



Old Gympie Road Upgrades

MNES Impact Assessment Report

PREPARED FOR



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Old Gympie Road Upgrades

MNES Impact Assessment Report

0824420



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ACRONYMS AND ABBREVIATIONS

Acronym	Description
CMB	City of Moreton Bay
DCCEEW	Department of Climate Change, Energy, the Environment and Water
Development Footprint	The area within which all Project infrastructure and activities are proposed, comprising approximately 23.8 ha
DoEE	Department of Environment and Energy
DEWHA	Department of the Environment, Water, Heritage and the Arts
DSEWPC	Department of Sustainability, Environment, water, Population and Communities
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
ERM	Environmental Resources Management Australia Pty Ltd
MNES	Matters of National Environmental Significance
PMST	Protected Matters Search Tool
Project Area	The area encompassing the Development Footprint and a 10 m buffer, with a total area of approximately 38.2 ha
SIA	Significant Impact Assessment
SIG1.1	Significant Impact Guidelines 1.1 – MNES
SPRAT	Species Profile and Threats Database
the Project	Active transport infrastructure upgrades of approximately 4.7 kilometres (km) of Old Gympie Road
the Report	Matters of National Environmental Significance Report

EXECUTIVE SUMMARY

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by the City of Moreton Bay (CMB) to provide support for proposed active transport infrastructure upgrades of approximately 4.7 kilometres (km) of Old Gympie Road (the Project). Old Gympie Road currently functions as a two-lane north-south arterial route servicing surrounding residential areas, schools, community facilities, and light industrial precincts. The corridor is experiencing increasing transport demand, including forecast growth in vehicle movements and the need for improved active transport connectivity. To address these constraints, upgrades to the road from a two to four lane corridor, improved creek crossings and fauna movement structures, pedestrian access and safety and existing utility re-location are proposed.

This Matters of National Environmental Significance (MNES) Report (the Report) has been prepared to support a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The following key terms will be used throughout this Report:

- **Project Area:** The area encompassing the Development Footprint and a 10 m buffer, with a total area of approximately 38.2 ha; and
- **Development Footprint:** The area within which all Project infrastructure and activities are proposed, comprising approximately 23.8 ha. The Development Footprint does not necessarily correspond to the extent of permanent vegetation clearing, but includes all areas required for Project activities, including construction, disturbance, and rehabilitation.

The purpose of this Report is to identify and describe key ecological values associated with the Project Area, inclusive of MNES identified through desktop assessment and field surveys. This report further aims to determine the potential for significant impacts on MNES as a result of the Project.

There are no listed threatened ecological communities or heritage places occurring within the Project Area, and therefore, this Report is limited to an assessment of impacts to EPBC Act listed threatened species and migratory species that are known or with potential to occur within the Project Area and the Moreton Bay Ramsar Wetland, located 5 km east of the Project Area.

While the majority (92.4%) of the Project Area is heavily disturbed containing existing road surface, pedestrian paths, car parks and associated infrastructure, some ecological values exist. The Project Area has therefore been classified into six broad habitat types, defined based on ground-truthed vegetation communities and landscape characteristics. These include:

- Native woodland dominated by *Casuarina* and *Acacia* species with weedy ground cover;
- Mixed forest dominated by broad-leaved paperbark (*Melaleuca quinquenervia*) and/or forest red gum (*Eucalyptus tereticornis*);
- Mature ornamental garden vegetation;
- Mixed roadside vegetation with mature street trees including *Eucalyptus* spp.;
- Waterbodies; and
- Developed areas including managed roadside grass, buildings, roads, and parking areas.

The significant impact assessments documented in this Report have been undertaken in accordance with the Significant Impact Guidelines 1.1 – MNES (SIG1.1) (DEWHA, 2013) for the following MNES, noting the potential direct disturbance to small areas of habitat for each matter:

- Known to occur:
 - koala (*Phascolarctos cinereus*) – listed endangered under the EPBC Act (disturbance to 1.9 ha of foraging and breeding habitat); and
 - grey-headed flying-fox (*Pteropus poliocephalus*) – listed vulnerable under the EPBC Act (disturbance to 1.9 ha of foraging habitat);
- Likely to occur:
 - fork-tailed swift (*Apus pacificus*) – listed migratory under the EPBC Act (no habitat mapped as species is likely to occur as an aerial visitor);
 - Latham's snipe (*Gallinago hardwickii*) – listed vulnerable and migratory under the EPBC Act (disturbance to less than 0.1 ha of potential habitat); and
 - white-throated needletail (*Hirundapus caudacutus*) – listed vulnerable and migratory under the EPBC Act (no habitat mapped as species is likely to occur as an aerial visitor);
- Potential to occur:
 - Austral toadflax (*Thesium australe*) – listed vulnerable under the EPBC Act (disturbance to 1.6 ha of potential habitat);
 - Australasian bittern (*Botaurus poiciloptilus*) – listed endangered under the EPBC Act (disturbance to less than 0.1 ha of potential habitat);
 - Australian painted snipe (*Rostratula australis*) – listed endangered under the EPBC Act (disturbance to less than 0.1 ha of potential habitat);
 - Common sandpiper (*Actitis hypoleucos*) – listed migratory under the EPBC Act (disturbance to less than 0.1 ha of potential habitat);
 - Curlew sandpiper (*Calidris ferruginea*) – listed critically endangered and migratory under the EPBC Act (disturbance to less than 0.1 ha of potential habitat);
 - Lesser swamp orchid (*Phaius australis*) – listed endangered under the EPBC Act (disturbance to 1.6 ha of potential habitat);
 - Oriental cuckoo (*Cuculus optatus*) – listed migratory under the EPBC Act (disturbance to 1.7 ha of potential habitat);
 - Osprey (*Pandion haliaetus*) – listed vulnerable and migratory under the EPBC Act (no habitat mapped as species is likely to occur as an aerial visitor);
 - Pectoral sandpiper (*Calidris melanotos*) – listed migratory under the EPBC Act (disturbance to less than 0.1 ha of potential habitat);
 - Sharp-tailed sandpiper (*Calidris acuminata*) – listed vulnerable and migratory under the EPBC Act (disturbance to less than 0.1 ha of potential habitat); and
 - South-eastern glossy black-cockatoo (*Calyptorhynchus lathami lathami*) – listed vulnerable under the EPBC Act (disturbance to 0.1 ha of potential habitat).

Following the significant impact assessments for each of the above listed threatened and migratory species, it is concluded that the Project is unlikely to result in a significant impact to any MNES and offsets are not required.

1. INTRODUCTION

Environmental Resources Management Australia Pty Ltd (ERM) has been engaged by the City of Moreton Bay (CMB) to provide support for proposed active transport infrastructure upgrades of approximately 4.7 kilometres (km) of Old Gympie Road (the Project). This Matters of National Environmental Significance (MNES) Report (the Report) has been prepared to support a referral under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

The following key terms will be used throughout this Report:

- **Project Area:** The area encompassing the Development Footprint and a 10 m buffer, with a total area of approximately 38.2 ha; and
- **Development Footprint:** The area within which all Project infrastructure and activities are proposed, comprising approximately 23.8 ha. The Development Footprint does not necessarily correspond to the extent of permanent vegetation clearing, but includes all areas required for Project activities, including construction, disturbance, and rehabilitation.

1.1 SCOPE AND OBJECTIVES

The purpose of this Report is to identify and describe key ecological values associated with the Project Area, inclusive of Matters of National Environmental Significance (MNES) identified through desktop assessment and field surveys. This report further aims to determine the potential for significant impacts on MNES as a result of the Project. Specifically, the objectives of this Report are as follows:

- Describe general biodiversity values and environmental condition of the Project Area, including watercourses, wetlands, MNES and ground-truthed regional ecosystems;
- Identify the Likelihood of Occurrence (LoO) (known, likely, potential, or unlikely) of MNES based on known distribution, habitat preferences and records;
- Describe and map habitat for MNES within the Project Area, based on habitat mapping rules developed from the desktop review and ground-truthed information;
- Describe and assess the potential direct and indirect impacts of the Project on the identified MNES associated with the Project Area;
- Describe mitigation and management measures that will be undertaken to reduce potential impact on MNES;
- Document the outcomes of an impact assessment, in accordance with the *Significant Impact Guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999* (SIG1.1) (DEWHA, 2013) for all MNES known, likely or potential to occur within the Project Area; and
- Determine whether significant residual impacts to MNES will result from the Project and if offsets are required.

1.2 PROJECT DESCRIPTION

The Project is located within the City of Moreton Bay Local Government Area (LGA) and extends south along Old Gympie Road from Boundary Road to Anzac Avenue (herein referred to as the Project Area) (Figure 1-1).

Old Gympie Road currently functions as a two-lane north-south arterial route servicing surrounding residential areas, schools, community facilities, and light industrial precincts. The corridor is experiencing increasing transport demand, including forecast growth in vehicle movements and the need for improved active transport connectivity. To address these constraints, upgrades to the road corridor are proposed.

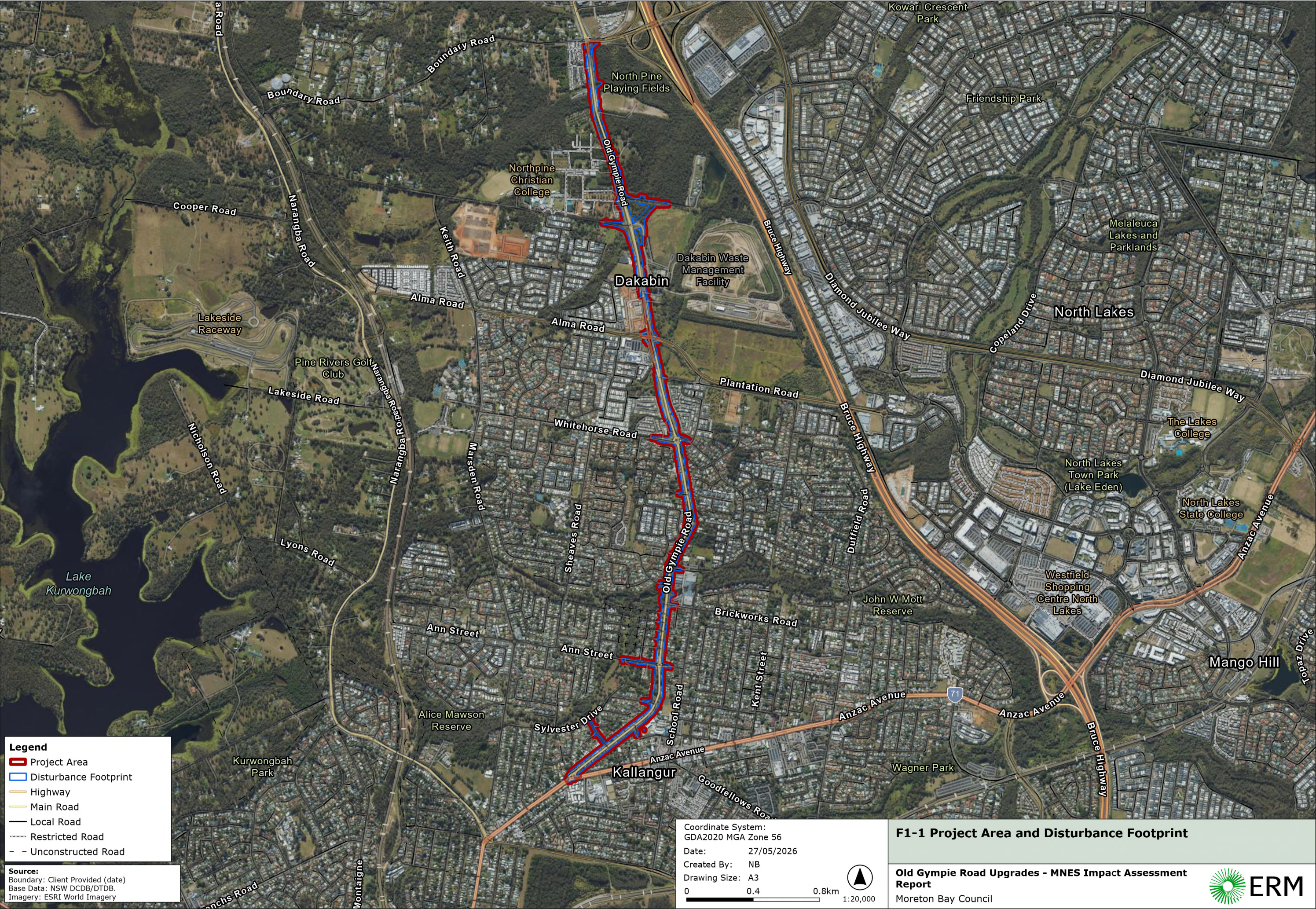
According to the Project documentation provided by CMB (Section 3.1), the key components of the Project include:

- Corridor widening to two lanes in each direction;
- A separated active transport network, comprising:
 - a 4.5 – 5.5 m shared active transport corridor to accommodate a two-way cycle track and pedestrian path on one side of the corridor; and
 - a 2.5 m wide shared path on the opposite side;
- A crossing upgrade at Freshwater Creek to replace and upgrade aged culverts;
- Intersection and access improvements, including upgraded turning movements and signalised pedestrian crossings;
- Green infrastructure integration, including fauna-movement structures, fauna-exclusion fencing north of Goodwin Road, and tree planting to improve ecological function;
- Public utility plant adjustments;
- Extension of the existing car parking area at 134 School Road, Kallangur; and
- Reconfiguration of the Dakabin Waste Management Facility access and provision of a new internal access road to improve safety and network function.

Previous ecological surveys have been undertaken within the Project Area, which have been relied upon to inform MNES values. Previous ecological surveys were conducted by two ecologists from 28 South, over two days in July 2025 (28 South, 2025). The field survey aimed to determine the presence of MNES ecological values within the Project Area, through:

- Ground-truthing of vegetation communities;
- Threatened Ecological Community assessments;
- Fauna habitat assessments; and
- Targeted threatened flora and fauna surveys (28 South, 2025).

The Development Footprint has been provided as an extract from the design model for the Project by CMB and is contained within the Project Area identifying areas to be cleared, disturbed only or retained. An Arboricultural Impact Assessment (Independent Arboricultural Services, 2026) following a detailed field survey has been prepared to assess impacts to existing trees based on earthworks and other physical works (e.g. service relocations, footpath construction etc.) and documents those trees that are to be removed and those trees that are to be retained. Therefore, there will be overlap between the Development Footprint and trees to be retained as outlined within the arborist assessment.



2. LEGISLATION AND POLICY CONTEXT

This Report has been prepared in accordance with Commonwealth and State legislation and policies, as specified in Table 2-1.

TABLE 2-1: LEGISLATION AND POLICY CONTEXT

Act / Policy	Administering Authority	Purpose
Commonwealth Legislation and Policies		
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Department of Climate Change, Energy, the Environment and Water (DCCEEW)	The EPBC Act administers the protection of the environment and MNES within Australia, which are: • World heritage properties; • National heritage properties; • Wetlands of international importance; • Threatened species and ecological communities; • Migratory species; • Commonwealth marine areas; • The Great Barrier Reef Marine Park; • Nuclear Actions (including Uranium mines); and • Water Resources. The desktop assessment was undertaken to identify the potential presence of MNES Threatened Ecological Communities, threatened species and migratory species and assessed these into 'known to occur', 'likely to occur' and 'potential to occur' categories.
EPBC Act Environmental Offsets Policy 2012 (Environmental Offsets Policy)	Department of Climate Change, Energy, the Environment and Water	The Environmental Offsets Policy comes into effect where there is a significant residual impact on an identified MNES value. The policy provides guidance on the role of offsets and when a proposed offset is considered suitable.

3. ASSESSMENT METHODOLOGY

3.1 DESKTOP ASSESSMENT

A comprehensive desktop review of the Project and relevant information sources was undertaken to identify the MNES associated with the Project Area, document any gaps in existing documentation, and support the determination of the potential for significant impacts to MNES.

This review was utilised to produce a preliminary likelihood of occurrence (LoO) analysis for significant species and communities. The Protected Matters Search Tool (PMST) and WildNet database results were cross-checked with the Atlas of Living Australia database records within a 1 km buffer surrounding the Project Area. The PMST search results are presented in Appendix A.

The desktop review identified several key information gaps and informed the updated likelihood of occurrence assessment (refer to Appendix B). These gaps were communicated to CMB, and a targeted field survey was subsequently undertaken to support the identification and verification of relevant MNES and associated habitat within the Project Area (Section 3.3) that may be impacted by the Project.

Additionally, the desktop review included a thorough review of previously prepared ecological reports for the Project Area, including:

- Ecological Assessment Report – Old Gympie Road Upgrade – Anzac Avenue to Boundary Road (28 South, 2025);
- Arboricultural Impact Assessment (Independent Arboricultural Services, 2026);
- Detailed Design Report (Arup, 2026a);
- Environmental Management Plan (Arup, 2026b);
- Detailed Design Landscape Architecture and Green Infrastructure Tech Note (Arup, 2026c); and
- Old Gympie Road Project Plan design drawings (City of Moreton Bay, 2025).

A summary of the desktop databases, including Commonwealth, State, and other public information sources, is provided in Table 3-1.

TABLE 3-1: DATA SOURCES REVIEWED FOR DESKTOP ANALYSIS

Information Source	Name	Data Description
DCCEEW	PMST	The search tool provides predictive results of matters of national environmental significance based on mapping of 'known' and 'potential' species distribution, habitat, ecological communities and wetlands. The outputs are based on modelling results and do not necessarily reflect known records of species or communities. The features highlighted by the search are considered further through a LoO assessment. The PMST is presented in Appendix A. Search Area: Project Area and a 1 km buffer. Search date: 12 May 2026

Information Source	Name	Data Description
Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development	Queensland Globe	This is a Google Earth based product that allows viewing of spatial data and imagery covering Queensland.
Ala.org.au	Atlas of Living Australia	Australia's national biodiversity database (supported by the National Collaborative Research Infrastructure Strategy, CSIRO). The database contains records accessed through an interactive spatial portal. Threatened species are searched to identify known records in proximity to the Project Area. Search area: Project Area and a 1 km buffer. Search date: 12 May 2026
DCCEEW	Species Profile and Threats Database (SPRAT)	The SPRAT profiles and associated conservation advice documents were consulted as they provide detailed information for the LoO assessment on: - Species distribution; and - Species habitat preferred and general.
City of Moreton Bay, 2026	Various reports	A compilation of reports in relation the Project inclusive of: - Arboricultural Impact Assessment Report (Independent Arboricultural Services, 2026); - Ecological Assessment Report – Old Gympie Road Upgrade – Anzac Avenue to Boundary Road (28 South, 2025) (Appendix C) - Detailed Design Report (Arup, 2026a); - Environmental Management Plan (Arup, 2026b); - Detailed Design Landscape Architecture and Green Infrastructure Tech Note (Arup, 2026c); and - Old Gympie Road Project Plan design drawings (City of Moreton Bay, 2025).

3.2 LIKELIHOOD OF OCCURRENCE

A preliminary likelihood of occurrence assessment, informed by desktop sources and the previously completed field surveys undertaken across the Project Area was undertaken. Desktop sources identified several threatened fauna, flora and ecological communities and migratory species listed under the EPBC Act which have been recorded previously or are predicted to occur within a 1 km buffer of the Project Area.

Following completion of the field surveys and review of previous field studies as referenced above, the preliminary likelihood of occurrence assessment was refined using site-specific observations and detailed habitat information collected within the Project Area. This process informed the final likelihood of occurrence outcomes.

The assessment ranks the likelihood of MNES occurring through analysis of species distribution information and the presence of specific habitat attributes as identified through desktop analysis and field surveys. The criteria applied are outlined in Table 3-2.

In accordance with terminology for MNES, preferable habitat are areas or a location which has the potential to provide necessary resources needed to meet the definition of 'habitat critical to the survival of a species'. This can include breeding, nesting and foraging habitat features or food resources. Suitable habitat are areas that contain some elements utilised by the species also could have been used transiently by a species.

Habitat and distribution information for species is sourced from the SPRAT database and/or Conservation Advice where available, supplemented by other primary sources (e.g., published literature). Species records were sourced from WildNet and/or Atlas of Living Australia. Where a species was recorded within 1 km of the Project Area, that is dated within the previous 20 years, these records are defined as a 'recent record'.

TABLE 3-2: LIKELIHOOD OF OCCURRENCE CRITERIA

	Preferred habitat exists	Suitable habitat exists¹	Habitat does not exist²
Records within Project Area (based on site surveys and recent (last 20 years) records)	Known	Known	Known
Records within 1 km of the Project Area	Likely	Potential	Unlikely
No records within 1 km of the Project Area, but Project Area is within known distribution	Potential	Potential	Unlikely
No records within 1 km of the Project Area, and Project Area is outside of distribution	Unlikely	Unlikely	Unlikely

¹Habitat may be considered suitable but not known preferable because: some desired habitat features may be present, but not all; habitat may have poor connectivity; or habitat may be known to be disturbed; or suitable habitat requires confirmation.

²Based on sources reviewed and/or field survey results.

3.3 FIELD SURVEY

A one-day field survey was undertaken by two ERM ecologists on 29 April 2026. The objective of the survey was to verify the findings of the previously prepared Environmental Assessment Report (28 South, 2025) and to undertake supplementary ecological surveys required to define MNES values within the Development Footprint and support the development of this Report to support a referral under the EPBC Act.

3.3.1 SURVEY GUIDELINES

The field survey was conducted in accordance with Commonwealth and State survey guidelines, summarised in Table 3-3. It is noted that some of these guidelines are not mandatory, however, are considered by DCCEEW when reviewing survey adequacy on threatened and migratory species.

TABLE 3-3: COMMONWEALTH AND STATE SURVEY GUIDELINES

Source	Survey Guideline Description
Department of the Environment, Water, Heritage and the Arts (DEWHA) (2017)	<u>Survey Guidelines for Australia's Threatened Birds</u> The 'Survey Guidelines for Australia's Threatened Birds' assist in determining the likelihood of a bird species presence or absence within a survey area, using species-specific survey methods. These guidelines are not mandatory; however, they have been prepared by expert sources and are helpful in determining the presence or absence of a species.
Department of Sustainability, Environment, water, Population and Communities (DSEWPC) (2011a)	<u>Survey Guidelines for Australia's Threatened Mammals</u> The 'Survey Guidelines for Australia's Threatened Mammals' assist in determining the likelihood of a mammalian species presence or absence within a survey area, using species-specific survey methods. These guidelines are not mandatory; however, they have been prepared by expert sources and are helpful in determining the presence or absence of a species.
DSEWPC (2011b)	<u>Survey Guidelines for Australia's Threatened Reptiles</u> The 'Survey Guidelines for Australia's Threatened Reptiles' assist in determining the likelihood of a reptilian species presence or absence within a survey area, using species-specific survey methods. These guidelines are not mandatory; however, they have been prepared by expert sources and are helpful in determining the presence or absence of a species.
DSEWPC (2011c)	<u>Draft referral guidelines for nationally listed Brigalow Belt reptiles</u> The 'Draft referral guidelines for nationally listed Brigalow Belt reptiles' applies to nine (9) nationally listed reptiles of the Brigalow Belt, anywhere they may occur in Australia. These guidelines detail survey effort, technique, and considerations.
Department of Environment and Energy (DoEE, 2017)	<u>Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species.</u> The 'Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species' applies to 37 migratory shorebirds that regularly visit Australia yearly and are listed as Migratory under the EPBC Act. The purpose of this policy statement is to assist proponents in avoiding, assessing, and mitigating significant impacts on migratory shorebirds listed under the EPBC Act. These guidelines detail survey timing, effort, coverage and minimum requirements.
Neldner et al. (2024)	<u>Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland Version 7.0.</u> The manual provides: Specific procedures for regional ecosystem and vegetation survey and mapping staff from the Queensland Herbarium; and General guidelines for other individuals or organisations carrying out similar mapping.
Department of the Environment, Tourism, Science and Innovation (2020)	<u>Guide to determining terrestrial habitat quality: Methods for assessing habitat quality under the Queensland Environmental Offsets Policy</u> This guide provides methods for undertaking habitat quality assessments required under the Queensland Environmental Offsets Framework for the following prescribed environmental matter groups:

Source	Survey Guideline Description
	• Prescribed regional ecosystems; • Terrestrial fauna habitat, including koala habitat outside of South-East Queensland; and • A koala habitat area in South-East Queensland.

3.3.2 SURVEY TECHNIQUES AND EFFORT

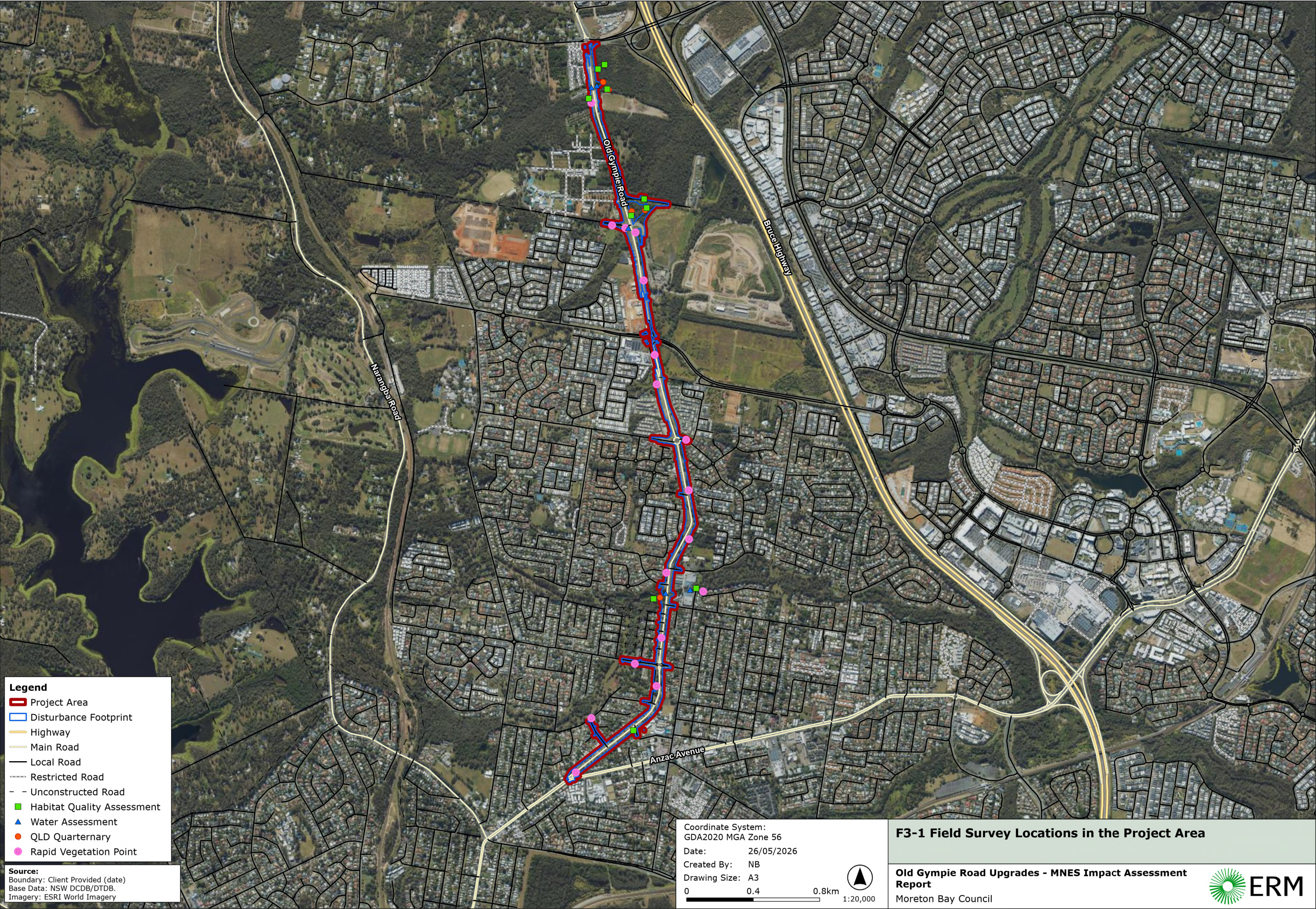
Survey methodologies employed and the effort conducted is presented in

Table 3-4 and survey locations are presented on Figure 3-1. It is noted that Figure 3-1 only presents the field survey locations undertaken by ERM in 2025, and does not include previous ecological surveys undertaken within the Project Area. Incidental observations of native flora and fauna, including any MNES, were also recorded during the field survey.

The survey effort associated with previous field investigations undertaken within the Project Area by 28 South and EcoSmart Ecology (EcoSmart) is described in the Environmental Assessment Report (28 South, 2025) found in Appendix C.

TABLE 3-4: FIELD SURVEY EFFORT

Survey Target	Survey Technique	Survey Effort
Vegetation assessments	Quaternary assessments	• 6 quaternary vegetation assessments.
	Rapid vegetation plots	• 17 rapid vegetation plots.
Fauna habitat features	Habitat quality assessment	• 10 habitat quality assessments.
	Waterbody assessment	• 5 waterbody assessments.
Targeted species surveys	Surveys for chewed seed cones (orts) of preferred foraging tree species (DCCEEW, 2022) of south-eastern glossy black cockatoo	• 1 chewed ort search in suitable habitat
	Scat and sign searches for koala (DES, 2022).	• Koala scat and sign searches conducted at each habitat assessment location.



Legend

- Project Area
- Disturbance Footprint
- Highway
- Main Road
- Local Road
- Restricted Road
- Unconstructed Road
- Habitat Quality Assessment
- Water Assessment
- QLD Quarternary
- Rapid Vegetation Point

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 26/05/2026
Created By: NB
Drawing Size: A3
0 0.4 0.8km
1:20,000

F3-1 Field Survey Locations in the Project Area

Old Gympie Road Upgrades - MNES Impact Assessment Report
Moreton Bay Council



3.3.2.1 QUATERNARY VEGETATION ASSESSMENTS

Vegetation community assessments were undertaken to describe the type and condition of the vegetation communities in the Project Area. The outcomes of the assessment were used to inform the likelihood of occurrence assessment of listed threatened species or other matters of ecological significance.

The quaternary assessments undertaken included:

- Representative sampling of regional ecosystems, including quaternary assessments in accordance with (Neldner, 2024);
- assessment of water features (such as gully lines) and habitat values;
- Recording of topographical features; and
- Defining the barriers of both disturbed and undisturbed areas.

3.3.2.2 RAPID VEGETATION ASSESSMENTS

Rapid vegetation assessments were conducted while traversing the Project Area to identify and verify regional ecosystems and broad vegetation types between quaternary and/or habitat assessment locations. These assessments provide a rapid means of confirming whether mapped regional ecosystems or vegetation patches are consistent with state mapping or adjacent vegetation and are primarily used to support ground-truthed vegetation mapping following field surveys.

3.3.2.3 HABITAT ASSESSMENTS

Habitat quality assessments were carried out in line with *Guide to determining terrestrial habitat quality* (DETSI, 2020) to determine the occurrence of specific habitat types and features for threatened species in particular areas. Ecological and habitat features recorded as part of this assessment include:

- Assessment of condition to determine if regrowth or remnant, as defined by the *Vegetation Management Act 1999*;
- Connectivity attributes;
- Slope and terrain;
- Soil moisture and description (i.e., ground cover);
- Food sources;
- Signs of fauna (i.e., scats and scratches) and/or fauna breeding (i.e., bird nests or juvenile fauna);
- Sheltering/breeding resources (i.e., woody debris, hollow logs, stags, rocky escapements);
- Hollow presence, size, abundance and type (i.e., large hollows in live, mature trees over 80cm diameter and breast height (DBH));
- Other microhabitat features (i.e., associated species, gilgai etc.);
- Understorey density;
- Canopy cover and strata height/s;
- Leaf litter description;
- Presence of disturbances (i.e., grazing, dogs, weeds, erosion, fire, dieback, pollution, light/noise);
- Water and wetland features (i.e., proximity, type, flow, vegetation etc.); and
- Bank features.

Habitat assessments targeted species-specific habitat requirements relevant to the known, likely and potentially occurring species (as per the likelihood of occurrence assessment).

Habitat assessments for koala focused on connectivity of koala habitat areas, tree species, size and location within the Development Footprint. Scat and scratch mark searches were undertaken for Koala as per the *Survey Guidelines for Australia's Threatened Mammals* (as listed under the EPBC Act).

Habitat assessments for south-eastern glossy black-cockatoo focused on presence of Casuarina and Allocasuarina food trees, and targeted surveys for the presence of chewed orts.

Habitat assessments for wading birds focused on presence of trees and shrubs near waterbodies, depth of water, presence of suitable grasses, and presence of bare mud.

3.3.2.4 WATERBODY ASSESSMENTS

General assessments were undertaken of watercourses, artificial waterbodies and infrastructure within waterbodies (e.g. culverts) within or adjacent to the Project Area.

3.3.2.5 INCIDENTAL SIGHTINGS

Incidental surveys are defined as any threatened or migratory species observed on a generic survey site during non-survey activities (i.e., when driving and walking around site etc.). Any species observed outside of the standard surveys must be recorded as an incidental on-site record. Incidental surveys are relevant for all threatened flora and fauna, and migratory fauna.

3.3.3 SURVEY CONDITIONS

Survey conditions for the survey were obtained from the Brisbane Airport Bureau of Meteorology weather station (station number 040842) (BOM, 2026), located 20.2 km south-east of the Project Area. This is the nearest publicly available weather data. The survey conditions within the Project area included a cool morning and warm day, with minor rainfall recorded.

The weather conditions recorded at the Brisbane Airport weather station (040842) during the survey period are summarised in Table 3-5.

TABLE 3-5: WEATHER CONDITIONS AT BRISBANE AIRPORT (040842)

Survey Date	Temp °C		Rain mm	9 AM Observations				3 PM Observations			
	Min	Max		Temp °C	RH	Wind Dir	Wind Spd (km/hr)	Temp °C	RH	Wind Dir	Wind Spd (km/hr)
29/04/2026	15.6	25.3	5.0	20.8	85	SSW	13	24.3	61	SE	19

3.3.4 SURVEY ADEQUACY

A survey adequacy review has been undertaken for the survey effort of threatened and migratory species and special least concern fauna with a likelihood of occurrence within the Project Area. The survey adequacy review assesses the survey effort for each species against their survey guideline requirements. The survey adequacy assessment is provided in Table 3-6. Where survey guidelines have not been met for some of the listed species, a conservative approach was taken to assume potential presence, and habitat mapping was undertaken to define potential habitat for consideration through the impact assessment process.

TABLE 3-6: SURVEY ADEQUACY ASSESSMENT

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Known to occur			
Grey-headed flying-fox	<u>Survey Guidelines for Australia's Threatened Bats</u> (DEWHA, 2024) - A review of the known flying-fox camps should be conducted for the Project Area and general wider area prior to surveys; - Daytime surveys for camps - Surveys of vegetation communities and food plants; and - Nighttime surveys – conducting walking transects for feeding and flying bats.	6 quaternary vegetation assessments 17 rapid vegetation assessments 10 habitat quality assessments	<i>Survey adequacy is met for species.</i> - Quaternary vegetation assessments and rapid vegetation were conducted throughout the Project Area to determine presence of foraging habitat; - Habitat assessments were conducted throughout the Project Area to determine species habitat; and - Species was not recorded during the field surveys.
Koala	<u>Terrestrial Vertebrate Fauna Survey Guidelines for Queensland</u> (Eyre T. , et al., 2022) Requires two-person, 30-minute spotlight searches of 100 x 100 m survey site. This can include spotlighting up one side of the 100 x 100 m area and then spotlighting back the other side of the 100 x 100 m area. Scat and sign search can coincide with the systematic diurnal active searches, within 50 x 50 m quadrats. <u>A review of Koala habitat assessment criteria and methods</u> (Youngentob et al. (2021)). The koala habitat assessment criteria and methods specify koala surveys are to be completed by a case-by-case scenario, however general methods include: Direct observations:	6 quaternary vegetation assessments 17 rapid vegetation assessments 10 habitat quality assessments - Koala scat and sign searches were conducted at each habitat assessment location.	<i>Survey adequacy is met for species.</i> - Quaternary vegetation assessments and rapid vegetation were conducted throughout the Project Area to determine presence of locally important koala trees; - Habitat assessments were conducted throughout the Project Area to determine species habitat; - Scat and sign searches for pellets were conducted during habitat assessments in areas of suitable habitat; and - Species was not recorded during the field surveys.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
	• Direct observations should be undertaken between August and January for peak activity; • Transect and point surveys (most commonly strip transects); • Nocturnal spotlighting at smaller sites to determine species presence (detecting reflected eye shine) and density; • Trained koala detection dogs; • Mark-resight or mark-recapture; • Thermal detection drones; • Radio tracking; and • Camera trapping in areas where fresh scats and/or scratches have been recorded. Indirect observations: • Scats – Spot Assessment Technique involving looking at food trees for presence of koala scats; • Scats – rapid-Spot Assessment Technique; • Scats – koala optimised Rapid Assessment Methodology; • Scats – balanced koala scat survey; • Scats – faecal standing crop method; • Scats – trained scat detection dogs; • Scats – genetic sampling from faecal pellets; • Call playback; • Passive acoustics; • Scratches; and • Landscape nutritional quality surveys.		

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Likely to occur			
Fork-tailed swift	<u>Draft referral guidelines for 14 birds listed as migratory species under the EPBC Act</u> (DCCEEW, 2015) There are no specific survey guidelines for the fork-tailed swift, however, it is recommended that a two-hectare survey in 20 minutes is undertaken in preferred habitat (i.e., moist forests, eucalyptus or Brigalow woodlands). During annual migration periods, standardised timed surveys should be conducted, and observers should listen for calls as well as sightings.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (November to March). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.
Latham's snipe	<u>Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species</u> (DoEE, 2017) There are no species-specific survey guidelines for this species. Survey guidelines for migratory species in non-tidal areas include: • Surveys should be conducted during the period when majority of migratory shorebirds are present in the area; • Surveys should also be conducted during the breeding season (mid-April to mid-August);	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (September to March).

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
	- Surveys should not be undertaken during periods of high rainfalls or strong winds; - Surveys should not be undertaken when activities are taking place which cause disturbance to birds; - Survey effort includes: - four surveys for roosting shorebirds during the period when most shorebirds are present in the area; and - four surveys for foraging shorebirds. One survey during the northern hemisphere breeding season to capture data on birds that remain in Australia during the breeding season.		- Targeted bird surveys were not completed during the field survey. - The species was not recorded during the survey.
White-throated needletail	<u>Species Profile and Threats Database: <i>Hirundapus caudacutus</i> – White throated needletail</u> (DCCEEW, 2026) There are no targeted survey guidelines for this species, however DCCEEW have advice of surveying efforts. The species occurs at great elevations, being primarily aerial, when flying at lower altitudes are readily detectable. Systematic surveys are difficult due to the species mobility and ability to cover immense distances in a day. Any surveys must be conducted between October and April in northern and eastern Australia, and between December and March in south-eastern Australia.	6 quaternary vegetation assessments 17 rapid vegetation assessments 10 habitat quality assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> - Habitat assessments were conducted throughout the Project Area to identify suitable habitat. - Waterbody assessments were conducted to determine their suitability in providing habitat for this species. - Surveys were undertaken outside the optimal survey timeframe for this species (October to April). - Targeted bird surveys were not completed during the field survey. - The species was not recorded during the survey.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Potential to occur			
Austral toadflax	<u>Flora Survey Guidelines – Protected Plants (Flora Survey Guidelines)</u> (DETSI, 2025) There are no specific survey guidelines for this species, however information such as its approved conservation advice was consulted before field surveys. Meander surveys to be conducted when and where the species is present. This is based on undertaking surveys during flowering (if applicable) and where habitat is available. The search must be continued (timed) until no new plant species has been recorded for 30 minutes, or when the entire site/habitat has been surveyed.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments	<i>Survey adequacy not adequate due to survey timing, despite no survey guidelines.</i> • Quaternary vegetation assessments were conducted throughout the Project Area to identify suitable habitat. • Rapid vegetation assessments were conducted to confirm regional ecosystem consistency between quaternary vegetation assessment locations. • Surveys were undertaken outside the optimal survey timeframe for this species (November to February). • Species was not recorded during the field survey and thus, meander surveys were not required. • Potential habitat was conservatively mapped for this potentially occurring species.
Lesser swamp orchid			<i>Survey adequacy not adequate due to survey timing, despite no survey guidelines.</i> • Quaternary vegetation assessments were conducted throughout the Project Area to identify suitable habitat.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
			• Rapid vegetation assessments were conducted to confirm regional ecosystem consistency between quaternary vegetation assessment locations. • Surveys were undertaken outside the optimal survey timeframe for this species (August to December). • Species was not recorded during the field survey and thus, meander surveys were not required. • Potential habitat was conservatively mapped for this potentially occurring species.
Australasian bittern	There are no species-specific survey guidelines for the Australasian bittern; however, the species' conservation advice was consulted prior to the survey.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (October to February). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Australian painted snipe	<u>Survey Guidelines for Australia's Threatened Birds</u> (DEWHA, Survey guidelines for Australia's threatened birds, 2017) Targeted surveys for Australian painted snipe include area searches or transects through suitable wetlands, with detection methods by sighting and flushing. Additionally, targeted stationary observations and dawn and dusk in suitable wetland habitats is also recommended, by sighting. Brief spotlighting searches shortly after dusk may also detect the species, however this is not the preferable method of detection.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (September to March). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.
South-eastern glossy black-cockatoo	<u>Survey guidelines for Australia's threatened birds: Guidelines for detecting birds listed as threatened under the EPBC Act</u> (DEWHA, Survey guidelines for Australia's threatened birds, 2017) There are no targeted survey guidelines for this species. Active searches or transects while recording any sightings and calls within suitable habitat is recommended. Suitable foraging habitat includes eucalypt woodlands with <i>Allocasuarina</i> spp. or <i>Casuarina</i> spp. seeds. Active searches for microhabitat features include large hollows in both living and dead eucalypt trees.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 1 chewed ort search	<i>Survey adequacy appropriate for species with no survey guidelines.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat; • Ort searches were conducted in suitable habitat to identify species presence; • The survey was conducted during the optimal survey timeframe for this species (March to August); • The species was not recorded during the survey.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Curlew sandpiper	<u>Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species</u> (DoEE, 2017) There are no species-specific survey guidelines for this species. Survey guidelines for migratory species in non-tidal areas include: • Surveys should be conducted during the period when majority of migratory shorebirds are present in the area; • Surveys should also be conducted during the breeding season (mid-April to mid-August); • Surveys should not be undertaken during periods of high rainfalls or strong winds; • Surveys should not be undertaken when activities are taking place which cause disturbance to birds; and • Survey effort includes: ◦ four surveys for roosting shorebirds during the period when most shorebirds are present in the area; and ◦ four surveys for foraging shorebirds. one survey during the northern hemisphere breeding season to capture data on birds that remain in Australia during the breeding season.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (September to April). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.
Common sandpiper	one survey during the northern hemisphere breeding season to capture data on birds that remain in Australia during the breeding season.		<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
			• Surveys were undertaken outside the optimal survey timeframe for this species (August to April). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.
Pectoral sandpiper			<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (August to April). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.
Sharp-tailed sandpiper			<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
			- Waterbody assessments were conducted to determine their suitability in providing habitat for this species. - Surveys were undertaken outside the optimal survey timeframe for this species (September to April). - Targeted bird surveys were not completed during the field survey. - The species was not recorded during the survey.
Osprey	<u>Survey guidelines for Australia's threatened birds</u> (DEWHA, 2017) and <u>Draft referral guidelines for 14 birds listed as migratory species under the EPBC Act</u> (DCCEEW, 2015) - Observations from vantage points to detect birds in flight over suitable habitat; - Area searches on foot to detect birds or signs of occupancy in suitable habitat; - Transect surveys from vehicles to detect birds or nests in large survey areas; - Transect surveys from boats along suitable coastal or riparian habitat; and - Aerial surveys to detect birds or nests in large survey areas.	6 quaternary vegetation assessments 17 rapid vegetation assessments 10 habitat quality assessments 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> - Habitat assessments were conducted throughout the Project Area to identify suitable habitat. - Waterbody assessments were conducted to determine their suitability in providing habitat for this species. - Surveys were undertaken during the optimal survey timeframe for this species (April to July). - Targeted bird surveys were not completed during the field survey. - The species was not recorded during the survey.

Target Species	Survey Guideline and Requirement	Sampling Technique and Effort	Comments on Survey Adequacy
Oriental cuckoo	<u>Draft referral guideline for 14 birds listed as migratory under the EPBC Act (DCCEEW, 2015)</u> <u>Surveys during the breeding season:</u> The most appropriate survey method for the species in non-breeding areas is an area survey, preferably being a two-hectare survey in 20 minutes, over sufficient plots to estimate a density, and hence a population size across the Project Area. Surveys should be undertaken in an appropriate season – spring or summer. <u>Surveys during the migration season</u> Surveys should be undertaken over standardised timed periods. Observers should be sufficiently skilled to recognise calls as well as counting birds detected by sight. Surveys and assessments should consider habitat (and specific locations) that is suitable and important for migration passage, regardless of numbers of individuals recorded during the survey period.	• 6 quaternary vegetation assessments • 17 rapid vegetation assessments • 10 habitat quality assessments • 5 waterbody assessments	<i>Survey adequacy adequate in identifying habitat; however not adequate in targeting species.</i> • Habitat assessments were conducted throughout the Project Area to identify suitable habitat. • Waterbody assessments were conducted to determine their suitability in providing habitat for this species. • Surveys were undertaken outside the optimal survey timeframe for this species (November to May). • Targeted bird surveys were not completed during the field survey. • The species was not recorded during the survey.

3.4 HABITAT MAPPING

Habitat mapping was conducted for all EPBC Act listed threatened and/or migratory species with a likelihood to occur within the Project Area. Habitat mapping was informed by the following two datasets:

- Ground-truthed broad habitat type mapping; and
- Data from the Arboricultural Impact Assessment (Independent Arboricultural Services, 2026), comprising point-based records for all trees within or in proximity to the Development Footprint, including removal status, species, Diameter at Standard Height (DSH), height, condition, and other relevant attributes.

Broad habitat type mapping was used, consistent with the standard approach for delineating habitat into foraging, breeding, denning, and dispersal functions for EPBC Act-listed threatened and/or migratory species.

The detailed Arboricultural data was utilised for koala (*Phascolarctos cinereus*) and grey-headed flying fox (*Pteropus poliocephalus*), as this dataset provides a higher resolution to sufficiently detail an assessment of impacts to these species, which are known to occur within the Project Area. The dataset comprises all trees within or in proximity to the Development Footprint that are identified for retention, removal, or pending determination of removal.

3.5 SIGNIFICANT IMPACT ASSESSMENT

The MNES significant impact assessments have been undertaken in accordance with the SIG 1.1 (DEWHA, 2013) for all listed threatened species known, likely or potential to occur within the Project Area. The impact assessments consider direct and indirect impacts as well as any mitigation measures that will be implemented by the Project.

The impact assessments further consider the presence of habitat critical to the survival of species, and whether this habitat is present within the Project Area. Habitat critical to the survival of a species is defined in the SIG 1.1 as areas that are necessary for the species, as follows:

- Habitat for activities such as foraging, breeding, roosting or dispersal;
- Habitat for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators);
- Habitat necessary to maintain genetic diversity and long-term evolutionary development; or
- For the reintroduction of populations or recovery of the species or ecological community (DEWHA, 2013).

3.6 ASSUMPTIONS AND LIMITATIONS

This Report provides an overview of the ecological values that are potentially present within the Project Area and has been prepared utilising publicly available desktop data, results from field surveys documented by others provided by CMB and results of a field survey April 2026. Desktop datasets are issued with their own caveats and limitations, and these are applicable to this Report.

This Report describes the EPBC Act listed threatened species and communities with a known, likely or potential occurrence within the Project Area.

All calculations within this Report have been rounded to the nearest decimal place.

The information presented in this Report is current as at the time of drafting. Desktop assessments and ecological modelling are subject to change over time, particularly in response to periodic updates in species and ecological community listings under relevant environmental legislation, revisions to species and community distribution mapping, and the incorporation of new survey records into government databases or updated species distribution models.

Accordingly, the validity of this assessment is likely to deteriorate over time, and it should not be relied upon without conducting at least an annual review.

4. ECOLOGICAL VALUES

4.1 LANDSCAPE CONTEXT

The Project Area is located within the Southeast Queensland bioregion. The Southeast Queensland bioregion covers an area of 6,248,417 ha (approximately 3.6% of Queensland) and is characterised by high biodiversity, varying climates and diverse ecosystems. The vegetative composition of the bioregion is diverse, however predominantly eucalypt woodland and open forests, with rainforest and scrub, coastal heaths, wet eucalypt forests, wetlands and grasslands.

4.2 BROAD HABITAT TYPES

While the majority (92.4%) of the Project Area is heavily disturbed containing existing road surface, pedestrian paths, car parks and associated infrastructure, some ecological values exist. The Project Area has therefore been classified into six broad habitat types, defined based on ground-truthed vegetation communities and landscape characteristics. These include:

- Native woodland dominated by *Casuarina* and *Acacia* species with weedy ground cover;
- Mixed forest dominated by broad-leaved paperbark (*Melaleuca quinquenervia*) and/or forest red gum (*Eucalyptus tereticornis*);
- Mature ornamental garden vegetation;
- Mixed roadside vegetation with mature street trees including *Eucalyptus* spp.;
- Waterbodies; and
- Developed areas including managed roadside grass, buildings, roads, and parking areas.

Broad habitat types and their corresponding areas within the Project Area and Development Footprint are presented in Table 4-1.

TABLE 4-1: BROAD HABITAT TYPES IN THE PROJECT AREA

Broad Habitat Type	Total Area in the Project Area (ha)	Total Area in the Development Footprint (ha)
Native woodland dominated by <i>Casuarina</i> and <i>Acacia</i> species with weedy ground cover	0.3 ha	0.1 ha
Mixed forest dominated by broad-leaved paperbark (<i>Melaleuca quinquenervia</i>) and/or forest red gum (<i>Eucalyptus tereticornis</i>)	4.0 ha	1.6 ha
Mature ornamental garden vegetation	1.1 ha	0.6 ha
Mixed roadside vegetation with mature street trees including <i>Eucalyptus</i> spp.	7.4 ha	4.3 ha
Waterbodies	0.1 ha	0.1 ha
Developed areas including managed roadside grass, buildings, roads, and parking areas	25.3 ha	17.1 ha
Total	38.2 ha	23.8 ha

4.3 MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE

MNES within the Project Area are summarised in Table 4-2. The PMST report is provided in Appendix A. The full likelihood of occurrence assessment for all EPBC Act listed threatened and/or migratory species identified by the desktop assessment is attached in Appendix B. It should be noted that marine aquatic species (e.g. whales and dolphins) associated with coastal and marine environments were excluded from the likelihood of occurrence assessment as they occur more than 5 km from the Project Area associated with Moreton Bay that will not be impacted by the Project.

TABLE 4-2: MATTERS OF NATIONAL ENVIRONMENTAL SIGNIFICANCE IN THE PROJECT AREA

Matter	Relevance to the Project Area
World heritage properties	The Project Area is not intersected by any world heritage properties or national heritage properties.
National heritage properties	
Wetlands of international importance	There are no wetlands of international importance which intersect the Project Area or Locality (1 km buffer). However, the desktop assessment identified one wetland of international importance, Moreton Bay, which is located to the north and north-east of the Project Area approximately 5 km away.
Threatened species and ecological communities	There are 11 EPBC Act listed threatened species that are considered known, likely or potentially occurring within the Project Area. EPBC Act listed threatened species are further detailed in the following subsections. Four threatened ecological communities were identified within the PMST. Field surveys confirmed that there are no threatened ecological communities occurring within the Project Area (28 South, 2025), therefore these have not been considered further within this MNES Report.
Migratory species	There are 8 EPBC Act listed migratory species that are considered known, likely or potentially occurring within the Project Area. Three of these species are also listed as threatened under the EPBC Act. EPBC Act listed migratory species are further detailed in the following subsections.
Commonwealth Marine Area	There are no Commonwealth Marine Areas within the Project Area.
The Great Barrier Reef Marine Park	The Great Barrier reef is not associated with the Project Area.
Nuclear actions	N/A to the Project.
Water resources in relation to a large coal mine or coal seam gas development	N/A to the Project.

4.3.1 WETLANDS OF INTERNATIONAL IMPORTANCE

The PMST identified one wetland of international importance, the Moreton Bay Ramsar site, in proximity to the Project Area. However, this site does not occur within the Project Area or the Locality (1 km buffer).

The Moreton Bay Ramsar site is situated in and around Moreton Bay and comprises a semi-enclosed basin, bounded by large sand islands to the east and a deltaic coastline to the west (DCCEEW, 2026). Several major river systems discharge into the bay from a combined catchment of approximately 22,000 square kilometres (km²). The Moreton Bay Ramsar site is a sub-tropical coastal wetland system and represents one of the largest estuarine bays in Australia (DCCEEW, 2026).

The Project Area is located within a catchment where existing pressures on the coastal-marine environment are well documented. Moreton Bay receives substantial inputs of treated sewage, stormwater runoff, and industrial effluent from the broader Caloundra-Brisbane-Gold Coast metropolitan region (Morelli, et al., 2012; DETSI, 2021). In addition, historical reclamation of tidal lands for urban development has resulted in the loss of key coastal habitats, including mangroves, seagrass, and saltmarsh communities (Duke, et al., 2003).

Given the nature and scale of the Project, being an upgrade within an existing, highly modified road corridor, no direct impact to the Ramsar site will occur. Consequently, any potential impacts would be indirect, principally via catchment-to-coastal wetland pathways (e.g. stormwater, erosion and sediment, elevated nutrients or hydrocarbons), plus cumulative effects when combined with other catchment activities. Potential indirect impacts will be effectively mitigated and managed through the implementation of erosion and sediment controls, ground and surface water quality monitoring, biosecurity protocols, and additional measures outlined in the Project's Environmental Management Plan (Arup, 2026b) and other management plans prepared for the Project.

On this basis, the Project is unlikely to alter the hydrological regime, impact habitat condition or lifecycle processes of native species dependent on the wetland, further degrade water quality, or facilitate the establishment or spread of invasive species. Accordingly, the Project is not considered likely to result in a significant impact on the Moreton Bay Ramsar site, and a detailed assessment against SIG 1.1 criteria is not required.

4.3.2 THREATENED ECOLOGICAL COMMUNITIES

Four threatened ecological communities (TECs) were identified within the PMST search undertaken for the Project, including:

- Coastal Swamp Oak (*Casuarina glauca*) Forest of New South Wales and South East Queensland ecological community;
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland;
- Lowland Rainforest of Subtropical Australia; and
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions.

Following the desktop assessment and field surveys, all TECs have been confirmed as not present within the Project Area. A total of seven TEC assessments were conducted by 28South to determine the presence of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland; however, patches of vegetation did not meet the diagnostic criteria to be

considered TEC (28 South, 2025). A detailed analysis of the TEC assessment results, following surveys conducted by 28South, and conclusions for not meeting the diagnostic criteria for each TEC, is provided in Attachment 5 of Appendix C. This outcome reflects that the ground-truthed vegetation lacks the structural integrity, species composition, and condition thresholds required to meet the TEC diagnostic criteria, with observed patches typically heavily disturbed and fragmented. In particular, a high prevalence of weeds and the influence of the surrounding urban environment were consistent excluding factors, resulting in modified communities that do not satisfy TEC definitions under the relevant listing advice.

4.3.3 THREATENED FLORA

The PMST identified 17 threatened flora species with the potential to occur within 1 km of the Project Area. Following the likelihood of occurrence assessment:

- No flora species known to occur within the Project Area;
- No threatened flora species are likely to occur within the Project Area; and
- Two threatened flora species, austral toadflax (*Thesium australe*) and lesser swamp orchid (*Phaius australis*), have the potential to occur within the Project Area.

The remaining threatened flora species were assessed as unlikely to occur.

4.3.3.1 THREATENED FLORA WITH POTENTIAL TO OCCUR

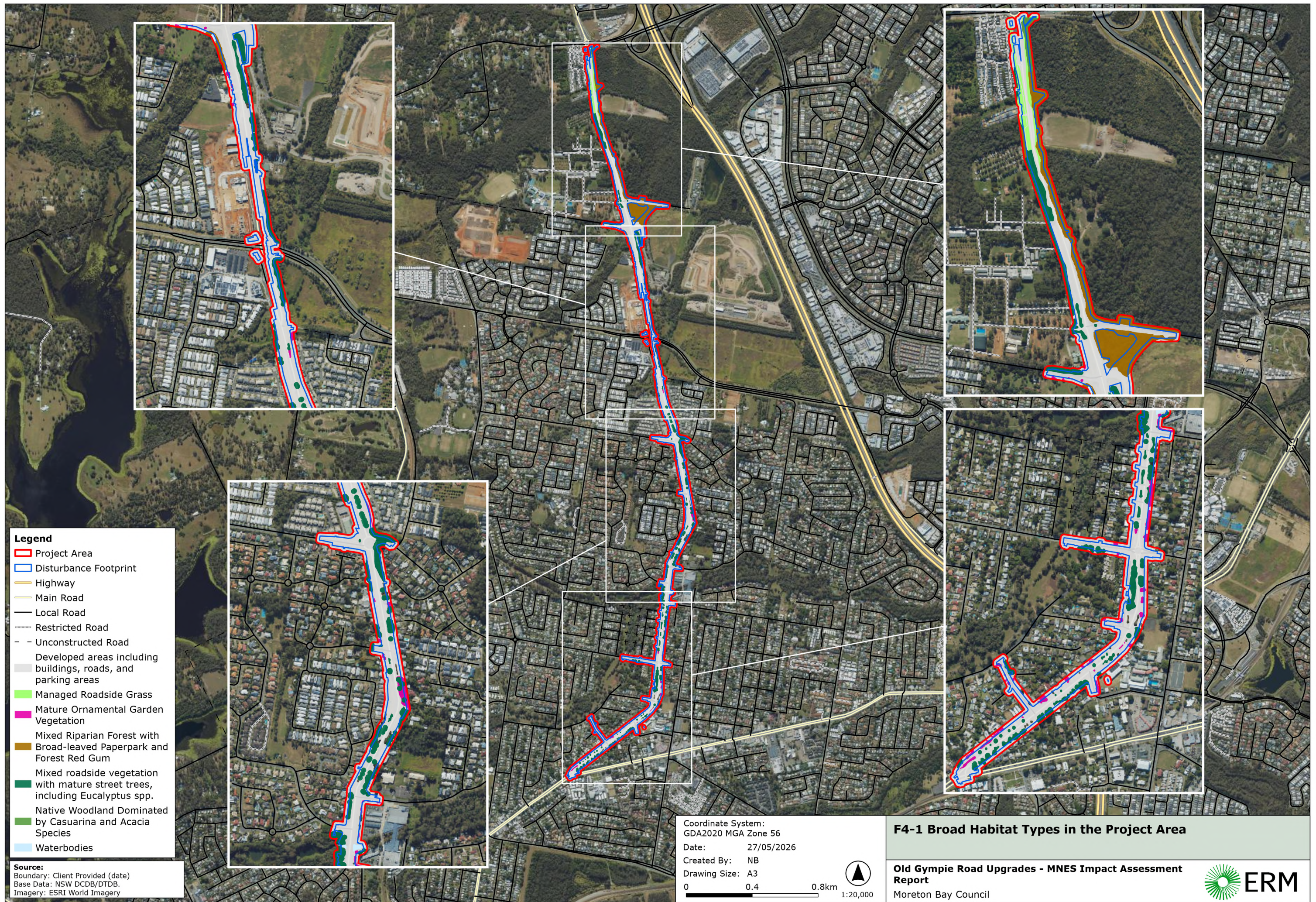
Two threatened flora species have the potential to occur within the Project Area. As the distribution of the species overlaps with the Project Area, and the study contains suitable habitat, their presence cannot be ruled out entirely.

A summary of each species habitat requirements is provided in Table 4-3. Potential habitat for threatened flora with potential to occur is presented in Figure 4-1.

TABLE 4-3: LISTED THREATENED FLORA WITH THE POTENTIAL TO OCCUR

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
Austral toadflax <i>(Thesium australe)</i>	Vulnerable		The austral toadflax has a widespread yet sporadic distribution, between the Bunya Mountains in south-east Queensland to northeast Victoria and as far inland as the southern, central and northern tablelands in New South Wales and the Toowoomba region. Within this distribution, the species occurs in subtropical, temperate and subalpine climates over a wide range of altitudes on a range of soils including black clay loams to yellow podzolics and peaty loams. Austral toadflax grows in shrubland, grassland or woodland, often on damp sites.	The nearest record of the species is located 18 km from the Project Area, recorded in 2021. The species' precise ecological requirements are not well understood; however, the species is commonly associated with damp grasslands and woodlands similar to those within the Project Area. Potential habitat within the Project Area has been mapped within: - Native woodland dominated by Casuarina and Acacia species with weedy ground cover; and - Mixed riparian forest and broad-leaved paperbark (<i>Melaleuca quinquenervia</i>) and/or forest red gum (<i>Eucalyptus tereticornis</i>). The Project Area contains 4.1 ha of potential habitat for the austral toadflax, presented in Figure 4-1.
Lesser swamp orchid <i>(Phaius australis)</i>	Endangered		Common Swamp-orchid is endemic to Australia and occurs in eastern Queensland and northern New South Wales. This species is associated with coastal wet heath/sedgeland wetlands, swampy grassland or swampy forest and often where Broad-leaved Paperbark (<i>Melaleuca leucadendra</i>) or Swamp Mahogany (<i>Eucalyptus robusta</i>) are found (DoE, 2014).	The nearest historically relevant record is from 2023, located 34 km to the south, with an additional historic record from 1992 located 1.8 km to the northeast. Suitable habitat occurs within and adjacent to the Project Area, including poorly drained soils and vegetated swamp conditions. Potential habitat within the Project Area has been mapped within: - Native woodland dominated by Casuarina and Acacia species with weedy ground cover; and - Mixed riparian forest and broad-leaved paperbark (<i>Melaleuca quinquenervia</i>) and/or forest red gum (<i>Eucalyptus tereticornis</i>). The Project Area contains 4.1 ha of potential habitat for the lesser swamp orchid, presented in Figure 4-1.

Photos sourced from iNaturalist



4.3.4 THREATENED FAUNA

The PMST identified 62 threatened fauna species with the potential to occur within 1 km of the Project Area. Following the likelihood of occurrence assessment,

- Two threatened fauna species are known to occur within the Project Area;
- Two threatened fauna species are likely to occur within the Project Area; and
- Five threatened fauna species have the potential to occur within the Project Area.

The remaining threatened fauna species were assessed as unlikely to occur.

4.3.4.1 THREATENED FAUNA KNOWN TO OCCUR

Koala

Species Description

The koala is a medium-sized, stocky marsupial with large, rounded ears, sharp claws and grey fur. Males are generally larger than females, and body size varies across its range, with southern koalas averaging around 12 kg, while northern koalas average about 6.5 kg (DAWE, 2022). Southern individuals have longer, thicker brown-grey fur, whereas northern koalas have shorter, silver-grey coats (DAWE, 2022) (refer to Photo 4-1).



PHOTO 4-1: KOALA (INATURALIST, 2026)

Species Distribution and Habitat

Koala has one of the broadest distributions of threatened arboreal mammal species under the EPBC Act with a range extending from north-eastern Queensland to the south-east corner of South Australia. The biological species distribution is widespread in coastal and inland areas that extends over approximately one million square kilometres (Martin and Handasyde, 1999). The species occurrence throughout their range is dependent on numerous environmental values including specialist food, habitat availability and environmental requirements (DAWE, 2022).

Four genetically important koala populations have been identified throughout eastern Australia, including:

- Queensland and New South Wales populations north of the Clarence River Valley, New South Wales;
- South of the Clarence River Valley, New South Wales to north of the Sydney Basin;
- South of the Sydney Basin to approximately the New South Wales/Victorian boarder; and
- Victoria and South Australia populations.

As per the species conservation advice (DAWE, 2022), threats to the koala include:

- Loss of climatically suitable habitat;
- Increased intensity and frequency of drought;
- Increased intensity and frequency of heatwaves;
- Increased intensity and frequency of bushfire;
- Declining nutritional value of foliage;
- Clearing and degradation of koala habitat;
- Encounter mortality with vehicles and dogs; and
- Koala retrovirus and Chlamydia (*Chlamydia pecorum*).

Whilst koala habitat varies throughout the species' distribution; however, common elements throughout include:

- The presence of one or more palatable tree species that provides reliable leaf moisture;
- Complexity of habitat structure to allow the species to mitigate temperature and humidity stressors, and predator avoidance; and
- A landscape of sufficient extent to allow a widespread population to persist and interact.

Under the Conservation Advice for *Phascolarctos cinereus* (koala) combined populations of Queensland, New South Wales and the Australian Capital Territory (DAWE, 2022) habitat for the koala is described as:

'Including both coastal and inland areas that are typically characterised by eucalyptus forests and woodlands. Biophysical habitat attributes for the koala include places that contain the resources necessary for individual foraging, survival (including predator avoidance), growth, reproduction, and movement.'

Habitat critical to the survival of the species relates to the habitat the species relies on to avoid or halt decline and promote the recovery of the species. Under the EPBC Act, the following factors and other relevant factors are considered when identifying habitat that is critical to the survival of the species:

- Whether the habitat is used during periods of stress (e.g., flood, drought or fire);
- Whether the habitat is used to meet essential life cycle requirements (e.g., foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes);
- The extent to which the habitat is used by important populations;
- Whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development;
- Whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements;

- Whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation; and
- Any other way in which habitat may be critical to the survival of a listed threatened species or a listed TEC.

Koala food trees are typically considered to be those of the following genus: *Angophora*, *Corymbia*, *Eucalyptus*, *Lophostemon* and *Melaleuca*. Koala's move between food trees and shelter trees daily, and as such, shelter trees are considered an essential resource to the species for thermoregulation and predator evasion (DAWE, 2022). Koala's show preference for large trees, shady trees and have been observed utilising a range of tree species (e.g., *Callitris* spp., *Acacia harpophylla* and *Melaleuca bracteata*) for shelter. Additionally, koalas have been observed in lone paddock trees, showing their capacity to disperse long distances.

- Koala dispersal habitat includes generalised habitats lacking an abundance of mature koala food trees (i.e., *Eucalyptus* spp., *Corymbia* spp. or *Angophora* spp.), however do meet the following criteria;
- Have suitable shelter trees among scattered food trees, as '*individual koalas move daily between food and shelter trees*' (Pfeiffer et al., 2005; Tucker et al. 2007; DCCEEW, 2022); and
- Occur in connective patches between foraging and breeding habitat.

Species Threats

Threats to the koala include:

- Loss of climatically suitable habitat;
- Increased intensity/frequency of drought;
- Increased intensity/frequency of heatwaves;
- Increased intensity/frequency of bushfire;
- Declining nutritional value of foliage;
- Clearing and degradation of koala habitat;
- Encounter mortality with vehicles and dogs; and
- Koala retrovirus (KoRV) and Chlamydia (*Chlamydia percorum*) (DAWE, 2022).

Species Occurrence within the Broader Region

A large number of records for the species occur within the Project Area and Locality. During the field surveys conducted by EcoSmart in July 2025, scats attributable to koala were located at a number of locations within and immediately adjacent the Project Area. Scratches potentially attributable to koala were also observed within remnant eucalypt forest to the near south of Goodwin Road (28 South, 2025).

Field Survey Methodology and Results

Survey Guidelines

Survey guidelines for the koala are outlined in the *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (terrestrial guidelines) (Eyre et al., 2022) and *A review of koala Habitat Assessment Criteria and Methods* (Youngentob et al., 2021), as explained below.

Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (Eyre T. J., et al., 2022):

- the terrestrial guidelines specify koala surveys are to be completed by:
 - two-person, 30-minute spotlighting search of 100 x 100m survey site. This can include spotlighting up one side of the 100 x 100m survey site and then spotlighting back the other side of the 100 x 100m survey site; and
 - scat and sign searches can coincide with systematic diurnal surveys within 50 x 50m quadrats of the survey site.

A review of koala Habitat Assessment Criteria and Methods (Youngentob, Marsh, & Skewes, 2021):

The koala habitat assessment criteria and methods outline the following observation techniques effective in assessing koala presence/absence:

- Direct observations:
 - transect Point Surveys – strip transects, line-transect distance sampling or double count transects, involving searching for koala in trees on both sides of pre-determined lines;
 - spotlighting – night-time spotlighting searches in smaller sites to determine species presence and density;
 - trained koala detection dogs;
 - mark-resight or mark-recapture;
 - thermal detection drones;
 - radio tracking; and
 - camera trapping in areas where fresh scats and/or scratches have been recorded.

Direct observations should be undertaken between August and January for peak activity.

- Indirect observations:
 - faecal pellet (scat) surveys;
 - scats – koala rapid assessment method;
 - scats – balanced koala scat survey;
 - scats – spot assessment technique involving looking at food trees for presence of koala scats;
 - scats – faecal standing crop assessment;
 - scats – trained scat detection dogs;
 - scats – genetic sampling from faecal pellets;
 - call playback;
 - passive acoustics;
 - landscape nutrition quality surveys; and
 - scratches on trees.

Survey Techniques and Effort

Field surveys targeted koalas through scat and sign searches and habitat assessments. A total of 10 habitat assessments were conducted throughout the Project Area, at which scat, and sign searches were undertaken.

Survey Results

The koala was not recorded within the Project Area during the field survey; however, Koala scat and scratches were recorded at multiple locations within and immediately adjacent to the Project Area during the July 2025 field survey conducted by EcoSmart (28 South, 2025). Additionally, there are multiple records of koalas across the locality (ALA, 2026).

Habitat Mapping

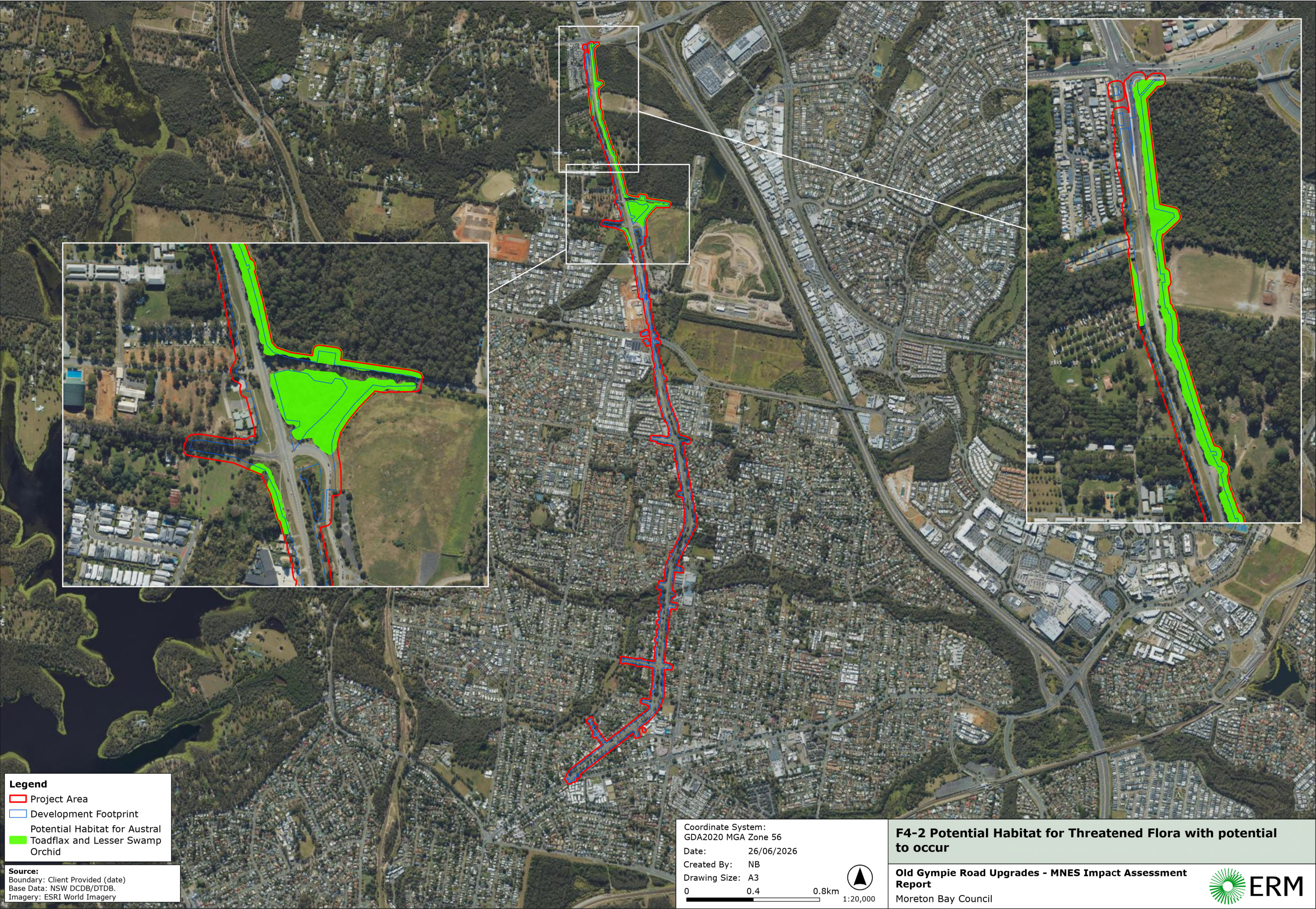
Habitat mapping for the koala was undertaken using the methodology described in Section 3.4 of this Report.

Given that koalas are able to traverse the entirety of the Project Area in the absence of barriers (e.g. fencing), it has been conservatively assumed that all trees within the Project Area may provide a resource for koalas, either for foraging or shelter while moving through the landscape. As such, all trees greater than 4 m in height and with a DSH exceeding 10 cm (Youngentob, Marsh, & Skewes, 2021) were classified as koala habitat. Trees not meeting these thresholds were excluded, as they are considered juvenile and unlikely to support koala foraging, shelter or dispersal.

Following identification of trees meeting the specified thresholds, each location of a tree was buffered by 0.004 ha, representing the recognised area of impact associated with a single non-juvenile koala habitat tree in SEQ (DES, 2019). The resultant buffered layer was reviewed and refined using field data and recent Nearmap and Google Earth imagery to identify and connect clusters of trees, thereby delineating habitat within the Project Area. This refinement was undertaken so that the spatial representation more accurately reflects on-ground conditions, as point-based buffering alone does not adequately capture landscape continuity. Importantly, those trees identified to be retained were included as koala habitat, but excluded from the impact assessment as they will not be removed.

Koala habitat within the Project Area includes all trees mapped by the *Arboricultural Impact Assessment* greater than 4 m in height and a DSH > 10 cm. Koala habitat within the Project Area is presented in Figure 4-2.

The quality of koala habitat within the Project Area is variable, with much of the mapped habitat comprising isolated street trees or small clusters of trees that are not directly connected to larger areas of intact habitat. Vegetation within the more intact northern portion of the Project Area was also observed to be degraded by weed encroachment and was frequently dominated by *Acacia* and *Casuarina* species.



Legend

- Project Area
- Development Footprint
- Potential Habitat for Austral Toadflax and Lesser Swamp Orchid

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 26/06/2026
Created By: NB
Drawing Size: A3

0 0.4 0.8km
1:20,000

F4-2 Potential Habitat for Threatened Flora with potential to occur

Old Gympie Road Upgrades - MNES Impact Assessment Report
Moreton Bay Council



Grey-headed flying-fox

Species Description

The grey-headed flying-fox is one of the largest bats globally, ranging from 600 – 1,00 grams, with a head to body length of 230 – 289 mm. This species is the only flying-fox species in Australia with an orange/brown collar encircling the neck (TSSC, 2001) (refer to Photo 4-2). The thick leg fur reaches the ankles, unlike other *Pteropus* species. The head is light grey, the belly grey with white or ginger flecks, and the back either dark grey or a silvery, frosted morph (TSSC, 2001). Fur colour varies seasonally, with darker winter coats and a major moult in June.

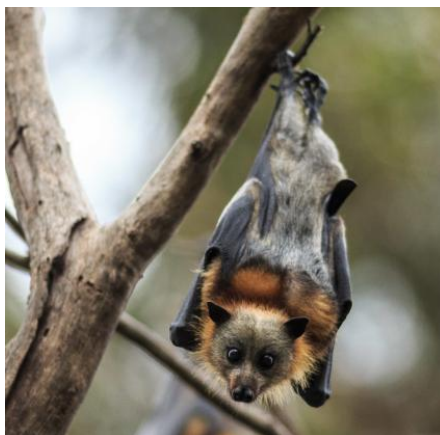


PHOTO 4-2: GREY-HEADED FLYING-FOX (INATURALIST, 2026)

Species Distribution and Habitat

Grey-headed flying-foxes are endemic to Australia, occurring in the coastal belt from Rockhampton, Queensland, to Melbourne, Victoria. Species abundance within this distribution differs seasonally and yearly, in response to the availability of food sources (TSSC, 2001). Within their distribution, the species requires foraging and roosting sites within 50 km of one another.

Grey-headed flying-fox is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, Melaleuca swamps and Banksia woodlands (TSSC, 2001). Important winter and spring vegetation communities are those that contain *Eucalyptus tereticornis*, *E. albens*, *E. crebra*, *E. fibrosa*, *E. melliodora*, *E. paniculata*, *E. pilularis*, *E. robusta*, *E. seeana*, *E. sideroxylon*, *E. siderophloia*, *Banksia integrifolia*, *Castanospermum australe*, *Corymbia citriodora citriodora*, *C. eximia*, *C. maculata*, *Grevillea robusta*, *Melaleuca quinquenervia* or *Syncarpia glomulifera* (DAWE, 2024).

The species roosts on exposed branches in the vicinity of water, including lakes, rivers or the coast (TSSC, 2001). Roost sites are generally associated with rainforest patches, stands of Melaleuca, mangroves and riparian vegetation (TSSC, 2001). The species is also known to roost in highly modified vegetation including urban and suburban areas.

Species Threats

Threats to the grey-headed flying fox include:

- Habitat loss and fragmentation;
- Exploitation;

- Competition and hybridisation; and
- Pollutants, electrocution and pathogens (TSSC, 2001).

Species Occurrence within the Broader Region

There are three desktop records within the locality dated 2025, 2022 and 2021, located <1 km to the west of the Project Area. During the July 2025 survey conducted by EcoSmart, between 50 to 60 grey-headed flying fox were observed roosting within Ross Reserve to the near west of the Project Area.

Field Survey Methodology and Results

Survey Guidelines

Survey guidelines for the grey-headed flying-fox are outlined in the *Survey Guidelines for Australia's Threatened Bats* (DEWHA, 2010). Surveys for grey-headed flying-fox should include:

- A review of known flying fox camps for the Project Area and the wider general area;
- Daytime field surveys in the form of habitat assessments and targeted searches. The species can be recorded directly while roosting or in flight, or from a distinctive odour or faecal droppings;
- Vegetation community and food plant surveys; and
- Night-time surveys, including walking transects (100 m apart) searching for feeding and flying bats.

Survey Techniques and Effort

Field surveys targeted grey-headed flying-fox through vegetation assessments (quaternary assessments and rapid vegetation assessments) and habitat assessments. A total of 10 habitat assessments, six quaternary vegetation assessment and 17 rapid vegetation assessments were conducted throughout the Project Area, at which flora species were recorded to determine suitability for habitat.

Survey Results

The grey-headed flying-fox was recorded during the field survey at a known roosting camp, located at Ross Reserve, less than 1 km from the Project Area.

Habitat Mapping

Habitat mapping for the grey-headed flying-fox was undertaken using the methodology described in Section 3.4 of this Report.

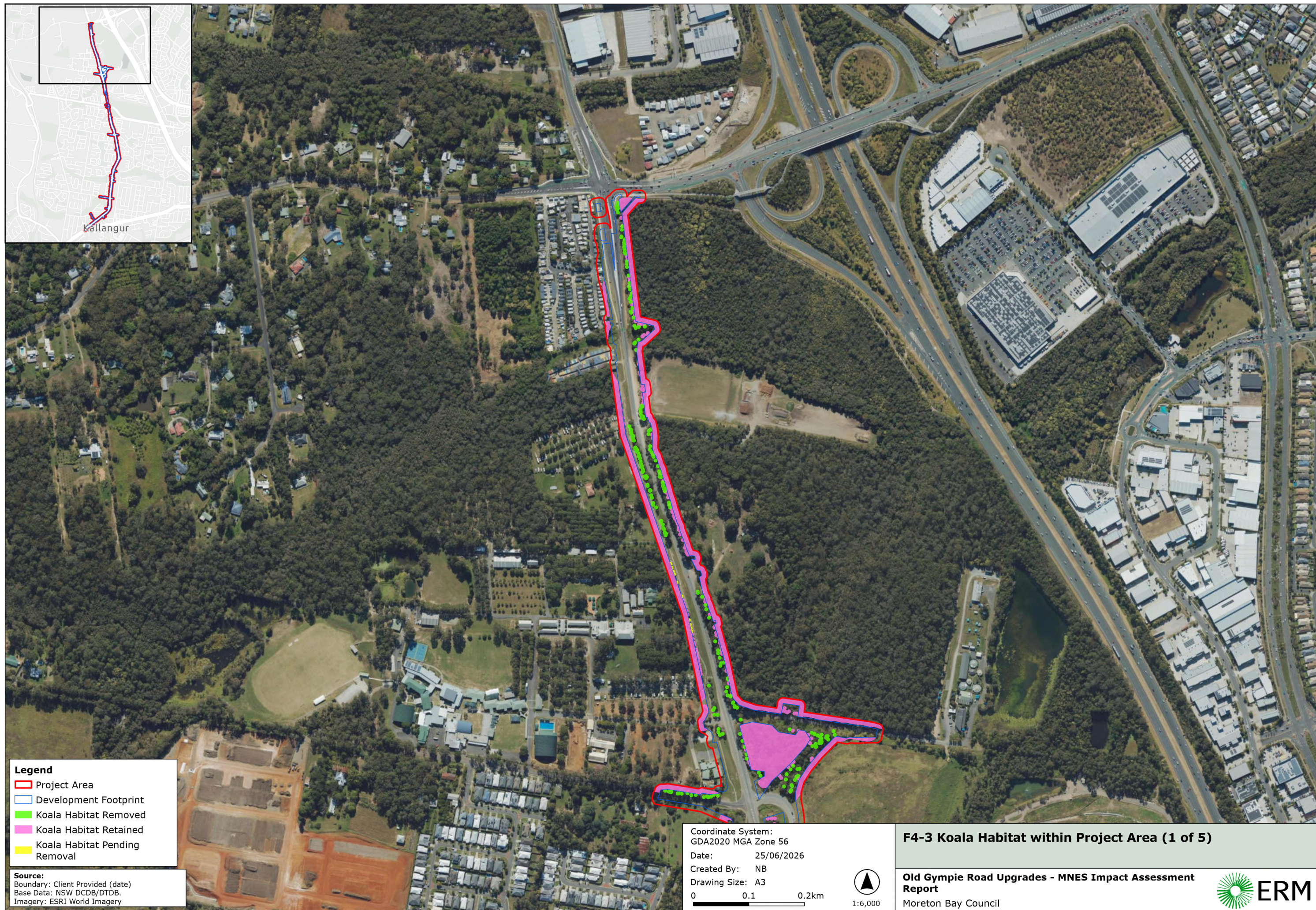
Grey-headed flying fox forage over extensive areas and consume the fruit and blossoms of a wide range of species, including *Ficus*, *Eucalyptus*, *Corymbia*, *Angophora*, *Melaleuca*, *Banksia*, *Syzygium*, as well as various non-native species (DAWE, 2021). Given their broad dietary preferences and overlap with koala habitat resources, the same mapping approach used for koala was applied to identify grey-headed flying fox foraging habitat.

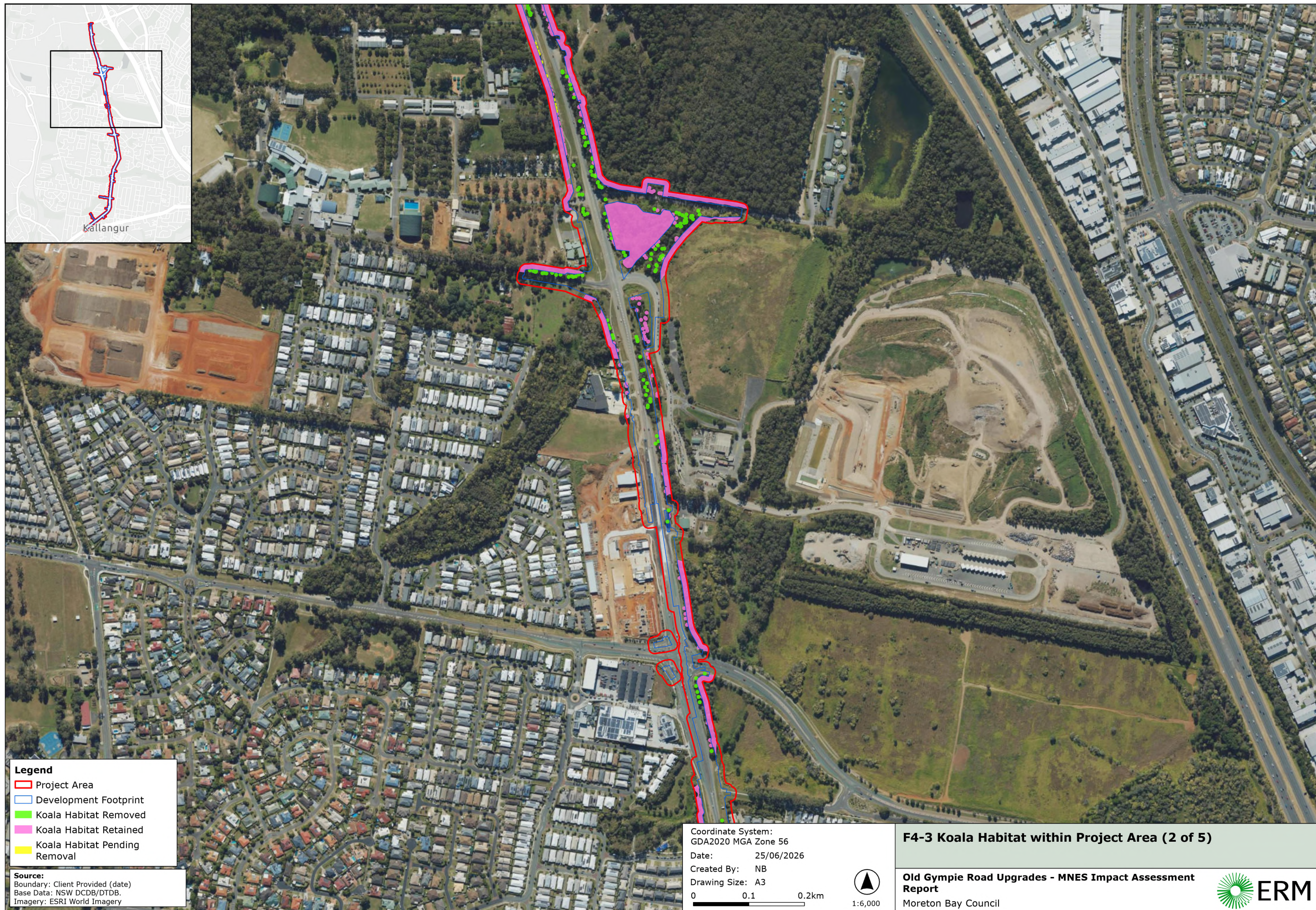
It should be noted that the Arboricultural Impact Assessment was primarily focused on trees within the Development Footprint to inform impact assessment, therefore not all trees across the Project Area were mapped. Trees not included within the Development Footprint are assumed to be retained and not impacted by the Project. For a conservative assessment, all trees classified as 'pending' have been included in habitat disturbance calculations for grey-headed flying fox for the impact assessment.

Grey-headed flying-fox habitat has been conservatively mapped within the Project Area, as 80% of the trees mapped as habitat are *Casuarina* spp. and *Acacia* spp. and are not considered the preferred foraging resources from Eucalypt and related genera.

Grey-headed flying-fox habitat within the Project Area includes all trees mapped by the *Arboricultural Impact Assessment* greater than 4 m in height and a DSH > 10 cm. The Project Area contains 7.6 ha of potential foraging habitat for grey-headed flying-fox (noting that approximately 80% of tree species are not flowering eucalypts). This habitat is generally degraded as a result of edge effects, disturbance associated with the existing road corridor and weed encroachment.

It is noted that the known camp at Ross Reserve is not located within the Project Area, and therefore, the Project Area does not contain breeding habitat for this species.





- Legend**
- Project Area
 - Development Footprint
 - Koala Habitat Removed
 - Koala Habitat Retained
 - Koala Habitat Pending Removal

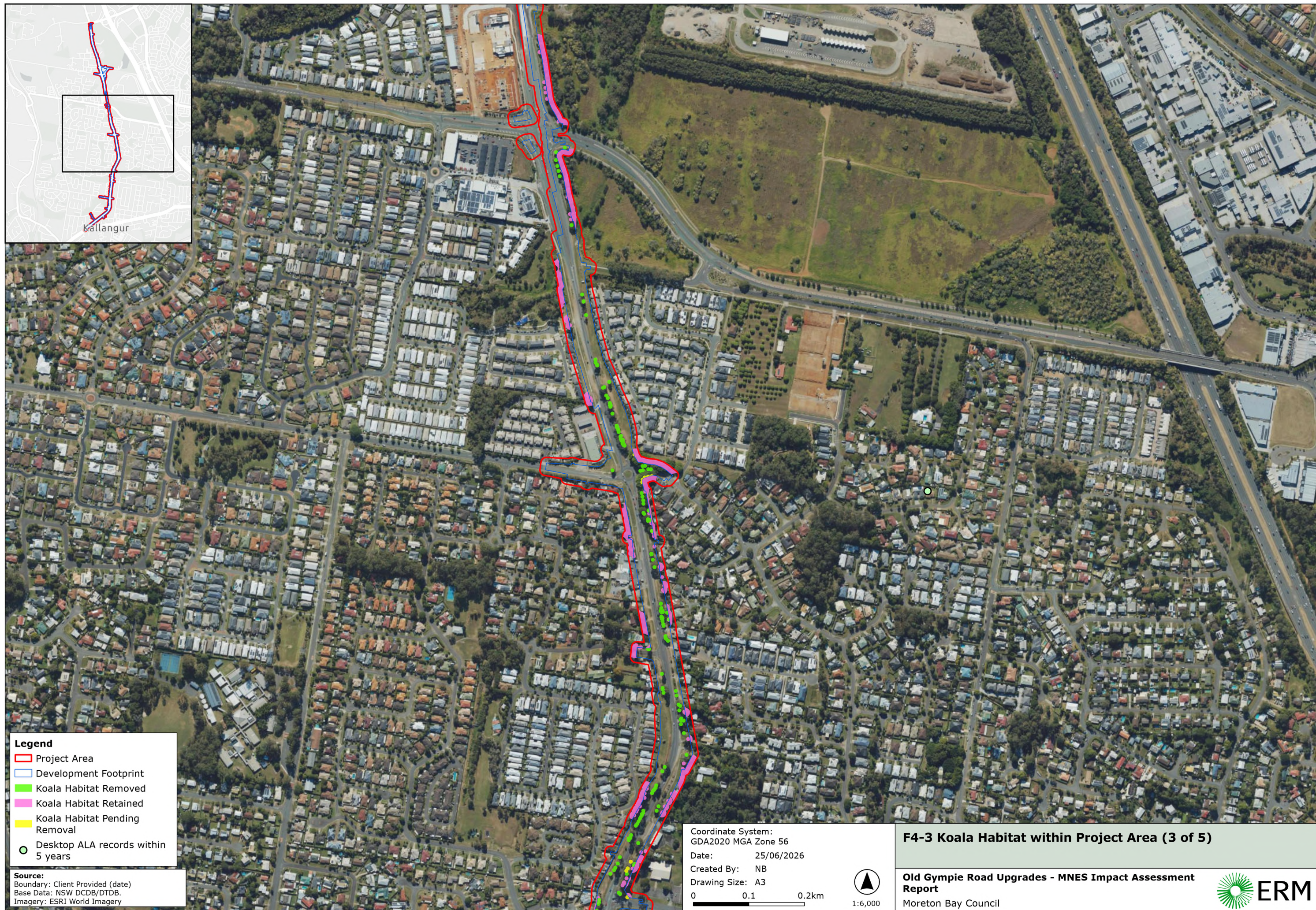
Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3
0 0.1 0.2km
1:6,000

F4-3 Koala Habitat within Project Area (2 of 5)

Old Gympie Road Upgrades - MNES Impact Assessment Report

Moreton Bay Council







4.3.4.2 THREATENED FAUNA LIKELY TO OCCUR

White-throated needletail

Species Description

White-throated needletail is a large swift with a thickset, cigar-shaped body, stubby tail and long pointed wings (20 cm in length and approximately 115–120 g in weight) (TSSC, 2019) (refer to Plate 4-1). Adults have a dark-olive head and neck, with an iridescent gloss on the crown, a pale greyish mantle and back, blackish/greenish gloss underwings, with a contrasting white patch at the base of the trailing edge. The face is dark-olive with a narrow, white band across the forehead and lores and a white patch on the chin and throat. The underparts are generally dark-olive except for a U-shaped band across the rear flanks and the undertail is black with a greenish gloss (TSSC, 2019).



PLATE 4-1: WHITE-THROATED NEEDLETAIL (INATURALIST, 2026)

Species Distribution and Habitat

White-throated needletail is a non-breeding visitor in all Australian states and territories (TSSC, 2019). The species is widespread in eastern and south-eastern Australia, from the islands in Torres Strait and the tip of Cape York south to Tasmania.

The species is almost exclusively aerial, flying from heights of 1 m to 1,000 m above the ground. Whilst almost exclusively aerial over all habitat types, the species shows preference for flying above wooded areas, including open forest and rainforest, flying above clearings and below the canopy (TSSC, 2019). The species also commonly occurs over heathland and farmland, above partly cleared pasture, plantations, or remnant vegetation at the edge of paddocks (TSSC, 2019). White-throated needletail roosts in tall mature forests and woodlands amongst dense foliage and in hollows often associated with ridgelines. The species also roosts aerially.

As per the 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DCCEEW, 2015), an ecologically significant proportion of a population of fork-tailed swift is 100 individuals (1%) or 10 individuals (0.1%).

Species Threats

In Australia, there are no known significant threats affecting species populations, however constant threats include the collision with overhead wires, windows and lighthouses.

Species Occurrence within the Broader Region

There are several records of the species within the Locality, with the nearest record located less than 100 m north of the Project Area, recorded in 2016.

Field Survey Methodology and Results

Survey Guidelines

As per the 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DCCEEW, 2015), there are no standard survey techniques for swifts in Australia. However, it is noted that the species should be counted by an experienced person from elevated viewpoints during the Austral summer (DCCEEW, 2015).

Survey Techniques and Effort

The field survey targeted identifying species habitat within the Project Area through six quaternary vegetation assessments, 17 rapid vegetation assessments and 10 habitat assessments.

Survey Results

White-throated needletail was not recorded during the field survey.

Potential Habitat within Project Area

White-throated needletail is almost exclusively aerial over all habitat types; however, prefers flying above wooded areas (e.g., open forest and woodlands, flying above clearings and below the canopy), thus, the entire Project Area may provide aerial foraging habitat for this species.

Latham's snipe

Species Description

Latham's snipe is a medium-sized wader, approximately 29 – 33 cm long, with a wingspan of 50 – 54 cm and weighing approximately 150 – 230 grams (DCCEEW, 2024). The species has a long, straight bill, short pointed wings, a long tail and short legs (DCCEEW, 2024) (refer to Photo 4-3). Males and females are similar in appearance, and the species shows only slight seasonal plumage changes.



PHOTO 4-3: LATHAM'S SNIPE (INATURALIST, 2026)

Species Distribution and Habitat

Latham's snipe is a non-breeding visitor in south-eastern Australia. In Queensland, the species distribution occurs along the eastern coastline, from Cape York Peninsula to the Queensland/New South Wales border, and further inland to the Great Dividing Range.

Latham's snipe inhabits permanent and ephemeral wetlands up to 2,000 m above sea level; particularly open, freshwater wetlands with low dense vegetation (e.g., swamps and flooded grasslands). Additionally, the species also inhabits saline or brackish waters, modified or artificial habitats and those located close to human activity.

Species Threats

Threats to the Latham's snipe include:

- Habitat loss caused by residential and commercial development;
- Habitat degradation caused by high-intensity grazing;
- Increased frequency or severity of drought;
- Increase in frequency, scale, or severity of fire;
- Predation by cats and European red foxes;
- Broad-leaved tea-tree invasion of grassland; and
- Hunting (DCCEEW, 2024).

Species Occurrence within the Broader Region

There are four records of the species within the Locality, of which, two are recent, recorded in 2015 and 2017.

Field Survey Methodology and Results

Survey Guidelines

There are no species-specific survey guidelines for Latham's snipe.

However, as per the '*Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*' (DoEE, 2017), survey guidelines for migratory species in non-tidal areas include:

- Surveys should be conducted during the period when majority of migratory shorebirds are present in the area;
- Surveys should also be conducted during the breeding season (mid-April to mid-August);
- Surveys should not be undertaken during periods of high rainfalls or strong winds;
- Surveys should not be undertaken when activities are taking place which cause disturbance to birds; and
- Survey effort includes:
 - four surveys for roosting shorebirds during the period when the majority of shorebirds are present in the area;
 - four surveys for foraging shorebirds; and
 - one survey during the northern hemisphere breeding season to capture data on birds that remain in Australia during the breeding season.

Survey Techniques and Effort

Field surveys targeted Latham's snipe through habitat assessments and waterbody assessments. A total of 10 habitat assessments and 5 waterbody assessments were conducted throughout the Project Area.

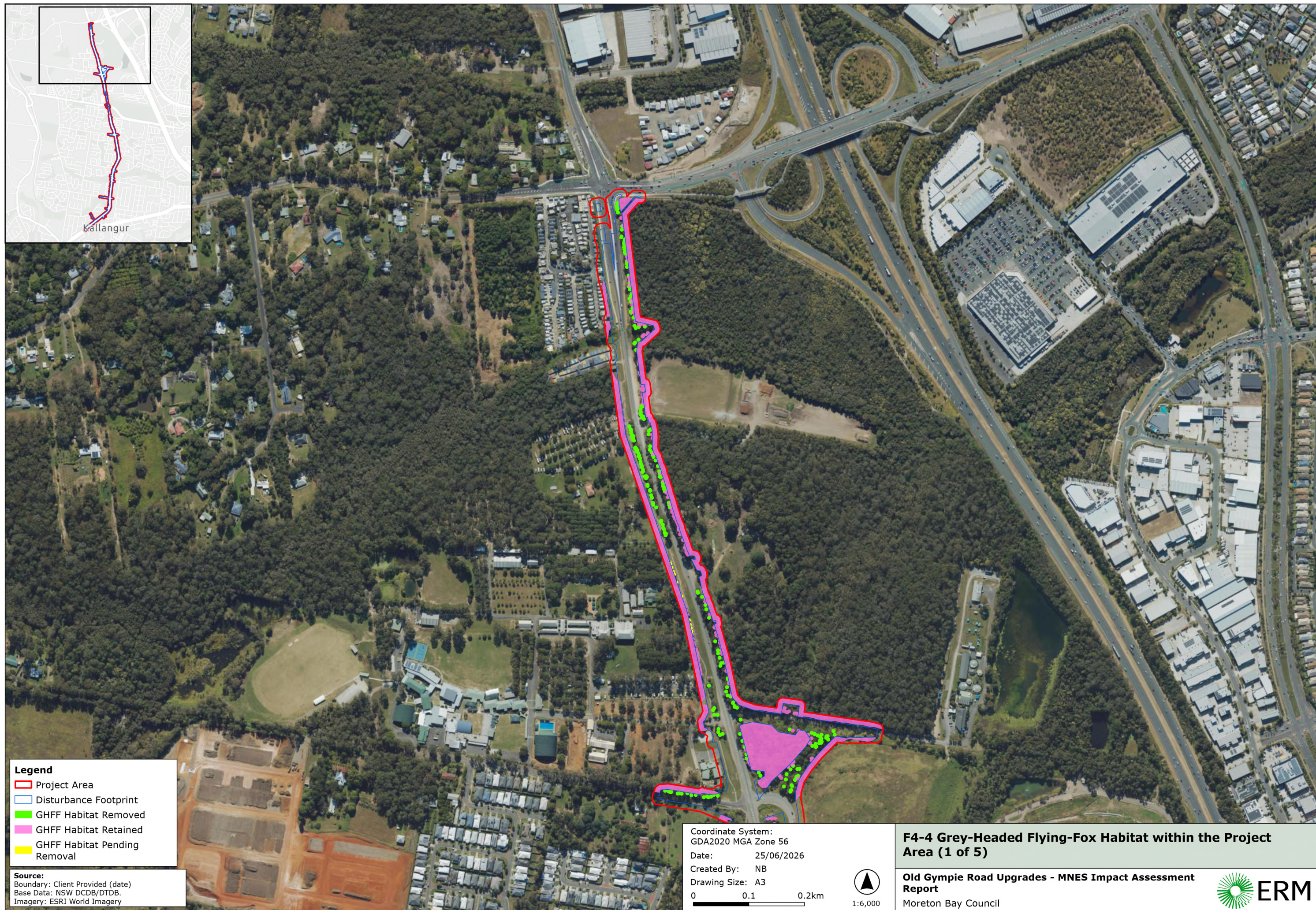
Survey Results

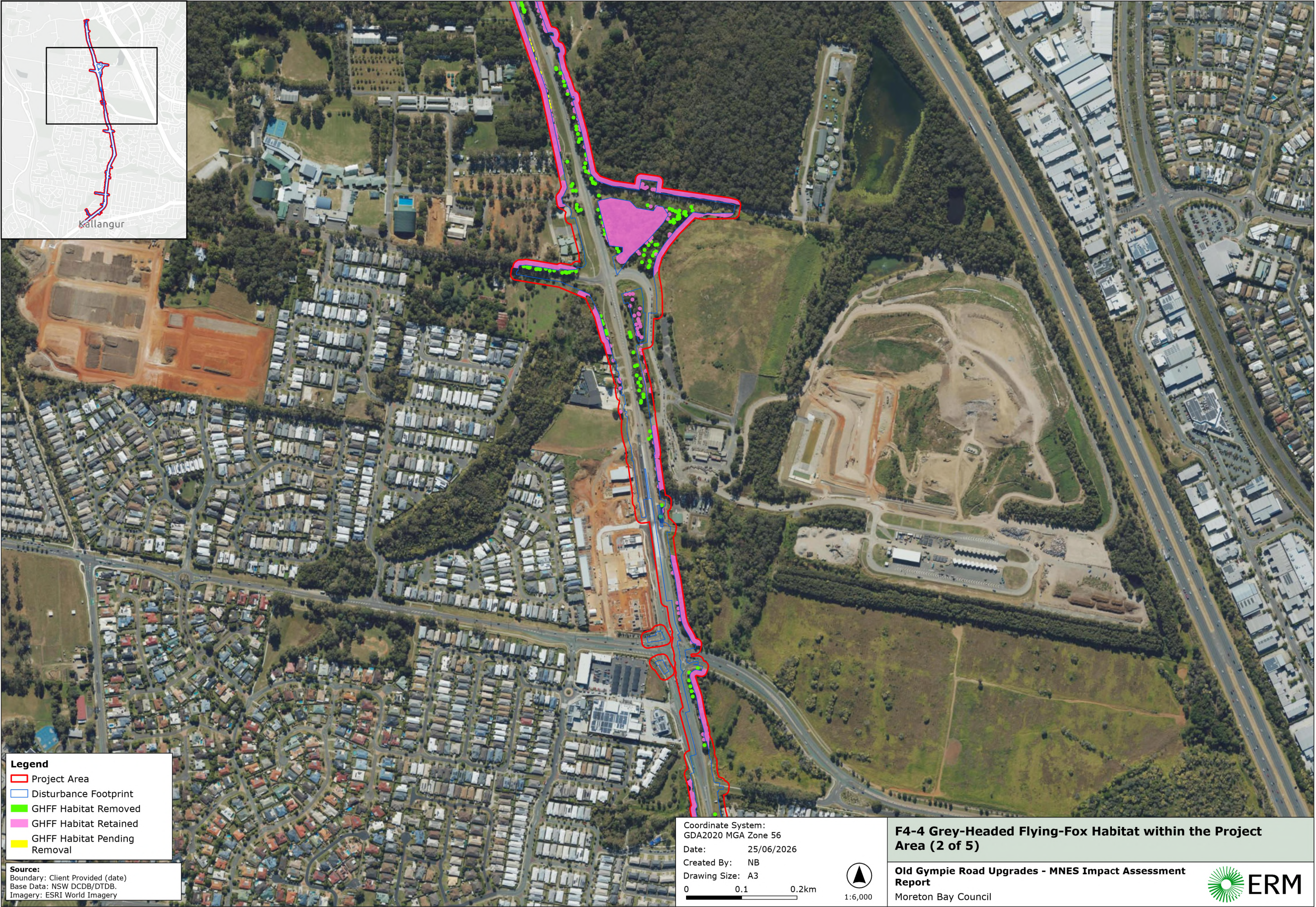
Latham's snipe was not recorded during the field survey; however, suitable habitat was identified within the Project Area.

Habitat Mapping

Habitat mapping for the Latham's snipe was undertaken using the methodology described in Section 3.4 of this Report and habitat includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies.

Latham's snipe habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-4.





Legend

- Project Area
- Disturbance Footprint
- GHFF Habitat Removed
- GHFF Habitat Retained
- GHFF Habitat Pending Removal

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3
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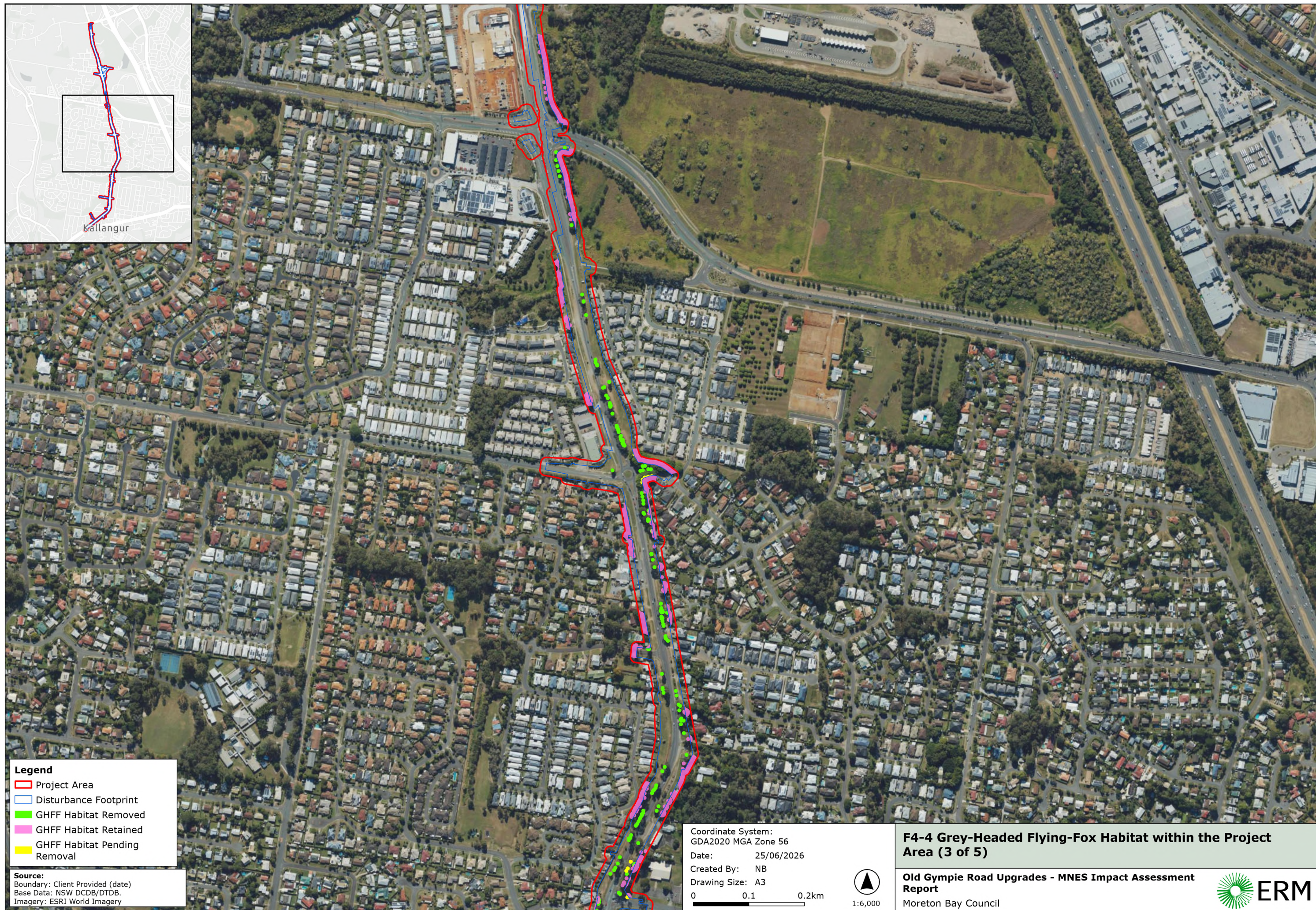


1:6,000

F4-4 Grey-Headed Flying-Fox Habitat within the Project Area (2 of 5)

Old Gympie Road Upgrades - MNES Impact Assessment Report
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- Legend**
- Project Area
 - Disturbance Footprint
 - GHFF Habitat Removed
 - GHFF Habitat Retained
 - GHFF Habitat Pending Removal
 - Desktop ALA records within 20 years

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3
0 0.1 0.2km



1:6,000

F4-4 Grey-Headed Flying-Fox Habitat within the Project Area (4 of 5)

Old Gympie Road Upgrades - MNES Impact Assessment Report
Moreton Bay Council





4.3.4.3 THREATENED FAUNA POTENTIAL TO OCCUR

Five threatened fauna species have the potential to occur within the Project Area. As the distribution of the species overlaps with the Project Area, and the study contains suitable habitat, their presence cannot be ruled out entirely.

A summary of each species habitat requirements is provided in Table 4-4. Potential habitat for threatened fauna with potential to occur is presented in Figure 4-5.

TABLE 4-4: THREATENED FAUNA WITH THE POTENTIAL TO OCCUR

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
Australasian bittern <i>(Botaurus poiciloptilus)</i>	E		The Australasian bittern occurs mainly in freshwater wetlands, favouring wetlands with tall dense vegetation shallow water up to 0.3 m deep, and those dominated by sedges, rushes and reeds (e.g. <i>Phragmites</i> , <i>Cyperus</i> , <i>Eleocharis</i> , <i>Juncus</i> , <i>Typha</i> , <i>Baumea</i> , <i>Bolboschoenus</i>) or cutting grass (<i>Gahnia</i>) growing over a muddy or peaty substrate (TSSC, 2019).	The modelled distribution of the species intersects with the Project Area. The closest, recent record of the species is located 5.0 km to the east from 2022. The old farm dam within the Project Area may provide marginally suitable foraging habitat, however the species is more likely to utilise intact coastal wetland habitats. Potential habitat for Australasian bittern includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies. Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-5.
Australian painted snipe <i>(Rostratula australis)</i>	E		The Australian painted snipe uses inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical waterbodies include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum <i>Muehlenbeckia</i> or canegrass or sometimes tea-tree (<i>Melaleuca</i>). The Australian Painted Snipe sometimes utilises areas that are lined with trees, or that have some scattered fallen or washed-up timber.	The modelled distribution of the species intersects with the Project Area. The closest, recent record of the species is located 3.5 km to the south-east from 2013. Potential habitat for Australian painted snipe includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies.

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
			Breeding habitat: Australian painted snipe breeding habitat requirements may be quite specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby. Nest records are all, or nearly all, from or near small islands in freshwater wetlands.	Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-5.
Curlew sandpiper (<i>Calidris ferruginea</i>)	CE, Mi		The curlew sandpiper is 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 occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters. Breeding habitat: This species does not breed in Australia. Foraging habitat: Curlew sandpipers forage on mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm, but up to 60 mm, deep. They forage at the edges of shallow pools and drains of intertidal mudflats and sandy shores. At high tide, they forage among low sparse emergent vegetation, such as saltmarsh, and sometimes forage in flooded paddocks or inundated salt flats. Roosting habitat: Curlew sandpipers generally roost on bare dry shingle, shell or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands, occasionally roosting in dunes during very high tides and sometimes in saltmarsh.	The modelled distribution of the species intersects with the Project Area. The closest, recent record of the species is located 5.3 km to the south-east from 2016. Potential habitat for the curlew sandpiper includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies. Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-5.

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
Sharp-tailed sandpiper <i>(Calidris acuminata)</i>	V, Mi		Prefers habitat on muddy edges of freshwater wetlands or brackish wetlands. The species can be found at dams inland and will often occupy coastal mudflats when ephemeral terrestrial wetlands have dried out. Breeding habitat: The species does not breed in Australia. Foraging habitat: They forage at the edge of the water of wetlands or intertidal mudflats, either on bare wet mud or sand, or in shallow water. They also forage among inundated vegetation of saltmarsh, grass or sedges. They forage in sewage ponds, and often in hypersaline environments. After rain, they may forage in paddocks of short grass, well away from water. They may forage on coastal mudflats at low tide and move to freshwater wetlands near the coast to feed at high tide. Roosting habitat: Roosting occurs at the edges of wetlands, on wet open mud or sand, in shallow water, or in short sparse vegetation, such as grass or saltmarsh. Occasionally, they roost on sandy beaches, stony shores or on rocks in water.	The modelled distribution of the species intersects with the Project Area. The closest, recent record of the species is located 2.3 km to the east from 2023. Potential habitat for sharp-tailed sandpiper includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies. Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-5.

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
South-eastern glossy black-cockatoo <i>(Calyptorhynchus lathami lathami)</i>	V		South-eastern glossy black-cockatoo habitat is restricted to woodlands dominated by <i>Allocasuarina</i> spp. and <i>Casuarina</i> spp. as the species almost exclusively feeds on the seeds of nine species of sheoaks. Within each region, the south-eastern glossy black-cockatoo relies on one to two species of sheoaks, and shows preference to individual feed trees and will not feed on many other proximate trees of the same tree species (DCCEEW, 2022). In South East Queensland, the species shows preference to black sheoak (<i>Allocasuarina littoralis</i>) and forest sheoak (<i>A. torulosa</i>); however, records of feeding on stringybark sheoak (<i>A. inophloia</i>), coastal sheoak (<i>Casuarina equisetifolia</i>), and to a lesser extent river sheoak (<i>C. cunninghamiana</i>) and swamp sheoak (<i>C. glauca</i>) also exist (DCCEEW, 2022). The seeds from sheoaks are extracted from closed cones, and the species drops the characteristic feeding litter (also known as 'chewed orts') under the feeding trees. Chewed orts are an indicator of south-eastern glossy black-cockatoo presence. The species nests in large hollows in both dead and live eucalypts, including narrow-leaved ironbark (<i>Eucalyptus crebra</i>), blue-leaved ironbark (<i>E. nubila</i>) and Blakely's red gum (<i>E. blakelyi</i>).	The closest historically relevant record is located 4 km to the north in habitat and RE composition similar to that of the Project Area. A historic record from 1983 occurs within the Project Area. The presence of <i>Casuarina</i> spp. may provide limited foraging habitat within the Project Area. Potential habitat for south-eastern glossy black-cockatoo includes native woodland dominated by <i>Casuarina</i> and <i>Acacia</i> species with weedy ground cover. Potential habitat occurs across 0.3 ha of the Project Area, as presented in Figure 4-5.

Note: EPBC Act Status: E = endangered, V = vulnerable; Mi = migratory
 Photos sourced from iNaturalist



Legend

- Project Area
- Disturbance Footprint
- Latham's Snipe Potential Foraging Habitat
- Desktop ALA records within 20 years

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3
0 0.5 1km
1:25,000

F4-5 Latham's Snipe Habitat within the Project Area

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Moreton Bay Council



4.3.5 MIGRATORY FAUNA

There are no migratory species known to occur within the Project Area; however, three have been assessed likely to occur, of which, two are also threatened under the EPBC Act. Those that are also threatened under the EPBC Act (white-throated needletail and Latham's snipe) have been addressed in Section 4.3.4.2).

Additionally, six migratory species have been assessed as potential to occur, of which, two are also threatened under the EPBC Act. Those that are also threatened under the EPBC Act (curlew sandpiper and sharp-tailed sandpiper) have been addressed in Section 4.3.4.3).

4.3.5.1 MIGRATORY FAUNA LIKELY TO OCCUR

Fork-tailed swift

Species Description

The fork-tailed swift is a medium-sized bird, with a slim body and long, scythe-shaped wings tapering to pointed tips, with an average body length of 18–21 cm, a wingspan of 40–42 cm and an overall weight of 30–40 grams (DCCEEW, 2026a). Fork-tailed swift are predominantly black with a white band across the rump, and a white patch on the chin and throat (DCCEEW, 2026a) (refer to Plate 4-2).



PLATE 4-2: FORK-TAILED SWIFT (ALA, 2026)

Species Distribution and Habitat

Fork-tailed swift is a non-breeding visitor in all Australian states and territories (DCCEEW, 2026a). In Queensland, species distribution occurs in scattered records in the Gulf country and Cape York Peninsula, with more abundant records east of the Great Dividing Range, from Cooktown to Townsville, and widespread records near south-east Queensland (DCCEEW, 2026a). The fork-tailed swift is almost exclusively aerial, flying from less than 1 m to approximately 300 m above ground (DCCEEW, 2026a). In Australia, the species predominantly occurs over inland plains, above foothills or in coastal areas; as well as over cliffs, beaches, islands and out to sea (DCCEEW, 2026a).

The fork-tailed swift does not breed in Australia.

As per the 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DCCEEW, 2015), an ecologically significant proportion of a population of fork-tailed swift in Australia is 100 individuals (0.1%).

Species Threats

In Australia, there are no known significant threats affecting populations of fork-tailed swift. However, potential threats may include:

- Habitat destruction; and
- Predation by feral animals.

As the species is widely distributed globally, the extent of potential impacts to the fork-tailed swift in Australia are likely to be negligible (BirdLife International, 2009)

Species Occurrence within the Broader Region

There are four records of the species occurring within 1 km of the Project Area, of which one is located north, and three are located west, recorded in 2017, 2018 and 2019.

Field Survey Methodology and Results

Survey Guidelines

As per the 'Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DCCEEW, 2015), there are no standard survey techniques for swifts in Australia. However, it is noted that the species should be counted by an experienced person from elevated viewpoints during the Austral summer (DCCEEW, 2015).

Survey Techniques and Effort

Field surveys targeted identifying species habitat within the Project Area included six quaternary vegetation assessments, 17 rapid vegetation assessments and 10 habitat assessments.

Survey Results

Fork-tailed swift was not recorded during the field survey.

Potential Habitat within Project Area

Fork-tailed swift is almost exclusively aerial in Australia and thus, the entire Project Area may provide aerial foraging habitat for this species.

4.3.5.2 MIGRATORY FAUNA POTENTIAL TO OCCUR

A summary of the six migratory species assessed as potential to occur, and their potential habitat within the Project Area, is provided in Table 4-5. Potential habitat for migratory species with potential to occur is presented in Figure 4-6.

Two migratory species (curlew sandpiper and sharp-tailed sandpiper) are also threatened under the EPBC Act and are addressed in Section 4.3.4.3).

TABLE 4-5: MIGRATORY FAUNA WITH THE POTENTIAL TO OCCUR

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
Common sandpiper <i>(Actitis hypoleucos)</i>	Mi		The common sandpiper inhabits a variety of coastal and inland wetlands with varying levels of salinity and is predominantly found in muddy margins or rocky shores; as well as estuaries and deltas of streams, around lakes, pools, billabongs, reservoirs, dams and occasionally piers and jetties (DCCEEW, 2026). The common sandpiper forages in wetlands of shallow water, often with rocks or mangrove roots projecting from the substrate, and lined with bare, soft mud. Additionally, the species occasionally ventures into grassy areas adjoining wetlands (DCCEEW, 2026). The common sandpiper roosts on rocks or branches of vegetation (i.e., mangroves), posts, jetties, moored boats and artificial structures (DCCEEW, 2026).	The modelled distribution of the species intersects with the Project Area. The closest, recent record of the species is located 5.0 km to the east from 2017. The old farm dam within the Project Area may provide marginally suitable foraging habitat. Potential habitat for common sandpiper includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies. Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-6.
Oriental cuckoo <i>(Cuculus optatus)</i>	Mi		The oriental cuckoo is a regular migrant to Australia, spending the non-breeding season (September to May) in coastal regions across northern and eastern Australia and offshore islands. This species does not breed in Australia. The oriental cuckoo inhabits a range of vegetated habitats including vine thickets, wet sclerophyll forest or open casuarina, acacia or eucalyptus woodlands, or ecotones between forest types (Youngentob, Marsh, & Skewes, 2021).	The modelled distribution of the species overlaps with the Project Area indicating that the species or species habitat is likely to occur. There are three historically relevant records within the Locality located to the west of the Project Area dated 2017, 2018 and 2020. The species occurs in all manner of habitats while in Australia, therefore it may utilise suitable habitats within the Project Area for foraging. Potential foraging habitat for the oriental cuckoo within the Project Area includes:

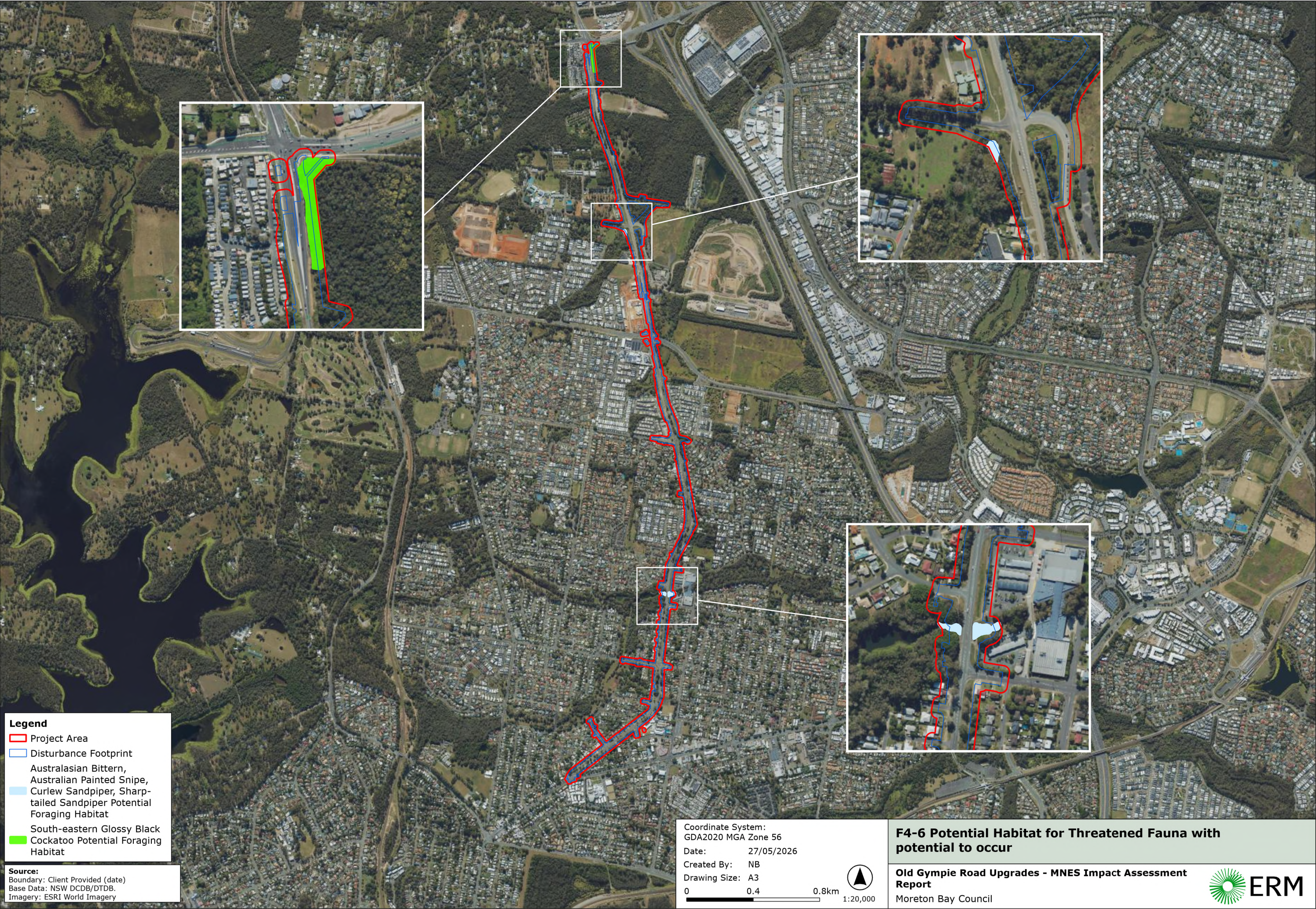
Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
				- Native woodland dominated by <i>Casuarina</i> and <i>Acacia</i> species with weedy ground cover; and - Mixed riparian forest and broad-leaved paperbark (<i>Melaleuca quinquenervia</i>) and/or forest red gum (<i>Eucalyptus tereticornis</i>). Potential habitat occurs across 4.3 ha of the Project Area, as presented in Figure 4-6.
Osprey (<i>Pandion haliaetus</i>)	Mi		The osprey inhabits littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. The species predominantly occurs in coastal regions, particularly occupying inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes; however, has been recorded inland along major rivers. The species may also occur in heath, woodland or forest when travelling to and from foraging sites.	The modelled distribution of the species overlaps with the Project Area indicating that the species or species habitat is likely to occur. There is one historically relevant record located approximately 450 m away from the Project Area from 2025. The species requires extensive open fresh, brackish or saline water. It is likely the species will be a flyover visitor travelling to more desirable habitat, its presence however cannot be eliminated and there is potential for the species to occur. Therefore, habitat for osprey is not mapped.

Species	EPBC Act Status	Species photo	Habitat Requirements	Likelihood of occurrence and potential Habitat Within Project Area
Pectoral sandpiper <i>(Calidris melanotos)</i>	Mi		The pectoral sandpiper has a global distribution, including within Australia. In Australasia, the pectoral sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. Preferred habitats include wetlands with open fringing mudflats and low, emergent or fringing vegetation (e.g., grass or samphire). The pectoral sandpiper does not breed in Australia and is considered a migratory non-breeding visitor from August to April.	The modelled distribution of the species overlaps with the Project Area indicated the species or species habitat may occur. There are no historically relevant records of the species within the Project Area or Locality. The nearest historically relevant record is located 2.2 km to the east and dated 2023. Potential habitat for pectoral sandpiper includes all waterbodies within the Project Area. It is noted that the Project Area does not contain substantial waterbodies. Potential habitat occurs across 0.1 ha of the Project Area, as presented in Figure 4-6.

Note:

EPBC Act status: Mi = migratory

All photos sourced from iNaturalist



Legend

- Project Area
- Disturbance Footprint
- Australasian Bittern, Australian Painted Snipe, Curlew Sandpiper, Sharp-tailed Sandpiper Potential Foraging Habitat
- South-eastern Glossy Black Cockatoo Potential Foraging Habitat

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 27/05/2026
Created By: NB
Drawing Size: A3
0 0.4 0.8km
1:20,000

F4-6 Potential Habitat for Threatened Fauna with potential to occur

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Moreton Bay Council



5. POTENTIAL PROJECT IMPACTS

The Project activities, as specified in Section 1.2, are likely to result in potential impacts to MNES, particularly during the construction phase but also during operation, as outlined in the following subsections. A summary of the impacts of the Project is provided in Table 5-1.

The Project has the potential to positively impact fauna movement through the implementation of design elements, including erection of fauna fencing and fauna movement infrastructure. This infrastructure will minimise fauna access to the roadway (including koala) reducing mortality impacts and resulting in a positive net effect from the Project in the important movement corridor for koala. Revegetation is proposed across several areas within the Development Footprint, including the planting of tree and shrub species consistent with existing REs, which will contribute to the gradual establishment of koala habitat over time and a net effect from the Project (Arup, 2026c).

5.1 CONSTRUCTION ACTIVITIES

The construction phase activities have the potential to impact MNES values within the Project Area due to:

- Vegetation clearing for project components, resulting in loss of habitat for native flora and fauna;
- Direct mortality or injury to native fauna during construction;
- Fragmentation of connectivity areas;
- Construction traffic and machinery movements;
- Indirect impacts to species behaviour through creating barriers to movement and dispersal;
- Indirect impacts to adjacent habitat areas because of noise, dust, runoff, and erosion, including impacts to downstream environments; and
- Minimise fauna access to the roadway (including koala), reducing mortality impacts.

The Development Footprint covers a total of 23.8 ha and overlaps both non-remnant and remnant vegetation, including MNES habitats.

5.2 OPERATIONAL PHASE ACTIVITIES

Operational phase activities are anticipated to be more indirect, of lower frequency, and smaller in intensity compared to the construction phase; however, will last for the lifetime of the Project. Potential impacts during the operational phase include direct impacts including mortality as a result of vehicle movement and collision incidents.

Operational phase activities will be managed through the proposed mitigation measures detailed in Section 6. Operational activities are not expected to contribute to a significant impact to any MNES.

5.3 KOALA MORTALITY WITHIN CITY OF MORETON BAY

A review of publicly available koala hospital data (2016 – 2022) (DETSI, 2023) was undertaken to determine the koala mortality risk and number of koala mortalities within a 1 km buffer of the Project Area. Following the review, a total of five koala deaths were reported between 2020 and 2022 within 1 km of the Project Area, of which:

- Two koala mortalities as a result of a vehicle travelling at 60 km/hr along Narangba Road (2020 and 2022);
- One koala mortality as a result of a vehicle travelling at 100 km/hr along the Bruce Highway (2021);
- One unreported reason for death within Ron Westaway Park (2020); and
- One unreported reason for death along Bruce Highway (2020).

There are currently no publicly available data displaying koala mortality along Old Gympie Road (being the Project Area); however, based on the above data, approximately 2 – 3 koalas are killed per year in the vicinity of the Project Area.

The five koala deaths within 1 km of the Project Area are displayed in Figure 6-1.

To minimise local koala mortality, design mitigation including dedicated koala crossing structures will be constructed, as further discussed in Section 6.1. These measures are expected to substantially reduce collision risk by safely directing koalas and other fauna toward controlled crossing points and limiting access to the road corridor. Together with associated fencing, connectivity design and traffic calming elements, the Project will reduce the likelihood of vehicle strike relative to the existing environment and improve overall fauna movement outcomes.

TABLE 5-1: POTENTIAL IMPACTS TO MNES

Impact	Relevance to the Project
Construction Phase	
Clearing remnant and regrowth vegetation and the resultant loss of habitat for native fauna	The Project will result in the clearing of remnant vegetation within the Project Area.
Indirect impacts to species behavior through creating barriers to movement and dispersal	Behavioral changes in fauna may occur because of short-term construction activities and machinery, creating barriers for species to move throughout the Project Area; however, these are temporary in nature.
Indirect impacts to adjacent habitat areas due to the introduction or spread of weed and pest species	- Removal of vegetation during the construction phase will potentially introduce and/or spread weed and pest species throughout in the Project Area. This can result from foot movements, vehicle movement, and distribution / movement of vegetation; and - Weed and pest species have the potential to negatively impact native flora and fauna communities through competition for resources and/or predation. For example, lantana is known to be deleterious to native ecosystems by changing vegetation structure (by cluttering understory), outcompeting native species, and creating barriers for movement to some species.
Fragmentation of connectivity areas	- Cleared vehicle tracks are located throughout the Project Area; and - Areas within the Project Area have been mapped and identified as foraging and dispersal habitat for some listed threatened flora and fauna species. The Development Footprint will directly result in clearing of vegetation that is used by the listed threatened species to enable construction of Project infrastructure and vehicle tracks. This can result in fragmentation of important connectivity.
Construction and Operation Phase	
Indirect impacts to adjacent habitat areas as a result of noise, dust, runoff, and erosion, including impacts to downstream environments	- Movement of construction equipment and plant operations will result in noise and dust causing potentially detrimental impacts to adjacent ecological communities; - Noise from construction activities have the potential to disturb and or influence breeding, roosting or foraging behavior of native fauna. Literature illustrates that the consistency of noise is more important than volume, with irregular and unpredictable noise being more disruptive to wildlife, with irregular noise being commonly emitted during construction and decommissioning phases; and

Impact	Relevance to the Project
	• Dust generated from vehicle and machinery movements, primarily during construction, has the potential to smother vegetation adjacent to works, which has potential to inhibit plant growth and palatability of native fauna.
Direct mortality or injury to native fauna during construction and operations	• The peak traffic periods will be during the construction period with operational vehicle movements likely to be minimal. Although most fauna species are highly mobile (e.g., birds) and are unlikely to be at risk from vehicle collision, some species are more vulnerable (e.g., koala) ; and • Excavations during the construction phase will pose a trapping hazard for amphibians, small reptiles, and small mammals that can trap animals in construction zones which can lead to mortality.

6. MANAGEMENT AND MITIGATION MEASURES

Potential direct and indirect impacts to MNES due to the Project, as outlined in Section 5, will be managed and mitigated in accordance with the expected procedures for transport infrastructure.

The management and mitigation measures, specific to MNES, to be implemented during the construction and operation phases of the Project are discussed in Section 5, and the management hierarchy has been used to inform the process, as:

1. Avoid;
2. Minimise;
3. Mitigate; and
4. Offset.

The outcomes are listed in Table 6-2 with the preferred listed first.

Additionally, potential indirect impacts will be effectively mitigated and managed through the implementation of additional measures outlined in the Project's Environmental Management Plan (Arup, 2026b) and other management plans prepared for the Project.

The concept behind the use is that proponents must demonstrate that for any impact they make due to their action, they have first put in a justifiable effort to avoid the impact. If they are not able to avoid, (or if they are able to for some of the impact but not all) they then must demonstrate that they have put in a justifiable effort to minimise and mitigate what impact they can't reasonably avoid. Only then must any remaining impact be offset following guidance from the EPBC Act Environmental offsets policy.

6.1 KOALA MORTALITY AND HABITAT CONNECTIVITY MITIGATION

Given the risk of approximately 2 – 3 koalas killed per year in the vicinity of the Project Area, the Project design has incorporated integrated green infrastructure to maintain and enhance koala connectivity across the corridor, including dedicated crossing structures. This is complemented by targeted mitigation measures such as exclusion fencing to guide safe movement and reduce road-related mortality, as well as pre-clearance surveys, staged clearing, and fauna management protocols to minimise the risk of direct impacts during construction (Arup, 2026b).

Fauna exclusion fencing and crossing infrastructure will be installed along key sections of Old Gympie Road, including continuous fencing between Hughes Road East and Boundary Road and targeted treatments around Freshwater Creek. These works include 1.2 m to 1.8 m high fauna exclusion fencing integrated with escape structures, rope cage crossings at Freshwater Creek and south of Boundary Road, and fauna movement shelves within culverts to facilitate safe passage beneath the road corridor. Collectively, these measures will effectively exclude koalas and other fauna from the carriageway and direct movement to safe crossing points along approximately 0.8 km of the Project Area, corresponding to the extent of continuous fencing between Hughes Road East and Boundary Road and associated localised treatments, thereby removing the potential for direct vehicle collision across these sections and substantially reducing the overall road mortality risk to koala.

Crossing structures, inclusive of culvert upgrades, will benefit koala habitat connectivity to current isolated patches (currently separated by shallow culverts and road corridors), particularly an isolated patch of koala habitat between the current Dakabin Waste Management Facility access road and Goodwin Road. By reconfiguring the Dakabin Waste Management Facility access and provision of a new internal access road connecting to Goodwin Road, and upgrading the culvert will facilitate koala movement to and from the currently isolated habitat patch.

A summary of the fauna infrastructure and reference to the relevant design drawing within Appendix F is provided in Table 6-1. The locations of fauna infrastructure are presented in Figure 6-1.

TABLE 6-1: FAUNA INFRASTRUCTURE AND DESIGN SHEET REFERENCE

Infrastructure Type	Location	Landscape Package – Design Drawing #
1.2 m high chain-wire fauna exclusion fencing	Old Gympie Road at Freshwater Creek	Sheet 5
1.8 m high chain-wire fauna exclusion fencing	Along Old Gympie Road	Sheet 12 to 15
Culvert upgrades	Old Gympie Road at Freshwater Creek	Sheet 5
	Old Gympie Road	Sheet 12 (two culverts)
		Sheet 13
		Sheet 15
	Goodwin Road	Sheet 18
Fauna exclusion grid at property access	Old Gympie Road	Sheet 13
		Sheet 14
Fauna rope cage crossing	Old Gympie Road at Freshwater Creek	Sheet 5
	Old Gympie Road	Sheet 14
Fauna escape pole and hatch	Old Gympie Road at Freshwater Creek	Sheet 5 (two fauna escape poles)
	Old Gympie Road	Sheet 12 (three fauna escape poles)
		Sheet 13
		Sheet 14 (four fauna escape poles)
		Sheet 15 (two fauna escape poles)

TABLE 6-2: MANAGEMENT AND MITIGATION MEASURES

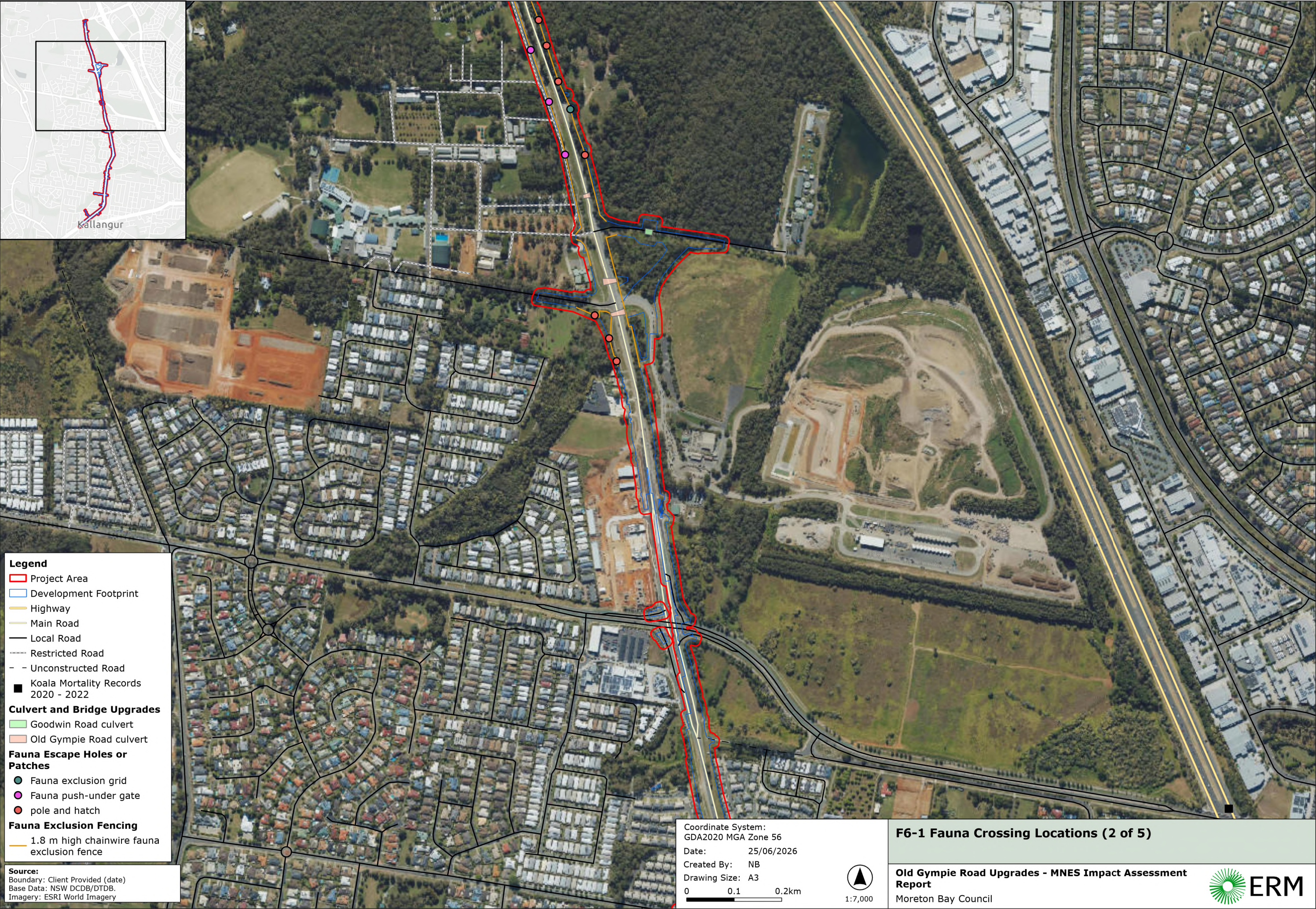
Impact	Hierarchy	Relevance to Impact
Clearing native vegetation and loss of habitat for native fauna	Avoidance	Through the design process, the Project has avoided clearing native vegetation (and associated MNES habitat) to the greatest extent practicable.
	Minimise	- An Environmental Management Plan (Arup, 2026b) has been prepared for the Project, and will be implemented throughout the Project; - Any vegetation clearing, regardless of its suitability for listed threatened species will undergo a pre-clearance assessment of to minimise risk of unforeseen impact to threatened species; - Where risks are identified from pre-clearance assessments, a qualified fauna spotter-catcher will undergo searches immediately prior to clearing of any vegetation for presence of any fauna species. If fauna species or nesting sites are detected, the qualified fauna spotter catcher will assess and conduct the most appropriate method at the time to avoid or minimise impacts from clearing; - To minimise further disturbance to vegetation that is set to not be cleared, vehicles and associated equipment / machinery will be confined to approved and zoned work areas; - Construction workers will be made aware of management requirements through site inductions and regular check ins during the construction phase. The site inductions will delineate potential risks and possible impacts to the surrounding environment, vegetation clearing requirements, no go zones, methods to minimise, avoid and mitigate potential impacts that will be relevant to onboarding workers and contractors; - Where pre-clearance assessments find key microhabitat features within unavoidable clearance zones, these will be inspected for fauna, and relocated, or mimicked¹ in the nearest suitable adjacent habitat to retain that microhabitat function in the broader ecosystem; and - CMB commits to replanting approximately 6000 native koala trees within an offset property located approximately 7 km north-east of the Project Area, along Uhlmann Road, to provide habitat for koala and grey-headed flying-fox within Moreton Bay. This commitment will contribute to a measurable increase in the availability and spatial extent of suitable foraging and roosting habitat in the local landscape, supporting long-term population viability. The scale and targeted species composition of the planting will align with local habitat connectivity objectives, reinforcing movement corridors between remnant habitat areas and reducing pressure on existing fragmented resources.
Indirect impacts to species behaviour through creating	Manage	- Construction activities and associated machinery will occur only within clearly zoned work areas and not enter/affect any adjacent vegetation areas; - Before works occur, any fauna species identified within the work zone area will be removed and relocated to a suitable location area, in proximity to the Project Area, to avoid impact; and

Impact	Hierarchy	Relevance to Impact
barriers to movement and dispersal		If fauna species are to be spotted on site during the construction phase a qualified fauna spotter catcher is to be contacted to relocate the individual.
Indirect impacts to adjacent habitat areas from noise, dust, runoff, and erosion, including impacts to downstream environments	Minimise	- Dust will be controlled via dust suppression tools through the entire construction phase of the Project; - Where needed, a qualified fauna spotter-catcher will undergo searches immediately prior to clearing of any vegetation for presence of any fauna species. If fauna species or nesting sites are detected, the qualified fauna spotter catcher will assess and conduct the most appropriate method at the time to avoid or minimise impacts; - Site inductions will delineate to workers and contractors the potential impacts of dust emissions and provide mitigation / management measures that will be implemented; - All vehicles and plant machinery will comply with site-specific speed limits to minimise dust generation; - Sediment and erosion controls will be implemented across the construction site in accordance with the Queensland Erosion and Sediment Control Plan, and the Contractor's erosion and sediment control procedures; and - During construction measures will be implemented to minimise impacts to natural drainage (e.g., disturbing channel contours).
Indirect impacts to adjacent habitat areas due to the introduction or spread of weed and pest species	Avoidance	Construction workers and contractors will be advised of biosecurity threats for the Project.
	Minimise	- Material that is imported from off site will be assessed for weed seeds and ensure it is free of contamination, disease, and invasive weeds. A Weed Hygiene Declaration will be implemented to ensure no contamination; - Weeds of National Significance and restricted invasive species, should they be present, will be monitored within the Project Area to ensure they are controlled; and - Site inductions will delineate to construction workers and contractor's biosecurity requirements, potential risks from weed and pest species, and mitigation and management measure that will be conducted on site.
Direct mortality or injury to native fauna during construction and operations	Minimise	- Where identified as needed, a qualified fauna spotter-catcher will undergo searches immediately prior to clearing of any vegetation for presence of any fauna species. If fauna species or nesting sites are detected, the qualified fauna spotter catcher will assess and conduct the most appropriate method at the time to avoid or minimise impacts; - Site inductions will delineate to construction workers and contractors' potential impacts to native fauna from construction activities, reporting requirements, and mitigation and management measures that need to be implemented;

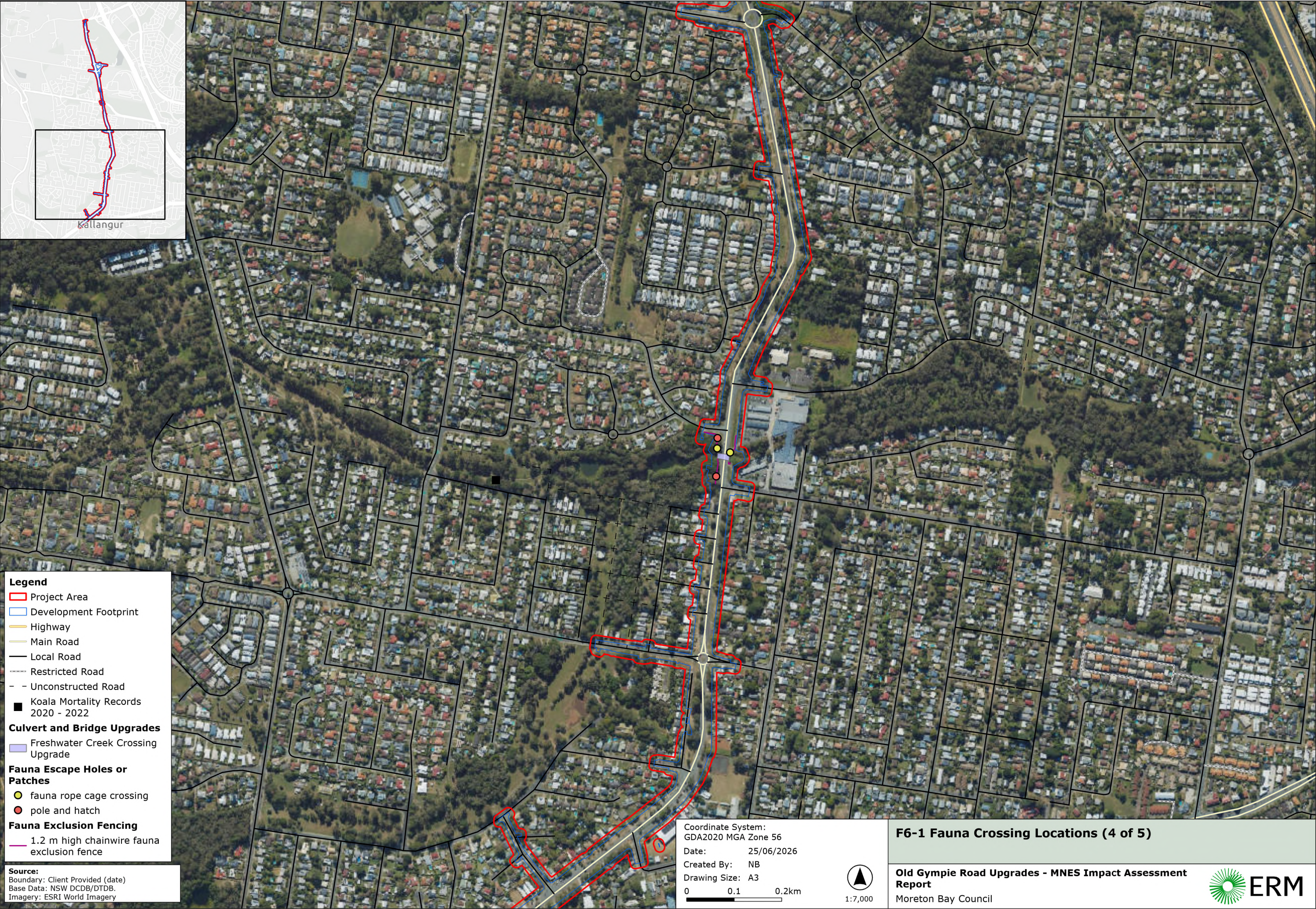
Impact	Hierarchy	Relevance to Impact
		- No driving will occur in unauthorised areas and speed limits will be implemented; and - Injured, sick or dead fauna will be recorded and reported, for the duration of construction and operation phases. A qualified fauna spotter catcher will carry out impacted fauna reporting during the construction phase. Where injured or sick fauna are detected, individuals will be taken to the nearest wildlife carer or veterinarian if practical.
Fragmentation of connectivity areas	Mitigate	Non-work zones will be clearly marked to ensure clearing only occurs in designed footprint and does not create unnecessary fragmentation.
	Minimise	Revegetation is proposed across several areas within the Development Footprint, including the planting of tree and shrub species consistent with existing REs, which will contribute to the gradual establishment of koala habitat over time (Arup, 2026c).
Disturbance to MNES	Avoid	- The Development Footprint avoids some of areas of MNES habitats within the Project Area, through initial design refinements; and - Species habitat will be outlined and displayed in work programs where relevant to potential impacts throughout the construction phase and operational phase.
	Minimise	- An Environmental Management Plan (Arup, 2026b) has been prepared for the Project, and will be implemented throughout the Project; - Wherever practical, signage will be erected to increase awareness of potential habitat of listed threatened species within the Project Area; - Speed limits will be enforced on all access roads, limited to 40 km/hour across the Project Area; - All vehicles plant, equipment and machinery will remain within the designated access areas; - Vegetation will only be removed that has been approved to be cleared; - A qualified fauna spotter-catcher will undergo searches immediately prior to clearing of any vegetation for presence of any fauna species. If fauna species or nesting sites are detected, the qualified fauna spotter catcher will assess and conduct the most appropriate method at the time to avoid or minimise impacts; - Where disturbance to threatened species habitat must occur, individuals and surrounding micro-habitat features (like logs etc.) will be translocated to suitable areas (if possible); - The Project design has incorporated fauna exclusion fencing and crossing infrastructure along key sections of Old Gympie Road to reduce koala mortality risks, including continuous fencing between Hughes Road East and Boundary Road and targeted treatments around Freshwater Creek. Fauna exclusion fencing (1.2 m to 1.8 m high) integrated with escape structures, rope cage crossings will be implemented at Freshwater Creek

Impact	Hierarchy	Relevance to Impact
		and south of Boundary Road (refer to Figure 6-1), and fauna movement shelves within culverts to facilitate safe passage beneath the road corridor; • CMB commits to engaging DETSI to confirm the appropriate regulatory pathway and management requirements for works undertaken in proximity to the grey-headed flying-fox roost (located outside the Project Area). Consultation during the pre-construction planning will confirm the applicability of relevant codes of practice, notification and permit requirements and monitoring expectations associated with activities adjacent to the grey-headed flying-fox roost. Requirements identified by DETSI will be incorporated into the Project's construction environmental management framework; and • In the event a protected flora species is found within the Development Footprint during clearing, translocation of the individual plants to within the Project Area will be undertaken in accordance with the relevant regulatory permits, such as a protected plant growing licence and a harvesting licence under the Nature Conservation (Plants) Regulation 2020. Translocation of protected plants will only be undertaken by a licenced bushcare regenerator/native plant nursery who has licences to: 1. harvest seeds and whole plants of threatened species (protected plant harvesting licence); and 2. cultivating a restricted plant (protected plant growing licence).









Legend

- Project Area
- Development Footprint
- Highway
- Main Road
- Local Road
- Restricted Road
- Unconstructed Road
- Koala Mortality Records 2020 - 2022
- Culvert and Bridge Upgrades**
 - Freshwater Creek Crossing Upgrade
- Fauna Escape Holes or Patches**
 - fauna rope cage crossing
 - pole and hatch
- Fauna Exclusion Fencing**
 - 1.2 m high chainwire fauna exclusion fence

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3

0 0.1 0.2km



1:7,000

F6-1 Fauna Crossing Locations (4 of 5)

Old Gympie Road Upgrades - MNES Impact Assessment Report
Moreton Bay Council





- Legend**
- Project Area
 - Development Footprint
 - Main Road
 - Local Road
 - Restricted Road
 - Unconstructed Road
 - Koala Mortality Records 2020 - 2022
 - Culvert and Bridge Upgrades**
 - Freshwater Creek Crossing Upgrade
 - Fauna Escape Holes or Patches**
 - fauna rope cage crossing
 - pole and hatch
 - Fauna Exclusion Fencing**
 - 1.2 m high chainwire fauna exclusion fence

Source:
Boundary: Client Provided (date)
Base Data: NSW DCDB/DTDB.
Imagery: ESRI World Imagery

Coordinate System:
GDA2020 MGA Zone 56
Date: 25/06/2026
Created By: NB
Drawing Size: A3
0 0.1 0.2km
1:7,000



F6-1 Fauna Crossing Locations (5 of 5)

Old Gympie Road Upgrades - MNES Impact Assessment Report
Moreton Bay Council



7. SIGNIFICANT IMPACT ASSESSMENT

The significant impact assessment for all MNES that are known, likely or have the potential to occur within the Project Area have been completed with reference to the criteria in SIG1.1 (DEWHA, 2013), with the assumption that the avoidance and mitigation measures, as per Section 6, are implemented.

A total of 16 MNES were assessed as part of the impact assessment, including two threatened flora and 14 threatened and/or migratory fauna. A summary of the significant impact assessments is provided in Table 7-1, while the detailed impact assessments are provided in 0.

The direct impact to MNES habitat has been calculated by overlapping MNES habitat with the Development Footprint, to identify the total disturbance to each threatened and/or migratory species. It should be noted that the overall disturbance limits are the maximum disturbance limits and are likely to be lower than those stated; however, these values are in relation to the direct Development Footprint.

Following the SIA, the Project, in its current form, is unlikely to result in a significant impact on MNES, and therefore, offsets are not required.

TABLE 7-1: SUMMARY OF SIGNIFICANT IMPACT ASSESSMENT

MNES	EPBC Act Status ¹	Total Habitat in the Project Area (ha)	Total Habitat in the Development Footprint (ha)	Comments	Significant Impact?
Known to occur					
Koala	E	Koala Habitat: 7.6	Koala Habitat: 1.9	The Project is expected to directly impact up to 1.9 ha of koala habitat with the removal of 737 koala trees (refer to Appendix E). Approximately 20% of the trees proposed for removal comprise species that provide foraging resources for koala, while the remaining 80% consist of species that are suitable only for shelter and dispersal functions. A total of 518 trees will be avoided and retained within the Development Footprint. Numerous records of the species occur within the Project Area and surrounding locality, and a recognised local koala population persists throughout the LGA, including within urban environments. The quality of koala habitat within the Project Area is variable, with much of the mapped habitat comprising isolated street trees or small clusters of trees that are not directly connected to larger areas of intact habitat. Vegetation within the more intact northern portion of the Project Area was also observed to be degraded by weed encroachment and was frequently dominated by <i>Acacia</i> and <i>Casuarina</i> species. The Project has largely avoided higher-quality koala habitat through the design process, with at least 518 existing trees that are >4 m in height and have a DSH of >10 cm to be retained. In addition, revegetation is proposed across several areas within the Development Footprint, including the planting of tree and shrub species consistent with existing REs, which will contribute to the gradual establishment of koala habitat over time (Arup, 2026c).	Unlikely

			The Project incorporates integrated green infrastructure to maintain and enhance koala connectivity across the corridor, including dedicated crossing structures. This is complemented by targeted mitigation measures such as exclusion fencing to guide safe movement and reduce road-related mortality, as well as pre-clearance surveys, staged clearing, and fauna management protocols to minimise the risk of direct impacts during construction (Arup, 2026b). Fauna exclusion fencing and crossing infrastructure will be installed along key sections of Old Gympie Road, including continuous fencing between Hughes Road East and Boundary Road and targeted treatments around Freshwater Creek. These works include 1.2 m to 1.8 m high fauna exclusion fencing integrated with escape structures, rope cage crossings at Freshwater Creek and south of Boundary Road, and fauna movement shelves within culverts to facilitate safe passage beneath the road corridor. Collectively, these measures will effectively exclude koalas and other fauna from the carriageway and direct movement to safe crossing points along approximately 0.8 km of the Project Area, corresponding to the extent of continuous fencing between Hughes Road East and Boundary Road and associated localised treatments, thereby removing the potential for direct vehicle collision across these sections and substantially reducing the overall road mortality risk to koala. The Project will result in the removal of a relatively small and localised portion of koala habitat within an already highly modified suburban landscape, where habitat is typically fragmented, disturbed, and of variable quality. Given the availability of intact foraging resources within the broader landscape, the retention of existing trees where practicable within the Development Footprint, the limited fragmentation effects associated with the Project, and the implementation of mitigation and management measures, the Project is considered unlikely to result in a significant impact on Koala.	
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Grey-headed flying-fox	V	Foraging Habitat: 7.6	Foraging Habitat: 1.9	Grey-headed flying-fox habitat has been conservatively mapped within the Project Area, as 80% of the trees mapped as habitat are <i>Casuarina</i> spp. and <i>Acacia</i> spp. and are not considered the preferred foraging resources from Eucalypt and related genera. As such, the mapping overestimates habitat availability, with the majority of vegetation providing only marginal foraging value relative to higher quality flowering resources typically relied upon by the species. The Project is expected to directly impact up to 1.9 ha of grey-headed flying fox foraging habitat, noting that impacts to foraging trees will likely be lower due to conservative habitat mapping. This includes the trees proposed to be removed and those that are pending determination of removal (refer to Appendix E). The Ross Reserve camp site does not comprise a nationally important camp and is not located within the Project Area. Habitat within the Project Area is generally degraded as a result of edge effects, disturbance associated with the existing road corridor and weed encroachment. Grey-headed flying foxes are known to be sensitive to disturbance associated with construction activities, including increased noise, artificial lighting and dust generation. In some circumstances, where such impacts have not been appropriately mitigated, construction activities have resulted in temporary avoidance of affected foraging areas and, in more severe cases, disturbance to nearby roost sites (Ecosure, 2021). However, the existing camp occurs within a highly modified suburban environment that is already subject to ongoing road traffic noise and anthropogenic disturbance. The Project is therefore not expected to substantially alter existing baseline disturbance conditions in the Locality. Furthermore, mitigation and management measures can be implemented to minimise potential direct and indirect impacts, including pre-clearance surveys, population monitoring and avoidance of major construction activities during sensitive periods where practicable.	Unlikely
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MNES	EPBC Act Status ¹	Total Habitat in the Project Area (ha)	Total Habitat in the Development Footprint (ha)	Comments	Significant Impact?
Likely to occur					
White-throated needletail	V	Aerial flyover visitor only for potential foraging.	Aerial flyover visitor only for potential foraging.	White-throated needletail does not breed within Australia and is an aerial foraging species that utilises broad areas of airspace while in flight. The Project is not expected to substantially alter the availability or function of aerial habitat within the Project Area, and the species would continue to be able to utilise the airspace above the Project Area during and following construction. Accordingly, the Project is not considered likely to result in a significant impact to the species.	Unlikely
Fork-tailed swift	Mi	Aerial flyover visitor only for potential foraging.	Aerial flyover visitor only for potential foraging.	Given the species' aerial nature and its capacity of forage over most vegetation types, including modified areas, the Project is considered unlikely to result in a significant impact to fork-tailed swift.	Unlikely
Latham's snipe	V, Mi	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1	The Project will impact less than 0.1 ha of potential foraging habitat for the species. This habitat comprises an old farm dam that is considered to provide relatively low-quality foraging function when compared to aquatic habitats available within the broader landscape. Mitigation and management measures can be implemented to minimise potential direct and indirect impacts to the species. Given the limited extent and low quality of habitat affected, the Project is not considered likely to result in a significant impact to the species.	Unlikely
Potential to occur					
Lesser swamp orchid	E	Potential Habitat: 4.1	Potential Habitat: 1.6	Based on the current Development Footprint, the Project is expected to impact up to 1.6 ha of potential habitat for lesser swamp orchid.	Unlikely

MNES	EPBC Act Status ¹	Total Habitat in the Project Area (ha)	Total Habitat in the Development Footprint (ha)	Comments	Significant Impact?
				There are no recent records of the species within the Project Area or Locality, and the species has not been detected during any of the three surveys conducted within the Project Area. It is considered unlikely that there would be an important population of the species within the Project Area. Mitigation and management measures can be implemented to minimise potential direct and indirect impacts to the species. Based on the above, it is considered unlikely that the Project will result in a significant impact to the species.	
Austral toadflax	V	Potential Habitat: 4.1	Potential Habitat: 1.6	Based on the current Development Footprint, the Project is expected to impact up to 1.6 ha of potential habitat for austral toadflax. There are no recent records of the species within the Project Area or Locality, and the species has not been detected during any of the three surveys conducted within the Project Area. It is considered unlikely that there would be an important population of the species within the Project Area. Mitigation and management measures can be implemented to minimise potential direct and indirect impacts to the species. Based on the above, it is considered unlikely that the Project will result in a significant impact to the species.	Unlikely
South-eastern glossy black cockatoo	V	Potential Foraging Habitat: 0.3	Potential Foraging Habitat: 0.1	Based on the current Development Footprint, the Project is expected to impact up to 0.1 ha of potential foraging habitat for south-eastern glossy black cockatoo. Mitigation and management measures can be implemented to minimise potential direct and indirect impacts to the species.	Unlikely

MNES	EPBC Act Status ¹	Total Habitat in the Project Area (ha)	Total Habitat in the Development Footprint (ha)	Comments	Significant Impact?
				There are no recent records of the species within the Project Area or Locality, and the species has not been detected during any of the three surveys conducted within the Project Area, despite targeted surveys being undertaken (e.g. chewed ort surveys). It is considered unlikely that there would be an important population of the species within the Project Area. Given the relatively minimal amount of habitat to be impacted, and the ecological context of this habitat, it is considered unlikely that the Project will result in a significant impact to the species.	
Osprey	Mi	Aerial flyover visitor only for potential foraging.	Aerial flyover visitor only for potential foraging.	The species does not utilise the Project Area for breeding and is therefore considered a potential aerial flyover visitor only for foraging purposes. The nature of the Project is not likely to alter the availability of foraging opportunity for the species, should it utilise the Project Area. As such, the Project is considered unlikely to result in a significant impact to the species.	Unlikely
Oriental cuckoo	Mi	Potential Foraging Habitat: 4.3	Potential Foraging Habitat: 1.7	The Project will impact up to 1.7 ha of potential foraging habitat for the species. However, the habitat within the Project Area is not considered to represent important habitat due to its degraded and fragmented condition, resulting from disturbance associated with the existing road corridor and weed encroachment. The Project Area is also not considered to support an ecologically significant proportion of the species' population within the locality or broader region. Accordingly, the Project is not considered likely to result in a significant impact on the species.	Unlikely

MNES	EPBC Act Status ¹	Total Habitat in the Project Area (ha)	Total Habitat in the Development Footprint (ha)	Comments	Significant Impact?
Sharp-tailed sandpiper	V, Mi	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1	The Project will impact less than 0.1 ha of potential foraging habitat for these shorebird and wader bird species. This habitat comprises an old farm dam that is considered to provide relatively low-quality foraging function when compared to aquatic habitats available within the broader landscape. Accordingly, the extent of potential foraging habitat impacted by the Project is considered negligible. Mitigation and management measures can be implemented to minimise the potential for any direct and indirect impacts to the species. Given the limited extent and low quality of habitat affected, the Project is not considered likely to result in a significant impact on these species.	Unlikely
Curlew sandpiper	CE, Mi	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1		
Australian painted snipe	E	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1		
Common sandpiper	Mi	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1		
Pectoral sandpiper	Mi	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1		
Australasian bittern	E	Potential Foraging Habitat: 0.1	Potential Foraging Habitat: <0.1		

¹EPBC Act Listing Status: CE = Critically Endangered, E = Endangered, V = Vulnerable, Mi = Migratory.

8. CONCLUSION

To assess the potential impact to ecological values associated with the Project, desktop assessment and field survey was undertaken to determine MNES habitats present within the Project Area. The desktop and field assessment involved a review of both State and Commonwealth databases and one field survey undertaken in April 2026, to determine species presence/absence and habitat availability for species potential present within the Project Area.

The desktop assessment and field survey confirmed the presence of two threatened species listed under the EPBC Act, including:

- Koala (*Phascolarctos cinereus*); and
- Grey-headed flying-fox (*Pteropus poliocephalus*).

Three threatened and/or migratory species were considered likely to occur, and nine have the potential to occur within the Project Area.

The Project Area contains the following six broad habitat types:

- Mixed riparian forests with broad-leaved paperbark and forest red gum;
- Native woodland dominated by *Casuarina* spp. and *Acacia* spp.;
- Waterbodies;
- Mature ornamental garden vegetation;
- Mixed roadside vegetation with mature street trees including *Eucalyptus* spp.;
- Managed roadside grass; and
- Developed areas including buildings, roads and parking areas.

As the Project has the potential to impact MNES, significant impact assessments were undertaken in accordance with the EPBC Act *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance*. The significant impact assessments concluded that the Project is unlikely to result in a significant impact on MNES, and therefore, offsets are not required.

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APPENDIX A PMST REPORT



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 12-May-2026

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	79
Listed Migratory Species:	40

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:	49
Whales and Other Cetaceans:	2
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	16
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Moreton bay	Within 10km of Ramsar site	In feature area

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 feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
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

Listed Threatened Species			[<u>Resource Information</u>]
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			
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within 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 known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely 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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Erythroriorchis 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 known to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely 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 known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area	In buffer area only
FROG			
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
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 known to occur within area	In feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Sousa sahalensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Acacia attenuata [10690]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In feature area
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 ternifolia Small-fruited Queensland Nut, Gympie Nut [7214]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat known to occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to 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 buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
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			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		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
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within 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 known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 likely 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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known 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 feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
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
Ardenna grisea as Puffinus griseus Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
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 known to occur within area overfly marine area	In feature area
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 likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni as Diomedea gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area	In buffer area only
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known 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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area overfly marine area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may 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 known 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
Pachyptila turtur Fairy Prion [1066]		Species or species habitat likely to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
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 known to occur within area overfly marine area	In feature area
Sterna striata White-fronted Tern [799]		Migration route may occur within 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
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Reptile			
Caretta caretta			
Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area	In buffer area only
Chelonia mydas			
Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Dermochelys coriacea			
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Emydocephalus annulatus			
Eastern Turtle-headed Sea Snake [1125]		Species or species habitat may occur within area	In feature area
Eretmochelys imbricata			
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Lepidochelys olivacea			
Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus			
Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Whales and Other Cetaceans			
[Resource Information]			
Current Scientific Name	Status	Type of Presence	Buffer Status
Mammal			
Orcaella heinsohni			
Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sousa sahalensis			
Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Extra Information

State and Territory Reserves [\[Resource Information \]](#)

Protected Area Name	Reserve Type	State	Buffer Status
Kurwongbah Park	Nature Refuge	QLD	In buffer area only

EPBC Act Referrals [\[Resource Information \]](#)

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				

Construction of dual-track electrified railway lines	2002/586	Controlled Action	Completed	In feature area
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Petrie Mill redevelopment project, Qld	2016/7839	Controlled Action	Post-Approval	In feature area
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redevelopment of waste water treatment plant	2005/2028	Controlled Action	Completed	In buffer area only
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Not controlled action

56 Lot Industrial subdivision and associated infrastructure construction activities adjacent to Hays	2004/1553	Not Controlled Action	Completed	In feature area
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Concrete Batching plant	2003/1245	Not Controlled Action	Completed	In feature area
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Development of residential community at Lawnton Pocket Road	2004/1571	Not Controlled Action	Completed	In feature area
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Dohles Rocks residential subdivision and development	2004/1494	Not Controlled Action	Completed	In feature area
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Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
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Installation of a sewer rising main and replacement of the existing PVC rising m	2005/2058	Not Controlled Action	Completed	In feature area
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Moreton Bay Rail Link between Petrie Station and Kippa Ring	2010/5589	Not Controlled Action	Completed	In feature area
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Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (Redcliffe)				
Rehabilitation of Dowse Lagoon, Sandgate	2004/1401	Not Controlled Action	Completed	In buffer area only
Residential Development at 31 Alma Rd Dakabin, QLD	2012/6455	Not Controlled Action	Completed	In feature area
Residential Subdivision, Freshwater Development, Brays Road	2004/1606	Not Controlled Action	Completed	In feature area
residential subdivision, park & infrastructure	2003/1216	Not Controlled Action	Completed	In feature area
Site preparation for residential dwelling, Lot 79, Gregory Road	2004/1499	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
North Lakes Development	2001/520	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

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 is 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 on the contents of this report.

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 point locations and environmental data layers.

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 when time permits.

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 breeding sites; and
- 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 LIKELIHOOD OF OCCURRENCE

TABLE 1: LIKELIHOOD OF OCCURRENCE CRITERIA

	Preferred Habitat Exists	General Habitat Exists ²	Habitat does not Exist ³
Records ¹ within the Project Area	Known	Known	Known
Records within the Locality ⁴	Likely	Potential	Unlikely
No records within the Locality, but the Project Area is within known distribution	Potential	Potential	Unlikely
No records in the Locality, and the Project Area is outside of distribution	Unlikely	Unlikely	Unlikely

1. Records considered are those that have been recorded in the last 20 years.
2. Habitat may be considered general but not preferred because: some desired habitat features may be present, but not all; habitat may have poor connectivity; or habitat may be known to be disturbed.
3. Based on sources reviewed and/or field survey results.
4. 'Locality' refers to a 10 km buffer around the Project Area and is inclusive of the Project Area.

TABLE 2: SUMMARY OF MNES LIKELIHOOD OF OCCURRENCE

Common Name	Scientific Name	EPBC Act Listing Status ¹
Known to occur		
Koala	<i>Phascolarctos cinereus</i>	E
Grey-headed flying fox	<i>Pteropus poliocephalus</i>	V
Likely to occur		
White-throated needletail	<i>Hirundapus caudacutus</i>	V
Latham's snipe	<i>Gallinago hardwickii</i>	V, Mi
Fork-tailed swift	<i>Apus pacificus</i>	Mi
Potential to occur		
Lesser swamp-orchid	<i>Phaius australis</i>	E
Austral toadflax	<i>Thesium australe</i>	V
South-eastern glossy black cockatoo	<i>Calyptorhynchus lathami lathami</i>	V
Australian painted snipe	<i>Rostratula australis</i>	E
Curlew sandpiper	<i>Calidris ferruginea</i>	CE, Mi
Australasian bittern	<i>Botaurus pociroptilus</i>	E
Sharp-tailed sandpiper	<i>Calidris acuminata</i>	V, Mi
Common sandpiper	<i>Actitis hypoleucos</i>	Mi
Pectoral sandpiper	<i>Calidris melanotos</i>	Mi

Common Name	Scientific Name	EPBC Act Listing Status ¹
Osprey	<i>Pandion haliaetus</i>	Mi
Oriental cuckoo	<i>Cuculus optatus</i>	Mi

¹EPBC Act Listing Status: CE = Critically Endangered, E = Endangered, V = Vulnerable, Mi = Migratory.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
Threatened Ecological Community					
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	E	The canopy layer is dominated by <i>Casuarina glauca</i> (swamp oak, swamp she-oak). A number of <i>Eucalyptus</i> spp. can emerge from the canopy, with typical examples including <i>Eucalyptus tereticornis</i> (forest red gum), <i>E. botryoides</i> (bangalay), <i>E. grandis</i> (flooded gum), <i>E. longifolia</i> (woollybutt), or <i>E. robusta</i> (swamp mahogany). The climbing plant species that is most commonly found in the community is <i>Parsonsia straminea</i> (common silkpod). The ground layer is typically a continuous to semi-continuous cover of either forbs, ferns, sedges, grasses and/or plant litter (including swamp-oak branchlets/needles), but can also often be "patchy,". This TEC aligns with the following regional ecosystems: - RE 12.1.1 - RE 12.3.20	-	-	Confirmed not occurring - The Project Area is not within any mapped known areas of this TEC; - The Project Area does not contain regional ecosystems associated with this TEC. - The threatened ecological community was not recorded within the Project Area during field surveys.
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	The Coastal Swamp Sclerophyll Forest typically features a canopy and/or sub-canopy dominated by <i>Melaleuca</i> spp. and/or <i>Eucalyptus robusta</i>. In the ground layer, typically occurring species include <i>Blechnum</i> spp. (syn. <i>Telmatoblechnum</i> spp.), <i>Calochlaena dubia</i> (False Bracken), <i>Gahnia</i> spp., particularly <i>Gahnia clarkei</i> (Tall Saw-sedge), <i>Hypolepsis</i> spp., <i>Imperata cylindrica</i> (Blady Grass), <i>Baumea</i> spp. (syn. <i>Machaerina</i> spp.) (Twig-rushes) and <i>Pteridium esculentum</i> (Bracken). This TEC aligns with the following regional ecosystems: RE 12.2.7	-	-	Confirmed not occurring Targeted surveys were undertaken within RE 12.3.6 within the Project Area; however patches of RE 12.3.6 within the Project Area were heavily disturbed by exotic species and did not meet the TEC criteria.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		- RE 12.3.4 / RE 12.3.4a - RE 12.3.5 - RE 12.3.6 - RE 12.3.20 (only parts not dominated by <i>C. glauca</i>)			
Lowland Rainforest of Subtropical Australia	CE	The ecological community primarily occurs from Maryborough in Queensland to the Clarence River (near Grafton) in NSW. Lowland rainforest mostly occupies areas on highly fertile basaltic and alluvial soils. Most of the remaining patches of this ecological community are small and scattered. This TEC aligns with the following regional ecosystems: - RE 12.3.1 - RE 12.11.10 - RE 12.12.1	-	-	Confirmed not occurring - The Project Area is not within any mapped known areas of this TEC; - The threatened ecological community was not recorded within the Project Area during field surveys.
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	E	The ecological community is found on alluvial landforms, including floodplains, the riparian zones of parent rivers and other order tributaries, alluvial flats, floodplain/alluvial terraces and periodically flooded depressions. It generally occurs below 50 m above sea-level (ASL), although it can occur up to 250 m ASL. The tree canopy is dominated by eucalypts and/or other myrtaceous trees (specifically from the Angophora, Corymbia, Lophostemon and Syncarpia genera), often as a mixture of species. This TEC aligns with the following regional ecosystems: - RE 12.3.2 / RE 12.3.2a - RE 12.3.3 / RE 12.3.3a / RE 12.3.3b / RE 12.3.3d - RE 12.3.4 / RE 12.3.4a	-	-	Confirmed not occurring - The Project Area is not within any mapped known areas of this TEC; - The threatened ecological community was not recorded within the Project Area during field surveys.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		- RE 12.3.7 / RE 12.3.7c / RE 12.3.7d - RE 12.3.10 - RE 12.3.11 / RE 12.3.11a / RE 12.3.11b - RE 12.3.12 - RE 12.3.14a			
Threatened Flora					
<i>Acacia attenuata</i>	V	<i>A. attenuata</i> is confined to high rainfall areas on coastal lowland sandplains with a restricted geographical range extending from Littabella National Park north of Bundaberg to Burleigh Heads on the Gold Coast. Field studies conducted in 2005 confirmed that 24 populations remain in the wild and two ex situ populations (revegetation plantings) have been established (Brownlie, 2007). The species occurs in several vegetation communities including wet heathland, layered eucalypt open forest, open woodland and shrublands, although shows a close association with the ecotone between wet heathland and open eucalypt forest communities. It typically occurs in seasonally waterlogged areas consisting of poorly drained and infertile sandy soils or peat swamps (Brownlie, 2007). Associated REs: 12.2.13, 12.3.5, 12.3.13, 12.3.14, 12.9-10.4 (Brownlie, H., 2007).	No	No	Unlikely - The Project Area is not within the mapped distribution for this species; - There are no known records of the species within the Project Area or Locality; - The closest, most recent record is located approximately 100 km to the south of the Project Area and is from 2011; - Soil conditions and vegetation community associations where this species typically occurs, specifically poorly draining soils and vegetated swamp conditions, are found within and adjacent to the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
Hairy-joint grass (<i>Arthraxon hispidus</i>)	V	Hairy-joint grass occurs in scattered locations throughout Queensland and northern New South Wales, with most occurrences occurring south of Noosa (DEWHA, 2008a).	Yes	No	Unlikely The Project Area intersects with the 'species or species habitat likely to

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		It is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, and woodlands (DEWHA, 2008a).			occur' mapped distribution of the species; - The closest, most recent record is located approximately 96 km to the south-west and is from 2009; - The closest, historic record is 16 km to the south-west and is from 1993; - There are no areas of rainforest or intact eucalypt woodlands present within the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
<i>Bosistoa transversa</i>	V	<i>Bosistoa transversa</i> occurs between Richmond River, NSW, to Mt Larcom near Gladstone, QLD (DEWHA, 2008b). It grows in wet sclerophyll forest, dry sclerophyll forest and rainforest up to 300 m in altitude. Associated vegetation includes <i>Argyrodendron trifoliolatum</i>, <i>Syzygium hodgkinsoniae</i>, <i>Endiandra pubens</i>, <i>Dendrocnide photiniphylla</i>, <i>Acmena ingens</i>, <i>Diploglottis australis</i> and <i>Diospyros mabacea</i> (DEWHA, 2008b).	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species, but it does not fall within the 'likely' modelled distribution; - There are no nearby records of the species, with the closest, recent record located approximately 22 km to the west at Mount Glorious from 2010; - This species is associated with rainforests to dry sclerophyll forests and has strong associations with a variety of species that inhabit those ecosystems, none of which have been identified within the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
Leafless tongue-orchid (<i>Cryptostylis hunteriana</i>)	V	<i>C. hunteriana</i> occurs in eastern NSW, Victoria and QLD. In QLD it is at only a few locations including a single plant near the village of Tinnanbar and four additional coastal populations north of the Glasshouse Mountains to Tin Can Bay (DEWHA, 2008c).	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - The closest, recent record is located 40 km to the north-west of the Project Area and is from 2022;

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		Queensland populations occur in sandy heathland (DEWHA, 2008c).			- This species is known to occur within areas of sandy heathland. Land Zone 2 or Quaternary coastal sand deposits do not occur within the Project Area according to published geospatial datasets, therefore the Project Area does not comprise suitable habitat for the species; and - The surveys undertaken within the Project Area did not detect this species.
Wedge-leaf tuckeroo (<i>Cupaniopsis shirleyana</i>)	V	The species occurs over a small range of approximately 450 km between Brisbane and Curtis Island (DEWHA, 2008d). It is found in dry rainforest and scrubby urbanised areas on moderate to very steep slopes, scree slope gullies and rocky stream channels at elevations of 60–550 m above sea level (DEWHA, 2008d).	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - The closest, recent record of the species is located approximately 25 km to the south of the Project Area and is from 2017; - The Project Area does not contain dry rainforest. Although the species has been recorded in scrubby, urbanised areas, the Project Area lacks moderate to very steep slopes, scree slope gullies, and rocky stream channels. Contour mapping indicates that most of the Project Area is relatively flat and lies between 20–30 m above sea level; and - The surveys undertaken within the Project Area did not detect this species.
Macadamia nut (<i>Macadamia integrifolia</i>)	V	Macadamia integrifolia is found between Mt Bauple, near Gympie, to Currumbin Valley in the Gold Coast Hinterland, south-east Queensland (DEWHA, 2008f). It occurs in remnant rainforest, including complex mixed notophyll forest, and prefers partially open areas such as rainforest edges (DEWHA, 2008f).	Yes	No	Unlikely - Some of the Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					located 3 km to the south-west of the Project Area and is from 2025; - Although there are records of this species within the broader landscape, the Project Area does not comprise remnant rainforest ecosystems, therefore there is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
Small-fruited Queensland nut (<i>Macadamia ternifolia</i>)	V	<i>M. ternifolia</i> once occurred between Gympie and Brisbane in south-east Queensland, however the range is now restricted between Mount Pinbarren south to Mary Cairncross park near Maleny (DEWHA, 2008g). This species has specialised habitat requirements generally occurring in fertile, basalt derived soils on steep southern slopes. Associated species include <i>Argyrodendron trifoliatum</i>-<i>Dissilaria baloghioides</i> alliance in the Blackall Range area and <i>Araucarian microphyll</i>-<i>notophyll</i> mixed tall, closed forest at Mt Pinbarren (DEWHA, 2008g).	Yes	No	Unlikely - Some of the Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - There are no recent records of the species within the Project Area or Locality. The closest, recent record of the species is located 7 km to the north-west and is from 2007; - This species typically occurs in remnant rainforest between Gympie and Brisbane, with its current range significantly contracted to an area from Mount Pinbarren south to Mary Cairncross Park near Maleny; - There is no rainforest vegetation within the Project Area, therefore there is no suitable habitat for the species - If this species is recorded within an urban setting, it is typically because it has been planted and is not naturally occurring; and - The surveys undertaken within the Project Area did not detect this species.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
Rough-shelled macadamia (<i>Macadamia tetraphylla</i>)	V	The species occurs in a small range of approximately 100 km from northern NSW to Mount Glorious near Brisbane, Queensland (DEWHA, 2008h). It is found in subtropical rainforest and notophyll vine forest near coastal areas, often on steep slopes and at ecotones. It is found on alluvial soils from 10 to 460 m above sea level (DEWHA, 2008h).	Yes	No	Unlikely - Some of the Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 5 km to the south of the Project Area and is from 2026; - This species typically occurs in remnant rainforest habitats from northern NSW to Mount Glorious to the west of Brisbane. There are no rainforest ecosystems within the Project Area; - If this species is recorded within an urban setting, it is typically because it has been planted and is not naturally occurring; and - The surveys undertaken within the Project Area did not detect this species.
Lloyd's olive (<i>Notelaea lloydii</i>)	V	<i>N. lloydii</i> occurs in a small range of approximately 3,700 m² between Mt Brisbane, near Somerset Dam, to just south of Beaudesert and west to Mt Berryman near Laidley (DEWHA, 2008i). It is found in open eucalyptus forest often near the margins of vine thickets, vine forests and softwood scrub at altitudes between 80 and 480 m. It generally occurs on stony, shallow and rocky soils derived from sandstone or acid volcanic rocks, often on steep slopes, or near drainage lines (DEWHA, 2008i).	No	No	Unlikely - A very small section of the Project Area (to the south) falls within the 'species or species habitat may occur' modelled distribution of the species, however most of the Project Area does not intersect with the modelled distribution mapping; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is approximately 20 km to the south from 2020; - The soils within the Project Area are typically alluvial or loamy and sandy plains and plateaus, which is

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					incongruous with this species preferred soil environment of shallow and rock soils derived from sandstone or acid volcanic rocks; • Absence of vine thickets preferred by the species within the Project Area; and • The surveys undertaken within the Project Area did not detect this species.
Tall knotweed (<i>Persicaria elatior</i>)	V	The species has a coastal distribution from south east Queensland to southern NSW (DEWHA, 2008j). It grows on sandy, alluvial soil in swampy areas and riparian herb lands along watercourses and lake edges. Associated plant species include <i>Melaleuca linearifolia</i>, <i>M. quinquenervia</i>, <i>Pseudognaphalium luteoalbum</i>, <i>Persicaria hydropiper</i>, <i>Floydia praealta</i> and <i>Cyperus semifertilis</i> (DEWHA, 2008).	No	No	Unlikely • Soil conditions and vegetation community associations where this species typically occurs, specifically poorly draining soils and vegetated swamp conditions, are found within and adjacent to the Project Area; • The Project Area does not intersect with the modelled distribution of the species; • There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 27 km to the south-east and is from 2019; and • The surveys undertaken within the Project Area did not detect this species.
Lesser swamp-orchid (<i>Phaius australis</i>)	E	<i>Phaius australis</i> has a coastal distribution from near Port Macquarie, NSW, north into Queensland with a disjunct range from Kirrima to Mackay (DoE, 2014). It occurs in wet heath/sedgeland, swampy grasslands or swampy forests, and less commonly in drier forests near the coast. It is associated with <i>Melaleuca leucadendra</i> and <i>Eucalyptus robusta</i> (DoE, 2014).	Yes	No	Potential • Soil conditions and vegetation community associations where this species typically occurs, specifically poorly draining soils and vegetated swamp conditions, are found within and adjacent to the Project Area; • The Project Area does intersect with 'species or species habitat likely to occur' modelled distribution of the species; • There are no records of the species within the Project Area or Locality. The

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					closest record is located approximately 1.8 km to the north-east but is not historically relevant as it is from 1992 and its coordinates have been generalised by 2 km; • The closest, most recent record of the species is located approximately 34 km to the south and is from 2023; • According to the species' conservation advice, the remaining mainland populations are small and scattered, with no documented populations occurring within or in proximity to the Project Area; and • The surveys undertaken within the Project Area did not detect this species.
Shiny-leaved condoo (<i>Planchonella eerwah</i>)	E	<i>P. eerwah</i> has a restricted distribution to three areas of south east Queensland: the Ipswich Beaudesert area south-west of Brisbane; the Beenleigh–Ormeau–Pimpama area, south-east of Brisbane; and the Nambour–Maleny district on the Sunshine coast. The species occurs in warm subtropical areas of 650-1000 mm annual rainfall and on slopes 80-420 m above sea level (DEWHA, 2008k). The known populations occur on rocky slopes and drainage lines on varied soils; on nutrient poor, metasediment derived soils; and well drained basaltic, dark sandy loams. The populations occur in Notophyll and Microphyll Vine Forests (DEWHA, 2008k).	No	No	Unlikely • A very small section of the Project Area (to the south) falls within the 'species or species habitat may occur' modelled distribution of the species, however most of the Project Area does not intersect with the modelled distribution mapping; • There are no records of the species within the Project Area or Locality. The closest, most recent record of the species is located approximately 41 km away from 2025; • The Project Area sits below the preferred elevation of the species; • In addition to the inappropriate elevation the soil characteristics in general around the Project Area are not congruent with the soil preferences of this species, namely rocks slopes, nutrient poor sediment derives soils or basaltic dark sandy loams; and

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					The surveys undertaken within the Project Area did not detect this species.
Scrub turpentine (<i>Rhodamnia rubescens</i>)	CE	<i>R. rubescens</i> occurs in a coastal distribution from Batemans Bay, NSW, north to Bundaberg, QLD, and occasionally extending inland onto the escarpment up to 600 m above sea level in areas with annual rainfall from 1,000 to 1,600 mm (TSSC, 2020a). It generally occurs in all rain forest sub-forms except cool temperate rainforest. The species occupies a range of volcanically derived and sedimentary soils and is a common pioneer species in eucalypt forests. It is associated with wet schlerophyl rainforest transition zones and creek side riparian areas (TSSC, 2020a).	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat likely to occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 8 km to the south-west and is from 2022; - This species is closely associated with volcanically derived soils, which are not associated with the Project Area. Furthermore, there are no rainforest habitat types within the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
Native guava (<i>Rhodomirtus psidioides</i>)	CE	The species occurs in a coastal distribution from Gosford NSW, north to Maryborough, QLD. Typically recorded in coastal and sub coastal areas of low elevation, although it is known to occur up to 120 km inland in the Hunter and Clarence River catchments and along the border ranges (TSSC, 2020b). It is a pioneer species found in subtropical rainforests, warm temperate rainforests, littoral rainforest, and wet sclerophyll forests (TSSC, 2020a).	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat likely to occur' modelled distribution of the species; - There are no records of the species from the Project Area or Locality. The closest, recent record of the species is situated approximately 3 km away to the west of the Project Area from 2022; - It is unlikely that this species will be found within the impact area due to the absence of rainforest associated REs; and - The surveys undertaken within the Project Area did not detect this species.

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<i>Quassia (Samadera bidwillii)</i>	V	Quassia is endemic to Queensland and is currently known to occur in several localities between Scawfell Island, near Mackay, and Goomboorian, north of Gympie. Quassia commonly occurs in lowland rainforest or on rainforest margins (Hewson, 1985), 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 (Belleng Pty Ltd, 2004) in locations up to 510 m altitude. Commonly associated with species like <i>Corymbia citriodora</i>, <i>Eucalyptus propinqua</i>, <i>E. acmenoides</i>, <i>E. tereticornis</i>, <i>E. intermedia</i>, <i>E. siderophloia</i>, <i>E. moluccana</i>, <i>E. cloeziana</i>, and <i>E. fibrosa</i>.	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat likely to occur' modelled distribution of the species; - This species is only known from several localities, all of which are approximately 130 km to the north of the Project Area; - There are no records of the species within the Project Area or Locality, and the species was not detected during the field surveys; and - There is habitat that would be considered suitable for quassia, but the lack of records and the species' known distribution contribute to the species' unlikely likelihood of occurrence outcome.
<i>Sophora fraseri</i>	V	<i>Sophora fraseri</i> is widespread but uncommon in south-east Queensland, and occurs south to Casino, NSW, where it is very rare (DEWHA, 2008m). 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 (DEWHA, 2008m).	No	No	Unlikely - The Project Area does not intersect with the species' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located 17 km to the west of the Project Area and is from 2015; - Absence of rainforest habitat within the Project Area; - The Project Area is situated below the optimal elevation levels for the species; and - The surveys undertaken within the Project Area did not detect this species.
Austral toadflax (<i>Thesium australe</i>)	V	Species was considered extinct in Queensland prior to the mid-1980s. Collections since the 1990s have been made from Kumbia, Glen Rock Regional	Yes	No	Potential

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		Park, Carnarvon National Park, Crow's Nest, Clifton, Warwick, Greenmount, Cambooya, Dalby, the Bunya Mountains, Blackbutt and Imbil. Occurring in subtropical, temperate and subalpine climates over a wide range of altitudes on a range of soils including black clay loams to yellow podzolics and peaty loams. It occurs in shrubland, grassland or woodland, often on damp sites.			- The Project Area intersects with the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is approximately 18 km away and is from 2021; - This species has a widespread and sporadic distribution; - Little is known of its precise ecological requirements, but it is often found in grasslands or woodlands that are damp, similar to that of the Project Area; and - The surveys undertaken within the Project Area did not detect this species.
Avifauna					
Regent honeyeater (<i>Anthochaera phrygia</i>)	CE	Occurring in box-ironbark woodland and eucalypt woodlands (sometimes found along riparian zones). Breeding habitat: Preference to nest in large mature trees with rough bark, e.g. ironbarks, sheoaks (<i>Casuarina</i>) and rough-barked apple (<i>Angophora</i>). Foraging habitat: Nectivorous species, taking nectar from eucalypts and mistletoe. However, prefer larger trees (often linked to high water soils and riparian zones) as they have higher rates of nectar.	Yes	No	Unlikely - The Project Area intersects with the 'species or species habitat likely to occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located 19 km to the south-west of the Project Area and is from 2018; - While the species has been recorded within remnant vegetation in urban environments, the largest contiguous vegetation patch within and adjacent to the Project Area occurs near Goodwin Road. Field surveys determined that the portion of this patch within the Project Area is non-remnant due to dominance by exotic species and was not assigned an RE code; as such, it is considered unlikely to be utilised by the species due

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					to its poor condition and exotic dominance; - The Project Area is unlikely to support the species' foraging requirements, such as mature trees containing mistletoe, given the highly disturbed nature of the site and its proximity to the existing road; and - The surveys undertaken within the Project Area did not record the species.
Australasian bittern (<i>Botaurus poiciloptilus</i>)	E	This species occurs from south east Queensland to south-east South Australia through to the southern Eyre Peninsula, Tasmania and south west Western Australia. This species is generally solitary and can show significant nomadic tendencies, moving hundreds of kilometres between wetlands. This species typically occurs in freshwater wetlands and rarely in estuaries or tidal wetlands favouring tall, dense vegetation for foraging activities. They favour permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds (<i>Phragmites</i>, <i>Cyperus</i>, <i>Eleocharis</i>, <i>Juncus</i>, <i>Typha</i>, <i>Baumea</i>, <i>Bolboschoenus</i>) or saw sedges (<i>Gahnia</i>) that grow over muddy substrates. This species will consume small fish, frogs, freshwater crayfish, spiders, insects and small reptiles.	Yes	No	Potential - The Project Area intersects with the 'species or species habitat likely to occur' modelled distribution of the species; - There are no records of this species within the Project Area or Locality; - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat represents an old farm dam which may provide marginal foraging habitat for the species and has been mapped as potential habitat on a precautionary basis; - The surveys undertaken within the Project Area did not record the species.
Sharp-tailed sandpiper (<i>Calidris acuminata</i>)	V	The species is widespread along the coast of Australia, and sparsely scattered inland, particularly in central and south-western regions of Queensland. This is a non-breeding visitor to Australia (DCCEEW, 2023y). The species uses coastal and inland, freshwater and saline habitats. The	Yes	No	Potential - The Project Area intersects with the 'species or species habitat may occur' modelled distribution; - No historically relevant records within the Project Area but there are two

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		species uses a range of habitats, preferring muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. It is also known from lagoons, swamps, lakes and pools, dams, waterholes, sedgelands, ephemeral wetland when wet, intertidal mud flats, inlets, estuaries, seashores, creeks lined with mangroves, soaks, swamps, salt pans and salt lakes inland They will also use modified environments, such as bore drains, sewage farms, saltworks and paddocks (DCCEW, 2023y).			records less than 1 km from the Project Area. One to the east dated 1992, and one to the south dated 1993. - The closest, most recent record of the species is located approximately 2.3 km to the east of the Project Area and is from 2023. - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat represents an old farm dam which may provide marginal foraging habitat for the species and has been mapped as potential habitat on a precautionary basis; - The surveys undertaken within the Project Area did not record the species.
Red knot (<i>Calidris canutus</i>)	V	This species is widespread around Australia, predominantly occurring in intertidal mudflats, sandflats and sandy beaches of sheltered coves, estuaries, bays, inlets, lagoons and harbours. They have occasionally been recorded on terrestrial saline wetlands and sewage ponds.	Yes	No*	Unlikely - The Project Area intersects with the 'species or species habitat may occur' modelled distribution; - No historically relevant records within the Project Area but there is a record from 1992 that is less than 1 km to the east of the Project Area. The closest, recent record is located 6 km to the east of the Project Area and is from 2021. Noting that most of the records are within 1-2 km of the coastline and the Project Area is located 5 km away from the coastline which could be stretching it; - There are no coastal habitats or saline/brackish wetlands within the Project Area; and - The surveys undertaken within the Project Area did not record the species.

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Curlew sandpiper (<i>Calidris ferruginea</i>)	CE	The species is a non-breeding visitor to Australia, primarily occurs along coastal areas of Australia, but can also be found inland in smaller numbers. Most commonly occurs along the coast south of Cairns and occasionally in the Gulf of Carpentaria, in Queensland (DCCEEW, 2023b). 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. Habitat occupied inland, include ephemeral and permanent lakes, dams, waterholes and bore drains. They forage at the edges of wetland habitats in water up to 60 mm deep, although usually between 15-30 mm deep, usually with bare edges of mud or sand. They occupy fresh and brackish waters (Higgins & Davies, 1996; DoE, 2015a; DCCEEW, 2023b).	Yes	No*	Potential - The Project Area intersects with the 'species or species habitat may occur' modelled distribution of the species; - No historically relevant records but there are three records (from 1972, 1992 and 1993) that are within 1 km of the Project Area. - The closest historically relevant record dated 2016 is located 5.3 km to the south east. - Similar to that explained above, most records occur near the coastline (1-2 km) and the Project Area is located at its closest point 5 km away; - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat may provide marginal foraging habitat for the species and has been mapped as potential habitat on a precautionary basis; and - The surveys undertaken within the Project Area did not record the species.
South-eastern glossy black-cockatoo (<i>Calyptorhynchus lathami lathami</i>)	V	South-eastern glossy black cockatoos are uncommon but widespread. They can be found from Mitchell, Queensland, through eastern New South Wales to East Gippsland, Victoria. Their distribution is continuous through the forested parts of the Great Dividing Range but becomes more scattered inland. This species prefers she-oak <i>Allocasuarina</i> dominated woodlands, or open sclerophyll forests where <i>Allocasuarina</i> is present amongst <i>Eucalyptus</i>, <i>Corymbia</i> or	Yes	No	Potential - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There is a record of the species within the Project Area, however it is not historically relevant as it is from 1983. - The closest, most recent record of the species is located approximately 4 km to the north of the Project Area and is from 2021. This record is located in a reserve with similar RE composition to that bordering the Project Area;

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		<i>Angophora</i> . The species is also known to inhabit brigalow woodlands with vegetation assemblages including <i>Allocasuarina</i> , <i>Casuarina</i> , <i>Callitris</i> and <i>Acacia harpophylla</i> . This species feed almost exclusively on the seeds of nine <i>Allocasuarina</i> and <i>Casuarina</i> species and has strong site fidelity for feeding trees.			<i>Casuarina</i> species are present in the native woodland dominated by <i>Casuarina</i> and <i>Acacia</i> species with weedy ground cover BHT which may provide suitable foraging habitat; and - The species was not detected during the field surveys undertaken within the Project Area. No signs of the species (e.g. chewed orts) were observed either.
Greater sand plover (<i>Charadrius leschenaultii</i>)	V	This species occurs in coastal areas across of all states and of Australia with the greatest population concentrated between North West Cape and Roebuck Bay, Western Australia. Feeding usually occurs around large intertidal mudflats, sandbanks, saltmarshes, estuaries, coral reefs, rocky islands, tidal lagoons and dunes near the coast. Their diet consists of marine molluscs, worms and crustaceans (DCCEEW, 2023).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality, with most records concentrated by the coastal area. The closest, recent record of the species is located approximately 6.5 km to the east and is from 2025. This record pertains to the shoreline; - The Project Area does not comprise coastal or brackish habitats that are utilised by the species for foraging; and - The surveys undertaken within the Project Area did not record the species.
Brown treecreeper (south-eastern) (<i>Climacteris picumnus victoriae</i>)	V	The subspecies mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species. The subspecies is not usually found in woodlands with a dense shrub layer, and it is absent from heavily degraded woodlands and steep rocky hills. Breeding habitat: Hollows in standing dead or live trees and tree stumps are	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within 100 km of the Project Area boundary. The closest record is located to the south of Tweed Heads (114 km away) and is from 2009; - The subspecies is generally absent from heavily degraded woodlands which aligns with the poor quality of the road

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		essential for nesting. Foraging habitat: The subspecies forages both on the ground and in mature live and dead trees, primarily eating invertebrates, small reptiles or on occasion sap form selective trees.			corridor vegetation found within the Project Area; and The surveys undertaken within the Project Area did not record the species.
Coxen's fig-parrot (<i>Cyclopsitta diophthalma coxeni</i>)	CE	This species is currently known from a small number of records within Queensland and New South Wales, however it has been historically recorded between Rockhampton in Queensland and the Richmond River in New South Wales. Their primary habitat includes lowland subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, sub littoral mixed scrub, riparian corridors in woodlands, open woodland and within cleared urban and agricultural land where <i>Ficus</i> sp. occur (DCCEEW, 2023). They will also consume the fruit of the native and exotic species, lichen and insect larvae (DCCEEW, 2023).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is near Sydney in New South Wales; and - The Project Area does not include rainforest habitats as preferred by the species; and - The surveys undertaken within the Project Area did not record the species.
Red goshawk (<i>Erythroriorchis radiatus</i>)	E	Occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia. Riverine forests are also used frequently. The vegetation types include eucalypt woodland, open forest, tall open forest, gallery rainforest, swamp sclerophyll forest, and rainforest margins. Forests of intermediate density, with tall stands or individual trees so that nests are supported, are favoured, or ecotones between habitats of differing densities, e.g. between rainforest and eucalypt forest, between gallery forest and woodland, or on edges of woodland and forest where they meet grassland, cleared land, roads or watercourses. This species avoids very dense and very open habitats.	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' mapped distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 47 km to the west and is from 2015; - The species typically occurs in tall open woodland and forest supporting a mosaic of vegetation types, with trees generally exceeding 20 m in height. The Project Area does not meet these habitat characteristics and is unlikely to provide

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		Breeding habitat: The red goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water. Breeding habitat is restricted to trees taller than 20 m high. Species rarely breeds in areas with fragmented vegetation. Foraging habitat: Such habitats typically support high bird numbers and biodiversity, especially medium to large species which the goshawk requires for prey. Habitat has to be open enough for fast hunting and manoeuvring in flight, but with enough cover for ambushing of prey.			suitable conditions for fast hunting and manoeuvring, given the surrounding residential land use and the fragmented nature of vegetation adjacent to the Project Area; and The surveys undertaken within the Project Area did not record the species.
Grey falcon (<i>Falco hypoleucos</i>)	V	Occurs in semi-arid to arid areas of inland and central Australia. The species is typically found where annual rainfall is less than 500 mm, except when wet years are followed by drought where the species may become marginally more widespread. This species utilizes timbered lowland plains, particularly acacia shrublands and treeless areas that contain tussock grasslands and open woodlands. Breeding habitat: In nest typically confined to the tallest trees along watercourses (particularly <i>E. camaldulensis</i> and <i>E. Coolabah</i>). Foraging and dispersal habitat: It has been observed foraging in treeless areas and frequents acacia shrublands crossed by tree-line watercourses, open woodlands, tussock grasslands, especially in winter. Roosting habitat: Likely to roost in both	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest record of the species is located approximately 55 km to the south of the Project Area and is from 2007; - The Project Area does not comprise habitat suitable for the species; and - The surveys undertaken within the Project Area did not record the species.

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		its breeding and foraging habitat, this falcon has been observed roosting on the ground.			
Latham's snipe (<i>Gallinago hardwickii</i>)	V	This species usually occurs in open, freshwater wetlands that have some form of shelter (usually low and dense vegetation) nearby. They generally occupy flooded meadows, seasonal or semi-permanent swamps, or open waters, but various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. This species has been said to occur very rarely in small patches of habitat such as roadside ditches and alpine bogs. They can also be found around irrigation channels and modified habitats at farms. Breeding habitat: Does not breed in Australia. Foraging habitat: Characterised by areas of mud (either exposed or beneath a very shallow covering of water) and some form of cover (e.g. low, dense vegetation). Roosting habitat: On the ground near (or sometimes in) their foraging areas, usually in sites that provide some degree of shelter, e.g. beside or under clumps of vegetation, among dense tea-tree, in forests, in drainage ditches or plough marks, among boulders, or in shallow water if cover is unavailable.	Yes	Yes	Likely • The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; • There are four records of the species within the Locality. Two of these records are historically relevant, and are from 2015 and 2017, respectively; • The waterbodies BHT within the Project Area do not include dense vegetation like the species requires but may offer limited foraging habitat; and • The surveys undertaken within the Project Area did not record the species.
Squatter pigeon (southern) (<i>Geophaps scripta scripta</i>)	V	The southern squatter pigeon habitat is generally defined as open-forests to sparse, open-woodlands and scrub that are mostly dominated by Eucalyptus, Corymbia	Yes	No	Unlikely

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		or <i>Callitris</i> species. Additionally, they also favour remnant regrowth or partly modified vegetation communities that are within 3 km of water bodies. Breeding habitat: Breeding habitat occurs on stony rises on sandy, gravelly soils, within 1 km of a suitable, permanent waterbody (including farm dams and watercourses). Foraging habitat: Natural foraging habitat for the species is any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by <i>Eucalyptus</i>, <i>Corymbia</i>, <i>Acacia</i> or <i>Callitris</i> species, on sandy or gravelly soils, within 3 km of a suitable, permanent or seasonal waterbody. Dispersal habitat: Dispersal habitat is any forest or woodland occurring between patches of foraging or breeding habitat, and suitable waterbodies.			- The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest record is located approximately 35 km to the west of the Project Area and is from 1963; - The Project Area does not include habitat suitable for the species as it falls within Land Zone 12, rather than any of the species' preferred zones; and - The surveys undertaken within the Project Area did not record the species.
Painted honeyeater (<i>Grantiella picta</i>)	V	This species is sparsely distributed throughout its range. Notably, populations move alongside mistletoe flowering and fruiting events as this species is highly specialised in consuming mistletoe fruit (sometimes nectar) during breeding season. The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. It is more common in wider blocks of remnant woodland than in narrower strips. Breeding habitat: The species appears to prefer mistletoe as a nest substrate and selects nest sites in habitats where mistletoe prevalence and parasitism rates	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 5 km to the east and is from 2023; - The Project Area is unlikely to support the species' foraging requirements, such as mature trees containing mistletoe, given the highly disturbed nature of the site and its proximity to the existing road; and

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		are high. Foraging habitat: The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes.			The surveys undertaken within the Project Area did not record the species.
White-throated needletail (<i>Hirundapus caudacutus</i>)	V	According to Higgins (1999), this species occurs over most types of habitat, but are recorded most often above wooded areas, including open forest and rainforest, and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland (as cited in TSSC, 2019). Whilst rare, they have been recorded on wooded ends of ridges, roosting after dark high in the eucalypt tree canopies (Tarburton, 1993). Breeding habitat: this species does not breed in Australia. Roosting habitat: the species is noted to roost in tall mature forests and woodlands amongst dense foliage and in hollows often associated with ridgelines. Foraging habitat: the species almost always will fly aerially at 'cloud level' and forage over farmland, heathland and mudflats.	Yes	Yes	Likely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are several records of the species within the Locality. The closest record is located less than 100 m to the north of the Project Area and is from 2016; - The Project Area is not considered to provide suitable roosting habitat due to the absence of ridgelines and tall mature forest. However, as the species has been recorded within the broader landscape, it may occur as a transient flyover visitor to the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Swift parrot (<i>Lathamus discolor</i>)	CE	Species over-winters in mainland Australia. On the mainland the swift parrot disperses widely to forage on flowers and psyllid lerps in Eucalyptus species, with the majority being found in Victoria and New South Wales (TSSC 2016).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - Considering the historical disturbance of the Project Area and its broader geographic context, it is unlikely that the Project Area supports sufficient

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					<i>Eucalyptus</i> species for this species to persist; - Historical records indicate that the last documented sighting in the Margate area occurred in 1965; and - The surveys undertaken within the Project Area did not record the species.
Australian painted snipe (<i>Rostratula australis</i>)	E	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber. However, species can use modified habitat, such as low-lying woodlands converted to grazing pasture, sewage farms, dams, bores and irrigation schemes, however they do not necessarily breed in such habitats (Marchant & Higgins, 1993). Foraging and roosting habitat: Forages nocturnally on mudflats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter. Breeding habitat: Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds. The nest consists of a scrape in the ground, lined with grasses and leaves.	Yes	No	Potential - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located 3.5 km to the south-east and is from 2013; - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat represents an old farm dam which may provide marginal foraging habitat for the species and has been mapped as potential habitat on a precautionary basis; and - The surveys undertaken within the Project Area did not record the species.
Diamond firetail (<i>Stagonopleura guttata</i>)	V	Diamond firetails occur on the south-east mainland of Australia from south-east Queensland to Eyre Peninsula, South Australia, and about 300 km inland from the sea. Suitable habitat includes <i>Eucalyptus</i>, <i>Acacia</i> or <i>Casuarina</i> woodlands, open forests and other lightly timbered habitats, including farmland and grassland with scattered trees. Includes areas of relatively	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 52 km to the west and is from 2017;

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		low tree density, few large logs, and little litter cover but high grass cover.			- Although the Project Area may be lightly timbered, the vegetation is historically disturbed, and remnants of native vegetation larger than 200 ha are absent. As such, the Project Area does not comprise habitat suitable for the species; and - The surveys undertaken within the Project Area did not record the species.
Black-breasted button-quail (<i>Turnix maelanogaster</i>)	V	Restricted to rainforests and forests, mostly in areas with 770-1200 mm rainfall per annum. They prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest. They may also be found in low, dense <i>Acacia</i> thickets and, in littoral area, in vegetation behind sand dunes. Optimum habitat is located on highly fertile soils. It is believed that the highly fertile soils promote rapid leaf growth on plants. During dry periods, much of the foliage then drops to the ground thus maintaining the deep leaf litter layer which is crucial to the foraging requirements of the species. It is often associated with the Semi-Evergreen Vine Thickets of the Brigalow Belt (North And South) and Nandewar Bioregions TEC.	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 12.7 km to the west and is from 2023; - The Project Area does not comprise vine thicket, rainforest, or low dense <i>Acacia</i> thickets as preferred by the species; and - The surveys undertaken within the Project Area did not record the species.
Mammals					
Large-eared pied bat (<i>Chalinolobus dwyeri</i>)	V	Sandstone or rhyolite cliffs and fertile woodland valley habitat within close proximity of each other is habitat of importance. Rainforest and moist eucalypt forest habitats on other geological substrates (rhyolite, trachyte and basalt)	Yes	No	Unlikely The Project Area is located within the 'species or species habitat may occur' modelled distribution;

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		at high elevation are of similar importance to the species. Foraging habitat: dry and wet sclerophyll forest, grassy woodland, Callitris dominated forest, tall open eucalypt forest with a rainforest sub-canopy, subtropical rainforest and small clearings adjacent to rainforest, sub-alpine woodland and sandstone outcrop country. Breeding habitat: Little information is available on the breeding behaviour for the species. Roosting habitat: It is usually found in areas with cliffs, escarpments or rocky outcrops for roosting (typically sandstone but also rhyolite), although the presence of suitable caves or overhangs is likely more important than the precise geology. Without both foraging and roosting habitat, the species is unlikely to occur.			- There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 140 km to the south-west near Woodenbong. Most records pertain to National Parks; - The Project Area represents a lowland area with no significant nesting features (e.g. cliffs, escarpments, rocky outcrops) or suitable habitat nearby; - No land zones supporting sedimentary rock are located within or near the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Northern quoll (<i>Dasyurus hallucatus</i>)	E	The northern quoll is known to occur as far south as Gracemere and Mt Morgan, south of Rockhampton, as far north as Weipa in Queensland and extends as far west into central Queensland to the vicinity of Carnarvon Range National Park. The species occupies a diversity of habitats including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands, and beaches, shrubland, grasslands and desert. The species is also known to occupy non-rocky lowland habitats such as beach scrub communities in central Queensland.	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 75 km to the north of the Project Area and is from 2019; - There is no suitable breeding habitat within the Project Area, therefore there is no foraging habitat either; and - The surveys undertaken within the Project Area did not record the species.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		Breeding habitat: the species generally requires habitat encompassing some form of rocky area for denning purposes with surrounding vegetated habitats used for foraging and dispersal, as well as connection to permanent water. Dens are made in rock crevices, tree holes or occasionally termite mounds. Foraging habitat: surrounding vegetation encompassing denning habitat, lowlands, woodlands, shrublands, deserts and grasslands often within proximity to water.			
Spotted-tailed quoll (southeastern mainland population) (<i>Dasyurus maculatus maculatus</i>)	E	The subspecies is mostly confined to the relatively cool, wet and climatically equable upland closed forests (mostly above 900 m altitude) that occur in the upper catchments of rivers draining east and west of the Eastern Escarpment in the Wet Tropics bioregion of north-eastern Queensland (Burnett 2001, cited in Long & Nelson 2010a). Maxwell and colleagues (1996), also suggest the species occurs in lower altitude notophyll, mesophyll and wet sclerophyll forests. Vegetation types typical of this habitat are simple and complex notophyll vine forest, simple microphyll vine-fern forest and simple microphyll vine-fern thicket (Long & Nelson 2010a). Breeding Habitat: The subspecies utilises dens for resting, breeding and raising young. Dens occur in tree hollows, logs, rock crevasses and occasionally among building materials. Maternal dens often have long entrances (Qld DERM 2006).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no recent records of the species from the Project Area or Locality. There is a record located within 1 km of the Project Area, but this is from 1990, therefore not historically relevant, and is spatially uncertain by 1.8 km; - There is no suitable breeding habitat for this species within the Project Area, nor within a 2 km² radius. As such, there is no suitable dispersal or foraging habitat for the species; and - The surveys undertaken within the Project Area did not record the species.

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		Dispersal Habitat: The home ranges of individuals vary from 100–200 ha.			
Greater glider (southern and central) (<i>Petauroides volans</i>)	E	Habitat attributes (but not necessarily all attributes), such as live and dead hollow-bearing trees for denning, feed trees, large trees, habitat connectivity across the landscape. Associated trees include; <i>Corymbia citriodora</i>, <i>Eucalyptus moluccana</i>, <i>E. tereticornis</i>, <i>E. crebra</i>, <i>C. intermedia</i> and <i>E. portuensis</i>. Size of trees is also important for Queensland greater gliders, with trees >30 cm diameter at breast height (DBH) preferentially selected for foraging and >50 cm DBH for denning. Trees >50 cm DBH are more likely to contain suitable hollows for sheltering by greater gliders. Hollow-bearing trees are an essential component of greater glider habitat, and their presence or absence may be used to indicate habitat suitability for greater gliders. Breeding and denning habitat: species shows a preference for hollows in old, mature, smooth bark living trees. Foraging and dispersal habitat: species is primarily folivorous, therefore foraging and dispersal habitat is tied to forests with a diversity of eucalypt species, due to seasonal variation in growth and nutrient content of its preferred tree species.	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality; - There is a record of the species approximately 1.8 km north of the Project Area from 2021. However, review of the observation data indicates the location is spatially uncertain by approximately 29 km to protect the species. The mapped point falls within a highly developed area with no suitable vegetation, and it is therefore considered unlikely that the record accurately reflects occurrence near the Project Area; - Vegetation within the Project Area is not considered to provide suitable habitat for the greater glider due to the fragmented nature of the vegetation present and the lack of connectivity to larger, intact remnant areas of vegetation; - The Project Area is situated within an existing road corridor subject to ongoing disturbance, edge effects, artificial lighting and noise, which further reduces habitat suitability for the species; - While a small number of hollow-bearing trees were identified within the Project Area, the hollows observed were small and are not considered capable of supporting greater gliders, which preferentially utilise large hollows within

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					mature trees for denning and sheltering; and The surveys undertaken within the Project Area did not record the species.
Yellow-bellied glider (south-eastern) (<i>Petaurus australis australis</i>)	V	Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Forest type preferences vary with latitude and elevation; mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south. Breeding and denning habitat: species shows a preference for hollows in old, mature, smooth bark living trees. Foraging and dispersal habitat: species uses a variety of food sources, including insects in shed bark, manna, eucalypt nectar and tree sap (typically smooth-barked gums).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 8 km to the south of the Project Area and is from 2020. Coordinate precision is unknown; - There are no mature, intact eucalypt forest areas present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (<i>Phascolarctos cinereus</i>)	E	Widely distributed species that can live in many different eucalypt forest and woodland environments ranging from dense, wet coastal forests to semi-arid scattered woodlands, and even suburban or rural landscapes, in patches or strips of native vegetation interspersed with isolated trees. Koalas can be found in habitats ranging from relatively open forests to woodlands, and in climates ranging from tropical to cool temperate. In semi-arid climates, they prefer riparian habitats, where nearby streams and creeks provide refuge during times of drought and extreme heat.	Yes	Yes	Known - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution of the species; - There are a large number of records of the species within the Project Area and Locality; - Suitable habitat is present within the Project Area; and - During the field surveys conducted by EcoSmart in July 2025, scats attributable to koala were located at a number of locations within and immediately adjacent the Project Area.

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		Breeding and foraging habitat: Koala habitat can be broadly defined as any forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees. Dispersal habitat: Dispersal habitat is recognised as habitat that the koala can disperse into and is typically open woodland, paddock trees, riparian habitat and habitat where there are koala food trees.			Scratches potentially attributable to koala were also observed within remnant eucalypt forest to the near south of Goodwin Road (28 South, 2025).
Long-nosed potoroo (northern) (<i>Potorous tridactylus tridactylus</i>)	V	Long-nosed potoroo has a broad and fragmented distribution between Many Peaks Range near Gladstone, QLD and the north of Sydney, NSW (DAWE, 2022). The species generally occurs up to 800 m above sea level, although it may occur up to 1000 m in the Main and Border Ranges on Queensland. Queensland habitats generally include high altitude ranges of wet sclerophyll forest and rainforests, however a few populations occur in lowland heath and coastal areas. The optimum habitat has a dense understorey layer to provide cover, but with sufficient open space beneath the sub-canopy to allow foraging. They are often recorded in gullies and near creeks (DAWE, 2022). At low altitudes associated flora communities include <i>Eucalyptus signata</i> (scribbly gum) woodlands with a heathy understory (Andren et al. 2013).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 5.5 km to the north and is from 2020; - There is no suitable habitat present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
		Other community members in the coastal heathlands are <i>Banksia aemula</i>, <i>Eucalyptus pilularis</i>, <i>Callitris columellaris</i>, <i>Banksia ericifolia</i>, and <i>Melaleuca quinquenervia</i>, often with dense ground covers of grass tree (<i>Xanthorrhoea</i> sp.), sedges, ferns, forbs and heath species. Habitat size is important, as the long-nosed potoroo rarely occurs in remnant vegetation patches smaller than 0.1 km², a minimum patch size is suggested at 0.41 km² (DAWE, 2022).			
Grey-headed flying-fox (<i>Pteropus poliocephalus</i>)	V	It is a canopy-feeding frugivore and nectarivore, which utilises vegetation communities including rainforests, open forests, closed and open woodlands, <i>Melaleuca</i> swamps and <i>Banksia</i> woodlands. It also feeds on commercial fruit crops and on introduced tree species in urban areas. Breeding habitat: No specific information is available for breeding habitat requirements however it is said that roosting camps contain breeding habitat. Foraging and roosting habitat: The listing advice for this species says that individuals can travel up to 50 km from their known roosting camps (typical flight distance from roosts is 15 km), in order to forage. They generally roost within 20 km of food sources which include the nectar and pollen of <i>Eucalyptus</i>, <i>Melaleuca</i> and <i>Banksia</i> native trees.	Yes	Yes	Known - The Project Area falls within the 'species or species habitat likely to occur' modelled distribution of the species; - There are three historically relevant records within the locality dated 2025, 2022 and 2021, located <1 km to the west; - During the July 2025 survey conducted by EcoSmart, between 50 to 60 grey-headed flying fox were observed roosting within Ross Reserve to the near west of the Project Area - Grey-headed flying fox were also observed during the April 2026 survey conducted by ERM; and - According to the <i>National Recovery Plan for the Grey-headed Flying Fox Pteropus poliocephalus</i> (DAWE, 2021), the Ross Reserve camp site is not considered a nationally important camp based on the number of grey-headed flying fox observed; and - The Project Area contains some suitable foraging and roosting habitat for the species.

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Water mouse (<i>Xeromys myoides</i>)	V	The species occurs across an extensive, yet disjunct coastal and near coastal range in Queensland and the northern territory. In south east Queensland it occurs from the Gold Coast and Morton Bay area to the Great Sandy Straight, and inland to Beerwah State Forest (DAWE, 2021). The species inhabits aquatic environments, including coastal saltmarsh, sedgeland, clay pans, heathlands, samphire shrublands, saline reed beds and saline grasslands, mangroves, and coastal freshwater wetlands, and wet heathlands (DAWE, 2021; DoE, 2025). Associated flora species in terrestrial communities adjacent to the coastal area include: <i>Melaleuca quinquenervia</i>, <i>Corymbia intermedia</i>, <i>Casuarina glauca</i>, <i>Eucalyptus robusta</i>, <i>Leptospermum liversidgei</i>, <i>Gahnia sieberiana</i> and <i>Caustis blakei</i> in adjacent terrestrial communities are associated with the species (DoE, 2025). Habitat attributes include: intact hydrology; prey resources (crustaceans, polychaete worms, pulmonate snails and bivalves); a defined supralittoral bank (enabling nest construction above high tide level); and structures (such as tidal pools, channels, crab holes, pneumatophores, crevices in bark and around roots, hollows in standing and fallen timber/mangroves, suspended drifts of twigs and leaves and driftwood) (DAWE, 2021). The species has been identified within 300 m from a waterway in south east Queensland. The water mouse may nest or	Yes	No	Unlikely - Part of the Project Area falls within the 'species or species habitat likely to occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 11 km to the north-east and is from 2017; - The Project Area does not include habitat that is considered suitable for the water mouse, as there are no wetlands with intact hydrology and suitable prey resources, nor are there any of the corresponding REs the species is known to occur in present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.

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		forage in the following Queensland Regional Ecosystems: 8.1.1, 11.1.1, 11.1.2, 11.1.4, 12.1.1, 12.1.2, 12.1.3, 12.2.5, 12.2.7, 12.2.11, 12.2.12 and 12.2.14 (DoE, 2025).			
Reptiles					
Three-toed snake-tooth skink (<i>Coeranoscincus reticulatus</i>)	V	The species occurs on the coast and in the ranges from the Macleay Valley in NSW to Cooloola in south-eastern Queensland (TSSC, 2008). The species inhabits rainforest and occasionally moist eucalypt forest, on loamy or sandy soils, utilising leaf litter, often immediately adjacent to fallen tree trunks (TSSC, 2008).	No	No	Unlikely - The Project Area does not intersect with the modelled distribution of this species; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 50 km to the north of the Project Area and is from 2025; - There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Adorned delma (<i>Delma torquata</i>)	V	The collared delma normally inhabits eucalypt-dominated woodlands and open-forests in Queensland Regional Ecosystem Land Zones (LZ); LZ 3 - Alluvium (river and creek flats), LZ 9 - Undulating country on fine-grained sedimentary rocks, and LZ 10 - Sandstone ranges. Associated REs include 11.3.2, 11.9.10, 11.10.1, and 11.10.4. Suitable habitats are commonly associated with exposed rocky outcrops on ridges or slopes in vegetation communities dominated by <i>Eucalyptus crebra</i>. Recorded from a number of different soil types (e.g. sandy loams, grey and black	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record is located approximately 30 km to the south of the Project Area and is from 2020; - There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.

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		cracking clays, stony lithosols and basalt derived Podzolics). The presence of rocks, logs, bark and other coarse woody debris, and mats of leaf litter (typically 30–100 mm thick) appears to be an essential characteristic of the species' microhabitat and is always present where the species occurs.			
Dunmall's snake (<i>Furina dunmalli</i>)	V	The species has been found in a broad range of habitats, including: Forests and woodlands on black alluvial cracking clay and clay loams dominated by <i>Acacia harpophylla</i>, <i>A. burowii</i>, <i>A. deanii</i>, <i>A. leioclyx</i>, <i>Callitris spp.</i> or <i>Allocasuarina luehmannii</i>. Additionally, various blue spotted gum (<i>Corymbia citriodora</i>), ironbark (<i>Eucalyptus crebra</i> and <i>E. melanophloia</i>), white cypress pine (<i>Callitris glaucophylla</i>) and bullock open forest and woodland associations on sandstone derived soils. The species has been found sheltering under fallen timber and ground litter and may use cracks in alluvial clay soils. Records indicate the species prefers habitats between 200 to 500 m above sea level.	No	No	Unlikely - The Project Area is not located within the modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 105 km to the north-west and is from 2008; - The soils within the Project Area do not correspond with the species' known soil preferences; and - The surveys undertaken within the Project Area did not record the species.
Grey snake (<i>Hemiaspis damelii</i>)	E	In Queensland, grey snake habitat is brigalow and <i>C. cristata</i> woodlands on heavy, dark brown to black cracking clay soils, particularly in association with water bodies, areas with small gullies and ditches, and floodplain environments where the species shelters beneath logs, rocks and soil cracks. Key attributes of grey snake habitat are	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution of the species; - There are no records of the species within the Project Area or Locality. The closest, recent record is located more than 200 km to the west and is from 2025;

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		the floodplains and ephemeral wetlands which provide breeding habitat for the frog species that are its main prey, the presence of the frog species themselves, and the heavy clay soils which provide and cracks and crevices that the species uses in its hunting strategy and for shelter.			- There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Amphibians					
Fleay's frog (<i>Mixophyes fleayi</i>)	E	<i>Mixophyes fleayi</i> occurs in a patchy distribution in montane areas from far south-east Queensland to far northeast NSW. Records occur from the Conondale Range, QLD, to Yabbra National Park, NSW and west to Tooloom National Park, NSW. It is known from 30 scattered sites, mostly within National Parks. (TSSC, 2021). The species is a ground-dwelling amphibian inhabiting montane rainforest and adjoining wet sclerophyll forest habitat. It generally occurs at higher altitudes above 400 m, although it has been found between 100-1000 m. Its habitat is usually defined in terms of stream environments, but terrestrial habitat may be of greater importance to species recovery, with females spending most of their time away from stream breeding sights (TSSC, 2021).	Yes	No	Unlikely - The Project Area is located within the 'species or species habitat may occur' modelled distribution; - There are no records of the species within the Project Area or Locality. The closest, recent record of the species is located approximately 32 km to the north-west of the Project Area and is from 2015; - There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Giant barred frog (<i>Mixophyes iteratus</i>)	V	<i>Mixophyes iteratus</i> occurs in a sparse distribution from Doongul Creek near Hervey Bay, south-east Queensland, south to Warrimoo in the Blue Mountains, New South Wales (TSSC, 2021). The species occurs in elevations ranging from 100-1000 m. Queensland subpopulations are generally restricted to lower elevations, although some individuals have been found at 500 m. 65 % of the Queensland		No	Unlikely - The Project Area is located - There are no records of this species within the Project Area or Locality. The closest, recent record of the species is located approximately 12 km to the north and is from 2025; - The habitat present in the Project Area is fundamentally unsuitable for this

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		population occurs in the Mary River catchment. Further south the species occurs in the headwaters of the Brisbane River (e.g. Stanley River, Byron Creek) and in coastal streams (e.g. Caboolture River, Burpengary Creek), all north of Brisbane (TSSC, 2021).			species. This rainforest to wet sclerophyll specialist is unlikely to occur within this coastal swamp and sclerophyll dominated vegetation within the Project Area. Additionally, the water features within the Project Area are not rocky streams or slower moving water bodies and are not suitable breeding habitat.
Fish					
Black rockcod (<i>Epinephelus daemeli</i>)	V	<i>Epinephelus daemeli</i> occurs in warm temperate and subtropical waters of the south-western Pacific, including south-eastern Australia and the North Island, Kermadec Islands and Poor Knights Islands of New Zealand. The distribution ranges from southern Queensland through NSW to northern Victoria. The species generally inhabit near-shore rocky and offshore coral reefs at depths down to 50 m. In coastal waters adult black cod are an aggressive, territorial species and individuals may occupy one particular cave for most of their adult life. The use of estuaries may be an important part of the ecology of juvenile black cod, at least in NSW waters. Larger juvenile black cod appears to move into adult habitats but hide in rock structures and remain highly cryptic until at least 40 cm in length. There is a general progression to deeper waters as black cod increases in size.	No	No	Unlikely - The Project Area is located outside of the modelled distribution of the species. - There are no records of this species within the Project Area or Locality. The closest, recent record is 165 km south dated 2018; - There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species
Australian fritillary (<i>Argynnis hypernlus inconstans</i>)	CE	<i>Argynnis hypernlus inconstans</i> usually occurs around river estuaries or open, swampy coastal regions. The species is believed to be host plant specifically in the wild and therefore only occurs in areas where its larval food plant, the arrowhead	Yes	No	Unlikely The Project Area is located within the 'species or species habitat may occur' modelled distribution of the species.

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		violet, occurs. The arrowhead violet is a small perennial herb which usually grows in damp niches in open habitats. The species has been record in scattered locations across south-eastern Queensland and north-eastern New South Wales. The core distribution is between Gympie in Queensland and Port Macquarie in NSW, although there are historical records which extend beyond this range.			- There are no historically relevant records of this species within Australia. The closest record is approximately 70 km north and dated 1985; - There is no suitable habitat for the species present within the Project Area; and - The surveys undertaken within the Project Area did not record the species

Migratory Birds

Common sandpiper (<i>Actitis hypoleucos</i>)	Mi	<i>Actitis hypoleucos</i> utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. It has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags.	Yes	No	Potential - The Project Area is located within the 'species or species habitat may occur' modelled distribution. - There are no historically relevant records of this species within the Project Area or Locality. The closest, historically relevant record dated 2017 is approximately 5 km to the east; - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat represents an old farm dam which may provide marginal foraging habitat for the species and has been mapped as potential habitat on a precautionary basis; and - The surveys undertaken within the Project Area did not record the species.
Fork-tailed swift (<i>Apus pacificus</i>)	Mi	<i>Apus pacificus</i> is a non-breeding visitor to all states and territories of Australia. The species is almost exclusively aerial, flying from less than 1 m to at least 300 m above	Yes	Yes	Likely

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		ground and probably much higher. 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. They are also found at treeless grassland and sandplains covered with spinifex, open farmland and inland and coastal sand-dunes. They sometimes occur above rainforests, wet sclerophyll forest or open forest or plantations of pines. They forage aerially, up to hundreds of meters above ground, but also less than 1 m above open areas or overwater. They often occur in areas of updraughts, especially around cliffs.			- The Project Area is located within the 'species or species habitat likely to occur' modelled distribution. - There are four records of the species occurring within the Locality. Three to the west located <1 km away dated 2017, 2018 and 2019. There is a record 1 km to the north. - The species may occur as an aerial visitor to the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Pectoral sandpiper (<i>Calidrus melanotos</i>)	Mi	In Australasia, the <i>Calidrus melanotos</i> prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation, such as grass or samphire. The species has also been recorded in swamp overgrown with lignum. They forage in shallow water or soft mud at the edge of wetlands. (DCCEEW, 2016).	Yes	No	Potential - The Project Area is located within the 'species or species habitat may occur' modelled distribution. - There are no historically relevant records within the Project Area or Locality. The closest, recent record is 2.2 km to the east and dated 2023. - There is one historic record within the Locality <1 km to the south dated 1993; - There is one area of wetland habitat present within the Project Area which is located on the corner of Hughes Road and Old Gympie Road. This wetland habitat represents an old farm dam which may provide marginal foraging habitat for the species and has been

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					mapped as potential habitat on a precautionary basis; and The surveys undertaken within the Project Area did not record the species.
Bar-tailed godwit (<i>Limosa lapponica</i>)	Mi	The species is mainly found in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It is found often around beds of seagrass and, sometimes, in nearby saltmarshes. It has been sighted in coastal sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. The species usually forages near the edge of water or in shallow water, mainly in tidal estuaries and harbours. They appear not to forage at high tide and prefer exposed sandy substrates on intertidal flats banks and beaches. Occasionally they have been known to forage among mangroves, or on coral reefs or rock platforms among rubble, crevices and holes.	No	No	Unlikely - The Project Area is not located within the modelled distribution of the species. - There are no historically relevant records within the Project Area or Locality. The closest and most recent record is 2.2 km east dated 2023. - There are two historic records <1 km from the Project Area dated 1972 and 1992; - There are no coastal habitats present within the Project Area; and - The surveys undertaken within the Project Area did not record the species.
Osprey (<i>Pandion haliaetus</i>)	Mi	<i>Pandion haliaetus</i> occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging. They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes.	Yes	Yes	Potential - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution. - There is one record within the Locality 450 m west of the Project Area dated 2025. - The species require extensive areas of open fresh, brackish or saline water. The Project Area does not contain suitable habitat for this species, however there is potential for it to fly over the Project Area while travelling to more suitable habitat; and

Scientific Name	EPBC Act Status	Habitat Requirements	Project Area within Species Distribution	Records in the Project Area / Locality	Comment on Likelihood of Occurrence in Project Area
					The surveys undertaken within the Project Area did not record the species.
Oriental cuckoo (<i>Cuculus optatus</i>)	Mi	<i>Cuculus optatus</i> is a non-breeding visitor to Australia. While in Australia the species occurs in all manner of habitats including open woodland, plantations, forest edge and clearings, and gardens, typically at lower elevations.	Yes	Yes	Potential - The Project Area is located within the 'species or species habitat likely to occur' modelled distribution. - There are three records located within the Locality 1 km west from the Project Area dated 2017, 2018 and 2020; - The species occurs in all manner of habitats while in Australia, as such it may occasionally utilise habitats within the Project Area for foraging; and - The surveys undertaken within the Project Area did not record the species.



APPENDIX C

28SOUTH ECOLOGICAL ASSESSMENT
REPORT



Ecological Assessment Report

Old Gympie Road Upgrade - Anzac Avenue to Boundary Road

2025-093

14 November 2025

Document Control

Project No: 2025-093
Project: Old Gympie Road Upgrade - Anzac Av to Boundary Rd
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28 South Environmental Pty Ltd

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In some instances, regulatory authorities may have differing interpretations or requirements. In cases where regulatory positions differ from those expressed in this report, the decisions and directives of the relevant authorities will take precedence. We recommend consulting with appropriate regulatory bodies or seeking independent legal advice to ensure full compliance with all applicable laws and regulations.

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Name	Position	Date
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Attachment 6 – Flora Species Lists

Acronyms, Abbreviations & Definitions

CMB – City of Moreton Bay

CREVNT - Critically Endangered, Endangered, Vulnerable, Near-threatened (CREVNT) species under the Nature Conservation Act.

DETSI - Queensland Department of the Environment, Tourism, Science and Innovation

EAR – Ecological Assessment Report

EH – Essential Habitat

GHFF – Grey-headed flying-fox

RE – Regional Ecosystem

TEC – Threatened Ecological Community

Executive Summary

This Ecological Assessment Report (**EAR**) has been prepared by 28 South Environmental Pty Ltd for the City of Moreton Bay (**CMB**) to inform the proposed upgrade of approximately 4.7 km of Old Gympie Road between Anzac Avenue, Kallangur and Boundary Road, Dakabin. The assessment considers ecological values within the project area, evaluates potential impacts of the proposed works, and identifies avoidance and mitigation measures to ensure compliance with Commonwealth, State, and local environmental legislation.

The EAR included desktop analysis, likelihood of occurrence assessments, targeted flora and fauna surveys, and assessment of threatened ecological communities (**TECs**). Field surveys undertaken in July 2025 confirmed the presence of conservation-significant species and associated habitat values, including:

- Koala (*Phascolarctos cinereus*), listed as Endangered under the *Environment Protection and Biodiversity Conservation Act (Cth) 1999 EPBC Act* and *Nature Conservation Act (Qld) 1992 (NC Act)* confirmed within the project area through scat evidence.
- Grey-headed flying-fox (*Pteropus poliocephalus*), listed as Vulnerable under the EPBC Act) confirmed through diurnal counts at the Reeves Reserve camp and foraging observations within the project area.

Glossy black-cockatoo (*Calyptorhynchus lathami lathami*) listed as Vulnerable under the EPBC Act and NC Act) was not recorded during surveys. However small patches of suitable foraging habitat were identified.

Additional potential habitat for other listed species (e.g. Wallum froglet, Swamp crayfish, Tusked frog, Platypus) was assessed. Wallum froglet was determined to be unlikely to occur on account of unsuitable habitat. However Wallum froglet, Swamp crayfish and Platypus could not be definitively ruled out. As breeding places may be present for these species, additional survey / or adoption of a precautionary approach of assuming breeding place presence, development of a project specific Impact Management Plan and securing endorsement of a Species Management Program (**SMP**) issued under the NC Act is required.

No EPBC-listed TECs were confirmed to intersect with the disturbance footprint.

Vegetation within the project area is highly fragmented, consisting of narrow roadside strips, planted street trees, and disturbed vegetation edges. Six general vegetation community types were delineated; however, most are degraded and non-remnant. The project footprint does not intersect intact remnant vegetation of high ecological value.

The project design is largely confined to the existing road reserve, thereby minimising direct impacts. Potential indirect impacts during construction include noise, light, dust, and temporary disturbance to fauna. Mitigation measures recommended include:

- Preparation and implementation of a vegetation and fauna management plan and construction environmental management plan.
- Staged vegetation clearing under supervision of a qualified fauna spotter-catcher.
- Retention and protection of trees where feasible.
- Incorporation of fauna-friendly design measures to maintain connectivity.
- Implementation of weed management, rehabilitation, and erosion and sediment control programs.

Based on ecological results and the inclusion of mitigation measures, the Project is considered to be unlikely to result in a significant impact on Matters of National Environmental Significance, provided recommended mitigation and management measures are adopted.

1. Introduction

1.1 Project background

28 South Environmental Pty Ltd (**28 South**) was engaged by the City of Moreton Bay (**CMB**) to advise on ecological and environmental planning matters regarding the delivery of active transport infrastructure upgrades along an approximately 4.7 km stretch of the Old Gympie Road (within the existing road reserve), between ANZAC Avenue, Kallangur in the south and Boundary Road, Dakabin in the north (the **Site**). Specific focus has been placed on ecological matters at eight locations identified and provided by CMB.

1.2 Project scope

The purpose of this Ecological Assessment Report (**EAR**) is to provide an assessment of the project against relevant ecological and environmental planning legislation, policies and instruments at the Commonwealth, State and Planning Scheme levels. The EAR achieves this through:

- Desktop Assessments.
- Ecological investigations involving the facilitation of surveys required to collect specific Fauna Habitat Associations, Threatened Ecological Communities (**TECs**) and Vegetation Community Mapping, Habitat Tree Mapping, Targeted Koala Habitat Assessments and Targeted Wallum Froglet Assessments.
- Determination of potential impacts of the project on ecological features within and adjoining the site.
- Assessment against the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- Assessment against the provisions of the *Nature Conservation Act 1992* (**NC Act**).
- Assessment against relevant ecologically focused components of the Moreton Bay Regional Council Planning Scheme 2016.
- Recommendations for measures to avoid, minimise, and mitigate potential impacts of the project on environmental values within the site, in accordance with relevant environmental planning frameworks.
- Assessment of ecological/environmental code compliance and relevant environmental offset requirements (if any) per the Planning Scheme and Queensland Environmental Offsets Policy 2014 (Version 1.16).

This EAR will document the findings of the bullets described above, including Significant Impact Assessments (SIAs) of realised conservation significant species/communities, making recommendations for design iterations and a planning approvals pathway perspective¹.

The following publicly available sources of information have been accessed to establish ecological and environmental constraints that are mapped across the site:

- Protected Matters Search (PMST) Report, under the EPBC Act (5 km radius).
- Species list generated from the Department of Environment, Tourism, Science and Innovation (DETSI) WildNet database (5 km radius).
- Vegetation Management Report, generated by Department of Resources (DOR) (Queensland).
- Mapping of Matters of State Environmental Significance (MSES) (Queensland Globe).
- Protected plant trigger mapping, under the NC Act.

¹ A stand-alone PFAS Management Plan based on existing data collected by CMB has already been prepared and submitted.

- CMB Planning Scheme environmental overlays.

Following review of the above-listed sources, ecological values and other environmental constraints of relevance for the project have been defined with reference to Commonwealth and State legislation, as well as the Planning Scheme.

1.3 Project Area

The project is located within the CMB local government area (LGA) and extends south along old Gympie Road from Boundary Road to ANZAC Avenue. The study area passes through the suburbs of Dakabin and Kallangur, which is defined by rural and urban residential neighbourhoods. However, parts of the road reserve also abut special use (e.g. Dakabin Landfill), mixed industry and business land uses.

The Project crosses tributaries of Saltwater Creek in two places and Freshwater Creek at Ross reserve. Matters of State Environmental Significance (MSES), Matters of Local Environmental Significance and Koala offset areas (MSES) abut the Old Gympie Road alignment. Geology of the study area is predominated by Landsborough sandstone, and deposits found in low lying areas, generally associated with the watercourses (Table 1).

Table 1: Detailed surface geology

Rock unit name	Map symbol	Lithological summary	Dominant rock	Rock type
Landsborough Sandston	RJl	Lithofeldspathic labile and quartzose sandstone, siltstone, shale, minor coal, ferruginous oolite marker	Arenite	Stratified unit (including volcanic and metamorphic)
Qr-QLD	Qr	Clay, silt, sand, gravel and soil; colluvial and residual deposits	Colluvium	Stratified unit (including volcanic and metamorphic)

Historical aerial photography and analysis of the Site is outlined in Table 2.

Table 2: Historical aerial photography

Image & Year	Historical Analysis
 1949 (QImagery, 14/08/2025)	The study area was largely undeveloped in 1949, dominated by large contiguous native vegetation. Cleared areas are near roads and are likely associated with agricultural use

Image & Year	Historical Analysis
 1959 (QImagery, 14/08/2025)	By 1959, the area was still undeveloped, but encroachment of cleared land for agricultural land uses continues to the east and west of the road.

Image & Year	Historical Analysis
An aerial photograph showing a rural landscape with a mix of cleared fields, some trees, and a small settlement. A red line is drawn across the image, indicating a proposed road route. The line starts in the upper left, runs south, then turns east, then south again, and finally turns east towards the bottom right. The terrain appears to be a combination of cleared land and some remaining vegetation. 1971 (QImagery, 14/08/2025)	During this period, extensive clearing of native vegetation is evident, including the establishment of a road network connecting the establishment of residential structures.

Image & Year	Historical Analysis
 1991 (QImagery, 14/08/2025)	By 1991, the Bruce motorway is prominent in the landscape and the area is defined by continued growth of suburbs, agricultural land use and industrial land uses.

Image & Year	Historical Analysis
An aerial photograph showing a suburban landscape with a grid-like street pattern. A red line is drawn across the image, starting from the top left, curving downwards, and then extending towards the bottom right. The landscape is a mix of green fields, residential areas with houses, and some larger commercial or industrial buildings. A river or watercourse is visible on the right side of the image. 2002 (QImagery, 14/08/2025)	By 2002, the landscape is largely transformed, with native vegetation largely aligned with the watercourses traversing the study area. Urban development continues with the establishment of dense residential areas and interconnected transport networks.

1.3.2 Ecological context

The Disturbance Footprint is the term used to describe the true extent of disturbance, and is illustrated in black hatching through the following figures. The Project Area is illustrated in red outline, and includes a 10 m buffer from the edge of the Disturbance Footprint. This is considered to be a conservative approach in the assessment of impact, to account for edge effects and indirect impacts associated with Project activities. **Figure 1** illustrates both the Disturbance Footprint and the Project Area. **Figure 2** illustrates the Project area in relation to state mapped environmental values, which are of relevance to the assessment of Commonwealth and State and Local Government ecological values which may incur impacts associated with the Project. **Figure 3** represents relevant CMB Environmental Areas.

The following Commonwealth listed environmental values are triggered to occur within 1 km of the Project:

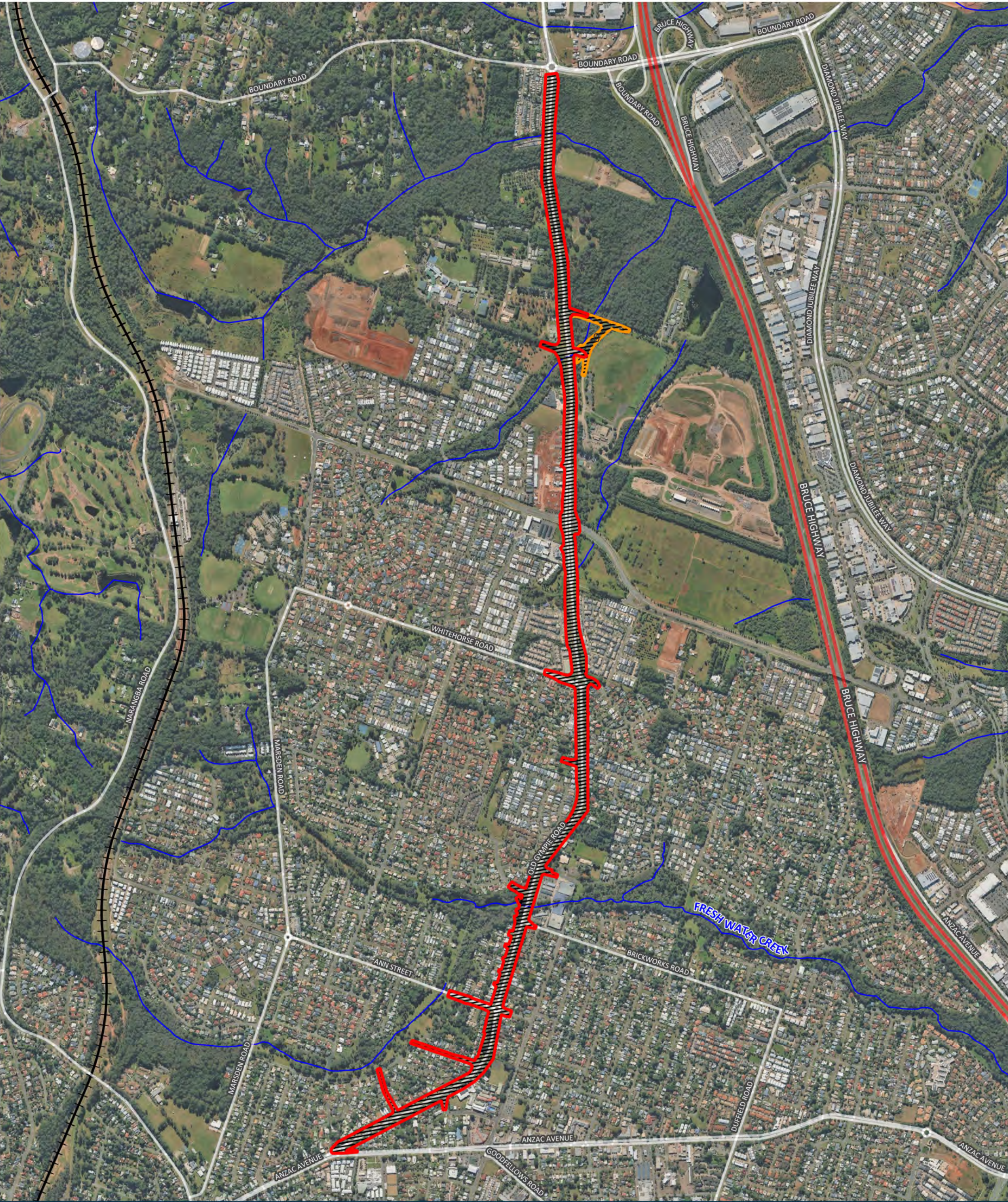
- Moreton Bay Ramsar wetland site (within 10km).
- Four listed Threatened Ecological Communities.
- 81 Listed threatened species.
- 40 listed Migratory species.
- State Kurwongbah Park Nature Refuge, within 1 km (State value triggered through PMST search tool and buffer zoning).

The following State listed environmental values intersect with the proposed Project Area:

- Category B endangered remnant vegetation (RE 12.5.3) as per the *Vegetation management regulated vegetation management map - version 7.15*.
- Category B least-concern remnant vegetation (RE 12.3.6) as per the *Vegetation management regulated vegetation management map - version 7.15*.
- Amber waterway as per the *Queensland waterways for waterway barrier works* (stream order 2 watercourse / drainage feature (no-name)) intersects the north of the Project Area.
- Green waterway as per the *Queensland waterways for waterway barrier works* (stream order 1 watercourse / drainage feature (no-name)) intersects the centre of the Project Area.
- Amber waterway as per the *Queensland waterways for waterway barrier works* (Fresh Water Creek (minor, stream order 2)) intersects the south of the Project Area.
- Core Koala habitat and essential habitat intersect at two minor edges of remaining remnant vegetation (MSES Series 12 of 22 (dataset 7c1) and 18 of 22 (dataset 8d)).

The following Local Government environmental values intersect with the proposed Project Area:

- MSES.
- MSES Koala Offsets.
- Matters of Local Government Significance.
- Waterways and Waterway buffers.



Anzac Avenue to Boundary Road

Legend

- Project Area
- Entrance upgrade to Goodwin Road
- Disturbance Footprint
- Rail Network
- Motorway
- Road
- Watercourse

Figure 1 - Project Area

28 South Project Ref: 2025 - 093

Source: C:\Users\Mitchell\Dropbox\Projects\2025\2025-093 (Anzac Avenue to Boundary Road)\Data\GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).agx

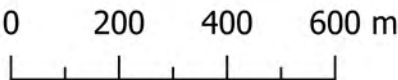
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.



Issue Date	Dwg No.	Author
13-11-2025		FK/MO
Approved		Revision Note
BS		

GDA2020 MGA 56
1:14,000



Southern section

12.5.3

12.5.3

12.3.6/12.3.5

12.3.6/12.3.5

12.3.6

12.3.6

non-rem

Northern section

Figure 2 - Ecological Context	
28 South Project Ref: 2025 - 093	Source: C:\Users\Mitchell\Dropbox\{d} Projects\2025\2025-093 (Anzac Avenue to Boundary Road)\{d} Data\{d} GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).agx
The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.	28°S ENVIRONMENTAL
Links to data sources can be provided upon request.	

Source: C:\Users\Mitchell\Dropbox\(\d) Projects\2025\2025-093 (Anzac Avenue to Boundary Road)\(\d) Data\(\d) GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).qgz

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ENVIRONMENTAL

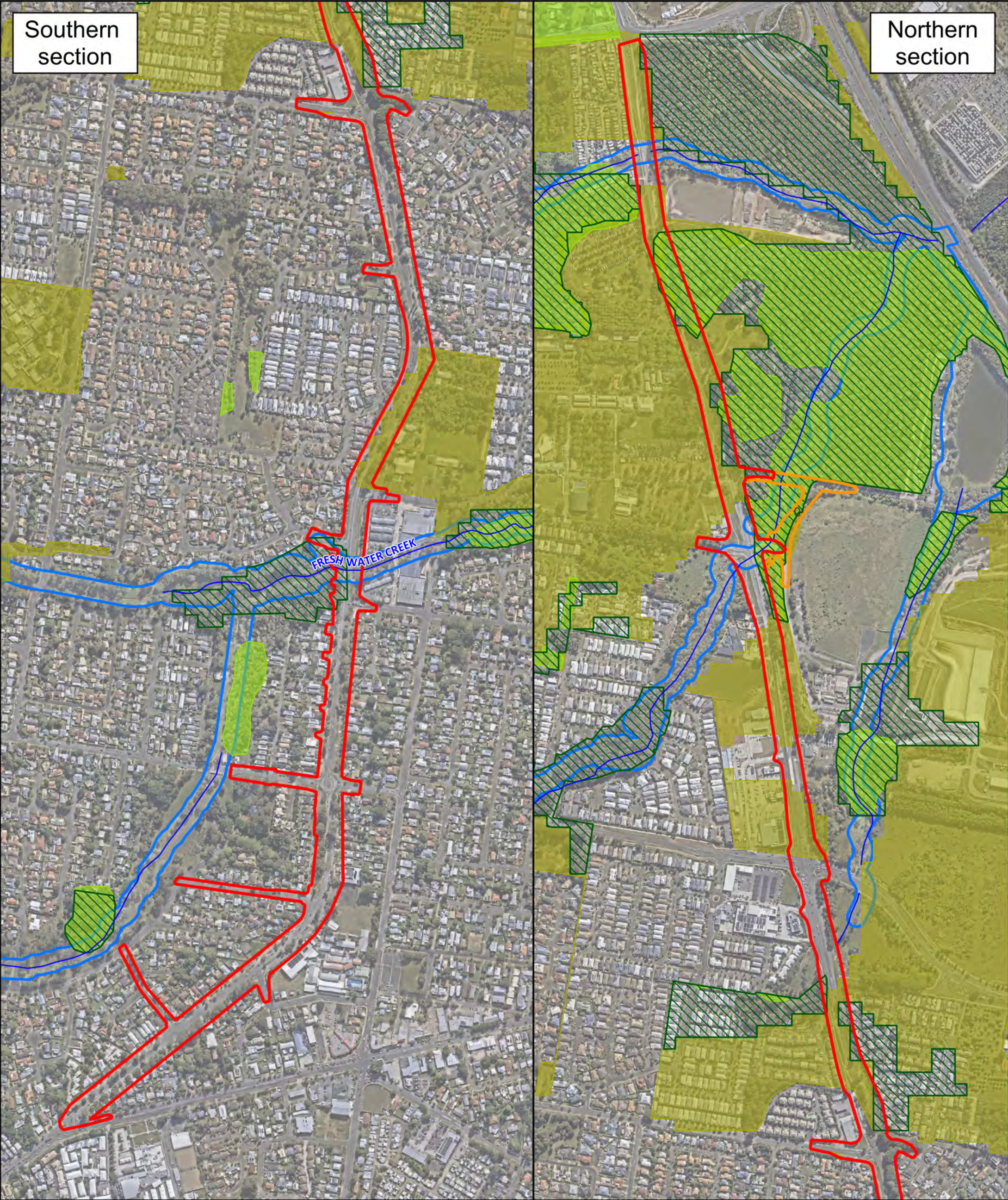
Legend

- Vegetation Management - Regional Ecosystem Mapping

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| 13-11-2025 | | FK/MO |
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A horizontal scale bar with markings at 0, 100, 200, and 300 m.





Anzac Avenue to Boundary Road

Legend

Figure 3 - Local Government Environmental Values

28 South Project Ref: 2025 - 093

Source: C:\Users\Mitchell\Dropbox\Projects\2025\2025-093 [Anzac Avenue to Boundary Road]\Data\GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).agx

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.

28°S
ENVIRONMENTAL

- Project Area
- Entrance upgrade to Goodwin Road
- Watercourse

- MBRC Planning Scheme - Environmental Areas Overlay
- MLES - Matters of Local Environmental Significance
 - MLES - Wetland Buffer
 - MLES - Wetlands
 - MLES Waterway Buffer
 - MSES - Koala Offsets
 - MSES - Matters of State Environmental Significance

Issue Date	Dwg No.	Author
13-11-2025		FK/MO
Approved	Revision Note	
BS		

GDA2020 MGA 56
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0 100 200 300 m



2. Legislative framework

2.1 Commonwealth Legislation

2.1.1 Environment Protection and Biodiversity Conservation Act 1999

The *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (**EPBC Act**) provides the legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities and heritage places. These are defined under the EPBC Act as 'Matters of National Environmental Significance' (**MNES**). Under the EPBC Act, a referral to the Department of Climate Change, Energy, Environment and Water (**DCCEEW**) is required if the Proposed Development is likely to or may cause a Significant Impact on MNES. The determination of whether a Significant Impact will arise is made with reference to the *Matters //f National Environmental Significance Significant Impact Guidelines 1.1* and other EPBC Act policy statements. The EPBC Act protects nine MNES:

- World Heritage Areas.
- National Heritage Places.
- Wetlands of International Importance.
- listed Threatened Species and Ecological Communities.
- listed Migratory Species.
- Commonwealth Marine Areas.
- Great Barrier Reef Marine Park.
- Nuclear Actions.
- Water Resources.

Under the EPBC Act, any action that is likely to have a significant impact on MNES is likely to be deemed a controlled action. If a controlled action, the action may not be undertaken without prior approval from the Minister for the Environment.

2.1.2 Significant Impact Assessment Guidelines

The *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DoE, 2013) provide overarching guidance on determining whether an action is likely to have a significant impact on a matter protected under the EPBC Act.

The significant impact criteria set out in the guidelines for each MNES are designed to assist Proponents in determining whether the impacts of the proposed action on an MNES are likely to be significant (important, notable or of consequence, having regard to its context or intensity). If after undertaking this assessment it is concluded that the action is likely to have a significant impact on any MNES, or if it is unclear if a significant impact may occur, the action should be referred to the Minister. If the Minister decides that the action is likely to have, or may have, a significant impact, then the action will be determined to be a controlled action and will require approval to proceed under the EPBC Act.

2.1.3 Commonwealth Offsets Policy

Offsets are measures that compensate for the significant residual impacts of an action on the environment, after avoidance and mitigation measures are taken. Where appropriate, offsets are considered during the assessment phase of an environmental impact assessment under the EPBC Act. The suitability of a proposed offset is considered as part of the decision to approve or not approve a proposed action under the EPBC Act once the

assessment of avoidance and / or mitigation is considered at an impact site. Offsets cannot be used to make an unacceptable impact acceptable. The EPBC Act Environmental Offsets Policy (EPBC Offsets Policy) (Department of Climate Change, Energy, the Environment and Water, 2012) outlines the approach for the use of environmental offsets under the EPBC Act, and provides guidance on how suitable offsets are determined.

2.1.4 Weeds of National Significance

The Australian Weeds Strategy 2017-2027 (Invasive Plants and Animals Committee, 2017) identifies 32 introduced plants as Weeds of National Significance (WoNS). This list of species was developed with reference to several key criteria: invasive tendencies; impacts; potential for spread; and socioeconomic and environmental values. National management strategies and manuals have been published for all of these species, and these strategies aim to:

- Prevent spread and new infestations.
- Reduce adverse impacts of existing infestations.
- Establish and maintain national commitment.
- Coordinate management at a national level.
- Increase community awareness.
- Relevant Queensland Legislation

Species and communities listed under the EPBC Act, and the vegetation and habitat associated with those values, may also be protected under Queensland legislation as described in the following sections.

2.2 State Legislation

2.2.1 Planning Act 2016

2.2.1.1 State Development Assessment Provisions

The Queensland Government defines matters of State Interest with referral triggers and responsible agencies set out in Schedule 10 of the *Planning Regulation 2017* (Qld) (**Planning Reg**). The Proposed Development will require consideration of the State Development Assessment Provisions (**SDAP**) to identify triggers for assessment. This Report includes a summary of this framework with regard to the Proposed Development.

Utilisation of the Development Assessment Mapping System (**DAMS**) mapping, assessment tools outlined in **Section 4**, and targeted field assessment, aids in determining MSES mapped to occur on-Site. This has contributed to validating matters regulated by the SDAP on Site. Additional relevant State matters are outlined below, and assessment of the Site values against Matters of State Interest has been performed in **Table 3**.

2.2.1.2 State Planning Policy 2017

The Queensland *State Planning Policy 2017* (**SPP**) is the primary State planning instrument in the Queensland planning system and sits above regional plans and planning schemes in the hierarchy of planning instruments. The SPP expresses and promotes the State's interests and identifies 17 State interests in land use planning and development. The SPP represents an assessment benchmark which the assessment manager must assess development against SPP Part E to the extent it is not identified as being appropriately integrated into a planning scheme. Notably, in the CMB Planning Scheme the SPP is integrated into the intentions and codes of the Planning Scheme, with the exception of natural hazards, risk and resilience (Coastal hazards (erosion prone areas)). However, the CMB Planning Scheme does not contemplate the most recent versions of the *State Planning Policy 2017* (Section 2.1- *MBRC Planning Scheme V4*), and as such, relevant State Government systems should be relied upon where relevant (see **Section 3.3**).

2.2.2 Nature Conservation Act 1992

The purpose of the *Nature Conservation Act 1992* (NC Act) is to conserve biodiversity by creating and managing protected areas, managing and protecting native wildlife, and managing the spread of non-native wildlife.

The NC Act is supported by the Nature Conservation (Plants) Regulation 2020 and Nature Conservation (Animals) Regulation 2020, which list species that are classed as threatened in Queensland. The following threatened species conservation classes are defined in the NC Act: Extinct; Extinct in the Wild; Critically Endangered; Endangered; and Vulnerable. Species can also be classed as Near Threatened if they are at risk of becoming threatened in the near future.

2.2.3 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (Qld) (**VM Act**) is Queensland's primary piece of legislation relating to the management of vegetation. In conjunction with the Regional Ecosystem (**RE**) vegetation classification framework, the VM Act forms the basis for vegetation management in Queensland. The VM Act provides for the preparation of maps to identify areas of high conservation value; areas vulnerable to land degradation; remnant vegetation; and provides for policies against which applications for clearing vegetation are assessed. The VM Act also captures Essential Habitat (**EH**) for Critically Endangered, Endangered, Vulnerable, Near-threatened (**CREVNT**) species under the NC Act. Matters triggered under the VM Act are then regulated by the Vegetation Management Regulation 2023 (**VM Reg**) and Planning Regulations.

A primary purpose of the VM Act is to regulate the clearing of vegetation in a way that conserves remnant vegetation identified as Regional Ecosystem (RE). REs are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Each RE is designated a vegetation management class and a biodiversity status: Endangered; Of Concern; or Least Concern.

2.2.4 Biosecurity Act 2014

The *Biosecurity Act 2014* (Qld) is a legislative framework aimed at preventing, managing, and controlling biosecurity risks to protect the State's economy, environment, and public health. It establishes measures to prevent the entry and spread of pests, diseases, and invasive species that could harm agriculture, natural ecosystems, and human health. The *Biosecurity Act 2014* (Qld) outlines responsibilities for government agencies, industry stakeholders, and individuals in detecting, reporting, and managing biosecurity threats. It also includes provisions for emergency responses, biosecurity planning, and enforcement actions to mitigate risks and safeguard Queensland's biosecurity status. The *Biosecurity Act 2014* (Qld) introduces specific management provisions such as Biosecurity Instrument Permits and General Biosecurity Obligations.

2.2.5 Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (Qld) is designed to compensate for the environmental impacts of development activities by requiring proponents to offset any residual environmental harm through measures that deliver equivalent or greater environmental benefits. The *Environmental Offsets Act 2014* establishes a framework for assessing, calculating, and implementing environmental offsets to maintain or improve the overall environmental values affected by development. It outlines principles for offsetting, including the use of biodiversity conservation, rehabilitation, and restoration initiatives, to achieve no net loss or a net gain of environmental values. Additionally, the *Environmental Offsets Act 2014* includes provisions for monitoring, compliance, and enforcement to ensure the effectiveness and integrity of offsetting measures, promoting sustainable development and conservation outcomes in Queensland.

2.3 Local Government Considerations

The City of Moreton Bay (CMB) Planning Scheme is the applicable planning instrument of the CMB LGA and provides the relevant framework for development assessment and approval. A search of the Project Area under

the Planning Scheme identifies that the proposed development is situated between multiple zone layers, however is largely within the current road reserve.

CMB has legal authority over all public roads and is responsible for their maintenance and improvement under the *Local Government Act 2009* (Qld). Section 60 of that Act gives a local government "control of all roads in its local government area" and states that this control includes the ability to "construct, maintain and improve roads". This includes the ability to undertake works, such as tree removal, that are necessary to facilitate essential infrastructure projects. The *Alteration of Public Land Local Law 2023* provides a framework to assess and approve the alteration of public land, to ensure any alteration of public land is undertaken in a way that does not unreasonably impact the environment. While the Council operational works are not subject to a formal development application under this framework, the Council's should ensure due diligence is performed to mitigate impacts on the environment, including street trees, in accordance with its duty of care and the overarching principles of the *Environmental Areas and Corridors Planning Scheme Policy*.

The proposed road upgrades encroach upon areas of mapped MLES and MSES environmental overlays (**Figure 3**). However, in large part these overlays are already impacted by the existing road alignment with future road upgrades to include additional safe fauna overpasses and underpasses to align with CMB green infrastructure network.

To mitigate any potential impacts to native flora and fauna, the proposed works will require a comprehensive Landscape Management Plan to outline the ecological contributions proposed for the potential temporary loss of habitat. The road works will consider standard street tree landscaping requirements, replacing shade trees and safe fauna crossing canopy vegetation in accordance with the Planning Scheme Policy Schedule 6.13 - Integrated design.

Additionally, habitat trees found along the alignment will be replaced in accordance with a Nest Box Management Plan and the Environmental areas and corridors Planning Scheme Policy under Schedule 6.9.

2.4 Summary of statutory matters

A summary of statutory matters considered by this is outlined in **Table 3**.

Table 3: Statutory matters considered by this Report

Legislation	Approval Type/Compliance	Administering Authority	Trigger	Comments
EPBC Act	EPBC Act Approval; or Not a Controlled Action Decision	DCCEEW	Proposing an Action that will significantly impact a MNES.	The Proposed Development requires the select removal of native and exotic vegetation. Contextually, the Site and the vegetation within provides little connectivity value for MNES. Threatened fauna species potentially present in the broader area owing to the existing Old Gympie Road as well as current residential and commercial developments. Minor habitat values are present on Site, though are not present in a significant abundance. As the Proposed Development has the potential to impact environmental values potentially utilised by MNES, further assessment has been performed. This ecological assessment addresses the impacts associated with the removal of all vegetation mapped within the Disturbance Footprint.

Legislation	Approval Type/Compliance	Administering Authority	Trigger	Comments
Planning Act	Development Permit for Operational Work: Native vegetation clearing	DSDI, as represented by the SARA and DoR	Clearing of native vegetation on prescribed land.	The Disturbance Footprint is largely contained within the existing road reserve, however vegetation clearing will take place along roadside edges and involve the removal of mature street tree vegetation. This ecological assessment addresses the impacts associated with the removal of all vegetation mapped within the Disturbance Footprint.
	Waterways for waterway barrier works	DSDI, as represented by the SARA and DAF	Constructing or raising waterway barrier works.	The Disturbance Footprint intersects with the <i>Queensland waterways for waterway barrier works</i> spatial layer at four locations (see Figure 4). The Project is <i>government supported transport infrastructure</i> , and subsequently meets the definition of <i>Exempt Clearing Works</i> , as defined in Schedule 21 of the Planning Regulation 2017 (Part 1 Section 1 (14)). No further assessment undertaken.
	Development in South East Queensland koala habitat areas	DSDI, as represented by the SARA and DESI	Interfering with CKHA.	The Disturbance Footprint intersects with the <i>Matters of state environmental significance - wildlife habitat - koala habitat areas – core</i> spatial layer at three locations (see Figure 4). The Project is <i>government supported transport infrastructure</i> , and subsequently meets the definition of <i>Exempt Clearing Works</i> , as defined in Schedule 21 of the Planning Regulation 2017 (Part 1 Section 1 (14)). No further assessment undertaken.
	Wetland Protection Areas	DSDI, as represented by the SARA and DESI	Interfering with High Ecological Significance (HES) wetland or wetland protection area.	The Disturbance Footprint intersects with the <i>Matters of state environmental significance - High ecological significance wetlands – Queensland</i> spatial layer at two locations (see Figure 4). The Project is <i>government supported transport infrastructure</i> , and subsequently meets the definition of <i>Exempt Clearing Works</i> , as defined in Schedule 21 of the Planning Regulation 2017 (Part 1 Section 1 (14)). No further assessment undertaken.
	Coastal Protection Area	DSDI, as represented by the SARA and DESI	Interfering with the erosion prone area or high storm tide	The Site is not within a State recognised Coastal Management District.

Legislation	Approval Type/Compliance	Administering Authority	Trigger	Comments
			inundation area.	No further assessment undertaken.
NC Act	Exempt Clearing Notification/ Clearing Permit	DESI	Clearing of CREVNT plants.	A review of the Flora Survey Trigger Map under the NC Act reveals that the Project Area is not within 100 meters of a 'high risk' trigger area. No further assessment undertaken.
	Species Management Program (SMP)	DETSI	Tampering with an animal breeding place.	The removal or tampering of an animal breeding place is allowed if it is part of a SMP for the same species, or if a damage mitigation permit is obtained and the permit authorises the proposed removal or tampering. Animal breeding places are defined as a bower, burrow, cave, hollow, nest or other thing that is commonly used by the animal to incubate or rear the animal's offspring. <u>Low Risk SMP</u> A low risk SMP is required in the event the removal or tampering of animal breeding places for species classified as least concern is required. This excludes special least concern species and colonial breeders. Alternatively, a suitably qualified person containing a damage mitigation permit that authorises the removal or tampering of breeding places can remove or tamper with breeding places of least concern species. <u>High Risk SMP</u> A high risk SMP is required in the event the removal or tampering of animal breeding places for species classified as extinct, extinct in the wild, critically endangered, endangered, vulnerable, near threatened, special least concern and/or colonial breeder is required. Given the current environmental values on Site and extent of disturbance, a High Risk SMP is considered unlikely to be required, however, consideration of obtaining an SMP or timing of the works should be given to avoid potential delays during construction. No further assessment undertaken.
Water Act	Riverine Protection Permit, Taking or Interfering with Water	SARA and the Department of Regional Development, Manufacturing	Operational works in a defined watercourse.	The Disturbance Footprint intersects with the three watercourses mapped by the state: one unnamed perennial/minor, one unnamed non-perennial/minor, and Fresh Water Creek mapped as perennial/minor (see

Legislation	Approval Type/Compliance	Administering Authority	Trigger	Comments
		and Water (DRDMW)		Figure 1). The Project is <i>government supported transport infrastructure</i>, and subsequently meets the definition of <i>Exempt Clearing Works</i>, as defined in Schedule 21 of the Planning Regulation 2017 (Part 1 Section 1 (14)). No further assessment undertaken.
Biosecurity Act	Undertaking Construction Works	DAF	Compliance with GBO.	Individuals and organisations whose activities pose a biosecurity risk have a GBO to: - Take all reasonable and practical steps to prevent or minimise each biosecurity risk - Minimise the likelihood of causing a 'biosecurity event', and limit the consequences if such an event is caused - Prevent or minimise the harmful effects a risk could have, and not do anything that might make any harmful effects worse. If an individual or organisation becomes aware of prohibited matter, the matter must be reported to Biosecurity Queensland within 24 hours unless the individual or organisation is aware that the matter has already been reported. WoNS Environmental Weeds detected on site are reported and mapped as a component of this ecological assessment, and are reported in Section 4.
EP Act	Undertaking Construction Works	DETSI	Compliance with general environmental duty and duty to notify environmental harm.	The EP Act outlines two duties that apply to everyone in Queensland: - General environmental duty – a person must not carry out an activity that causes, or is likely to cause, environmental harm, unless measures to prevent or minimise the harm have been taken - Duty to notify of environmental harm – to inform the administering authority, landowner or occupier when an incident has occurred that may have caused or threatens serious or material environmental harm. No further assessment undertaken.

Southern section

An aerial photograph of the Southern section of the City of Melbourne. A red line outlines the city's boundary. A green line represents the Yarra River, which flows through the center of the image. Several areas are highlighted with green dashed outlines and blue dotted patterns, indicating specific zones of interest. The surrounding area is densely populated with residential buildings and streets.

Northern section

Legend

Source: C:\Users\Mitchell\Dropbox\(\d) Projects\2025\2025-093 (Anzac Avenue to Boundary Road)\(\d) Data\(\d) GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).qgz

28°S
ENVIRONMENTAL

Links to data sources can be provided upon request.

- ### Waterways for waterway barrier works

- 1 - Low
 2 - Moderate
 3 - High
 4 - Major
 Watercourse buffer - 25m

GDA2020 MGA 56
1:7,000



3. Methods

3.1 Desktop assessment

The following databases and search tools were used to initially assess the potential occurrence of MNES and MSES within the Study Area, consisting of:

- Protected Matters Search Tool (PMST) Database (1 km buffer around Project Area boundary) (Department of Climate Change, Energy, the Environment and Water, 2025a). The results of this assessment are provided in **Attachment 1**.
- Environmental reports online, issued by the Queensland Department of the Environment, Tourism, Science and Innovation (**DETSI**), including the following (**Attachment 2**):
 - o Matters of state environmental significance (MSES).
 - o Regional ecosystems.
 - o Terrestrial biodiversity and aquatic conservation values.
 - o WildNet records—Conservation significant species list.
 - o WildNet records—Introduced species list.
- Wildlife Online extract of full flora and fauna species list, issued by the Queensland Department of the Environment, Tourism, Science and Innovation (DETSI), with a radius of 1 km from the approximate center of the Project Area (Department of the Environment, Tourism, Science and Innovation, 2025).
- Vegetation Management Regional Ecosystem map (Version 13) (Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development, 2024).
- Species of National Environmental Significance Database mapping (Department of Climate Change Energy the Environment and Water, 2024).
- Protected Plants Flora Survey Trigger Map issued by DETSI (Department of the Environment, Tourism, Science and Innovation, 2023)

The following spatial mapping layers were accessed through the Queensland Spatial Catalogue (QSpatial) to interrogate and predict environmental values of the Project Area prior to ecological survey:

- Certified Biodiversity Planning Assessment (BPA) mapping to identify significant wildlife corridors of State, Regional and Local biodiversity significance (Department of Environment and Science, 2020a).
- Contours – 1 m and 10 m interval map (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development, 2019).
- Detailed surface geology mapping (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development, 2023a).

3.2 Likelihood of Occurrence Assessment

A Likelihood of Occurrence (LoO) assessment was undertaken following the review of desktop search results (**Attachment 3**). Each triggered Matter of National Environmental Significance (MNES) and Matter of State Environmental Significance (MSES) was assessed for their likelihood of occurrence within the Project and connected vegetation in the immediate surrounds. Each matter was assigned a likelihood of occurrence categorisation as per the definitions described in **Table 4**.

Initial LoO assessments were made prior to undertaking field surveys based on desktop information collected in **Section 3.1**, to design a targeted ecological survey and ensure satisfactory survey effort as per the *Survey guidelines for Australia's threatened mammals* (DSEWPC, 2024). The LoO assessment for each MNES was

reviewed and updated at the conclusion of field survey effort to reflect survey results based on the presence or absence of habitat within the Project Area.

The LoO score was not downgraded in response to a failure to detect a species during field surveys if suitable for the species was identified within the Project Area. This approach accommodates natural changes in the distribution and abundance of species over time and was applied in acknowledgement of the limitations of field sampling methods and survey conditions, which may not capture all target species present at the time of sampling. This approach is an application of the precautionary principle that underpins ecological assessment, which errs on the side of conservative assumptions regarding species range and habitat.

Table 4: Likelihood of occurrence definitions

Potential-occurrence category	Definition description
Known	The listed matter ² has been detected either through direct observation (i.e. motion sensor camera or observer), or through detection of evidence (i.e. Koala scat) in the defined Project Area. Alternatively, a recent and valid (<5 years) spatial record occurs within or directly adjacent to the Project Area i.e. a record may occur within the contiguous vegetation patch.
High	The listed Matter is considered to have a high possibility to occur within the Project Area based on the presence of suitable habitat, and nearby recent and valid spatial records. Based on contextual assessment of the Matter i.e. species distribution, life history traits, habitat requirements, boarder movement pathways etc., it is highly likely that the species may either occur or regularly pass through the Project Area. Consideration is given to survey effort in the region, as well as the species prevalence and the detectability (e.g. cryptic species or rare species). This categorisation also includes species' likely to regularly occur within the Project Area during migratory, short-distance season or nomadic movements (including cases for which likelihood of occurrence is high regardless of the nature of habitat present in the Study Area). The TEC has one or more corresponding REs mapped within the Project Area, and key species have been recorded from the broader area (desktop search extent). Key diagnostic characteristics and condition thresholds specified as part of the Commonwealth listing advice will need to be evaluated through field survey to verify presence/absence.
Moderate	Potential or suitable habitat is present within the Project Area, however, recent spatial species' records may not necessarily occur nearby. An assessment of <i>moderate</i> species' likelihood is made in consideration of species' detectability difficulty, species prevalence within the broader area, and life history traits i.e. species abundance and density. A species may therefore be assigned a moderate likelihood of occurrence where habitat is mapped within the Project Area, and the species has been detected within the assessed buffer zone (i.e. the desktop search radius applied) within recent history (~20 years). A <i>moderate</i> rating also includes species that may occasionally occur in the Project Area during migratory, short-distance season or nomadic movements. The TEC has one or more corresponding REs mapped within the Project Area; however, key species have not been recorded from the broader area (desktop search extent). Key diagnostic characteristics and condition thresholds specified as part of the Commonwealth listing advice will need to be evaluated through field survey to determine if the community is confirmed within the Study Area.
Low	The Project Area either contains limited suitable habitat or potential/marginal habitat. Based on Matter distribution and broad (high-level) habitat descriptions of both the Project Area and the Matter in question, there is a theoretical possibility, although slim, that the Matter may occur. Alternatively, the species is either very scarce or absent in the surrounding region. The species is considered to be <i>unlikely</i> to occur within the Project Area based on the aforementioned factors, however, is assigned the categorisation of <i>low</i> based on the

²A matter refers to any listed species, vegetation community, Threatened Ecological Community (TEC), or other under the EPBC Act or NC Act.

Potential-occurrence category	Definition description
	inability to unequivocally assign the below definition of <i>unlikely</i>. The species may infrequently disperse through or near the Project Area. The TEC has no corresponding REs mapped within the Study Area.
Unlikely	The Project Area offers limited to no potential habitat for the matter. Although species habitat may occur as per the DESI and DCCEEW habitat modelling predictions, key habitat elements to support the matter indisputably do not occur within the defined Project Area or immediate surrounds/contiguous vegetation i.e. there is no potential for the species to 'pass through'. Alternatively, the Project Area is outside the matter's known range and/or is lacking broader habitat requirements.
Highly unlikely	The Study Area is fundamentally unsuitable for the species, or the species is presumed extinct or locally extinct. For example, this is usually applied to marine species or seabird for terrestrial sites. The TEC has corresponding REs which are associated with a different bioregion or land zone than REs mapped within the Study Area. This definition also incorporates where no REs or necessary diagnostic species were observed necessary for defining the TEC. This option is only utilised when the entirety of the Study Area has been ground-truthed.

3.3 Significant Impact Assessment

The potential direct and indirect impacts on relevant MNES as a result of the Project have been assessed as per the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment, 2013). Results of the likelihood of occurrence assessment were considered when assessing potential impacts, with only MNES 'known' to occur, or MNES with a 'high' or 'moderate' likelihood of occurring assessed.

Key terms used within significant impact criteria for listed TECs, threatened species and migratory species are defined by the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment, 2013) as follows:

- **Habitat critical to the survival** of a species or ecological community refers to areas that are necessary:
 - for activities such as foraging, breeding, roosting, or dispersal
 - for the long-term maintenance of the species or ecological community (including the maintenance of species essential to the survival of the species or ecological community, such as pollinators)
 - to maintain genetic diversity and long-term evolutionary development, or
 - for the reintroduction of populations or recovery of the species or ecological community.
- **Important population** of a species refers to a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans and/or that are:
 - key source populations either for breeding or dispersal
 - populations that are necessary for maintaining genetic diversity, and/or
 - populations that are near the limit of the species range.
- **Important habitat** for a migratory species refers to habitat that is:
 - utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the species, and/or
 - of critical importance to the species at particular life-cycle stages, and/or

- utilised by a migratory species which is at the limit of the species range, and/or
- within an area where the species declining.

For some MNES, the key terms described above are already defined in the value's associated SPRAT profile, National Recovery Plans, referral guideline, Listing Advice or Conservation Advice. Where this occurs, the specific definition is used in lieu of the above generic definitions.

3.4 Flora survey

Desktop assessment, namely results of the PMST (5 km buffer), resulted in the identification of four TECs and 18 potentially occurring threatened flora species under the EPBC Act. Of these results, the likelihood of occurrence assessment determined a single Threatened Ecological Community and five threatened flora species, listed under the EPBC Act and NC Act, to have either a moderate, high, or known likelihood of occurrence within the Project Area. They are:

- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland Threatened Ecological Community (TEC) – listed as endangered
- *Acacia attenuata* – listed as Vulnerable under the EPBC Act and NC Act
- *Arthraxon hispidus* (hairy-joint grass) - listed as Vulnerable under the EPBC Act and NC Act
- *Persicaria elatior* (knotweed) – listed as Vulnerable under the EPBC Act and NC Act
- *Phaius australis* (lesser swamp orchid) – listed as endangered under the EPBC Act and NC Act
- *Thesium australe* (Austral toadflax) - listed as Vulnerable under the EPBC Act and NC Act.

Ecological field survey was undertaken between 29 and 30 of July, 2025, by two suitably qualified ecologists. Survey methods included the following:

- Ground-truthing of vegetation communities in accordance with the latest Regional Ecosystem Database Descriptions (REDD, version 13), and the *Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland* (version 7.0) (Neldner *et al.*, 2024). This included the collection of quaternary and tertiary vegetation data.
- TEC assessment in accordance with the *Conservation Advice for the Coastal Swamp Sclerophyll Forest of New South Wales and Southeast Queensland* (DAWE, 2021). This included the collection of vegetation species and structural data in approximate 20 x 20 m survey plots.
- Random meander and opportunistic survey for the identification of individual EPBC Act and NC Act listed threatened species which have the potential to occur within the area as per the Likelihood of Occurrence assessment.

3.4.1 Limitations

The Project design is subject to inherent access limitations given the practicality of linear infrastructure and the extension of an existing busy main road (Old Gympie Road) in an urban environment. The Project Area intersects multiple areas of existing residential and commercial development, and as such access to the entirety of the disturbance footprint was not achievable nor necessary. Areas of natural vegetation in the northeast of the Project Area, between Goodwin Road and Boundary Road, were accessible through council owned and managed land.

The identification of flora to the taxonomic species is often subject to the availability of reproductive anatomical features such as seed and flowers. This is particularly true for sedges, rushes, and grasses which are often difficult to distinguish and require floristic keys. As such, flora were identified to the taxonomic species level where possible; or otherwise were identified to genus.

3.5 Fauna survey

Desktop assessment, namely results of the PMST (5km buffer), resulted in the identification of 66 potentially occurring threatened fauna species and WildNet searches identified an additional five potentially occurring threatened species under the NC Act. Of these results, the likelihood of occurrence assessment determined the following eight fauna species to have either a moderate, high, or known likelihood of occurrence within the Project Area:

- Grey-headed flying-fox (*Pteropus poliocephalus*)
- Koala (*Phascolarctos cinereus*)
- Wallum froglet (*Crinia tinnula*)
- Swamp crayfish (*Tenuibranchiurus glypticus*)
- Powerful owl (*Ninox strenua*)
- Glossy black-cockatoo (south-eastern subspecies) (*Calyptorhynchus lathami lathami*)
- Tusked frog (*Adelotus brevis*)
- Platypus (*Ornithorhynchus anatinus*).

Field surveys to investigate the presence and potential occurrence of conservation significant fauna species within the Project Area were undertaken by a team of two ecologists on the 24th and 29th of July 2025. Surveys undertaken at this time included:

- Assessment of habitat suitability for target species having regard to: the presence of feed and shelter trees, prey, native vegetation cover, invasive weeds and pest animal species and water quality, existing anthropogenic impacts (e.g., noise and light pollution).
- Diurnal counts of Grey-headed flying fox at a permanent flying fox camp within Reeves Reserve (on Freshwater Creek).
- Systematic (SAT) and opportunistic searches for Koala scats and scratches.
- Nocturnal spotlighting and dipnet surveys for swamp crayfish and wallum froglet.
- Call playback/aural census surveys for wallum froglet.
- Spotlighting surveys targeting Koala, Grey-headed flying fox, powerful owl and platypus.
- Opportunistic surveys for diurnal bird and reptile species and fauna signs (e.g., scats, diggings and scratches).

Whilst undertaking field surveys, the proposed location/siting of green infrastructure facilitating safe passage of fauna across the Project Area was also investigated at the following locations:

- Road crossing at Ann Street, north of Penson Park.
- Road crossing at Saltwater Creek on Old Gympie Road, to the south of Boundary Road.
- Road crossing at Freshwater Creek on Old Gympie Road.

3.5.1 Limitations

Field surveys were subject to a number of limitations, as detailed below:

- Areas of potential habitat for MNES/MSES species on private land adjacent to Old Gympie Road (to the north and south of Hughes Road East and north of Goodwin Road) could not be accessed during surveys.
- Survey timing and conditions were suboptimal for the detection of migratory species visiting south-east Queensland during spring/summer and fauna species generally active during warmer months (i.e., most reptile and frog species [excluding the wallum froglet but including the tusked frog]).
- Surveys did not include:
 - active searches for platypus burrows, or
 - call playback for tusked frog.
- Owing to limited temporal replication, survey results may not accurately reflect a species' occurrence or usage of habitat within and/or adjacent the Project Area.

Given the above, a precautionary approach was adopted when assessing the potential occurrence and habitat values for MNES/MSES species within and adjacent the Project Area.

4. Results

4.1 Fauna survey

Complete results of the fauna survey are presented in **Attachment 4**.

In summary, ecological fauna surveys confirmed the presence of two threatened species which are likely to either utilise habitats within the Disturbance Footprint, or traverse through the area in order to meet foraging, breeding, or dispersal requirements:

- Koala (*Phascolarctos cinereus*) – listed as endangered under the EPBC Act and NC Act.
- Grey-headed flying fox (*Pteropus poliocephalus*) – listed as vulnerable under the EPBC Act.

In addition, survey effort confirmed the presence of foraging habitat for EPBC Act listed, Glossy black-cockatoo (south-eastern subspecies) (*Calyptorhynchus lathami lathami*). Although the species was not confirmed on site or in adjacent connected vegetation, It is possible the species could traverse through the area and opportunistically utilise foraging resources. The powerful owl (*Ninox strenua*) is also likely to occur in connected remnant vegetation however, species resources do not intersect with the Project Area. Technical details relating to the assessment of these species are contained in **Attachment 4**.

The following NC Act listed species were assessed but not detected:

- Platypus (*Ornithorhynchus anatinus*) - listed as Special Least Concern under the NC Act
- Powerful owl (*Ninox strenua*) – listed as Vulnerable under the NC Act
- Wallum froglet (*Crinia tinnula*) - listed as Vulnerable under the NC Act
- Swamp crayfish (*Tenuibranchiurus glypticus*) - listed as Endangered under the NC Act
- Tusked frog (*Adelotus brevis*) - listed as Vulnerable under the NC Act.

4.1.1 Platypus

Though not recorded during surveys, platypus have previously been recorded immediately adjacent the Project Area, with a single ALA record from 2024 near Dakabin Refuse Transfer Station (on the east side of Old Gympie Road) and another, low precision record from 2002 at Freshwater Creek, east of the shopping complex south of Nellie's Lane (to the east of Old Gympie Road). CMB has records (environmental DNA (eDNA)) and observational field records for records within Freshwater Creek, 1.3 km downstream of the Project Area. This appears to be a duplicate of the low precision 2002 ALA record. CMB considers Freshwater Creek downstream of this point to be confirmed or 'Known' habitat (see **Inset 1**).

During the filed assessment spotlighting for Platypus was undertaken, however active searches for burrows did not occur. Suitable burrow and forage habitat for the species is present within and/or adjacent the Project Area to the immediate south and north of Goodwin Road (east of Old Gympie Road) and along Freshwater Creek (east and west of Old Gympie Road).



Inset 1: City of Moreton Bay, Platypus Habitat Working Layer (source: Bernadette May, CMB, 7 October 2025)

4.1.2 Powerful Owl

The powerful owl (*Ninox strenua*) is also likely to occur in connected remnant vegetation however, species resources generally do not intersect with the Project Area.

There are multiple contemporary (post-2020) ALA records of powerful owl from the Dakabin area and the species was observed within Ross Reserve (Freshwater Creek), in close proximity to the known Flying-fox camp, outside of the Project Area (approximately 70 m west of Old Gympie Rd) during surveys).

Suitable foraging habitat for the species (remnant eucalypt forest with avian and mammalian prey, including possums and Flying-foxes) is present adjacent (to the near east and west) of the Project Area with areas of denser vegetation associated with Freshwater and Saltwater Creeks likely suitable for roosting as well. No trees containing suitable nest hollows for powerful owl were observed within or immediately adjacent the Project Area during surveys.

It has been determined that the upgrade works will not impact Powerful owl habitat.

4.1.3 Wallum Froglet

While known to occur at nearby Lagoon Creek, to the near north of the Project Area (E. Meyer, pers. obs.), the Wallum froglet was not recorded within or adjacent the Project Area during surveys; and, while the Project Area and surrounds contain areas of potentially suitable Melaleuca wetland habitat, the amenity of these areas for wallum froglet appears low owing to high densities of predatory pest fish, (including platy, mosquitofish and swordfish). The vegetation and water chemistry in these areas, moreover, is atypical of wetland habitats frequented by Wallum froglet, with the ground stratum dominated by grass species (as opposed to sedges and/or bungwall fernmore typical of wetland habitat occupied by the wallum froglet) and water pH levels >5. Tannin-staining levels in these wetland areas are also lower than areas normally frequented by wallum froglet with areas of surface water clear and largely colourless. Water chemistry conditions within and adjacent the Project Area are therefore likely to favour less acid-tolerant competitor species such as the Beeping froglet (*Crinia parinsignifera*).

It is therefore determined that Wallum froglet is unlikely to occur based on the absence of suitable habitat.

4.1.4 Swamp Crayfish

While not recorded within or adjacent the Project Area during surveys, the Swamp crayfish is known from scattered locations around Narangba and Burpengary, including Lagoon Creek to the near north of the Project Area (E. Meyer, pers. obs.).

Suitable habitat for the species (areas of *Melaleuca* wetland containing shallow, ephemeral water and areas of shallow, ephemeral water along drainage depressions and, to a lesser extent, under culverts) is also present within and adjacent the Project Area, including to the near south and north of Goodwin Avenue and southeast of Hughes Road East. Areas of likely suitable habitat for the swamp crayfish occur at Freshwater Creek, Saltwater Creek, a tributary of Saltwater Creek in the vicinity of Hughes Road East, Old Gympie Road and Goodwin Road, and the waterway crossing Old Gympie Road in a south-west to north-east direction in the vicinity of Alma Road and Plantation Road (four locations).

Given difficulties detecting the species (owing to its small size and cryptic nature), the presence of swamp crayfish within and adjacent the Project Area cannot be definitively ruled out. Further seasonal field assessment work (Spring – Summer) is needed to determine whether or not the species is present within the Project Area.

4.1.5 Tusked Frog

Tusked frog was detected during surveys, however survey conditions at the time of the field assess were not optimal (and generally outside of times considered suitable to detect presence). The presence of Tusked frog therefore cannot be discounted owing to the species low detectability during winter surveys and presence of potentially suitable habitat within and/or adjacent the project Area.

Potentially suitable habitat for the species within the Project Area occurs at Freshwater Creek and to the east of Old Gympie Road at Goodwin Road in the vicinity of the realigned access to the Dakabin waste facility (both upstream and downstream of Goodwin Road).

Call playback was not undertaken at the time of the assessment (survey occurred outside of the active calling period). Further surveys in spring and early summer are needed to determine whether the species is present or not within the Project Area.

4.2 Flora Survey

A total of 30 (thirty) Quaternary assessments and nine (9) Tertiary vegetation assessments were completed at various locations within the Project Area and surrounding contiguous vegetation (**Figure 5**). Ecological survey effort did not identify the extent of remnant Regional Ecosystems, as per the Regional Ecosystem Database Descriptions (REDD, version 13), and the Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (version 7.0) (Neldner et al., 2024), to occur within the Project Area. Vegetation as it occurs within the heavily developed and urbanised environment which encompasses the Project Area, is described in the section below.

During Eucalyptus fruit searches under trees to aid in accurate species identification, Koala scats were incidentally detected on three occasions.

4.2.1 Vegetation Communities

Vegetation communities intersecting the edges of the Project Area are overall relatively disturbed and not analogous to Regional Ecosystem descriptions which have been ground-truthed to align with state mapping in proximity to the Project Area. Six distinct vegetation descriptions have been mapped and assigned to delineate the Project into spatially assessable units for the purposes of impact assessment of threatened species. The following vegetation communities and their extent within the Project Area are listed in Error! Reference source not found. below. Vegetation Communities observed with tin the study area are shown as **Figure 6**.

Table 5: Vegetation extent within the Project Area

Vegetation Community	Species habitat	Area (ha)
Exotic roadside vegetation	Potential shelter habitat for Koala	0.2
Mature native street tree vegetation	Mixed habitat potential for Koala, Grey-headed flying fox and Glossy black-cockatoo	4.3
Mature native vegetation	Mixed habitat potential for Koala, Grey-headed flying fox and Glossy black-cockatoo	1.6
Mature native vegetation with weed encroachment	Mixed habitat potential for Koala, Grey-headed flying fox and Glossy black-cockatoo	1.9
Mature ornamental garden vegetation	Potential shelter habitat for Koala	0.9
Unvegetated	Not habitat	17.9
Total area		26.8

4.2.1.1 Exotic roadside vegetation

Exotic roadside vegetation delineates obvious planted shady areas, which were typically not accessible for detailed assessment due to retaining walls, fencing, and other physical barriers. These areas observably included attractive garden tree species such as Palms and *Callitris* sp. This area accounts for ~0.2 ha, or ~0.7% of the total Project Area.

4.2.1.2 Mature native street tree vegetation

Roadside vegetation often included narrow patches of mature native trees, which although form components of the locally mapped Regional Ecosystem of 12.5.3, do not meet the criteria to form an assessment unit due to their size in isolation i.e. <1 ha, and their lack of other essential criteria such as understory and midstory vegetation. Mature street trees were typically between 300- and 450-mm diameter at breast height (DBH), and greater than 16 metres in height. The common canopy species included Scribbly gum (*Eucalyptus racemosa*), Queensland blue gum (*Eucalyptus tereticornis*), Pink bloodwood (*Corymbia intermedia*), Tuckeroo (*Cupaniopsis anacardioides*), Northern grey ironbark (*Eucalyptus siderophloia*), Wattles (*Acacia* sp.), Weeping bottlebrush (*Melaleuca viminalis*), Kauri pine (*Agathis robusta*) and Weeping tea-tree (*Melaleuca leucadendra*). This area accounts for ~4.3 ha, or ~15.9% of the total Project Area, and was most common in the south of the Project.

4.2.1.3 Mature native vegetation

Mature native vegetation is distinct from the above categorisation due to its connection with larger, intact habitat areas and its overall character as a more natural ecosystem, rather than a constructed or recreated nature space. Six distinct polygons are mapped across the Project Area, with the majority of area mapped in connection with Ross Reserve. Vegetation on the western roadside edge of Ross Reserve, where it intersects with Old Gympie Road, included presumably planted native *Ficus* species. Common canopy tree species included Scribbly gum (*Eucalyptus racemosa*), Northern grey ironbark (*Eucalyptus siderophloia*), Queensland blue gum (*Eucalyptus tereticornis*), Pink bloodwood (*Corymbia intermedia*), Soap tree (*Alphitonia excelsa*), Macaranga (*Macaranga tanarius*), and Cocos palm (*Syagrus romanzoffiana*). Midstory and understory vegetation was typically lacking in these areas, presumably under council management for public use and accessibility purposes. This area accounts for ~1.6 ha, or ~5.9% of the total Project Area.

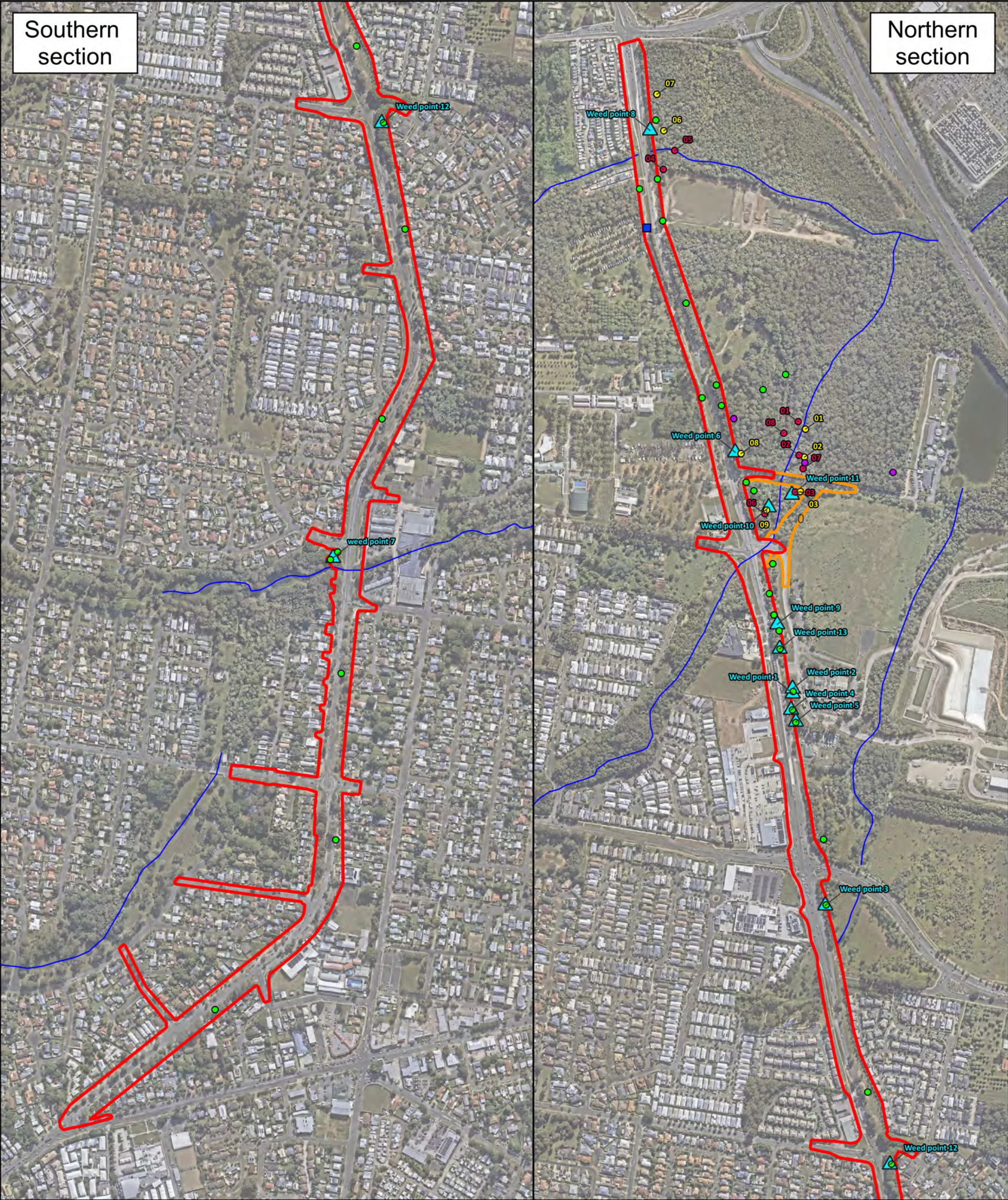


Figure 5 - Flora Survey Sites

28 South Project Ref: 2025 - 093

Source: C:\Users\Mitchell\Dropbox\Projects\2025-093 [Anzac Avenue to Boundary Road]\Data\GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).qgz

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.

Project Area

Entrance upgrade to Goodwin Road

Watercourse

WoNS Observation Point

Survey Site Type [50]

Habitat tree [1]

Koala scat [3]

Quaternary Assessment [31]

TEC Assessment [8]

Tertiary Assessment [7]

Issue Date

14-11-2025

Dwg No.

Author

FK/MO

Approved

BS

Revision Note

GDA2020 MGA 56

1:7,000

0

100

200

300 m

N

Southern section

This aerial photograph shows a residential area with a waterway running through it. A red boundary outlines a specific section of the waterway. A blue line indicates a path or boundary within the waterway. A purple shaded area is visible along the right side of the waterway, possibly indicating a specific land use or environmental feature.

Legend

	Project Area		Vegetation Community		Unvegetated
	Entrance upgrade to Goodwin Road		Exotic roadside vegetation		
	Watercourse		Mature native street tree vegetation		
			Mature native vegetation		
			Mature native vegetation with weed encroachment		
			Mature ornamental garden vegetation		

Issue Date	Dwg No.	Author
13-11-2025		FK/MO
Approved	Revision Note	
BS		

GDA2020 MGA 56
1:7,000
100 200 300 m

28°S
ENVIRONMENTAL

4.2.1.4 Mature native vegetation with weed encroachment

This area is mapped along the eastern edge of the Project Area, where it intersects with the Category B patch of vegetation which occupies the space between Old Gympie Rd, Boundary Rd, and the Bruce Highway. Vegetation condition within the vegetation patch, which equates to ~50 ha, appears to be of high quality with an intact canopy and subcanopy layer, as well as mixed native ground conditions. A slow trickle of fresh water continues to flow through the drainage features which intersect the vegetation patch, maintaining sodic soils and vegetated swamp conditions. However, vegetation condition rapidly deteriorates with proximity to the western and southern edges, which were assessed through quaternary and tertiary data collection.

Edge effects have resulted in the heavy encroachment of weed and pioneer species, leading to competition with native flora, altered soil composition, and observable degradation of habitat quality and ecological function. Although high-quality vegetation analogous to remnant condition RE 12.5.3 and RE 12.3.6 occur in close proximity to the Project Area, species composition within the actual Disturbance Footprint rapidly deteriorates becoming dominated by canopy species Slash pine (*Pinus elliottii*); subcanopy species Winter cassia (*Senna pendula*), Chinese celtis (*Celtis sinensis*), Cadaghi (*Blakella torelliana*), and Leopard tree (*Lipidibia ferrea*); and exotic understory species including Singapore daisy (*Sphagneticola trilobata*), Dyschoriste (*Dyschoriste depressa*), Blue billygoat weed (*Ageratum houstonianum*), Guinea grass (*Megathyrsus maximus*), Signal grass (*Urochloa decumbens*), and Groundsel bush (*Baccharis halimifolia*) a WoNS, and Johnson grass (*Sorghum halepense*).

Vegetation condition along the western edge of the remnant vegetation patch does experience natural variation, with important native canopy species such as Tallowwood (*Eucalyptus microcorys*) and Red stringybark (*Eucalyptus resinifera*) interspersed amongst heavily exotic dominated areas. In addition to weed encroachment, native pioneer species occupy these edges such as Early-flowing black wattle (*Acacia leiocalyx*) and Black she-oak (*Allocasuarina littoralis*). The unusual mixed species composition, and vegetation dominance in favour of exotic species at multiple structural levels, means that vegetation which intersects with the Project Area is considered to be non-remnant. Despite the maturity of vegetation, the species composition does not align with any naturally occurring vegetation community as per the REDD, and as such has not been assigned a vegetation community code. This area accounts for ~1.9 ha, or ~7.1% of the total Project Area.

4.2.1.5 Mature ornamental garden vegetation

This area is mapped in the southeastern edge of the Project Area, and captures where roadside vegetation is a combination of non-endemic native species as well as typical garden plants. A native tree species canopy was present and included Red stringybark (*Eucalyptus resinifera*), Angophora sp., and Queensland blue gum (*Eucalyptus tereticornis*). Other tree species included Slash pine (*Pinus elliottii*), Cadaghi (*Blakella torelliana*), and Umbrella tree (*Schefflera actinophylla*). A mid story of Early-flowing black wattle (*Acacia leiocalyx*) and Zig-zag wattle (*Acacia macradenia*) was present. This area accounts for ~0.9 ha, or ~3% of the total Project Area.

4.2.1.6 Unvegetated

Unvegetated area delineates the existing road, residential and commercial development, as well as cleared areas which are not functionally usable by threatened species to meet any life cycle requirements associated with foraging, dispersal, or breeding. This area accounts for ~17.9 ha, or ~66% of the total Project Area.

4.2.2 TEC Assessment

To determine the presence of the EPBC Act Endangered Threatened Ecological Community (TEC), Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland (herein referred to as Coastal Swamp Sclerophyll), targeted ecological survey was undertaken. Survey effort was concentrated in the Category B mapped patch of RE 12.3.6, *Melaleuca quinquenervia* +/- *Eucalyptus tereticornis*, *Lophostemon suaveolens*, *Corymbia intermedia* open forest on coastal alluvial plains, which is analogous to the TEC.

The potential Coastal Swamp Sclerophyll TEC patch is located in the northeast of the Project area situated between Old Gympie Road and the Bruce Highway (see **Figure 2**). A patch of RE 12.3.6 intersects the proposed Development Footprint along Goodwin Road, where a proposed revision to the entrance alignment to the Dakabin

Waste Facility is planned. The potential TEC patch extends further north from Goodwin Road, through the centre of the mapped Category B vegetation.

A total of seven TEC assessments were undertaken across areas identified as potentially analogous to RE 12.3.6 (Error! Reference source not found.). This approach aimed to confirm the extent of any potential TEC patches and determine whether they extended to the edges of the remnant vegetation, potentially intersecting with the Disturbance Footprint. Vegetation within the Category B patch was found to meet the TEC criteria and is therefore considered *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland*. However, the vegetation patch opposite Goodwin Road was heavily disturbed by exotic species and, as such, did not meet the TEC criteria for Coastal Swamp Sclerophyll Forest as outlined in the Conservation Advice (DAWE, 2021a). As a result, TEC habitat does not intersect with the Project Area and therefore was not assessed for impact.

The assessment focused on areas with suitable landscape position, soil type, and hydrological conditions characteristic of this community. Surveys involved detailed floristic composition analysis, vegetation structure assessment, and comparison against the EPBC-listed community description and condition thresholds. Particular attention was given to the presence of diagnostic canopy species such as Swamp messmate (*Eucalyptus robusta*), Broad-leaved paperbark (*Melaleuca quinquenervia*), and associated wetland understorey species such as sedges and rushes. This effort aimed to verify the occurrence, extent, and condition of any remnant or regenerating patches potentially consistent with the listed TEC.

Table 6: Summary table of TEC assessment results

TEC Site	Assessment	TEC Status	Justification
1		TEC present	Criteria met
2		TEC absent	<i>Imperata cylindrica</i> absent
3		TEC absent	<i>Imperata cylindrica</i> and tall sedges absent
4		TEC present	Criteria met
5		TEC present	Criteria met
6		TEC absent	<i>Imperata cylindrica</i> and tall sedges absent
7		TEC absent	<i>Imperata cylindrica</i> and tall sedges absent
8		TEC present	Criteria met

Complete results of TEC assessment, including assessment against condition criteria, are presented in **Attachment 5**.

4.2.3 Weeds of National Significance and other invasive species

During the survey 39 invasive flora species were recorded within the impact area. These invasive species are recorded in **Attachment 6** of this report. Of the 39 species recorded three species are classified as WoNS including:

- Groundsel bush (*Baccharis halimifolia*)
- Lantana (*Lantana camara*)
- Cat's claw creeper (*Dolichandra unguis-cati*).

The location of WoNS is represented in **Figure 5**. In addition to the WoNS above eight species were categorised as Category 3 species under the *Biosecurity Act 2014 (BC Act)*. Category 3 species, under the BC Act as species

that a person must not release into the environment, give away or sell as a plant or something infested with its seeds. These species include:

- Broad-leaved pepper tree (*Schinus terebinthifolius*)
- Cat's claw creeper (*Dolichandra unguis-cati*)
- Chinese celtis (*Celtis sinensis*)
- Groundsel bush (*Baccharis halimifolia*)
- Lantana (*Lantana camara*)
- Creeping lantana (*Lantana montevidensis*)
- Singapore daisy (*Sphagneticola trilobata*)
- Yellow bells (*Tecoma stans*).

The location of Restricted weeds is represented in **Figure 5**. The remaining exotic species are not classified as invasive under any legislation, are not native to Australia, or endemic to the region.

Summaries of the invasive species found at each location can be found in Error! Reference source not found..

Table 7: Weed points from Figure 3

Weed point	Common name	Botanical name	WoNS	Biosecurity Act designation
1	Chinese celtis	<i>Celtis sinensis</i>	no	Category 3
	Ochna	<i>Ochna serrulata</i>	n/a	n/a
	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3
	Zig zag wattle	<i>Acacia macradenia</i>	n/a	n/a
	Golden rain tree	<i>Koelreuteria elegans subsp. formosana</i>	n/a	n/a
2	Chinese celtis	<i>Celtis sinensis</i>	no	Category 3
	Guinea grass	<i>Megathyrsus maximus</i>	n/a	n/a
	Ochna	<i>Ochna serrulata</i>	n/a	n/a
	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3
	Zig zag wattle	<i>Acacia macradenia</i>	n/a	n/a
	Golden rain tree	<i>Koelreuteria elegans subsp. formosana</i>	n/a	n/a
3	Guinea grass	<i>Megathyrsus maximus</i>	n/a	n/a
4	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3
5	Chinese celtis	<i>Celtis sinensis</i>	no	Category 3
	Guinea grass	<i>Megathyrsus maximus</i>	n/a	n/a
	Ochna	<i>Ochna serrulata</i>	n/a	n/a
	Yellow bells	<i>Tecoma stans</i>	no	Category 3

Weed point	Common name	Botanical name	WoNS	Biosecurity Act designation
	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3
	Zig zag wattle	<i>Acacia macradenia</i>	n/a	n/a
	Golden rain tree	<i>Koelreuteria elegans subsp. formosana</i>	n/a	n/a
6	Climbing asparagus	<i>Asparagus plumosa</i>	n/a	n/a
7	Climbing asparagus	<i>Asparagus plumosa</i>	n/a	n/a
8	Groundsel bush	<i>Baccharis halimifolia</i>	no	Category 3
9	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3
10	Groundsel bush	<i>Baccharis halimifolia</i>	no	Category 3
11	Groundsel bush	<i>Baccharis halimifolia</i>	no	Category 3
12	Cadagi	<i>Corymbia torelliana</i>	n/a	n/a
13	Cat's claw creeper	<i>Dolichandra unguis-cati</i>	WoNS	Category 3

4.3 CMB Environmental Constraints

In accordance with the *Environmental Areas and Corridors Planning Scheme Policy* habitat trees; being native trees with hollows or trees greater the 800 mm DBH should be incorporated into development at design stage. Where this is not possible, installation of artificial nest boxes is required to ensure lost habitat values are at least temporarily counterbalanced. Deployment is required for each hollow lost or three nest boxes for each habitat tree removed, whichever is the greater. **Figure 6** identifies the presence of one habitat tree within the corridor. The contractor will be required to develop a Habitat Tree and Nest Box Management Plan to accommodate deployment of artificial boxes for all habitat trees removed.

The roadworks proposed are accepted development. While operational works undertaken by or on behalf of Council are not subject to a formal development application under this framework, Council ensures due diligence is performed to mitigate impacts on the environment, including street trees. In accordance with its duty of care and the overarching principles of the *Environmental Areas and Corridors Planning Scheme Policy* removal of trees within waterway buffer areas require replacement. However, Council has adopted a policy to replace all trees removed on account of its activities. Replacement at the following rates will be undertaken for the Old Gympie Road upgrade:

- Weed trees at a ratio of 1:1³
- Weed trees >800mm DBH 3:1
- Non-Juvenile Koala Habitat Trees / Koala Habitat Trees 6:1

Vegetation removal will be calculated at the time of detailed design and the offsets provided through Landscape Restoration work associated with the project.

³ Replanted : removed.

5. Impact avoidance and Mitigation measures

5.1 General

The proposed project design involves only minor encroachment into vegetated areas possibly containing threatened species habitat, with majority of project works utilising the existing road reserve and residential developments. Subsequently, impacts to threatened species determined to be either *high* or *known* to occur within the Project Area and immediate surrounds are largely avoided. The inclusion of green infrastructure design features into Project design will contribute to the long-term avoidance and mitigation of Project associated impacts to threatened species. Project operational stage impacts, however, will involve temporary indirect effects which equally require avoidance and mitigation. Given the typically slow time to completion of road upgrades, indirect impacts associated with noise, light and dust are likely to effect threatened species, in particular the Grey-headed flying fox.

5.1.1 Overarching mitigation measures

Recommended mitigation measures to minimise the impacts of the Proposed Development on identified values include, but are not limited to:

- Development and implementation of a Vegetation and Fauna Management Plan (VFMP) to outline relevant flora and fauna related requirements for undertaking the works.
- Development and implementation of a Construction Environmental Management Plan (CEMP) to outline relevant environmental requirements for undertaking the works.
- Development and implementation of an Erosion and Sediment Control Plan (ESCP), to prevent loss of dispersible materials to surrounding water features during construction and operation.
- Implementation of weed management and controls across the Site and reestablishment of native groundcover in line with an approved Rehabilitation Management Plan (RMP).
- Implementation of fauna exclusion fencing and fauna friendly design approaches such as fauna ingress poles.
- Utilising arborist (minimum Australian Qualification Framework Level 5) advice and supervision during works to ensure that trees identified for retention adjacent to works are suitably protected from damage.
- Clearing should be, at a minimum, undertaken in accordance with the requirements of Part 10 and 11 of the *Nature Conservation (Koala) Conservation Plan 2017*.
- Further assessment of animal breeding places will be undertaken (see **Figure 7**) and if present a SMP obtained. Alternatively, a precautionary / time / cost effective approach of assuming presence and securing a SMP may be considered. This is discussed in Section 5.3 below.
- Any potential animal habitat and / or breeding places shall be checked by a fauna spotter/catcher prior to clearing to assess animal breeding. Should evidence of animal breeding be identified either:
 - No clearing shall be undertaken of the animal breeding place until the breeding has ceased and the animal (and offspring) vacate the breeding place on their own volition, or
 - Activities are undertaken in accordance with an approved Species Management Program for tampering with an animal breeding place should development include clearing of animal breeding place.
- Minimising ground disturbance and implementing erosion and sediment controls.
- Utilise fauna friendly lighting and in-ground path markers to minimise light spill and disturbance for adjacent fauna habitats.

- Ensuring habitat connectivity for fauna through sensitive design measures including providing connectivity under elevated sections of pathway and ensuring fauna sensitive fencing design is incorporated into the design.

Recommended mitigation measures to minimise the impacts of the Project on identified threatened species include, but are not limited to:

- Engage fauna spotter-catcher to undertake through pre-clearance survey to avoid wildlife interactions where possible, and facilitate necessary wildlife interactions during vegetation clearing. Undertake pre-clearance surveys prior to (~24 hours before) clearing commencing and be present at the time of clearing. Reporting of all activities undertaken is required.
- Undertake staged vegetation clearing, with progressive disturbance to vegetation layers to encourage wildlife self-dispersal.
- Undertake vegetation clearing works at the most suitable time of day or night to avoid direct impact to sensitive species i.e. where flying-fox is identified within the Disturbance Footprint, vegetation clearing should be undertaken at night when the species is foraging.
- Removal of trees within the road reserve especially Koala Habitat and Potential Flying-fox forage species should not be undertaken at once, rather is should staged and be undertaken sequentially with removal and compensatory planning undertaken well in advance (several month) of work stages with compensatory planting to occur immediately following removals.
- Time vegetation clearing to avoid peak breeding seasons:
 - Koalas: Breeding (Sept–Feb); avoid clearing during this time if possible.
 - Flying-foxes: Avoid disturbance during maternity season (Oct–Jan).
 - Glossy black-cockatoos: Nesting season varies; avoid clearing known hollow-bearing trees year-round.
- Maintain vegetation buffers around:
 - Flying-fox camps (ideally ≥300 m for significant disturbance).
 - Active nest trees or breeding places.

5.2 Flying-fox camp disturbance

A review of the National Flying-fox monitoring viewer website indicates the presence of a known Flying-fox roosting site within the 300m of the proposed road upgrades. It is important that mitigation measures are incorporated into the proposed design to ensure the safe management of Grey-headed flying-fox during construction phase and throughout the operational phase. This camp is not a Nationally Important Camp with respect to the statutory documentation⁴.

The numbers of grey-headed flying fox recorded roosting at Ross Reserve during surveys in July 2025 and previous surveys undertaken at this site as part of the National Flying-fox Management Program data set⁵ and indeed CMB camp data⁶ are well below this threshold and, as such, the Ross Reserve camp site is not considered nationally important. The outer bounds of the camp have been mapped by CMB and are represented by **Inset 2**.

⁴ The *National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus* identifies Nationally important camps (NICs) are those that have contained ≥ 10,000 Grey-headed Flying-foxes in more than one year in the last 10 years, or have been occupied by more than 2,500 Grey-headed Flying-foxes permanently or seasonally every year for the last 10 years.

⁵ <https://data.csiro.au/collection/csiro:64370>

⁶ <https://www.moretonbay.qld.gov.au/Services/Environment/Moreton-Bay-Wildlife/Local-Wildlife/Flying-Foxes/Observations>

The existing camp occupies a highly urban setting and had habituated to diurnal and nocturnal anthropogenic activities with encamped flying fox moving freely within the camp area in response to preference and stochastic events.

The proposed road alignment has been designed to align with existing noise and light disturbances. Direct disturbance to the roosting site will be avoided; however, potential secondary impacts on Grey-headed flying-fox could include behavioural, physiological, which may arise in response to construction phase nuisance factors, such as noise, light and dust.



Inset 2: Ross Reserve, Kallangur camp, left; and Camp Area and works notification buffer (amber shade), right

A Site-specific Flying-Fox Management Plan will be prepared for construction, as well as ongoing maintenance of the road. Consideration should be given to avoiding major activities at flying-fox roosts during breeding and rearing seasons and consider night works outside peak foraging times. This management plan should consider monitoring during construction until it is considered they have limited impact to camp behaviour. Detailed road design should consider the orientation of lighting largely faces away from the camp.

Flying-fox camps are naturally loud accounting for ability for the species to habituate to relatively high anthropogenic noise levels in urban habitats (DCCEEW, 2021). It is understood the flying-fox camp has a high level of habituation related to the urban environment of the locality. the flying-foxes have habituated to existing noise from the trainline and main road networks surrounding the area as well as occasional Motorcar race days at Lakeside Park which significantly elevate disturbance for a short period of time. Due to the highly urbanised environment, the flying-foxes have habituated to a relatively high level of human disturbance.

The incorporation of vegetation rehabilitation using appropriate landscaping, particularly locally endemic flora species that are fauna feed species or those that flower prolifically, will offer foraging opportunities for native fauna residing within the immediate locality. Any vegetation clearing be required for the Proposed Development is to be undertaken in accordance with Schedule 11 of the *Planning Regulation 2017*.

Species Management Programs (under the NC Act) are not applicable to Flying-fox camps (genus *Pteropus*). Disturbance of a flying-fox roost (genus *Pteropus*) is dealt with separately under section 88C of the Act and section 61 of the *Nature Conservation (Animal) Regulation 2020*. Section 61 of the Animal Regulation deals with actions resulting in destroying, driving away, attempting to drive away or disturb a flying-fox roost. Although such actions are not proposed by the work, works could disturb the Ross Reserve camp. A flying fox camp management plan will be developed for the project and DETSI must be contacted directly to discuss the proposed activity and management measure proposed.

5.3 Species Management Program

5.3.1 High Risk Fauna

Although potential habitat for Platypus, Tusked frog and Swamp crayfish has been identified, their presence is unknown as sampling for these species did not occur at optimal seasonal assessment timeframes. The exception here is the spotlighting assessment work undertaken for Platypus activity within Freshwater Creek. However, searches for potential burrows (shelter and breeding sites) was not.

In Queensland, the conservation of nature is achieved through the protection of wildlife and its habitat, and the ecological sustainability of any use of protected wildlife. Protected wildlife cannot be taken, kept or used unless authorised. Construction work would be considered 'taken' under the definition. A Species Management Program (SMP) authorises activities if it will impact on breeding places of protected animals that are classified as extinct in the wild, critically endangered, endangered, vulnerable, near threatened, special least concern, colonial breeder or least concern. An SMP is project and activity specific statutory instrument (sitting outside of the Planning Act) issued under the NC Act. SMPs if approved by the Department of Environment, Technology, Science and Innovation (DETSI) are usually current for a period of work and endorse pre-approved impacts to animal breeding places so long as activities are guided by an Impact Management Plan.

An SMP is only required where an animal breeding place has been identified and activities are required to tamper with the breeding place in order to complete the scope of works. Animal breeding places include obvious structures such as bird nests and tree hollows, as well as more cryptic places such as amphibian or reptile habitat where breeding takes place.

The purpose of an SMP is to:

1. Assess the threats to native animal breeding places resulting from a planned activity
2. Incorporate management actions that will avoid or minimise both the immediate and the long term impact of removing or altering an animal breeding place
3. Set monitoring and reporting requirements that demonstrate the management actions in the SMP are effectively implemented and produce the intended results.

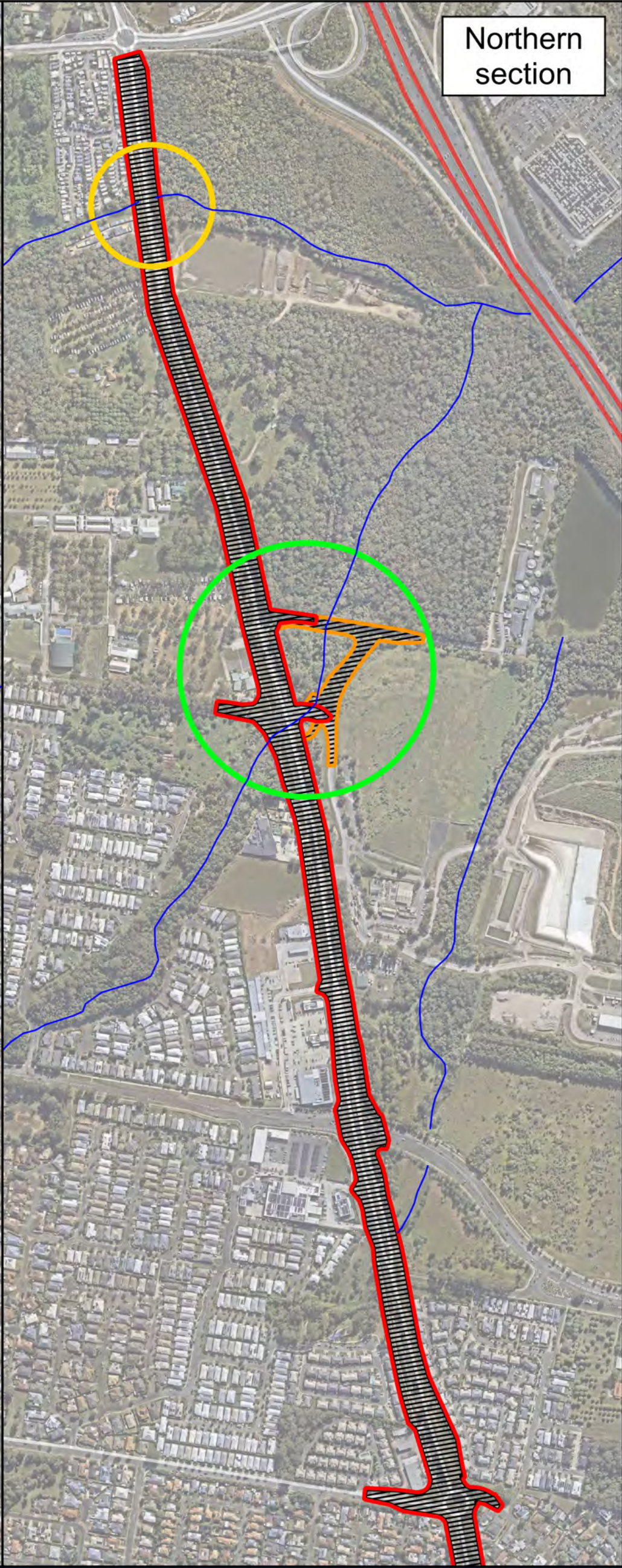
In relation to item '1', the presence of Tusked frog and Swamp crayfish are unknown at this stage. On account of these species occupying very small home ranges, if observed it would be assumed that breeding places were present. No searches for Platypus burrows have occurred within the likely habitats of the Project Area (refer **Figure 7**). Additional seasonally appropriate assessment to established DETSI survey guidelines is required to satisfy 1.

However, it may be pertinent and both time and / or cost effective, given their moderate likelihood of presence, and their crepuscular and cryptic behaviour causing uncertainty around identifying their presence (particularly Swamp crayfish), to adopt a precautionary approach and assume their presence, develop impact management strategies accordingly and obtain an endorsed High Risk SMP from DETSI. SMPs are valid for a period of three years from the date of DETSI endorsement.

5.3.2 Low Risk Fauna

A Low Risk SMP is used for impacts to the breeding places of Least Concern fauna that are not colonial breeders. With respect to the upgrading of Old Gympie Road, this would generally include hollow dependent possums (Common brushtail possum (*Trichosurus vulpecula*) and Common ringtail possum (*Pseudocheirus peregrinus*)) and nesting birds. It would be pertinent to either 1) obtain a stand-alone Low Risk SMP for proposed works or 2) incorporate Least Concern animal breeding place impacts into the High Risk SMP at the time of the application. SMPs are valid for a period of three years from the date of DETSI endorsement.

Existing CMB Low Risk SMPs are not relevant as they endorse Council's general maintenance and operational activities.



Anzac Avenue to Boundary Road

Figure 7 - Key Areas Identified for Further Ecological Planning

28 South Project Ref: 2025 - 093

Source: C:\Users\Mitchell\Dropbox\Projects\2025\2025-093 (Anzac Avenue to Boundary Road)\Data\GIS\Anzac Avenue to Boundary Road (2025-093) (GDA2020).qgz

The spatial data referenced within this map has been obtained from a variety of verified and licensed sources, as follows: Relevant local government data portals, DoR's QSpatial data catalogue, 28 South Environmental, clients and associates. Aerial imagery is sourced from NearMap, Google Satellite and the DoR repositories QImagery and QGlobe.

Links to data sources can be provided upon request.

28°S
ENVIRONMENTAL

Legend

- Project Area
- Entrance upgrade to Goodwin Road
- Disturbance Footprint
- Rail Network
- Motorway
- Road
- Watercourse

Areas for Further Ecological Planning

- Platypus
- Swamp crayfish, Tusked Frog & Platypus
- Additional consideration for green infrastructure

Issue Date	Dwg No.	Author
14-11-2025		FK/MO
Approved	Revision Note	
BS		

GDA2020 MGA 56
1:7,000

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5.4 Green Infrastructure

5.4.1 Scope

To facilitate fauna movement across the Project Area, and mitigate development effects, CMB is proposing to install green infrastructure at a number of locations on Old Gympie Rd and nearby Ann Street (to the immediate west of Old Gympie Rd).

An evaluation of the siting/efficacy of proposed green infrastructure to facilitate movement of fauna across the Project Area was undertaken at the following locations:

- Road crossing at Ann Street, north of Penson Park
- Road crossing at Saltwater Creek on Old Gympie Rd, to the south of Boundary Rd, and
- Road crossing at Freshwater Creek on Old Gympie Rd.

Limitations and recommended improvements to green infrastructure at these crossing points are discussed below.

In addition to the above infrastructure, driver awareness cues such as static Koala awareness signage variable, road stencilling, variable Safety Advisory Monitoring signage (speed alerts) and exclusion fencing along the edge of the road reserve (to guide koala and other fauna to designated crossing points), will also be installed.

Log bridges / Log gantry's are a recent and proven effective innovation to convey koala and other scansorial / arboreal fauna across roads (see **Inset 3**) especially in situation where elevation and terrain do not present opportunities for dedicated underpasses to be constructed, e.g. Boundary Road.

In addition to the below mentioned proposed Green Infrastructure locations, green infrastructure deployment should be considered for the waterway crossing (unnamed Saltwater Creek Tributary) of Old Gympie Road / Goodwin Road (**Figure 7**).

Jump-outs and climb-outs provide escape routes for wildlife trapped within road reserves and should be adopted



Inset 3: Example of a log bridge over Boundary Road, White's Hill Reserve⁷

⁷ Sourced from <https://www.brisbane.qld.gov.au/environment-and-water/wildlife-and-conservation/wildlife-movement-solutions>

5.4.2 Green infrastructure at Ann Street

Green infrastructure proposed for Ann Street (including fauna exclusion fencing, a box rope bridge and escape poles) is unlikely to facilitate the passage/movement of Koalas, with research showing koalas are unlikely to use rope bridge crossings (see Goldingay and Taylor, 2016). To better facilitate koala movement north-south across Ann Street, a climbing ledge should be installed inside the existing culvert at this crossing point to facilitate koala movement. There are no dedicated 'dry culvert cells' at this location (all convey water) and ledges are preferable to log rails in this instance as operationally, constructed log climbing rails snare flood debris reducing their effectiveness and become maintenance liabilities. The ledges will have utility to other scansorial / arboreal fauna.

It is recommended that this ledge is installed on the west side of the culvert crossing under Ann Street to facilitate koala movement between trees growing to the immediate south and north. Additional plantings of LIKTs linking koala habitat trees south of Ann Street (within Penson Reserve) would also be helpful in this regard.

5.4.3 Green infrastructure at Freshwater Creek crossing

The installation of exclusion fencing, escape poles, rope bridge and climbing rails if a sufficiently high up the bank location can be found or preferably (on account of the operational maintenance aspects identified in Section 5.4.2, above) ledges on either side of Freshwater Creek where it intersects Old Gympie Road. Such structures are likely to facilitate the safe passage of arboreal fauna.

Given the significance of the Freshwater Creek Corridor log bridge / log gantry may be considered at this location in addition to the above as they would have utility for other scansorial / arboreal fauna.

5.4.4 Green infrastructure at Saltwater Creek crossing

Green infrastructure proposed to facilitate fauna movement in the north of the Project Area (including fauna fencing and escape poles, a box rope bridge, and 'dry culvert crossing' under Old Gympie Rd) may have limited amenity for koala, given (1) koalas are unlikely to use rope bridges (see Goldingay and Taylor, 2016) and (2) the likely persistence of surface water within the culvert crossing at Saltwater Creek (with surface water currently persisting well into the dry season). Log bridges will have utility to other scansorial / arboreal fauna.

To better facilitate koala movement at this crossing point, log bridges should be installed inside the culvert under this section of road on both the northern and southern side of Saltwater Creek. It is also recommended that additional koala habitat trees are planted along Saltwater Creek on the west (upstream) side of Old Gympie Rd to facilitate movement of koalas to/from areas of remnant vegetation east and west of the Project Area.

6. Significant Impact Assessment

6.1 Glossy black-cockatoo (*Calyptorhynchus lathami lathami*)

The Glossy black-cockatoo (south-eastern) is listed as Vulnerable under the EPBC Act.

6.1.1 Species ecology

6.1.1.1 Distribution and Habitat Requirements

The Glossy black-cockatoo (south-eastern) occurs in south-eastern Queensland, eastern NSW, ACT and eastern Victoria. The species' distribution extends from Mitchell in Queensland, through the eastern third of NSW and into East Gippsland in Victoria. Preferred habitat is continuous along the forested parts of the Great Dividing Range, but becomes increasingly fragmented and more sparsely distributed in the western extent of the subspecies distribution (Department of Climate Change, Energy, the Environment and Water, 2022). The subspecies movement patterns are not well understood, but it has been suggested that the subspecies is a seasonal visitor to south-east Queensland, likely as a response to changing resource availability and breeding requirements (Department of Climate Change, Energy, the Environment and Water, 2022).

6.1.1.2 Foraging Habitat

The subspecies forages almost exclusively on the seeds of nine species of *Allocasuarina* and *Casuarina*, with foraging tree species preference dependent on the region. In south-east Queensland, the subspecies shows preference to Black-she-oak (*Allocasuarina littoralis*) and Rose she-oak (*Allocasuarina torulosa*). Where suitable foraging tree species occur, the subspecies shows strong fidelity to individual feed trees, preferring to return to the same specific tree in an area even where the surrounding habitat supports an abundance of suitable feed trees. This fidelity may be explained by the feeding reward offered from specific trees due to the preferred cone size, seed weight and nutritional content on offer (Department of Climate Change, Energy, the Environment and Water, 2022). The subspecies may spend up to 88% of the day foraging, highlighting the importance of foraging habitat, and identifying that the rate of intake is likely to be critical to the subspecies survival (Department of Climate Change, Energy, the Environment and Water, 2022).

6.1.1.3 Breeding Habitat

The subspecies is a hollow nester, utilising large hollows in both living and dead eucalypts to breed and rear young (Department of Climate Change, Energy, the Environment and Water, 2022). The subspecies utilises a number of eucalypt species for breeding including *Eucalyptus crebra*, *Eucalyptus nubila*, *Eucalyptus blakelyi* and *Eucalyptus camaldulensis*, but a higher dependence is placed on the hollow characteristics on offer, rather than the species of potential breeding tree. Glossy black-cockatoo (south-eastern) breeding habitat includes living and dead trees containing hollows with the following traits:

- >8 metres above ground.
- Located in branches >30 cm in diameter.
- Branch or stem no more than 45° from vertical.
- Minimum entrance diameter of >15 cm.

6.1.2 Species habitat within the Project Area⁸

Glossy black-cockatoo was not detected during ecological field surveys, nor were traces of species evidence such as chewed orts. Given the species is highly mobile, following the availability of foraging resources i.e. seeds belonging to *Allocasuarina* and *Casuarina* tree species, it is considered unlikely to chance a direct observation

⁸ refer also Attachment 4

encounter with the species across four survey days. Despite the lack of species evidence, suitable habitat is mapped within the Project Area. Suitable habitat occurs as a total of 0.1 ha in the northeastern corner of the Project Area, however, is part of a slightly larger patch, although still less than 1 ha in total. The habitat is mapped as a regenerating disturbed ecosystem, where Black she-oak (*Allocasuarina littoralis*) has become locally dominant in a small roadside patch. The REDD (version 13) does not describe a vegetation community on land zone 5 (Tertiary-early Quaternary loamy and sandy plains and plateaus) dominated by Black she-oak (*Allocasuarina littoralis*), and the patch is too small (<1 ha) to delineate an independent RE as per the Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland version 7 (Nelder et al., 2024). The habitat patch is therefore considered to be a heavily disturbed regrowth version of RE 12.5.3, which is ground-truthed as the dominant RE in the broader vegetation patch east of Old Gympie Road.

Although the quantity of potential species habitat is relatively low within the Disturbance Footprint, Black she-oak (*Allocasuarina littoralis*) was observed along other vegetated edges within the local surrounds, particularly in the northeastern corner between Goodwin Road and Boundary Road. Further, *Casuarina glauca* was observed as a sparse canopy and subcanopy species throughout the same broader vegetated area made up of REs 12.5.3 and 12.3.6. The broader vegetation patch would therefore reasonably be considered to provide valuable foraging habitat for the species, especially given the species transient movement pattern along the east coast between Qld and NSW.

6.1.3 Important Population

Important populations are not identified specifically for Glossy black-cockatoo (south-eastern). As such the generic definition for important populations in the *Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (Department of the Environment, 2013) has been applied. This document defines an 'important population' as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- Key source populations either for breeding or dispersal.
- Populations that are necessary for maintain genetic diversity.
- Populations that are near the limit of the species range.

Neither actual presence of Glossy black-cockatoo, nor evidence of the species visitation to the area, have been identified on site. However, the species very likely passes through or over the general area between suitable habitat patches along the east coast of Australia during seasonal movements in search of foraging resources. Although, the presence of Black she-oak (*Allocasuarina littoralis*), a preferred feed tree, is indicative of suitable foraging habitat to the species, suitable breeding habitat was not identified in the area.

Given the subspecies occurrence is highly dependent on resource availability and the Disturbance Footprint support 0.1 ha of foraging habitat, it is unlikely that it would support a permanent or important population of the subspecies.

6.1.4 Habitat Critical to the Survival of the Species

As defined in the subspecies' Conservation Advice (Department of Climate Change, Energy, the Environment and Water, 2022), habitat critical to the survival of the subspecies includes areas of foraging and breeding habitat that include:

- **Foraging habitat:** *Allocasuarina* or *Casuarina* species (namely Black she-oak (*Allocasuarina littoralis*) or Rose she-oak (*Allocasuarina torulosa*)) based on the subspecies preference for these species in south-east Queensland and northern NSW).
- **Breeding habitat:** Areas supporting *Eucalyptus* species that provide hollows with suitable characteristics including:
 - >8 m above the ground.

- located in branches >30 cm diameter.
- branch or stem no more than 45 degrees from vertical.
- minimum entrance diameter of 15 cm.

Though not recorded during surveys, the Glossy black-cockatoo has previously been recorded within the Project Area and wider surrounds: with a single ALA record from Old Gympie Rd from the 1990s and more recent (post-2010) records from Narangba, North Lakes and Griffin to the near north and east of Dakabin. Suitable foraging habitat (comprising stands of female Black she-oak (*Allocasuarina littoralis*)) is also present in the north of the Project Area; however, the Project Area and immediate surrounds do not appear to contain suitable breeding habitat for the species. Given the paucity of records within the wider surrounds, the species is likely to utilise habitat within and adjacent the Project Area intermittently/opportunistically.

Given the paucity of Glossy black-cockatoo records within the Project Area surrounds and the species' ability access foraging resources elsewhere within the wider landscape, it is doubtful whether feed trees within and adjacent the Project Area would be utilised by the subspecies.

6.1.5 Threats

The Project Area is situated amongst a highly urbanised environment characterised by residential and commercial developments. Consequently, Old Gympie Road experiences continuous road traffic, and therefore remaining habitat in the area is subjected to frequent noise and light pollution. Threats to the Glossy black-cockatoo (south-eastern) include (Department of Climate Change, Energy, the Environment and Water, 2022):

- Inappropriate fire regimes - Wildfire is a major on-going threat for the Glossy black-cockatoo (south-eastern), which could affect both their habitats and the birds directly.
- Clearing of native vegetation / timber harvesting - Historical and current land clearance (e.g. for agriculture and timber harvesting) has been the main threat causing the decline of the subspecies.
- Habitat fragmentation - Land clearing causes patches of suitable habitat for the subspecies to become increasingly fragmented, threatening the genetic diversity of subpopulations.
- Grazing - Impacts from grazing species such as domestic livestock (cattle, sheep and goats) and invasive herbivores (primarily rabbits) threatens the extent and productivity of foraging habitat for the subspecies and can impede regeneration of native vegetation including *Casuarina* and *Allocasuarina*, particularly after fire.
- Invasive weeds - Invasive weeds have the ability to change the floristic and structural characteristics of habitat, thereby changing resource availability.
- Increased likelihood of extreme weather events: Temperature increase as a result of climate change results in the increased likelihood and frequency of extreme weather events (wildfire, drought, heatwaves), impacting the subspecies and its habitat.
- Temporal or spatial shifts of resource availability as a result of climate change: Given the subspecies specialised diet, temporal or spatial shifts in resource availability may impact movement patterns, nutrient intake and energy investment, causing adverse effects on the subspecies population.
- Competition for nest hollows - A wide range of Australian fauna utilise tree hollows for nesting, roosting, breeding and shelter. Reduction of hollow-bearing trees as a result of land clearance increases the density of hollow-dependent species in areas with remaining tree hollows. Species which are more aggressive including galah (*Eolophus roseicapillus*), little corella (*Cacatua sanguinea*) and sulphur-crested cockatoo (*Cacatua galerita*), may displace Glossy black-cockatoo (south-eastern) from nesting hollows.
- Psittacine Beak and Feather Disease (PBFD - While the impact of PBFD on Glossy black-cockatoo (south-eastern) is low, increased hollow competition with other species may increase the transmission rate of the disease to the subspecies.
- Predation - Nest predation by common brushtail possum (*Trichosurus vulpecula*) is a known threat to eggs and chicks on Kangaroo Island and may impact the south-eastern subspecies of Glossy black-cockatoo also.

6.1.6 Assessment against SIA criteria

Following field verification of suitable foraging habitat, the subspecies is considered to have a *high* likelihood of occurring within the Project Area, and consequently has further been assessed for significant impact against Significant Impact Assessment Guidelines (Error! Reference source not found.). The Project will result in the removal of up to 0.1 ha of foraging habitat.

Table 8: Significant Impact Assessment – Glossy black-cockatoo (South-eastern)

Is there a real chance or possibility that the Project will:	Assessment of significance
Lead to a long-term decrease in the size of an important population of a species?	Unlikely The subspecies is conspicuous and easily identified by trained ecologists, and was not detected on site over four survey days and four ecologists. Further, evidence of species occupancy i.e. chewed ors, was not detected and recent spatial records do not occur within the vegetation patches contiguous with the Project Area. However, the Glossy black-cockatoo (south-eastern) is transient and its occurrence is highly dependent on resource availability. The subspecies may utilise foraging resources within the Project Area intermittently, depending on movement patterns and local resource availability. Given no breeding habitat is present and ~0.1 ha of foraging resources are available, it is not considered plausible that habitat within the Project Area supports an important population of Glossy black-cockatoo (south-eastern). Any potential individuals which may visit the Project Area are therefore not considered to be part of an important population given it is unlikely to be a key source population or be necessary for the maintenance of genetic diversity. In addition, the Project Area does not exist at the limit of the subspecies distribution. An important population of Glossy black-cockatoo (south-eastern) has therefore been concluded to not occur within the Project Area and immediate surrounds. Direct impacts to the subspecies habitat include a maximum of 0.1 ha of foraging habitat. Given the absence of an important population, the proposed action to remove 0.1 ha of habitat cannot lead to a long-term decrease in the size of an important population. Further, it is unlikely that the Project would result in a measurable change to how any individuals or any local populations utilise the landscape.
Reduce the area of occupancy of an important population?	Unlikely The area of occupancy for the species is estimated to be 40,000 km² (Garnett and Baker, 2020). Direct impacts to the species habitat include a narrow strip of roadside vegetation where <i>Allocasuarina littoralis</i> has become opportunistically dominant in a disturbed environment, equating to ~0.1 ha of foraging and dispersal habitat. Habitat is largely mapped based on the presence of preferred foraging tree species <i>Allocasuarina littoralis</i> and the Project Area being situated within species distribution and known seasonal movement pathways along the southeast coast of Queensland (DCCEEW, 2022). Occupancy by the subspecies, if to occur, is therefore likely to be short-lived and extremely limited given the small quantity of habitat available (~0.1 ha). Consequently, it is unreasonable to determine a reduction in the area of occupancy. Further, as discussed above, an important population of Glossy black-cockatoo (south-eastern) has been concluded to not occur within the Project Area. Given the absence of an important population, the proposed action to remove ~0.1 ha of foraging and dispersal habitat cannot reduce the area of occupancy of an important population.
Fragment an existing important population into two or more populations?	Unlikely Glossy black-cockatoo (south-eastern) is susceptible to fragmentation, which may lead to subpopulations becoming genetically isolated, increasing the rate of decline and increasing the risk of extinction (DCCEEW, 2022). The proposed action to expand the existing Old Gympie Road will result in the potential clearing of up to 0.1 ha of foraging and dispersal habitat, which is connected to a larger patch of ~50 ha of marginally suitable foraging and dispersal habitat. Vegetation

Is there a real chance or possibility that the Project will:	Assessment of significance
	removal will take place along the existing roadside edge, and as such will not result in habitat patch fragmentation, rather a minor reduction to the western edge of the existing remnant vegetation patch between Old Gympie Road and Bruce Highway (M1). As discussed above, an important population of Glossy black-cockatoo (south-eastern) has been concluded to not occur within the Project Area. Given the nature of the proposed action, it is determined that broader habitat patch fragmentation will not occur given only a thin, narrow stretch of vegetation will be removed. The connected vegetation to the east of Old Gympie Road, will remain intact and continue to provide ~50 ha of potential foraging and dispersal habitat.
Adversely affect habitat critical to the survival of a species?	Unlikely Foraging and dispersal habitat is mapped as ~0.1 ha in the northeast of the project area, along the eastern edge of Old Gympie Road. The habitat itself is a narrow stretch of disturbed roadside vegetation, which has likely become opportunistically dominated by <i>Allocasuarina littoralis</i>. The habitat is part of a broader remnant vegetation patch analogous to RE 12.5.3. As discussed in Section 6.3.4, foraging habitat within the Project Area meets the definition of habitat critical to the survival of the species as per the subspecies conservation advice (DCCEEW, 2022). Breeding habitat, however, does not occur. The proposed action will therefore result in the removal of ~0.1 ha of foraging habitat, which is critical habitat. Given the relatively small amount of habitat, and the ecological context of this habitat, i.e. a narrow roadside edge connected to ~50 ha of intact remnant vegetation analogous to RE 12.5.3, is it unreasonable to claim that the subspecies will be <i>adversely</i> affected. Although habitat will be removed, this is exceptionally small, and it remains uncertain whether the subspecies will realistically utilise the ~50 ha habitat patch between Old Gympie Rd and the Bruce Highway. The vegetation patch in discussion is bordered by continuous road traffic to the east and west and therefore is subjected to frequent noise and light pollution. An impact is therefore considered unlikely to occur.
Disrupt the breeding cycle of an important population?	Unlikely As discussed above, an important population of Glossy black-cockatoo (south-eastern) and suitable breeding habitat has been concluded to not occur within the Project Area. As such, the breeding cycle of an important population cannot be affected or disturbed. If a potential Glossy black-cockatoo nest is located, it will be avoided wherever possible. If tampering with the nest is unavoidable and it appears active, this will only be permitted in accordance with an approved high risk Species Management Program as per the <i>Nature Conservation (Animals) Regulation 2020</i>.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	Unlikely No individual or population of Glossy back-cockatoo was detected during site surveys. Despite the lack of species evidence, suitable habitat is mapped within the Project Area. Suitable habitat occurs as a total of 0.1 ha in the northeastern corner of the Project Area, however, is part of a slightly larger patch, although still less than 1 ha in total. The habitat is mapped as a regenerating disturbed ecosystem, where <i>Allocasuarina littoralis</i> has become locally dominant in a small roadside patch. The broader vegetation patch transitions into approximately 50 ha of remnant vegetation belonging to two distinct REs: 12.3.6 and 12.5.3. <i>Allocasuarina littoralis</i> and <i>Casuarina glauca</i> are occasional subcanopy species within these vegetation communities, and as such do not hold the same habitat value as the disturbed vegetation patch supporting dominant <i>A. littoralis</i>. Although up to 0.1 ha of foraging and dispersal habitat will be removed, the scale of this action being relatively small means that it is unlikely to result in the decline of the subspecies population. Further, indirect impacts on habitat within the ~50 ha of adjacent remnant vegetation will be somewhat negligible to the subspecies given it is of

Is there a real chance or possibility that the Project will:	Assessment of significance
	very marginal habitat value, containing sparse foraging tree resources and lacking breeding habitat. Despite the potential for very minor local impacts, these are not of the quantum or severity that would result in overall species decline or decline of any local population.
Result in invasive species that are harmful to a Vulnerable species becoming established in the Vulnerable species' habitat?	Unlikely Impacts from introduced species to Glossy black-cockatoo (south-eastern) include the reduction of extent and productivity of foraging habitat from invasive herbivores (primarily rabbits) through grazing. Impacts from invasive herbivores can also impede regeneration of native vegetation including <i>Casuarina</i> and <i>Allocasuarina</i>, after fire. In addition, invasive weeds have the ability to change the floristic and structural characteristics of habitat, thereby changing resource availability. It is acknowledged in the Conservation Advice (Department of Climate Change, Energy, the Environment and Water, 2022) that weeds and invasive herbivores pose only a minor threat to the subspecies. Rabbits were not detected during ecological field survey effort, nor are they expected to occur with the adjacent ~50 ha vegetation patch which is largely characterised by swamp and Eucalyptus woodland. Further, the roadside edge vegetation which is situated within the Disturbance Footprint is already heavily weed infested and disturbed. Consequently, mitigation and management actions will be employed to prevent and manage further weed encroachment into the existing connected remnant vegetation.
Introduce disease that may cause the species to decline?	Unlikely Psittacine beak and feather disease (PBFD) is transmitted between parrots (and their allies) and is often fatal if contracted. The conservation advice states that PBFD is considered to be a low level threat to south-eastern glossy black cockatoo in consideration of other threatening processes. This is largely a product of competition for hollow nest space, which would facilitate a disease transition pathway between other cockatoo species which are more commonly affected by the disease. The project will not remove any nest spaces or potential breeding habitat. The removal of 0.1 ha of foraging and dispersal habitat would therefore not increase hollow competition and potential disease transmission. While PBFD is a potential threat to the subspecies, the Project will follow appropriate biosecurity protocols and there are no mechanisms that would facilitate the exacerbation of this disease within a local population of the subspecies.
Interfere substantially with the recovery of the species?	Unlikely The subspecies' Conservation Advice describes conservation and management priorities for the subspecies relating to the potential impact of threats discussed above. Key priorities relevant to the Project include: ▪ Protect, restore and enhance the quality of known suitable habitat and increase the extent of habitat (both breeding and foraging) for Glossy black-cockatoo (south-eastern) across the subspecies' range (both current and future) to maintain viability in response to threats, including climate change. ▪ Protect large old trees and smaller trees that contain large hollows, including those affected by fires. Ensure the recruitment of large old trees by retaining medium-sized trees, facilitating regeneration, and undertaking replanting. ▪ Maintain connectivity within and between regions. ▪ Promote and encourage revegetation programs or groups to include a <i>Allocasuarina/Casuarina</i> mix in their planting, where appropriate. The Project will remove up to 0.1 ha of foraging and dispersal habitat from an existing patch of remnant vegetation (~50 ha) between Old Gympie Rd and the Bruce Highway. The removal of this habitat would not impact the functional connectivity of the

Is there a real chance or possibility that the Project will:	Assessment of significance
	surrounding habitat for the species and would not result in habitat fragmentation. Noting this, any population present in the region is expected to continue to persist and the quantum and quality of habitat which would be removed as a result of the Project would not be sufficient to substantially interfere with the species' recovery.

6.2 Koala (*Phascolarctos cinereus*)

The Koala is listed as Endangered under the EPBC Act.

6.2.1 Species ecology

6.2.1.1 Distribution and Habitat Requirements

Koala (*Phascolarctos cinereus*) has a fragmented distribution across eastern Australia, however, is considered to occur where suitable eucalypt-dominated forest and woodland habitats remain. The species' distribution is not continuous within its range and while historically more widespread, Koala distribution has contracted due to habitat loss, land-use change, disease, and climate-related pressures. These processes are exacerbated in southeast Queensland where urban development pressures continue to further fragment and remove remaining habitat patches.

6.2.1.2 Foraging and Breeding Habitat

Koala occurs in coastal and inland locations and inhabits eucalypt forests and woodlands, which wholistically support all essential habitat requirements. The Koala's diet is defined by the availability and palatability of a limited variety of *Eucalyptus*, *Corymbia* and *Angophora* species in a given region. The species that are regularly browsed by Koala in a particular bioregion and could be considered a substantial portion of the Koala's diet are referred to as locally important Koala trees (LIKTs) (Youngentob *et al.*, 2021). Within the South East Queensland bioregion, 48 Eucalyptus species have been identified as LIKTs. An additional 17 species are classified as ancillary habitat trees, which Koala use as shelter trees and are believed to offer preferable thermoregulating properties due to tree characteristics such as bark type (DAWE, 2022b; Youngentob *et al.*, 2021). Although Koala will feed in smaller preferred browse species at night, they prefer larger and more shady trees as shelter/refuge during the day.

Equally important habitat considerations are that of patch size and connectivity. Home ranges across the species' distribution are highly variable; in Queensland and New South Wales individual home ranges are reported to vary between 3 and 500 ha (Department of Agriculture Water and the Environment, 2022a). Koalas are nocturnal and spend significant periods of time moving across the ground between food and shelter trees, with movement increasing during the breeding season (typically September to February). Because of this, areas can constitute Koala habitat even if a Koala is not present at a given time (DAWE, 2022a).

6.2.2 Species habitat within the Project Area⁹

Areas of state-mapped remnant (Category B) vegetation and high value regrowth (Category C vegetation) containing Koala habitat trees within and adjacent the Project Area are currently mapped as Core Koala Habitat under the *Nature Conservation (Koala) Plan 2017*, as are several smaller areas of vegetation cover containing Koala habitat trees currently mapped as non-remnant (Category X) vegetation. Core Koala Habitat within and adjacent the Project Area comprising remnant and high value regrowth RE 12.5.3, 12.3.6 and 12.3.5 to the near east and west of and adjoining Old Gympie Road (south of Boundary Road and along Freshwater Creek) is also mapped as Essential Habitat for Koala under the *Vegetation Management Act 1999*. There are also numerous

⁹ See Figure 2 of Attachment 4

contemporary (post-2010) ALA records of Koala from within and adjacent the Project Area, including numerous records from roadside vegetation/trees lining Old Gympie Road. Mapping showing the extent of State mapped Koala habitat (i.e., Core Koala Habitat and Essential Habitat for Koala) within the Project Area and near surrounds is provided in Figure 2 of **Attachment 4**.

During surveys, scats attributable to Koala were located at a number of locations within and immediately adjacent the Project Area, including: within Ross Reserve (along Freshwater Creek, to the near west of Old Gympie Road), at Penson Park on Ann Street (to the near east of Old Gympie Road) and alongside Old Gympie Road (to the south of Boundary Road and north of Goodwin Road). Scratches potentially attributable to Koala were also observed within remnant eucalypt forest to the near south of Goodwin Road (see Figure 3 of **Attachment 4**).

Locally important Koala feed trees (LIKTs) and ancillary habitat trees (sensu Youngentob et al., 2021) occur as dominant or co-dominant canopy species within areas of remnant forest and also as scattered trees fringing Old Gympie Road, both within and adjacent the Project Area. LIKTs and ancillary Koala habitat trees (AHTs) recorded within and/or adjacent the Project Area are listed in Error! Reference source not found..

Table 9: Koala habitat trees recorded within and immediately adjacent the Project Area

Tree species	LIKT/AHT	Occurrence within Project Area
<i>Eucalyptus tereticornis</i>	LIKT	Common. Scattered trees growing on road verge and in areas of parkland; subdominant canopy species in areas of remnant vegetation.
<i>Eucalyptus microcorys</i>	LIKT	Common. Scattered trees growing on road verge and in areas of parkland; subdominant or co-dominant canopy tree in areas of remnant vegetation.
<i>Eucalyptus crebra</i>	LIKT	Common. Scattered trees growing on road verge and in areas of parkland; subdominant or co-dominant canopy tree in areas of remnant vegetation.
<i>Eucalyptus racemosa</i>	LIKT	Scarce. Small number of trees in remnant vegetation near boundary road.
<i>Eucalyptus propinqua</i>	LIKT	Scarce. Scattered trees in areas of remnant vegetation and parkland.
<i>Eucalyptus seeana</i>	LIKT	Scarce. Scattered trees in areas of remnant vegetation
<i>Corymbia intermedia</i>	AHT	Common. Scattered trees growing on road verge and in areas of parkland; subdominant or co-dominant canopy tree in areas of remnant vegetation.
<i>Lophostemon suaveolens</i>	AHT	Scarce. Scattered trees in areas of remnant vegetation.
<i>Melaleuca quinquenrvia</i>	AHT	Common. Scattered trees growing on road verge and in areas of parkland; co-dominant canopy species in some areas of remnant vegetation.
<i>Corymbia tessellaris</i>	AHT	Scarce. Scattered trees growing on road verge and in areas of parkland.
<i>Syncarpia glomulifera</i>	AHT	Scarce. Scattered trees growing on road verge and in areas of parkland.
<i>Angophora woodsiana</i>	AHT	Scarce. Scattered trees in areas of remnant vegetation.
<i>Angophora leiocarpa</i>	AHT	Scarce. Scarce. Scattered trees growing on road verge.

Tree species	LIKT/AHT	Occurrence within Project Area
<i>Allocasuarina littoralis</i>	AHT	Common. Scattered trees growing on road verge; dominant understory species in some areas of remnant vegetation.

Habitat trees fringing Old Gympie Road (within the Project Area) are likely important for the movement/dispersal of Koalas within and across the project Area and, along with areas of green space/remnant vegetation containing LIKTs, are considered critical habitat for Koala (consistent with the National Recovery Plan for the Koala [DAWE, 2022]).

6.2.3 Important Population

While not generally applicable to species listed Endangered under the EPBC Act, the *Conservation Advice for Phascolarctos cinereus (Koala)* (DAWE, 2022a), defines important populations of the species. These have been identified as those which are valuable for cultural, social and economic reasons as well as for the species conservation. Important populations for the conservation of the species are those that:

- Have the potential to act as source populations to adjacent areas of suitable, or potentially suitable, habitat.
- Exist in areas of climatically suitable refugia during periods of environmental stress including droughts, heatwaves, and long-term climate change.
- Are genetically diverse.
- Are disease free and/or exhibit low rates of infection with important pathogens.
- Contain genes which may confer adaptation to current and future environmental stressors.
- Are geographical or environmental outliers within the species range.
- Are considered to be important for social, cultural or economic reasons including:
 - Cultural and spiritual importance to Indigenous people.
 - The social value and enjoyment of having Koalas close to residential areas.
 - The economic value brought to local business and tourism.
 - The iconic species value at the national and international political and community level.

State-level important populations have not been identified for Queensland.

6.2.4 Habitat Critical to the Survival of the Species

Habitat critical to the survival of a species is defined in the Koala conservation advice (DAWE, 2022a) as areas that the species relies on to avoid or halt decline and promote the recovery of the species. The following factors in consideration of the species functional ecological requirements have been considered when determining whether or not habitat that is critical to the survival of a species is present within the Project Area:

- Whether the habitat is used during periods of stress (examples: flood, drought or fire).
- Whether the habitat is used to meet essential life cycle requirements (examples: foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes).
- The extent to which the habitat is used by important populations.
- Whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development.

- Whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements.
- Whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation.
- Any other way in which habitat may be critical to the survival of a listed threatened species or a listed threatened ecological community.

Multiple instances of Koala traces (fresh scats and scratches) were detected during ecological surveys. Koala is therefore considered to regularly utilise forested habitats which intersect Old Gympie Road, and subsequently the Project Area. At a broader ecological scale, habitat patches east and west of Old Gympie Road collectively are considered to provide habitat critical to the survival of the species. These habitat patches and intersecting watercourses provide habitat features including multiple LIKT species, Ancillary tree species, and essential habitat connectivity between the heavily fragmented landscape of South East Queensland.

Although Koala has been confirmed to utilise habitat adjacent to and connected with the Project Area, only a very marginal quantity of Koala habitat will be removed. Approximately 2 ha of forested habitat will be removed from the western edge of the Eucalypt and Broad-leaved paperbark (*Melaleuca quinquenervia*) forest patch between Old Gympie Road and the Bruce Highway (~50 ha). This edge, although attached to a larger remnant habitat patch, largely contains less important tree species including Slash pine (*Pinus elliotii*) and mixed acacia species. However, given the connection with the intact broader area, the narrow-vegetated edge proposed to be removed by the Project is considered to part of the larger habitat patch which meets the definition of habitat critical to the survival of the species.

In addition to this, approximately 7 ha of roadside treed habitat will be removed. Roadside treed habitat is not considered to be habitat critical to the survival of the species given it is exposed to consistent traffic, noise and light disturbance. Although mature roadside trees facilitate species movement between more suitable habitat patches, the Project will mitigate impacts through green infrastructure design.

6.2.5 Threats

The Koala Conservation Advice (DAWE, 2022a) and the National Recovery Plan (DAWE, 2022b) identify the following key threatening processes:

- Climate change - specifically, increasing severity and frequency of heatwaves, drought, and bushfires.
- Disease - includes Chlamydia and Koala Retrovirus (KoRV).
- Dog predation - attacks from domestic or feral dogs.
- Vehicle strike – injuries and mortality due to road crossings.
- Habitat loss and fragmentation - isolation of habitat patches impeding movement and metapopulation connectivity.
- Habitat degradation and disturbance - alteration of forest tree species composition (e.g., through logging, invasive species, fire regime changes) that reduces habitat quality.
- Inadequate understanding of habitat - a poor or unclear understanding of what constitutes Koala habitat can lead to flawed conservation and management decisions.

6.2.6 Assessment against SIA criteria

Following field verification of suitable habitat and species occupancy within connected vegetation, the species is considered to have a *known* likelihood of occurring within the Project Area, and consequently has been assessed for significant impact in Error! Reference source not found. below. The Project will result in the removal of up to 3.5 ha of foraging habitat, and an additional ~5.3 ha of roadside marginal dispersal habitat (mature street trees).

6.2.7 The avoidance and mitigation proposed

Threat avoidance measures as discussed in Sections 5.1 and 5.4 to be implemented.

Table 10: Significant Impact Assessment – Koala

Is there a real chance or possibility that the Project will:	Assessment of significance
Lead to a long-term decrease in the size of a population?	Unlikely The Project is an upgrade of the existing Old Gympie Road (an arterial road), which is currently only a 2-lane road of up to 80 km/h. The road is consistently busy throughout the day, which was observable during ecological survey effort. Subsequently, Old Gympie Road, as it currently stands, already poses a serious barrier to Koala movement. Local Koala populations are therefore already at risk of increased mortality due to vehicle strike, as well as dog attack due to the density of residential development, and loss of genetic flow due to movement barriers associated with the network of roads and fences which are inherent in an urban environment. The long-term viability of a Koala population through residential Brisbane is subjected to multiple threatening processes as discussed above. Old Gympie Road likely already contributes to Koala mortality, population fragmentation, loss of genetic flow, and overall a decrease in the size of a local Koala population. It would be unreasonable to claim that these processes do not already affect local Koala populations in habitats which intersect Old Gympie Road. Thus, it would be incorrect to state that these threatening processes would be introduced to the region as a result of the Project. The Project has proposed green infrastructure solutions which form part of the Moreton Bay Green Infrastructure Network. This includes a fauna underpass to maintain fauna movement through the Deception Bay to Lakeside Habitat Corridor. Fauna fencing with escape ramps and poles, as well as improve Koala warning road signage will improve successful fauna movement within the ecological corridor. Given the absence of Koala safe movement pathways at the current time, it is possible that the implementation of green infrastructure will improve population dynamics i.e. improve Koala dispersal and therefore breeding opportunity and reduce risk of vehicle collision, which is a common cause of Koala mortality (DAWE, 2022a and 2022b). In conclusion, the implementation of impact mitigation and management measures such as green infrastructure will ensure that the Project is unlikely to lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species?	Unlikely As stated in the species' Conservation Advice, the area of occupancy for the Koala is estimated at 19,428 km² and is contracting. It is noted that the area of occupancy may be potentially overstated given the low resolution in the mapping methodology used by the Commonwealth (2 km x 2 km grid). The Koala is also widespread across Queensland, and the Project Area is not located near the limit of the species distribution. The Project will result in the removal of up to 3.5 ha of foraging habitat, and an additional ~5.3 ha of roadside marginal dispersal habitat (mature street trees). The ~3.5 ha of known habitat is restricted to the western edge of the broader habitat patch between Old Gympie Road and the Bruce Highway. Although vegetation is remnant and evidence of Koala was detected, vegetation on the roadside edge is poor quality due to encroachment of slashpine and <i>Acacia</i> species. Habitat which falls within the Disturbance Footprint of the Project is exclusively not high quality and is largely restricted to narrow vegetation strips containing mature suitable trees. Based on this, Project works are considered unlikely to materially reduce the availability or quality of habitat for the species to the extent that the area of occupancy of a population would be reduced.

Is there a real chance or possibility that the Project will:	Assessment of significance
Fragment an existing population into two or more populations?	Unlikely Koala is considered to be a highly mobile species and is known to disperse large distances including through suburbia, across roads, cleared and modified areas. The project is an upgrade of the existing Old Gympie Road (an arterial road), which is currently only a 2-lane road with a signed speed of 60-80 km/h. The road is consistently busy throughout the day, which was observable during ecological survey effort. Subsequently, Old Gympie Road already poses a serious barrier to Koala movement due to extremely high risk of collision and thus Koala mortality. Subsequently, Old Gympie Road likely already contributes to Koala fragmentation and loss of genetic flow. The road upgrade will not necessarily increase this risk, which is listed as a key threatening process to Koala as per the Conservation Advice and National recovery Plan (DAWE, 2022a and 2022b). The Project has proposed green infrastructure solutions including a fauna underpass to maintain fauna movement through the Deception Bay Lakeside Habitat Corridor, as well fauna fencing solutions to manage risk of road and wildlife interaction. It is therefore unlikely that any additional habitat fragments will be created as a result of the Project, which is essentially a widening of the existing Old Gympie Road. The inclusion of green infrastructure and koala exclusion fencing will ensure habitat connectivity is maintained across the road itself, and long-term risk to wildlife is mitigated and managed appropriately. In conclusion, the Project is unlikely to increase the effects of population fragmentation which are likely already in place due to residential and commercial development, Old Gympie Road traffic, and the Bruce Highway which is <1km east of the Project. Temporary population fragmentation may occur during the construction phase of the Project. The inclusion of fauna-spotter catcher monitoring during vegetation clearing and earthworks stages will allow effective management of Koala movement, where Koala passage can be safely facilitated when necessary.
Adversely affect habitat critical to the survival of a species?	Unlikely As described in Section 6.5.4 habitat critical to the survival of the species is considered to occur in the northeast of the Project Area, where the Disturbance Footprint intersects with the remnant vegetation patch situated between Old Gympie Road and the Bruce highway. The broader vegetation patch (extending beyond the Project Area) was confirmed as Koala habitat through the identification of Koala scat and scratches. As such, the vegetation community <u>as a whole meets</u> the definition of habitat critical to the survival of the species primarily the following criteria: ■ Whether the habitat is used to meet essential life cycle requirements (examples: foraging, breeding, nesting, roosting, social behaviour patterns or seed dispersal processes). ■ Whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements. The Disturbance Footprint will include up to 2 ha of Koala habitat in this area. However, edge effects have had considerable impact on vegetation along the roadside, which is characterised by a narrow strip of mixed Eucalyptus with other unsuitable tree species including slash pine (<i>Pinus elliotii</i>) and mixed acacia species. The quality of vegetation of which is proposed to be removed is therefore of marginal value to Koala. The encroachment of edge effects following vegetation clearing will be mitigated through weed management practices. The implementation of indirect impact mitigation measures will ensure the broader habitat patch remains unaffected by processes such as weeds, pests, construction waste etc. It is therefore unlikely that mapped habitat as critical to the survival of the species will be adversely impacted.
Disrupt the breeding cycle of a population?	Unlikely The project will result in the removal of up to 2 ha of remnant vegetation, of which is of marginal quality due to considerable edge effect impacts (i.e. the encroachment of

Is there a real chance or possibility that the Project will:	Assessment of significance
	slashpine and acacia species forming shrubby thickets). The broader habitat patch, of which is of significantly greater value to the species, will largely remain intact. With the exception of the construction phase itself, no new threatening processes and disturbances will be introduced to the area. Koala individuals which occupy the area and surrounds are presumably already exposed to disturbances such as light and noise associated with development and busy roads. Koala's do not have any specific habitat requirements for breeding. Male Koalas are known to disperse large distances during the breeding season in search of a mate, and dispersal will not be hindered by the Project, as described earlier. Given Koalas are nocturnal, and mating behaviour and communication generally takes place at night, a series of recommendations have been made to ensure breeding and Koala movement are not disrupted: ▪ It is recommended that night works not take place during the breeding season to prevent noise disturbance and the interference with breeding communications. ▪ If movement is hindered due to temporary construction infrastructure, Koala passage should be facilitated across Old Gympie Road during the breeding season to maintain Koala movement. ▪ Preclearance surveys and presence of spotter-catchers during construction, as well as best practice clearing methods and mitigation protocols if a Koala is observed, will be enforced. Based on implementation of the above mitigation measures and the design details of the project, the Project is unlikely to disrupt the breeding cycle of a population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	Unlikely The project is an upgrade of the existing Old Gympie Road (an arterial road), which is currently only a 2-lane road of up to 80 km/h in the vicinity of potential habitat. The road is consistently busy throughout the day, which was observable during ecological survey effort. Subsequently, Old Gympie Road already poses a serious barrier to Koala movement due to extremely high risk of collision and thus Koala mortality. Subsequently, Old Gympie Road likely already contributes to Koala fragmentation and loss of genetic flow. The road upgrade will not necessarily increase this risk, which is listed as a key threatening process to Koala as per the Conservation Advice and National recovery Plan (DAWE, 2022a and 2022b). The Project has proposed green infrastructure solutions including a fauna underpass to maintain fauna movement through the Deception Bay Lakeside Habitat Corridor, as well as koala exclusion fencing solutions to manage risk of road and wildlife interaction. Although the project will result in the removal of up to 2 ha of remnant vegetation, of which is of marginal quality due to considerable edge effect impacts (i.e. the encroachment of slashpine and acacia species forming shrubby thickets). The broader habitat patch, of which is of significantly greater value to the species, will largely remain intact. With the exception of the construction phase itself, no new threatening processes and disturbances will be introduced to the area. Koala individuals which occupy the area and surrounds are presumably already exposed to disturbances such as light and noise associated with development and busy roads. The implementation of indirect impact mitigation measures will ensure the broader habitat patch remains unaffected by processes such as weeds, pests, construction waste etc. Temporary population fragmentation may occur during the construction phase of the Project. The inclusion of fauna-spotter catcher monitoring during vegetation clearing and earthworks stages will allow effective management of Koala movement, where Koala passage can be safely facilitated when necessary. Although direct and indirect impacts to the species would occur as a result of the Project, these impacts are minor in scale and severity and unlikely to modify, destroy, remove, isolate or decrease the availability of habitat to the extent that the species (or any local population) is likely to decline.

Is there a real chance or possibility that the Project will:	Assessment of significance
Result in invasive species that are harmful to an Endangered species becoming established in the Endangered species' habitat?	Unlikely The invasive species which poses the greatest threat to Koala is the dog, both domestic and wild. Canines are known to be present and abundant in the area given the surrounding residential development. Koalas are most at risk of canine encounter when making movements along the ground between trees or habitat patches, particularly in cleared areas where refuge is limited. The implementation of green infrastructure will include Koala movement aids such as a dry underpass as well as escape ramps and poles. Interactions between Canines and Koala are, however, largely not related to the Project given it is an expansion of the existing Old Gympie Road. No processes related to the Project would realistically exacerbate this threat, especially where Koala passage is both maintained and improved through the inclusion of green infrastructure. The lack of vegetation clearing associated with the project means that there is little opportunity for invasive species to encroach into disturbed habitats. The developed areas will form part of the road upgrade and as such do not provide any potential habitat for invasive species to move into. It is therefore unlikely that the overall risk of wild dog attack or predation by other invasive species within the Project Area would be exacerbated as a result of the Project.
Introduce disease that may cause the species to decline?	Unlikely <i>Chlamydia</i> and Koala Retrovirus (KoRV) are known threats to the species. <i>Chlamydia</i> and KoRV are found in most Koalas and many live with the infections and never show outward signs of illness or suffer measurable reproductive consequences (K. N. Youngentob, Marsh and Skewes, 2021). These common pathogens can progress to clinical disease when influenced by factors that cause chronic stress, including habitat loss. Chronic stress to Koalas is also thought to increase their susceptibility to contracting disease as their immune systems can be negatively impacted. Where chronic stress is widespread in a population, for example in marginal habitat or urban areas, it is possible that loss of fertility due to disease and reduced recruitment due to habitat fragmentation could cause populations to decline (DAWE, 2022b). Suitable Koala habitat will remain within the Project Area with connectivity to surrounding areas maintained, ensuring opportunities for Koalas to seek refuge from disturbance during construction. Should an unwell Koala be identified during clearing works, it will be handled appropriately by a qualified spotter catcher and taken to a predesignated veterinarian/wildlife care facility for treatment prior to release. Best practice biosecurity measures will also be implemented through the CEMP. Further, Project works are unlikely to lead to new pathways to disease dispersal into the Project Area for any individuals which may carry the disease. Based on the above, it is considered unlikely that Project activities are of the magnitude that would result in a population level decline from introduction or exacerbation of disease.
Interfere with the recovery of the species?	Unlikely A <i>National Recovery Plan for the Koala</i> was published in 2022. Four main objectives are detailed: ▪ Stabilise and then increase the area of occupancy and size of populations that are declining. ▪ Maintain or increase the area of occupancy and size of populations that are stable. ▪ Metapopulation processes are maintained or improved. ▪ Partners, communities and individuals have a greater role and capability in Koala monitoring, conservation and management.

Is there a real chance or possibility that the Project will:	Assessment of significance
	Adverse impacts to a potential Koala population in the Project Area should be minimal given that the clearing represents a small reduction in total available habitat, no further fragmentation is anticipated, and metapopulation processes will be maintained through the implementation of green infrastructure. With the implementation of the mitigation measures proposed, population scale impacts would be unaffected in the long-term and interference to species recovery as a result of the Project are therefore unlikely.

6.3 Grey-headed flying-fox (*Pteropus poliocephalus*)

The Grey-headed flying-fox (*Pteropus poliocephalus*) is listed as Vulnerable under the EPBC Act.

6.3.1 Species ecology

6.3.1.1.1 Distribution and life history

The Grey-headed flying-fox (*Pteropus poliocephalus*) is endemic to eastern and southeastern Australia, with a distribution extending from Ingham in Queensland to Adelaide in South Australia. The species is highly mobile, moving along the east coast of Australia with the seasonal patterns of flowering and fruiting forage tree species. As with other flying-foxes, the GHFF plays a critical role in long-distance seed dispersal and pollination, contributing to the health, longevity, and diversity within and among vegetation communities (Ecosure, 2021).

The species primarily occurs in coastal lowlands and slopes below 200 m elevation but also inhabits inland regions, including the tablelands of southern Queensland and northern New South Wales. Maternity camps have been recorded throughout the species range, with more recent establishments in the ACT, Victoria, South Australia, and parts of inland New South Wales. Individuals have also been recorded on Bass Strait islands and in Tasmania. Camp occupancy patterns are spatially and temporally variable. While some camps support year-round populations, others are used intermittently or seasonally, reflecting regional variation in the phenology of flowering and fruiting plants. These ecological cues underpin broad-scale migratory movements. Distribution data are maintained and updated through the National Flying-Fox Monitoring Program.

The GHFF is a seasonable breeder, with females generally producing a single pup each year between October and December. Although females are believed to reach sexual maturity in their second season, it is thought few females younger than three successfully raise a pup to independence (DAWE, 2021). Flying-foxes are known to abort fetuses in response to environmental stress, often resulting in mass abortions and premature births (DAWE, 2021). As a result, disturbance at maternity camps poses a significant risk to the species. Due to their slow reproductive rate, Grey-headed Flying-foxes are particularly vulnerable to population decline, as they are unable to rapidly recover from losses.

6.3.1.2 Foraging Habitat

The Grey-headed flying-fox (GHFF) feed mainly on the blossoms and fruit of a wide variety of native trees, and occasionally on leaves. Their diet includes rainforest species like *Ficus* and *Syzygium*, along with flowering trees such as *Eucalyptus*, *Corymbia*, *Angophora*, *Melaleuca*, and *Banksia*. While many of these species flower at specific times of year, they aren't always reliable, and food availability can shift from place to place depending on seasonal conditions. This means flying-foxes need to move across the landscape to find suitable foraging areas throughout the year. In some regions, they also feed on introduced species including Camphor laurel (*Cinnamomum camphora*), Chinese celtis (*Celtis sinensis*), Privets (*Ligustrum* spp.), Cocos palm (*Syragrus romanzoffiana*), and Guava (*Psidium* spp.). These species, as well as commercial fruit orchids, can become important alternative food sources, especially when native flowering is limited.

6.3.1.3 Breeding Habitat

Australian flying-fox species are known as colonial breeders, establishing group roost sites known as camps. Camps are conspicuous, typically in the upper branches of large trees and can support multiple flying-fox species. Flying-foxes will typically return to the same series of camps during their seasonal movements, following the availability of foraging resources. These camps have historically been stable, with some occupied continuously for over a century. Flying-fox camps can serve as both maternity roost and day-time roost sites, making them essential to all life-stages. Occupancy patterns range widely, from sites inhabited year-round to those used irregularly, with peak populations in some camps exceeding 50,000 individuals. Flying-foxes show flexibility in camp vegetation, occupying habitats from extensive forests to small patches as little as one hectare. During food shortages, they may roost in atypical locations and camps can shrink in size. Increasingly, flying-foxes are roosting in urban areas, leading to more frequent human interactions.

6.3.2 Species habitat within the Project Area¹⁰

During surveys on the 24th and 29th of July, between 50 and 60 Grey-headed flying-fox were seen roosting in the company of 500 to 600 black flying foxes within Ross Reserve to the near west of the Project Area. At this time, Grey-headed flying-foxes were observed roosting in paperbark (*Melaleuca*) and eucalypt trees between 30 and 150 m from Old Gympie Road, with black flying foxes were observed roosting as close as 10 m from the road edge. The location of roosting animals within Ross Reserve is shown in Figure 4 of **Attachment 4**.

The National Recovery Plan for the Grey-headed Flying Fox (DAWE, 2021) considers nationally important camps are 'those that have contained $\geq 10,000$ Grey-headed Flying Foxes in more than one year in the last 10 years, or have been occupied by more than 2,500 Grey-headed Flying foxes permanently or seasonally every year for the last 10 years'. The numbers of Grey-headed flying fox recorded roosting at Ross Reserve during surveys in July 2025 and previous surveys undertaken at this site as part of the National Flying-fox Management Program data set are well below this threshold and, as such, the Ross Reserve camp site is not considered nationally important.

While no flying foxes were observed foraging during surveys, the Project Area contains numerous important winter and spring-flowering trees which the species relies upon during periods of resource scarcity over winter and early spring, including Queensland blue gum (*Eucalyptus tereticornis*), Narrow-leaved red ironbark (*Eucalyptus crebra*), Swamp Messmate (*Eucalyptus robusta*), Narrow leaved red gum (*Eucalyptus seeana*), Northern grey ironbark (*Eucalyptus siderophloia*), Broad-leaved paperbark (*Melaleuca quinquenervia*) and Turpentine (*Syncarpia glomulifera*). These tree species occur as scattered trees and in isolated stands along Old Gympie Road and also as canopy/subcanopy trees in areas of adjoining remnant and high value regrowth vegetation. Areas of vegetation containing these tree species are considered critical habitat for the species.

Additional native myrtaceous trees species present within the Project that could also serve as an important food source for Grey-headed flying fox at other times (i.e., the final weeks of gestation, birth and during conception and lactation) are also present within the project Area and include spring and summer-flowering *Corymbia*, *Angophora* and *Eucalyptus* spp. (including Pink bloodwood (*Corymbia intermedia*), Brown bloodwood (*Corymbia trachyphloia*), Smudgee (*Angopora woodsiana*), Rusty gum (*Angopora leiocarpa*) and White stringybark (*Eucalyptus carnea*). Areas of vegetation containing these species are also considered critical habitat for the species.

6.3.3 Important Population

The highly mobile nature of the GHFF along the east and south coast of Australia means that the species is recognised as a single population (DAWE, 2021). An important population is therefore not defined for GHFF. A surrogate for this measure is the definition of a **nationally important camp**, which is defined as either:

- Camps that have contained $\geq 10,000$ Grey-headed flying-foxes in more than one year in the last 10 years, or
- Camps that have been occupied by more than 2,500 Grey-headed flying-foxes permanently or seasonally every year for the last 10 years.

¹⁰ see also Attachment 4.

As at August 2020, 75 of the 418 Grey-headed Flying-Fox camps known to have been occupied since the commencement of the National Flying-fox Monitoring Program are recognised as nationally important camps (DAWE, 2021).

6.3.4 Habitat Critical to the Survival of the Species

Habitat critical to the survival of the species is defined in the National Recovery Plan (DAWE, 2021) as the following:

- Any habitat which supports important winter and spring flowering vegetation, including the following Myrtaceae tree species: Queensland blue gum (*Eucalyptus tereticornis*), White box (*Eucalyptus albens*), Narrow-leaved ironbark (*Eucalyptus crebra*), Broad-leaved ironbark (*Eucalyptus fibrosa*), yellow box (*Eucalyptus melliodora*), grey ironbark (*Eucalyptus paniculata*), Blackbutt (*Eucalyptus pilularis*), Swamp messmate (*Eucalyptus robusta*), Narrow-leaved red gum (*Eucalyptus seeana*), Mugga ironbark (*Eucalyptus sideroxylon*), grey ironbark (*Eucalyptus siderophloia*), Coast banksia (*Banksia integrifolia*), Black bean (*Castanospermum australe*), Spotted gum (*Corymbia citriodora*), Yellow bloodwood (*Corymbia eximia*), Spotted gum (*Corymbia maculata*), Silky oak (*Grevillea robusta*), Broad-leaved paperbark (*Melaleuca quinquenervia*), and Turpentine (*Syncarpia glomulifera*).

Habitat critical to the survival of the Grey-headed Flying-fox may also be vegetation communities not containing the above tree species but which:

- Communities which contain the above native species that are known to be productive as foraging habitat during the final weeks of gestation, and during the weeks of birth, lactation and conception (August to May) (trees listed in Eby and Law, 2008).
- contain native species used for foraging and occur within 20 km of a nationally important camp as identified on the Department's interactive flying-fox web viewer¹¹, or
- contain native and or exotic species used for roosting at the site of a nationally important Grey-headed Flying-Fox camp¹ as identified on the Department's interactive flying-fox web viewer⁵.

Although winter and spring flowering species do occur within the road reserve they occur either as street trees or small groups of trees and cannot be considered as contiguous vegetation communities (with respect to the GHFF conservation advice). The conservation advice notes that 'back yard fruit trees, orchards or non-native trees that may be used for foraging are not considered to be habitat critical to the survival of the Grey-headed flying-Fox' (DAWE 2021b). Such areas constitute already modified environments. Concurrently, a highly urbanised road reserve with large daily vehicle count can be considered highly urban. Any street trees present cannot be considered to be a community and therefore not critical habitat.

6.3.5 Threats

The National Recovery Plan for the GHFF lists nine key threatening processes, which are considered to be more prevalent north of the Sydney Basin within the species range. The species capacity for population recovery, however, is subject to further concern due to the species life history traits as discussed above. Threatening processes are summarised below:

- Habitat loss is the most significant threat to the GHFF, particularly the reduction of foraging habitat across its range. The species depends on a wide network of seasonally productive food trees, many of which fall outside conservation reserves, leaving it vulnerable to land clearing, especially during critical periods like winter and early spring when food shortages can lead to poor reproductive outcomes and mortality. Loss of roosting habitat due to historical vegetation clearing and urban fragmentation is also a concern, though its full impact remains poorly understood.
- Camp disturbance is an increasing threat as GHFF camps become more common in urban areas, leading to conflict with nearby residents due to noise, smell, mess, and perceived disease risk. Attempts to disperse camps are often ineffective and can cause stress, injury, or even mortality among flying-foxes, while also failing to prevent new camps from forming in similarly unsuitable locations.
- Mortality in commercial fruit crops occurs when GHFF feed on cultivated fruit, particularly during periods of native food shortage, leading to conflict with orchardists and, historically, widespread culling. Although lethal

¹¹ The camp data that is presented in the National Flying-fox monitoring viewer is now available through the CSIRO Data Access Portal, available at: <https://data.csiro.au/collection/csiro%3A64370v2>

control methods like shooting are now restricted or discouraged, they still occur under certain conditions and pose serious welfare and conservation concerns, highlighting the need for continued investment in non-lethal crop protection such as exclusion netting.

- Heat stress is a significant and increasing cause of mortality in GHFF, particularly during extreme heat events above 40 °C, with mass die-offs recorded during recent summers. Climate change is expected to worsen these events, making the protection of camp vegetation and the development of early warning systems essential to reduce heat-related deaths.
- Entanglement in netting and barbed wire is a major cause of injury and death for GHFF, particularly where poorly secured or inappropriate materials are used. Wildlife-friendly netting and fencing practices are critical to reducing these incidents, with public education and regulatory measures forming part of the response.
- Climate change threatens GHFF by disrupting the timing and availability of key food resources, particularly through altered flowering and fruiting patterns in native vegetation. Rising temperatures, drought, and fire risk will likely increase heat-related mortality and habitat loss, compounding existing pressures on the species.
- Bushfires have caused significant loss of foraging habitat and resources for GHFF, with the 2019/20 fires prompting urgent management action. These events lead to habitat fragmentation, potential camp abandonment, increased conflict as bats move into new areas, and have coincided with high pup mortality likely linked to food shortages.
- Electrocution on power lines - GHFF are vulnerable to accidental injury and death from various artificial obstacles. They are prone to electrocution on power lines, particularly in urban areas, and increasing urbanisation exposes larger numbers of animals to electrocution (Tidemann 1999, Tidemann and Nelson 2011).
- Public misunderstanding of disease risk around GHFF arises from their role as natural reservoirs for some zoonotic diseases (like Australian Bat Lyssavirus, Hendra virus, and Menangle virus). Although these viruses rarely transmit directly to humans and pose low risk, fear and misinformation cause negative perceptions, which can harm conservation efforts. Education and research continue to clarify actual risks and improve public health responses.

6.3.6 The avoidance and mitigation proposed

Threat avoidance measures as discussed in Sections 5.1, 5.2, and 5.4 to be implemented.

6.3.7 Assessment against SIA criteria

Following field verification of suitable habitat and species occupancy within connected vegetation, the species is considered to have a *known* likelihood of occurring within the Project Area, and consequently has been assessed for significant impact in **Table 11** Error! Reference source not found. below. The Project will result in the removal of up to 3.5 ha of foraging habitat, and an additional ~5.3 ha of roadside foraging habitat (mature street trees).

Table 11: Significant Impact Assessment – Grey-headed flying-fox

Is there a real chance or possibility that the Project will:	Assessment of significance
Lead to a long-term decrease in the size of an important population of a species?	Unlikely A nationally important camp is used as a surrogate for the consideration of a nationally important population for the assessment of GHFF, as discussed in Section 6.3.2. This is because the GHFF is recognised a single Australian population. Between 50 and 60 Grey-headed flying-fox were seen roosting in the company of 500 to 600 black flying foxes within Ross Reserve to the near west of the Project Area. At this time, Grey-headed flying-foxes were observed roosting in paperbark (<i>Melaleuca</i>) and eucalypt trees between 30 and 150 m from Old Gympie Road, with black flying foxes were observed roosting as close as 10 m from the road edge.

Is there a real chance or possibility that the Project will:	Assessment of significance
	The National Recovery Plan for the Grey-headed Flying Fox (DAWE, 2021), identifies nationally important camps are 'those that have contained $\geq 10,000$ Grey-headed Flying Foxes in more than one year in the last 10 years, or have been occupied by more than 2,500 Grey-headed Flying foxes permanently or seasonally every year for the last 10 years'. The numbers of Grey-headed flying fox recorded roosting at Ross Reserve during surveys in July 2025 and previous surveys undertaken at this site as part of the National Flying-fox Management Program data set are well below this threshold and, as such, the Ross Reserve camp site is not considered nationally important. Given the susceptibility of GHFF to noise, dust, and light, project impacts are considered to have the potential to affect resident individual GHFF up to 300 metres from the edge of the Project Area. In particular, construction noises will be disturbing to day-time roost sites as flying-foxes are considered to be most agitated by impulsive sound; excessively loud, sharp or sudden bursts that are fast or surprising in nature such as metal-on-metal (Ecosure, 2021). Given the proximity of the mixed species camp, it is recommended a species management plan be developed and the relevant permits be obtained to undertake the required disturbance to the area. Although the camp will not be required to be directly impacted as it is situated outside of the Disturbance Footprint, indirect impacts associated with noise, light, and dust will occur. Despite the confidence in the occurrence of these impacts, it has been determined that an important camp belonging to GHFF does not occur, and as such cannot incur a long-term population decrease as a result of Project activities.
Reduce the area of occupancy of an important population?	Unlikely A nationally important camp is used as a surrogate for the consideration of a nationally important population for the assessment of GHFF, as discussed in Section 6.3.3. This is because the GHFF is recognised a single Australian population. As discussed above, a nationally important camp does not occur within or adjacent to the Project Area. No area of occupancy is reported for the GHFF in the National Recovery Plan, and there is no available Approved Conservation Advice. In lieu of this information to address, the information discussed above can be equally applied to describe a lack of significant impact to what is recognised as an important camp, and therefore 'local' population.
Fragment an existing important population into two or more populations?	Unlikely. A nationally important camp is used as a surrogate for the consideration of a nationally important population for the assessment of GHFF, as discussed in Section 6.4.3. This is because the GHFF is recognised a single Australian population. As discussed above, a nationally important camp does not occur within or adjacent to the Project Area. As a result, fragmentation into two or more populations cannot occur due to impacts associated with Project activities.
Adversely affect habitat critical to the survival of a species?	Unlikely Although winter and spring flowering species do occur within the road reserve they occur either as street trees or small groups of trees and cannot be considered as contiguous vegetation communities (with respect to the GHFF conservation advice). The conservation advice notes that '<i>back yard fruit trees, orchards or non-native trees that may be used for foraging are not considered to be habitat critical to the survival of the Grey-headed flying-Fox</i>'. Such areas constitute already modified environments. Concurrently, a highly urbanised road reserve with large daily vehicle count can be considered highly urban. Any street trees present cannot be considered to be a community and therefore not habitat critical to the survival of GHFF.
Disrupt the breeding cycle of	Unlikely

Is there a real chance or possibility that the Project will:	Assessment of significance
an important population?	A nationally important camp is used as a surrogate for the consideration of a nationally important population for the assessment of GHFF, as discussed in Section 6.3.3. This is because the GHFF is recognised a single Australian population. As discussed above, a nationally important camp does not occur within or adjacent to the Project Area. As a result, the breeding cycle cannot be interrupted due to impacts associated with Project activities. It is unlikely that the flying-fox camp identified within the Ross Reserve would support pregnant or lactating females. This is because GHFF typically return to known maternity roost camps where they breed, birth and raise their pups. This typically takes place between October and December. Further, impact mitigation measures can be implemented to prevent any risk of interference with GHFF breeding, as listed below: ▪ Ecological pre-clearance survey effort to monitor flying-fox camp activity. ▪ Species populations counts and monitoring for pups. ▪ Use of fauna-spotter catcher to mitigate vegetation clearing and other disturbance actions which fall within 300 m from the edge of the flying-fox camp. ▪ Avoidance of all major project works between October and December. The implementation of these mitigation measures, in addition to the perceived absence of a breeding population of GHFF within or adjacent to the Project Area, is reason to conclude that the Project will not disrupt the breeding cycle of an important population.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline?	Unlikely Although the Project proposes to clear a maximum of ~3.5 ha of remnant roadside vegetation, multiple mature street trees exist in the southern portion of the Project Area which likely provide valuable foraging resources. Large and mature Weeping tea-tree (<i>Melaleuca leucadendra</i>) trees, as well as other native <i>Eucalyptus</i>, <i>Corymbia</i>, and <i>Angophora</i> species line Old Gympie Road in small, narrow patches. Given the mobility of the species, the location of these resources being along the roadside does not present a significant barrier to their accessibility. The size of the flying fox camp detected in the Ross Reserve was observed to support up to 60 GHFF roosting in the company of 500 to 600 black flying foxes. As discussed earlier, the Ross Reserve camp site does not meet the criteria to be considered nationally important. Although Project Actions will likely have indirect disturbance impacts on the flying fox camp, the size of the GHFF camp is not considered nationally significant. Flying-fox camps are highly transient however, with groups of individuals moving between camp sites in search of foraging resources between seasons. To gauge the true value of the camp, it is essential to understand flying fox occupancy rates between seasons. Camp information at the current time does not meet the criteria to be considered a nationally important camp. It is unlikely that the magnitude of both direct impacts (vegetation clearing of foraging resources) and indirect impacts (noise, dust, light) associated with the Project could modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline at the national scale.
Result in invasive species that are harmful to a Vulnerable species becoming established in the Vulnerable species' habitat?	Unlikely The encroachment of invasive species, flora or vertebrate pest fauna, is not a listed threatening process to the GHFF. Given the highly mobile and aerial existence of the species, impacts associated with vertebrate pest fauna are unlikely to have direct effect on GHFF. Impacts associated with ecosystem shift, i.e. the death of canopy trees or loss of soil fertility and therefore flowering and fruiting productivity of forage tree species, may occur over time if habitat was exposed to repetitive and long-term pressure. This is, however, considered unlikely to occur as a result of project activities. The encroachment of competitive tree species, however, has the potential to impact species habitat quality. Namely, the slash pine (<i>Pinus elliottii</i>) occurs along the

Is there a real chance or possibility that the Project will:	Assessment of significance
	roadside of the Project Area as large and mature canopy trees. Regenerating slash pine saplings should be promptly managed to prevent any further spread of the exotic species. Weed management practices, which will form a component of Project impact mitigation and management measures, will prevent further establishment of invasive flora species. It is therefore unlikely that the overall risk of impacts resulting from the establishment of invasive species within the Project Area would be exacerbated as a result of the Project.
Introduce disease that may cause the species to decline?	Unlikely Multiple diseases are cited in the National Recovery Plan (DAWE, 2021) as having the potential to impact GHFF populations. A lack of adequate research and understanding prevents the consideration of their role in population dynamic and tangible preventative management actions which can be implemented into species management plans for impact mitigation. In addition to this, there is considerable public concern for potential transmission pathways between flying-foxes and humans. Consequently, disease management should be considered from both species' conservation and human health perspectives. Given multiple diseases already occur within Australian flying fox populations, such as Hendra virus and Lyssavirus, it is unlikely that actions associated with the Project could introduce new diseases to the national population. The Project will not directly impact the Ross Reserve flying fox camp through vegetation removal, rather, the camp will be exposed to indirect impacts including but not limited to noise, light and dust. Although these indirect impacts pose a level of risk to the camp, Project activities will be typical of linear infrastructure and as such, will not realistically expose the camp to entirely new environmental stressors given the recent commercial and residential development surrounding the local area. Animals exposed to severe stressors are expected to become vulnerable to disease outbreak. Although the incidence of Lyssavirus in the Grey-headed Flying-fox is low (<1 %), when flying-foxes are subject to significant ecological stress the incidence of Lyssavirus can increase to the point where the disease can impact upon the population. The virus appears to have evolved with the flying-foxes and is generally in equilibrium with the population (DAWE, 2021). The incidence of Lyssavirus infection is also higher (5-10%) in sick, injured and orphaned flying-foxes (DAFF 2013). The highly mobile ecology of the species means that individuals are able to avoid stressors, such as construction noises, through self-dispersal to another nearby camp. Based on the above, it is considered unlikely that Project activities are of the magnitude that would result in a population level decline from introduction or exacerbation of disease.
Interfere substantially with the recovery of the species?	Unlikely The overall objectives of the Grey-headed Flying-fox National Recovery Plan are: ■ To improve the Grey-headed Flying-foxes national population trend by reducing the impact of the threats outlined in this plan on Grey-headed Flying-foxes through habitat identification, protection, restoration and monitoring. ■ To assist communities and Grey-headed Flying-foxes to coexist through better education, stakeholder engagement, research, policy and continued support to fruit growers. Of the nine listed threatening processes in Section 6.4.5 above, habitat loss and camp disturbance are likely to take place as a result of the Project. Large and mature <i>Melaleuca Leucadendra</i> trees, as well as other native <i>Eucalyptus</i>, <i>Corymbia</i>, and <i>Angophora</i> species line Old Gympie Road in small, narrow patches. Given the mobility of the species, the location of these resources being along the roadside does not present a significant barrier to their accessibility. Subsequently, the removal of all of these trees

Is there a real chance or possibility that the Project will:	Assessment of significance
	(an additional ~2.6 ha of foraging vegetation, an estimated 4.6 ha in total) will result in the loss of foraging habitat to the GHFF. In addition to this, the flying-fox camp observed in the Ross Reserve (~150 m from the Project Area edge) will be subject to indirect disturbances including noise, light, and dust – which has the potential to have significant disturbance impacts given the species sensitivity (Ecosure, 2021). However, it is important to consider the size of the camp, which was observed to support up to 60 GHFF roosting in the company of 500 to 600 black flying foxes. As discussed earlier, the Ross Reserve camp site does not meet the criteria to be considered nationally important. Although Project Actions will likely result in indirect disturbance to the flying fox camp, effects can be managed through clearing at appropriate times (outside of the key breeding, gestation and lactation periods). The size of the GHFF camp is not considered nationally significant. Flying-fox camps are highly transient however, with groups of individuals moving between camp sites in search of foraging resources between seasons. To gauge the true value of the camp, it is essential to understand flying fox occupancy rates between seasons. Camp information at the current time does not meet the criteria to be considered a nationally important camp, and thus it is unlikely that the magnitude of indirect impacts associated with the Project could interfere substantially with the recovery of the species on a national scale.

7. Summary and Conclusions

Ecological assessment has identified that the Project Area supports limited habitat values for three EPBC Act-listed species. While the proposed upgrade will result in some localised vegetation loss, impacts are considered minor in extent and unlikely to be significant when assessed against EPBC Act Significant Impact Guidelines.

Koala (*Phascolarctos cinereus* - Endangered, EPBC Act; Endangered, NC Act)

- Habitat within the Project Area includes scattered mature *Eucalyptus* street trees and small disturbed patches that provide both foraging and shelter resources.
- Koala scats were recorded in several locations, confirming species presence.
- The disturbance footprint includes approximately 6.8 ha of scattered or linear habitat, though no important population was identified.
- With appropriate staged clearing and habitat connectivity measures, the Project is unlikely to have a significant impact on the species.

Grey-headed flying-fox (*Pteropus poliocephalus* - Vulnerable, EPBC Act)

- Habitat within the Project Area is primarily associated with mature trees providing seasonal foraging resources, including Broad-leaved paperbark (*Melaleuca quinquenervia*), Queensland blue gum (*Eucalyptus tereticornis*), and Pink bloodwood (*Corymbia intermedia*).
- A flying-fox camp occurs at Ross Reserve (Freshwater Creek), adjacent to the project area, though no roost habitat will be directly affected.
- Indirect construction impacts (noise, dust, light) may temporarily disturb individuals but are not expected to result in long-term or population-level impacts.
- The Project is unlikely to have a significant impact on the species.

Glossy black-cockatoo (*Calyptorhynchus lathami lathami* - Vulnerable, EPBC Act)

- A small patch (~0.1 ha) of Black she-oak (*Allocasuarina littoralis*) roadside vegetation provides potential foraging habitat within the Disturbance Footprint, contiguous with a larger (~50 ha) vegetation patch also supporting Swamp oak (*Casuarina glauca*).
- No individuals or evidence of foraging were recorded during surveys.
- The area does not support breeding habitat and is unlikely to represent an important population.
- Removal of ~0.1 ha of marginal foraging habitat is considered unlikely to have a significant impact on the species.

The proposed upgrade of Old Gympie Road is not expected to significantly impact MNES under the EPBC Act. Habitat for Koala, Grey-headed flying-fox, and Glossy black-cockatoo occurs within the Project Area in fragmented and disturbed forms, with limited extent and value. Provided the recommended mitigation and management measures are implemented, as well as Project design features of green infrastructure, ecological impacts of the project can be appropriately managed and reduced to an acceptable level.

8. References

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Attachment 1 – PMST



Australian Government

Department of Climate Change, Energy,
the Environment and Water

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: 17-Jul-2025

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

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	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	81
Listed Migratory Species:	40

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:	49
Whales and Other Cetaceans:	2
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	16
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Moreton bay	Within 10km of Ramsar site	In feature area

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 feature area
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
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

Listed Threatened Species			[<u>Resource Information</u>]
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			
Anthochaera phrygia			
Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour likely to occur within area	In feature area
Ardenna grisea			
Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat likely to occur within 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 known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely 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
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat may occur within area	In feature area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Erythroriorchis 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 known to occur within area	In feature area
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	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
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely 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 known to occur within area	In buffer area only
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area	In feature area
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Epinephelus daemeli Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat may occur within area	In buffer area only
FROG			
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
Mixophyes iteratus Giant Barred Frog, Southern Barred Frog [1944]	Vulnerable	Species or species habitat may occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area
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 known to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides volans Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely 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 known to occur within area	In feature area
Potorous tridactylus tridactylus Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In feature area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
Sousa sahalensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
PLANT			
Acacia attenuata [10690]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In feature area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat may 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 ternifolia Small-fruited Queensland Nut, Gympie Nut [7214]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Macadamia tetraphylla Rough-shelled Bush Nut, Macadamia Nut, Rough-shelled Macadamia, Rough-leaved Queensland Nut [6581]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat may occur within area	In feature area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat may occur within area	In feature area
Phaius australis Lesser Swamp-orchid [5872]	Endangered	Species or species habitat known to occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
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 buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area
REPTILE			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Coeranoscincus reticulatus Three-toed Snake-tooth Skink [59628]	Vulnerable	Species or species habitat may occur within area	In feature area
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
SHARK			
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			
Anous stolidus Common Noddy [825]		Species or species habitat may occur within area	In buffer area only
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Ardenna grisea Sooty Shearwater [82651]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Fregata ariel Lesser Frigatebird, Least Frigatebird [1012]		Species or species habitat known to occur within area	In buffer area only
Fregata minor Great Frigatebird, Greater Frigatebird [1013]		Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area	In buffer area only
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Phaethon lepturus White-tailed Tropicbird [1014]		Species or species habitat may occur within area	In buffer area only
Thalassarche cauta Shy Albatross [89224]	Endangered	Species or species habitat may occur within area	In buffer area only
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Thalassarche steadi White-capped Albatross [64462]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Marine Species			
Caretta caretta Loggerhead Turtle [1763]	Endangered	Congregation or aggregation known to occur within area	In buffer area only
Chelonia mydas Green Turtle [1765]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat may occur within area	In buffer area only
Lepidochelys olivacea Olive Ridley Turtle, Pacific Ridley Turtle [1767]	Endangered	Species or species habitat known to occur within area	In buffer area only
Mobula alfredi as Manta alfredi Reef Manta Ray, Coastal Manta Ray [90033]		Species or species habitat may occur within area	In buffer area only
Mobula birostris as Manta birostris Giant Manta Ray [90034]		Species or species habitat may occur within area	In buffer area only
Natator depressus Flatback Turtle [59257]	Vulnerable	Congregation or aggregation known to occur within area	In buffer area only
Orcaella heinsohni Australian Snubfin Dolphin [81322]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Sousa sahalensis as Sousa chinensis Australian Humpback Dolphin [87942]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		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
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known 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 known to occur within area	In feature area
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 likely 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
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Limnodromus semipalmatus Asian Dowitcher [843]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known 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 feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area