Ecological Assessment Report

Miriam Vale Solar Farm

Prepared for:
Private Energy Partners Pty Ltd

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Attexó

Document Information

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1.0 Introduction

1.1 Project Background

Attexo Group Pty Ltd (Attexo) has been engaged by Private Energy Partners Pty Ltd (PEP) to prepare an Ecological Assessment Report (EAR) for the Miriam Vale Solar Farm Project (the Project).

The Project involves the construction of a photovoltaic solar farm up to 1 GW, and associated infrastructure that will connect into the National Electricity Market (NEM) via a new substation adjacent to Powerlink's 275 kilovolt amperes (kVA) Calliope River to Gin Gin Transmission Line.

The detailed design, specific layout and electricity generating capacity have not been finalised at this stage, including the specific type and number of modules and inverters. These design decisions will not have a material impact on the development footprint in terms of the environmental and planning considerations.

1.2 Description of Project Area

The Project area is comprised of fourteen (14) freehold lots and has a total area of 1,082.25 ha, as described in **Table 1.1** and involves three landholders (**Figure 1.1**). The Project is located approximately 6 km south-west of Miriam Vale and 60 km south-west of Gladstone, in the Gladstone Regional Council (GRC) local government area. The Project will be accessed from a new site access point off Burgess Road via Blackman Gap and the Bruce Highway.

The Project area contains two homesteads and unused road reserves. House Creek and a number of associated tributaries of House Creek and Skeleton Creek traverse the Project area and generally flow in a northeasterly direction.

A transmission line easement containing Powerlink's 275 kV Calliope River to Gin Gin Transmission Line, and an Ergon 22 kV overhead powerline run north-south across the eastern lots of the Project Area. Another 22 kV overhead Ergon line intersects the southern lots of Project Area east of Mossman Road and south of the unconstructed road reserve.

Table 1.1 Project Land Parcels

Lot description	Area (ha)
Lot 88 on FD14	94.55
Lot 130 on FD3	128.38
Lot 132 on FD32	94.41
Lot 137 on FL40301	64.08
Lot 140 on FL40301	67.41
Lot 133 on FL40301	64.8
Lot 134 on FL40301	63.66
Lot 136 on FL40301	64.56
Lot 138 on FL40301	63.4
Lot 251 on FD900	8.47
Lot 139 on FL40301	65.1

Lot description	Area (ha)
Lot 142 on FL40301	128.93
Lot 143 on FL40301	123.3
Lot 5 on FD112	51.2
Total Area of Land Parcels	**1,082.25**

The Project is described using the terms defined in **Table 1.2**.

Table 1.2 Project Area and Footprint Descriptions

Area	Definition	Size (hectares, ha)
Project area	Encompasses the entirety of the 14 land parcels intersected by the Project.	1,082.25 ha
Miriam Vale Solar Farm footprint	Comprises the maximum area to be disturbed by the Miriam Vale Solar Farm Project, equating to 85.2% of the Project area.	921.74 ha

A review of QImagery indicates that most of the Project area had been substantially cleared of remnant vegetation by 1955, with all areas of the Project area either cleared or significantly thinned by 1981. Previous land use of the host properties included development of a private hardwood plantation of Tasmanian Blue Gum (*Eucalyptus globulus*). The properties were cleared for the plantation and have been generally maintained as pastoral land, with scattered patches of Tasmanian Blue Gum remaining. Current regulated vegetation mapping reflects this clearing history, with only isolated areas of regulated vegetation mapped within the Project area that are associated with the unused road reserve and riparian areas.

For the purposes of the report, the total Project area is 1,082.25 ha (associated with the boundary of the host lots) and the disturbance footprint of the proposed Project is 921.74 ha. The majority of the disturbance footprint Is related to the footprint of the solar panel array.

1.3 Project Description

The Project layout has been designed to minimise impacts on the environmental values of the Project area. Accordingly, the Project design considered the existing environment, rural activities occurring on-site and off-site, proximity to existing electricity infrastructure, stormwater and flooding constraints, and visual amenity.

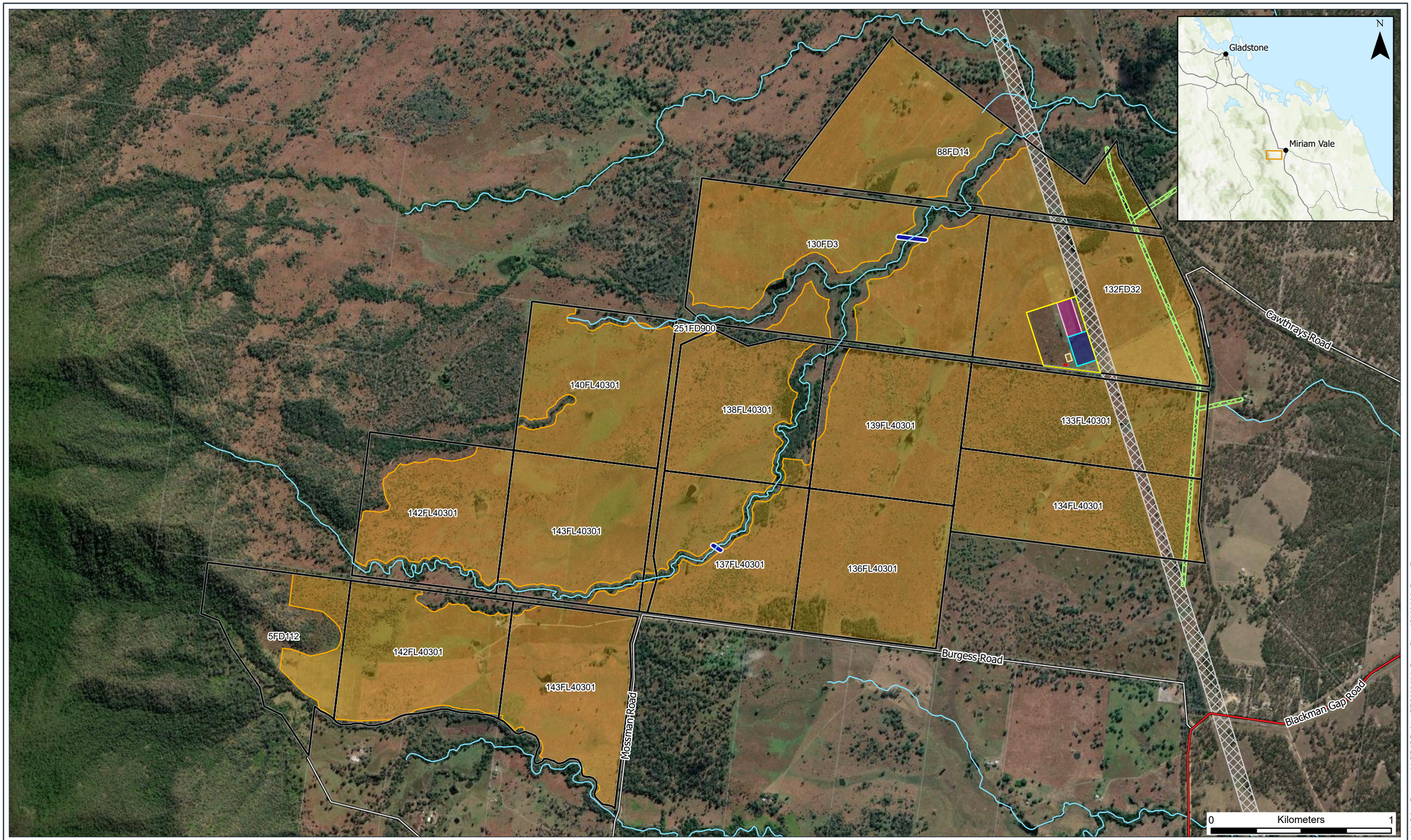
The proposed development footprint takes into consideration the existing mapped regulated vegetation (in accordance with Queensland State mapping) while accommodating appropriate bushfire protection setbacks from boundary lines (10 to 15 metres) and watercourse and high ecological value setbacks.

The Projects infrastructure comprises a number of interlinked and integral components for the operation of the equipment and generation of electricity from solar irradiance. These components include:

- solar PV modules (panels)
- access tracks and cabling runs

- an internal substation on the 275 kVA Calliope River-Gin Gin transmission line
- internal collector lines
- internal boundary fire trail and bushfire asset protection zones (APZ)
- security fencing around the solar farm
- control building including site office, operation and maintenance facilities, spare parts supervisory control and data acquisition (SCADA) systems and staff amenities serviced by septic systems and a rainwater tank
- car park adjacent to control building
- meteorological stations.

An overview of the Project configuration and disturbance footprint is shown in **Figure 1.1**.



Project Overview

MIRIAM VALE SOLAR FARM

- Highway
- Local Road
- Watercourses
- Miriam Vale Solar Farm Development Footprint
- Proposed Substation and Switchyard Area
- Proposed Substation Development Area
- Proposed Switchyard Development Area
- Proposed Laydown Area
- Proposed Maintenance and Storage Shed Area
- Waterway Crossings
- OHTL Exclusion Zone
- Powerlink Corridor Easement
- Property Boundary
- Lot Type Parcel

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FIGURE 1-1

GDA2020 MGA Zone 56

Data Source: World Topographic Map: Department of Resources, Dept.of Environment and Science, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, CGIAR
World Imagery: Maxar

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The Project will consist of the following infrastructure:

- PV array - The PV array will cover the majority of the development footprint. The number of rows of PV panels within the array depends on the specific module model chosen, and the detailed design and configuration of the subarrays or "blocks". The panels will be mounted on a tracking system and separated into rows with enough physical space to allow access between modules for maintenance purposes and to avoid shading issues. The blocks of PV panels are connected via underground cabling to inverters, with each block connected to an inverter.

- Tracking System - The tracking systems will rotate the rows of PV panels from east to west each day to ensure optimal exposure to the sun. The tracking system will be designed and constructed in accordance with the Australian Standards and from the ground to the tip of the PV panels at their maximum tilt angle the panels will have an approximate height of 4 m.

- Inverters and Transformers - The energy generated by the PV modules will be converted from direct current (DC) to alternating current (AC) energy by the inverters and increased to medium voltage via integrated transformers. The inverters are connected via a network of underground medium voltage cables (33 kV). The cables reticulate AC current to the collector substation. The final buried cable depth will be subject to detailed design; however, the likely buried depth is 600 mm. All DC cabling is anticipated to be between 4 mm and 10 mm thick. The maximum DC system voltage will be 1500 V.

- The inverters and transformers will be housed either in standard 40-foot shipping containers, in small (approximately 12 m by 8 m) buildings, or in an outdoor "skid" configuration. The exact type and number of inverters that will be required for the Project will not be finalised until the detailed design phase, which will determine the electricity generating capacity of the facility. Regardless of what configuration and specific inverter model is chosen, any impact on the Project Area of the Project will be insignificant.

- Internal Substation- The Project will facilitate interconnection of the solar farm into the NEM via a new substation and switchyard to be built on site. The substation and switchyard design are currently being developed; however, the indicative footprint is approximately 4 ha.

- Each of the site power stations will be interlinked via the underground MV cables back to the onsite substation and switchyard for connection to the existing 275 kVA Calliope River to Gin Gin transmission line. The incoming MV feeders will terminate within 33kV switchgear at the substation.

- A transformer will be utilised within the on-site substation to step this internal 33 kV Medium Voltage to the point of interconnection voltage of 275 kV. The transformer will be the largest single piece of plant on the site. The likely final transformer design will be an oil filled unit, and appropriate bunding will be in place to contain the oil in the unlikely event of a leak.

- Control Building - The control building will contain both the site office and workshop/warehouse facilities and will consist of a steel structure. The onsite workshop footprint will be approximately 9 m x 9 m and stand approximately 4.5 m high depending on final design and plant requirements.

- Maintenance Storage Shed - The maintenance storage shed footprint will be approximately 9 m x 18 m and stand approximately 4.5 m high depending on final design and plant requirements. The maintenance storage shed will consist of a steel structure.

- Parking and Access - Access to the facility will be via the existing local road network - Burgess Road and Blackman Gap Road. Proposed access points to the development from the local road network. Sufficient parking to meet the needs of the development will be provided at the substation site.

- Fencing – The Project development footprint will be fenced for safety and security purposes.

- Utilities – The Project is not connected to reticulated water or sewerage infrastructure. Rainwater may be collected and stored via several water tanks (metal or concrete) across the Project area with a nominal minimum capacity of 40,000 L and used on-site for operational activities, including fire-fighting purposes. Sewerage will be managed by a septic system and be removed off-site by a certified contractor.

1.4 Site Selection and Project Design

The selection of an appropriate site for the proposed solar farm project is a critical aspect to its successful development. Several key criteria were taken into consideration during the site selection process to ensure the Project aligns with best practices in environmental stewardship, grid connectivity, and overall feasibility. The following was considered in determining the site was appropriate for the Project:

- Presence of environmental values including vegetation and waterways, favouring sites with that would have less environmental impact and that have been modified by current use including cleared of vegetation.
- Relatively flat topography as a flat terrain simplifies the construction process, reduces grading and earthwork requirements, and optimises the overall efficiency of the solar farm layout. This consideration contributes to the Project's cost-effectiveness and feasibility.
- Existing road access for transportation of Project components.
- Proximity to existing grid infrastructure to reduce the footprint of transmission infrastructure and reduces the need for extensive new transmission lines, minimising environmental disruption and enhancing project efficiency.
- High solar irradiance reduces the number of solar panels and Project footprint required to generate the same amount of energy.

Since the early design stages of the Project, the proponent has made several commitments that have guided the design of the Project's disturbance footprint, including avoiding (where practicable) impacts to mapped regulated vegetation under the *Vegetation Management Act 1999* (Queensland) and applying appropriate buffers to watercourses/drainage features under the *Water Act 2000* (Queensland) and Threatened Ecological Communities (TEC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Furthermore, the proponent has committed to allowing natural regeneration of buffer areas to help improve the connectivity of biodiversity values identified across the Project area. A key priority has been providing suitably sized corridors to facilitate fauna movement across the site, providing connectivity between areas of higher quality habitat outside of the Project area. Direct impacts resulting from the construction and the ongoing operation of the Project will therefore only relate to scattered areas of non-remnant vegetation and historically cleared areas that are currently being utilised for pastoral activities.

1.5 Purpose and Scope

Attexo was engaged by Private Energy Partners to undertake an assessment to determine potential impacts of the Project on the ecological values of the Project area, through both desktop assessments and ecological field survey work. This Report been prepared to support a development application for the Miriam Vale Solar Farm Project under the *Our Place Our Plan* Gladstone Regional Council Planning Scheme (Version 2) (GRC Planning Scheme), being:

- Development permit for Material Change of Use for Renewable Energy Facility (Solar Farm); and
- Development permit for Material Change of Use for a Substation.

This EAR focuses on environmental values prescribed at a State level as Matters of State Environmental Significance (MSES) and Matters of Local Environmental Significance (MLES), assessable under the *Planning Act 2016* (Planning Act) and GRC Planning Scheme. Specifically, the objectives of this EAR are to:

- Present a summary of findings from desktop and field-based ecological assessments undertaken across the Project area;
- Describe the ecological values of the Project area, particularly those that are MSES and MLES;
- Identify and assess potential impacts that may occur to MSES and MLES within the Project area; and
- Provide avoidance and mitigation measures to manage or mitigate these potential impacts.

This Report is primarily focused on identifying and assessing MSES and MLES in relation to the Project. An MNES report for the Project has been prepared to support the referral made under the EPBC Act, which addresses the Project's potential impacts on MNES values. MNES values are summarised in this Report; however, are assessed through a separate process.

2.0 Regulatory Framework

2.1 Commonwealth

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), is the Australian Government's key framework for protection of the Australian environment, including the conservation of biodiversity, and protection and management of significant natural and cultural places. If a proposed development or other action is likely to have a significant impact on a protected matter, then it must be referred for assessment under the EPBC Act. The protected matters under the EPBC Act are:

- World Heritage properties;
- National Heritage places;
- Wetlands of international importance (as listed under the Ramsar Convention);
- Listed threatened ecological communicates (TECs) and listed threatened species;
- Migratory species protected under international agreements;
- Commonwealth marine areas;
- The Great Barrier Reef Marine Park;
- The environment, where nuclear actions are involved;
- A water resource, in relation to coal seam gas and large coal mining developments;
- The environment, where actions are proposed on or will affect Commonwealth land; and
- The environment, where Commonwealth agencies are proposing to undertake the action.

A referral was lodged in mid-March 2024 to the Commonwealth Department of Climate Change, Energy, the Environment and Water for a determination as to whether the Project constitutes a controlled action for which approval is required under the EPBC Act.

An MNES report was prepared to support the referral, identifying and assessing potential impacts of the Project on MNES. The referral was prepared having regard to referral guidelines for specific species where available including guidelines for the endangered Koala and the guidelines for 14 birds listed as migratory under the EPBC Act (DoE 2015a).

Significant impact assessments were undertaken in accordance with the *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (DoE 2013), where impacts may have a significant impact on MNES. As assessment was undertaken against detailed criteria to determine whether or not the proposed action will have a significant residual impact on MNES.

The EPBC Act referral and supporting documentation concluded that the Project was unlikely to have a significant residual impact on MNES.

2.2 Queensland

2.2.1 Planning Act 2016

The Planning Act provides for an efficient, effective, transparent, integrated, coordinated and accountable system of land use planning, development assessment and related matters that facilitates the achievement of ecological sustainability. The system to facilitate the achievement of ecological sustainability includes:

- State planning policies setting out planning and development assessment policies about matters of State interest.
- Regional plan setting out integrated planning and development assessment policies about matters of State interest for particular regions of the state.
- Planning schemes setting out integrated State, regional and local planning and development assessment policies for all of a local government area.
- Temporary local planning instruments setting out planning and development assessment policies to protect all or part of a local government area from adverse impacts in urgent or emergent circumstances.
- Planning scheme policies.
- A development assessment system, including State Assessment and Referral Agency (SARA), for implementing planning instruments and other policies and requirements about development.

The Planning Act regulates and manages development in Queensland, providing a framework for the preparation and implementation of planning instruments. It requires the coordination and integration of State, regional and local planning outcomes. There are three categories of development: prohibited, assessable or accepted development. A development permit is required under the Planning Act prior to commencing assessable development.

Development may be prescribed as assessable development by the State in Schedule 10 of the Planning Regulation 2017 (Planning Regulation) or by local government through a planning scheme.

The Project requires a development application under the GRC Planning Scheme for:

- Development permit for Material Change of Use for a Renewable Energy Facility (Solar Farm); and
- Development permit for Material Change of Use for a Substation.

The Planning Scheme includes an MSES overlay map which captures features such as regulated vegetation, wildlife habitat and wetlands. Where development is proposed on sites which are captured by the overlay map, assessment is required against the Planning Scheme Biodiversity Overlay Code (the Biodiversity Overlay Code).

Through a layout design process, the Project development footprint has avoided direct impacts to the mapped MSES, that are mapped within the broader Project area, specifically regulated vegetation. The purpose of the biodiversity overlay code is to:

- Protect and enhance MNES and MSES and their associated ecological processes and biodiversity values.
- Maintain or enhance the health and resilience of biodiversity to support ecological integrity.
- Maintain or enhance ecological connectivity to preserve fauna movement, habitat values, remnant vegetation and ecological processes.

- Protect and enhance water quality, ecosystem health and the natural hydrological functioning of waterways, wetlands and their riparian areas and buffers.
- Protect, rehabilitate and manage coastal natural resources, biodiversity and ecosystem services values.

This Report has been prepared to demonstrate how the Project supports the achievement of the Purpose of the biodiversity overlay code through assessment against the relevant Performance Outcomes from the code.

2.2.2 Vegetation Management Act 1999

The VM Act regulates vegetation clearing in a way that conserves remnant vegetation, ensures clearing does not cause land degradation, prevents loss of biodiversity, maintains ecological processes, reduces greenhouse gas emissions, and allows for sustainable land use. The Regional Ecosystem (RE) framework was developed as a way of classifying vegetation and provides the basis for vegetation management in Queensland (McGrath 2011). Sattler and Williams (1999) define an RE as a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform, and soil.

Under the VM Act, REs are assigned three Vegetation Management statuses as follows:

- Endangered;
- Of Concern; and
- Least Concern.

Under the VM Act, mapping divides all vegetation in Queensland into one of five categories of regulated vegetation, defined as follows:

- Category A – vegetation subject to compliance notices, offsets, and voluntary declarations;
- Category B – remnant vegetation with a status of endangered RE, an of concern RE or a least concern RE;
- Category C – high value regrowth vegetation with a status of endangered RE, an of concern RE or a least concern RE;
- Category R – regrowth watercourse area with a status of endangered RE, an of concern RE or a least concern RE; and
- Category X – non-remnant vegetation, including cleared areas.

Clearing of regulated vegetation requires varying assessment under the Planning Act depending on the assigned category. A development permit for Operational Works is required to clear native vegetation as defined in the VM Act unless the clearing is exempt under Schedule 21 of the Planning Regulation. Specifically, a development permit is required for clearing of Category B native vegetation. The Project has been designed to avoid the clearing of regulated vegetation.

2.2.3 Nature Conservation Act 1992

The *Nature Conservation Act 1992* (NC Act) provides the framework for the creation and management of protected areas including national parks, conservation parks, resources reserves, nature refuges, coordinated conservation areas, wilderness areas, world heritage management areas, international agreement areas and protection of native species.

The Regulations under this Act provide detailed rules regulating activities in protected areas and a permit and licensing system for the taking or keeping of native wildlife. These regulations include the Nature Conservation (Protected Areas Management) Regulation 2017 (Qld) and the Nature Conservation (Animals) Regulation 2020 (Qld).

MSES are a component of the biodiversity state interest that is defined under the State Planning Policy and under the Environmental Offsets Regulation 2014 (EO Regulation). MSES are given status under the NC Act as endangered, vulnerable or near threatened (EVNT) species and special least concern wildlife under the Nature Conservation (Wildlife) Regulation 2006 (NC Regulation).

2.2.3.1 Protected Plants in High-Risk Trigger Mapping

In Queensland, all plants that are native to Australia are protected plants under the NC Act. The NC Act prevents whole plants or parts from being illegally removed from the wild or illegally traded. Clearing, growing, harvesting and trading of protected plants in Queensland is regulated by the NC Regulation.

If an area proposed to be cleared contains native plants in the wild and the area is shown as 'high risk' on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken prior to any clearing. If the flora survey identifies the presence of an EVNT plant in the clearing impact area (or within a 100 m buffer), a clearing permit under the NC Act is required prior to any clearing. Where a significant residual impact to a protected plant is likely to occur, an offset may be required.

If the flora survey of the high-risk area does not detect any EVNT plants in the clearing impact area, or the impacts on EVNT plants can be avoided (i.e. clearing will not take place within 100 m of the EVNT plants), a clearing permit is not required but an exempt clearing notification must be submitted to the Department of Environment, Science and Innovation (DESI).

The Project area is not mapped as a 'high risk area' on the Protected Plants Flora Survey Trigger Map.

2.2.3.2 Fauna Breeding Places

A Species Management Program (SMP) is required for a proposed impact to conservation significant native animal breeding places (e.g., hollow bearing trees) and requires the implementation of management actions that will avoid or minimise both the immediate and the long-term impact of removing or altering an animal breeding place. The SMP sets out monitoring and reporting requirements that demonstrate the management actions in the SMP are effectively implemented and produce the intended results. An SMP is recommended to be implemented if any clearing of remnant vegetation is proposed and in areas where nests, burrows, bowers and log piles exist.

There are two types of SMPs. A high-risk SMP is implemented for:

- Least concern animals that are colonial breeders (broader populations at greater risk from impacts at a single location);
- Special least concern animals; and
- Near threatened, Vulnerable, Endangered, Critically Endangered or Extinct in the Wild Animals.

A low-risk SMP is implemented for least concern animals that are not colonial breeders.

The duration of the SMP must be identified and must be relevant to the activity being undertaken and allow for a periodic review of the program. The standard term for a SMP is three years.

The seasonal ecology surveys undertaken for the Project have included habitat assessments and identification of animal breeding places. This information has been used to inform an evaluation of species likelihood of occurrence on the site, habitat mapping and an assessment of potential impacts to threatened fauna species. The field survey results confirm that an SMP is not likely required due to the non-occurrence of EVNT fauna species within and surrounding the Project area.

2.2.4 Environmental Offsets Act 2014

In Queensland there is an offsets framework governed by a range of legislation, policies and guidelines to support a determination as to when environmental offsets are required, and how they are to be delivered. A summary of the framework and guiding principles that apply is summarised below.

The Queensland Offsets Framework includes:

- *Environmental Offsets Act 2014* (EO Act);
- Environmental Offsets Regulation 2014 (EO Regulation);
- Queensland Environmental Offsets Policy (QEOP) (version 1.9); and
- Significant Residual Impact Guideline – for MSES and prescribed activities assessable under the *Sustainable Planning Act 2009* (EHP, 2014).

Under the Queensland Environmental Offsets Framework an environmental offset may be required when a significant residual impact occurs to a MSES. MSES are prescribed in Schedule 2 of the EO Regulation and include:

- Endangered and vulnerable flora and fauna species under the NC Act and their habitats;
- Special least concern fauna species under the NC Act and their habitats;
- Endangered and of concern REs under the VM Act;
- Essential habitat (mapped by DESI);
- REs that intersect with wetlands and watercourses;
- Connectivity values;
- Wetlands of high ecological significance;
- Protected areas (including nature refuges);
- Declared fish habitat areas and waterways providing for fish passage; and
- Legally secured offset areas. Impacts to the above MSES have been assessed in this report in Section 5.0. An assessment of significant residual impacts to MSES has been completed for those prescribed matters relevant to the Project and applying criteria from the SRI Guideline (EHP 2014).

2.2.5 Biosecurity Act 2014

The *Biosecurity Act 2014* (Biosecurity Act) provides a legislative framework to manage pest flora and fauna, diseases and environmental contaminants, to address the impacts they have on the economy, environment, agriculture,

tourism and society. The Act prohibits or restricts the introduction and spread of declared plant and animal pests within Queensland, and outlines obligations surrounding the management of biosecurity risks.

Field ecology surveys have identified the presence of pest plants and animals, including those with classifications under the Act. Weeds listed as Weeds of National Significance (WoNS) were also noted during survey activities.

2.2.6 Fisheries Act 1994

The *Fisheries Act 1994* (Fisheries Act) establishes a framework for the management and protection of fisheries resources, including regulating development that might impact declared fish habitat areas and fish passage. Waterway barrier works are regulated under the Planning Act. The Fisheries Act establishes a risk hierarchy for waterway barrier works across Queensland and guides the design and assessment process for the implementation of new waterway crossings.

There are multiple waterways mapped within the development footprint. The Project may impact on mapped waterways; however, a site assessment may be undertaken to confirm the presence of waterways within the disturbance footprint. The assessment will determine if the features and characteristics present meet the criteria of a waterway. Where the Project impacts on a waterway, the relevant approval will be obtained or design criteria met.

Site verification of waterways undertaken by Attexo in October 2023, identified three (Green – Low Risk) waterways mapped by the State of Queensland to not possess the physical and hydrological attributes necessary for a waterway under the Fisheries Act. As there was no observable difference between the surrounding pasture and the mapped water feature, the waterway was deemed likely to be a shallow drainage line that provides no aquatic habitat value under present conditions. As such, these three waterway areas are within the Development Footprint.

Field-verified waterways within the Project area have been avoided and buffered by the development footprint.

Recent updates to the Queensland waterways for waterway barrier works spatial data layer indicate a number of additional Green – Low Risk waterways within the Project area; however, these were not observed as waterways during the field verification activities.

2.2.7 Water Act 2000

The purpose of the *Water Act 2000* (Water Act) is to protect rivers, creeks or other streams in which water flows permanently or intermittently. A person must not take or interfere with the flow of water in a watercourse, lake or spring without an authorisation or entitlement under the Water Act.

The Water Act identifies and categorises water features such as watercourses, drainage feature, unmapped, lakes and springs. Watercourses are mapped as stream orders. Various stream order watercourses and drainage and unmapped features are within the Project development footprint.

Works within the drainage feature or watercourse (removal of native vegetation and/or excavation and fill) may trigger the requirement for a riverine protection permit under the Water Act. Consideration is also required under the Planning Act as native vegetation borders the drainage feature and offsets of riparian values may be required.

2.3 Local Government

2.3.1 Our Place Our Plan Gladstone Regional Council Planning Scheme (Version 2)

The GRC Planning Scheme is a local planning scheme instrument prepared in accordance with the Planning Act and is a framework for managing development in a way that advances the purposes of the Planning Act.

The proposed Miriam Vale Solar Farm project is defined by the Planning Scheme as a *Renewable Energy Facility* and a *Substation*. A Material Change of Use for the *Renewable Energy Facility* and a *Substation* is Code Assessment in the applicable Rural Zone. There are several overlays affecting the Miriam Vale Solar Farm Project area, namely:

- Agricultural Land Classification;
- Biodiversity;
- Bushfire Hazard;
- Scenic Amenity; and
- Steep Land.

This report addresses the requirements of the biodiversity overlay code as related to the Project. **Section 7.0** details the matters raised in the assessment benchmarks for the biodiversity overlay code in accordance with the GRC Planning Scheme.

3.0 Existing Environment

3.1 Land Zones

Land zones are categories that describe the major geologies and associated landforms and geomorphic processes of the State of Queensland. The differences between land zones result in marked differences in the function of ecosystems and their associated biodiversity and this is due in part to the effects that geology (lithology, structure, alteration) has on landform, hydrology and landscape processes (geomorphology and soil formation). There are two land zones mapped across the Project area, in order of spatial dominance, these are:

- Land Zone 12 – Mesozoic to Proterozoic igneous rocks, forming ranges, hills and lowlands. Acid, intermediate and basic intrusive and volcanic rocks such as granites, granodiorites, gabbros, dolerites, andesites and rhyolites, as well as minor areas of associated interbedded sediments.
- Land Zone 3 – Recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes and associated wave built lunettes.

Soils on Land Zone 12 are greatly influenced by the lithology (mineral content). In general terms, the acidic rocks (such as granites and rhyolites) form mainly shallow Tenosols on steeper slopes with Chromosols and Sodosols on lower slopes and gently undulating areas. In high rainfall areas, Kandosols and Podosols can occur on colluvial slopes. Intermediate rocks (such as granodiorite, diorite, syenite, monzonite) form a very diverse range of soils depending on their mineral content, ranging from shallow Tenosols, Chromosols and Dermosols on steeper slopes to Sodosols and Vertosols on lower slopes.

Alluvial soils on Land Zone 3 are usually fertile (chemically and physically) resulting in extensive clearing and development for agriculture and pastures. Soil fertility reflects the chemical properties of the geology and soils of the catchment from which they are derived. A diversity of species utilise the alluvial environment ranging from rain forests, vine thickets, eucalypt forests and woodlands, grasslands, sedgelands, forblands and shrublands. Prominent species include River red gum (*Eucalyptus camaldulensis*), Queensland blue gum (*E. tereticornis*), coolibah (*E. coolabah*), river sheoak (*Casuarina cunninghamiana*), Leichhardt pine (*Nauclea orientalis*), lignum (*Muehlenbeckia florulenta*), and tea-tree (*Melaleuca spp*.) communities.

3.2 Hydrology

The Project is located within the Burnett – Curtis Hills and Ranges subregion of the Southeast Queensland Bioregion.

The Project area is situated entirely within the Baffle Creek sub catchment of the Baffle Creek Catchment. There are several water features throughout the Project area that flow in a northeasterly direction, the most significant of which is an unnamed tributary to Skeleton Creek (stream order 2 to 3) with numerous associated unnamed tributaries (stream order 1). Several man-made farm damns occur throughout the Project area.

3.3 Connectivity

Regional and statewide biodiversity corridors are identified to maximise areas of connectivity between large tracts of remnant vegetation, and with a particular focus on connecting unique ecosystems and areas of high species richness and diversity.

No state or regional biodiversity corridors overlap with the Project area. The nearest state biodiversity corridor runs in a north-south direction through the Bulburin National Park approximately 4 km to the west of the Project area and

riparian biodiversity corridors are mapped along Colosseum Creek and Baffle Creek and their associated vegetation zones. A regional terrestrial biodiversity is located over 9 km east of the Project area.

The development footprint avoids impacts to biodiversity corridors.

4.0 Assessment Methodology

4.1 Desktop Assessment

A desktop assessment has been undertaken to determine the environmental values, landscape features, vegetation communities and threatened species that are known or have the potential to occur within the Project area and surrounds. The study area was defined as the boundary of the Project area with a 20 km buffer. The following resources were reviewed as part of this desktop assessment:

- DCCEEW Protected Matter Search Tool (PMST) with a 20 km buffer from the Project area (see **Appendix A**) (latest search undertaken 1 February 2024);
- Queensland Department of Environment and Science (DESI) Wildlife Online database search (see **Appendix B**) (search undertaken 30 August 2023);
- Department of Resources (DoR) regulated vegetation mapping (including essential habitat mapping and regulated watercourses);
- eBird records of threatened and/or migratory birds;
- Atlas of Living Australia (ALA) database;
- DESI Queensland Regional Ecosystem (RE) mapping; and
- Published ecological information on threatened flora and fauna species where available.

4.1.1 Likelihood of Occurrence Assessment

A likelihood of occurrence assessment was completed for all identified TECs, migratory and threatened flora and fauna species listed under the EPBC Act in the Protected Matters Search Tool (PMST) and WildNet database searches. The full assessment is provided as **Appendix C**. Definitions used to identify the likelihood of occurrence are described below:

- **Known to occur** – species or community has been recorded within the Project area during assessment, or historical records (within the last 10 years) have been identified within the Project area.
- **Likely to occur** – suitable habitat for species is present within or immediately adjacent to the Project area, and historical records (within the last 10 years) occur within 10 km. Alternatively, older historical records (>10 years) have been recorded within the Project area. For communities, constituent regional ecosystems are present, but patches are small and/or isolated.
- **Potential to occur** –suitable habitat for species is present within the Project area, historical records (any age) occur within 50 km and the species has not been recorded within 10 km of the Project (within the past 10 years). For ecological communities, constituent regional ecosystems are mapped adjacent to the Project area and could be unmapped within the Project.
- **Unlikely to occur** – suitable habitat for species is absent from the Project area with no records in the vicinity (>50 km). For communities, constituent regional ecosystems are not mapped within or adjacent to the Project.

4.2 Field Assessment

4.2.1 Survey Teams, Timing and Conditions

Field surveys were conducted across the Project area from the 12 to 16 June 2023 by Principal Ecologist Richard Floyd and Ecologist Natasha Lawrie. This survey program was developed to target those MNES values identified during the likelihood of occurrence assessment (**Appendix C**) as either 'Known to Occur' or 'Likely to Occur'.

Comprehensive watercourse/waterway surveys and weed surveys were conducted across the Project area between 11 September and 15 September 2023, with a focus on identifying the locations and density of priority weed species, including those listed as Weeds of National Significance (WoNS), restricted invasive plants (RIP) under the Biosecurity Act or priority weed species listed by GRC, across the Project properties. GRC priority species include Local Control Invasive Species (LC) and Containment Invasive Species (C).

Weather data outlined in **Table 4.1** was collected from Springs weather station (039255) which is located approximately 18.7 km from Miriam Vale and Seventeen Seventy weather station (039314) which is located approximately 38.3 km from Miriam Vale.

Table 4.1 Weather conditions (BOM Station #039255 and #039314)

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean max temp (°C)	29.2	30.5	30.9	27.6	24.1	23.7	22.8	23.7	25.3	27.7	28.5	30.9
Mean min temp (°C)	22.3	23	23	19.7	15.6	15.9	15	15.8	17.1	19.3	21.6	23.1
Rainfall (mm)	132.8	79.6	150.8	22	24.2	3.5	13.8	16	3	10	109.2	186.6
Mean rainfall (mm) (all years)	169.1	159	111.3	57.9	54.1	37.7	36.7	34.1	33.6	71.4	93.4	133.9

4.2.2 Flora and Fauna Survey Approach

The flora and fauna survey program included:

- Verification of vegetation communities and TECs;
- Targeted MNES and MSES flora and fauna surveys in accordance with relevant guidelines; and
- Opportunistic MNES flora and fauna observations.

4.2.3 Threatened Ecological Communities

Guided by the TECs identified during the desktop assessment, suitability/condition assessments were conducted within relevant vegetation to determine whether TECs were present within the Project area. Targeted surveys were conducted within associated vegetation communities to determine suitability and condition for:

- *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland;* and
- *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions.*

The above listed TECs were identified as 'Possibly occurring' within the desktop study area as suitable habitat may be available.

Quaternary surveys were undertaken to assess the vegetation communities present within and immediately adjacent to the Project area. Whilst comprehensive ground-truthed regional ecosystem mapping within the Project area was not within the scope of this assessment, these surveys were used to help map patches of potential TEC. The information collected during these surveys was also used in conjunction with the Habitat Assessments to help map suitable habitat for identified MNES values.

4.2.4 Flora and Fauna Surveys

A broad flora and fauna survey approach was adopted for this survey program to help build a species inventory for the Project area and identify MNES species that occur or are likely to occur within the disturbance footprint. This survey program was developed using methodologies outlined in the following survey guidelines:

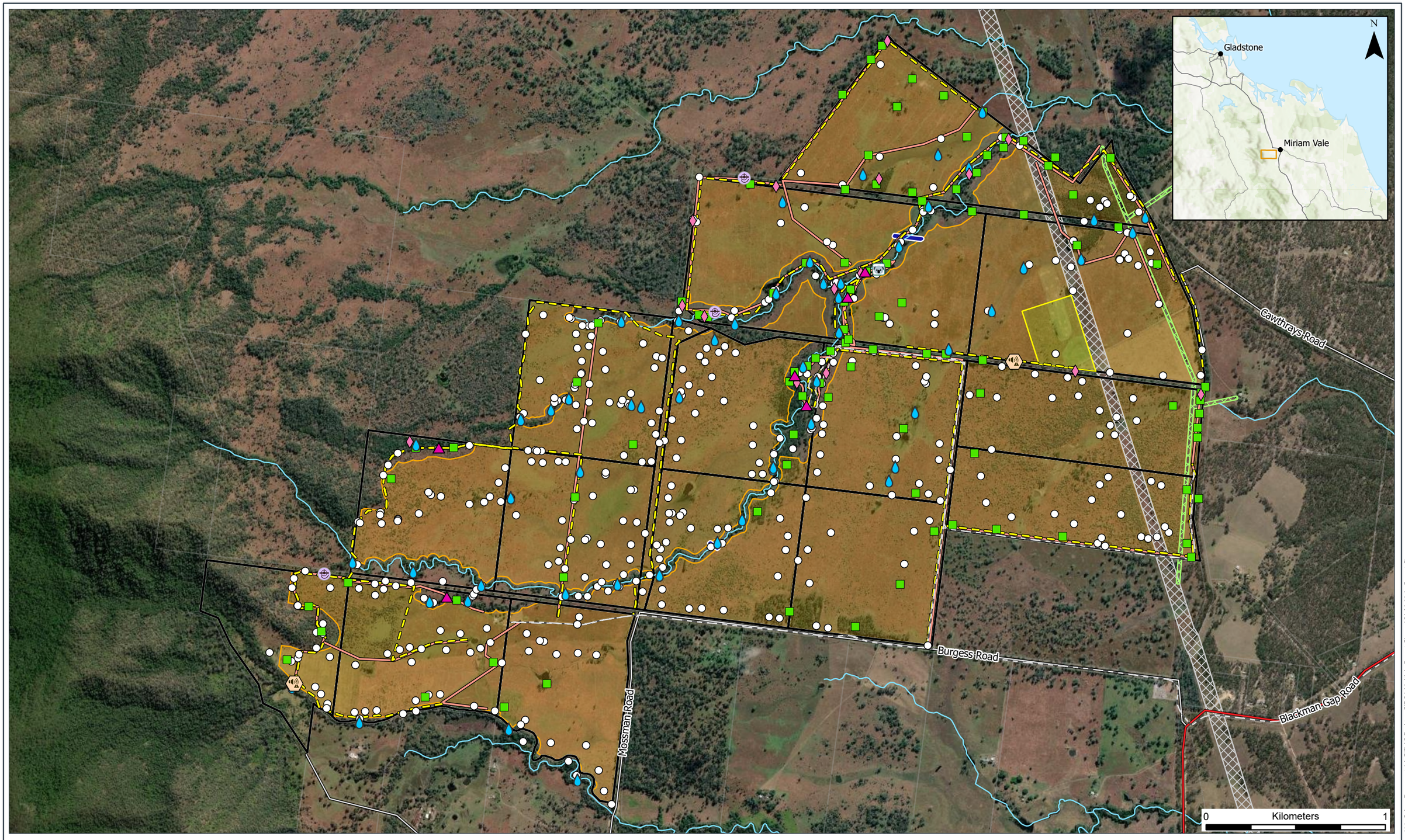
- Survey Guideline for Australia's threatened mammals (DSEWPC 2011a);
- Survey Guidelines for Australia's threatened birds (DEWHA 2010a);
- Survey Guidelines for Australia's threatened reptiles (DSEWPC 2011b);
- Survey Guidelines for Australia's threatened bats (DEWHA 2010b);
- Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre, at al. 2022);
- Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DSEWPC 2011c);
- The Spot Assessment Technique (Phillips and Callaghan, 2011); and
- Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland (Nelder et al. 2022).

A summary of the various survey methods and consolidated survey effort undertaken as part of this flora and fauna survey program has been provided in **Table 4.2**. The distribution of this survey effort across the Project area has been shown on **Figure 4-1**.

Table 4.2 Summary of survey effort

Survey Method	Description of Method	Survey Effort
Quaternary Vegetation Surveys	Quaternary surveys were undertaken to assess the vegetation communities present within and immediately adjacent to the Project area. Whilst comprehensive GTRE mapping within the Project area was not within the scope of this MNES assessment, these surveys were used to help map patches of potential TEC. The information collected during these surveys was also used in conjunction with the Habitat Assessments to help map suitable habitat for identified MNES values.	**100 quaternary surveys**
Habitat Assessments	Habitat assessments were undertaken to document the habitat values available for all potentially occurring flora and fauna species based on the presence of key resources and microhabitats, such as hollows, caves, rocky outcrops, leaf litter and proximity to water. Key habitat features for those MNES species identified in the likelihood of occurrence were also recorded at each site.	**15 Sites**

Survey Method	Description of Method	Survey Effort
Passive Acoustic Detection	Anabat Swift detectors were installed along potential flyways (including vehicle track, adjacent to a waterways or dams that could attract bats to drink and forage for insects) and set to record bat calls between dusk and dawn each night.	**2 Sites; 5 Nights**
Random Diurnal Meander Surveys	Random diurnal meander surveys were conducted on foot in areas of potential habitat for MNES flora and fauna species. Direct sightings and indirect evidence (i.e. scratches, scats and skeletal remains) was used to help confirm the presence/absence of those potentially occurring species identified in the desktop assessment. These surveys were undertaken throughout the various habitat types present within the Project area and involved two people searching through available microhabitats for 30 minutes at each site.	**16 Sites (approximately 23 person-hours)**
Spotlighting Surveys	Spotlighting transects were traversed either on foot or in a vehicle in areas of potential fauna habitat, focusing primarily on riparian areas where there is taller and more mature vegetation which is likely to support more large hollows. This survey effort focused on arboreal mammals and ground dwelling reptiles identified as potentially occurring in the desktop assessment. Each spotlighting transect involved two people searching for 30 minutes at each transect.	**16 Sites; (approximately 12 person-hours)**
Koala SAT Surveys	Koala Spot Assessment Technique (SAT) surveys were undertaken throughout suitable Koala habitat identified within the Project area in accordance with the methodologies outlined in Philips & Callaghan 2011. The purpose of these surveys was to help identify any signs of Koalas and get an indication of the potential density of resident populations. SAT surveys involved picking a central Koala habitat tree that has signs of potential Koala activity (i.e. scratches or scats) and then searching for scats within 1 metre of the base of this tree and the nearest 29 Koala food trees. Little evidence of Koala occupation was detected during this survey program, hence only a limited number of Koala SAT surveys were undertaken.	**1 Site**
Opportunistic Observations	In conjunction with the survey efforts outlined above and whilst generally traversing through the Project area as part of this survey program, opportunistic observations of any other conservation significant flora and fauna species were also recorded.	**5 Days of Survey Effort**



Flora and Fauna Survey Locations

MIRIAM VALE SOLAR FARM

- Koala SAT
- Anabat
- Call Playback
- Diurnal Bird
- Habitat Assessment
- Watercourse Assessment
- Quaternary Site
- Weeds and Pests
- Access Tracks
- Spotlighting Transect
- Diurnal Transect Survey
- Highway
- Local Road
- Watercourse
- Proposed Substation and Switchyard Area
- Miriam Vale Solar Farm Development Footprint
- Waterway Crossings
- OHTL Exclusion Zone
- Powerlink Corridor Easement
- Property Boundary
- Lot Type Parcel

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FIGURE 4-1

GDA2020 MGA Zone 56

Data Source: World Topographic Map: Department of Resources, Dept.of Environment and Science, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, CGIAR
World Imagery: Maxar

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5.0 Results

5.1 Habitat Types

Whilst the presence of suitable flora and fauna habitat within the Project area is limited, four broad habitat types were identified and are described below. **Figure 5.1** presents the habitat types across the Project area based on State mapped vegetation and ground-truthed vegetation.

5.1.1 *Eucalyptus* and *Corymbia* Woodland

Several patches of woodland dominated by *Eucalyptus* and *Corymbia* species (particularly *Eucalyptus crebra*, *E. tereticornis* and *Corymbia tessellaris*) were located adjacent to the Project area (**Plate 1**). These areas are associated with the undeveloped Council road reserves located between the properties associated with the Project outside of the Project disturbance footprint. These woodland patches were observed to contain numerous mature tall trees with hollows. The species composition of these patches resembles communities of RE 12.12.12 (as per the State vegetation mapping); however, many are restricted to thin patches along road reserves and are infested with restricted weed species such as Lantana.

Plate 1 Example of *Eucalyptus* and *Corymbia* Woodland in road reserve

5.1.2 Remnant Riparian Vegetation

Several drainage features traverse the Project area, all of which are tributaries of Skeleton Creek and House Creek which flow in a northeasterly direction. Mature vegetation associated with these tributaries defines this habitat type with canopy species including *E. tereticornis*, *E. crebra*, *Melaleuca viminalis* and *M. quinquenervia* (**Plate 2**). Several other key species were observed in the sub-canopy/shrub layer including *Casuarina cunninghamiana* and *Angophora subvelutina*. These woodland patches were observed to contain numerous mature tall trees with hollows. The species composition of these patches resembles communities of RE 12.3.3 and RE 12.3.7 (as per the State vegetation mapping). Numerous weed species were observed to occur within this habitat type including Lantana, Prickly Pear, Rubber vine and Mother of Millions.

Plate 2 Example of Riparian Vegetation Habitat

5.1.3 *Eucalyptus* Plantation

It was observed that several patches of historical plantation trees (Tasmanian Blue Gum – *E. globulus*) were still present within the Project area (**Plate 3**). These areas of *E. globulus* the lack hollows and structural diversity and are isolated from other large tracts of remnant vegetation. These plantation forests were also established in previously cleared, cultivated or pasture improved areas and do not support the structural or species diversity which would be expected in remnant vegetation types. Several weed species were also found to be abundant within these plantation areas including, Lantana and Prickly Pear.

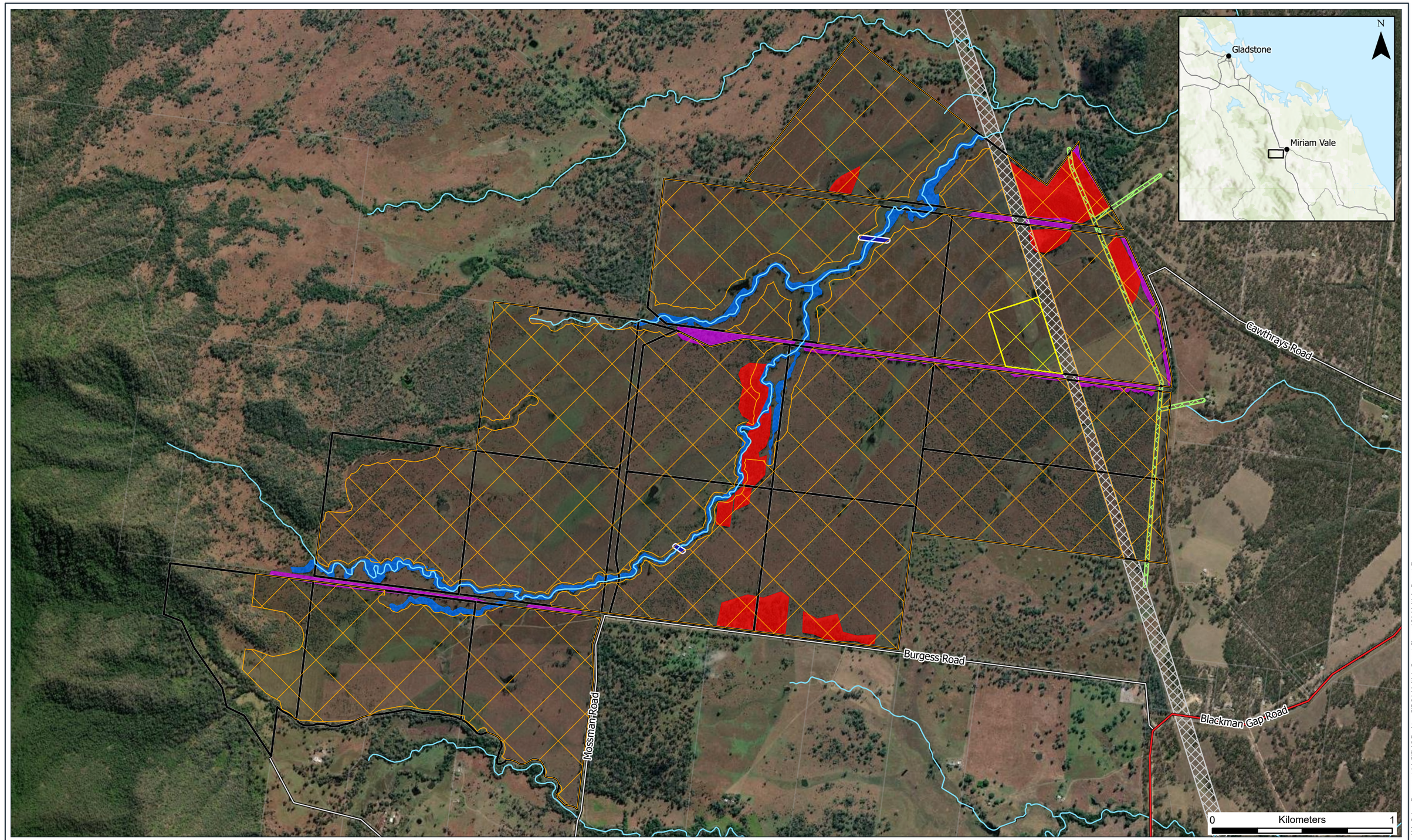
Plate 3 Example of *Eucalyptus* Plantation Habitat

5.1.4 Grassland with Immature Regrowth

Most of the Project area (more than 90%) consists of open grassland that has historically been cleared for pastoral and plantation activities (**Plate 4**). These grasslands are mapped as non-remnant and contain smaller patches of immature regrowth *Corymbia* and *Acacia* shrubland (**Plate 5**) (likely relic RE 12.12.12). Ongoing disturbance from cattle has further degraded this habitat type. Several farm dams were also identified within this habitat. In addition to numerous invasive pasture species, this habitat type also contained Giant Rats Tail Grass.

Plate 4 Example of Grassland with Immature Regrowth Habitat

Plate 5 Example of Immature *Corymbia* and *Acacia* Regrowth



Flora and Fauna Habitat Types

MIRIAM VALE SOLAR FARM

- Highway
- Local Road
- Watercourses
- Proposed Substation and Switchyard Area
- Miriam Vale Solar Farm Development Footprint
- Waterway Crossings
- Riparian Vegetation Habitat
- Eucalyptus Plantation Habitat
- Eucalyptus and Corymbia Woodland Habitat
- Non-derived Grassland Habitat Type
- Powerlink Corridor Easement
- OHTL Exclusion Zone
- Property Boundary
- Lot Type Parcel

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FIGURE 5-1

GDA2020 MGA Zone 56

Data Source: World Topographic Map: Department of Resources, Dept.of Environment and Science, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, CGIAR
World Imagery: Earthstar Geographics

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5.2 Conservation Significant Species

Conservation significant species are species listed under the EPBC Act or NC Act as critically endangered, endangered, vulnerable or near threatened. Where a species is listed under both Commonwealth and State legislation (overlap in values), the assessment of impact to that species is considered under the EPBC Act.

The likelihood of occurrence assessment considered 74 flora and fauna species initially identified in the PMST and WildNet database searches. Of these, 6 were identified as 'Likely to Occur' and 21 were identified as 'Possibly Occurring' within the Project area. Despite falling within the 'Possibly Occurring' category, the Squatter Pigeon (*Geophaps scripta scripta*) and Koala (*Phascolarctos cinereus*) have been treated as though they are 'Likely to Occur' based upon Attexo's experience undertaking impact assessments in this region of Queensland.

The complete likelihood of occurrence assessment is provided in **Appendix C**.

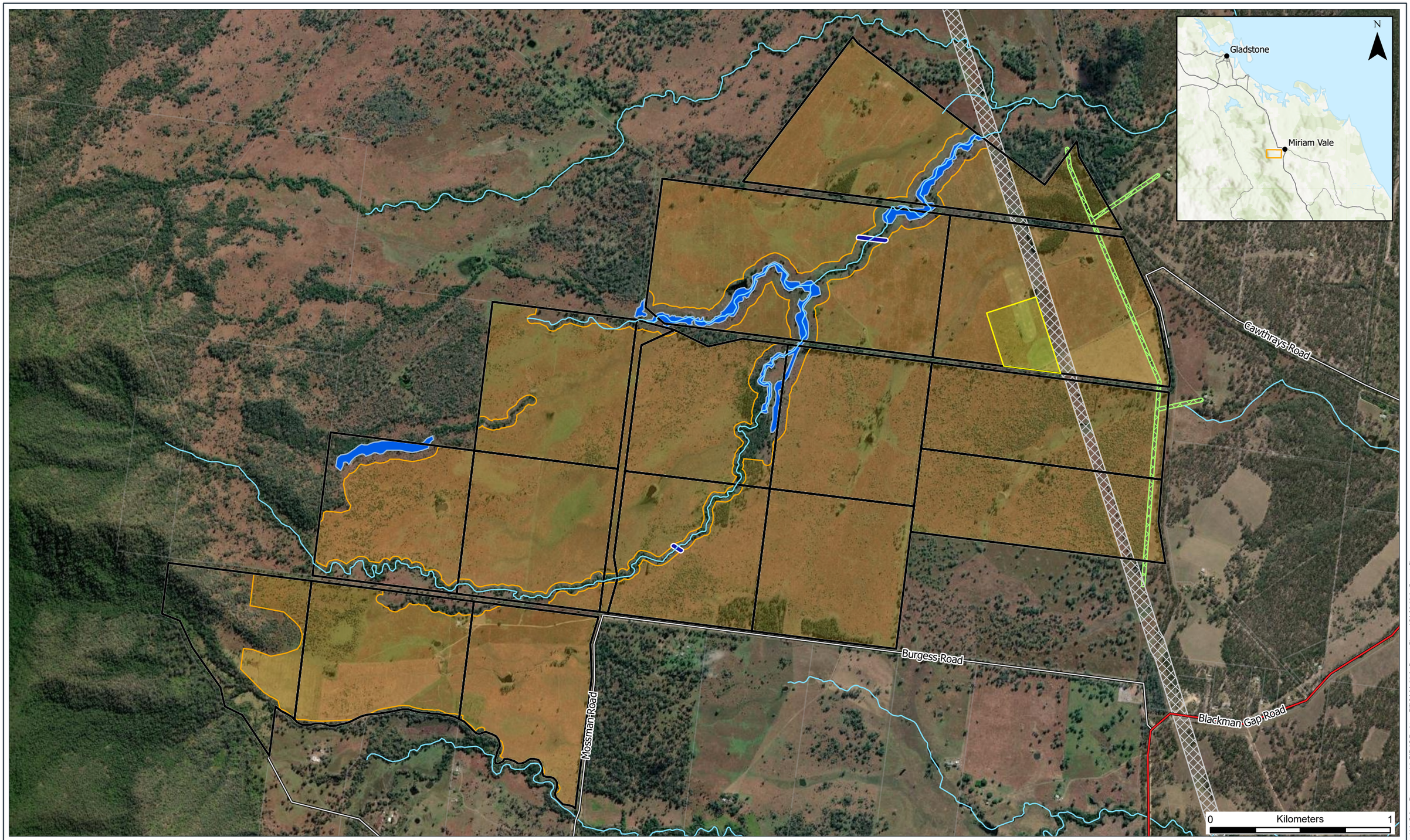
5.2.1 Threatened Ecological Communities

Of the 7 TECs (listed under the EPBC Act) identified in the desktop and likelihood of occurrence assessment, verification surveys were undertaken within the Projects area for 2 TECs which were initially identified as 'possibly occurring' within the Project area, these include:

- *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland*; and
- *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions*.

Quaternary surveys undertaken within and adjacent to the Project area confirmed the presence of RE 12.3.3 (listed as endangered under the Queensland VM Act) which is associated with the *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* TEC. Four distinct patches of this TEC were identified in the Project area, but outside of the current Project development footprint. These TEC patches are shown on **Figure 5.2**.

The *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland* TEC was considered absent from the Project area and is not considered further in this report.



TECs mapped across the Project area

MIRIAM VALE SOLAR FARM

- Highway
- Local Road
- Watercourses
- Miriam Vale Solar Farm Development Footprint
- Proposed Substation and Switchyard Area
- Waterway Crossings
- Subtropical Eucalypt Floodplain TEC
- OHTL Exclusion Zone
- Powerlink Easement Corridor
- Property Boundary
- Lot Type Parcel

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FIGURE 5-2

GDA2020 MGA Zone 56

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5.2.2 Flora

The PMST and WildNet searches identified 24 threatened flora species as potentially occurring within the study area. No flora listed as EVNT under the EPBC or NC Act were found to occur within the Project footprint during field surveys. list of all observed flora species is provided in **Appendix F.**

5.2.3 Fauna

Throughout the fauna survey program, a total of 46 fauna species were recorded, including 39 birds, 5 mammals, 1 reptile and 1 mollusk. The species recorded are all common, open country species which are typical in rural agricultural settings and cleared areas. A list of all observed fauna species is provided in **Appendix F**.

The PMST and WildNet searches identified 51 threatened or migratory fauna species as potentially occurring within the search area. The likelihood of occurrence desktop assessment refined this to 16 species considered as 'possibly occurring' and 3 migratory species as 'likely to occur'.

Species considered likely to occur at the desktop assessment stage were:

- Rufous Fantail (Migratory) – there is a record less than 20 years old around 6 km from the Project area
- Spectacled Monarch (Migratory) - there is a record less than 20 years old around 4 km from the Project area
- Osprey (Migratory) – there is a record less than 20 years old around 9 km from the Project area.

None of these species were recorded during field surveys.

In addition to the species listed above, the Koala was considered a possible occurrence based on the historical distribution of suitable habitat in the locality. There are, however, no records of the Koala from the Project area or wider locality within the past 20 years. Despite this, a very conservative position has been taken in relation to potential impacts of the Project on the Koala and Koala habitat, and a Significant Impact Assessment has been undertaken in accordance with *Significant Impact Guidelines 1.1: Matters of National Environmental Significance* (DoE 2013) (assessment undertaken and presented in MNES Report, Attexo 2024)).

Five fauna species were recorded during field surveys which are also listed as Marine under the EPBC Act, detailed in **Table 5.1**. Species listed solely as marine under the EPBC Act have only been considered in the context of the Project's potential impacts to the Great Barrier Reef Marine Park (GBRMP) as there are no standalone impact assessment criteria for individual marine species. Further information is provided in the MNES Report (Attexo, 2023).

Table 5.1 Significant fauna species observed within the Project area

Scientific Name	Common Name	NC Listing	EPBC Listing	Survey Method
Anthus novaeseelandiae	Australasian Pipit	LC	Ma	Incidental Observations
Falco cenchroides	Nankeen Kestrel	LC	Ma	Incidental Observations
Grallina cyanoleuca	Magpie-lark	LC	Ma	Incidental Observations
Merops ornatus	Rainbow Bee-eater	LC	Ma	Incidental Observations, Diurnal Bird Survey

Scientific Name	Common Name	NC Listing	EPBC Listing	Survey Method
Hirundo neoxena	Welcome Swallow	LC	Ma	Incidental Observations

5.3 Pest Flora and Fauna Species

WildNet database searches of the study area produced records of 115 introduced flora and 11 introduced fauna species considered to be weeds and pests in Australia, see **Appendix B**. Of these, 9 introduced flora and 7 introduced fauna species are listed as Restricted Matters under the Queensland *Biodiversity Act 2014* (Biosecurity Act).

The listed Restricted Matter items fall under the following categories under the Biosecurity Act, wherein a person who has, or has a thing infested with, the Restricted Matter in the person's possession or under the person's control must:

- **Category 3** – not distribute or dispose of the restricted matter unless the distribution or disposal is carried out via the methods set out in the Biosecurity Act;
- **Category 4** – not move the Restricted Matter, or cause or allow it to be moved;
- **Category 5** – not keep in the person's possession or under the person's control;
- **Category 6** – not give food to the Restricted Matter; and/or
- **Category 7** – kill the restricted matter and dispose of the carcass by burying the whole carcass in the ground above the high tide water mark or place it in a waste disposal receptacle.

The *Gladstone Regional Council Biosecurity Plan 2021-2025* identifies four levels of management of invasive species as per the following categories:

- **Prevention** – species are not present in the region; aims to prevent species arrival and establishment;
- **Eradication** – species are present in limited distribution and abundance in the region; aims to completely remove the species from the area;
- **Containment** – species are widely distributed in parts of the region, but not everywhere; aims to prevent ongoing spread in the area; and
- **Natural asset protection / local control** – species are widely distributed with low feasibility of total eradication; aims to reduce overall impacts.

The weeds identified during the survey program considered to be the most prevalent, widespread and in the densest infestations across the Project area are listed in **Table 5.2**. Although weeds, it should be noted that Balloon Cotton Bush and Devil's fig are not WoNs, restricted invasive plants under the Biosecurity Act or priority weed species listed by GRC. They are considered environmental weeds and can become problematic if infestations are left unchecked and fall under a General Biosecurity Obligation (GBO) under the Biosecurity Act to take reasonable and practical steps to minimise risks associated with these species.

Table 5.2 Prevalent weed species observed within the Project area

Weed Species	Biosecurity Act Category	WoNS	LGA Listed Weed	GRC Priority
Lantana (*Lantana camara*)	Restricted Invasive Plant – Cat 3	Yes	No	Local Control
Giant Rats Tail Grass (*Sporobolus pyramidalis*)	Restricted Invasive Plant – Cat 3	No	Yes	Containment
Balloon Cotton Bush (*Lopocampa's physocarpus*)	-	No	No	-
Devil's Fig (*Solanum torvum*)	-	No	No	-

Three additional WoNS were recorded from the Project area, namely Prickly Pear, Velvety Tree Pear and Rubber Vine - these are also restricted invasive plants under the Biosecurity Act. Mother-of -millions, Giant Parramatta Grass and Yellow Oleander are considered restricted invasive plants, while additional species are either priority species for containment or control, or environmental weeds. Additional weed species recorded during field surveys are listed in **Table 5.3**.

Table 5.3 Additional weed species identified in the Project area

Weed Species	Biosecurity Act Category	WoNS	LGA Listed Weed	GRC Priority
Prickly Pear (*Opuntia stricta)*	Restricted Invasive Plant – Cat 3	Yes	Yes	Local Control
Velvety Tree Pear (*Opuntia tormentosa*)	Restricted Invasive Plant – Cat 3	Yes	Yes	Local Control
Rubber Vine (*Cryptostegia grandiflora*)	Restricted Invasive Plant – Cat 3	Yes	Yes	Containment
Mother-of-Millions (*Bryophyllum delagoense*)	Restricted Invasive Plant – Cat 3	No	Yes	Containment
Giant Paramatta Grass (*Sporobolus fertilis*)	Restricted Invasive Plant – Cat 3	No	Yes	Containment
Yellow Oleander (*Cascabela thevetia*)	Restricted Invasive Plant – Cat 3	No	Yes	-
Praxelis (*Praxelis clematidea*)	-	No	No	Local Control
Jamaican Snakeweed (*Stachytarpheta jamaicensis*)	-	No	No	Local Control

Weed Species	Biosecurity Act Category	WoNS	LGA Listed Weed	GRC Priority
Tropical Milkweed (*Asclepias curassavica*)	-	No	No	-
Guava (*Psidium guajava*)	-	No	No	-
Spear Thistle (*Cirsium vulgare*)	-	No	No	-
Easter Cassia (*Senna pendula var. glabrata*)	-	No	No	-

Throughout the survey program, several pest species listed as Restricted Matters under the Biosecurity Act were found to occur across the Project properties, listed in **Table 5.4**.

Table 5.4 Identified pest species occurring in the Project area

Species Name	Biosecurity Act Status	GRC Priority
European rabbit (*Oryctolagus cuniculus)*	Category 3,4,5,6	Containment
Pig (*Sus scrofa)*	Category 3,4,6	Containment
Cane toad (*Rhinella marina syn. Bufo marinus*)	GBO	Local Control
European fox (*Vulpes vulpes*)	Category 3,4,5,6	Containment

5.4 Matters of State Environmental Significance within the Project area

Using the information collected during the desktop and field assessments several Matters of State Environmental Significance (MSES) have been identified within the Project area. **Table 5.5** provides a summary of these MSES values and a discussion as to whether they will be impacted by the Project.

Table 5.5 MSES values within the Project area

MSES Value	Relevance to the Project
Protected Areas	There are no protected areas within or adjacent to the Project area.
State Marine Parks	There are no State Marine Parks within or adjacent to the Project area.
Fish Habitat Areas	There are no Fish Habitat Areas within or adjacent to the Project area.
Strategic Environmental Areas	There are no Strategic Environmental Areas within or adjacent to the Project area.
HES Wetlands	There are no HES wetlands within or adjacent to the Project area.

MSES Value	Relevance to the Project
HEV Wetlands	There are no HEV wetlands within or adjacent to the Project area.
HEV Watercourses	There are no HEV watercourses within or adjacent to the Project area.
Threatened Species and Iconic Species	As discussed in **Section 4.1.1** and **Appendix C**, all flora and fauna species identified as either 'Possibly Occurring' or 'Likely to Occur' are also listed as MNES values. No additional MSES values were detected during surveys across the Project area.
Regulated Vegetation – Endangered/Of concern in Category B (remnant)	There is no Category B regulated vegetation within the proposed development footprint. Several small patches of Endangered RE 12.3.3 have been identified within the balance of the Project area. Several small patches of Of Concern RE 12.12.12 and RE 12.12.12./12.12.28 have been identified within the balance of the Project area.
Regulated Vegetation – Endangered/Of concern in Category C (regrowth)	There is no Category C regulated vegetation within the Project area.
Regulated Vegetation – Category R (GBR riverine regrowth)	There is no Category R regulated vegetation within the Project area.
Regulated Vegetation – Essential habitat	Several small patches of Essential Habitat Mapping for the Koala (*Phascolarctos cinereus*) have been identified either within or immediately adjacent to the Project area. The current Project design has avoided any impacts to these areas.
Regulated Vegetation – intersecting a watercourse	MSES - Regulated Vegetation (intersecting a watercourse) is mapped within the Project area, but primarily outside of the proposed development footprint. Although SARA referral can be avoided by avoiding or minimising vegetation clearing in these areas, the GRC Planning Scheme seeks to ensure that development provides buffers to these features. This is discussed further under **Section 7.4**.
Regulated Vegetation – within 100 m of a Vegetation Management Wetland	There is no regulated vegetation within 100 m of a VM Wetland within the Project area.
Legally secured offset areas	There are no legally secured offset areas within the Project area.
Connectivity Areas	There are no connectivity areas (which must contain Cat B Regulated Vegetation) within the Project area.
Protected Wildlife Habitat	There is a small high-risk area on the flora survey trigger map associated with the riparian vegetation along House Creek located beyond the south-eastern boundary of FD112 directly adjacent to the Project area. No high-risk areas are located within the proposed development footprint.

MSES Value	Relevance to the Project
Waterways providing for fish passage	Waterways providing for fish passage are mapped within the Project area. To construct or raise waterway barrier works within a waterway, the works must comply with accepted development requirements or a development application under the *Planning Act 2016* needs to be lodged. A field verification survey of the mapped waterways within the Project area was undertaken by Attexo in 2023. The Project footprint has been designed to ensure that these features are avoided (and buffered).
Marine plants	There are no marine plants within the Project area.

5.4.1 Protected Areas

There are no protected areas within the Project area. National Park borders Lot 5 on FD112 in the southwest corner of the Project area. Castle Tower National Park is located approximately 14 km northwest of the Project area, the Mount Colosseum National Park approximately 7 km to the south, respectively, and the Rule and Norton State Forests are situated approximately 13 km to the southwest and the Pemberton State Forest to the north.

5.4.2 Essential habitat

Several small patches of Essential Habitat Mapping for the Koala (*Phascolarctos cinereus*) have been identified either within or immediately adjacent to the Project area. The current Project layout has been designed to avoid impacts to these essential habitat areas.

5.4.3 Protected Plants Trigger Mapping

There is a small patch of high-risk protected plant trigger mapping along the southern boundary in the southwestern corner, south of the unconstructed road parcel. There are no mapped areas of high-risk protected plant trigger mapping within the Project area.

5.4.4 Queensland Wetland Environmental Values

There are no nationally or internationally important wetlands within the Project area, however Queensland wetlands mapping shows wetland areas adjacent to the southeast and eastern boundaries of the Project area, consisting of sub-dominant (1-50%) palustrine wetlands. Wetland values are associated with unnamed water features flowing across the Project area.

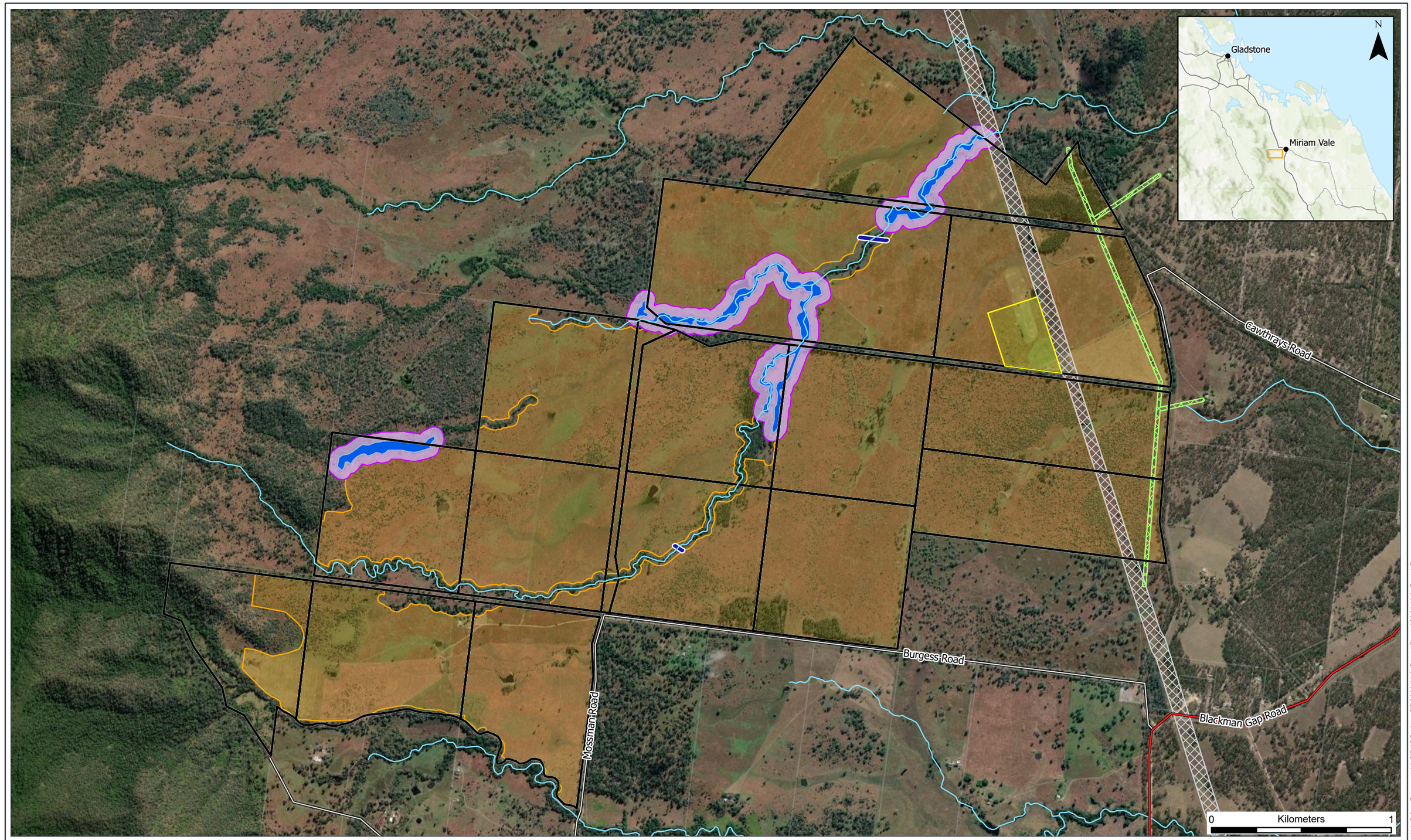
Site verification of waterways undertaken by Attexo identified three (Green – Low Risk) waterways mapped by the State of Queensland to not possess the physical and hydrological attributes necessary for a waterway under the Fisheries Act. As there was no observable difference between the surrounding pasture and the mapped water feature, the waterway was deemed likely to be a shallow drainage line that provides no aquatic habitat value under present conditions. As such, these three mapped areas were not avoided by the development footprint.

In addition, three waterways, as defined by the Fisheries Act, were identified within the Project Area that were previously unmapped. Further site verification of watercourses will be undertaken to determine requirements for

Riverine Protection Permits under the *Water Act 2000*. **Figure 5.3** shows the presence of waterways within the Project area and demonstrates how the Project footprint has avoided these areas.

A significant portion of the Stream Order 3 watercourses within the Project area overlap with the *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* TEC. The development footprint has considered a 50 m wide buffer between the several patches of the TEC and any development which goes beyond the stream order buffers applied. The buffer has been nominated based on advice received by the Commonwealth Department of Climate Change, Energy, the Environment and Water that any impact to areas within 50 m of a TEC constitutes an impact to the TEC.

There are no Stream Order 4 or 5 within the Project area.



Waterway Buffers Applied to the Development Footprint

MIRIAM VALE SOLAR FARM

- Highway
- Local Road
- Watercourses
- Miriam Vale Solar Farm Development Footprint
- Proposed Substation and Switchyard Area
- Waterway Crossings
- Subtropical Eucalypt Floodplain TEC
- Subtropical Eucalypt Floodplain TEC (50m Buffer)
- OHTL Exclusion Zone
- Powerlink Easement Corridor
- Property Boundary
- Lot Type Parcel

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GDA2020 MGA Zone 56

Data Source: World Topographic Map: Department of Resources, Dept.of Environment and Science, Esri, TomTom, Garmin, FAO, NOAA, USGS
World Hillshade: Esri, CGIAR
World Imagery: Earthstar Geographics

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5.5 Biodiversity Overlay

In accordance with section 8.2.3 of the GRC Planning Scheme, the biodiversity overlay code and the assessment benchmarks have been considered as part of this assessment to support the development application. The biodiversity overlay code outlines the purpose of the code as including:

- Protect or enhance matters of national (MNES) and state environmental significance (MSES) and their associated ecological processes and biodiversity values.
- Maintain or enhance the health and resilience of biodiversity to support ecological integrity.
- Maintain or enhance ecological connectivity to preserve fauna movement, habitat values, remnant vegetation and ecological processes.
- Protect or enhance water quality, ecosystem health and the natural hydrological functioning of waterways, wetlands and their riparian areas and buffers.
- Protect, rehabilitate and manage coastal natural resources, biodiversity and ecosystem services values.

The GRC biodiversity overlay adopts MSES values, NSES valued within the Project area are regulated vegetation (which has been avoided) and regulated vegetation associated with a defined watercourse. These values are shown in **Figure 5.4.** There are no MLES identified by GRC in the biodiversity overlay code.

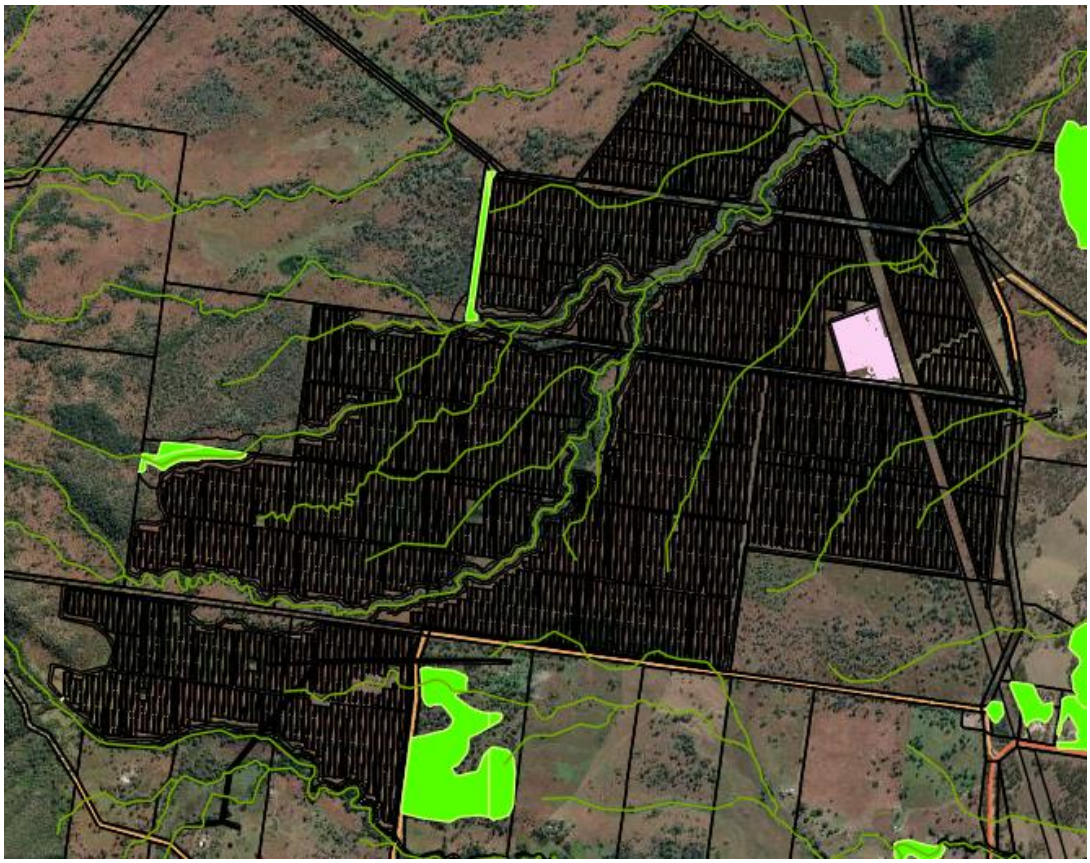


Figure 5.4 Biodiversity Overlay Mapping - MSES regulated vegetation in bright green polygon, regulated vegetation associated within defined watercourse in dark green line

6.0 Project Impacts and Mitigation

6.1 Vegetation Clearing

The development footprint associated with the siting of solar panels, substation, electricity transmission lines (underground) and internal access tracks resides largely within existing cleared areas. Cleared areas either contain no remnant vegetation or immature and low-density regrowth, thus the installation of infrastructure requires minimal clearing of regrowth vegetation. Clearing has been minimised through:

- Avoidance through Project design of riparian vegetation along watercourses and tributaries and applying appropriate buffers to protect riparian vegetation values.
- Avoidance through Project design of regulated vegetation predominantly associated with riparian corridors and unused road reserves within the Project area.

The development footprint covers an area of 921.74 ha, of which 90 % is completely cleared or contains areas of immature regrowth and scattered patches of vegetation which do not clearly align with described regional ecosystems and are generally too young to be mapped as high value regrowth under the Vegetation Management Framework. The disturbance footprint has been designed to remain within State mapped non-remnant vegetation and avoid areas of high value regrowth. Much of the area within the disturbance footprint has been subject to clearing for the purposes of grazing and timber plantation.

The development footprint contains only Category X (non-remnant) vegetation which has been subject to routine clearing for maintenance of regrowth by the landholders and the cultivation of the remaining timber plantation. All areas of Category B (remnant) vegetation within the Project area have been avoided by the Project footprint. Some areas of riparian vegetation along higher order watercourses and tributaries within the Project area is remnant (although mapped as non-remnant by the State) but avoided by the Project footprint. Ground-truthing of vegetation has determined the extent of remnant and non-remnant vegetation.

A proportion of the Project area (156 ha, or 14 %) will remain undeveloped, including corridors of between approximately 90 m and 300 m width along watercourses (tributaries to Skeleton Creek and Baffle Creek). In the long term, it is considered likely that fauna habitat values and landscape connectivity will improve over time under the developed scenario. The proponent also proposes to actively manage these areas to improve the quality of the vegetation by implementing activities such as weed control and pest management.

6.2 Erosion and Sedimentation

Much of the Project area has been historically cleared for plantation and is currently used intensively for grazing practices. Plantation activities no longer occur within the Project area (a few patches of trees remaining). Cleared areas are subject to erosion due to altered drainage regimes. Local studies have explored the effect that vegetation clearing has on surface water infiltration and runoff and soil retention (Carroll & Tucker 2000; Loch 2000; Ludwig & Tongway 2002). Surface water infiltration and soil retention decreases dramatically as vegetation cover is lost, and runoff increases, but improves as vegetation cover is restored (Ludwig & Tongway 2002). The current grazing practices on the Project site exacerbate the transportation of sediments and nutrients due to ground disturbance by cattle and a reduction in groundcover (grass). By removing this practice on the site, a reduction of sedimentation and nutrients loads will be available to enter the tributaries, reducing the downstream impacts on the GBR.

Despite being historically cleared, patches of regrowth within non-remnant areas have likely mitigated erosion processes, and clearing of these areas that lie within the development footprint is considered to be a potential impact

on the MNES. Through Project design, the development footprint addresses erosion impacts by avoiding clearing of ground-truthed remnant vegetation and larger areas of high-valued regrowth.

An Erosion and Sediment Control Plan (ESCP) will be prepared by a Certified Professional in Erosion and Sediment Control. This plan should be developed in accordance with the Best Practice Erosion and Sediment Control guideline (IECA, 2008), which specifies sediment and erosion control requirements based on assessed erosion risk and estimated soil loss. Correct application of the ESCP will ensure the erosion risk associated with the construction works remain very low to low. A Preliminary ESCP is prepared and included with the Development Application for the Project.

6.3 Stormwater Management

A Stormwater Management Plan (SMP) has been prepared for the Project and included within the Development Application for the Project. The SMP identifies key water quality risks to be managed including where erosion and sediment control if required, as well as recommendations for the storage and handling of hazardous materials. The SMP includes the proposed substation site – no SMP is required for the balance of the solar farm as this area will be a pervious surface. For operational stormwater management, modelling for the SMP estimates that the hardstand area for the substation and other facilities will require a sediment basin of approximately 2,000m^2 and a wetland with a total area of approximately 5,000m^2. Detailed design would be required to further understand stormwater management requirements. This will, at a conceptual level, ensure that the Project appropriately manages water quality through the operational phase.

The SMP also identifies principles and measures for the management of water quality during the construction phase.

Throughout the operational phase of development, the site's topography is expected to remain virtually unchanged from its existing conditions. Gravel sheeting will be applied to internal access tracks and substation areas, while the rest of the site will retain its grass cover. The solar panels will be elevated above the ground, ensuring they do not hinder vegetative growth in accordance with bushfire management requirements (i.e. grass ≤30 cm during high fire danger season).

6.4 Disturbance to Wildlife

Activities associated with construction, maintenance, and operation of the Project may impact resident fauna. In general, dust, air, noise, and light pollution are also considered to cause disturbance to wildlife.

Increased dust from vegetation clearing, earthworks and vehicle movements during construction has the potential to temporarily and locally impact flora and fauna values in the vicinity of the Project footprint. Dust is expected to only be a potential issue during vegetation clearing and construction and will be mitigated by routine environmental management measures.

Noise may adversely affect fauna by interfering with communication (e.g. territorial bird song), masking the sound of predators and prey, causing avoidance reactions and displacement from habitat. Construction noise will be generated by the Project through the use of machinery, plant and vehicles, and will vary from short intermittent noise from plant and equipment to more persistent noise from generators. Individuals that occur within the Project area may leave the area of impact. Project construction works and therefore potential noise impacts will be temporary.

Vibration from vehicles and equipment may cause temporary disturbance to fauna, and displacement or structural damage to boulder piles, rock fissures and caves which form habitat for fauna.

Artificial lighting from infrastructure and machinery may impact fauna within the Project area during construction. Artificial lighting can have a range of impacts which vary between species. Artificial light can disrupt patterns of both nocturnal and diurnal species by eliciting responses. Some species may avoid brightly lit areas, potentially due to the

perception of being increased risk of predation. Conversely, some species such as nocturnal reptiles, frogs and bats may congregate at artificial light sources to feed on insects attracted to light. Other potential adverse impacts include disruption of breeding and migratory patterns, disorientation and potential collision with structures.

The Project's Environmental Management Plan (EMP) will consider mitigation and management measures to minimise impacts from dust, air, noise and light pollution. It is expected that the conditions of approval will require consideration of these matters.

6.5 Fauna Injury and Mortality

Fauna is at risk of injury or mortality from vegetation clearing. Vehicle strikes are also a threat to wildlife, both during construction and ongoing operations of the Project, although traffic volumes associated with a solar farm project are not likely to be significant and night-time traffic is unlikely. To minimise the potential direct mortality of fauna, a management plan should be developed as a component of the EMP which describes practical measures be implemented prior to and during construction, including:

- Delineation of clearing boundaries and no-go zones
- Spotter/Catcher oversight of all clearing activities
- Pre-clearance surveys to locate active fauna breeding sites
- A sequential clearing plan which affords fauna the opportunity to relocate away from the work front
- Imposition of vehicular speed limits within work areas
- Daily inspection of any open excavations to remove trapped fauna.

Operation of the Project is expected to generate minimal, sporadic vehicles movements unlikely to pose a significant risk to fauna.

6.6 Barriers to Movement

The introduction of fencing around proposed infrastructure may limit fauna entry to those areas, subject to fence design. To date, most empirical research on wildlife-fence interactions and fence systems has been limited in scope, often focused on single species at local spatial scales. Existing studies have largely addressed fence impacts on ungulates or at-risk species, often motivated by mortalities and barriers to known movements.

Fence impacts on wildlife are usually observed at the individual or local group level, such as individual mortalities or barriers to herd movements. Some of these impacts may be dismissed as inconsequential, especially since rates (i.e., mortality) are usually unknown.

Negative consequences of wildlife-fence interactions can be classified as direct or indirect. Direct effects involve physical contact between the individual and the fence. These include direct mortality, injuries, and hair loss, which can result in reduced individual or population level fitness. The most observable impact is direct mortality, which can happen immediately when an animal collides with fencing or slowly when animals are caught in fences and die from exposure, starvation, or predation. Direct mortality of a wide range of birds and mammals from fence collisions and entanglements has been documented worldwide.

Indirect effects of fences on wildlife manifest themselves as changes in behaviour and biology. These include heightened stress of negotiating fences, separation of neonates from mothers (Harrington and Conover, 2006), obstructed movements, habitat loss, and fragmentation. Stress occurs when animals are temporarily entangled,

search frantically for a place to cross by pacing up and down the fence (Seidler et al., 2018), or must negotiate multiple fences in a landscape. These impacts can accumulate over time and contribute to increased energy expenditure, higher mortality rates, and decreased overall fitness of individuals. Young that cannot negotiate a fence and are separated from adults can die of dehydration, exposure, or predation (Harrington and Conover, 2006), and the loss of neonates reduces recruitment and potentially population size.

Given the potential extent of fencing required around proposed infrastructure, it is proposed that a fauna management plan be prepared which documents appropriate fence design specifications based on the intended purpose (fauna exclusion or fauna permeability).

6.7 Pests and Weeds

To manage the introduction and spread of invasive pest and weed species, a biosecurity management plan will be prepared and implemented as part of the Construction EMP prior to the commencement of construction which will include species-specific weed prevention, management and monitoring measures to control invasive weed species.

6.8 Lake Effects

Researchers have previously hypothesised a "lake effect" where water birds—some of which require water to take off and land—are confusing reflective solar panels with waterbodies and colliding into them. The hypothesis was that large solar fields can fool birds into changing flight direction, sometimes during migration, to approach them because they appear to be lakes from a distance. It was concluded that many birds susceptible to the lake effects at large solar sites are waterbirds, which indicates that these birds fly to solar fields and realise too late in their descent that the solar panels are not water. The waterbirds then collide with the solar panels and are critically wounded or killed.

Emerging research indicates that this is not a universal issue for solar farms, and is highly context dependant, with sites located close to natural wetlands and waterbodies likely to be the greatest risk. Given the dryland nature of the Project area, this is not considered a significant issue for the Project.

7.0 Compliance with Relevant State and Local Requirements

7.1 State Code 16 – Clearing Native Vegetation

A development approval is required for clearing native vegetation that is not Exempt Clearing Work, or clearing carried out under an Accepted Development Vegetation Clearing Code or Area Management Plan. State Code 16 is used to assess developments that involve clearing, or could result in future clearing, of native vegetation in regulated regional ecosystems or areas shown on the Regulated Vegetation Management Map and associated supporting maps current as at the time of lodging the development application.

Under the Planning Regulation 2017 (Qld) (Planning Regulation) and the *Vegetation Management Act 1999* (Qld) (VM Act), a development permit is required for vegetation clearing (operational work and MCU) unless that clearing is exempt clearing work.

A large proportion of the study area us mapped as Category X vegetation. Under Schedule 21, Part 2, Section 2 of the Planning Regulation, clearing vegetation on freehold land in a Category X area is "exempt clearing work". The proposed development will avoid all areas of regulated vegetation, and clearing will only occur in Category X areas. The proposed clearing is therefore exempt clearing work.

Importantly, the proposed development has also been designed with consideration of vegetation clearing which would be "exempt clearing work" if a development approval is granted for the solar farm. This includes clearing for firebreaks, fire management lines and boundary clearing, which would become "exempt clearing work" and would increase vegetation clearing for the project. In all cases, development has been setback a minimum of 10 m from boundaries and temporary infrastructure. All vegetation within the development footprint will be maintained as an Asset Protection Zone (APZ); cleared of weeds and wood vegetation and have a grass surface maintained at a height of ≤30 cm during the fire danger season.

7.2 Nature Conservation Act

The Project site is not located within a mapped flora "High Risk Trigger Area". A detailed botanical survey of the Project Footprint and surrounding area failed to identify the presence of protected plants and/or suitable habitat for these. Consequently, based on the information presently at hand, a Protected Plant Clearing Permit under the NC Act is not likely to be required.

Some of the relict trees that will be removed within the Project footprint contain hollows that would serve as animal breeding places. Therefore, clearing of these trees will require a Permit to Tamper with an Animal Breeding Place prior to works occurring. This in turn will require the preparation of a Species Management Program to the satisfaction of DES.

7.3 Fisheries Act

Field-verified waterways within the Project area have been avoided and buffered by the development footprint.

Recent updates to the *Queensland waterways for waterway barrier works* spatial data layer indicate a number of additional Green – Low Risk waterways within the Project area; however, these were not observed as waterways during the field verification activities. It is intended that all waterway barrier works to be constructed on the Project site be designed in accordance with the Accepted development requirements for operational work that is constructing or raising waterway barrier works. As such, the Project will not require a development approval for waterway barrier works.

The accepted development requirements for operational work that is constructing or raising waterway barrier works are prescribed under section 135 of the Fisheries (General) Regulation 2019. Compliance with all aspects of the requirements can provide authorisation for specified work types as accepted development. If the proposed work does not comply with all accepted development requirements, the work is not accepted development. Constructing or raising waterway barrier works that is not accepted development is assessable development and requires development approval.

7.4 Planning Scheme - Biodiversity Overlay Code

The Project is to be assessed in against the GRC Planning Scheme's biodiversity overlay code due to the presence of MSES within the broader Project area. A comprehensive response to the biodiversity overlay code has been provided in the Planning Report which accompanies the development application for the Miriam Vale Solar Farm Project. The proposed development has been designed to meet the objectives of the biodiversity overlay code (where practicable) and responds to site constraints. In summary:

- The proposed development avoids areas supporting MNES and MSES;
- The proposed development incorporates buffers to ecologically sensitive areas, including several patches of TECs and riparian corridors;
- Substantial development free buffers will be maintained to waterways with stream orders of 2 and above;
- Ecological corridors will be re-instated on major watercourses;
- Continuous corridors across the site will provide effective ecological connectivity and create additional linkages;
- Waterway buffers will be provided and maintained with a minimum width of 10 m to Stream order 2 and 3 and no buffer widths to first order watercourses where riparian ecological values are not present. No stream order 4, 5 or above are present on site;
- There will be no impact on wetland hydrology or ecology, and there are no mapped wetlands on the Project site; and
- Downstream impacts associated with changes to catchment hydrology are expected to be limited.

The development complies with all the relevant Performance Outcomes (PO) or Acceptable Outcomes (AO) of the code except for AO2. The Alternative Outcome proposed is discussed below.

7.4.1 Compliance with PO2 (Alternative Outcome)

The Project does not comply with minimum width MSES buffers stipulated in AO2:

A buffer extending from the outside edge of an area of MSES is provided and has a minimum width of:

a. *200m where located outside of an urban area, or*

b. *50m where within an urban area.*

However, the Project is considered to comply with an Alternative Outcome in accordance with PO2, which states:

Development is setback from and provides an adequate vegetated buffer to significant vegetation, habitats and areas containing MSES in order to:

a. *protect these areas and their values from threatening processes*

b. *avoid edge effects such as undesirable microclimate effects and threats from non–native or pest fauna or flora, and*

c. *maintain and enhance ecological connectivity.*

Note—Any setbacks or other areas required for bushfire management, safety, recreation, maintenance or any other purpose are provided in addition to a vegetated buffer provided for ecological and environmental protection purposes.

Note—An alternative buffer width may be proposed where buffers for significant species and ecological communities, including areas of habitat for listed threatened and migratory species, are based on best practice and current scientific knowledge of individual species requirements and supported by an ecological assessment. Other legislation, including the Nature Conservation Act and EPBC Act *may establish other requirements with which applicants must comply.*

The Project includes mapped areas of MSES – Regulated Vegetation (intersecting a defined watercourse). These areas coincide with mapped waterways from the *Queensland waterways for waterway barrier works* spatial layer as well as with the four distinct patches of the *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* TEC as shown in **Figure 7.1**.

Waterway assessments undertaken by Attexo concluded that at three mapped waterways (Stream order 1), which overlay with mapped areas of MSES, there were no observable difference between the surrounding pasture and the mapped water feature, and thus it is considered that these areas are only shallow drainage lines that provides no aquatic habitat for any significant flora or fauna species under present conditions. Based on the information obtained and given the lack of defining physical and hydrological waterway attributes, no waterways are present in these locations.

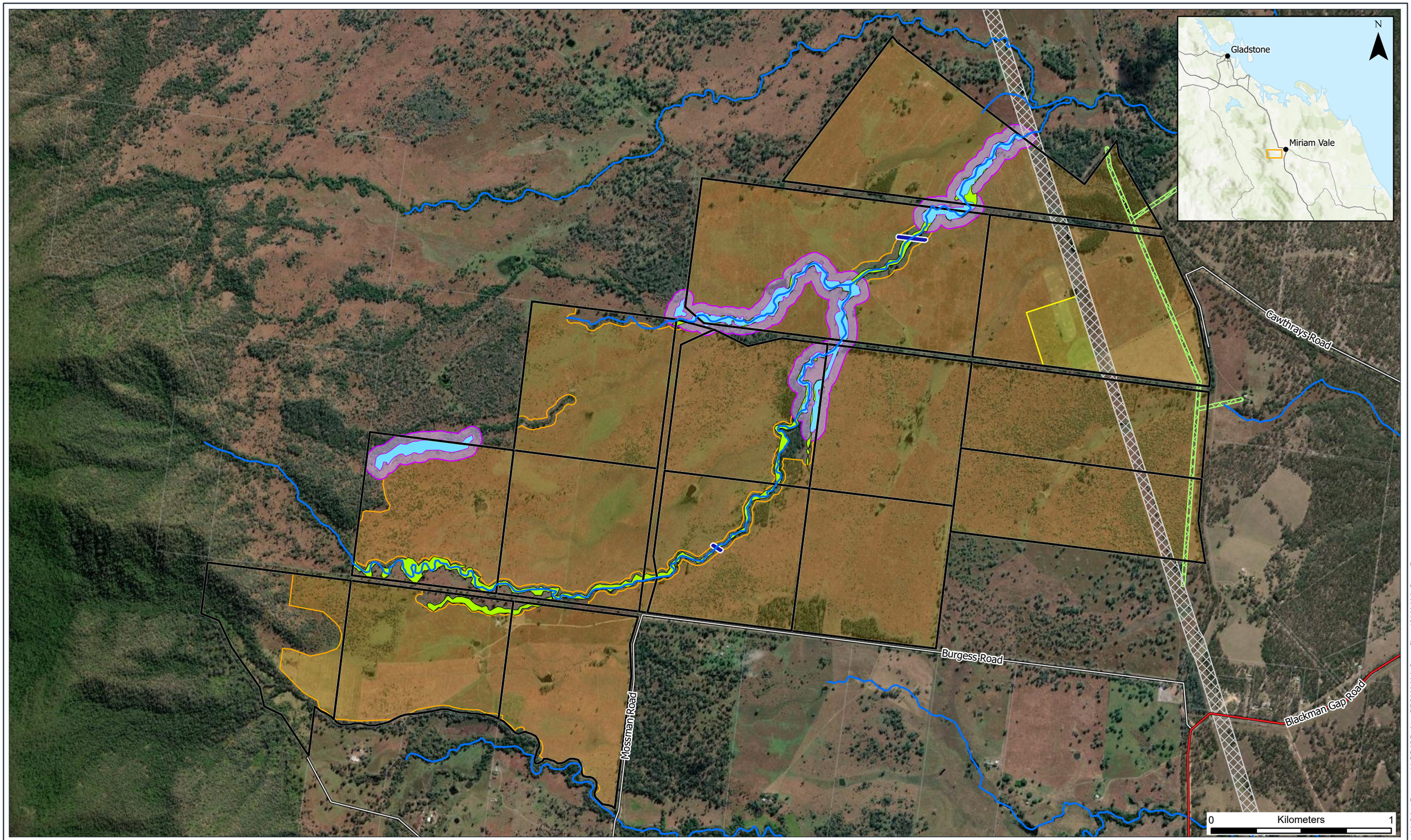
A significant portion of the MSES within the Project area overlap with Stream Order 2 and 3 watercourses which also represents areas of the *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* TEC. The development footprint has considered a 50m wide buffer either side of the TEC patches and an additional minimum 10 m Stream order 2 and 3 buffer (minimum 120 m total buffer of the MSES centreline). The TEC buffer has been nominated based on advice received by the DCCEEW and is considered sufficient to minimise impacts to the TEC and therefore is also considered sufficient for minimising impacts to MSES.

In those areas where MSES overlap with Stream Order 2 and 3 watercourses but are not within TEC patches, a minimum buffer of 50 m (25 m either side of the MSES centreline) has been applied. It is considered that a minimum buffer of 50 m is sufficient to maintain and enhance connectivity between large tracts of riparian vegetation, and in between areas of TEC patches.

The riparian corridors within the Project area are substantially degraded through weed infestations at present. Furthermore, the corridors are presently suffering from edge effects associated with the historical agricultural pursuits within the broader Project area.

In addition to buffers, to further protect areas of MSES and areas of high ecological value from threatening processes, a biosecurity management plan, fauna management plan and a broader Environmental Management Framework will be developed and implemented prior to construction works. These management plans will require actions such as weed and pest eradication and fencing. The implementation of these plans will ensure the maintenance and enhancement of ecological connectivity.

Through the avoidance of higher order watercourses with presented evidence of suitable habitat for aquatic flora and fauna species and TEC areas, ecological connectivity will be maintained and enhanced. The watercourses and riparian areas which traverse the Project area will be retained as functional connectivity corridors for flora and fauna for the life of the Project.



Overlap of MSES, TEC and Waterway Areas

MIRIAM VALE SOLAR FARM

- Highway
- Local Road
- Watercourses
- Miriam Vale Solar Farm Development Footprint
- Proposed Substation and Switchyard Area
- Waterway Crossings
- Riparian Vegetation Habitat
- Subtropical Eucalypt Floodplain TEC
- Subtropical Eucalypt Floodplain TEC (50m Buffer)
- OHTL Exclusion Zone
- Powerlink Corridor Easement
- Property Boundary
- Lot Type Parcel

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FIGURE 7-1

GDA2020 MGA Zone 56

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8.0 Conclusion

This Ecological Assessment Report (EAR) has been prepared to accompany a development application for the proposed Miriam Vale Solar Farm Project. The report documents the extent and nature of ecological values within the Project site and demonstrates how these values have been avoided by the proposed development.

This EAR focuses on environmental values prescribed at a State level as Matters of State Environmental Significance (MSES) and Matters of Local Environmental Significance (MLES), assessable under the *Planning Act 2016* (Planning Act) and GRC Planning Scheme.

A comprehensive desktop review was completed prior to conducting field surveys on the Project site. Field surveys were completed in June and September 2023 to confirm the findings of the desktop review. Key findings of the desktop and field surveys were:

- There are several patches of the *Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions* threatened ecological community listed under the EPBC Act on the Project site.
- All Regional Ecosystems recorded on the Project site will be avoided by the Project. There will be no clearing of regulated vegetation for the Project.
- No threatened flora or fauna species listed under the EPBC Act or NC Act have been recorded from the Project site.
- One additional threatened fauna species, the koala, was considered as a potential occurrence, although impacts on habitats have been minimised by avoiding all remnant and high value regrowth vegetation.
- The site does not support an important population of any migratory fauna species.
- Overall the quality of the Project area was determined to be highly degraded, including riparian corridors with remnant vegetation.

The Project and subsequent disturbance footprint have been designed to ensure that impacts to environmental values are avoided and buffers have been applied to patches of vegetation and fauna habitat which are of higher ecological value.

Furthermore, the proponent has committed to allowing natural regeneration of buffer areas to help improve the connectivity of biodiversity values identified across the Project area. A key priority has been providing suitably sized corridors to facilitate fauna movement across the site, providing connectivity between areas of higher quality habitat outside of the Project Area.

The Project meets the purpose of the biodiversity overlay code by protecting MNES and MSES, maintaining and enhancing ecological connectivity, and protecting waterways and riparian areas.

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Appendix A

Protected Matters Search Tool

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 01-Feb-2024

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	57
Listed Migratory Species:	19

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	24
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	6
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	1
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.
Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In buffer area only
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In buffer area only
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area	In buffer area only
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area
Weeping Myall Woodlands	Endangered	Community may occur within area	In buffer area only

Listed Threatened Species [Resource Information]

Status of Conservation Dependent and Extinct are not MNES under the EPBC Act.
Number is the current name ID.

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limosa lapponica baueri Nunivak Bar-tailed Godwit, Western Alaskan Bar-tailed Godwit [86380]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Neochmia ruficauda ruficauda Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FROG			
Taudactylus pleione Kroombit Tinker Frog, Pleione's Torrent Frog [1889]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat may occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour may occur within area	In feature area
Xeromys myoides			
Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
PLANT			
Apatophyllum olsenii			
[7718]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Arthraxon hispidus			
Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bertya opponens			
[13792]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Bosistoa transversa			
Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bulbophyllum globuliforme			
Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cossinia australiana Cossinia [3066]	Endangered	Species or species habitat likely to occur within area	In feature area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat known to occur within area	In feature area
Cycas megacarpa [55794]	Endangered	Species or species habitat known to occur within area	In feature area
Cycas ophiolitica [55797]	Endangered	Species or species habitat may occur within area	In buffer area only
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Eucalyptus raveretiana Black Ironbox [16344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea venosa [24040]	Vulnerable	Species or species habitat known to occur within area	In feature area
Germainia capitata [14069]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Graptophyllum ilicifolium Holly-leaved Graptophyllum, Mt Blackwood Holly [8601]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Macadamia integrifolia Macadamia Nut, Queensland Nut Tree, Smooth-shelled Macadamia, Bush Nut, Nut Oak [7326]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macadamia jansenii Bulberin Nut, Bulburin Nut Tree [55597]	Endangered	Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Medicosma elliptica [12192]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat may occur within area	In buffer area only
Polianthion minutiflorum [82772]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhodamnia angustifolia Narrow-leaved Malletwood [84816]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sophora fraseri [8836]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area
SHARK			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Sphyrna lewini			
Scalloped Hammerhead [85267]	Conservation Dependent	Species or species habitat likely to occur within area	In buffer area only

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
Crocodylus porosus			
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
Cuculus optatus			
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus			
White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis			
Black-faced Monarch [609]		Species or species habitat known to occur within area	In feature area
Myiagra cyanoleuca			
Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus			
Spectacled Monarch [83946]		Species or species habitat known to occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat likely to occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris canutus Red Knot, Knot [855]	Vulnerable	Species or species habitat may occur within area overfly marine area	In buffer area only
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat likely to occur within area	In buffer area only
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhipidura rufifrons			
Rufous Fantail [592]		Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus			
Spectacled Monarch [83946]		Species or species habitat known to occur within area overfly marine area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Reptile			
Crocodylus porosus			
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area

Extra Information

State and Territory Reserves			[Resource Information]
Protected Area Name	Reserve Type	State	Buffer Status
Bulburin	National Park	QLD	In feature area
Castle Tower	National Park	QLD	In buffer area only
Colosseum Inlet	Fish Habitat Area (A)	QLD	In buffer area only
Eurimbula	National Park	QLD	In buffer area only
Mount Colosseum	National Park	QLD	In buffer area only
Woodside	Nature Refuge	QLD	In buffer area only

Nationally Important Wetlands		[Resource Information]
Wetland Name	State	Buffer Status
Granite Creek	QLD	In buffer area only

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
Not controlled action				
Expansion of Orica's existing Ammonium Nitrate production facilities	2004/1869	Not Controlled Action	Completed	In buffer area only
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Biologically Important Areas			
Scientific Name	Behaviour	Presence	Buffer Status
Seabirds			
Anous minutus			
Black Noddy [824]	Foraging	Likely to occur	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix B

WildNet Online Search Results

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: Confirmed
Date: Since 1980
Latitude: -24.3522
Longitude: 151.5036
Distance: 20
Email: matthew.whitehouse@attexo.com.au
Date submitted: Friday 26 May 2023 11:58:18
Date extracted: Friday 26 May 2023 12:00:03

The number of records retrieved = 29

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Limnodynastidae	*Adelotus brevis*	tusked frog		V		16
animals	birds	Apodidae	*Hirundapus caudacutus*	white-throated needletail		V	V	3
animals	birds	Cacatuidae	*Calyptorhynchus lathami*	glossy black-cockatoo		V		1
animals	birds	Cacatuidae	*Calyptorhynchus lathami erebus*	glossy black-cockatoo (northern)		V		7
animals	birds	Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)		V	V	1
animals	birds	Podargidae	*Podargus ocellatus plumiferus*	plumed frogmouth		V		2
animals	birds	Procellariidae	*Macronectes giganteus*	southern giant-petrel		E	E	1
animals	birds	Strigidae	*Ninox strenua*	powerful owl		V		1
animals	mammals	Dasyuridae	*Antechinus argentus*	silver-headed antechinus		E	E	4
animals	mammals	Petauridae	*Petaurus australis australis*	yellow-bellied glider (southern subspecies)		V	V	6
animals	mammals	Pseudocheiridae	*Petauroides armillatus*	central greater glider		E	E	4
animals	reptiles	Carphodactylidae	*Phyllurus caudiannulatus*	ringed thin-tailed gecko		V		10
plants	land plants	Acanthaceae	*Graptophyllum ilicifolium*	holly-leaved graptophyllum		V	V	1/1
plants	land plants	Asteraceae	*Cassinia collina*			V		2/2
plants	land plants	Campanulaceae	*Lobelia membranacea*			NT		2/2
plants	land plants	Combretaceae	*Dansiea elliptica*			NT		1/1
plants	land plants	Combretaceae	*Macropteranthes leiocaulis*			NT		3/3
plants	land plants	Cycadaceae	*Cycas megacarpa*			E	E	16/14
plants	land plants	Euphorbiaceae	*Fontainea venosa*			V	V	1/1
plants	land plants	Hernandiaceae	*Hernandia bivalvis*	cudgerie		NT		5/2
plants	land plants	Myrtaceae	*Eucalyptus decolor*			NT		9/8
plants	land plants	Myrtaceae	*Rhodamnia dumicola*	rib-fruited malletwood		E		2/2
plants	land plants	Myrtaceae	*Rhodamnia glabrescens*			NT		11/10
plants	land plants	Myrtaceae	*Xanthostemon oppositifolius*	southern penda		V	V	1/1
plants	land plants	Phyllanthaceae	*Phyllanthus sp. (Bulburin P.I.Forster+ PIF16034)*			V		5/5
plants	land plants	Poaceae	*Germainia capitata*			V	V	1/1
plants	land plants	Rutaceae	*Medicosma elliptica*			V	V	5/5
plants	land plants	Sapindaceae	*Arytera dictyoneura*			NT		14/12
plants	land plants	Sapindaceae	*Cupaniopsis shirleyana*	wedge-leaf tuckeroo		V	V	4/3

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Introduced
Queensland status: All
Records: All
Date: Since 1980
Latitude: -24.3522
Longitude: 151.5036
Distance: 20
Email: leah.knight@attexo.com.au
Date submitted: Tuesday 20 Feb 2024 15:59:20
Date extracted: Tuesday 20 Feb 2024 16:00:11

The number of records retrieved = 126

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	*Rhinella marina*	cane toad	Y			37
animals	birds	Columbidae	*Spilopelia chinensis*	spotted dove	Y			1
animals	insects	Nymphalidae	*Danaus plexippus*	monarch	Y			2
animals	mammals	Bovidae	*Bos taurus*	European cattle	Y			2
animals	mammals	Canidae	*Canis familiaris*	dog	Y			2
animals	mammals	Canidae	*Vulpes vulpes*	red fox	Y			1
animals	mammals	Felidae	*Felis catus*	cat	Y			1
animals	mammals	Leporidae	*Lepus europaeus*	European brown hare	Y			4
animals	mammals	Leporidae	*Oryctolagus cuniculus*	rabbit	Y			3
animals	mammals	Muridae	*Mus musculus*	house mouse	Y			1
animals	mammals	Suidae	*Sus scrofa*	pig	Y			3
plants	land plants	Acanthaceae	*Hygrophila polysperma*		Y			1/1
plants	land plants	Acanthaceae	*Hypoestes phyllostachya*		Y			1/1
plants	land plants	Acanthaceae	*Thunbergia alata*	black-eyed Susan	Y			2/2
plants	land plants	Acanthaceae	*Thunbergia grandiflora*	sky flower	Y			1/1
plants	land plants	Amaranthaceae	*Alternanthera philoxeroides*	alligator weed	Y			2/2
plants	land plants	Amaranthaceae	*Alternanthera pungens*	khaki weed	Y			2/2
plants	land plants	Amaranthaceae	*Amaranthus spinosus*	needle burr	Y			1/1
plants	land plants	Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	Y			1/1
plants	land plants	Amaranthaceae	*Guilleminea densa*	small matweed	Y			1/1
plants	land plants	Apiaceae	*Cyclospermum leptophyllum*		Y			2/2
plants	land plants	Apocynaceae	*Araujia sericifera*	white moth vine	Y			1/1
plants	land plants	Apocynaceae	*Asclepias curassavica*	red-head cottonbush	Y			2/2
plants	land plants	Apocynaceae	*Catharanthus roseus*	pink periwinkle	Y			1/1
plants	land plants	Apocynaceae	*Gomphocarpus fruticosus*	narrow-leaved cotton bush	Y			1/1
plants	land plants	Apocynaceae	*Gomphocarpus physocarpus*	balloon cottonbush	Y			3/3
plants	land plants	Asparagaceae	*Asparagus plumosus*	feathered asparagus fern	Y			1
plants	land plants	Asteraceae	*Acanthospermum hispidum*	star burr	Y			1/1
plants	land plants	Asteraceae	*Ageratum conyzoides*	billygoat weed	Y			1/1
plants	land plants	Asteraceae	*Ageratum conyzoides subsp. conyzoides*		Y			2/2
plants	land plants	Asteraceae	*Ageratum houstonianum*	blue billygoat weed	Y			3/3
plants	land plants	Asteraceae	*Baccharis halimifolia*	groundsel bush	Y			2/2
plants	land plants	Asteraceae	*Bidens biternata*		Y			1/1
plants	land plants	Asteraceae	*Bidens pilosa*		Y			2/1
plants	land plants	Asteraceae	*Calyptocarpus vialis*	creeping cinderella weed	Y			1/1
plants	land plants	Asteraceae	*Cirsium vulgare*	spear thistle	Y			2/2
plants	land plants	Asteraceae	*Crassocephalum crepidioides*	thickhead	Y			2/1
plants	land plants	Asteraceae	*Emilia sonchifolia var. javanica*		Y			1/1
plants	land plants	Asteraceae	*Erigeron bonariensis*		Y			1/1
plants	land plants	Asteraceae	*Erigeron canadensis*		Y			1/1
plants	land plants	Asteraceae	*Erigeron sumatrensis*		Y			1/1
plants	land plants	Asteraceae	*Gamochaeta antillana*		Y			1/1
plants	land plants	Asteraceae	*Praxelis clematidea*		Y			3/3
plants	land plants	Asteraceae	*Sonchus oleraceus*	common sowthistle	Y			1/1
plants	land plants	Asteraceae	*Synedrellopsis grisebachii*		Y			1/1
plants	land plants	Asteraceae	*Tagetes minuta*	stinking roger	Y			2/2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Asteraceae	*Tridax procumbens*	tridax daisy	Y			1/1
plants	land plants	Asteraceae	*Verbesina encelioides var. encelioides*		Y			1/1
plants	land plants	Asteraceae	*Xanthium spinosum*	Bathurst burr	Y			1/1
plants	land plants	Asteraceae	*Zinnia peruviana*	wild zinnia	Y			1/1
plants	land plants	Basellaceae	*Anredera cordifolia*	Madeira vine	Y			1/1
plants	land plants	Bignoniaceae	*Dolichandra unguis-cati*	cat's claw creeper	Y			3/3
plants	land plants	Boraginaceae	*Echium plantagineum*	Paterson's curse	Y			1/1
plants	land plants	Boraginaceae	*Heliotropium amplexicaule*	blue heliotrope	Y			3/3
plants	land plants	Brassicaceae	*Lepidium virginicum*	Virginian peppercress	Y			1/1
plants	land plants	Cannabaceae	*Celtis sinensis*	Chinese elm	Y			1/1
plants	land plants	Caryophyllaceae	*Stellaria media*	chickweed	Y			1/1
plants	land plants	Chenopodiaceae	*Dysphania ambrosioides*		Y			2/2
plants	land plants	Cyperaceae	*Cyperus aggregatus*		Y			1/1
plants	land plants	Cyperaceae	*Cyperus brevifolius*	Mullumbimby couch	Y			1/1
plants	land plants	Euphorbiaceae	*Euphorbia cyathophora*	dwarf poinsettia	Y			1/1
plants	land plants	Euphorbiaceae	*Euphorbia hirta*		Y			1/1
plants	land plants	Euphorbiaceae	*Euphorbia hyssopifolia*		Y			1/1
plants	land plants	Euphorbiaceae	*Ricinus communis*	castor oil bush	Y			1/1
plants	land plants	Hyacinthaceae	*Ledebouria petiolata*		Y			1/1
plants	land plants	Iridaceae	*Iris domestica*		Y			1/1
plants	land plants	Iridaceae	*Sisyrinchium rosulatum*		Y			1/1
plants	land plants	Lamiaceae	*Mesosphaerum pectinatum*		Y			1/1
plants	land plants	Lamiaceae	*Salvia coccinea*	red salvia	Y			1/1
plants	land plants	Lamiaceae	*Salvia misella*		Y			1/1
plants	land plants	Lauraceae	*Cinnamomum camphora*	camphor laurel	Y			1/1
plants	land plants	Leguminosae	*Abrus precatorius subsp. africanus*		Y			1/1
plants	land plants	Leguminosae	*Alysicarpus bupleurifolius*	sweet alys	Y			2/2
plants	land plants	Leguminosae	*Chamaecrista rotundifolia var. rotundifolia*		Y			1/1
plants	land plants	Leguminosae	*Crotalaria pallida var. obovata*		Y			4/4
plants	land plants	Leguminosae	*Crotalaria spectabilis*	showy rattlepod	Y			1/1
plants	land plants	Leguminosae	*Desmodium triflorum*		Y			1/1
plants	land plants	Leguminosae	*Macroptilium atropurpureum*	siratro	Y			2/2
plants	land plants	Leguminosae	*Macroptilium lathyroides*		Y			1/1
plants	land plants	Leguminosae	*Senna occidentalis*	coffee senna	Y			1/1
plants	land plants	Leguminosae	*Senna septemtrionalis*		Y			2/2
plants	land plants	Malvaceae	*Malvastrum coromandelianum subsp. coromandelianum*		Y			1/1
plants	land plants	Malvaceae	*Sida cordifolia*		Y			1/1
plants	land plants	Malvaceae	*Sida rhombifolia*		Y			1/1
plants	land plants	Nymphaeaceae	*Nymphaea caerulea*		Y			1/1
plants	land plants	Papaveraceae	*Argemone ochroleuca subsp. ochroleuca*	Mexican poppy	Y			1/1
plants	land plants	Passifloraceae	*Passiflora suberosa*	corky passion flower	Y			3
plants	land plants	Passifloraceae	*Passiflora subpeltata*	white passion flower	Y			2/2
plants	land plants	Petiveriaceae	*Rivina humilis*		Y			1/1
plants	land plants	Plantaginaceae	*Mecardonia procumbens*		Y			1/1
plants	land plants	Poaceae	*Axonopus compressus*		Y			2/2
plants	land plants	Poaceae	*Cenchrus ciliaris*		Y			1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Poaceae	*Chloris gayana*	rhodes grass	Y			1/1
plants	land plants	Poaceae	*Chloris virgata*	feathertop rhodes grass	Y			1/1
plants	land plants	Poaceae	*Cynodon dactylon var. dactylon*		Y			1/1
plants	land plants	Poaceae	*Cynodon nlemfuensis var. nlemfuensis*		Y			1/1
plants	land plants	Poaceae	*Digitaria didactyla*	Queensland blue couch	Y			1/1
plants	land plants	Poaceae	*Echinochloa crus-galli*	barnyard grass	Y			1/1
plants	land plants	Poaceae	*Eragrostis curvula*		Y			3/3
plants	land plants	Poaceae	*Eragrostis tenuifolia*	elastic grass	Y			1/1
plants	land plants	Poaceae	*Hyparrhenia rufa subsp. rufa*		Y			5/3
plants	land plants	Poaceae	*Melinis minutiflora*	molasses grass	Y			1/1
plants	land plants	Poaceae	*Paspalum dilatatum*	paspalum	Y			1/1
plants	land plants	Poaceae	*Paspalum vaginatum*	saltwater couch	Y			2/2
plants	land plants	Poaceae	*Setaria sphacelata*		Y			1/1
plants	land plants	Poaceae	*Sporobolus coromandelianus*		Y			1/1
plants	land plants	Poaceae	*Sporobolus fertilis*	giant Parramatta grass	Y			1/1
plants	land plants	Poaceae	*Sporobolus jacquemontii*		Y			2/2
plants	land plants	Poaceae	*Sporobolus pyramidalis*		Y			3/3
plants	land plants	Poaceae	*Urochloa mosambicensis*	sabi grass	Y			3/3
plants	land plants	Poaceae	*Urochloa subquadripara*		Y			1/1
plants	land plants	Rubiaceae	*Mitracarpus hirtus*		Y			3/3
plants	land plants	Rubiaceae	*Oldenlandia corymbosa var. caespitosa*		Y			2/2
plants	land plants	Rubiaceae	*Oldenlandia corymbosa var. corymbosa*		Y			1/1
plants	land plants	Rubiaceae	*Spermacoce remota*		Y			1/1
plants	land plants	Rutaceae	*Murraya paniculata 'Exotica'*		Y			4
plants	land plants	Sapindaceae	*Cardiospermum halicacabum var. halicacabum*		Y			1/1
plants	land plants	Scrophulariaceae	*Verbascum virgatum*	twiggy mullein	Y			1/1
plants	land plants	Solanaceae	*Capsicum frutescens*		Y			1/1
plants	land plants	Solanaceae	*Physalis angulata*		Y			2/2
plants	land plants	Solanaceae	*Solanum lycopersicum var. cerasiforme*		Y			1/1
plants	land plants	Solanaceae	*Solanum seaforthianum*	Brazilian nightshade	Y			3
plants	land plants	Solanaceae	*Solanum torvum*	devil's fig	Y			4/4
plants	land plants	Verbenaceae	*Lantana camara*	lantana	Y			8/1
plants	land plants	Verbenaceae	*Stachytarpheta jamaicensis*	Jamaica snakeweed	Y			1/1
plants	land plants	Verbenaceae	*Verbena incompta*		Y			2/2

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

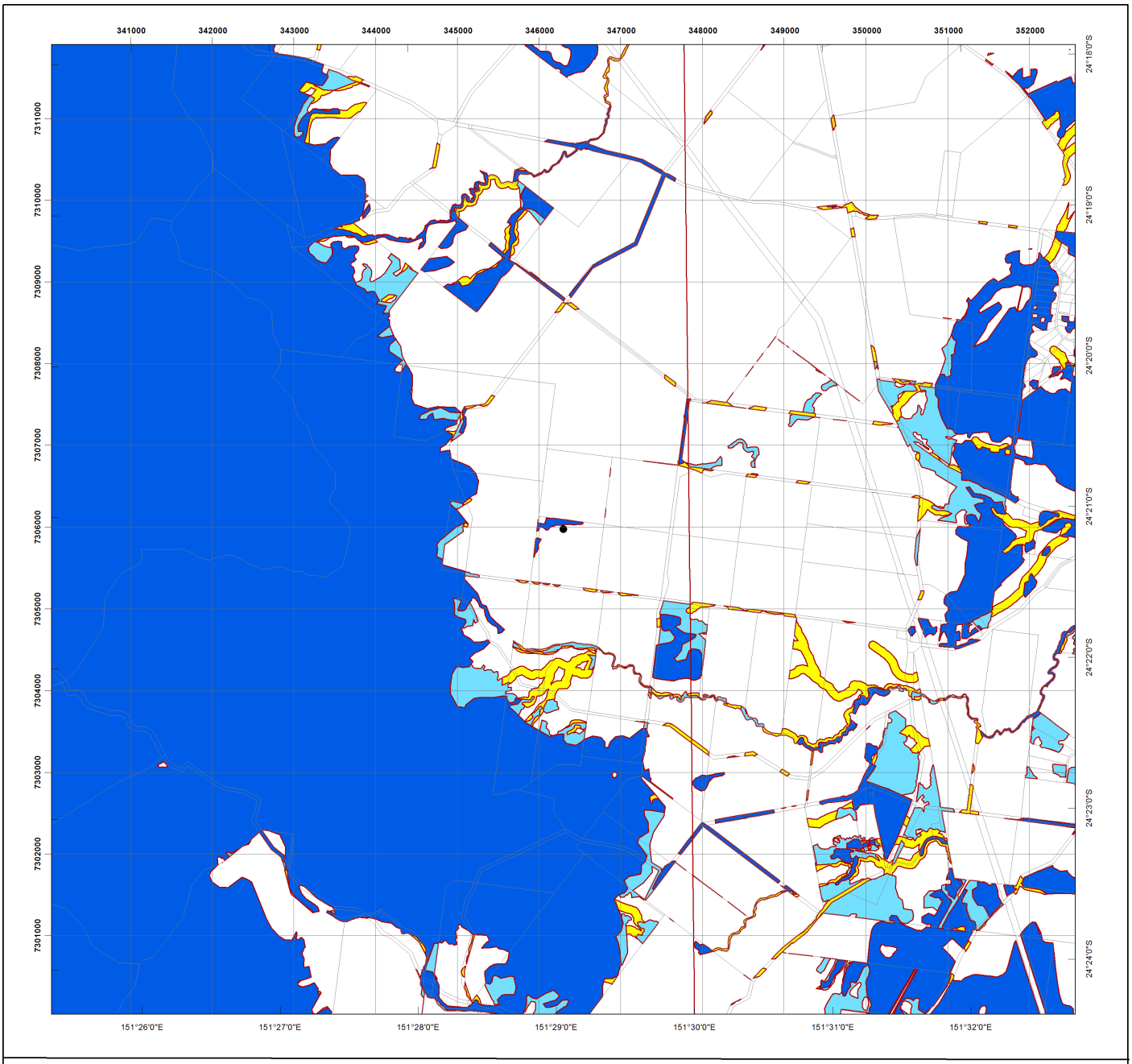
Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix C

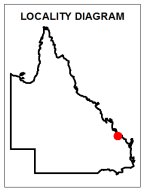
DoR Regulated Vegetation Mapping



Regulated Vegetation Management Map

Legend

- Coordinates
- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Other land parcel boundaries



N

0 675 1,350 2,025 2,700 3,375 m

This product is projected into:
GDA 1994 MGA Zone 56

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

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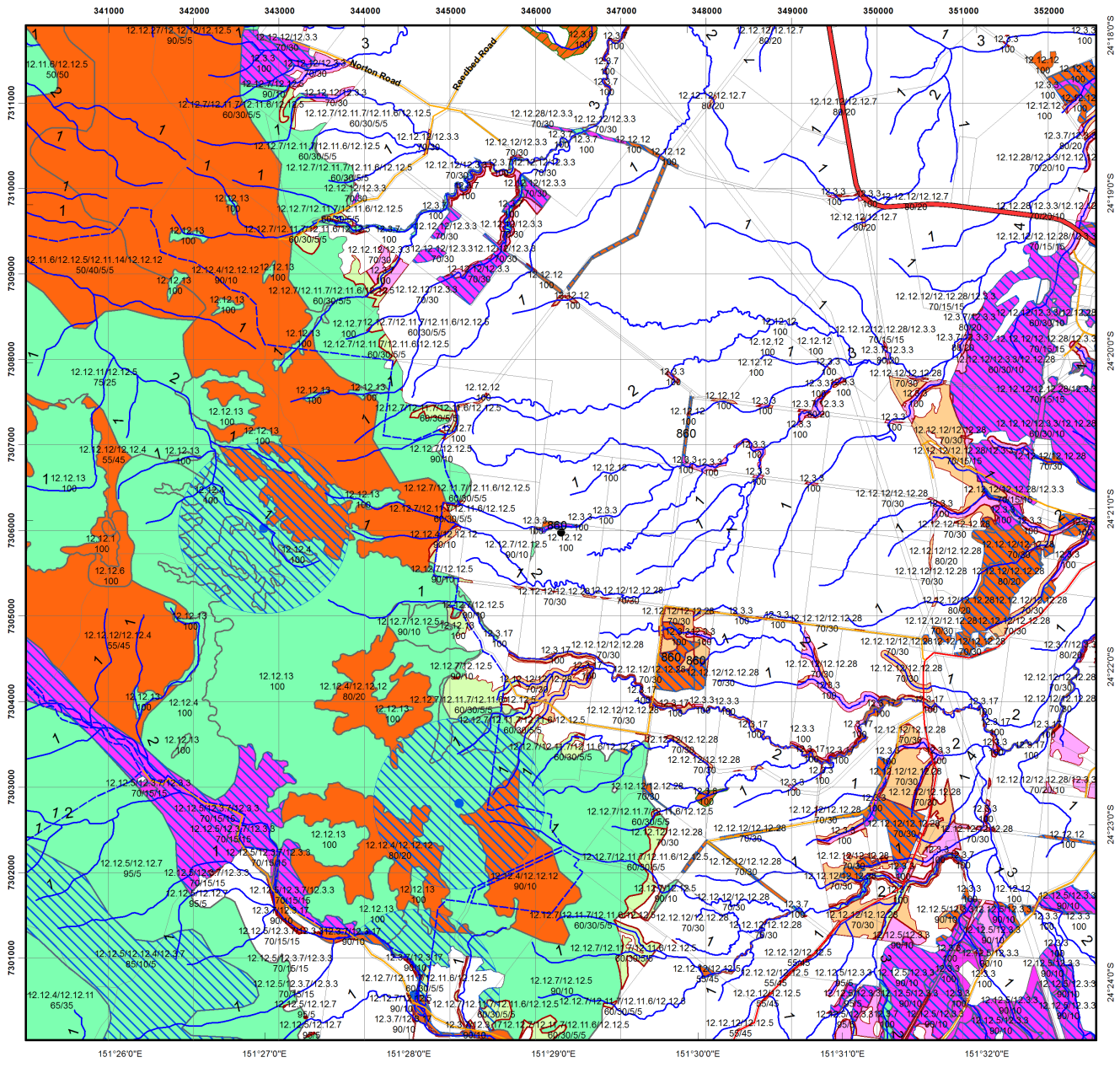


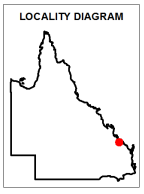
Vegetation Management Supporting Map

Legend

- Coordinates
- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map (Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries

Queensland Government

LOCALITY DIAGRAM



N

0 480 960 1,440 1,920 2,400 m

This product is projected into:
GDA 1994 MGA Zone 56

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

Vegetation Management Act 1999 - Extract from the essential habitat database

Essential habitat is required for assessment under the:

- State Development Assessment Provisions - State Code 16: Native vegetation clearing which sets out the matters of interest to the state for development assessment under the *Planning Act 2016*; and
- Accepted development vegetation clearing codes made under the *Vegetation Management Act 1999*

Essential habitat for one or more of the following species is found on and within 1.1 km of the identified subject lot/s on the accompanying essential habitat map.

This report identifies essential habitat in Category A, B and Category C areas.

The numeric labels on the essential habitat map can be cross referenced with the database below to determine which essential habitat factors might exist for a particular species.

Essential habitat is compiled from a combination of species habitat models and buffered species records.

The Department of Resources website (http://www.resources.qld.gov.au) has more information on how the layer is applied under the State Development Assessment Provisions - State Code 16: Native vegetation clearing and the *Vegetation Management Act 1999*.

Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated.

Essential habitat, for protected wildlife, means a category A area, a category B area or category C area shown on the regulated vegetation management map-

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or

2) in which the protected wildlife, at any stage of its life cycle, is located.

Protected wildlife includes critically endangered, endangered, vulnerable or near-threatened native wildlife prescribed under the *Nature Conservation Act 1992*.

Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
860	Phascolarctos cinereus	koala	E	Open forests and woodlands containing Eucalyptus, Corymbia, Lophostemon or Melaleuca trees having a trunk of a diameter of more than 10cm at 1.3m above the ground. Tree species used for food and habitat varies across the state and can include: Corymbia citriodora, Corymbia henryi, Corymbia intermedia, Eucalyptus acmenoides, Eucalyptus bancroftii, Eucalyptus biturbinata, Eucalyptus blakelyi, Eucalyptus brownii, Eucalyptus camaldulensis, Eucalyptus carnea, Eucalyptus chloroclada, Eucalyptus coolabah, Eucalyptus crebra, Eucalyptus dealbata, Eucalyptus drepanophylla, Eucalyptus dunnii, Eucalyptus eugenioides, Eucalyptus exserta, Eucalyptus fibrosa, Eucalyptus grandis, Eucalyptus helidonica, Eucalyptus latisinensis, Eucalyptus longirostrata, Eucalyptus major, Eucalyptus melanophloia, Eucalyptus melliodora, Eucalyptus microcarpa, Eucalyptus microcorys, Eucalyptus microtheca, Eucalyptus moluccana, Eucalyptus montivaga, Eucalyptus orgadophila, Eucalyptus papuana, Eucalyptus pilularis, Eucalyptus platyphylla, Eucalyptus populnea, Eucalyptus portuensis, Eucalyptus propinqua, Eucalyptus racemosa, Eucalyptus resinifera, Eucalyptus robusta, Eucalyptus saligna, Eucalyptus seeana, Eucalyptus siderophloia, Eucalyptus sideroxylon, Eucalyptus tereticornis, Eucalyptus thozetiana, Eucalyptus tindaliae, Eucalyptus umbra, Lophostemon confertus, Melaleuca leucadendra, Melaleuca quinquenervia.	Sea level to 1000m.	None	Riparian areas, plains and hill/escarpment slopes.

Label	Regional Ecosystem (mandatory unless otherwise specified)
860	4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.6, 4.3.8, 4.3.10, 4.3.11, 4.5.3, 4.5.5, 4.5.6, 4.5.8, 4.5.9, 4.7.1, 4.7.7, 4.7.8, 4.9.6, 4.9.10, 4.9.12, 4.9.17, 6.3.1, 6.3.2, 6.3.3, 6.3.4, 6.3.5, 6.3.7, 6.3.8, 6.3.9, 6.3.11, 6.3.12, 6.3.17, 6.3.18, 6.3.22, 6.3.24, 6.3.25, 6.4.1, 6.4.2, 6.4.3, 6.4.4, 6.5.1, 6.5.2, 6.5.3, 6.5.5, 6.5.6, 6.5.7, 6.5.8, 6.5.9, 6.5.10, 6.5.11, 6.5.13, 6.5.14, 6.5.15, 6.5.16, 6.5.17, 6.5.18, 6.5.19, 6.6.2, 6.7.1, 6.7.2, 6.7.5, 6.7.6, 6.7.7, 6.7.9, 6.7.11, 6.7.12, 6.7.13, 6.7.14, 6.7.17, 6.9.3, 7.2.3, 7.2.4, 7.2.7, 7.2.11, 7.3.7, 7.3.8, 7.3.9, 7.3.12, 7.3.13, 7.3.14, 7.3.16, 7.3.19, 7.3.20, 7.3.21, 7.3.25, 7.3.26, 7.3.39, 7.3.40, 7.3.42, 7.3.43, 7.3.44, 7.3.45, 7.3.47, 7.3.48, 7.3.50, 7.5.1, 7.5.2, 7.5.3, 7.5.4, 7.8.7, 7.8.8, 7.8.10, 7.8.15, 7.8.16, 7.8.17, 7.8.18, 7.8.19, 7.11.5, 7.11.6, 7.11.13, 7.11.14, 7.11.16, 7.11.18, 7.11.19, 7.11.20, 7.11.21, 7.11.31, 7.11.32, 7.11.33, 7.11.34, 7.11.35, 7.11.37, 7.11.41, 7.11.42, 7.11.43, 7.11.44, 7.11.45, 7.11.46, 7.11.47, 7.11.48, 7.11.49, 7.11.50, 7.11.51, 7.12.4, 7.12.5, 7.12.17, 7.12.21, 7.12.22, 7.12.23, 7.12.24, 7.12.25, 7.12.26, 7.12.27, 7.12.28, 7.12.29, 7.12.30, 7.12.33, 7.12.34, 7.12.35, 7.12.51, 7.12.52, 7.12.53, 7.12.54, 7.12.55, 7.12.56, 7.12.57, 7.12.58, 7.12.59, 7.12.60, 7.12.61, 7.12.62, 7.12.63, 7.12.65, 7.12.66, 7.12.69, 8.1.5, 8.2.3, 8.2.6, 8.2.7, 8.2.8, 8.2.11, 8.2.12, 8.2.13, 8.2.14, 8.3.1, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.8, 8.3.10, 8.3.11, 8.3.13, 8.5.1, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.5.7, 8.9.1, 8.10.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.11.10, 8.11.12, 8.12.4, 8.12.5, 8.12.6, 8.12.7, 8.12.8, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 8.12.26, 8.12.27, 8.12.29, 8.12.31, 8.12.32, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.10, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.27, 9.4.1, 9.4.2, 9.5.1, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.15, 9.5.16, 9.5.17, 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Appendix D

QLD SPP MSES Mapping and Report

Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Longitude: 151.5036 Latitude: -24.3522 with 2 kilometre radius

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

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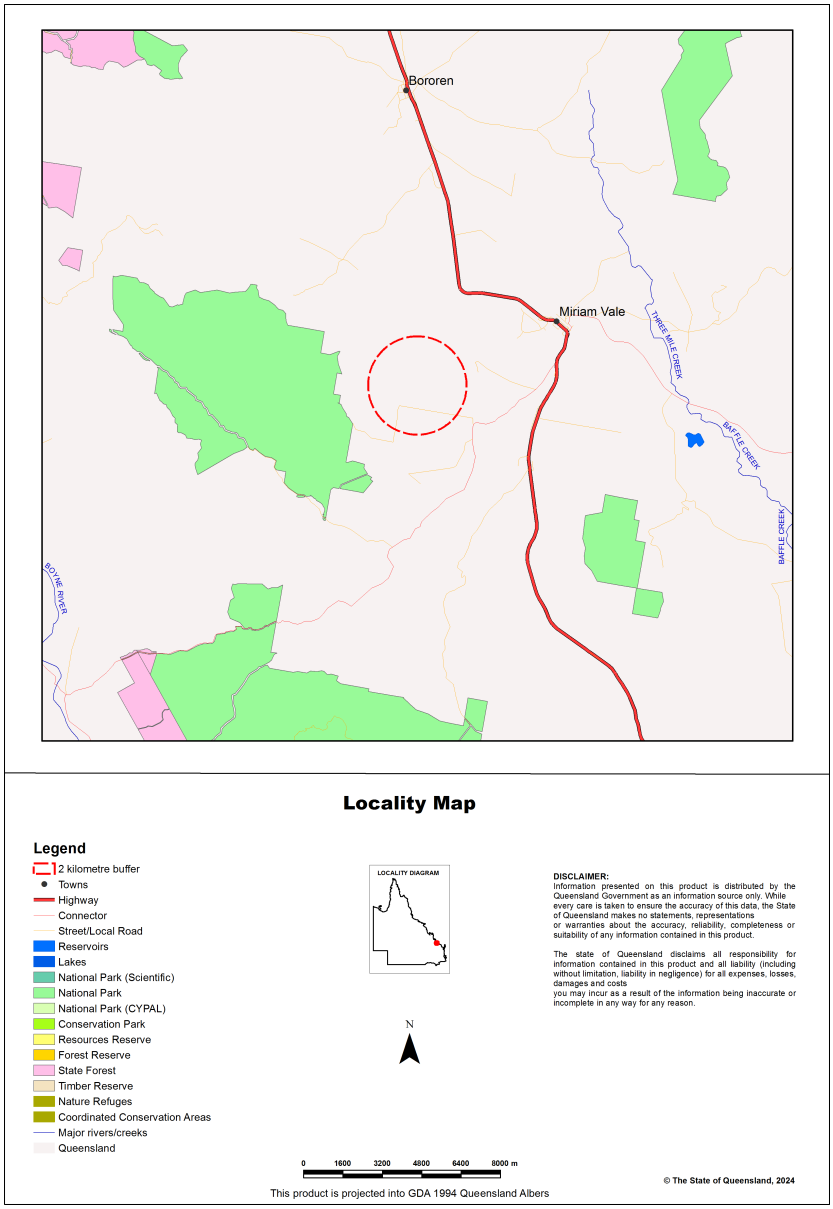
Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Longitude: 151.5036 Latitude: -24.3522

Size (ha)	1,256.55
Local Government(s)	Gladstone Regional
Bioregion(s)	Southeast Queensland
Subregion(s)	Burnett - Curtis Hills And Ranges
Catchment(s)	Baffle



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

    • Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;

    • Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;

    • Category R areas on the regulated vegetation management map;

    • Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;

    • Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;

- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
1c Protected Areas- special wildlife reserves	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	0.0 ha	0.0 %
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	34.8 ha	2.8%
7b Special least concern animals	0.0 ha	0.0 %
7c i Koala habitat area - core (SEQ)	0.0 ha	0.0 %
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
7d Sea turtle nesting areas	0.0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	33.78 ha	2.7%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	29.54 ha	2.4%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	19.47 ha	1.5%
8d Regulated Vegetation - Essential habitat	32.72 ha	2.6%
8e Regulated Vegetation - intersecting a watercourse	31.5 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0.0 ha	0.0 %

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

1c. Protected Areas - special wildlife reserves

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

(no results)

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Not applicable

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Melaleuca irbyana	swamp tea-tree	E	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale coenensis	Cape York rock-wallaby	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None

Species	Common name	NCA status	Presence
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Phascolarctos cinereus	Koala - outside SEQ*	E	Core
Taudactylus pleione	Kroombit tinkerfrog	E	None
Xeromys myoides	Water Mouse	V	None

**For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.*

Threatened (endangered or vulnerable) wildlife species records

(no results)

Special least concern animal species records

(no results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:
https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals, Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/
For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:
https://environment.ehp.qld.gov.au/regional-ecosystems/

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.12.12	O-dom	rem_oc
12.3.3	E-dom	rem_end
12.12.12/12.12.28	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.12.12/12.12.28	O-dom	hvr_oc
12.3.3	E-dom	hvr_end
12.12.12	O-dom	hvr_oc
12.3.7/12.3.3	E-subdom	hvr_end
12.3.17	O-dom	hvr_oc

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Regulated vegetation map category	Map number
R	9249
R	9149

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

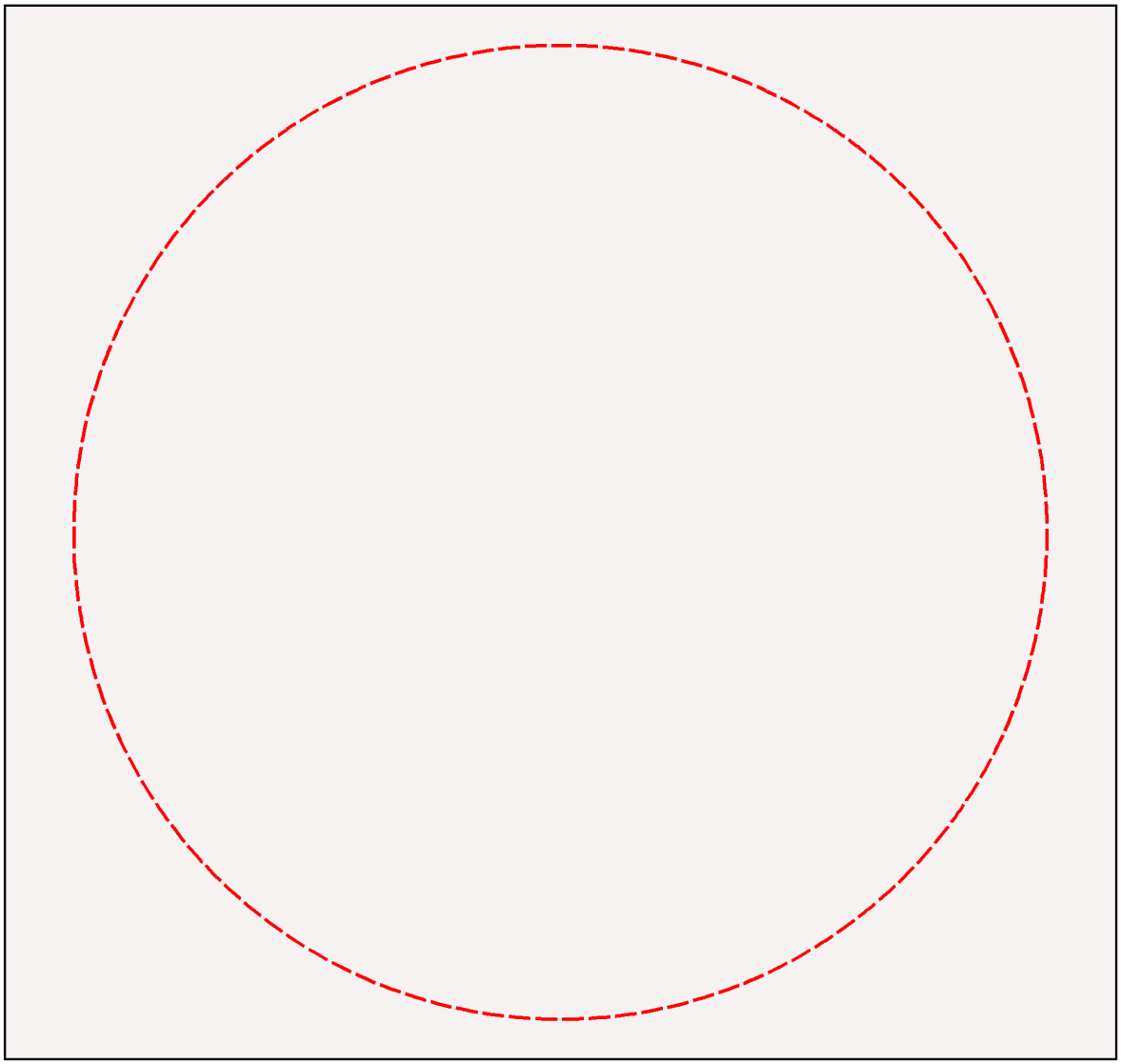
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

(no results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

Map 1 - MSES - State Conservation Areas

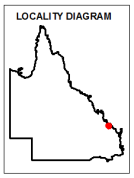


MSES - State Conservation Areas

Area of Interest

- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Protected area (estates, nature refuges, special wildlife reserves)
- Declared fish habitat area (A and B areas)
- Marine park (highly protected)

LOCALITY DIAGRAM

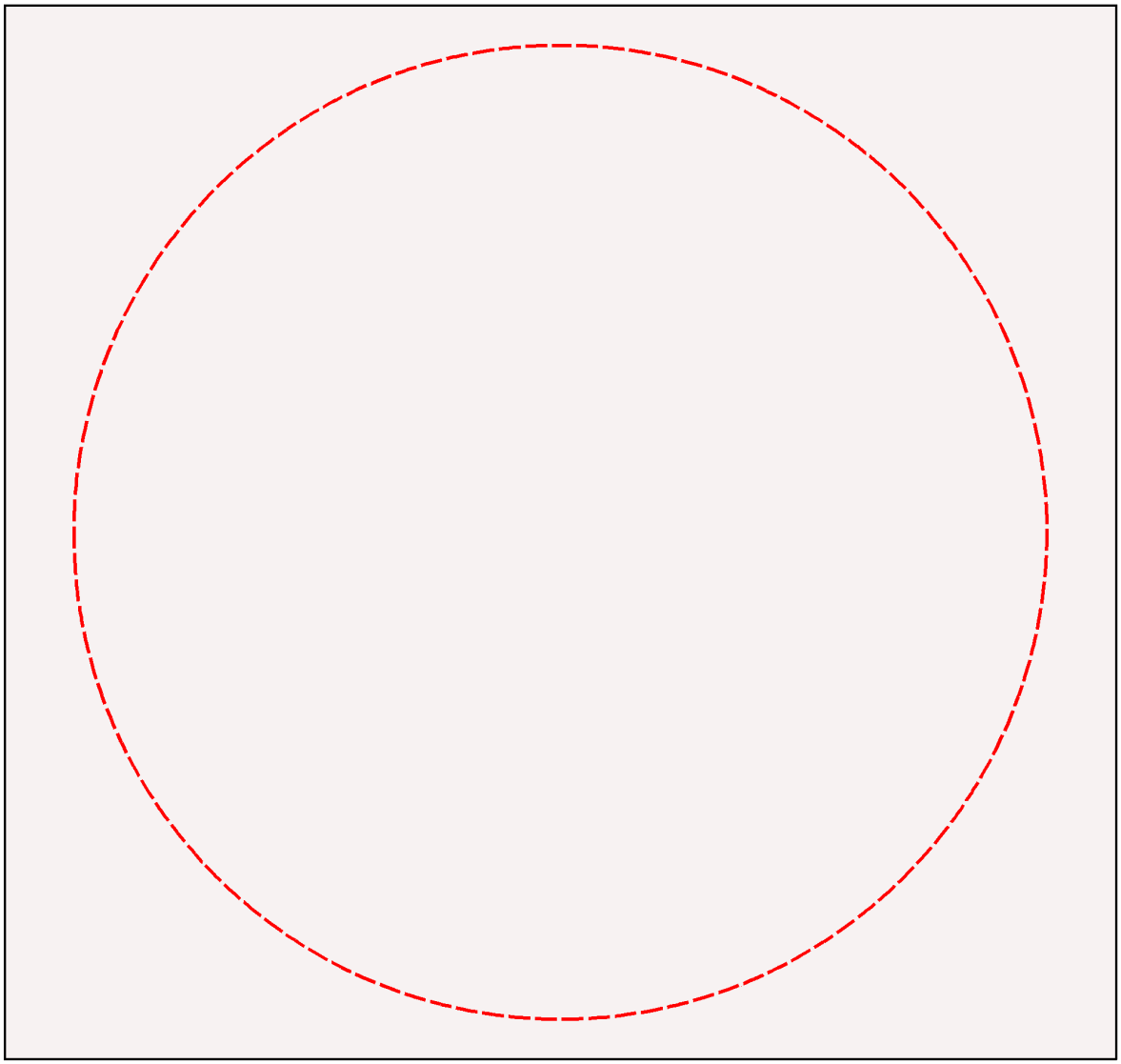


N

0 240 480 720 960 1200 m

This product is projected into GDA 1994 Queensland Albers

Map 2 - MSES - Wetlands and Waterways

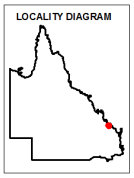


MSES - Wetlands and Waterways

Area of Interest

- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands

LOCALITY DIAGRAM

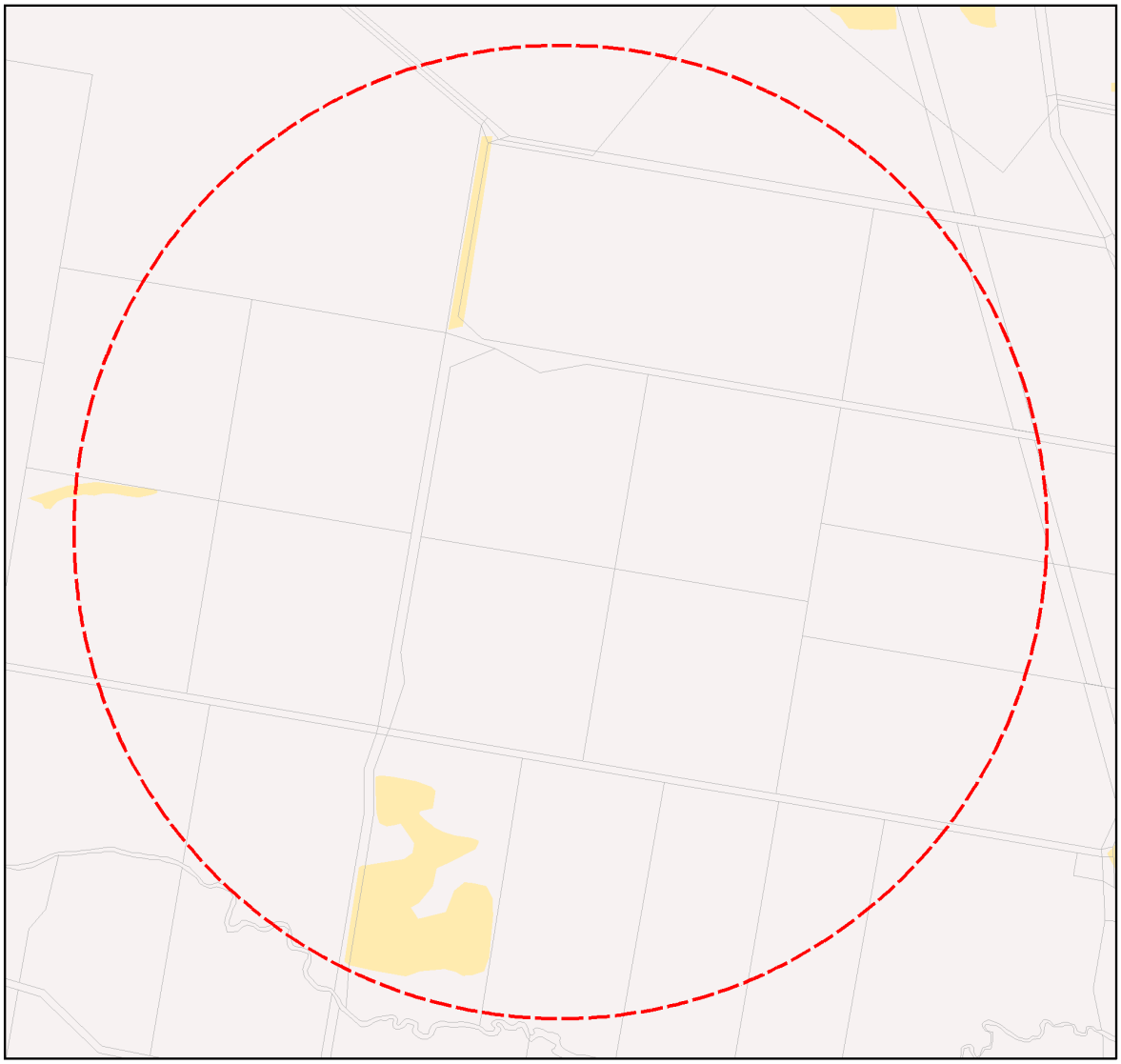


N

0 240 480 720 960 1200 m

This product is projected into GDA 1994 Queensland Albers

Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals

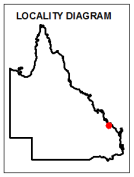


MSES - Species
Threatened (endangered or vulnerable) wildlife and special least concern animals

Area of Interest

- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)

LOCALITY DIAGRAM

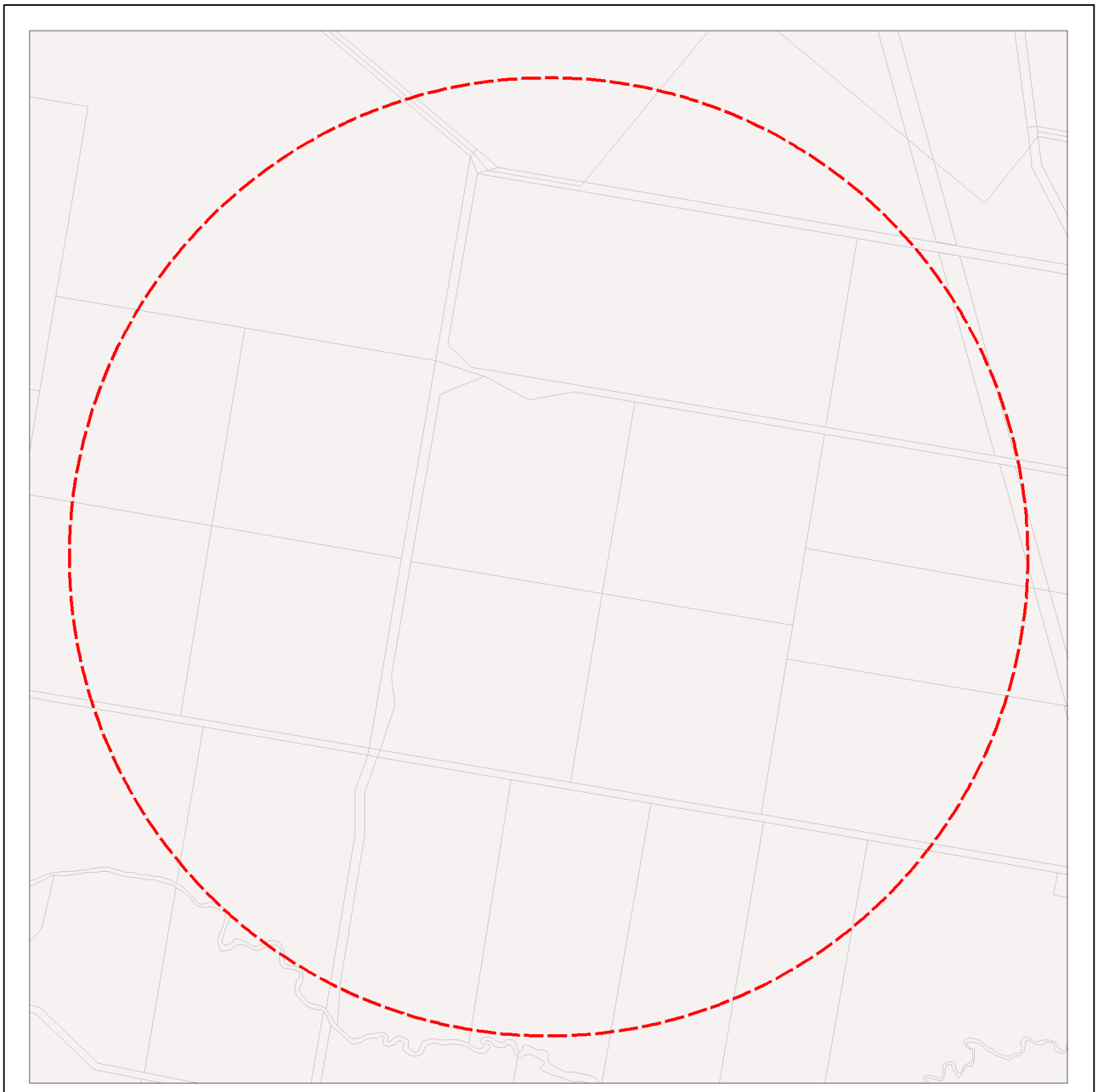


N

0 240 480 720 960 1200 m

This product is projected into GDA 1994 Queensland Albers

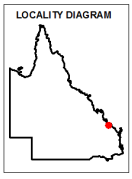
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

Area of Interest
- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)

LOCALITY DIAGRAM



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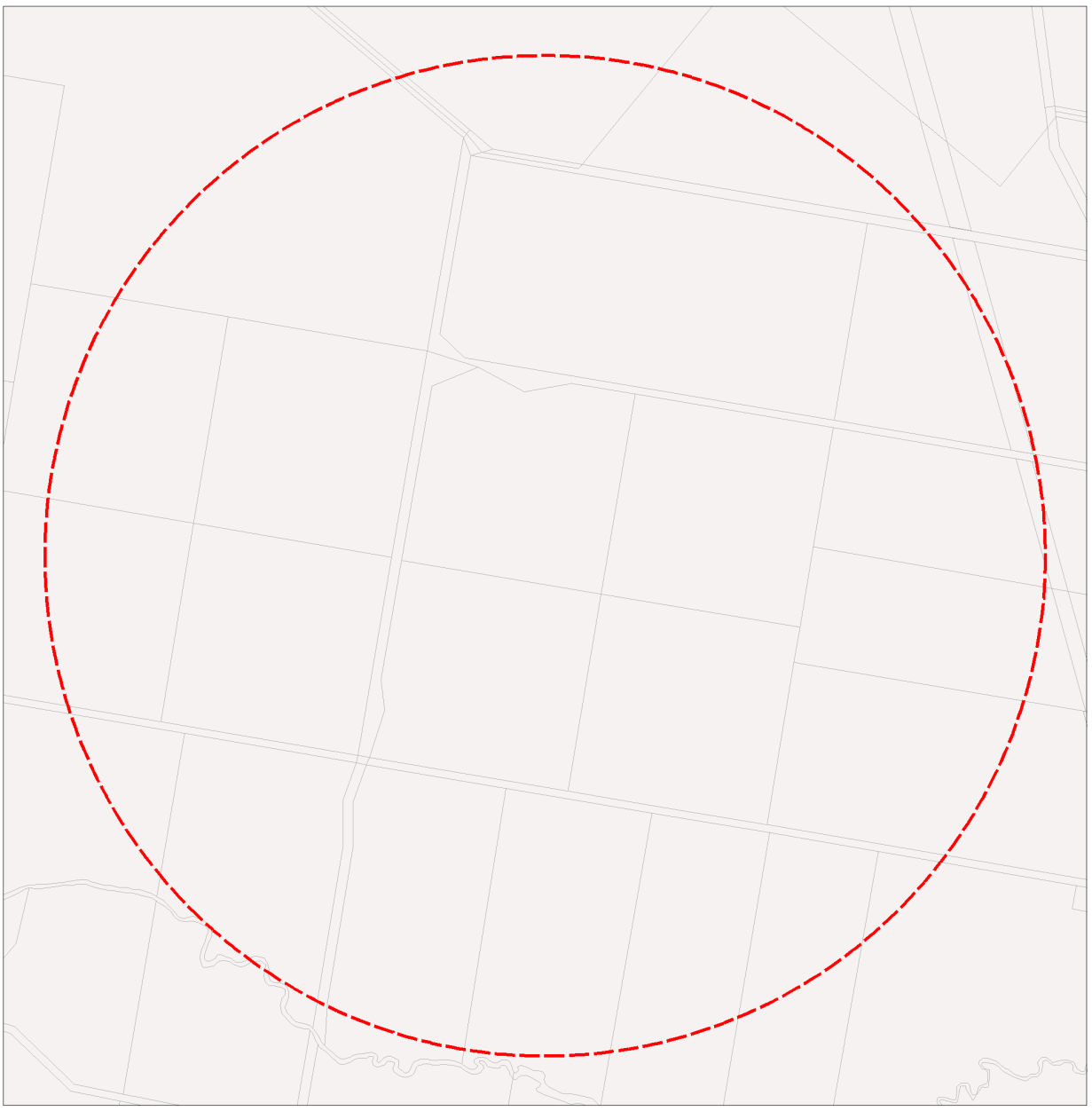
The represented layers for SEQ 'koala habitat area-core' and 'koala habitat area- locally refined' in MSES are sourced directly from the regulatory mapping under the Nature Conservation (Koala) Conservation Plan 2017. Whilst every effort is made to ensure the information remains current, there may be delays between updating versions. Please refer to the original mapping for the most recent version. See https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping

The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

0 225 450 675 900 1,125 m

This product is projected into GDA 1994 Queensland Albers

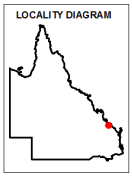
Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

Area of Interest
- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)

LOCALITY DIAGRAM



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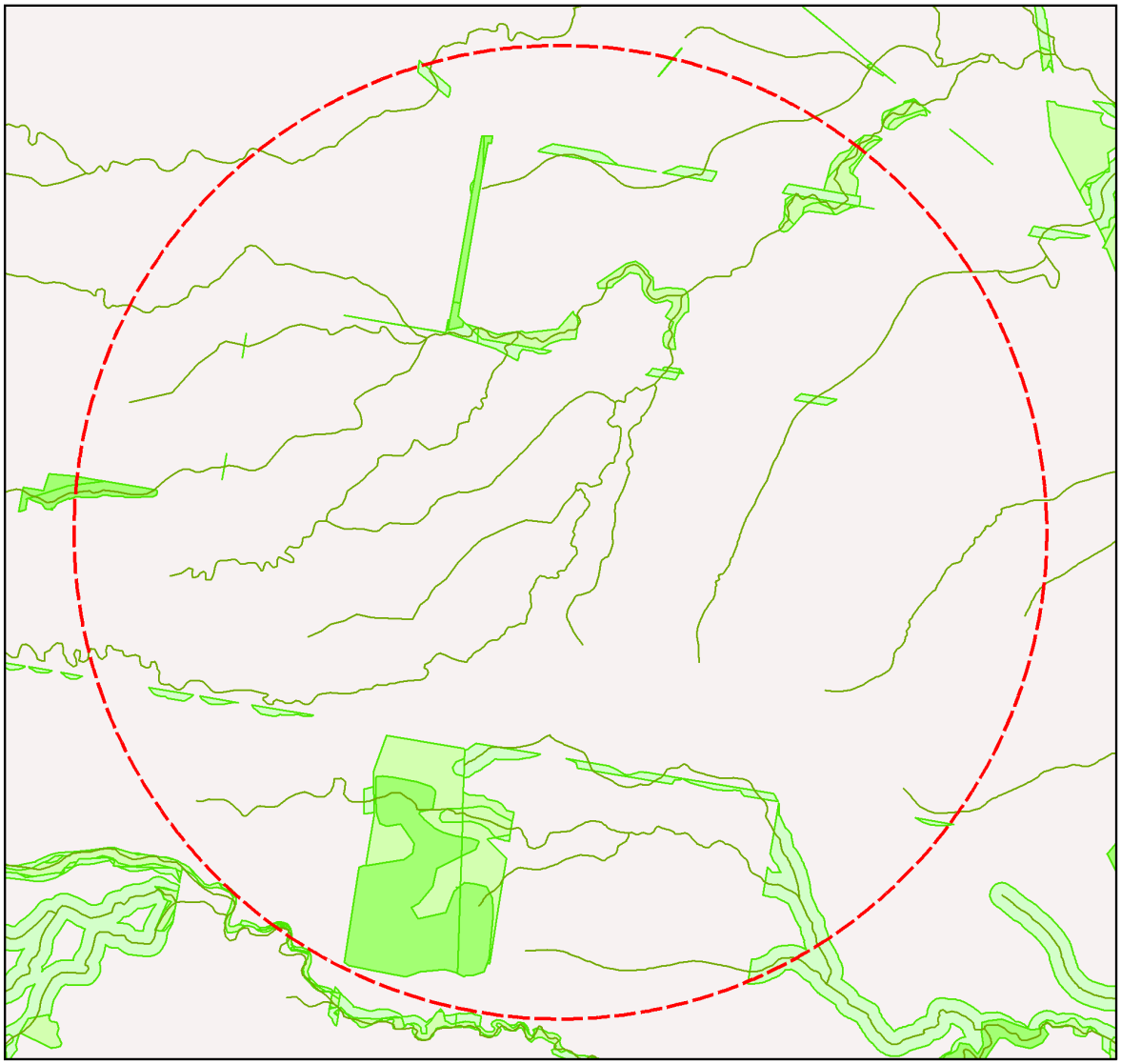
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and hatchlings can become disoriented by light pollution from development on rocky coastlines and headlands while navigating offshore from nesting beaches.

0 225 450 675 900 1,125 m

This product is projected into GDA 1994 Queensland Albers

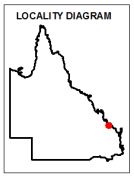
Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

Area of Interest

- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)



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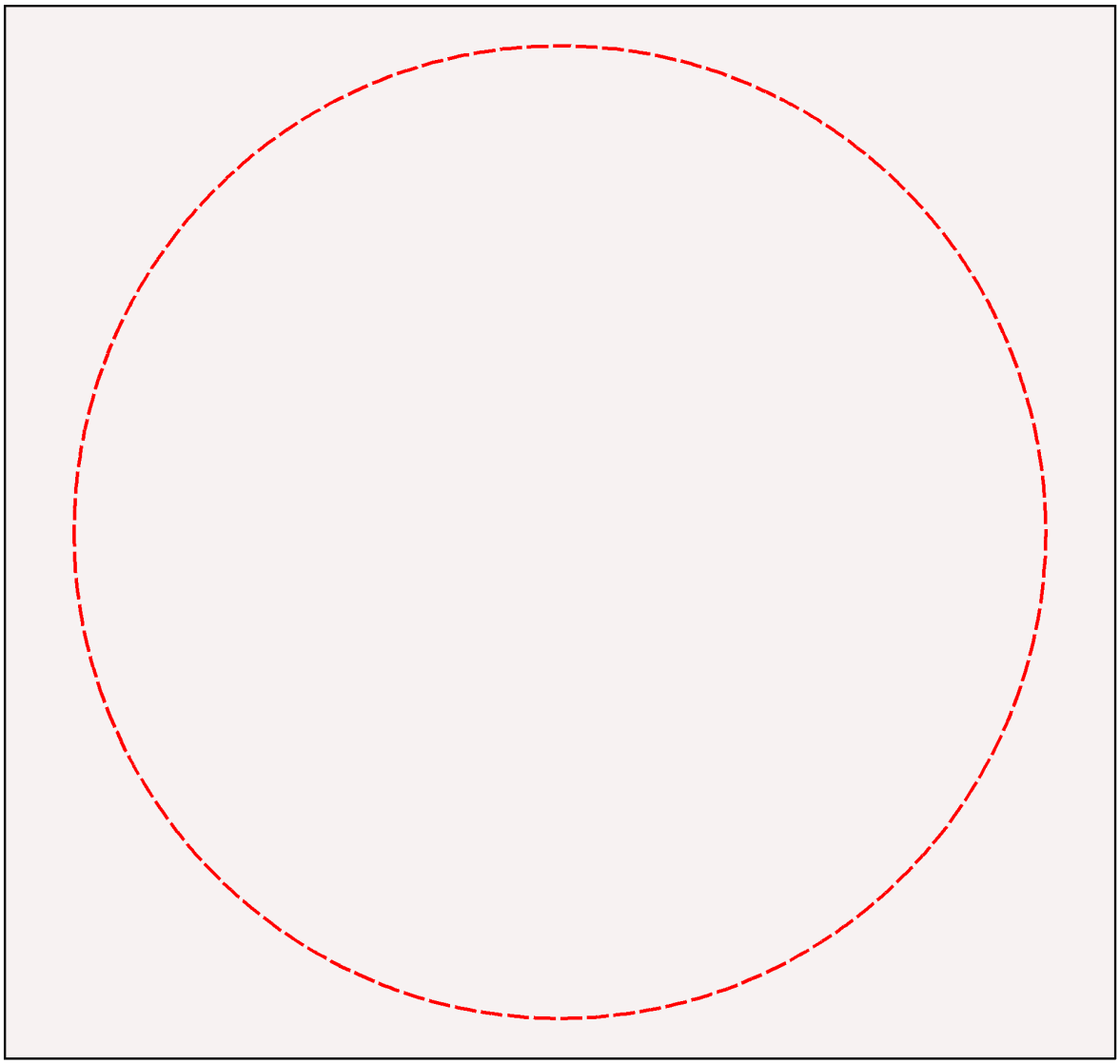
0 240 480 720 960 1200 m

This product is projected into GDA 1994 Queensland Albers

Map 5 - MSES - Offset Areas

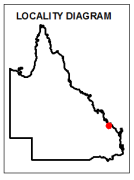


MSES - Offsets

Area of Interest

- 2 kilometre buffer
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Legally secured offset area (offset register)
- Legally secured offset area (vegetation offsets)

LOCALITY DIAGRAM



N

0 240 480 720 960 1200 m

This product is projected into GDA 1994 Queensland Albers

Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

http://qldspatial.information.qld.gov.au/catalogue/custom/index.page

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	- WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019 - Sea Turtle Nesting Areas records
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- *Environmental Protection Act 1994*
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- *Vegetation Management Act 1999*

Appendix E

Likelihood of Occurrence Assessment

Threatened Ecological Community	EPBC Act Status	Habitat Description	Likelihood of Occurrence
Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community	Endangered	It is characterised by the dominance of Casuarina glauca in the canopy, with an understory of rushes, sedges, forbs and grasses. Coastal Swamp Oak Forest is typically found on loose or alluvial soil on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes where soils are at least occasionally saturated, water-logged or inundated. Sometimes the ecological community can integrate with mangroves or saltmarsh communities (on the seaward site), or with Melaleuca species and eucalypts (more landward). Remnant patches retain mature trees and/or with diverse and good native understory, particularly those that are more closely connected with another area of native vegetation have very high conservation value.	**Unlikely to Occur.** *Casuarina glauca* is not listed as a dominant speices for any Regional Ecosystem mapped within the Project area.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	The Coastal Swamp Sclerophyll Forest community includes the plants, animals and other organisms typically associated with forested palustrine wetlands, or swamp forests, found in the temperate to subtropical coastal valleys of Australia's east coast. This community often has a layered canopy, dominated by Melaleucas and/or Eucalyptus robusta. In some areas the canopy may be dominated by other Melaleuca species including M. dealbata (SEQ bioregion) (rarely). This community occurs between the Great Dividing Range and the coastline from near Gladstone in QLD, through to the south coast of NSW where it is found on the mainland and islands near to the coast (within 20 km). It typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes. Its structure varies from open woodland to closed forest with a crown cover of at least 10% and typically no more than 70%.	**Possibly Occuring.** Suitable habitat may be present within the Project area. Confirm with GTRE mapping as there are no Regional Ecosystem associations to draw upon.
Lowland Rainforest of Subtropical Australia	Critically Endangered	This ecological community primarily occurs from Maryborough in Queensland to the Clarence River (near Grafton) in New South Wales (NSW). The ecological community also includes isolated areas between the Clarence River and Hunter River such as the Bellinger and Hastings valleys. The ecological community occurs in South Eastern Queensland Bioregion and NSW North Coast Bioregion. The ecological community occurs on basalt and alluvial soils, including sand and old or elevated alluvial soils as well as floodplain alluvia. It also occurs occasionally on enriched rhyolitic soils and basaltically enriched metasediments. Lowland Rainforest mostly occurs in areas <300 m above sea level. Aspect can result in the ecological community being found at >300 m altitude on north-facing slopes, but typically 300 m defines the extent of the lowlands. In addition, Lowland Rainforest typically occurs in areas with high annual rainfall (>1300 mm). Queensland State equivelants are 12.3.1; 12.5.13; 12.8.3; 12.8.4; 12.8.13; 12.11.1; 12.11.10; 12.12.1 and 12.12.16.	**Unlikely to Occur.** No associated Regional Ecosystems are present within the Project area. Confirm with GTRE mapping.
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	The Poplar Box Grassy Woodland on Alluvial Plains ecological community is typically a grassy woodland with a canopy dominated by Eucalyptus populnea and understory mostly of grasses and other herbs. The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin. This TEC is scattered across a broad distribution within an area that is roughly: south of Charters Towers (QLD); north of Leeton (NSW); west of Ipswich (QLD) and Armidale (NSW); and east of Longreach (QLD) and Hillston (NSW). This TEC occurs within the Brigalow Belt North, Brigalow Belt South, Southeast QLD, Cobar Peneplain, Darling Riverine Plains, NSW South Western Slopes and Riverina IBRA bioregions. In Queensland it is commonly associated with the following REs: 11.3.2; 11.3.17; 11.4.7; 11.4.12 & 12.3.10.	**Unlikely to Occur.** No associated Regional Ecosystems are present within the Project area. Confirm with GTRE mapping.
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	This ecological community occurs within a relatively narrow margin of the Australian coastline (South-east QLD IBRA bioregion). Found in all 6 states of Australia. The physical environment for this ecological community is coastal areas under regular or intermittent tidal influence. It is typically restricted to the upper intertidal environment, occurring in areas within the astronomical tide limit but can also be found in closed and open lakes and lagoons (NSW) as well as supratidal zones (SA). This community could also be found in areas that have groundwater connectivity to tidal water bodies. This TEC consists mainly of salt-tolerant vegetation (halophytes) including: grasses, herbs, sedges, rushes and shrubs. Succulent herbs, shrubs and grasses generally dominate and vegetation is generally of less than 0.5m height.	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	The subtropical eucalypt floodplain forest and woodland TEC is a floodplain forest community dominated by eucalyptus and other myrtaceous tree species. This community occurs in the NSW North Coast and SE QLD IBRA bioregions and on Curtis Island in the Brigalow Belt north IBRA Bioregion. It encompasses an area from just north of Newcastle, NSW in the south, to just north of Gladstone in QLD. It occurs in catchments of the eastern watershed of the Great Dividing Range, typically in their lower reaches at elevations up to 250 ASL. It occurs on alluvial landforms including river floodplains, riparian zones (i.e. along riverbanks, lake foreshores and creek lines), the floors of tributary gullies, floodplain pockets, alluvial flats, fans, terraces, and localised colluvial fans. It occurs on alluvial soils of varying textures including silts, clay loams, sandy loams, gravel and cobbles. It occurs as a tall closed-forest, tall open forest, closed forest with a canopy that has at least 20% crown cover. The canopy is dominated by Angophora, Corymbia, Eucalyptus, Lophostemon and/or Syncarpia tree species, but NOT dominated by Eucalyptus robusta. The mid-layer may be present, sparse or absent.	**Possibly Occuring.** Suitable habitat may be present within the Project area. Confirm with GTRE mapping as there are no Regional Ecosystem associations to draw upon.
Weeping Myall Woodlands	Endangered	The Weeping Myall Woodlands occur in a range from open woodlands to woodlands, generally 4-12 m high, in which Weeping Myall (Acacia pendula) trees are the sole or dominant overstorey species. Other vegetation may also occur in the ecological community, though not as dominant species. These include Western Rosewood (Alectryon oleifolius subsp. elongatus); Poplar Box (Eucalyptus populnea); or Black Box (Eucalyptus largiflorens). The understorey of Weeping Myall Woodlands often includes an open layer of shrubs above an open ground layer of grasses and herbs, though the ecological community can exist naturally either as a shrubby or a grassy woodland. Although the species Acacia pendula occurs widely in Queensland, the Weeping Myall Woodlands ecological community is restricted to small patches that occur within two REs in Queensland. These are 11.3.2 and 11.3.28.	**Unlikely to Occur.** No associated Regional Ecosystems are present within the Project area. Confirm with GTRE mapping.

Common Name	Scientific Name	EPBC Act Status	NC Act Status	Habitat Description	Likelihood of Occurrence
Birds					
Australasian Bittern	*Botaurus poiciloptilus*	E	-	Occurs from southern Queensland to Tasmania and south eastern South Australia. In NSW this species has been recorded along the coast as well as inland wetlands and rivers (NPWS, 1999). The Australasian Bittern occurs in estuarine and freshwater wetlands with tall dense vegetation, including sedges, spike rushes, reeds and bulrush (NPWS, 2000; NPWS, 1999). It favours wetlands with tall dense vegetation, where it forages in still, shallow water up to 0.3 m deep, often at the edges of pools or waterways, or from platforms or mats of vegetation over deep water Feeds mostly at night upon frogs, yabbies, spiders, insects, snails, small fish and mice (Schodde and Tidemann, 1993; NPWS, 2000).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is ~59 km away.
Australian Painted Snipe	*Rostratula australis*	E	E	Inhabits well-vegetated shallows and margins of wetlands, dams, sewage ponds and other water courses; wet pastures, marshy areas, irrigation systems, lignum, tea-tree scrub and open timber (Geering et al., 2007; Pizzey and Knight 1999). Occurs mostly in south-eastern Australia but dispersive in response to rainfall. The species has a broad range of distribution throughout Australia but has a close association with brackish or freshwater terrestrial wetlands, especially temporary ones which have muddy margins. (www.birdlife.org.au)	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is ~58 km away.
Bar-tailed Godwit	*Limosa lapponica*	Mi, Ma	-	The temperate or tropical winter habitats are usually located around intertidal areas along muddy coastlines, estuaries, lagoons, sewage ponds, brackish or saline inland lakes, flooded pastures and airfields (Pizzey and Knight 1999).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Black-breasted Button-quail	*Turnix melanogaster*	V	V	Inhabits leaf-litter in drier rainforests, vine thickets; scrubby woodlands of eucalypts, she-oaks, bottle-brushes, brush box, Brigalow and other Acacias; thickets of lantana on rainforest fringes, hoop pine plantations; grain stubbles (Pizzey and Knight 1999). Its distribution is patchy in southeast QLD to northern NSW (Pizzey and Knight 1999).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~22 km away.

Black-faced Monarch	*Monarcha melanopsis*	Mi, Ma	-	The Black-faced Monarch is found in rainforests, eucalypt woodlands, coastal scrub and damp gullies. It may be found in more open woodland when migrating (www.birdsinbackyards.net).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record (from 1998) is ~4 km away.
Common Greenshank	*Tringa nebularia*	E, Mi, Ma	SLC	In Queensland, the species is widespread in the Gulf country and eastern Gulf of Carpentaria (SPRAT, 2010). Found in mudflats, estuaries, saltmarshes, margins of lakes, wetlands, claypans, fresh and salines, commercial saltfields, sewage ponds (Pizzey and Knight 1999).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Common Sandpiper	*Actitis hypoleucos*	Mi, Ma	-	Shallow, pebbly, muddy or sandy edges of rivers and streams, coastal to far inland; dams, lakes, sewage ponds; margins of tidal rivers; waterways in mangroves or saltmarsh; mudflats; rocky or sandy beaches; causeways, riverside lawns, drains and street gutters (Pizzey and Knight 1999).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~37 km away.
Coxen's Fig-Parrot	*Cyclopsitta diophthalma coxeni*	CE	E	The distribution of the Coxen's Fig-Parrot is poorly known. Based on accepted records, the core distribution extends from Gympie in south-eastern QLD to Richmond River in north-eastern NSW. They occupy habitats that occur from sea level to approximately 900m above sea level. They occur in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforests and vine forests (SPRAT 2010).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Curlew Sandpiper	*Calidris ferruginea*	CE, Mi, Ma	CR	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms (Pizzey and Knight 1999). They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They generally roost on bare dry shingle, shell or sand beaches, sandpits and islets in or around coastal or near-coastal lagoons and other wetlands (SPRAT 2015).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~40 km away.
Diamond Firetail	*Stagonopleura guttata*	V	V	Diamond Firetails occur on the south-east mainland of Australia from south-east QLD to Eyre Peninsula, SA and about 300 km inland from the sea. This species occurs in eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. They tend to prefer areas with relatively low tree density, few large logs, and little litter cover but high grass cover (SPRAT, 2023).	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~36 km away.
Eastern Curlew	*Numenius madagascariensis*	CE, Mi, Ma	E	Inhabits estuaries, tidal mudflats, sandspits, saltmarshes, mangroves; occasionally fresh or brackish lakes; bare grasslands near water (Pizzey and Knight 1999). The Eastern Curlew breeds in northeast Asia and is a common summer migrant to Australian coastlines, although about 25% of the population remains all year round (Finn et al., 2001 and 2007; Geering et al., 2007).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Fork-tailed Swift	*Apus pacificus*	Mi, Ma	-	Almost exclusively aerial species, flying from less than 1m to at least 300m above the ground. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea. They also occur over settled areas, including towns, urban areas and cities. They mostly occur over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh (SPRAT 2010).	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~17 km away.
Glossy Black-cockatoo	*Calyptorhynchus lathami*	-	V	The Glossy Black-Cockatoo is widespread in eastern Australia from Eungella, QLD south to east Gippland VIC. They are highly dependent on the distribution of Allocasurina species and are found in woodland dominated it and in open forests where it forms a substantial middle layer. They are often confined to remnant Allocasurarina patches surrounded by cleared farmlands (www.birdsinbackyards.net).	**Unlikely to Occur.** Whilst nearby records exist within 11 km, vegetation communities within the Project area do not contain Allocasuarina spp.
Glossy Black-cockatoo (northern)	*Calyptorhynchus lathami erebus*	-	V	The northern Glossy Black Cockatoo occurs in the north and central east coast of QLD. This subspecies ranges from the Dawson-Mackenzie-Isaac Rivers basin, north to the Connors-Clarke Ranges, south to Dawes and Many Peaks Ranges, and inland to the Expedition, Peak and Denham Ranges, including the Blackdown Tablelands. This species prefers woodland areas dominated by she-oak (Allocasuarina) or open sclerophyll forests and woodland with a stratum of Allocasuarina beneath Eucalyptus, Corymbia or Angophora. Glossy black-cockatoos have also been observed in mixed Allocasaurina, Casuarina, cypress Callitris and brigalow (Acacia harpophylla) woodland assemblages (Hourigan, 2012).	**Unlikely to Occur.** Whilst nearby records exist within 10 km, vegetation communities within the Project area do not contain Allocasuarina spp.
Greater Sand Plover	*Charadrius leschenaultii*	V, Mi, Ma	V	In Australia, the Greater Sand Plover occurs in coastal areas in all states, through the greatest numbers occur in northern Australia, especially the nor-west. This species breeds in central Asia. In the nonbreeding ground in Australasia, the species is almost entirely coastal, inhabiting littoral and estuarine habitats. They mainly occur on sheltered sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks, as well as sandy estuarine lagoons, inshore reefs, rock platforms, small rocky islands or sandy cays on coral reefs. They are also occasionally recorded on near-coastal saltworks and salt lakes, including marginal saltmarsh, and on brackish swamps. They seldom occur at shallow freshwater wetlands (SPRAT, 2023).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Grey Falcon	*Falco hypoleucos*	V	V	They Grey Falcon's habitat includes lightly treed inland plains; gibber deserts, sandridges, pastoral lands, timbered watercourses; seldom in driest deserts. Resident or nomadic visitor to inland parts of all mainland states (Pizzey and Knight 1999).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is >100 km away.
Latham's Snipe	*Gallinago hardwickii*	V, Mi, Ma	-	Latham's Snipe is a non-breeding visitor to south-eastern Australia, and is a passage migrant through northern Australia. This species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern SA. It occurs in permanent and ephemeral wetlands up to 2000m ASL, where they usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). They can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity (SPRAT, 2023).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~15 km away.
Nunivak Bar-tailed Godwit	*Limosa lapponica baueri*	E	V	The bar-tailed godwit (both subspecies combined) have been recorded in the coastal areas of all Australian states. It is widespread in the Torres Strait and along the eastern and south-east coasts of QLD, NSW and VIC. These species migrate southwards for the boreal winter. L. l. menzbieri has a more westerly migration than L. l. baueri. They are usually located around intertidal areas along muddy coastlines, estuaries, lagoons, sewage ponds, brackish or saline inland lakes, flooded pastures and airfields (Pizzey and Knight 1999, Threatened Species Scientific Committee)	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Oriental Cuckoo	*Cuculus optatus*	Mi	-	Within Australia, this species uses a range of vegetated habitats such as monsoon rainforests, wet sclerophyll forest, open woodlands and appears quite often along edges of forests, or ecotones between forest types (DoE, 2015; Menkhorst et al,. 2017). This cuckoo species feeds arboreal, foraging for invertebrates on loose bark on the trunks and branches of trees, and among the foliage, including in mistletoes. It will forage from the ground, but requires shrubs or trees from which it sallies and returns to consume prey items. Caterpillars have been noted as a preferred food source. Oriental Cuckoos tend to forage individually and have only been recorded foraging in pairs when infestations of caterpillars occur (DoE, 2015).	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~14 km away.

Osprey	*Pandion haliaetus*	Mi, Ma	SLC	The Osprey is thinly distributed around the coast of Australia where they forage for fish in fresh, brackish, or saline waters of rivers, lakes, estuaries and inshore coastal waters (Schodde and Tidemann, 1993; NPWS, 2000). Nests are usually located near a suitable area of foraging habitat and are a bulky structure made from piled sticks, often positioned in a tall dead tree or artificial structures such as telecommunication towers or poles (Schodde and Tidemann, 1993; NPWS, 2000). Breeding pairs defend breeding territory against other Ospreys, and active nests are usually more than 1 km apart (NPWS, 2005).	**Likely to Occur.** Limited suitable habitat is present within the Project area and the nearest record is ~9 km away (2007).
Pectoral Sandpiper	*Calidris melanotos*	Mi, Ma	-	This species if found in shallow fresh waters, often with low grass and other herbage; swamp margins, flooded pastures, sewage ponds; occasionally tidal areas and saltmarshes (Pizzey and Knight 1999).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Red Goshawk	*Erythrotriorchis radiatus*	E	E	The Red Goshawk is endemic to Australia where it is very sparsely dispersed across approximately 15% of coastal and sub-coastal Australia from western Kimberly to north-eastern NSW, and occasionally on continental islands. It has probably always occurred in central Australia, where three widely-spaced, recent confirmed sightings corroborate earlier, previously doubted records, however no breeding has been recorded in central Australia. This species occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia. Riverine forests are also used frequently. Such habitats typically support high bird numbers and biodiversity, especially medium to large species which the red goshawk requires for prey (SPRAT, 2023).	**Unlikely to Occur.** Whilst limited suitable habitat exists within the Project area, all nearby records (4 km, 58km) are at least 30 years old (closest record from 1978).
Red Knot	*Calidris canutus*	V, Mi, Ma	E	Marine species. During the non-breeding season in Australasia, the Red Knot mainly inhabit intertidal mudflats, sandflats and sandy beaches of sheltered coasts and sometimes on sandy beaches or shallow pools on exposed rock platforms. They are occasionally seen on terrestrial saline wetlands near the coast and on sewage ponds and salt works (Higgins & Davies 1996).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Rufous Fantail	*Rhipidura rufifrons*	Mi, Ma	SLC	The Rufous Fantail occurs in coastal and near coastal districts of northern and eastern Australia. In eastern Australia they inhabit wet sclerophyll forests often in gullies dominated by eucalyptus species, usually with a dense shrubby understory often including ferns. They also occur in subtropical and temperate rainforests (SPRAT 2017).	**Likely to Occur.** Limited suitable habitat is present within the Project area and the nearest record is ~6 km away (2019).
Satin Flycatcher	*Myiagra cyanoleuca*	Mi, Ma	-	Satin Flycatchers inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (SPRAT, 2010).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~29 km away.
Sharp-tailed Sandpiper	*Calidris acuminata*	V, Mi, Ma	SLC	The sharp-tailed sandpiper breeds in northern Siberia but migrates south to winter in Australia and New Zealand. In the non-breeding season they can be found in tidal mudflats, saltmarshes, mangroves; shallow fresh, brackish or saline inland wetlands; floodwaters, irrigated pastures and crops; sewage ponds and saltfields (Pizzey and Knight 1999).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Southern Giant-petrel	*Macronectes giganteus*	E, Mi, Ma	E	Breeds on Macquarie Island, Heard Island, McDonald Island, Giganteus Island, Hawker Island and Frazier Island. Nests in open vegetation or in Antarctic colonies of no vegetation. In the southern Antarctic zone, it nests in exposed snow and ice-free coastal areas, open gravel areas rocky bluffs, outcrops, ridges, slopes, mounds, raised beaches, open flats, edges of plateaux or offshore rocks. Often nest near a steep drop or on slope (SPRAT, 2010).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Spectacled Monarch	*Symposiachrus trivirgatus*	Mi, Ma	-	The Spectacled Monarch prefers dense vegetation, mainly in rainforest but also in moist forest or wet sclerophyll and occasionally in other dense vegetation such as mangroves, drier forest and woodlands (www.birdsinbackyards.net).	**Likely to Occur.** Limited suitable habitat is present within the Project area and the nearest record is ~4 km away (2014).
Squatter Pigeon (southern)	*Geophaps scripta scripta*	V	V	The known distribution of the Squatter Pigeon extends south from the Burdekin-Lynd divide in the southern region of Cape York Peninsula to the border Rivers region of northern NSW, and from the east coast to Hughenden, Longreach and Charleville. Their habitat is generally defined as open-forests to sparse, open woodlands and scrub that are mostly dominated by Eucalypts, Corymbia, Acacia or Callitris species. The habitat is generally remnant, regrowth or partly modified vegetation communities and within 3 km of water bodies or courses. Foraging occurs on well-drained, gravelly or loamy soils which support the open-forest to woodland communities with patchy, tussock-grassy understories (SPRAT, 2015).	**Unlikely to Occur.** Although a recent record exists ~14 km away (2003) extensive survey effort undertaken within the Project area has determined suitable habitat is not present.
Star Finch (eastern)	*Neochmia ruficauda ruficauda*	E	E	Distribution is poorly known but it only occurs in central Queensland. It resides mainly in grasslands and grassy woodlands that are located close to body of fresh water. It also occurs in cleared or suburban areas such as along rode sides in towns (SPRAT 2017).	**Unlikely to Occur.** Whilst suitable habitat is present within the Project area, the nearest record is >100 km away.
White-throated Needletail	*Hirundapus caudacutus*	V, Mi, Ma	V	Almost exclusively aerial from heights of less than 1m up to more than 1000m above the ground. Most often recorded above wooded areas, including open forest and rainforest and also are commonly recorded over heathland and coastal cliffs (SPRAT, 2010).	**Unlikely to Occur.** Although a recent record exists ~8 km away (2005) extensive survey effort undertaken within the Project area has determined suitable habitat is not present.
Mammal					
Ghost Bat	*Macroderma gigas*	V	E	Ghost bats occur in a wide range of habitats from rainforest, monsoon and vine scrub, to open woodlands in arid areas. These habitats are used for foraging, while root habitat is more specific. Favoured roosting sites of the ghost bat are undisturbed caves or mineshafts which have several openings. Ghost bats occur in tropical regions in Queensland, and along the ventral and northern coast, from Rockhampton north to Cape York (DEHP 2017).	**Unlikely to Occur.** No suitable habitat is present within the Project area.

Greater Glider (central)	*Petauroides armillatus*	E	E	The central Greater Glider occurs in mid Queensland from Eungella Range to just north of Townsville. This species was origionally grouped with P. volans but has since been split from this group (McGregor, et.al 2020). This species is largely restricted to eucalypt forests and woodlands of eastern Australia. It is typically found in highest abundance in taller, montane, moist eucalypt forests on fertile soils, with relatively old trees and abundance hollows. It is likely that only a proportion of forest in potential habitat areas is suitable for the species, as the structural attributes of the forest overstorey and forage quality it relies on vary considerably across the landscape (TSSC Conservation Advice, 2022).	**Unlikely to Occur.** Although a recent record exists ~7 km away (2005) extensive survey effort undertaken within the Project area has determined suitable habitat is not present.
Greater Glider (southern and central)	*Petauroides volans*	E	E	The southern and central Greater Glider occurs in eastern Australia, where it has a broad distribution from around Proserpine in QLD, south through NSW and the ACT, to Wombat State Forest in central VIC. This species is largely restricted to eucalypt forests and woodlands of eastern Australia. It is typically found in highest abundance in taller, montane, moist eucalypt forests on fertile soils, with relatively old trees and abundance hollows. It is likely that only a proportion of forest in potential habitat areas is suitable for the species, as the structural attributes of the forest overstorey and forage quality it relies on vary considerably across the landscape (TSSC Conservation Advice, 2022).	**Possibly Occuring.** Limited suitable habitat exists within the Project area, the nearest record (4 km away) is at least 30 years old (1976).
Grey-headed Flying-fox	*Pteropus poliocephalus*	V	-	The Grey-headed Flying-fox occurs in a range of habitats including subtropical and temperate rainforests, dry and wet sclerophyll forests, Banksia woodland, heaths and Melaleuca swamps (Duncan et al, 1999; NPWS, 2001).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~13 km away.
Koala	*Phascolarctos cinereus*	E	E	The Koala is endemic to Australia. The biological species range extends from north-eastern QLD to the south-east corner of SA. Koalas naturally inhabit a range of temperate, subtropical and tropical forests, woodland and semi-arid community's dominated by Eucalyptus species. Their habitat can broadly be defined as any forest or woodland containing species that are a known Koala food tree, or shrubland with emergent food trees (SPRAT 2017).	**Possibly Occuring.** Limited suitable habitat exists within the Project area, the nearest record (3 km away) is at least 30 years old (1986).
Large-eared Pied Bat	*Chalinolobus dwyeri*	E	V	It is found in a variety of dryer habitats, including the dry sclerophyll forests and woodlands to the east and west of the Great Dividing Range. Daytime roosts include caves, mine tunnels and the abandoned, bottle-shaped mud nests of Fairy Martins. In caves it often selects positions close to the cave entrance where individuals huddle together. It is believed to forage for small flying insects below the forest canopy. Its distribution of mostly limited to NSW with a few records in SE Queensland (Strahan, 2002).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Long-nosed Potoroo (northern)	*Potorous tridactylus tridactylus*	V	V	The Long-nosed Potoroo (northern) has scattered populations extending from south-eastern QLD through to NSW. This species has been recorded at Many Peaks range, south-west of Gladstone, Bellthorpe near Beerwah and in the Border Ranges. It has also been seen at Bulburin, south-west of Miriam vale and in the Lamington National Park and surrounds. There is limited information about the species habitat in QLD and NSW. There appears to be no consistent pattern to the habitat that this species utilises as it has been found in wet eucalypt forests through to coastal heaths and scrubs. Key attributes appear to be access to some form of dense vegetation for shelter and the presence of an abundant supply of fungi for food (SPRAT, 2023).	**Unlikely to Occur.** Whilst a nearby record exists, no suitable habitat exists within the Project area. Populations have limited distributions.
Northern Quoll	*Dasyurus hallucatus*	E	-	The northern quoll occurs across much of northern Australia, from south-eastern Queensland to the south-west Kimberley, with a disjunct population in the Pilbara. In the Northern Territory it is restricted to the Top End. The species occupies a diversity of habitats across its range which includes rocky areas, eucalypt forest and woodlands, rainforest, sandy lowlands and beaches, shrubland, grasslands and desert. The habitat generally encompasses some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal (SPRAT 2012).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Silver-headed Antechinus	*Antechinus argentus*	E	E	The silver-headed antechinus is known from three isolated subpopulations located in central eastern QLD; the plateau at the eastern escarpment of Kroombit Tops National Park (70 km SW of Gladstone); Blackdown Tableland national Park (220 km W of Gladstone); and the Bulburin National Park (20 km SE of Gladstone). This species occurs on an undulating sandstone plateau bounded on the eastern site by an escarpment with cliffs at 850-300 m ASL. They have been found in communities dominated by Eucalyptus montivaga (a blackbutt) with subdominant Corymbia trachyphloia (brown bloodwood) shrubby tall open forest (SPRAT, 2023).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~18 km away.
Spot-tailed Quoll	*Dasyurus maculatus maculatus*	E	E	The Spotted-tailed Quoll occurs along the east coast of Australia from south east Queensland to South Australia and Tasmania. The Spotted-tailed Quoll has been recorded in a wide range of habitat types including dry and moist sclerophyll forests and woodlands, rainforest, coastal heathland, and riparian forest. This species been occasionally sighted in treeless areas, rocky outcrops and grazing lands (NPWS, 1999; NPWS, 2000; Strahan, 2008). The Spotted-tailed Quoll shelters and dens in small caves, fallen logs with large hollows and tree hollows and may utilise numerous dens within its home range which has been estimated to be between 800 ha to 20 km2 (NPWS, 2000; NPWS in prep, 1999). The Spotted-tailed Quoll is partly arboreal and feeds upon a variety of prey species including birds, rodents, lizards, small wallabies, and even insects. The Spotted-tailed Quoll is also known to scavenge and feed upon carrion, road kills including wild dogs, and litter (Strahan 1998; NPWS 2000).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Water Mouse	*Xeromys myoides*	V	V	The water mouse occurs in three regions of coastal Australia: NT, central-south QLD and south-eastern QLD. Although they have been documented in three distinct regions they all require similar habitat including mangroves and the associated saltmarsh, clay pans, heathlands and freshwater wetlands. The main habitat difference at each location is the littoral, supralittoral and terrestrial vegetation which differs in structure and composition (SPRAT 2017).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Yellow-bellied Glider (south-eastern)	*Petaurus australis australis*	V	V	The Yellow-bellied Glider is found in tall mature Eucalypt Forest and they feed on a range of sources including winter-flowering Eucalypts which provide nectar and pollen. They also feed upon the sap of Eucalypts in which they chew V-shaped incisions to collect the sap. Yellow-bellied Gliders den in large tree hollows (NPWS, 2000).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~11 km away.
Reptile					
Collared Delma	*Delma torquata*	V	V	Under rocks and in soil cracks on heavy, stony and lightly timbered soils near Kenmore, Brookfield and Mt Crosby. Endemic to South-east Queensland. Also found in numerous disturbed habitats throughout Southeast Queensland (Cogger 2000).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~32 km away.
Dunmall's Snake	*Furina dunmalli*	V	V	The distribution of the Dunmall's Snake extends from near the QLD border through the Brigalow Belt South and Nandewar bioregions, as far south as Ashford in NSW. In QLD this species occurs primarily in the Brigalow Belt region in the south-eastern interior of QLD. Records indicate sites at elevations between 200-500 m above sea level. The snake is very rare of secretive with limited records existing. It has been recorded at Archokoora, Oakey, Miles, Glenmorgan, Wallaville, Gladstone, Lake Broadwater, Mount Archer, Exhibition Range National Park, roadside reserves between Inglewood and Texas, Rosedale, Yeppoon and Lake Broadwater Conservation Park. It has been found in a broad range of habitats including forests and woodlands on black alluvial cracking clay and clay loams dominated by Brigalow; and other various Blue Spotted Gum, Ironbark, White Cypress and Bulloak open forests and woodland associations on sandstone derived soils (SPRAT).	**Possibly Occuring.** Limited suitable habitat is present within the Project area, and the nearest record is ~35 km away.
Grey Snake	*Hemiaspis damelii*	E	E	Queensland, records are known from near Goondiwindi and the adjacent Darling-Riverine Plain, from the Darling Downs and from the Lockyer Valley. Several isolated records also occur in the Rockhampton area. It favours woodlands, usually on heavier, cracking clay soils, particularly in association with water bodies. They shelter under rocks, logs and other debris as well as in soil cracks (SPRAT 2011).	**Unlikely to Occur.** No suitable habitat is present within the Project area.

Ringed Thin-tailed Gecko	*Phyllurus caudiannulatus*	V	V	The ringed thin-tail gecko is restricted to a small distribution that occurs entirely within the South-Eastern QLD Bioregion. This species occurs primarily in the Dawes Range, the Many Peaks Range and surrounding forest reserves. Most records of this species have been found in Bulburin National Park. This species occurs in discrete patches of closed subtropical vine forest, adjacent wet sclerophyll forest, and Araucaria cunninghamii (Hoop Pine) plantations between 180-600 m ASL. This species shelters in buttress cavities of trees (especially fig species), under bark, and beneath rock piles (SPART, 2023 Draft Conservation Advice).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Salt-water Crocodile	*Crocodylus porosus*	Mi, Ma	V	It may be found in brackish water around coastal areas and rivers, often amongst mangrove forest, as well as occurring further out to sea, and also occurs in freshwater rivers, lakes, swamps and marshes, up to 200 kilometres inland (www.arkive.org).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Southern Snapping Turtle	*Elseya albagula*	CE	E	The Southern Snapping Turtle is only found in the Burnett, Fitzroy, Raglan and Mary River drainages of south-east QLD. It prefers permanent flowing water habitats where there are suitable shelters and refuges like fallen trees. (www.environment.des.qld.gov.au).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Yakka Skink	*Egernia rugosa*	V	-	Endemic to Queensland where its distribution is highly fragmented. Often associated with partly-buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. It is also known to excavate deep burrow systems. The Yakka Skink can persist in cleared habitats if shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens are available (DEHP 2017).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest recorded population is ~85 km away.
Amphibian					
Kroombit Tinker Frog	*Taudactylus pleione*	CE	CE	The Kroombit Tinker Frog is extremely restricted. This species is only known from twelve small unconnected patches of rainforest above 500m at Kroombit Tops, south-west of Gladstone, QLD. It is believed that the species is a relict species, restricted to Kroombit Tops through habitat fragmentation that disrupted rainforest connections in the area. This species is highly cryptic and is mainly associated with Piccabeen Palm rainforest and boulder scree gullies. The species is found around rocky shelves and boulders, under rocks or in deep rock piles near temporary streams, seepage zones and in sheltered rocky scree (SPRAT, 2023).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Plants					
Black Ironbox	*Eucalyptus raveretiana*	V	-	Eucalyptus raveretiana has a wide distribution in coastal and sub-coastal areas of QLD, from south of Townsville to Nebo, around Rockhampton and areas 100 km west of the city. It has been recorded from about 23 sites throughout its range, in two main areas. This species usually grows along water courses, and sometimes on river flats or open woodland. It is found in altitudinal ranges from 0-300 m and the climate of the area is sub-tropical. The species is said to be highly salt tolerant (SPRAT, 2020).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is >100 km away.
Bluegrass	*Dichanthium setosum*	V	-	Dichanthium setosum has been reported from inland NSW to QLD. There are also reports from WA and TAS. The species is associated with heavy basaltic black soils and red-brown loams with clay subsoils (predominantly cracking clays or alluvium, often in gilgai). It is often found in moderately disturbed areas such as cleared woodland, grassy roadside remnants and highly disturbed pasture. The species may tolerate or benefit from disturbance, otherwise, disturbance is indicative of threatening processes in its habitat (SPRAT 2013).	**Unlikely to Occur.** Whilst suitable habitat is present within the Project area, the nearest record is >100 km away.
Bulberin Nut	*Macadamia jansenii*	E	E	Macadamia jansenii is Australia's rarest Macadamia Species and is only found in the wild in a single location north of Gin Gin, QLD. It grows in Araucarian microphyll-notophyll vineforest. This species is found on steep, rocky, hilly terrain at about 350 m above sea level, where it occurs on well drained, red brown, sandy clay loams (DES - Species Search, 2020).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Cossinia	*Cossinia australiana*	E	E	Cossinia australiana is known from fragmented remnant patches of Araucarian vineforests or fine thickets on fertile soils in central and southern QLD. This species' distribution is from Rockhampton to Kingaroy, east of the Dividing Range, a distance of approximately 300km. At most sites it is recorded as uncommon, usually as scattered individuals. This species occurs from 20-520 m in altitude and appears to prefer ecotonal situations around dry rainforest edges, although it also occurs as scattered individual plants within closed forest communities (DES - Species Search).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Hairy-joint Grass	*Arthraxon hispidus*	V	V	In NSW and QLD, this species is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, as well as woodland. In the SE QLD Bioregion, A. hispidus has also been recorded growing around freshwater springs on coastal foreshore dunes, in shaded small gullies, on creek banks, and on sandy alluvium in creek beds in open forests, and also with bog mosses in mound springs (Queensland Government Species Profile)	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is ~90 km away.
Holly-leaved Graptophyllum	*Graptophyllum ilicifolium*	V	V	Graptophyllum ilicifolium is endemic to central coast QLD from the Mackay area and a disjunct population near Miriam Value. This species occurs in an area of vegetation consisting of tall to very tall mixed notophyll forest where it grows along rocky drainage lines in various substrates (www.des.qld.gov.au/species-search).	**Possibly Occuring.** Whilst limited suitable habitat is present within the Project area, the nearest record (9 km) is more than 20 years old.
Lesser Swamp-orchid	*Phaius australis*	E	E	Phaius australis grows in areas where soils are almost always damp, but not flooded for lengthy periods. Sands are generally the underlying soil type and they are usually found in coastal habitats inbetween swamps and forests or in suitable areas further inland. This includes swampy sclerophyll forest dominated by melaleucas, swampy forest that often have sclerophyll emergents, or fringing open forest and and melaleuca swamp forest associated with rainforest speices. This species has aso been recorded in wallum sedgeland, rainforest and slosed forest where they often grow in deep shade, but can also occur in full sun (www.des.qld.gov.au/species-search).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Macadamia Nut	*Macadamia integrifolia*	V	V	The Macadamia Nut is found in remnant rainforest in northern NSW and SE QLD. The species is known from Mt Bauple (north of Gympie) to Currumbin Valley (Gold coast hinterland). Along with the Rough-shelled Bush Nut (Macadamia tetraphylla) this species forms the basis of the commercial macadamia nut industry. This species prefers to grow in mild, frost-free areas with a reasonably high rainfall. Vegetation communities in which this species is found range from complex notophyll mixed forest, extremely fall closed forest, simple microphyll-notophyll mixed mid-high closed forest with Araucaria and Argyrodendron emergents (SPRAT 2019).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is >100 km away.
Miniature Moss-orchid	*Bulbophyllum globuliforme*	V	-	The Miniature Moss-orchid is endemic to eastern Australia where this species is recorded from near Paluma, north-east QLD and south to the McPherson Range on the QLD/NSW border. This is a host-specific species, only growing on Hoop Pines, where it colonises the upper branches of mature trees. The Hoop Pine occurs in upland (100-900 m ASL) subtropical rainforest communities that have a discontinuous distribution along the Australian east coast (SPRAT, 2022).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Narrow-leaved Malletwood	*Rhodamnia angustifolia*	CE	CE	Rhodamnia angustifolia grows in microphll vineforest with Blackhousia subargentea, Barklya syringifolia, Archidendropsis thozetiana, Blackhousia kingii, Sterchlia quadrifida, Mallotus philippensis, Croton stigmatosus and Araucaria cunninghamii as the dominant tree species. It is found in areas with reddish or brown loam from mudstones of muncorn volvnics with elevation ranging from 200 to 560 m above sea level (www.wetlandinfo.des.qld.gov.au).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
Quassia	*Samadera bidwillii*	V	V	Quassia is endemic to QLD and is currently known to occur in several localities including: Scawfell Island, Mackay, Goomboorian and north of Gympie. This species mainly occurs in lowland rainforest margins, but it can also be found in other forest types, such as open forest and woodland. Quassia is commonly found in areas adjacent to both temporary and permanent watercourses (SPRAT 2019).	**Unlikely to Occur.** Whilst suitable habitat is present within the Project area, the nearest record is ~72 km away.

Southern Penda	*Xanthostemon oppositifolius*	V	V	Xanthostemon oppositifolius is known from three general localities in south-east QLD, covering a range of approximately 250km. In southern locations, this species occurs predominantly in riparian communities on slightly acid clayey sands to sandy clays derived from sedimentary and metasedimentary rocks. At Granite Creek sites, it occurs on hillside on metasediments or old volcanic rocks in araucarian notophyll vine forest (SPRAT, 2022).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is >100 km away.
Three-leaved Bosistoa	*Bosistoa transversa*	V	-	Three-leaved Bosistoa is found from the Nightcap Range north of Lismore in north-east NSW to Mount Larcom (near Gladstone) in south-east QLD. The species is described in herbarium collection records as locally abundant at Natural Bridge-Springbrook NP and Coalstoun Lakes NP in QLD. This species typically grows in lowland subtropical rainforest. Has been found in closed forests on steep slopes, rainforests along creek lines, on reddish loam over basalt rock on very steep slopes and in notophyll vine forests (SPRAT).	**Unlikely to Occur.** Whilst nearby relatively recent records exist for this species, no suitable habitat is present within the Project area.
Wedge-leaf Tuckeroo	*Cupaniopsis shirleyana*	V	V	Cupaniopsis shirleyana is restricted to south-east Queensland, from Brisbane, north to Bundaberg. This species occurs at 20-550m in elevation and has been recorded in a variety of rainforest types including vine thicket and dry rainforest. It occurs on hillsides, mountain tops, lower slopes of valleys, stream beds and along riverbanks. it grows in a variety of soil types (DES - Species Search).	**Unlikely to Occur.** Whilst nearby relatively recent records exist for this species, no suitable habitat is present within the Project area.
	Apatophyllum olsenii	V	E	Apatophyllum olsenii is known from three localities in the Many Peak Range, south of Gladsone, Qld. Two populations occur in the vicinity of Castle Tower National Park. One population occurs in the National Park on the east slopes of Many Peaks Range and contains six plants. The other populations occur just out of the Park, west of Castletower Mountain and is described as small. The third population occurs about 40 km to the south of Castle Tower National Park. This species inhabits granite ridges and granite boulder outcrops in open forest or tall shrubland with E. exserta, L. confertus and Xanthorrhoea johnsonii (Approved Conservation Advice, 2008)	**Unlikely to Occur.** No suitable habitat is present within the Project area.
	Bertya opponens	V	-	Bertya opponens is widely scattered in eastern Australia, occurring as far north as near charters towers, in the north-east QLD, southwards to Cobar and Coffs Harbor, NSW. The species occurs within several national parks. This species has been recorded growing in a variety of community types including mixed shrubland, lancewood woodland, mallee woodland, eucalypt/Acacia open forest with shrubby understory and semi-evergreen vine thickets. The soils are recorded as generally shallow sandy loams or red earths associated mostly with sandstone, but also with rhyolite, shale and metasediments (DES - Species Search).	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~15 km away.
	Cycas megacarpa	E	E	Cycas megacarpa is endemic to south-east Queensland where it is found as far south as Woolooga to Bouldercombe in the north. Many surviving populations are small and greatly fragmented, with only a handful of adult plants. This species is typically found in woodland, open woodland and open forests, often in conjunction with a grassy understory. Cycas megacarpa is found in habitats dominated by Eucalyptus crebra and Corymbia citriodora as well as Corymbia erythrophloia, Eucalyptus melanophloia and Lophostemon confertus. There are also reports that it can be found on the edge of rainforest habitat (SPRAT, 2022).	**Unlikely to Occur.** Although a historical and recent record is preset 4 and 10km away (1997 and 2012 respectively) extensive survey effort undertaken within the Project area did not confirm the presence of the species.
	Cycas ophiolitica	E	E	Cycas ophiolitica is endemic to Queensland, occurring from Marlborough to Rockhampton in central-eastern Queensland. It occurs in woodland or open eucalypt woodland (SPRAT, 2019).	**Unlikely to Occur.** Whilst limited suitable habitat is present within the Project area, the nearest record is >100 km away.
	Fontainea venosa	V	V	Fontainea venosa (Southern Bluchwood) occurs in notophyll vine forests and vine thickets with a mean annual rainfall of 1000-1100mm on soil derived from and containing abundant andesitic rocks, often on rocky outcrops or along creeks. Associated species include Backhousia citriodora, Actephila lindleyi, Bosistoa medicinalis, Diospyros fasciculosa, Barkly syringifolia, Araucaria cunninghamii, Owenia venosa, Aphananthe philippinensis, Argyrodendron trifoliolatum, Croton acronychioides, Pentaceras australe and Planchonella myrsinoides (wetlandinfo.des.qld.gov.au)	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~23 km away.
	Germainia capitata	V	V	Germainia capitata occurs in Australia at two disjunct localities north of Bundaberg and Torres Strait. North of Bundaberg, this species occurs near the Town of 1770 and Agnes Water, where one population occurs in the Eurimbula National Park and most of the other populations occur in areas of remnant vegetation. This species grows in open Eucalypt sp. and Melaleuca spp. woodland where it is often found in clumps on sandy soils, often in seasonally inundated areas (SPRAT, 2022).	**Possibly Occuring.** Suitable habitat is present within the Project area, and the nearest record is ~20 km away.
	Macropteranthes leiocaulis	-	NT	Macropteranthes leiocaulis occurs in central eastern QLD. It is known from Mingela Bluff south of Townsville to Binjour Plateau west of Maryborough in dry rainforest and vine thicket communities (Australian Tropical Rainforest Plants).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
	Medicosma elliptica	V	V	Medicosma elliptica is known from Many Peaks and Dawes Ranges in central eastern QLD at 200-580 m above sea level. The species has been collected at the Boyne Logging Area, upper Boyne River and Granite Creek areas. This species occurs in mountainous terrain on rocky, inclined hillsides, in complex notophyll vine forest of Hoop Pine, Brush Box and Moreton Bay Fig. These areas were previously logged for Hoop Pine and particularly cleared for the establishment of Hoop Pine plantations (www.des.qld.gov.au/species-search).	**Unlikely to Occur.** No suitable habitat is present within the Project area.
	Polianthion minutiflorum	V	V	The species is known from five areas in east Queensland, from Redcliffe Vale (110 km west of Mackay) south to Kingaroy (BRI collection records, n.d. as per conservation advice). Habitat includes forest and woodland on sandstone slopes and gullies with skeletal soil, or deeper soils adjacent to deeply weathered laterite (Kellermann et al., 2006). Locations include Redcliffe Vale; near Blackwater; Callide Range, north-east of Biloela; East Boogalgopal, west of Monto; and in the Kingaroy area north of Nanango, north-east of Jandowae and near Goodger (BRI collection records, n.d. as per conservation advice). Locations within State forest and timber reserve include SF 236, TR 170, Coominglah SF and Diamondy SF (BRI collection records, n.d. as per conservation advice).	**Unlikely to Occur.** No suitable habitat is present within the Project area and historical records are >80km north-west (ALA 1995).
	Sophora fraseri	V	V	This species is widespread but not common through south-east Queensland. It grows in moist habitats, often in hilly terrain at altitudes from 60-660 m on shallow soils along rainforest margins in eucalypt forests or in large canopy gaps in closed forest communities (Conservation Advice 2008 - EPBC).	**Unlikely to Occur.** No suitable habitat is present within the Project area.

references for *Polianthion minutiflorum*

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Kellermann, J, Rye, BL & Thiele, KR 2006, 'Polianthion, a new genus of Rhamnaceae (Pomaderreae) FromWestern Australia and Queensland', Australian Systematic Botany, vol. 19, no. 2, p 169-181.

Appendix F

Flora and Fauna Observations

Table 1: Flora Species List – Targeted Surveys 2023

Scientific Name	Common Name	Family	NC Act Listing[1]
Eucalyptus crebra	Narrow-leaved red ironbark	Myrtaceae	Least Concern
Eucalyptus tereticornis	Queensland blue gum	Myrtaceae	Least Concern
Melaleuca viminalis	Weeping bottlebrush	Myrtaceae	Least Concern
Melaleuca quinquenervia	Swamp paperbark	Myrtaceae	Least Concern
Eucalyptus megacornuta	Warted yate	Myrtaceae	Introduced
Casuarina cunninghamian	River sheoak	Casuarinaceae	Least Concern
Angophora subvelutina	Broad-leaved apple	Myrtaceae	Least Concern
Araucaria cunninghamii	Hoop pine	Araucariaceae	Least Concern
Corymbia erythrophloia	Variable-barked bloodwood	Myrtaceae	Least Concern
Corymbia intermedia	Pink bloodwood	Myrtaceae	Least Concern
Lophostemon suaveolens	Swamp box	Myrtaceae	Least Concern
Corymbia tessellaris	Moreton Bay ash	Myrtaceae	Least Concern
Jagera pseudorhus	Foambark-tree	Sapindaceae	Least Concern
Vachellia bidwilli	Corkwood wattle	Leguminosae	Least Concern
Macaranga tanarius	Macaranga	Euphorbiaceae	Least Concern
Ficus coronata	Creek sandpaper fig	Moraceae	Least Concern
Pittosporum undulatum	Sweet pittosporum	Pittosporaceae	Least Concern
Passiflora herbertiana subsp. herbertiana	Native passionfruit	Passifloraceae	Least Concern
Eustrephus latifolius	Wombat Berry	Laxmanniaceae	Least Concern
Tradescantia fluminensis	White-flowered wandering Jew	Commelinaceae	-
Secamone elliptica	Corky milk vine	Apocynaceae	Least Concern
Brachyachne convergens	Common couch (native)	Poaceae	Least Concern
Dicondra repens	Kidney weed	Convolvulaceae	Least Concern
Stephania duponica	Snake vine	Menispermaceae	Least Concern
Smilax australis	Barbed-wire vine	Smilacaceae	Least Concern
Malotus phillipensis	Red kamala	Euphorbiaceae	Least Concern
Cheilanthes tenuifolia	Rock Fern	Pteridaceae	Least Concern
Pandorea pandorana	Wonga vine	Bignoniaceae	Least Concern
Heteropogon contortus	Black speargrass	Poaceae	Least Concern

[1] Listings under the Queensland Nature Conservation Act 1992: Introduced, Least Concern, Special Least Concern, Vulnerable

Scientific Name	Common Name	Family	NC Act Listing[1]
Themeda triandra	Kangaroo grass	Poaceae	Least Concern
Cryptostegia grandiflora	Rubber Vine	Apocynaceae	-
Lantana camara	Lantana	Verbenaceae	-
Bryophyllum delagoense	Mother of Millions	Crassulaceae	-
Gomphocarpus physocarpus	Balloon cotton bush	Apocynaceae	-
Ageratum conyzoides	Billy goat weed	Asteraceae	-
Cirsium vulgare	Spear thistle	Asteraceae	-
Bidens pilosa	Cobblers pegs	Asteraceae	-
Senna pendula var. glabrata	Easter Cassia	Leguminosae	-
Erigeron bonariensis	Fleabane	Asteraceae	-
Sporobolus pyramidalis	Giants rat tail grass	Poaceae	-
Acacia disparrima	Brown salwood	Fabaceae	Least Concern

Table 2: Fauna Species List – Targeted Surveys 2023

Scientific Name	Common Name	Nc Act Listing[2]	EPBC Act Listing[3]
Birds			
Anthus novaeseelandiae	Australasian Pipit	Least Concern	Ma
Gymnorhina tibicen	Australian Magpie	Least Concern	-
Tyto novaehollandiae	Australian Masked Owl	Least Concern	-
Coracina novaehollandiae	Black-faced Cuckoo-shrike	Least Concern	-
Artamus cinereus	Black-faced Woodswallow	Least Concern	-
Falco berigora	Brown Falcon	Least Concern	-
Lichmera indistincta	Brown Honeyeater	Least Concern	-
Synoicus ypsilophorus	Brown Quail	Least Concern	-
Bubulcus ibis	Cattle Egret	Least Concern	-
Taeniopygia bichenovii	Double-barred Finch	Least Concern	-
Rhipidura albiscapa	Gray Fantail	Least Concern	-
Dacelo novaeguineae	Laughing Kookaburra	Least Concern	-
Meliphaga lewinii	Lewin's Honeyeater	Least Concern	-
Grallina cyanoleuca	Magpie lark	Least Concern	Ma
Vanellus miles	Masked Lapwing	Least Concern	-
Falco cenchroides	Nankeen Kestrel	Least Concern	-
Platycercus adscitus	Pale-headed Rosella	Least Concern	-
Cracticus nigrogularis	Pied Butcherbird	Least Concern	-
Strepera graculina	Pied Currawong	Least Concern	-
Merops ornatus	Rainbow Bee-eater	Least Concern	Ma
Trichoglossus moluccanus	Rainbow Lorikeet	Least Concern	-
Malurus melanocephalus	Red-backed Fairy-wren	Least Concern	-
Calyptorhynchus banksii	Red-tailed Black Cockatoo	Least Concern	-
Aprosmictus erythropterus	Red-winged parrot	Least Concern	-
Pachycephala rufiventris	Rufous Whistler	Least Concern	-
Myzomela sanguinolenta	Scarlett Honeyeater	Least Concern	-
Threskiornis spinicollis	Straw-necked Ibis	Least Concern	-
Pardalotus striatus	Striated Pardalote	Least Concern	-
Cacatua galerita	Sulphur-crested Cockatoo	Least Concern	-
Podargus strigoides	Tawny Frogmouth	Least Concern	-

[2] Listings under the Queensland Nature Conservation Act 1992: Introduced, Least Concern, Special Least Concern, Vulnerable
[3] Listings under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999: Introduced (I), Marine (Ma), Migratory (Mi), Vulnerable (V)

Scientific Name	Common Name	Nc Act Listing[2]	EPBC Act Listing[3]
Corvus orru	Torresian Crow	Least Concern	-
Aquila audax	Wedge-tailed Eagle	Least Concern	-
Hirundo neoxena	Welcome Swallow	Least Concern	Ma
Egretta novaehollandiae	White faced Heron	Least Concern	-
Sericornis frontalis	White-browed Scrubwren	Least Concern	-
Gerygone olivacea	White-throated Gerygone	Least Concern	-
Melithreptus albogularis	White-throated Honeyeater	Least Concern	-
Corcorax melanorhamphos	White-winged Chough	Least Concern	-
Mammals			
Trichosurus vulpecula	Common Brushtail Possum	Least Concern	-
Macropus giganteus	Eastern Grey Kangaroo	Least Concern	-
Isoodon macrourus	Northern Brown Bandicoot	Least Concern	-
Petaurus breviceps	Sugar Glider	Least Concern	-
Notamacropus parryi	Whiptail Wallaby	Least Concern	-
Reptiles			
Morelia spilota	Carpet Python	Least Concern	-
Other			
Pedinogyra rotabilis	Southern Flat-Coiled Snail	Least Concern	-