertake any necessary remedial work.

5.19 Bushfire risk

5.19.1 Existing environment

As identified in Sections 5.1.1 and 5.7.1, the MID Corridor is located across a gently undulating landscape with fragmented and isolated areas of vegetation, surrounded by pastoral and cropping land. Patches of isolated vegetation typically are located on local peaks, with steep slopes (relative to the surrounding environment) and have been left undisturbed due to the difficulties associated with navigating such terrain. As a result, bushfire potential (as correlated between areas of steep slopes and vegetation), is likely highest within these isolated patches of vegetation. Aside from these areas, the general surrounding landscape is predominantly grasses.

The SPP expresses the State's interest in land use planning and development, including natural hazards and risk and includes State-wide mapping for bushfire prone areas. The SPP mapping takes into consideration potential fuel load, maximum landscape slope, and the severity adverse weather conditions conducive to fire risk (e.g., rainfall and temperature).

Additionally, the BSC Planning Scheme includes bushfire overlay mapping. The SPP and BSC Planning Scheme bushfire overlay mapping both identify areas of medium potential bushfire intensity and potential impact buffers within the MID Corridor. These areas are mostly restricted along watercourses, and where pockets of vegetation are present.

It is noted that bushfire intensity potential within the surrounding environment is at its greatest where proximal to the Callide Power Station. Small pockets of vegetation, which appear to be associated with steep slopes, adjacent to the MID Corridor are mapped as having high to very high potential bushfire intensity.

5.19.2 Potential impacts

Construction phase

Clearing associated with the construction phase of the project may result in increased fuel loads within proximity to the project, including the removal of canopy layers which may protect underlying vegetation from climatic conditions. Once clearing has been completed, laydown areas will be developed to temporarily store materials for use during construction. These areas are likely to pose the greatest bushfire risk due to the concentration of plant, equipment and materials capable of generating and/or retaining heat.

In addition to the above, construction equipment and vehicles utilised throughout the MID Corridor may increase bushfire potential through the generation of sparks, heat and machinery faults which may ignite dry combustible materials. Potential spills of fuel, oil and flammable liquid may also increase the potential for bushfire, particularly in proximity to dry combustible materials (e.g. vegetation).

Operation and maintenance phase

The potential for bushfire to occur during the operational and maintenance phases of the MID corridor generally associated with external influences, such as climate, surrounding land use/management and proximity to surrounding vegetation and other fuel loads. Operational faults along transmission lines are rare, and do not necessarily result in electrical arc flashover to vegetation. During periods of reduced rainfall and increased temperatures, the potential for bushfire increases as power arcing may occur between the transmission line conductor and adjacent dry vegetation. Powerlink undertake regular vegetation maintenance and inspections within the easement to ensure the risk of fire affecting the powerline, or being caused by the transmission line is minimal.

In addition to the above, transmission lines are designed specifically to be able to withstand and be compatible with the surrounding environment. To this end, impacts to the Project as a result of natural hazards (e.g. bushfire), are anticipated to be limited.

Further information on safety risks associated with fires burning near transmission lines are provided on Powerlink's website (Powerlink Queensland, 2015).

Maintenance activities which involve vegetation management have the potential to increase the likelihood of bushfire within the MID corridor due to increased fuel load. Vegetation within the MID corridor with either be sprayed with herbicides, or otherwise physically trimmed/pruned. Trimmed/pruned vegetation will either be mulched or chipped and left onsite, whilst sprayed vegetation will be left in place to decompose.

Maintenance activities that involve activities on the transmission towers or substation plant may increase the potential for bushfire risks as a result of sparks or heat generation due to machinery faults.

Decommissioning phase

The anticipated life of the transmission line is approximately 50 years and is consistent with the connecting BRWF Project life. Beyond this period of time a number of potential future uses of the transmission line may occur.

With regard to the ongoing operation of the transmission line, if associated, connected and/or extended to facilitate transmission of power (e.g. connection to adjacent projects, extension of the BRWF operational life etc), ongoing bushfire hazard will be assessed as part of the ongoing approval requirements for each project.

Should a future use not be determined for the transmission line, it will be dismantled and removed over a number of stages. Typically, this includes, the lowering and removal of overhead conductors and earth wires, removal of insulators and line hardware and towers, then the excavation and removal of foundations. The equipment and plant required to undertake decommissioning activities may result in increased potential for bushfire due to sparks or heat generation due to operation of machinery.

5.19.3 Mitigation measures

Mitigation measures will be applied to the project construction, operation/maintenance and decommissioning phases specific to the potential risks present. Powerlink will ensure that activities are undertaken consistently with internal requirements as well as relevant Australian and industry standards, including:

- Guideline for the Design of Transmission Lines for Bushfires (A544415); and
- AS1940–2004 The Storage and Handling of Flammable and Combustible Liquids.

In addition to the above, standard measures provided for within Powerlink's EMP would likely be appropriate to effectively manage any potential risk associated with bushfire hazards. This includes; emergency management procedures, minimum requirements for firefighting equipment within plant and equipment, as well as staff training/awareness.

Figure 5-30 outlines Powerlink's standard construction and operational requirements for transmission lines with respect to vegetation management (which will assist with reducing bushfire hazards).

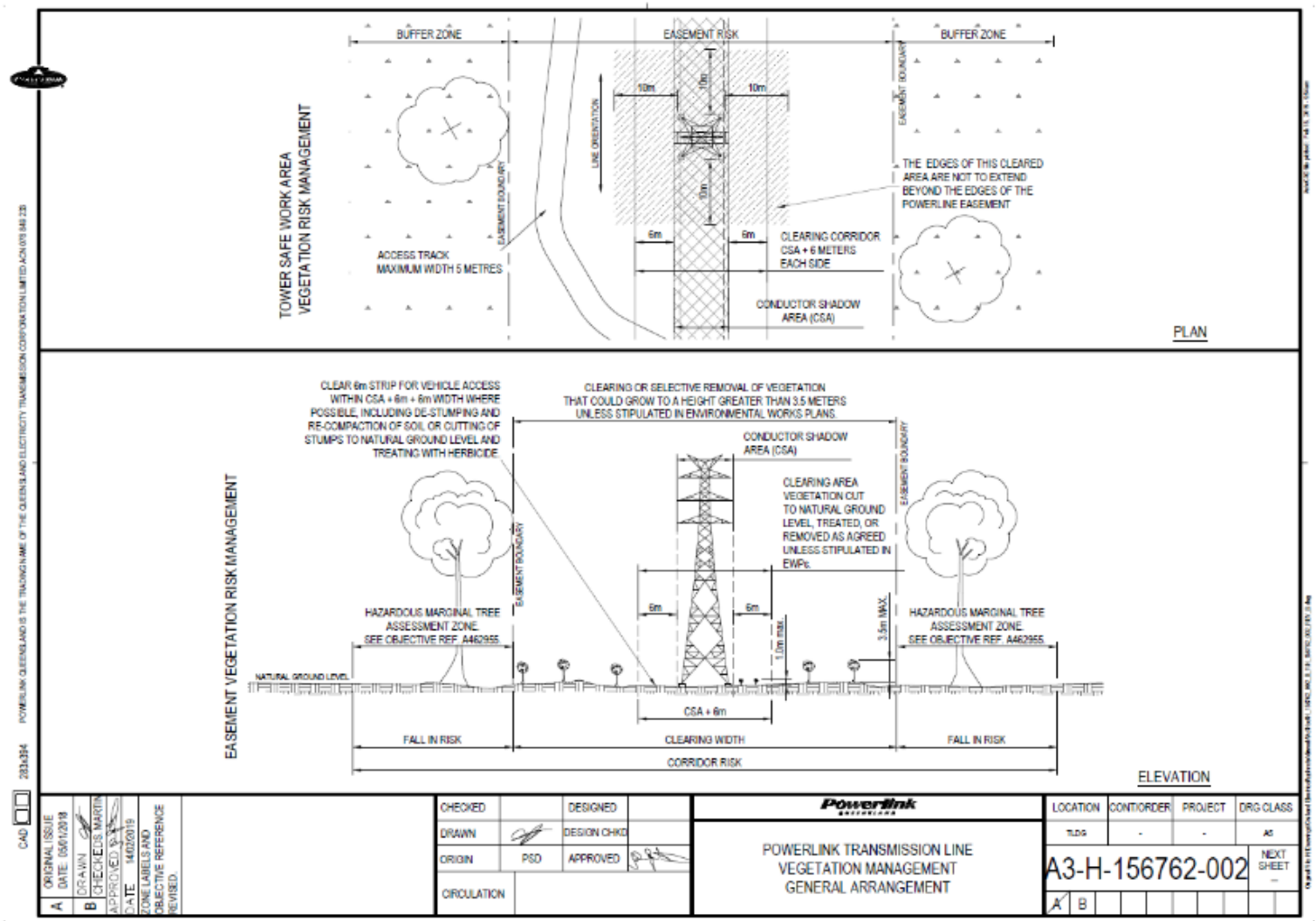


Figure 5-30 Powerlink Vegetation Management General Arrangement

5.20 Waste management

5.20.1 Construction

The construction of the project will generate various waste types, including, but not limited to, cleared vegetation, excess spoil, pallets, plastic and cardboard packaging.

Quantities of waste to be generated is yet to be determined, however, prior to construction a Waste Management Plan will be prepared and implemented. The Waste Management Plan will provide details of the estimated quantities of waste from each waste stream and will include all actions needed to effectively implement the waste management hierarchy. It will also establish a waste monitoring program for the construction stage.

Transmission line support structures are designed, fabricated, and supplied to sites ready for installation. This practice ensures that minimal excess material is transported to site and on–site waste generation is minimised.

Waste excavated material will be reused where possible. Where excavated waste material cannot be reused (e.g. due to contamination), it is to be disposed of by a licensed waste contractor (if required) to a facility that is authorised to accept that type of waste. Stockpiles and waste that must be stored temporarily on site will be located on existing cleared areas on the site away from drainage channels and slopes. All stockpiles of waste excavated material will be covered or watered down when weather conditions dictate.

Waste produced during construction activities will be disposed of as required by relevant legislation. Waste kept on site will be stored in a manner that does not pose health and safety risks. Segregation of waste will allow for efficient reuse, recycling, or disposal. Putrescible waste will be sorted in closed waste containers to prevent the attraction and breeding of pest and disease vectors (such as flies and rodents) and will be removed from site at the end of each day. Waste that cannot be reused onsite will be transported to a facility that is authorised to accept that type of waste.

5.20.2 Operation

Operation of the transmission line and substation does not generate waste, except during infrequent refurbishment programs. Some waste is generated from line maintenance activities (i.e. conductor offcuts, damaged insulators). Generated waste materials would be removed from the site and either recycled or disposed of at facilities that are authorised to accept the waste.

Easement maintenance schedules depend on the type and growth rates of the easement vegetation; the maintenance requirements of landholders; and transmission line equipment failures. Maintenance inspections are expected to occur approximately once every 12 months. Maintenance of vegetation regrowth will be maintained less frequently, and on an as-needs basis. Typical vegetation regrowth maintenance works include mechanical trimming; mechanical removal; and selective use of herbicides, predominantly used for stump spraying. Powerlink uses contractors for routine maintenance of easements. Cleared regrowth will be mulched or chipped, with the waste being sold or distributed by the contractor.

5.21 Infrastructure

5.21.1 Existing environment

Road networks

The MID corridor crosses four SCRs (managed by DTMR) and eight Local government roads (managed by BSC) as detailed in Section 5.16.

With the exception of SCRs and railway corridors (discussed below) the MID corridor is not mapped within the SPP IMS Transport Infrastructure layer.

Rail network

The MID corridor crosses the following rail corridors:

- Moura System, Callide Mine Balloon Loop for mining purpose.
- Moura System, Callide Mine Branch for mining purpose.

With the exception of SCRs and railway corridors the MID corridor is not mapped within the SPP IMS Transport Infrastructure layer.

Airports and air strips

As detailed in Section 6.16 the Project does not intersect any existing air transport infrastructure; however, it is located approximately 800m south/southwest of Fitzy's Airfield.

The MID corridor is not located within any SPP IMS Strategic Airports and Aviation Facilities layers or BSC airport overlay maps.

Ports

The MID corridor is not mapped within SPP IMS Strategic Ports or Priority Ports later.

Electricity infrastructure

The MID corridor intercepts the following SPP IMS Energy Supply layers:

- Electricity substation (Powerlink).
- Major electricity infrastructure (Powerlink) within the easement.
- Major electricity infrastructure (Ergon) within road reserves.

The Project follows the existing Baralaba to Callide A Power Station 132kV transmission line.

Water and sewer infrastructure

The MID corridor has limited access to reticulated water and sewerage, with many of the rural properties relying on private dams and septic systems.

The MID corridor does not intercept any SPP IMS Water Supply layers.

A review of the BSC Planning Infrastructure Overlay mapping identified that the closest water treatment plant is located 1.8km south of the Project and the closest sewage treatment plant is located 6.5m south of the Project.

Powerlink Queensland will engage with the BSC to manage any potential infrastructure (potable water, sewer and stormwater) interactions.

Private infrastructure

The MID corridor is located in mostly rural regions where limited infrastructure is present. The Project, however, is likely to intercept access tracks, fencing and farm infrastructure.

Defence land

The Project will not interfere with any Department of Defence land.

High pressure gas pipelines

A review of SPP IMS identified that no high-pressure gas pipeline are mapped within and adjacent to Project.

5.21.2 Potential impacts and mitigation measures

No relocation of existing public infrastructure is required to facilitate this Project.

During construction, the road network (both State-controlled and Local government) may be impacted through an increase in traffic associated with light vehicle movements, equipment haulage and machinery movements. Minimal access is anticipated during the operational phase and will be limited to maintenance activities. Powerlink Queensland will seek approval under the Electricity Act from the relevant road authority prior to constructing the transmission line over and within the road. Potential impacts associated with the road network are discussed in Section 5.16. Powerlink Queensland will seek approval under the Electricity Act from the relevant rail authority prior to constructing the transmission line across the rail corridor.

No impacts will occur to Ergon Energy infrastructure from the construction and operation of the Project.

Powerlink Queensland will engage with the BSC to manage any potential infrastructure (potable water, sewer and stormwater) interactions.

Construction and operation of the Project will be managed in accordance with Powerlink's Standard Environmental Controls provided within Appendix C. Additional mitigation measures for traffic management are detailed in Section 5.16.

5.22 Cumulative impacts

5.22.1 Existing environment

This MID Assessment Report presents the existing environmental, social and economic values of the MID corridor, and considers benefits and impacts in that context. Projects that have been developed or are under the process of development are considered part of the existing environment for this MID Assessment Report.

5.22.2 Cumulative impacts

With respect to cumulative impacts, consideration has been given to proposed developments and projects where there is publicly available information available, and the potential exists for cumulative impact of that development concurrent with this Project.

Relevant projects have been identified from the following sources:

- Coordinated projects being assessed under the *State Development and Public Works Organisation Act 1971* – there are no adjacent or upstream/downstream projects.
- Powerlink Queensland projects portal (Transmission Line and Connection Projects | Projects | Powerlink) – the nearest projects are the Calvale to Calliope River Transmission Line Reinforcement Project which is currently in the planning phase and starts at the Calvale Substation) and the Theodore Wind Fram Connect Project which is currently in the planning phase and connecting to a future substation at Mt Benn.
- Infrastructure Australia projects (Projects | Infrastructure Australia) - there are no adjacent or upstream/downstream projects.
- Queensland Government procurement portal (Queensland Government - future procurement opportunities for suppliers*)* –Biloela Hospital upgrade which is currently in the planning phase.
- Commonwealth EPBC Act Portal (All referrals EPBC Act Public Portal) Banana Range Wind Farm, Theodore Wind Farm, Theodore Solar Farm, Callide Solar Power Station Project, Callide Wind Farm Project.
- State Assessment and Referral agency portal (SARA application material | Planning).
- BSC website (Development Applications), Callide Solar Power Station.

Relevant proposed projects adjacent and within the vicinity of the Project are provided in Table 5-40 This list is based on publicly accessible information, available at the time of writing.

Table 5-40 Existing and proposed developments

#	Project name (Proponent)	Description	Location	Status
1	Banana Range Wind Farm (BRWF) Project	Construction of a 230 MW wind farm approximately 20km west of the town of Biloela with 41 wind turbine generators.	Northern foothills of the Banana Range (about 20 km west of Biloela) within Banana Shire Council.	Development phase
2	Calvale to Calliope River Transmission Line Reinforcement Project	Construction of a new 87km long double circuit 275kV transmission line between the Calvale Substation (near Callide Power Station) and the	Between the Calvale Substation (near Callide Power Station) and the Calliope River Substation (near Gladstone).	Development Application-Planning phase

#	Project name (Proponent)	Description	Location	Status
		Calliope River Substation to reinforce electricity supply to the Gladstone region.		
3	Theodore Wind Farm Connection Project	Construction of a 1,100 MW wind farm near Biloela with 170 wind turbine generators.	Theodore in Central Queensland (65.2 km from the Project)	DA approved Planning phase
4	Biloela Hospital redevelopment	Upgrade of existing hospital facilities in a staged approach, starting with minor works to upgrade staffing accommodation and operating theatre.	Biloela	Development phase
5	Callide Solar Power Station	Construction of solar power station comprising a 200 MW solar photovoltaic (PV) farm with a 200 MW/800 MWh battery energy storage system (BESS).	Biloela	Approved October 2023 (MCU011-22/23) Development phase
6	Theodore Wind and Solar Farm	Construction of a 70 MW solar farm.	Theodore	Planning phase
7	Callide Wind Farm	Construction of a 462MW wind farm in the Calliope Range. Approx 70 wind turbines with a tip height of approx 250 m. 275 kV Switchyard to connect into the existing Calvale or Callide to Stanwell 275 kV overhead transmission lines.	Callide	Development Approval granted
8	Kariboe Wind Farm	Construction of a wind farm with a generation capacity of up to 1000 MW, connection to the existing 275 kV transmission line with 170 wind turbines.	40km southeast of Biloela	Planning phase
9	Mount Sugarloaf Wind Farm	Construction of a 345 MW wind farm with up to 56 turbines.	Biloela	Feasibility Study
10	Mount Rainbow Wind Farm	Construction of a 270 MW wind farm with approx 60	Biloela	Feasibility Study

#	Project name (Proponent)	Description	Location	Status
		wind turbines & potential battery		
11	Sawpit Solar Farm	Construction of a 1000 MW solar farm	Biloela	Feasibility Study
12	Renewable Ammonia Plant	Construction of a renewable ammonia plant at QNP's existing facility, proposed to produce 20,000 tonnes per year of ammonia from 3,600 tonnes of renewable hydrogen	Moura	Feasibility Study
13	Dawson Wind Farm	Construction of a 560MW wind farm with up to 70 turbines	Biloela	Planning phase
14	Smoky Creek Solar Farm	Construction of a 600 MW large scale solar photovoltaic (PV) power station.	Goovigen	Development Approval
15	Specimen Hill Wind Farm	Construction of 56 wind turbines and 380 MW of energy	Biloela	Development Approval

5.22.3 Potential cumulative impacts

Cumulative impacts of the Project, and other known major projects in the area are difficult to quantify based on the lack of available information, however the following section aims to provide a qualitative assessment of the potential and assumed activities which may lead to a cumulative impact on environmental, social and economic values (Table 5-40).

Those projects where information is available are described below and potential cumulative impacts presented in Table 5-41.

Project 1 - Banana Range Wind Farm Project

The Banana Range Wind Farm Project incorporates a wind farm with up to 41 turbines to generate a total capacity of 230 MG and potential to incorporate battery storage as part of a solar expansion stage. The project has completed the planning and arrival stage and received all planning approvals from DSSIP, and from the FDCCEEW.

Currently, EDF is assessing the quality of the wind resource which will feed directly into the engineering design. Major contracts for wind turbine supply and installation, operations and maintenance, and civil and electrical works are currently under tender or negotiation. All construction works will be conducted by appropriately licenced contractors.

Construction of the project is expected to start from 2026 take up to three years and require a workforce up to 200 workers during the construction.

The project is currently in the development phase and has been considered in the assessment in Table 5-41.

Project 2 - Calvale to Calliope River Transmission Line Reinforcement Project

Powerlink is planning for a new transmission line between the Calvale Substation (near Callide Power Station) and the Calliope River Substation (near Gladstone). The project will reinforce electricity supply to the Gladstone region and increase network capacity and reliability to service the growing renewable energy industry in this area.

In November 2024, Powerlink referred the project for assessment under the EPBC Act (2024/10044) and has classified the project as a 'controlled action'.

The project is currently in the planning phase and has been considered in the assessment in Table 5-41.

Project 3 - Theodore Wind Farm Connection Project

Powerlink is planning for a new transmission line between the Theodore Wind Farm Project, located approximately 20km east of Theodore in Central Queensland, to the electricity grid. The project will include building a new double circuit 275kV transmission line north of the proposed wind farm site, connecting to a future substation at Mount Benn near Banana which forms part of the Banana Range Wind Farm Connection Project currently in the planning and approvals phase and has been considered in Table 5-41.

Project 4 - Biloela Hospital redevelopment

Biloela Hospital redevelopment has been announced as part of the second phase of the $1 Billion Building Rural and Remote Health Program.

The project is currently under development.

Project 5 - Callide Solar Power Station

The Callide Solar Power Station is located north-east of Biloela and is currently in development phase. The project has the potential to accommodate up to 240MWp of clean solar photovoltaic electricity generation and up to 200MW / 800MWh of energy storage in the form of an integrated battery.

At peak construction, the project will employ around 230 people full time, recruiting local trades, workers and businesses as much as possible. During the build, which will take approximately 18 months, the community can expect to benefit from the positive economic flow to local hospitality, retail and general business. Once complete, the project will employ seven people full time.

Construction is anticipated to commence in financial year 2025/26. Edify secured the Planning Permit from Banana Shire Council in 2023 and the EPBC Act referral approval decision not required (2024/09863).

The project is currently in the development phase and has been considered in the assessment in Table 5-41.

Project 6 - Theodore Wind Farm and Solar Farm

The Theodore Wind Farm Project incorporates a wind farm with up to 170 turbines and a battery storage facility. The Theodore Solar Farm Project includes a solar farm within the project boundary. The projects are located about 22km east of Theodore, 50km south-west of Biloela and 150km southwest of Gladstone.

Construction of the project is expected to take up to four years and require a workforce up to 500 people at peak periods. Studies and investigations finalised and state development application and EPBC Act Referral submitted for the wind farm (2024/09842) deemed a controlled action and referral decision made not a controlled action on the solar farm (2019/8588). Targeting 2027 for initial operations and expected to be fully operational in 2029.

The project is currently in the planning phase and has not been considered in the assessment.

Project 7 - Callide Wind Farm

The proposed Callide Wind Farm Project is located in the Calliope Range approximately 22km north north-east of Biloela and 75km west south-west of Gladstone. The project has the potential for an installed wind turbine capacity of some 430MW, comprising both permanent and temporary elements.

In September 2023 the project was granted development approval by the Queensland Government. The project was granted approval (2021/9057) under the EPBC Act in January 2025.

The project is estimated to generate 280 full-time jobs during construction and 20 permanent jobs throughout the operation of the wind farm.

Construction is planned to commence in mid 2026.

The project is currently in the development phase and has been considered in the assessment in Table 5-41.

Project 8 – Kariboe Wind Farm

The proposed Kariboe Wind Farm development is to develop up to 170 wind turbines of 1000 MW involving multiple substations, transmission lines, a BESS and associated infrastructure. The project is estimated to generate up to 440 jobs in both construction and operations.

This project is currently in the planning phase and awaiting assessment and approval under the EPBC Act (Referral 2022/09428) after it was deemed a controlled action on 16 March 2023.

The project is currently in the planning phase and has been considered in the assessment in Table 5-41.

Project 9 – Mount Sugarloaf Wind Farm

The proposed Mount Sugarloaf Wind Farm development is currently in the feasibility phase. It is proposed to have up to 56 wind turbines and contribute up to 345MW of power to the Central Queensland region. It is predicted that 400 construction jobs will be created as a result of this project.

The project has been considered in the assessment in Table 5-41.

Project 10 – Mount Rainbow Wind Farm

The proposed Mount Rainbow Wind Farm project is still undergoing feasibility studies, so information regarding the scale and energy output of this farm is not publicly available. As a result, this project has not been accounted for in Table 5-41.

The project is anticipated to generate $900 M for QLD's economy and create up to 400 construction jobs.

Project 11 – Sawpit Solar Farm

The Sawpit Solar Farm project is in the feasibility phase, and it is set to provide 1 GW of solar power to the Central QLD region. Over $1 M in grant funding is to be made available to local organisations during the project's operations.

As this project is still in the feasibility phase, its likely impacts have not been accounted for in Table 5-41.

Project 12 – Renewable Ammonia Plant

The Renewable Ammonia Plant project involves the construction of a renewable ammonia plant at an existing facility owned by Queensland Nitrates Pty Ltd (QNP). It is estimated to produce 20,000 tonnes of ammonia per year from 3,600 tonnes of renewable hydrogen. This project is still in the feasibility phase, so information regarding community benefits and environmental impacts is not yet available. Hence, this project is not accounted for in Table 5-41.

Project 13 – Dawson Wind Farm

Dawson Wind Farm involved the construction of up to 70 Wind Turbines that will produce 560 MW of power. As this project is still in the planning phase, its impacts are not yet fully known and have not been accounted for in Table 5-41.

Project 14 – Smoky Creek Solar Farm

The Smoky Creek Solar Power Farm is currently in the development phase. It is an advanced solar and battery hybrid connection to Powerlink's 275 kV network that will involve the construction of 600 MW large scale solar photovoltaic (PV) power station. Upon completion it could provide power for over 244,000 homes.

It has been approved under the EPBC Act (2021/9030) and has undergone ongoing community consultation. At peak construction, it is anticipated to employ approximately 800 people.

Project 15 – Specimen Hill Wind Farm

Specimen Hill Wind Farm has been approved for development and is estimated to involve the construction of up to 56 wind turbines that produce 380 MW output. The project was approved with conditions under the EPBC Act in December 2021 (2020/8864), mostly to minimise project impacts Listed Threatened Species, including Koalas, the Greater Glider, the Squatter Pigeon, the Collared Delma and *Cycas megacarpas*.

It is expected to provide 250-350 jobs during construction and 15-30 ongoing jobs once the facility is operational.

Table 5-41 Potential cumulative impacts

Impact	This Project	Project 1	Project 2	Project 3	Project 5	Project 6	Project 7	Project 8	Project 9	Project 14	Project 15	Potential cumulative impact
Climate	NA		NA	NA	Saved CO^2 emissions 440,000 tonnes per annum.	NA	NA	NA	NA	NA	NA	No anticipated significant cumulative impact.
Impacts to MSES	Likely to have a significant residual impact on Of Concern and Endangered REs	NA	NA	Category B remnant Least Concern and Of Concern RE and Category C high-value regrowth vegetation RE.	No significant residual impacts.	Wind farm - Significant residual impact to squatter pigeon (southern), koala, greater glider (southern and central), large-eared pied-bat and golden-tailed gecko. Solar farm - no significant residual impacts.	Likely to be significant residual impacts to Koala habitat.	Likely to impact Koala habitat.	NA	Likely to impact Brigalow TEC and squatter pigeon habitat.	Likely to be significant residual impacts to Koala habitat.	Impacts on koala, squatter pigeon (southern), greater glider habitat, large-eared pied-bat, golden tail gecko and Brigalow Belt TEC. No anticipated significant cumulative impact.
Impacts to MNES	No significant impacts However, the project is being referred to DCCEEW for assessment under the EPBC Act.	The impact to any listed species under EPBC Act is not significant.	Likely to have a significant impact for following: • Great Barrier Reef World Heritage Area (GBRWHA) (Calliope River Island) National Heritage List (Calliope River Island). • Semi-evergreen Vine Thickets of the Brigalow Belt (North and South) and Nandewar Bioregions (SEVT TEC). • Subtropical Eucalypt floodplain forest and woodland of the NSW North Coast and Southeast QLD bioregions (Eucalypt Floodplain Forest TEC). • *Cycas megacarpa.* • Greater glider (southern and central)	Likely to be a significant impact for following: • Poplar Box Grassy Woodland on Alluvial Plains TEC. • Brigalow *(Acacia harpophylla* dominant and co-dominant) TEC. • Squatter pigeon (southern) (*Geophaps scripta scripta*) habitat. Clearing of following species habitat: • Koala (*Phascolarcs cinereus*). • Greater glider (southern and central) (*Petuaroides Volans*). • Large-eared pied bat (*Chalinolobs dwyeri*).	No significant residual impacts	Wind farm - Four EPBC Act listed species, squatter pigeon (southern), koala, greater glider (southern and central) and large-eared pied-bat, are likely to or have the potential to be significantly impacted. Two EPBC Act listed TECs, Brigalow (*Acacia harpophylla* dominated and co dominated) and Poplar Box Grassy Woodland on Alluvial Plains, have been concluded as likely to be significantly Impacted. Solar farm - no significant residual impacts.	Likely to be significant residual impacts to Koala habitat.	Likely to impact Koala, Northern Quoll and Greater Glider habitat.	NA	Likely to impact Brigalow TEC, Squatter Pigeon habitat, Ornamental Snake habitat, Solanum habitat	Likely to impact Koala habitat, Greater Glider habitat, Squatter Pigeon habitat, Collared Delma habitat, Solanum habitat and *Cycas megacarpa* habitat	Impacts on Poplar Box Grassy Woodland on Alluvial Plains TEC, Brigalow TEC, koala, squatter pigeon (southern), Northern Quoll, Ornamental Snake, Collared Delma, Solanum and *Cycas megacarpa* habitat and Brigalow TEC. No anticipated significant cumulative impact.

Impact	This Project	Project 1	Project 2	Project 3	Project 5	Project 6	Project 7	Project 8	Project 9	Project 14	Project 15	Potential cumulative impact
			(*Petauroides volans*). • Yellow-bellied glider (south-eastern) (*Petaurus australis australis*). • Koala (*Phascolarctos cinereus*). • Collared delma (*Delma torquata*).	The project is referred to the DCCEEW for assessment under the EPBC Act.								
Traffic and transport	Minor impacts during construction only	NA	NA	NA	Impacts not considered significant.	Impacts not considered significant.	NA	NA	NA	NA	NA	No anticipated significant cumulative impact.
Waste	Waste will be generated during construction only which will be managed in accordance with project specific Waste Management Plan (WMP).	NA	Waste will be generated during construction only which will be managed in accordance with project specific WMP.	Waste will be generated during construction only which will be managed in accordance with project specific WMP.	NA	NA	NA	NA	NA	NA	NA	No anticipated significant impact.
Housing and accommodation	NA	NA	NA	NA	NA	On site workforce accommodation and use of short-term existing accommodation with Banana Shire. Use of longer-term rental options in the Banana Shire.	NA	NA	NA	NA	NA	No anticipated significant cumulative impact.
Construction jobs	NA	150-200 people during the construction.	NA	NA	230 people full time.	500 people at peak periods.	280 full-time jobs	400	Up to 400	Up to 800	250-350	No anticipated significant cumulative impact due to the specialised skills and experience needed for the project and existing labour profile.
Operational jobs	NA	10-15 people full time role.	NA	NA	7 people full time	Up to 50 ongoing jobs for the 35-year operations of the wind farm.	20 permanent jobs throughout the operation of the wind farm.	40	NA	Up to 800, combined with construction.	15-30 ongoing	As above
Economic benefit ($)	NA	$100,000 (annual amount - 30 Year).	NA	NA	NA	Community Benefit Fund of at least $500,000 per year – $17.5 million over the operational life of the wind farm.	NA	NA	Up to $800M investment for QLD economy.	NA	NA	No anticipated significant cumulative impact.

NA – Information not available

5.23 Offsets

5.23.1 Offsets for Matters of National Environmental Significance

Under the EPBC Act Environmental Offsets Policy, offsets for a project may be required to compensate for adverse or significant impacts to MNES. When offsets to MNES are considered possible and appropriate, the principles within this Policy will apply when determining what constitutes a suitable offset.

When determining offsets, the Environmental Offsets Policy has five key aims:

- to ensure the efficient, effective, timely, transparent, proportionate, scientifically robust and reasonable use of offsets under the EPBC Act;
- to provide proponents, the community and other stakeholders with greater certainty and guidance on how offsets are determined and when they may be considered under the EPBC Act;
- to deliver improved environmental outcomes by consistently apply the policy;
- to outline the appropriate nature and scale of offsets and how they are determined; and
- to provide guidance on acceptable delivery mechanisms for offsets.

There are eight overarching offset principles within the Policy that are applied in determining the suitability of offsets. Where significant impacts are identified, the EPBC Act Offsets Assessment Guide is utilised through a tool developed by the Department to assist proponents with estimating offset requirements. The Policy requires at least 90% of the offset obligation to be delivered through proponent-driven, direct (land-based) offsets. The Policy allows up to 10% of the offset obligation to be delivered through other compensatory measures, such as education or research. Advanced offsets are also permitted and encouraged, whereby offsets are delivered prior to the impact commencing.

Based on the results of the assessment, it is considered unlikely that a significant impact to an MNES will occur as a result of the Project due to avoidance, minimisation, mitigation and remediation measures that have been proposed to reduce adverse impacts. Therefore, it is unlikely that offsets will be required to compensate for impacts to MNES, however, an EPBC Act Referral will be submitted to DCCEEW to confirm that DCCEEW agree with this for assessment.

5.23.2 Offsets for Matters of State Environmental Significance

Under the EO Act, an environmental offset may be required as a condition of an approval under various legislation, 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. Significant residual impacts for prescribed activities listed in the Planning Regulation are determined through the application of criteria outlined in the Significant Residual Impact *Guideline For matters of state environmental significance and prescribed activities assessable under the Sustainable Planning Act 2009* (DSDIP 2014).

Prescribed activities that may require offsets are outlined in Schedule 1 of the EO Act. A prescribed environmental matter includes but are not limited to protected areas, endangered or vulnerable wildlife, essential habitat, prescribed regional ecosystems, connectivity areas, wetlands and watercourses, fish habitat areas, waterways for fish passage and marine plants. The infrastructure designation process under the Planning Act is not considered a prescribed activity for the purpose of providing an offset under the EO Act. Therefore, as the Project will be subject to approval under the infrastructure designation process, offsets for significant residual impacts to MSES do not apply under the Planning Act.

The Project would however be considered a prescribed activity for the taking of a protected plant within the meaning of the NC Act, however none were detected within the clearing impact area or disturbance footprint. Accordingly, no significant impact is anticipated, and offsets are not required. Regardless of no offsets being required for impacts to MSES, the avoid, minimise, mitigate approach to the Project has been employed to reduce impacts on MSES as detailed in Sections 5.7 and 5.8.

5.24 Environmental management

5.24.1 Powerlink commitment to environmental management

Powerlink is committed to the protection of the environment and management of adverse environmental impacts as a result of all Powerlink activities and as such, every Powerlink individual is responsible and accountable for environmental management, and Powerlink's leaders are active role models of this commitment.

Powerlink's Health, Safety and Environment Policy outline the commitment to delivering environmental outcomes for everyone, everywhere and everyday by the following:

- Setting targets and objectives to monitor performance aimed at the elimination or minimisation of environmental harm;
- Consulting and communicating with employees and other stakeholders on relevant environmental matters;
- Applying a continuous improvement framework to the development, implementation and review of standards, procedures and supporting documentation which complies with environmental statutory obligations; is fit for purpose; and drives protection of the environment and prevention of pollution;
- Systematically identifying, assessing, and managing as far as reasonably practicable the environmental impacts which may arise from Powerlink's activities;
- Ensuring environmental responsibilities are clearly defined and individuals are accountable for performance within their scope of responsibility; and
- Providing the necessary resources to meet these commitments.

5.24.2 Environmental management plan

The mitigation and management measures for this project have been proposed in line with Powerlink's standard environmental controls, in addition to other Project specific measures. All proposed measures are detailed within Section 5 and within Appendix C.

The EMP applies to activities carried out by Powerlink, its contractor/s or representatives during the construction, maintenance and operation of the Project. Powerlink and its nominated Contractors or representatives will be responsible for implementing the requirements of this EMP. All construction measures will be documented within a Construction Environmental Management Plan (CEMP) EMP and EWP which will be prepared by the construction contractor. Any requirements specific to a Project that are in addition to those listed in the EMP must be captured in the Environmental Annexure and/or included on the EWP.

An 'Environmental Annexure' will be developed and issued as part of Contractor engagement. The Environmental Annexure will detail Project specific environmental management requirements relevant to the Project. The contractor would then be expected to develop a CEMP in compliance with both the EMP and Environmental Annexure.

6. Consultation

Powerlink is committed to effective and genuine engagement practices with landholders, Traditional Owner groups, the wider community and other stakeholders.

Powerlink's activities are guided by our Stakeholder Engagement Framework which is underpinned by the key principles of integrity, openness, responsiveness, accountability and inclusiveness.

Our Community Engagement Strategy also underpins our engagement planning approach and commitments to ensure we remain focused on undertaking respectful and transparent engagement across all stages of our infrastructure lifecycle. These frameworks are available on Powerlink's website – powerlink.com.au.

The aim of Powerlink's engagement for the Banana Range Wind Farm Connection Project is to:

- Provide timely, relevant and meaningful information about the project, reflective of the scale and complexity of project activities
- Ensure landholders, Traditional Owner groups, the wider community and other stakeholders are aware of key project activities and how they can provide input within the scope of consultation processes
- Use a range of engagement activities to facilitate two-way information sharing with identified target stakeholder groups.

6.1 Engagement approach

A Project Engagement Plan was developed at the commencement of the project to ensure a best practice approach was used throughout the Project lifecycle. Dependent on context and the associated project 'negotiables' and 'non-negotiables', engagement for the Project has been at the 'inform', 'consult' and 'involve' levels of the International Association for Public Participation (IAPP) Spectrum of Public Participation.

Stakeholders were categorised per impact level, ranging from directly affected at the primary level to interested parties at the tertiary level, and consultation requirements were scaled accordingly.

6.2 Engagement phases

Engagement with stakeholders on the Project began in June 2022 with discussions relating to a broad study area. Further engagement was undertaken in August 2022 to discuss three potential corridors identified within the study area. Engagement activities continued throughout the corridor selection phase until a final corridor was identified in April 2023.

Details of each phase are provided below.

6.2.1 Consultation regarding the Study Area

Early engagement for the project commenced in June 2022 with phone calls and letters to landholders in the Study Area. Meetings were also undertaken from this time and have been ongoing.

In mid-June 2022, letters were sent to all landholders in the Study Area inviting them to attend the first community information drop-in sessions at the Biloela Civic Centre in mid-July 2022 to find out more about the project. The key matters raised by landholders during the early engagement phase for the Study Area are summarised in Figure 6-1.

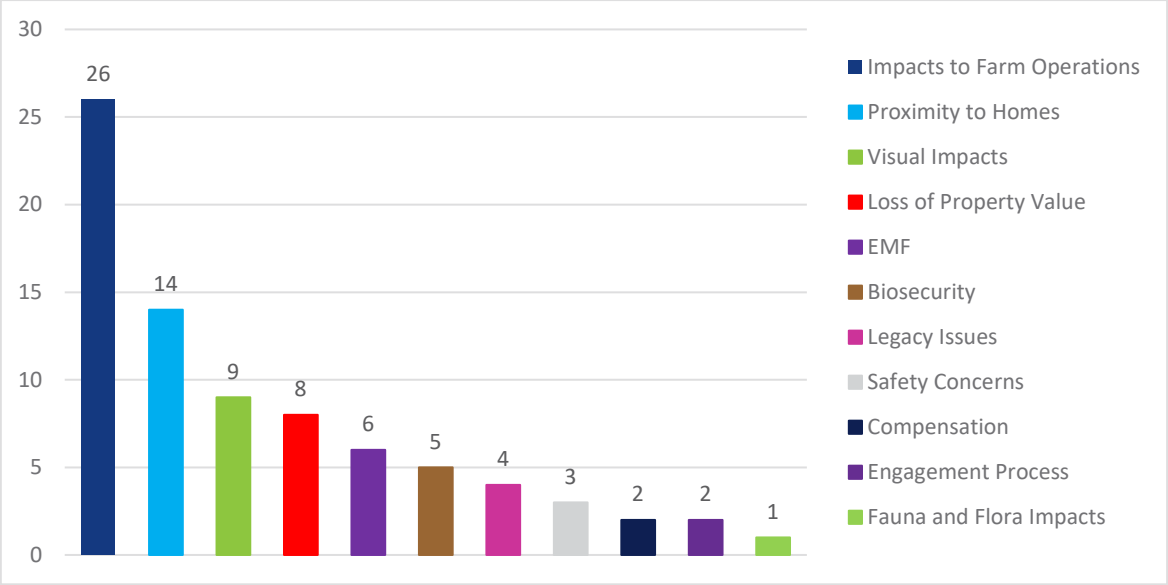


Figure 6-1 Matters raised by landholders during early engagement for the Study Area

6.2.2 Initial consultation regarding the potential transmission line corridors

Feedback from the Study Area engagement provided valuable information for the assessment of potential corridors for the proposed transmission line.

Three potential corridors, generally 1km wide, were identified for detailed analysis. In late August 2022, landholders within each corridor were contacted, together with a range of other stakeholders, and invited to provide initial comments on the suitability of the corridors. They were also invited to attend a second round of community information drop-in sessions in mid-September 2022. Over 25 community members participated in these sessions.

The community information drop-in sessions enabled the project team to meet face-to-face with landholders within the potential corridors, as well as other stakeholders to discuss any issues or concerns and provide valuable feedback on the proposed corridor options. All interactions with landholders were captured, with feedback options remaining open for comment until 30 September 2022.

Figure 6-2 graphs the key matters raised by landholders and other stakeholders across the corridor option phase engagement.

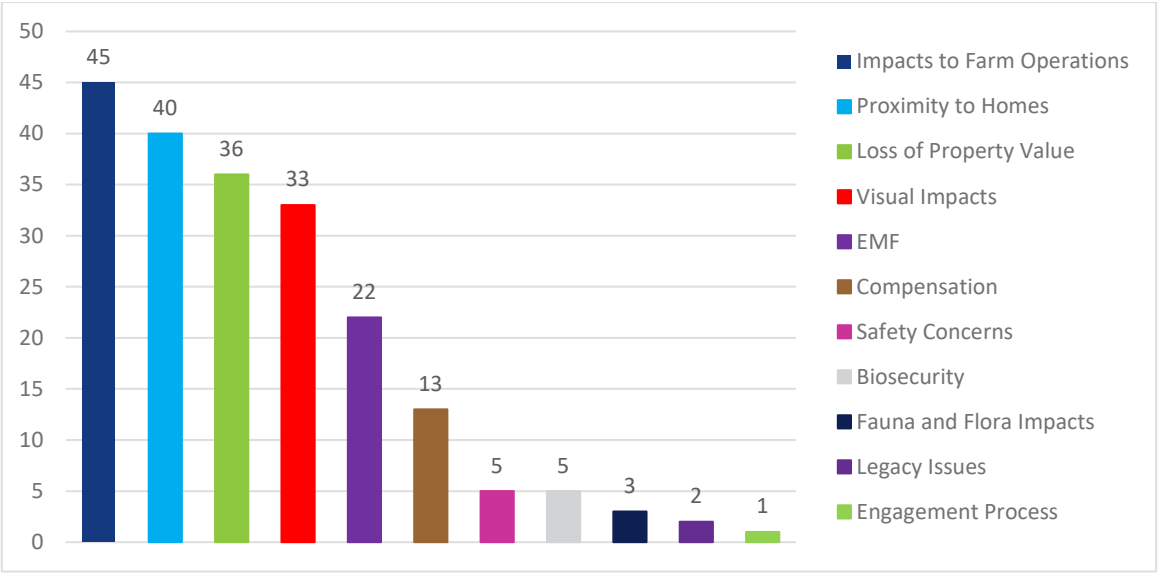


Figure 6-2 Matters raised by landholders during early engagement on the proposed corridor options

There was a wide range of feedback received on the proposed corridor options, particularly in relation to transport routes, airstrip and aviation facility operations, and the potential for proposed corridors to impact planned development or investment in infrastructure on properties. Based on feedback received and further analysis, small amendments were made to the boundaries of some of the corridors assessed in the Draft CSR.

6.2.3 Consultation on the Draft Corridor Selection Report

In early November 2022, Powerlink briefed local, state and federal elected representatives and community leaders ahead of the release of the Draft CSR which occurred later that month. Landholders within the three corridor options and wider Study Area, and elected representatives and industry representative bodies, were notified by phone, email or letter. The report was also placed on Powerlink's website.

Powerlink held community information drop-in sessions on 29 and 30 November 2022 to support the release of the Draft CSR and provide landholders and the community with opportunities to discuss the assessment directly with project staff.

Based on stakeholder feedback that end of year harvest activities would limit availability to make a submission before Christmas, the consultation period was then extended to 20 January 2023 (originally closing 16 December 2022).

Key themes expressed by stakeholders who lodged submissions on the Draft CSR are summarised below:

- The proposed transmission line's interaction with CS Energy's existing and future infrastructure at Callide Power Station needs to be carefully designed and managed.
- Concerns regarding impacts of the proposed transmission line on high quality agricultural land (especially cultivation).
- Concerns regarding the lack of engagement between the renewable energy and agricultural sectors.
- Locating the proposed line adjacent the existing 132kV line traversing Biloela or replacing the existing line within the Central Corridor is the lowest impact option.
- The recommended Northern Corridor 1 unduly affects food and fodder producers with calls for the line to be located within the Central Corridor.
- Use of the Ministerial Infrastructure Designation process and compulsory easement acquisition process under the Acquisition of Land Act is inappropriate for a private sector development.

- Some landholders nominated areas within their properties most suitable for the proposed line.
- Land use, house and land parcel data has been manipulated as it does not take account of properties already affected by the existing 132 kV line between the Calvale Biloela-Banana Range.
- Consultation and communication has been poor.
- Endangered vegetation will be removed and should be protected.
- The project is a private nuisance and constitutes Assault by Force under the Queensland Criminal Code.

Amendments to the Corridor Selection Report and Determination of the Study Corridor

Following the Draft CSR phase of work, and careful consideration of all feedback, the Northern Corridor was identified as having:

- The lowest impact on Strategic Cropping Land and Class A Agricultural Land;
- The lowest number of houses; and
- Strong opportunities for the alignment to follow boundaries or co-locate with existing transmission lines.

Of the three corridors assessed, this corridor most closely aligns with feedback provided by landholders and the community as part of the early engagement process. The top five matters raised were:

- Impacts to farming operations including biosecurity, loss of productivity, irrigation systems.
- Proximity to houses.
- Visual impacts of the transmission line.
- Loss of property value.
- Perceived health effects from Electric and Magnetic Fields.

In recommending Northern Corridor 1, Powerlink is very mindful that cultivation land still needs to be traversed and landholders remain concerned about the impact of the proposed line on farming operations, property values, perceived health effects and other matters. Powerlink's response to submissions outlined how these matters will be addressed.

Powerlink carefully reviewed each submission to identify matters which materially impact its recommendation and has determined that only minor changes were required to Northern Corridor 1, namely:

- Small reduction in corridor width west of Kroombit Creek to exclude an area where the transmission line will not traverse.
- Small increase in corridor width in the area near Dudarkos Road to provide additional alignment flexibility in this area.

All mapping and assessment tables in the Final CSR were amended to reflect these changes. The changes made to Northern Corridor 1 do not affect the comparative assessment of corridor options. Accordingly, Powerlink adopted Northern Corridor 1 as the Study Corridor which has been taken through as the proposed alignment and MID corridor that has been assessed as part of this MID Assessment Report.

Consultation prior to MID lodgement

Since the release of the final corridor in April 2023, Powerlink has been meeting and engaging with landholders to identify individual site considerations and constraints, and to determine any minor easement alignment changes required before proceeding with environment and planning approvals.

Additional engagement activities have been undertaken to provide landholders, Traditional Owner groups, the wider community and other stakeholders with project information and updates. These activities have included project and Central Queensland region-specific newsletters, and an in-person engagement pop-up session held in Biloela as follows:

- Banana Range Wind Farm Connection Project – Newsletter – October 2024.
- Central Queensland Transmission Update – October 2024.
- Central Queensland Transmission Update – February 2025.
- Central Queensland Transmission Update – July 2025.
- Banana Range Wind Farm Connection Project – Newsletter – August 2025.
- Powerlink engagement pop-up session in Biloela – 2 August 2025.

These activities have been further supported with a dedicated project webpage (www.powerlink.com.au/banana), which is updated as new information became available, and an online feedback form where stakeholders can provide feedback on the project and register for updates.

6.3 Public consultation and further engagement

The project's MID public consultation process is initiated by the DSDIP by contacting impacted landholders and local government to invite submissions.

During this time, Powerlink will also undertake public consultation with landholders, Traditional Owner groups, the wider community and other stakeholders to share project information and details on how to make a submission to DSDIP.

Powerlink has prepared a consultation strategy to detail the public consultation process for the MID Proposal Report, and engagement activities include:

- Advertisements in local newspapers advising of the release of the MID Proposal Report and how to make a submission to the Minister for State Development, Infrastructure and Planning.
- Providing hard copies of the MID Proposal Report to be available to view at local venues, such as the library and Council office.
- Updates to the project webpage, with an electronic copy of the MID Proposal Report.
- Project newsletter summarising the key components of the MID Proposal Report.
- Correspondence with landholders, Traditional Owner groups, the wider community and other key stakeholders advising of the release of the MID Proposal Report, how it can be viewed and how to make a submission to the Minister for State Development, Infrastructure and Planning.
- Project signage on the proposed site.
- Project stakeholder briefings, as required.
- Community information drop-in sessions in Biloela with hard copies of the MID Proposal Report available.

Landholders, Traditional Owner groups, the wider community and other stakeholders can lodge formal submissions to DSDIP through the following avenues:

- online at https://www.planning.qld.gov.au/planning-framework/infrastructure-planning/ministerialinfrastructure-designations;
- via email infrastructuredesignation@dsdilgp.qld.gov.au; and

- by post to PO Box 15009, City East, QLD 4002.

The MID Proposal Report and public submissions received will be assessed by DSDIP. Copies of submissions will be provided to Powerlink who will also need to appropriately consider and address matters raised in submissions.

Powerlink is committed to updating landholders, Traditional Owner groups, the wider community and other stakeholders on the public consultation outcomes and throughout the MID process.

Powerlink is undertaking a social impact assessment IA and developing a SIMP to ensure social impact management strategies are identified and implemented for the extensive activity being undertaken in the Central Queensland region. Further details on the Social Impact Assessment and SIMP Social Impact Assessment/SIMP engagement activities are detailed in Section 5.13.3.

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