Graphinex – Esmeralda Graphite Project Environmental Impact Statement

Appendix E – Terrestrial Ecology Assessment

GRAPHINEX

TERRESTRIAL ECOLOGY ASSESSMENT

ESMERALDA GRAPHITE PROJECT



PREPARED FOR
Qld Aus Graphite Pty Ltd

1 October 2026

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1 Introduction

AARC Environmental Solutions Pty Ltd (AARC) was commissioned by Qld Aus Graphite Pty Ltd (the Proponent) to undertake a Terrestrial Ecology Impact Assessment for the Esmeralda Graphite Project (the Project) Environmental Impact Statement (EIS).

1.1 Project background

Graphinex proposes to develop the Project, located on light grazing land approximately 70 km south of Croydon, Queensland, Australia (Figure 1). The Project proposes mining of the Esmeralda Granite unit and on-site concentration of graphite ore.

Graphite is recognised as a 'critical mineral' by both the Queensland and Commonwealth Government, reflecting its strategic importance and limited global availability. Local production of graphite will aid the state's renewable energy transition. Furthermore, the advancement of this project will contribute significantly to establishing a sustainable, long-term supply of high-grade graphite, essential for a wide range of renewable energy applications. This initiative aligns with broader national and state objectives to secure vital resources for the emerging green economy and enhance energy independence.

In 2025, as part of the Commonwealth approval process, an *Environment Protection and Biodiversity Conservation Act 1999* (Commonwealth) (EPBC Act) Referral for the Project was submitted to the Department of Climate Change, Energy, the Environment, and Water (DCCEEW). The Referral decision on 23 June 2025 states that the proposed action is not a controlled action.

The project is the subject of a 'Coordinated Project' Environmental Impact Statement (EIS) process. In recognition of the critical role this Project will play in the production and supply of graphite, the Project was declared a 'Prescribed Project' by the Queensland Government on the 13th of November 2025.

This assessment has been designed to address the Terms of Reference (ToR) for the EIS, issued in September 2025.

1.2 Project description

The Project proposes to construct and develop an open cut graphite mine, producing up to 3.5 Mtpa of run-of-mine (ROM) ore over an operational mine life of approximately 53 years. Mining is proposed to be via conventional truck and excavator methods, to a maximum depth of approximately 250 m below ground level. Ore extraction necessitates the implementation of controlled blasting techniques. Mine construction is scheduled to span approximately 24 months, with mining ramping up to 3.5 Mtpa ROM over the first three years.

Excavated overburden and non-ore-bearing material will be deposited in one of two out-of-pit waste dumps located adjacent to the mining void. The majority of waste movement will occur within the first 18 years of the mine life.

Graphite ore (~ 6% total graphite) will be trucked to the mineral processing plant for stockpiling and concentration via conventional flotation methods. The processing method includes an initial crushing and milling circuit that liberates the graphite in 106-micron product. Ore is then fed to a flotation circuit consisting of rougher and flotation stages. Flotation tailings produced from the mineral processing circuit will be transferred to one of three purpose designed storage facilities, to be constructed in stages over the production life of the mine.

Other infrastructure necessary to support project operations will include:

- mine access, tracks and haul roads;
- on-site solar array and energy storage system with back-up diesel generation;
- accommodation facility, ablutions, sewage treatment plant, airfield;

- water management infrastructure, including a 1.8 km long permanent watercourse diversion with a central watercourse width of approximately 5 m, flood levee, dams, drains and bunds;
- mine infrastructure areas including mine offices, bathhouse, crib rooms, warehouse/stores, workshop, fuel storage, refuelling facilities, wash bay, laydown area, effluent and liquid waste storage;
- ROM and product stockpiles and product loading area; and
- power, water and other minor plant and equipment.

The proposed Project development comprises three Project stages:

- Stage 1 - Project construction;
- Stage 2 - Mining and processing (ramping up to full production by Project year 3 - 3.5 Mtpa), followed by low-grade ore stockpile reclaim (plant feed from stockpiles after pit depletion); and
- Stage 3 - Final site rehabilitation and monitoring.

Mining activities proposed for the Project will occur within Mining Lease Application (MLA) 100430 and MLA 100431, with a proposed Project footprint of 2,413.7 ha. Mining, processing and access will occur within the proposed MLAs. The main Project infrastructure within the MLAs is shown in Figure 2, and the transport corridor in Figure 3. The maximum disturbance area for the Project (referred to as Project disturbance area herein) is shown in Figure 2 and Figure 3. The Project is expected to have a negative water balance, and no water releases are proposed. Groundwater may be extracted for use during the construction phase of the Project subject to the receipt of required approvals.

Site rehabilitation will occur in accordance with an approved progressive rehabilitation and closure plan (PRCP) for the Project, generally commencing once mining and processing have been completed.

1.3 Purpose and scope

The purpose of this report is to describe the terrestrial ecological values of the study area and assess the potential impacts of the Project on these values.

The study area covers both proposed MLAs for the Project, with a particular focus on field validation of relevant prescribed environmental matters within the Project disturbance area. Nonetheless, survey efforts were designed to ensure adequate representation of matters across the MLAs. The areas visited during the surveys are shown in Figure 7 (flora) and Figure 8 (fauna). Further description of the survey sites is provided in Section 4.

The ecological assessment considers data collected from four seasonal terrestrial ecology surveys undertaken between 2024 and 2025. The scope of the assessment and report was defined by the ToR for the EIS and includes:

- identification of legislation and policies relevant to the Project and terrestrial flora and fauna;
- desktop assessment to identify conservation significant species and ecological communities that have potential to occur within the study area;
- seasonal and targeted terrestrial flora and fauna surveys, designed to identify ecological values associated with the Project site;
- develop a comprehensive flora and fauna species inventory for the Project site;
- provide a ground-truthed Regional Ecosystem (RE) map developed in accordance with the 'Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (V7.0)' (Neldner et al. 2023);
- identify the presence of Matters of State Environmental Significance (MSES), Matters of National Environmental Significance (MNES), Matters of Local Environmental Significance (MLES), and their habitats;

- assesses the potential direct and indirect impacts of the Project on terrestrial species and ecosystems, and proposes measures to avoid, minimise or mitigate the impacts; and
- identify the likely requirements for any offsets under the Queensland *Environmental Offsets Act 2014* (EO Act).

A reconciliation of the requirements of the ToR addressed in this assessment is provided in Appendix A.

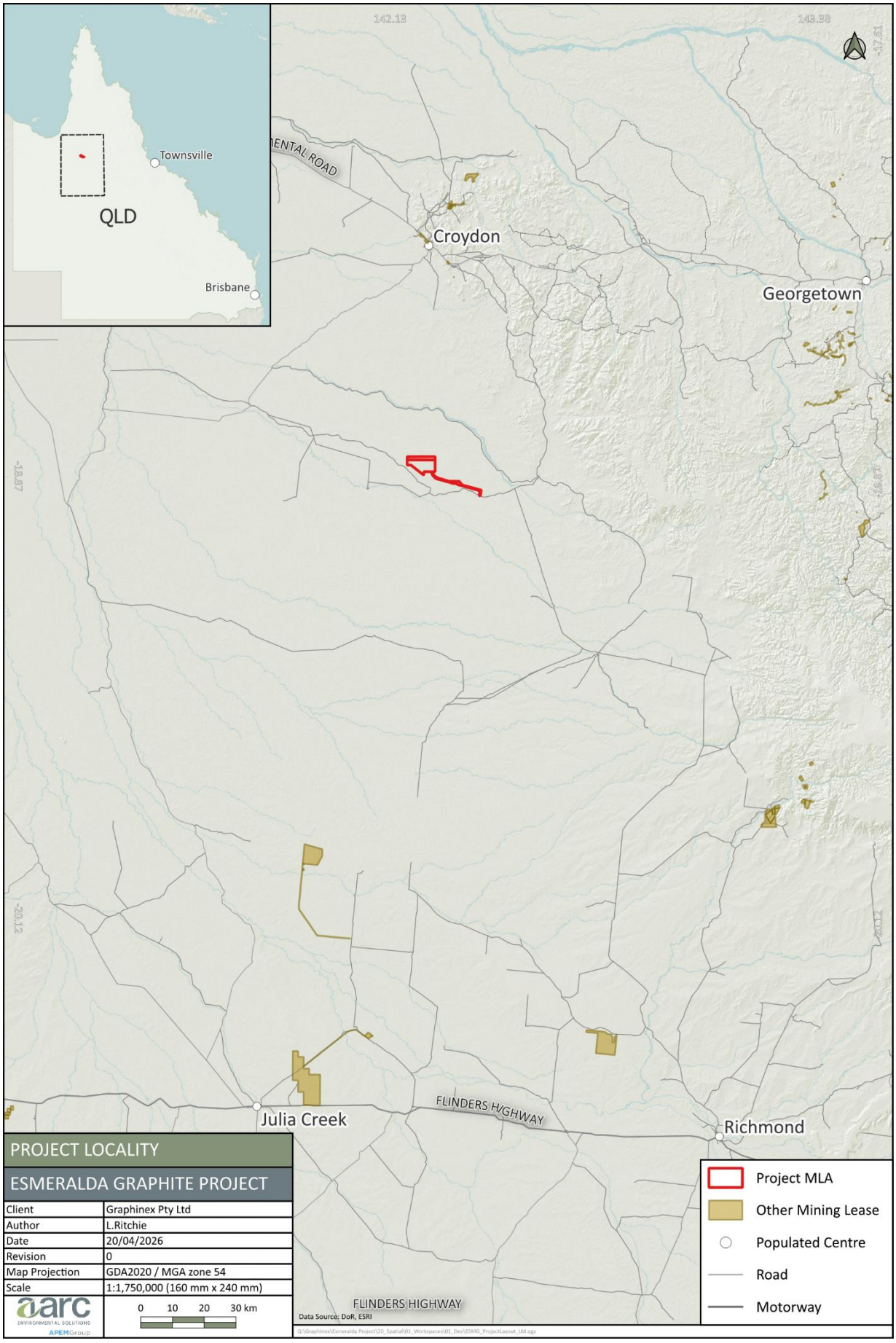


Figure 1: Project location

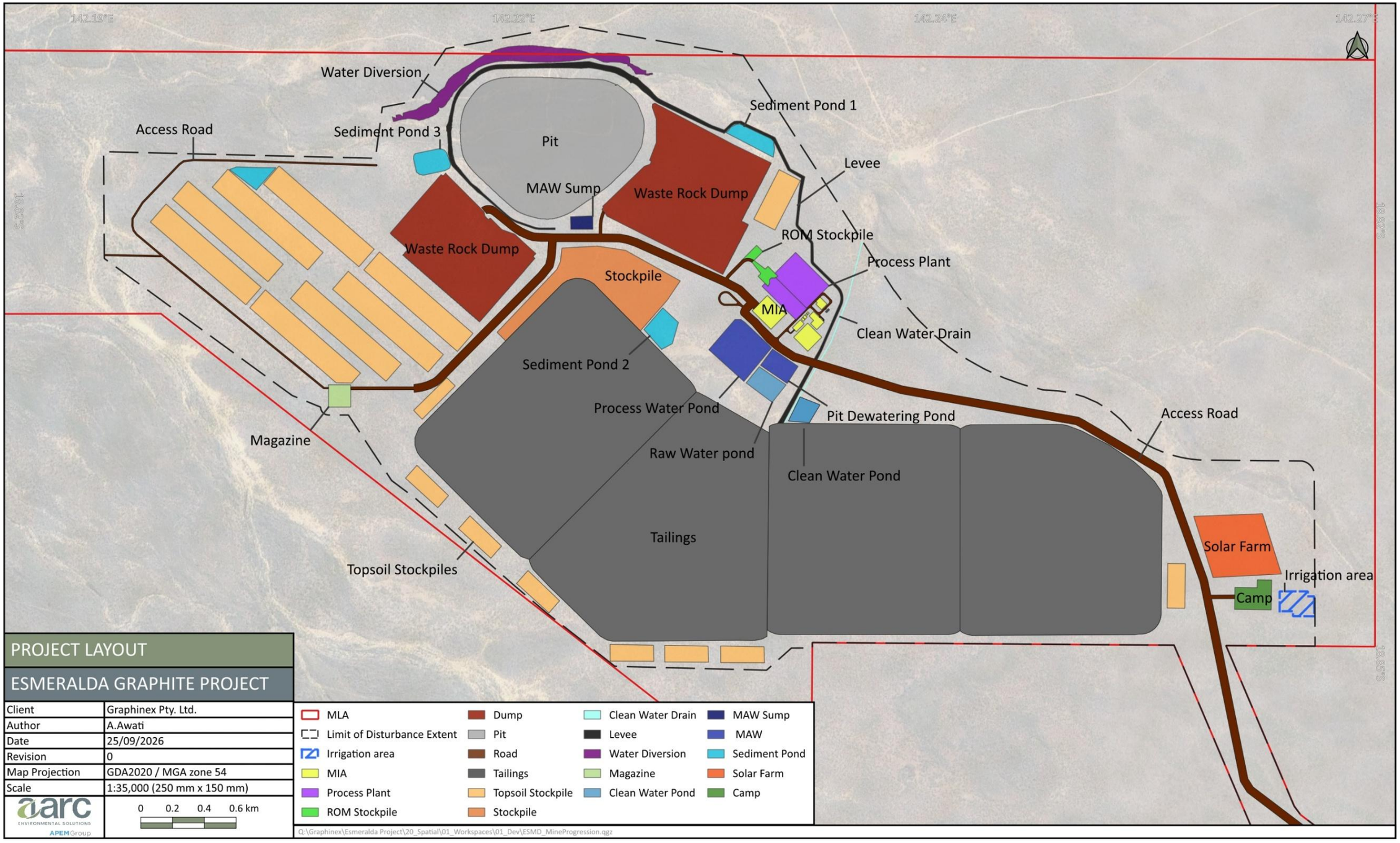


Figure 2: Conceptual project layout (mining and processing area)

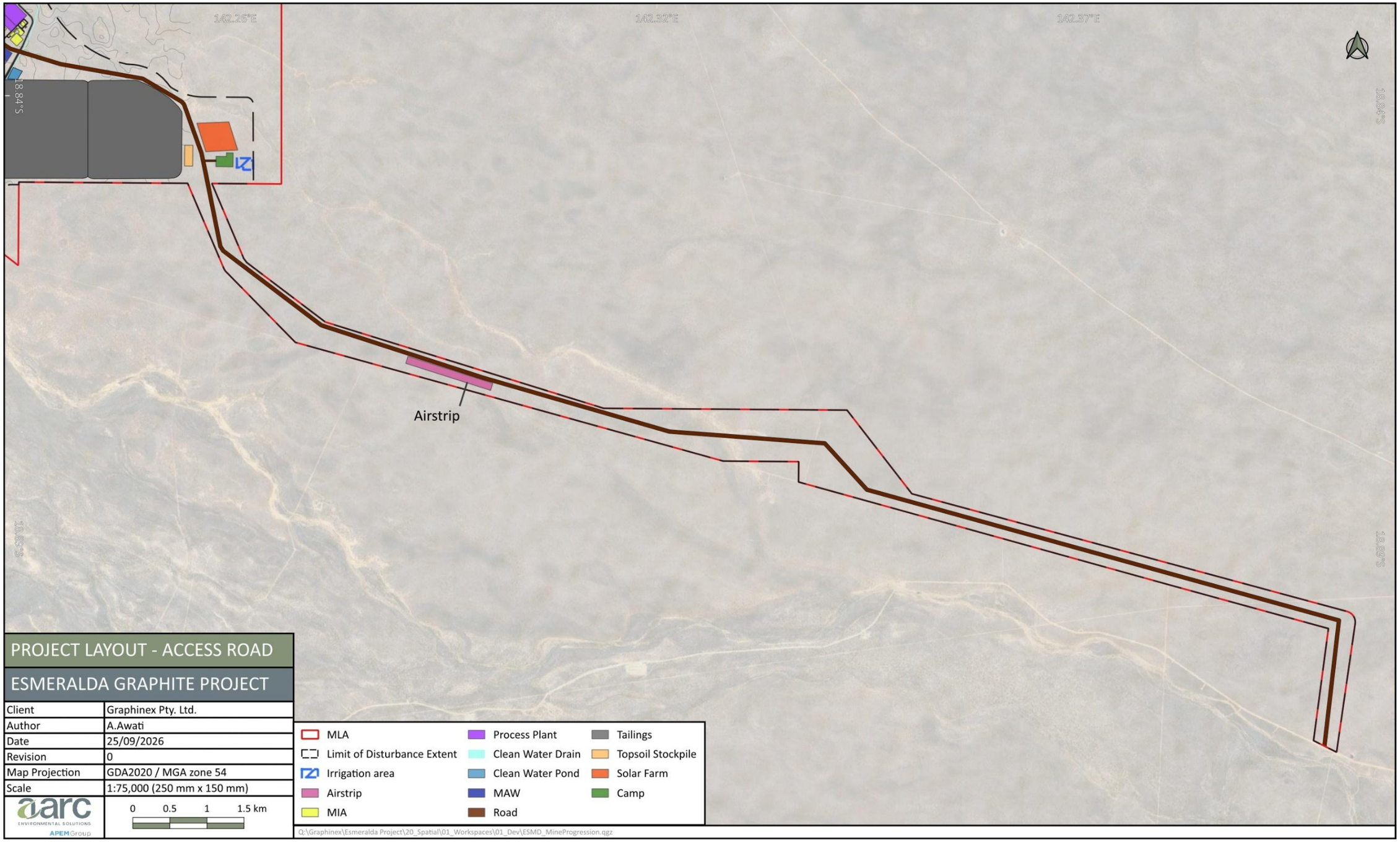


Figure 3: Conceptual project layout (transport corridor)

2 Regional context

2.1 Biogeographic region

The Project is located in the Croydon Shire, within the Gulf Plains Bioregion. The Gulf Plains Bioregion is located in the Gulf of Carpentaria of northern Queensland. The bioregion encompasses approximately 211,000 km^2 of low-lying country and offshore islands of north-west Queensland and is characterised by extensive alluvial plains and coastal areas.

The Project is located inland within the Claraville subregion of Gulf Plains bioregion, around 20 km west of the Gilberton Plateau subregion border and around 35 km west of the Einasleigh Uplands bioregion border. The inland vegetation of the Gulf Plains bioregion is dominated by grasslands, Eucalypt woodlands, *Melaleuca* and *Acacia*, which cover the landscape of plains and river channels, comprising clay and alluvial soils (DEHP 2015).

2.2 Climate

The region's climate is described as sub-tropical with monsoonal influence, with a winter dry season and summer wet season. Long-term climate data (1960 to 2025) was retrieved from Queensland Government SILO LongPaddock (DEC 2025) for - 18.85 °S, 142.25 °E (Figure 4).

Rainfall records indicate annual rainfall is approximately 668 mm/year. Most rainfall occurs during the wet season (November to March), with dry conditions prevailing for most of the year. The mean annual evaporation in the study area is approximately 2,625 mm, about four times higher than the average rainfall. The mean monthly maximum temperature is highest in November (38°C, with the highest recorded temperature of 44.3°C) and lowest in June (13.8°C). The mean monthly minimum temperature is highest in December (24.5°C) and lowest in July (12.7°C), with the lowest temperature of around 2°C registered in 1983 and 2024.

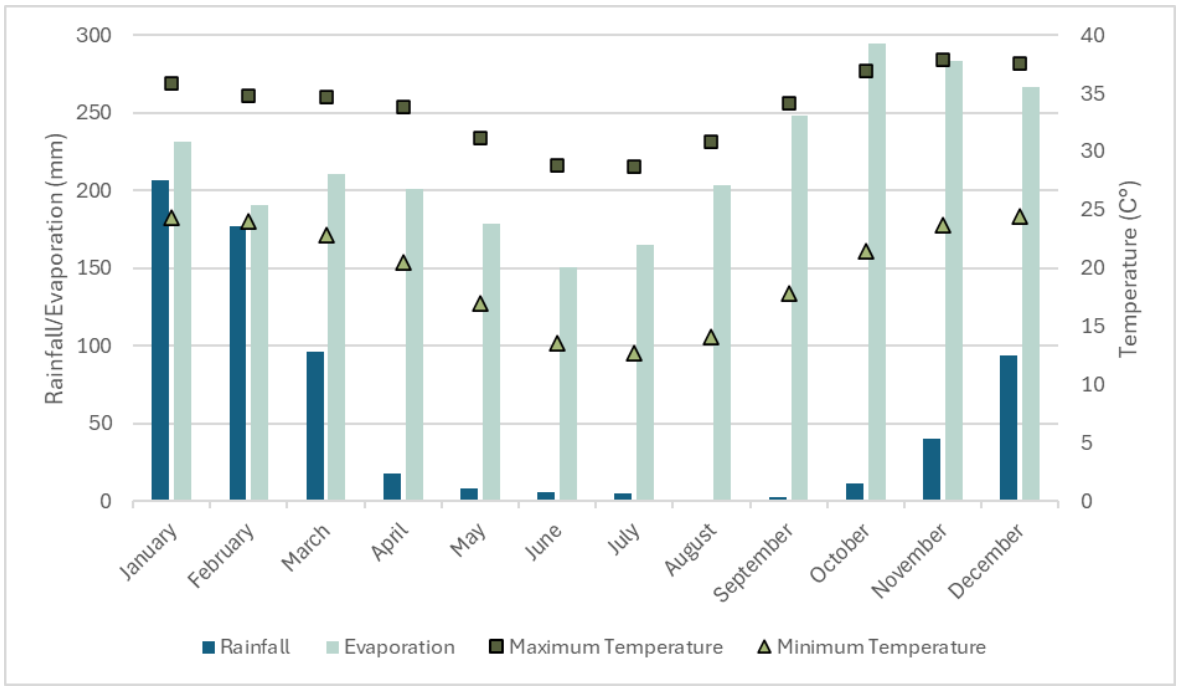


Figure 4: Project climate data (1960 to 2025)

2.3 Topography and land zone

The topography of the study area is generally flat with elevations ranging between 120 m and 140 m Australian Height Datum (AHD).

Two land zones occur within the Project:

1) Land Zone 3 – recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes, and associated wave-built lunettes (Wilson & Taylor 2012). Land Zone 3 excludes colluvial deposits such as talus slopes and pediments. This Land Zone includes a diverse range of soils predominantly Vertosols and Sodosols (Wilson & Taylor 2012). Land Zone 3 also occurs with Dermosols, Kurosols, Chromosols, Kandosols, Tenosols, Rudosols and Hydrosols; and Organosols in high rainfall areas (Wilson & Taylor 2012); and

2) Land Zone 5 – Tertiary - early Quaternary loamy and sandy plains and plateaus (Wilson & Taylor 2012). Land Zone 5 consists of extensive, uniform near level or gently undulating plains with sandy or loamy soils and includes dissected remnants of these surfaces. Soils are usually Tenosols and Kandosols, also minor deep sandy surfaced Sodosols and Chromosols (Wilson & Taylor 2012).

2.4 Hydrology

The Project is located within the Norman River Drainage Basin, which encompasses an area of 50,667 km^2 and only contains the Norman River sub-catchment area (DESI 2013). The Norman Drainage Basin is part of the Gulf Drainage Division. The Norman River is joined by three major tributaries, the Carron, Clara and Yappar Rivers. The Project is situated between the Clara and Yappar Rivers, approximately 7 km north of the Clara River and 8 km south-west of the Yappar River, at its closest point.

The Warrigal Creek, a 5th order stream that converges with the Clara River, is situated to the south of the Project. The Warrigal Creek originates approximately 50 km south-east of the transport corridor MLA boundary, flowing north-west before converging with the Borer River and flowing into the Clara River, approximately 45 km north-west of the MLA boundary. Several unnamed, ephemeral waterways (tributaries of Warrigal Creek) traverse the Project area (Figure 5). The proposed mining pit for the Project intersects a section of an unnamed tributary of Warrigal Creek – a stream order 3 waterway (referred to as the 'main creek' in the Project area). This waterway has a moderate size catchment (114 km^2) and flows in an east west direction through the Project area.

Periods of flow in the Warrigal Creek and its tributaries are restricted to significant rainfall events in the wet season between the months of December to late March. Topography across the Project area and in the surrounding area is very flat, which results in widespread flooding, with interactions between the nearby major waterways during significant flood events. The unnamed stream order 3 waterway (tributary of Warrigal Creek) receives significant breakout flood flows from the northern banks of Warrigal Creek and the Borer River.

The waterways (which refer to vegetation management watercourses and drainage features on this assessment) and topography of the study area are shown in Figure 5. There are several small and isolated ephemeral wetlands, identified under the Vegetation Management Wetlands Map, within and surrounding the study area (Figure 5).

2.5 Land use

The study area is located within the Gulf Savannah natural resource management (NRM) region. The land in the study area is currently used for low-intensity cattle grazing and resource exploration activities (DESI 2013). Queensland Land Use Mapping classifies the study area as 'Grazing Native Vegetation' (DNRMMRRD 2025a).

There are no World Heritage areas within 150 km of the Project. There are some protected areas, such as the Tagalaka National Park (also listed as Littleton Resources Reserve), the Rungulla National Park and several Nature Refuges (state protected areas established under the NC Act), located within 100 km of the Project (Figure 6). The Esmeralda Nature Refuge is located over 40 km east of the Project.

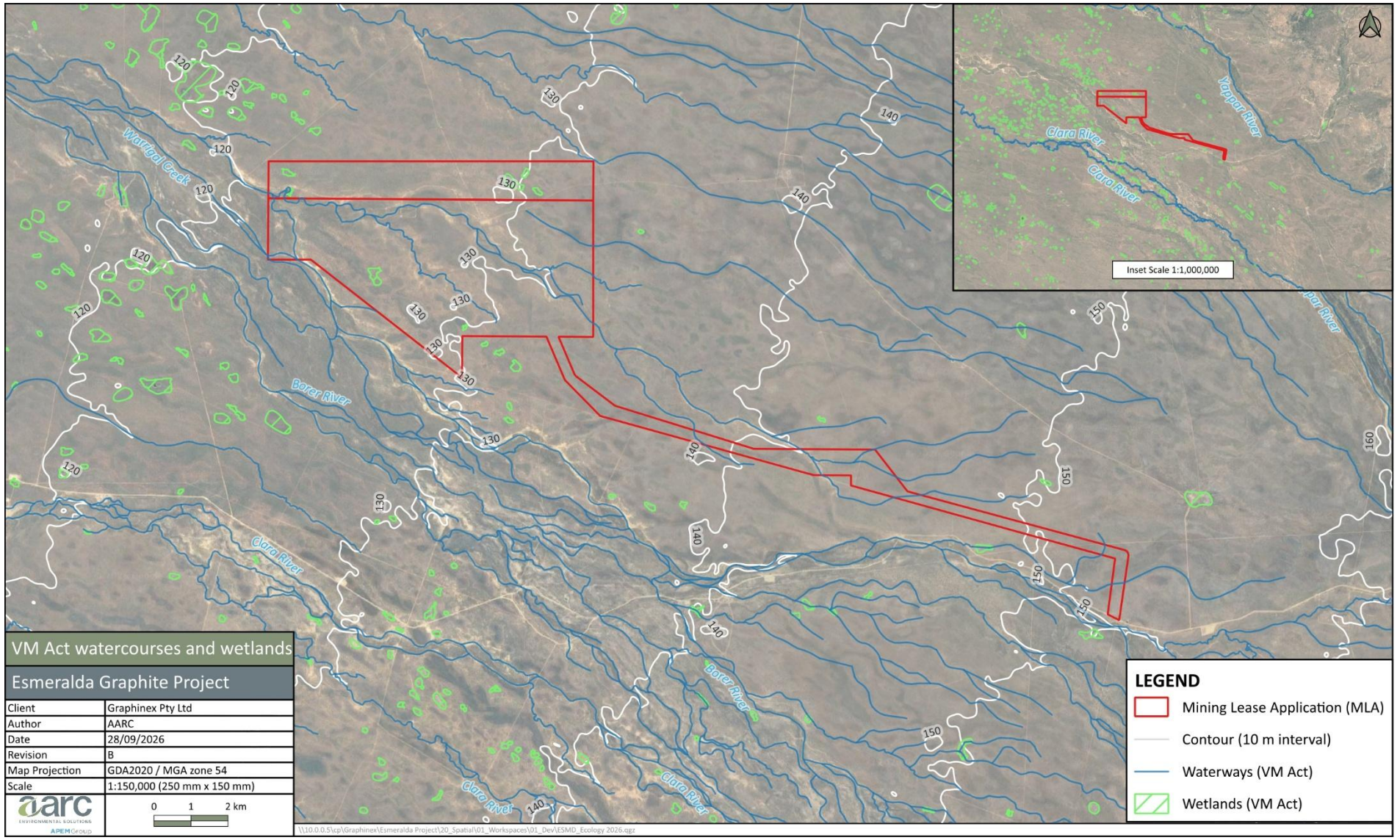


Figure 5: Vegetation Management waterways and wetlands in relation to the study area

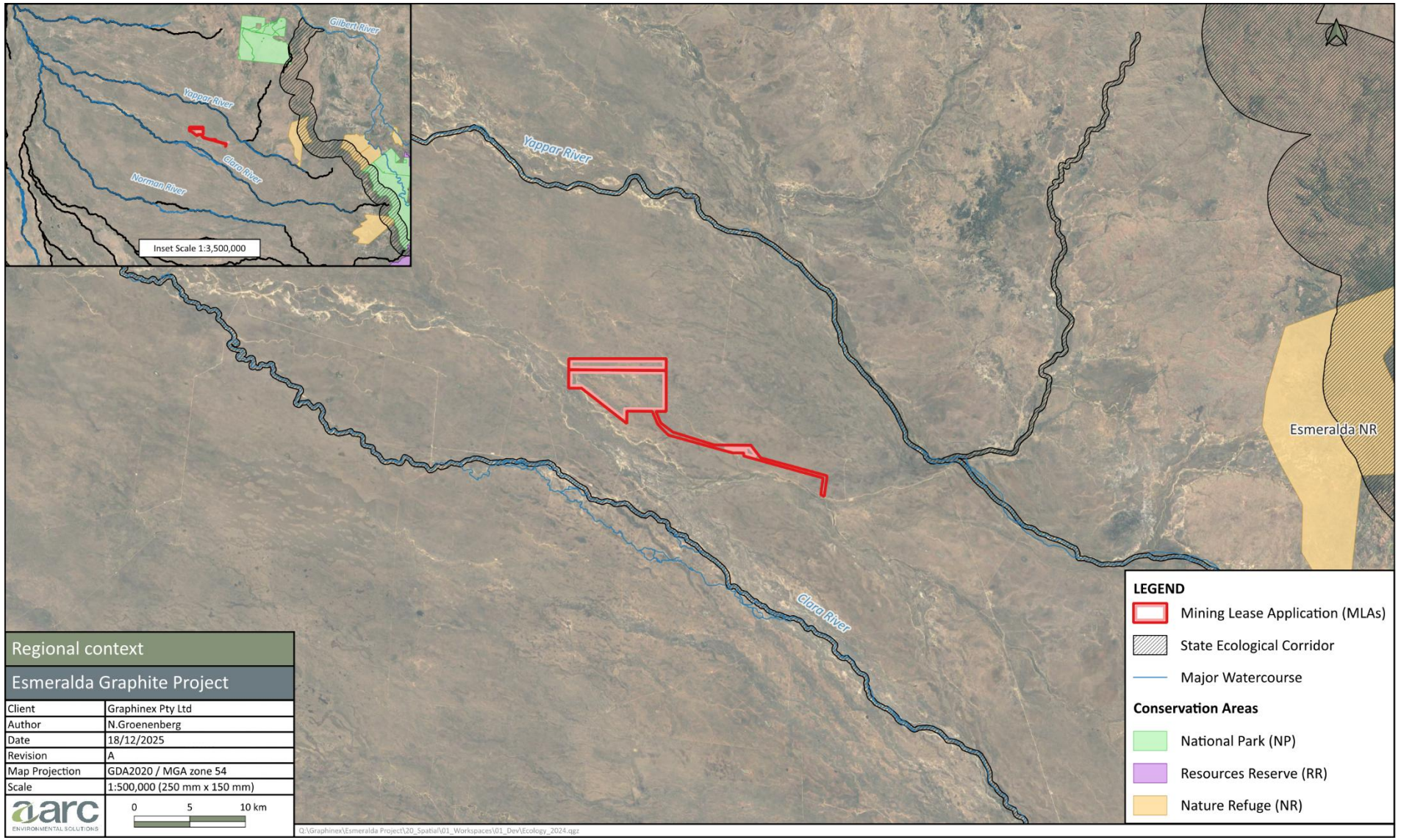


Figure 6: Regional context of the study area

3 Relevant legislation and policy

3.1 Commonwealth

3.1.1 *Environmental Protection and Biodiversity Conservation Act 1999*

The Commonwealth EPBC Act provides a framework to protect and manage nationally and internationally important flora, fauna, ecological communities, and heritage places, which are defined in the EPBC Act as MNES. The EPBC Act applies to nine MNES:

- world heritage properties;
- national heritage places;
- wetlands of international importance (Ramsar wetlands);
- nationally listed threatened species and ecological communities;
- migratory species;
- Commonwealth marine areas;
- the Great Barrier Reef Marine Park;
- nuclear actions (including uranium mines); and
- a water resource, in relation to coal seam gas development and large coal mining development.

The EPBC Act requires assessment and approval for any activity that has, or is likely to have, a significant impact on an MNES. The Project was determined 'not a controlled action' (EPBC reference 2025/10140) under the EPBC Act on 23 June 2025, and therefore, impacts to MNES will not be discussed in this report. However, the assessment does consider EPBC Act tools, guidelines and conservation listings, where they provide important context to the characterisation of the environmental values for the site.

3.1.2 Agreements for migratory species and international conventions

Australia has signed or ratified nearly one hundred environmental treaties that serve as sources of environmental legal obligations (PCA 1999). Providing critical habitat for millions of migratory birds each year, Australia is a party to international conventions and agreements to protect migratory species. These include the:

- China–Australia Migratory Bird Agreement (CAMBA);
- Japan–Australia Migratory Bird Agreement (JAMBA);
- Republic of Korea–Australia Migratory Bird Agreement (ROKAMBA); and
- Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Bird species listed within the appendices/annexes of these agreements/conventions are subsequently listed as migratory species under the EPBC Act.

Other international biodiversity conventions to which Australia is party to include the:

- Convention on Biological Diversity (CBD);
- Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES);
- Convention on Conservation of Nature in the South Pacific (Apia Convention); and
- Convention Concerning the Protection of the World Cultural and Natural Heritage (the World Heritage Convention).

3.2 Queensland

3.2.1 *Environmental Protection Act 1994*

The objective of the *Environmental Protection Act 1994* (Qld) (EP Act) and its associated regulations and policies is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends. This principle is commonly referred to as ecologically sustainable development. The EP Act addresses the following areas that are relevant to the Project:

- notifiable activities, as listed in Schedule 3 of the EP Act;
- environmental protection policies for water and wetland biodiversity, noise and air which are intended to enhance or protect Queensland's environment and list relevant environmental outcomes and performance criteria;
- Prescribed Environmentally Regulated Activities defined within the EP Act and listed in schedule 2 of the Environmental Protection Regulation 2019;
- The EP Act defines resource activities listed in schedule 21 part 1 of the Planning Regulation 2017 for exempt clearing work;
- Environmental Authorities (EAs) required to carry out an Environmental Relevant Activity (ERA) including a resource activity, and which will include conditions that will regulate the Project; and
- duties of care associated with environmental harm.

3.2.2 *Nature Conservation Act 1992*

The Queensland *Nature Conservation Act 1992* (NC Act) and its associated regulations provide a framework for creating and managing protected areas (such as National Parks), and protecting native and threatened species. The regulations include the Nature Conservation (Animals) Regulation 2020 and the Nature Conservation (Plants) Regulation 2020.

The Nature Conservation (Animals) Regulation 2020 and the Nature Conservation (Plants) Regulation 2020 prescribe the following classes of protected wildlife[1]:

- Extinct;
- Extinct in the wild;
- Critically Endangered;
- Endangered;
- Vulnerable;
- Near Threatened; and
- Least Concern.

The Nature Conservation (Animals) Regulation 2020 prescribes Least Concern fauna as Special Least Concern for the following species:

- Short-beaked Echidna (*Tachyglossus aculeatus*).
- Platypus (*Ornithorhynchus anatinus*).

[1] Under the NC Act the term wildlife refers to any native taxon or species of an animal, plant, Protista, procaryote or virus.

- A Least Concern bird to which any of the following agreements apply: China-Australia Migratory Bird Agreement, Japan-Australia Migratory Bird Agreement, Republic of Korea-Australia Migratory Bird Agreement or the Convention on the Conservation of Migratory Species of Wild Animals.

Under the NC Act, a Regulation may prescribe a Least Concern plant as a Special Least Concern plant if the taking or use of the plant is at risk of not being ecologically sustainable.

Permits and licences are required to authorise impacts to, or the handling of, native flora and fauna and their breeding habitat. Permits that may be relevant to the proposed activities during the life of the Project are:

- Protected Plant Clearing Permit: required under the Nature Conservation (Plants) Regulation 2020 for the clearing of Endangered, Vulnerable, or Near Threatened plants protected under the NC Act.
- Species Management Program (SMP): required under the Nature Conservation (Animals) Regulation 2020 requirements for tampering with a breeding place for a protected animal that is classified as extinct in the wild, critically endangered, endangered, vulnerable, near threatened, special least concern, colonial breeder or least concern. 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.
- Damage Mitigation Permit: required under the Nature Conservation (Animals) Regulation 2020 for the take wildlife to minimise damage or loss of property or to protect human health or wellbeing. There are three types of damage and mitigation permit, one applicable to the proposed activities, being the removal and relocation of protected animals. This permit allows the safe and humane removal of native animals that pose a threat to human health or wellbeing, such as removing a venomous snake from a working area.

3.2.3 *Vegetation Management Act 1999*

The *Vegetation Management Act 1999* (Qld) (VM Act) is part of the framework to manage native vegetation in Queensland.

The purpose of the VM Act is to regulate the clearing of vegetation in a way that:

- conserves remnant vegetation that is an Endangered, Of Concern, or Least Concern Regional Ecosystem (RE);
- conserves vegetation in declared areas;
- ensures the clearing does not cause land degradation;
- prevents the loss of biodiversity;
- maintains ecological processes;
- manages the environmental effects of the clearing to achieve the matters mentioned in the above bullet points;
- reduces greenhouse gas emissions; and
- allows for sustainable land use.

The status of each RE identified within Queensland is described in the Regional Ecosystem Description Database (REDD) (V13.1) (DESI 2024).

Remnant vegetation means vegetation that is either an Endangered, Of Concern, or Least Concern RE and the predominant canopy of the vegetation:

- covers more than 50% of the undisturbed predominant canopy;
- averages more than 70% of the vegetation's undisturbed height; and
- is composed of species characteristic of the vegetation's undisturbed dominant canopy.

An RE is defined as a vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil (Neldner et al. 2019). Under the VM Act, each RE is classed as either Endangered, Of Concern or Least Concern.

Schedule 21 of the Planning Regulation lists exemptions for the Vegetation Management framework, including a resource activity as defined under Section 107 of the *Environmental Protection Act* – a mining activity.

The VM Act classes are used to determine offset requirements for significant residual impacts on regional ecosystems under the provisions of the EO Act. Projects assessed by EIS will have to assess any clearing of regulated vegetation under the environmental offsets framework.

The biodiversity status is an additional classification assigned to REs by the Queensland Government. The biodiversity status assigned to each RE is based on an assessment of the condition of remnant vegetation in addition to the criteria used to determine the class under the VM Act. This includes other threatening processes, such as reduction in biodiversity, weed invasion, grazing pressures, inappropriate fire management, fragmentation and infrastructure development. While the biodiversity status is not applicable under the VM Act, it is used for a range of planning and management applications. REs are classified as either Endangered, Of Concern or as No Concern at present under the biodiversity status.

3.2.4 *Environmental Offsets Act 2014*

The Queensland environmental offsets framework consists of the *Environmental Offsets Act 2014* (EO Act), Environmental Offsets Regulation 2014, and the 'Queensland Environmental Offsets Policy (Version 1.17)'. The offsets framework requires environmental offsets to be delivered where an activity is likely to result in a significant residual impact on a prescribed environmental matter. The 'Significant Residual Impact Guideline' (DEHP 2014) is used to assess whether the Project will result in a significant residual impact.

Prescribed environmental matters include:

- matters of national environmental significance (MNES);
- matters of state environmental significance (MSES); and
- matters of local environmental significance (MLES).

The Queensland Environmental Offsets Policy establishes an environmental offset hierarchy to avoid duplication of offset conditions between jurisdictions. State and local governments may only impose an offset condition if 'the same, or substantially the same, impact and the same, or substantially the same, matter' has not been subject to assessment under the Commonwealth.

These prescribed environmental matters are outlined in the Environmental Offsets Regulation 2014 (EO Act).

MSES comprise:

- regulated vegetation (determined under VM Act), including:
    - Endangered and Of Concern prescribed REs[2] listed under the VM Act;
    - Prescribed REs that intersect areas shown as wetlands on the VM Act Wetlands map;
    - Prescribed REs located within a defined distance from the defining banks of a relevant watercourse or relevant drainage feature; and
    - Prescribed REs mapped as essential habitat for Endangered and Vulnerable flora and fauna listed under the NC Act;
- areas that provide connectivity and maintain ecosystem functioning;

[2] prescribed regional ecosystem means a regional ecosystem, other than a regional ecosystem mentioned in the Vegetation Management Act 1999, section 8(b), located in a category B area on the regulated vegetation management map, to the extent the ecosystem contains remnant vegetation.

- wetlands and watercourses, including:
  - a wetland in a wetland protection area;
  - a wetland of high ecological significance shown on the map of Queensland wetland environmental values; and
  - a wetland or watercourse in high ecological value waters.
- designated precincts in a strategic environmental area under the Regional Planning Interests Regulation 2014;
- protected wildlife habitat for Critically Endangered wildlife, Endangered wildlife or Vulnerable wildlife or a special least concern animal (referring only to an echidna (*Tachyglossus aculeatus*) or a platypus (*Ornithorhynchus anatinus*));
- protected areas and highly protected zones of State marine parks;
- fish habitat areas;
- waterways providing for fish passage;
- marine plants; and
- legally secured offsets.

3.2.5 *Biosecurity Act 2014*

The *Biosecurity Act 2014* (Biosecurity Act (Qld)) provides comprehensive biosecurity measures to safeguard the economy, agricultural and tourism industries, environment, and way of life, from pests, diseases, and contaminants.

Biosecurity matters are separated into two broad categories:

- A 'prohibited matter' is a biosecurity matter that is not found in Queensland but would have a significant adverse impact on our health, way of life, the economy, or the environment if it entered the state. Prohibited matters must be reported to Biosecurity Queensland within 24 hours and all reasonable steps taken to minimise the risks of the prohibited matter and not make the situation worse.
- A 'restricted matter' is a biosecurity matter found in Queensland that has a significant impact on human health, social amenity, the economy, or the environment. There are seven categories whereby specific actions are required to limit the spread and impact of the matter by reducing, controlling, or containing it. Several categories can apply to the one restricted matter. In such cases, the requirements of all the relevant restriction categories would apply.

There is a general biosecurity obligation for parties to take all reasonable and practical steps to minimise the risks associated with other matters under their control. The Biosecurity Act (Qld) is relevant to the Project in regard to control and management of invasive plant and animal species.

3.2.6 Planning Regulation 2017

The proposed activities included in this report are limited to the Project MLAs. Clearing work is considered exempt under Schedule 21, Part 1 of the Planning Regulation 2017 within an ML, and will therefore be exempt once the ML is granted.

However, clearing on-lease may require a development approval if the clearing is for activities not authorised by the Mineral Resources Act or another mining-related Act.

4 Methodology

4.1 Desktop assessment methods

4.1.1 Government mapping and database searches

A desktop assessment was undertaken to collate information on the terrestrial ecological values within the study area and surrounds. The review informed the terrestrial ecology assessment methods and field survey design, ensuring a robust assessment of conservation significant flora and fauna species potentially inhabiting the study area. Desktop searches consisted of relevant government reports, government mapping, database searches, and a literature review.

For the review of MNES, the EPBC Act Prescribed Matter Search Tool (PMST) was used to generate an EPBC Act Protected Matters Report, using the study area as a search area (DCCEEW 2024-2025a). Subsequent reports were generated with a 50 km buffer to provide representation of MNES values potentially present within the broader region.

For the review of MSES, Queensland Globe, a spatial, interactive and visualisation tool supplied by the Queensland Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD 2025a) was used in conjunction with state government reports specific to the study area. These reports included:

- The Department of Environment, Tourism, Science and Innovation (DETSI), Environmental Reports, Matters of State Environmental Significance: to identify known MSES within the study area and surrounds (DETSI 2024-2025a);
- The DETSI Environmental Reports, Regional Ecosystems Biodiversity Status: to identify remnant regional ecosystems within the study area and surrounds (DETSI 2024-2025b);
- The DNRMMRRD Vegetation Management Report: to identify areas of regulated vegetation, Vegetation Management Regional Ecosystems mapping (VM Act), and essential habitat for protected wildlife (*Nature Conservation Act 1992* (NC Act)) within the study area and surrounds (DNRMMRRD 2025b);
- The DETSI Protected Plants Flora Survey Trigger Map: to identify any high-risk areas where NC Act protected plants are present or are likely to be present (searches based on the study area) (DETSI 2024-2025c);
- The DETSI Environmental Reports, Biodiversity and Conservation Values: to identify known Biodiversity Planning Assessment areas and Aquatic Conservation Assessment areas within the study area and surrounds (DETSI 2024-2025d); and
- The BoM and DNRMMRRD mapping of GDEs (study area and surrounds) (BoM 2024-2025, DNRMMRRD 2025b).

Searches of databases were also conducted to identify species records. These searches included:

- The DETSI Wildlife online species list: to identify conservation significant species (Critically Endangered, Endangered, Vulnerable, Near Threatened, and Special Least Concern under the EPBC Act and/or the NC Act) species records (searches based on 10, 25 and 50 km buffer) (DETSI 2024-2025e);
- The Atlas of Living Australia Occurrence Records: to further verify conservation significant species records (searches based on 10, 25 and 50 km buffer) (ALA 2024-2025); and
- The Australian Virtual Herbarium (AVH) to identify flora EVNT species records (AVH 2024-2025).

The results of the desktop assessment are described in Section 5.1. A complete list of the species of conservation significance identified during desktop searches is presented in Appendix C (flora) and Appendix D (fauna).

4.1.2 Likelihood of occurrence assessment

A likelihood of occurrence assessment for species of conservation significance identified during database searches was prepared by qualified ecologists using the criteria in Table 1. The likelihood assessment considered the desktop assessment results, prior to field surveys and was based on the knowledge of ecologists, species' records distribution, potential habitat suitability, known records, and scientific literature.

Table 1: Criteria adopted for likelihood of occurrence determination

Likelihood of occurrence	Criteria
Known	There are confirmed species records within the study area.
Likely	Preferred habitat occurs within the study area, and there are confirmed species records in the nearby surrounds (species-dependent, but approximately 10 km from the study area). However, the species is not known to occur within the study area.
Potential	Potential habitat may occur within the study area, and the species is known to occur in the wider surroundings (species-dependent, but approximately 50 km from the study area).
Unlikely	Due to a lack of suitable habitat within the study area and/or the absence of records from the wider surroundings, the species is considered to have a low likelihood of occurring within the study area.

4.2 Field surveys

The field surveys were designed and conducted in accordance with the following guidelines:

Commonwealth Guidelines:

- 'Survey guidelines for Australia's threatened reptiles' (DSEWPC 2011a).
- 'Survey guidelines for Australia's threatened birds' (DEWHA 2010a).
- 'Survey guidelines for Australia's threatened mammals' (DSEWPC 2011b).
- 'Survey guidelines for Australia's threatened bats' (DEWHA 2010b).
- 'Draft referral guideline for 14 migratory birds listed under the EPBC Act' (DoE 2015a).

Targeted surveys undertaken for EPBC Act listed species considered likely to occur, or have the potential to occur, considered the requirements outlined in the 'Species Profile and Threats Database' (SPRAT) (DCCEEW 2024-2025b).

The Project was determined 'not a controlled action' (EPBC reference 2025/10140) under the EPBC Act on 23 June 2025, and therefore, impacts to MNES will not be discussed in this report. However, the field surveys were designed to enable the environmental values of the site to be characterised, including matters listed under the EPBC Act.

State Guidelines:

- 'Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (V7.0)' (Neldner et al. 2023).
- 'Flora Survey Guidelines - Protected Plants (V2.03)' (DETSI 2025).
- 'Management of endangered plants' (Cropper 1993).
- 'Terrestrial Vertebrate Fauna Survey Guidelines for Queensland (V4.0)' (Eyre et al. 2022).

This report refers to the nationally accepted taxonomy for flora from the Australian Plant Census (APC 2023), and the nomenclature for fauna follows the Australian Biological Resources Study Faunal Directory (ABRS 2022).

Targeted surveys were undertaken for listed species under the NC Act and the EPBC Act assessed as having potential to occur. The requirements outlined in publicly available resources, such as those listed above, formed the basis for targeted habitat searches.

4.2.1 Survey timing and conditions

Terrestrial flora and fauna surveys were conducted for the Project in August 2024 (from the 13 to 19 August), November 2024 (from 14 to 27 November), February 2025 (from 11 to 15 February) and August 2025 (flora only) (from 26 August to 2 September).

The survey timing was consistent with the 'Terrestrial Vertebrate Fauna Survey Guidelines for Queensland V4.0' (Eyre et al. 2022) to account for temporal and seasonal changes in faunal assemblages while avoiding the hottest and coldest months.

Weather conditions were obtained from SILO/LongPaddock for -18.85 °S, 142.25 °E (DEC 2025). During the August 2024 survey, the weather conditions experienced were typical for the region. Rainfall in the three-month period preceding the survey was below the 20-year average (0.4 mm vs 19.6 mm), with no rainfall occurring during the survey period. The minimum temperature during the survey period ranged from 12°C to 13.8°C, which is slightly below the long-term August minimum temperature average for the same period (14.2°C). The maximum temperature ranged from 30.7°C to 34.7°C, similar to the long-term August maximum temperature average (30.8°C).

Weather conditions during the November 2024 survey were typical for the region, featuring elevated temperatures, humidity, and evening storms. Rainfall in the three-month period preceding the survey was approximately 90% lower than the long-term average (1.7 mm vs 15.7 mm), with a total of 36.6 mm of rainfall occurring during the survey period. The minimum temperature during the survey period was variable, ranging from 23.3°C to 25.7°C, consistent with the long-term November minimum temperature average (23.6°C). The maximum temperature ranged from 35.4°C to 40°C, consistent with the November average maximum temperature of 37.9°C.

Rainfall in the three months preceding the February 2025 survey was greater than double the long-term average (360 mm vs 160 mm), of which, 200 mm were recorded in the nine days preceding the survey. The survey was undertaken when rainfall decreased, registering a total of 9.4 mm. The minimum temperature ranged from 24.3°C to 26.5°C, marginally above the long-term February average of 24°C. The maximum temperature ranged from 33.6°C to 36.6°C, consistent with the average February maximum of 34.8°C.

Weather conditions during the August 2025 survey were similar to those recorded during the August 2024 survey, with no rainfall occurring during the survey period and similar temperatures. However, the rainfall in the three-month period preceding the survey was similar to the 20-year average (17 mm vs 19.6 mm). The minimum temperature during the survey period varied considerably, and ranged from 9.4°C to 17.6°C, which is similar to the long-term August minimum temperature average for the same period (14.2°C). The maximum temperature ranged from 29.7°C to 35.8°C, with most days exceeding 30°C, slightly above the long-term August average maximum temperature (30.8°C).

Table 2: Temperatures and rainfall for the survey periods

Survey Dates	Minimum Temp (°C)	Maximum Temp (°C)	Rainfall (mm)
13 Aug. 2024	12.9	30.7	0
14 Aug. 2024	12	32.1	0
15 Aug. 2024	11.7	33	0
16 Aug. 2024	12.3	33.8	0

Survey Dates	Minimum Temp (°C)	Maximum Temp (°C)	Rainfall (mm)
17 Aug. 2024	11.6	34.5	0
18 Aug. 2024	13.8	33.5	0
19 Aug. 2024	13.6	34.7	0
14 Nov. 2024	24.8	38.5	4.7
15 Nov. 2024	25.1	39.7	2
16 Nov. 2024	24.3	38.1	0
17 Nov. 2024	25.7	40	0
18 Nov. 2024	24.6	35.4	0.7
19 Nov. 2024	24.4	37.9	0.5
20 Nov. 2024	23.3	35.4	6.5
21 Nov. 2024	23.9	37.8	0.7
22 Nov. 2024	24	37.6	4.2
23 Nov. 2024	25	38.1	0.2
24 Nov. 2024	25.3	39	0
25 Nov. 2024	24.7	36.4	0
26 Nov. 2024	24.1	37.8	17.1
27 Nov. 2024	24.4	36.1	0
11 Feb. 2025	24.7	33.6	2.7
12 Feb. 2025	25.5	34.7	0
13 Feb. 2025	26.5	36.6	0
14 Feb. 2025	25.2	35	3.8
15 Feb. 2025	24.3	33.9	2.9
26 Aug. 2025	14	34.6	0
27 Aug. 2025	15.4	34.3	0
28 Aug. 2025	15.9	34.7	0
29 Aug. 2025	16.1	35.8	0
30 Aug. 2025	17.6	31	0
31 Aug. 2025	10.5	29.7	0
1 Sept. 2025	10.3	30.5	0
2 Sept. 2025	9.4	31.8	0

4.2.2 Flora surveys

4.2.2.1 Representative site selection

Aerial imagery and Government RE maps were used to inform the selection of representative sites for the various flora and fauna survey methods applied within the study area. Sites were selected to provide a representative sample set for each vegetation community. Site selection was adjusted in the field to account for site specific factors and variations observed by expert ecologists.

4.2.2.2 Flora survey methods

A comprehensive flora species list, including native and introduced species, was compiled for the study area. The flora species list includes all species identified within the study area from assessments of vegetation transects, quaternary sites, targeted searches and incidental observations while traversing the site. Where a flora species could not be positively identified to species level, a voucher specimen was collected for identification by the Queensland Herbarium.

Vegetation community mapping

Vegetation communities were mapped on the ground in accordance with the 'Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (V7.0)' (Neldner et al. 2023). All RE's are described in accordance with the Queensland Regional Ecosystem Description Database (DESI 2024) classification system. Vegetation community boundaries were validated in the field using a Global Positioning System (GPS) and refined using the latest aerial imagery available for the study area. Data from the flora survey was used in conjunction with topographical and geological maps to produce a field-verified vegetation map.

Vegetation transects

A total of 24 vegetation transect sites were surveyed within the study area or surrounds in accordance with the 'Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (V7.0)' (Neldner et al. 2023) and the BioCondition Manual (Eyre et al. 2015). The location of the vegetation transects is shown in Figure 7.

The detailed flora assessments 100 m x 50 m were undertaken to classify and provide descriptions of the vegetation communities (and associated REs) present within the study area. Transect size was reduced when the assessment area was restricted by a small or narrow patch size. The following information was collected at each vegetation transect:

- site identifier information (e.g. GPS location, site name, collector, corresponding photographs);
- site photographs (including start and end transect photographs and central north, east, south, and west orientation photographs);
- vegetation type (e.g. woodland, open woodland, forest);
- vegetation stratum details, including list of species present and dominance, stratum height;
- vegetation structure details, including foliage projection cover percentage, ground cover composition (assessed using five 1 m x 1 m quadrats along the central transect line), stem density counts and diameter at breast height assessments;
- identification of flora to species level within representative transects, as follows:
    - all tree species within the 100 m x 50 m plot; and
    - all shrub, grass, forb and other vascular plant species within the 50 m x 10 m sub-plot.

  Where flora samples were not identifiable in the field, samples were collected for later identification at the Queensland Herbarium.
- land zone descriptions, including landform, slope and aspect and soil characteristics; and

- disturbance notes (e.g. presence of weed species, cattle grazing etc).

Quaternary sites

A total of 230 quaternary sites were sampled within the study area in accordance with the methods detailed in Neldner et al. (2023). The locations of the quaternary sites are shown in Figure 7.

The following information was recorded at each quaternary site:

- site identifier information (e.g. GPS Location, site name, collector, corresponding photographs);
- site photographs (taken of the vegetation with mostly north, east, south, and west orientation);
- vegetation structural formation (e.g. woodland, open woodland, grassland);
- vegetation stratum details (including list of main species present and dominance, stratum height);
- identification of ecologically dominant layer;
- land zone descriptions (including landform and soil characteristics); and
- disturbance notes (e.g. presence of weed species, cattle grazing).

Rapid observation points and incidental observations

Rapid observation points were conducted within the study area to provide further information on the vegetation communities present, including confirmation of their presence and delineation of their boundaries. Incidental observations of relevant flora were also recorded whilst moving around the study area, as required. Photographs and rapid notes were taken at these points.

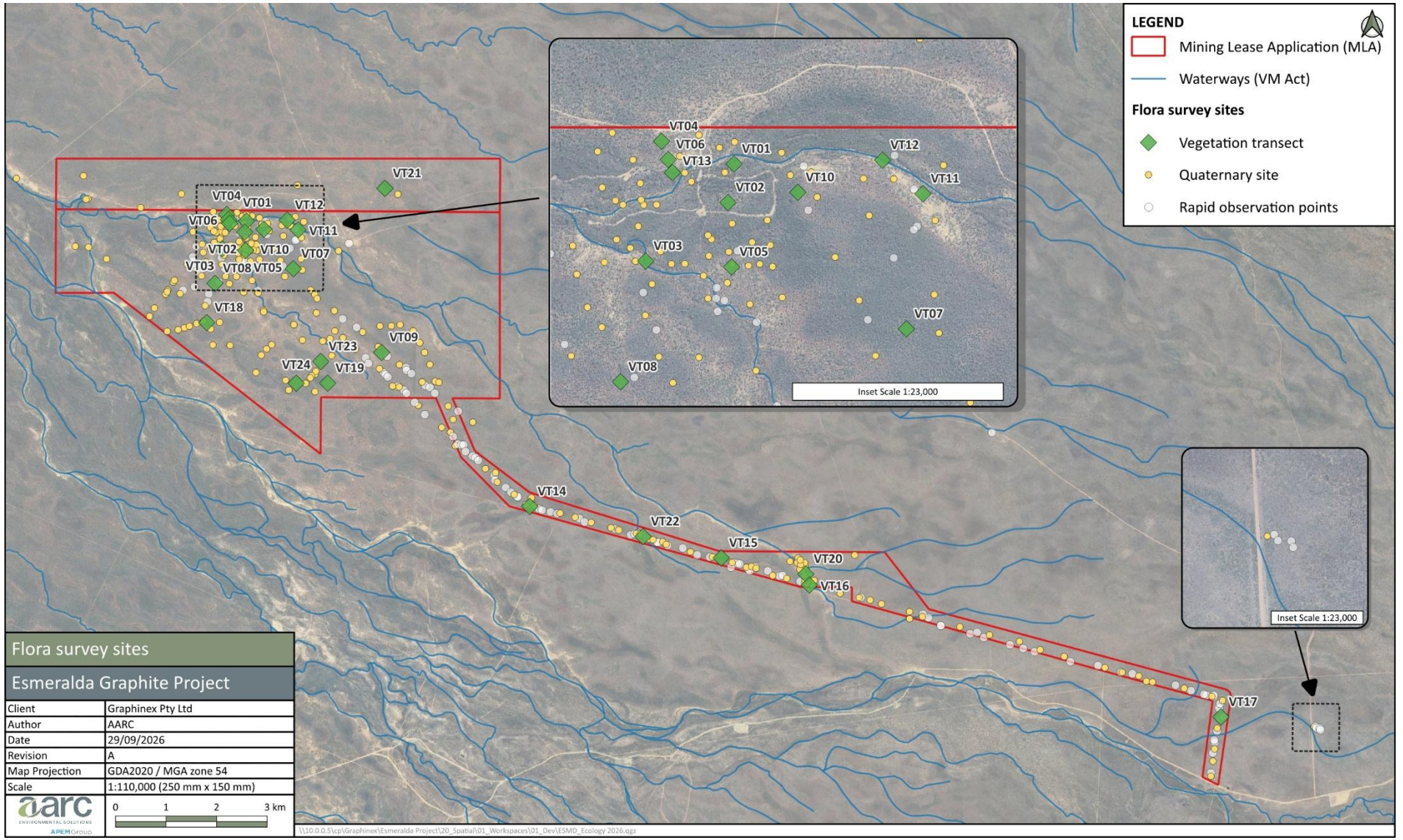


Figure 7: Location of flora survey sites in the study area

4.2.3 Fauna surveys

4.2.3.1 Habitat mapping

A total of 149 rapid habitat assessments were completed within the study area, with sites located throughout each habitat type, at a scale that was considered sufficient for the study area. Sites were selected to ensure a representative sample set for each habitat type was collected, which was deemed suitable to support the habitat assessments for the Project. These assessments were used to support the description of the habitat and microhabitat present within the study area, informing the selection of fauna survey site locations and assisting with mapping of habitat.

4.2.3.2 Fauna survey design

Fauna survey sites were located in representative areas of the five major habitat types occurring within the study area: Eucalypt woodland fringing creeks, Paperbark woodland, Annual tussock grassland, *Corymbia* woodland on sand plains and seasonal swamp.

Two classes of fauna survey site were adopted:

- **Fauna trapping sites** comprised a range of fauna survey methods in one location, including active trapping methodologies, and were established within each of the major habitat types across two seasons, as recommended in the 'Terrestrial Vertebrate Fauna Survey Guidelines for Queensland V4.0'.
- **Supplementary sites** included a varied list of targeted survey methods, determined by the habitat type in which they were conducted. Supplementary sites included any combination of spotlighting, targeted species habitat searching and bird surveying.

4.2.3.3 Fauna survey techniques

The fauna survey methods utilised by the study were consistent with relevant Commonwealth and State fauna survey guidelines, including the 'Terrestrial Vertebrate Fauna Survey Guidelines for Queensland' (Eyre et al. 2022). The fauna survey methods are described below. The survey effort from each site is detailed in Section 4.2.3.4.

Elliott trapping

Elliott A traps are aluminium boxes (8 x 10 x 33 cm) that were used to target small ground-dwelling mammals. Twenty baited Elliott traps were installed at 10 m intervals at fauna trapping survey sites for a duration of four days. Traps were strategically positioned under shrubs or beside logs to reduce exposure of trapped animals to the sun, wind and rain and maximise trap success. Traps were checked soon after dawn and captured animals were identified and released. Traps at each site were then closed during the heat of the day and reset before dusk, repeating for four nights.

Pitfall trapping

A pitfall trap line was established at the fauna trapping survey sites to target small ground-dwelling taxa (e.g. amphibians, reptiles, and small terrestrial mammals). Four 20 litre buckets were buried at 7.5 m intervals flush with the soil surface along a pitfall trap line constructed with a T-shape design and 45 m drift fence. A small amount of soil, vegetation litter, a damp sponge, and a small plastic pipe were placed at the bottom of each bucket to provide shelter and moisture for the captured wildlife. Pitfall traps were checked soon after dawn and before dusk, and captured animals were identified and released. The traps were left open for four days and nights.

Funnel trapping

Funnel traps, being elongated box-shaped traps made of wire and fine mesh, were installed at fauna trapping survey sites to catch amphibians and medium to large reptiles. Six funnel traps were positioned approximately 3 m from the ends of the pitfall trap drift fence. The traps were covered with a hessian bag and contained a damp sponge to provide protection and moisture for captured wildlife. Traps were checked soon after dawn and before dusk and captured animals were identified and released. Traps were left open for four nights.

Automated camera trapping

An automated camera is a less invasive method of surveying medium and large-sized nocturnal terrestrial species and is an effective survey method used widely instead of cage trapping (Eyre et al. 2022). One camera was attached to a tree at each fauna trapping survey site and several supplementary survey sites. A bait tube filled with raw chicken was positioned in clear view of the camera. When the motion-sensing technology in the camera detected movement, it triggered a photograph to be taken. The cameras were set up for four consecutive nights unless otherwise specified.

Diurnal bird surveys

Bird surveys were conducted during early mornings during peak avian activity to provide a direct census of diurnal bird species occurrence and abundance. Bird surveys included observations of all bird taxa visible from the survey site, including aerial hunters/feeders/scavengers such as raptors, wood swallows and bee-eaters. Bird surveys were undertaken for a minimum of 30 minutes at each fauna trapping site (on two separate occasions). Bird surveys were conducted at all fauna trapping and supplementary survey sites.

Spotlighting

Spotlighting was carried out in the early evenings at the survey sites to maximise nocturnal wildlife's encounter rate, such as amphibians, reptiles, nocturnal birds and nocturnal arboreal mammals. Spotlight searches were undertaken for a one-person-hour at each fauna trapping and supplementary site. The survey sites were randomly traversed with spotlights and binoculars consistent with the methodology outlined in the 'Terrestrial Vertebrate Fauna Survey Guidelines for Queensland' (Eyre et al. 2022). Where the survey site habitat was suitable for species likely to be detected through call playback, spotlighting was undertaken following call playback to maximise the chance of detecting these species.

Call playback

Call playback was used to detect nocturnal bird species that are highly cryptic, call infrequently, are wide-ranging and occur at naturally low population densities. The Masked Owl (*Tyto novaehollandiae*) was the only species targeted with call playback. The species selected for call playback at each site were determined through an assessment of the surrounding habitat, microhabitat features and the ecology of each species.

Habitat searches

Diurnal habitat searches were conducted at fauna trapping survey sites and elsewhere within the study area based on habitat suitability to detect fauna that are active during the day. This survey method was used to target diurnal reptiles, amphibians, and large mammals where the preferred habitat was located (e.g. cracking soil or dense ground debris). These habitat searches included recording evidence of fauna through the detection of tracks, scats, and traces (e.g. tree trunk scratches). Habitat searches were typically undertaken during the late morning to allow for reptile activity to increase with rising temperatures, but before the maximum heat of the day. At fauna trapping and supplementary survey sites, searches were undertaken for a minimum of one person-hour.

Microchiroptera bat echolocation detection surveys

Microbats rely primarily on echolocation for orientation and navigation in flight and to hunt for food. Echolocation call detectors are a non-invasive method used to record echolocation calls. One Anabat was set at each survey site for three nights unless otherwise specified.

Incidental (opportunistic) observations

The study area was traversed on foot and by vehicle throughout each survey to conduct flora and fauna survey activities. All incidental observations of fauna were recorded whilst moving around the study area.

4.2.3.4 Fauna survey effort

A total of thirteen fauna trapping sites were established over the course of the field surveys (August 2024, November 2024) for the study area.

Fauna trapping sites generally consisted of the following trap configurations:

- 20 Elliott traps;
- 4 pitfall traps;
- 6 funnel traps;
- an automated camera trap; and
- an echolocation call detector.

Trapping sites located along the transport corridor and other areas where repeat access was limited, excluded Elliott, pitfall and funnel trapping for animal ethics reasons.

Across the study area, ecologists also undertook a total of 54 targeted supplementary surveys within various habitats for cryptic fauna species and for species of conservation significance. These survey locations included one or more of the following survey methods considered relevant to the habitat type: targeted bird surveys, spotlighting, echolocation call detection, targeted searches and camera trapping.

Additionally, incidental bird surveys and targeted species searches were undertaken opportunistically during the surveys.

The opportunistic survey conducted in February 2025 comprised only supplementary survey sites. This survey aimed to collect additional information to support the results from the comprehensive fauna trapping surveys conducted in August 2024 and November 2024. Site access during the February 2025 survey was limited to helicopter travel only due to flooding conditions.

The location of the survey sites is shown in Figure 8. Where several fauna survey methods were undertaken at the same location or in close proximity within the same area, sites were identified as only one point on the map.

A detailed summary of the survey effort undertaken per survey method is provided in Table 3.

Table 3: Summary of fauna survey effort

Survey method	**Survey effort**			**Total survey effort**
	August 2024	**November 2024**	**February 2025**	
Fauna trapping sites				
Elliott trapping	4 sites x 20 traps x 4 nights = 320	4 sites x 20 traps x 4 nights = 320	N/A*	80 Elliot traps over 8 nights

Survey method	Survey effort			Total survey effort
	August 2024	November 2024	February 2025	
Pitfall trap lines	4 sites x 4 pitfalls x 4 nights = 64	4 sites x 4 pitfalls x 4 nights = 64	N/A*	16 pitfalls over 8 nights
Funnel trapping	4 sites x 6 funnels x 4 nights = 96	4 sites x 6 funnels x 4 nights = 96	N/A*	24 funnels over 8 nights
Automated camera trapping	2 sites x 1 camera x 4 nights + 2 sites x 1 camera x 1 nights = 10	3 sites x 1 camera x 4 nights + 3 sites x 1 camera x 6 nights + 1 sites x 1 camera x 2 nights = 32	N/A*	42 nights of camera trapping
Bird surveys	1 person-hour x 3 sites + 1.5 person-hours x 1 sites + 0.5 person-hours x 2 sites = 5.5 person-hours	1 person-hour x 4 sites + 0.5 person-hours x 1 site = 4.5 person-hours	N/A*	10 person-hours of bird surveying
Spotlight searches	1 person-hour x 4 sites + 0.5 person-hours x 2 sites = 5 person-hours	1 person-hour x 5 sites = 5 person-hours	N/A*	10 person-hours of spotlighting
Call playback sessions	1 session per site x 6 sites = 6 sessions	1 session per site x 4 sites = 4 sessions	N/A*	10 sessions of call playback
Habitat searches	1 person-hour x 4 sites + 0.5 person-hour x 2 sites = 5 person-hours	1 person-hour x 4 sites + 0.5 person-hour x 1 site = 4.5 person-hours	N/A*	9.5 hours of habitat searches
Echolocation call detection	1 bat detector per site x 3 nights x 4 sites = 12 detection nights	1 bat detector per site x 3 nights x 2 sites + 1 bat detector x 2 nights x 2 sites + 1 bat detector x 1 night x 2 sites + 1 bat detector x 4 nights x 1 site + 1 bat detector x 10 nights x 1 site = 26 detection nights	N/A*	38 detection nights
Supplementary survey sites				
Bird surveys incl. waterbirds	~6.5 person-hours of bird surveying	~15 person-hours of bird surveying	~5.5 person-hours	27 person-hours of bird surveying
Habitat searches	Not relevant. Completed as part of the fauna trapping sites.	~8 hours of habitat searches	~3 person-hours	11 person-hours of habitat searches
Spotlight searches	Not relevant. Completed as part of the fauna trapping sites.	~4 hours of spotlighting	N/A*	4 person-hours of spotlighting
Automated Camera trapping	Not relevant. Completed as part of the fauna trapping sites.	~8 nights of camera trapping	N/A*	8 nights of camera trapping

* No fauna trapping completed during the February 2025 survey. Additional supplementary survey effort was conducted opportunistically.

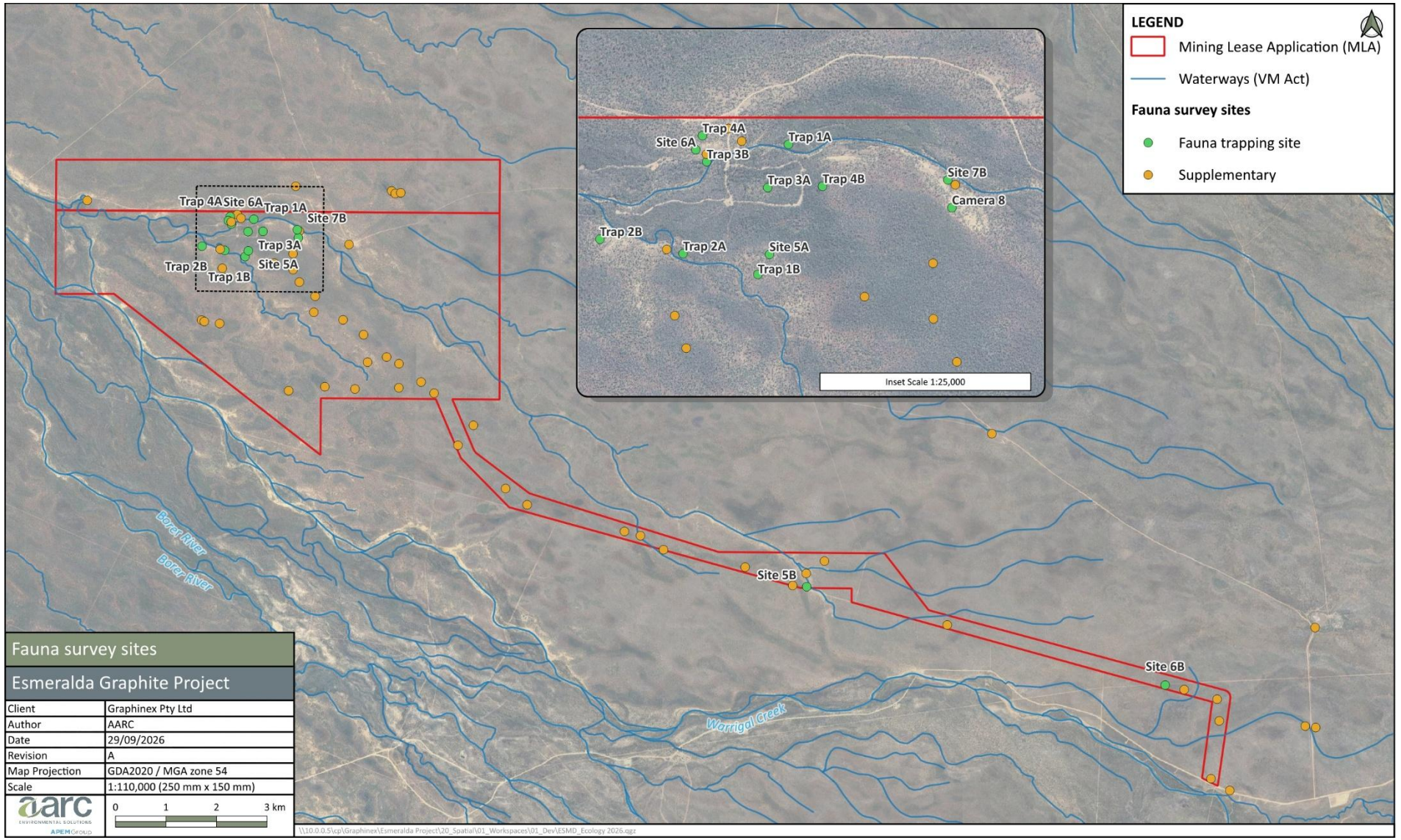


Figure 8: Location of fauna survey sites in the study area

5 Results

The Commonwealth and State governments (DCCEEW and DETSI respectively) regularly assess and reclassify the status of flora and fauna species. The status of listed threatened and migratory species under the EPBC Act that has been reported in this assessment is in accordance with the listing status prior to the EPBC Act referral decision for the Project (23 June 2025, EPBC reference 2025/10140). Any subsequent gazetted listings have not been included in this assessment.

The NC Act listed species status reported in this assessment is accurate as of the time of reporting (January 2026).

5.1 Desktop assessment results

5.1.1 General desktop values identified

Desktop searches (BoM 2024-2025, DNRMMRRD 2025b) have identified potential GDEs associated with riparian and floodplain vegetation along Warrigal Creek to the south of the study area and other watercourses in the Project disturbance area (Figure 9).

Key impacts to potential GDEs are addressed in Section 7.2.7.2. Further assessment of the presence of GDEs and any potential impacts by the Project are discussed in a separate GDE assessment prepared for the Project by Watermark Ecohydrology.

The Project is not located within the designated precincts in a strategic environmental area under the Regional Planning Interests Regulation 2014.

The Project does not intersect any biodiversity offset areas approved by the State or Australian governments.

5.1.2 Matters of National Environmental Significance

5.1.2.1 Threatened Ecological Communities (TECs)

Protected matters search results identified one Endangered TEC (EPBC Act), potentially occurring in the broader Project area. 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' TEC, is associated with springs within the Great Artesian Basin discharge area that are the natural surface discharge points of aquifers in the Triassic, Jurassic and Cretaceous sedimentary sequence of the Great Artesian Basin (DCCEEW 2024-2025a).

Desktop search results indicate that the nearest springs, active or inactive, have been mapped approximately 28 km and 30 km north east of the study area (Figure 9) (DNRMMRRD 2025b). The desktop review of regional ecosystems mapping and historic satellite imagery provided no indication of vegetation communities likely to be associated with springs, seeps or groundwater soaks.

Consultations with representatives of the Tagalaka People and extensive heritage surveys were undertaken separately as part of the cultural heritage assessment for the Project. The aim of the consultations and heritage surveys included understanding the traditional knowledge that may indicate the presence of 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' TEC within the vicinity of the Project area, including undocumented springs and soaks.

Heritage surveys were completed from 12 to 17 May 2025. No evidence of the community of native species dependent on natural discharge of groundwater or identifiable springs from the Great Artesian Basin was identified during the surveys.

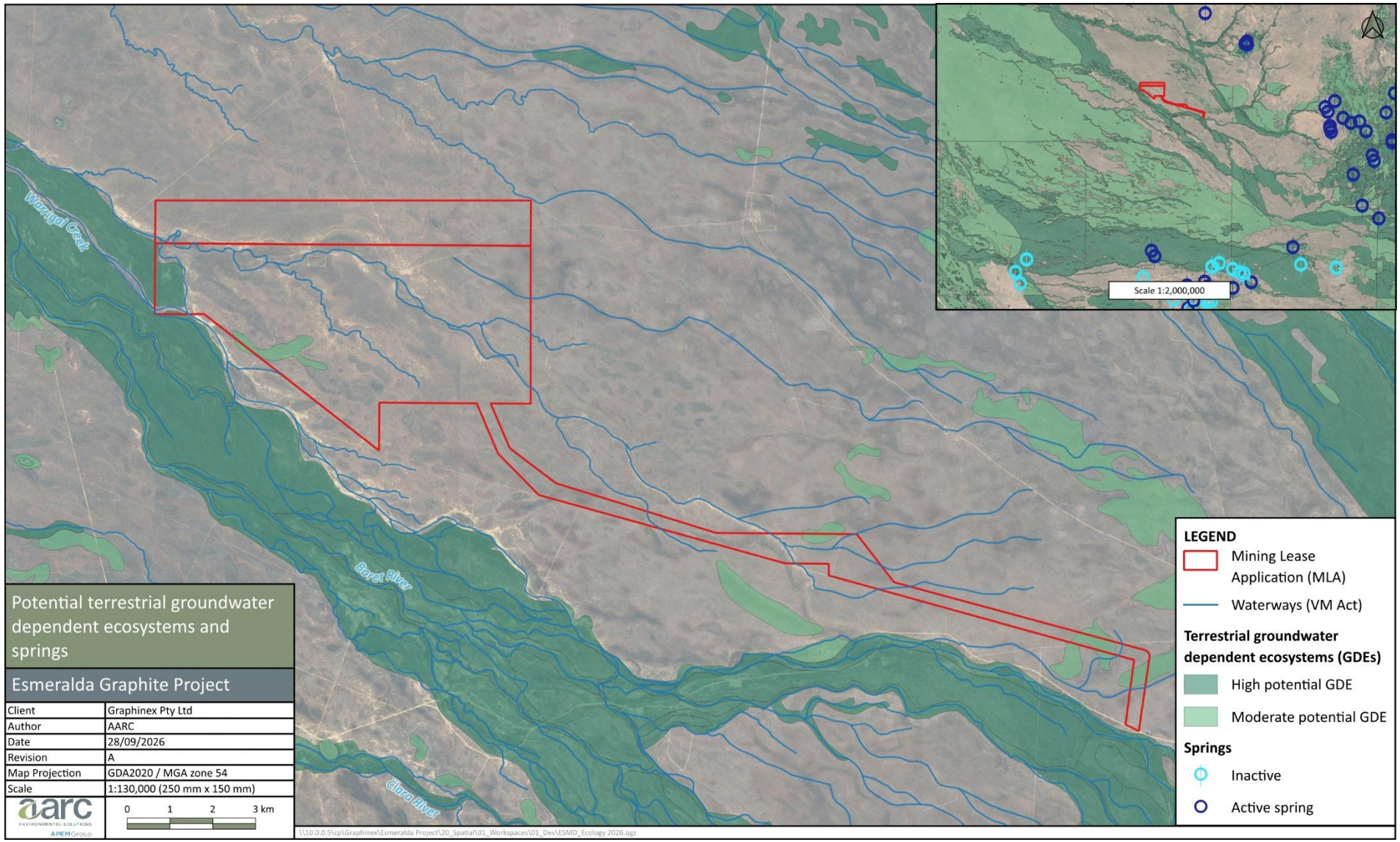


Figure 9: Mapped groundwater dependent ecosystems and springs in relation to the study area

5.1.2.2 EPBC Act listed threatened and migratory species

Database searches of publicly available data did not identify any flora species listed as Critically Endangered, Endangered or Vulnerable under the EPBC Act (within a 50 km search area).

Desktop searches indicate potential for 27 conservation significant fauna species to inhabit the wider surroundings (species-dependent, but approximately 50 km from the study area).

Of the 27 EPBC Act fauna species of conservation significance identified, the likelihood assessment determined only 11 species had potential to occur within the study area. The remaining 16 were classed as unlikely to occur (Table 4, Appendix D).

Table 4: EPBC Act listed species potentially occurring within the study area (desktop assessment)

Scientific Name	Common Name	EPBC Act status[1]	Likelihood of Occurrence
Reptiles			
Varanus mertensi	Mertens' Water Monitor	E	Unlikely
Birds			
Actitis hypoleucos	Common Sandpiper	Mi	Potential
Apus pacificus	Fork-tailed Swift	Mi	Potential
Calidris acuminata	Sharp-tailed Sandpiper	V, Mi	Potential
Calidris ferruginea	Curlew Sandpiper	CE, Mi	Unlikely
Calidris melanotos	Pectoral Sandpiper	Mi	Unlikely
Calidris ruficollis	Red-necked Stint	Mi	Potential
Charadrius veredus	Oriental Plover	Mi	Unlikely
Chloebia gouldiae	Gouldian Finch	E	Potential
Cuculus optatus	Oriental Cuckoo	Mi	Unlikely
Erythrotriorchis radiatus	Red Goshawk	E	Unlikely
Falco hypoleucos	Grey Falcon	V	Unlikely
Gallinago hardwickii	Latham's Snipe	V, Mi	Potential
Glareola maldivarum	Oriental Pratincole	Mi	Unlikely
Grantiella picta	Painted honeyeater	V	Potential
Hirundo rustica	Barn Swallow	Mi	Unlikely
Motacilla cinerea	Grey Wagtail	Mi	Unlikely
Motacilla tschutschensis	Yellow Wagtail	Mi	Unlikely

Scientific Name	Common Name	EPBC Act status[1]	Likelihood of Occurrence
Pandion haliaetus	Eastern Osprey	Mi	Unlikely
Plegadis falcinellus	Glossy Ibis	Mi	Potential
Poephila cincta cincta	Black-throated Finch (White rumped subspecies)	E	Potential
Rostratula australis	Australian Painted Snipe	E	Potential
Tringa stagnatilis	Marsh Sandpiper	Mi	Potential
Tyto novaehollandiae kimberli	Masked Owl (Northern Subspecies)	V	Unlikely
Mammals			
Macroderma gigas	Ghost Bat	V	Unlikely
Petauroides minor	Northern Greater Glider	V	Unlikely
Saccolaimus saccolaimus nudicluniatus	Bare-rumped Sheathtail Bat	V	Unlikely

[1] Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi – Migratory

5.1.3 Matters of State Environmental Significance

5.1.3.1 Regulated Vegetation

The Queensland Government Regulated Vegetation Management Map identified only Category B, remnant vegetation, across the study area. A regional ecosystem (RE) within Category B remnant vegetation (prescribed RE) that meets the following conditions constitutes an MSES:

- Endangered or Of Concern RE under the VM Act; or
- RE located within the defined distance of a VM Act watercourse; or
- RE that intersects with a VM Act wetland; or
- RE mapped as essential habitat.

Prescribed Endangered or Of Concern REs

REs identified from database searches within the study area are listed in Table 5, and depicted in Figure 10 and Figure 11. There are Endangered or Of Concern REs, under the VM Act, within the study area.

Table 5: Regulated vegetation mapped regional ecosystems in the study area

RE	RE Short Description	VM Act Class[1]	Biodiversity Status[2]
RE 2.3.26b	*Eucalyptus camaldulensis* woodland, commonly with *Melaleuca fluviatilis.* Occurs on fringes of major watercourses in the south-east of the bioregion. Alluvial sands and loams. Riverine.	Least concern	Of concern
RE 2.3.29b	*Melaleuca spp.* low open woodland to low woodland, occasionally with *Eucalyptus microtheca,* on active Quaternary alluvial plains and drainage depressions on Tertiary surfaces in the south-east of the bioregion. Sandy and silty clay soils.	Least concern	No concern at present
RE 2.3.42b	*Eucalyptus microtheca* low open woodland to woodland, commonly with *Excoecaria parvifolia* and *Lysiphyllum cunninghamii.* Silty loams and texture-contrast soils. Soils may be shallow, overlying a layer of ferruginous gravel.	Least concern	Of concern
RE 2.3.50a	Bare sand and rock with scattered shrubs and patches of grasses, forbs and sedges. Occurs in the channels of major watercourses. Riverine.	Least concern	Of concern
RE 2.3.51	Seasonal swamps. *Eucalyptus camaldulensis* +/- *Melaleuca viridiflora* open woodland in closed depressions on Tertiary sand sheets	Least concern	No concern at present
RE 2.5.14a	*Melaleuca viridiflora* low open woodland to low woodland, commonly with *Melaleuca citrolens, Melaleuca stenostachya, Acacia leptostachya, Erythrophleum chlorostachys, Terminalia platyptera* and *Eucalyptus microneura. Emergent Corymbia polycarpa* may occur. Tertiary sand sheets in the south-east of the bioregion. Sands, yellow podzolics and yellow earths.	Least concern	No concern at present
RE 2.5.17b	*Melaleuca citrolens* low open woodland to low woodland, commonly with *M. viridiflora, Eucalyptus microneura* and *Terminalia platyptera. Emergent Corymbia polycarpa* may occur. Occurs on broad, gently undulating Tertiary sand sheets in the south-east of the bioregion. Yellow to brown sands and loams.	Least concern	No concern at present
RE 2.5.28a	*Corymbia polycarpa* woodland, commonly with *C. confertiflora, Erythrophleum chlorostachys* and *C. grandifolia.* Occurs on reworked sand deposits on broad plains (Claraville Plains subregion). Brown sands and sandy loams.	Least concern	No concern at present

[1] VMA Status may be: Endangered; Of Concern; or Least Concern

[2] Biodiversity Status may be: Endangered; Of Concern; or No concern at present

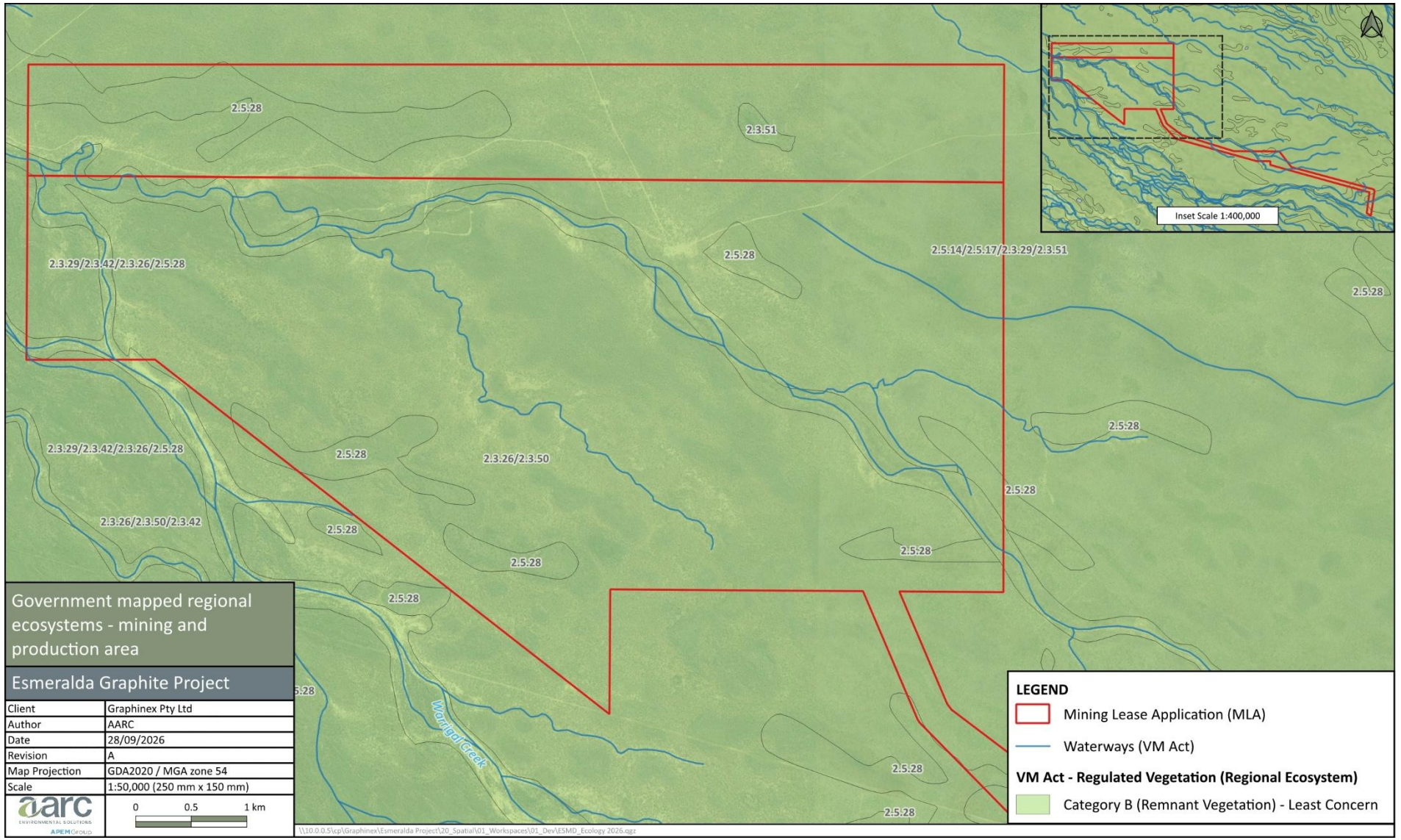


Figure 10: Queensland government mapped regional ecosystems (mining and processing area)

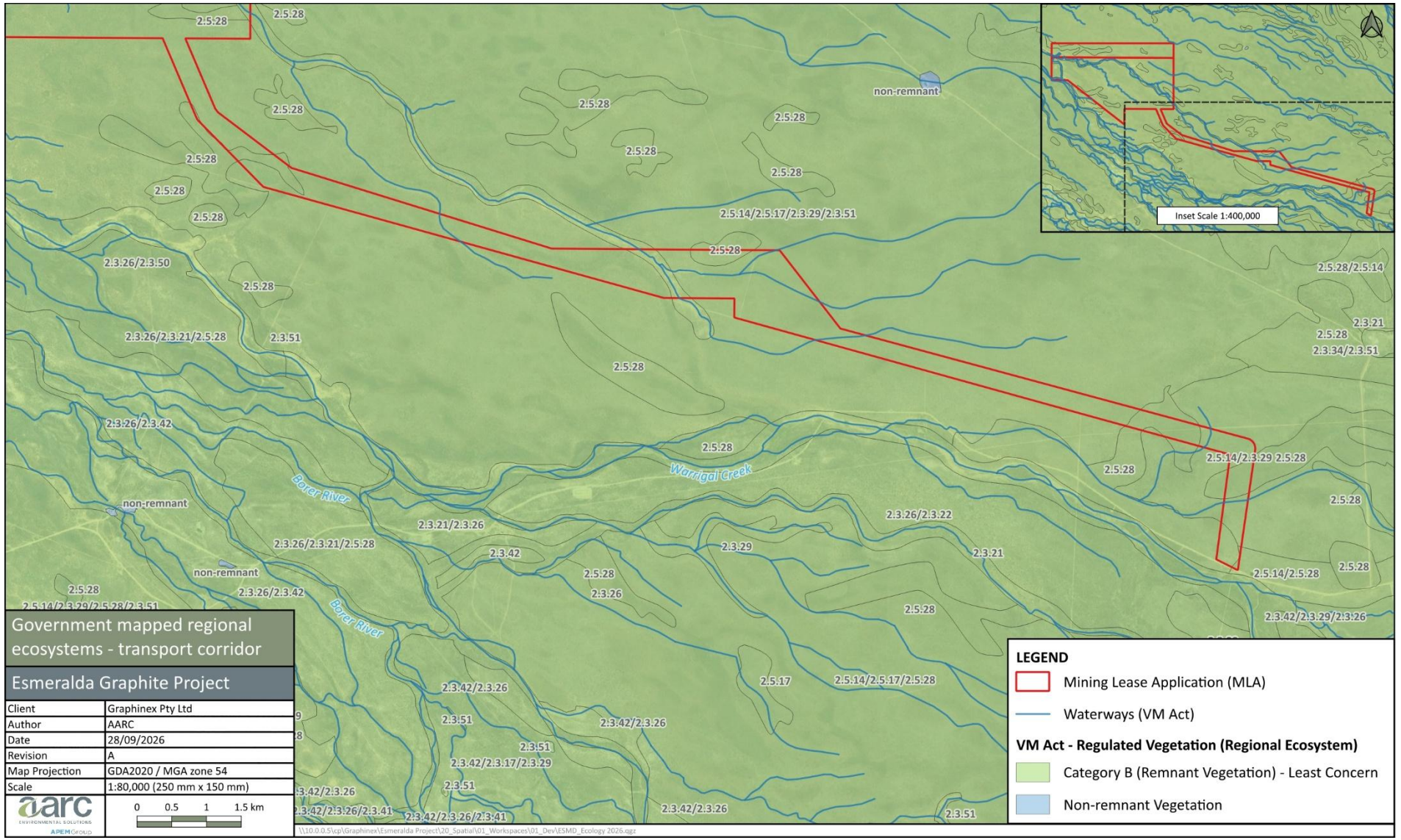


Figure 11: Queensland government mapped regional ecosystems (transport corridor)

Prescribed REs that intersect a VM Act wetland

Under the VM Act, a wetland is defined as an area of land that supports plants or is associated with plants that are adapted to, and dependent on, living in wet conditions for at least part of their life cycle (DEHP 2014). Prescribed REs that intersect areas mapped as wetlands, under the VM Act wetlands map, constitute MSES. Eight mapped wetlands were identified within the study area, constituting MSESs (Figure 5).

Prescribed REs located within the defined distance of a VM Act watercourse

The Queensland Government Vegetation Management Watercourse Map shows watercourses defined under the VM Act, which are used to regulate vegetation clearing in proximity to watercourses (DEHP 2014).

Prescribed REs located within the defined distance from the defining banks of a watercourse identified on the vegetation management watercourse map are considered a MSES. The defined distance from the defining banks of a watercourse for a regional ecosystem is defined by the Queensland Environmental Offsets Policy. The defined distance for the REs present in 1st and 2nd order streams is 25 m, for 3rd and 4th order streams is 50 m, and for higher order streams is 100 m.

Desktop assessment identified prescribed REs (some of them as a mixed polygon) as mapped by the Queensland Government regulated vegetation map, located within the defined distance from the defining banks of the watercourse. The field survey validated the vegetation map for the study area (refer to Section 5.2.1)

Essential habitat

Essential habitat is mapped by DNRMMRRD and is defined as regulated vegetation identified as containing at least three essential habitat factors for a species that is Critically Endangered, Endangered or Vulnerable or where a species has been known to occur (DEHP 2014).

Prescribed REs in an area of essential habitat on the essential habitat map for a species, both flora and fauna, that is Critically Endangered, Endangered or Vulnerable, are considered MSES. As such, clearing of these REs can trigger an environmental offset under the EO Act.

No essential habitat on the essential habitat map is present within the study area.

5.1.3.2 Connectivity areas

Connectivity areas are regulated under Queensland legislation, and the criteria for determining prescribed environmental matters are defined in Schedule 2 of the EO Regulation. The EO Regulation defines connectivity areas as a prescribed regional ecosystem:

- to the extent the ecosystem contained remnant vegetation; and
- if the ecosystem contained an area of land that is required for ecosystem functioning.

A prescribed regional ecosystem which meets the above criteria is a MSES if the administering agency is satisfied, having regard to criteria in the environmental offset policy about connectivity areas, that:

- the connectivity area is of sufficient size or configured in a way that maintains ecosystem functioning; and
- the prescribed regional ecosystem will remain despite a threatening process within the meaning of the *Nature Conservation Act 1992*[3].

[3] A threatening process is any process that is capable of—
(a) threatening the survival of any protected area, area of major interest, protected wildlife, community of native wildlife or native wildlife habitat; or

Disturbance of remnant vegetation within the study area has potential to impact connectivity values.

The Proponent is planning to deliver financial settlement offsets in accordance with the Queensland Environmental Offsets Policy, as detailed in Section 9. An Environmental Offset Strategy will be prepared for the Project that presents any offset requirements and proposed provision of offsets for impacted matters.

5.1.3.3 Protected wildlife habitat

Protected wildlife habitat is defined as an area of habitat for an Endangered, Vulnerable or Special Least Concern (non-migratory) species under the NC Act. Habitat is defined as the area occupied (including periodically and occasionally) by any species, population or ecological community, or an area used by species during different stages of their life cycles (DEHP 2014).

Protected wildlife habitat is also a prescribed matter in areas that:

- are shown as a high-risk area on the flora survey trigger map and that contain plants that are critically endangered wildlife, endangered wildlife or vulnerable wildlife; and
- areas not shown as a high-risk area on the flora survey trigger map, to the extent the area contains plants that are critically endangered wildlife, endangered wildlife or vulnerable wildlife.

No wildlife habitat for Endangered or Vulnerable species (NC Act) has been mapped within the study area, nor has high risk area in the flora survey trigger map.

Conservation significant species identified during database searches were subjected to a likelihood of occurrence assessment, undertaken as part of the initial desktop assessment. Of the flora and fauna species with occurrence records, only two flora and seven fauna species were assessed as having potential to occur in the study area. These species are listed in Table 6.

A description of each threatened flora and fauna species' distribution, habitat, ecology and an assessment of their likelihood of occurrence is provided in Appendix E (flora), and Appendix F (fauna).

Table 6: NC Act listed species potentially occurring in the study area (desktop assessment)

Scientific Name	Common Name	NC Act Status[1]	Likelihood
Plants			
Solanum carduiforme	-	V	Potential
Reptiles			
Varanus mertensi	Mertens' Water Monitor	E	Unlikely
Birds			
Calidris acuminata	Sharp-tailed Sandpiper	V	Potential
Calidris ferruginea	Curlew Sandpiper	CE	Unlikely
Chloebia gouldiae	Gouldian Finch	E	Potential
Erythrotriorchis radiatus	Red Goshawk	E	Unlikely
Falco hypoleucos	Grey Falcon	V	Unlikely

(b) affecting the capacity of any protected area, area of major interest, protected wildlife, community of native wildlife or native wildlife habitat to sustain natural processes.

Scientific Name	Common Name	NC Act Status[1]	Likelihood
Gallinago hardwickii	Latham's Snipe	V	Potential
Grantiella picta	Painted honeyeater	V	Potential
Poephila cincta cincta	Black-throated Finch (White rumped subspecies)	E	Potential
Rostratula australis	Australian Painted Snipe	E	Potential
Tyto novaehollandiae kimberli	Masked Owl (Northern Subspecies)	V	Unlikely
Mammals			
Macroderma gigas	Ghost Bat	E	Unlikely
Petauroides minor	Northern Greater Glider	V	Unlikely
Saccolaimus saccolaimus nudicluniatus	Bare-rumped Sheathtail Bat	E	Unlikely
Tachyglossus aculeatus	Short-beaked Echidna	SL	Potential

[1] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern

5.1.4 Matters of Local Environmental Significance

No MLES are identified within the State Planning Policy (SPP) biodiversity mapping of the Croydon Shire Planning Scheme (Croydon Shire Council 2019). The planning scheme refers only to MSES, which will be addressed under the EO Act.

5.2 Flora assessment results

Desktops search results presented in earlier sections informed ecological field assessments of the study area, with site specific assessment results presented below.

5.2.1 Regional ecosystems

The entire study area is vegetated with remnant vegetation. No areas of high-value regrowth or non-remnant vegetation were identified. The field-verified REs are summarised in Table 7 and described in detail in Sections 5.2.1.1 to 5.2.1.10. The distribution of these REs is illustrated in Figure 12, Figure 13, Figure 14, Figure 15 and Figure 16.

Field-verified RE mapping, undertaken as part of this assessment, differed in a number of locations from the existing Queensland Government RE mapping (version 13.1). An application to amend the QLD Government RE map was submitted, based on data obtained from the field surveys and results. The submission was accepted by the Queensland Herbarium on 31 March 2026, and the changes will be incorporated into Version 14 of the RE mapping (Queensland Herbarium reference MAR_3594). The accepted RE mapping (Queensland Herbarium reference MAR_3594) has been adopted as the field-verified vegetation map in this report. This accepted RE mapping includes two heterogeneous polygons. The Queensland Herbarium classified these polygons as heterogeneous, consistent with the "Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland 7.0" (Neldner *et al* 2023), which includes a caveat for heterogeneous polygons under certain conditions.

Table 7: Field-verified regional ecosystems in the study area

RE	Description	VM Act status	Biodiversity status[2]
RE 2.3.22	Long-fruited Bloodwood (*Corymbia polycarpa*) and *Melaleuca* spp. woodland on sandy channels and levees	Least concern	Of concern
RE 2.3.26a	River Red Gum (*Eucalyptus camaldulensis*) woodland to low woodland, with *Melaleuca* spp., on fringes and in channels of minor watercourses	Least concern	Of concern
RE 2.3.26a / 2.3.50a	River Red Gum (*Eucalyptus camaldulensis*) low woodland, with *Melaleuca* spp., fringing minor watercourses, with areas of bare sand and rock, and scattered vegetation in channels	Least concern	Of concern
RE 2.3.26c	River Red Gum (*Eucalyptus camaldulensis*) low woodland, with Broad-leaved Paperbark (*Melaleuca viridiflora*), on fringes of minor watercourses in broad sand sheets	Least concern	Of concern
RE 2.3.29b	*Melaleuca* spp. low open woodland to low woodland on alluvial plains and drainage depressions	Least concern	No concern at present
RE 2.3.41	Annual tussock grassland on alluvial plains	Least concern	Of concern
RE 2.3.42b	Coolibah (*Eucalyptus microtheca*) low open woodland to woodland on alluvial plains	Least concern	Of concern
RE 2.3.55d	Seasonal swamp (wooded). Broad-leaved Paperbark (*Melaleuca viridiflora*) low woodland in shallow closed depressions on sand sheets	Least concern	Of concern
RE 2.3.61c	Seasonal swamp (wooded). Coolibah (*Eucalyptus microtheca*) and Broad-leaved Paperbark (*Melaleuca viridiflora*) woodland in closed depressions on alluvial plains	Least concern	No concern at present
RE 2.5.14a	Broad-leaved Paperbark (*Melaleuca viridiflora*) low open woodland to low woodland on sand sheets	Least concern	No concern at present
RE 2.5.14a / 2.5.17b / 2.3.29b / 2.3.51	Mixed community of *Melaleuca* spp. low open woodland to low woodland on fringes of alluvial plains and sand sheets, with seasonal swamps of River Red Gum (*Eucalyptus camaldulensis*) woodland	Least concern	No concern at present
RE 2.5.17b	Gulbarn (*Melaleuca citrolens*) low open woodland to low woodland on broad sand sheets	Least concern	No concern at present
RE 2.5.18a	Rough-leaved Bloodwood (*Corymbia setosa*) low open woodland to woodland on broad sand sheets	Least concern	No concern at present
RE 2.5.28a	Long-fruited Bloodwood (*Corymbia polycarpa*) woodland on broad plains of reworked sand deposits	Least concern	No concern at present

[1] Status may be: Endangered; Of concern; or Least concern. [2] Status may be: Endangered; Of concern; or No concern at present.

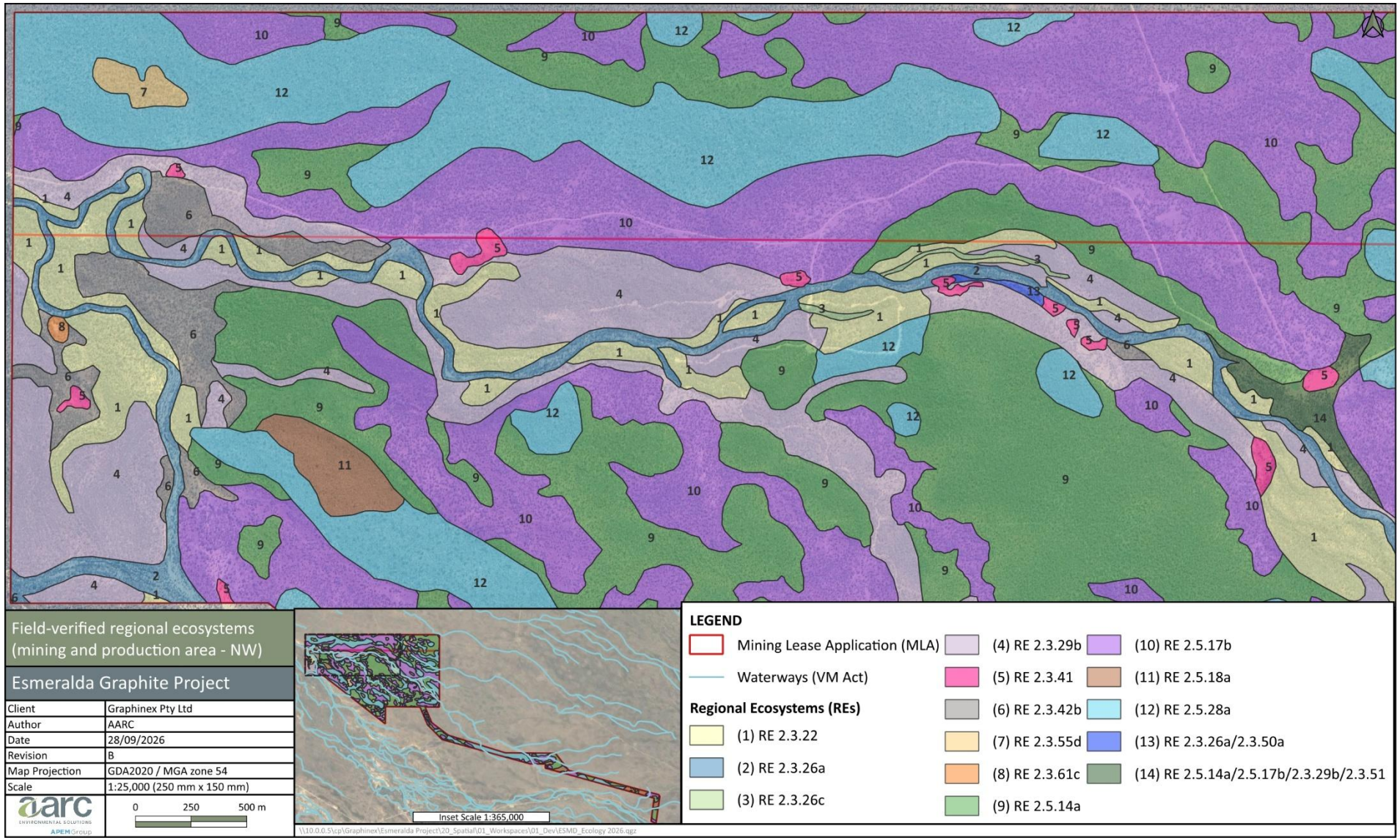


Figure 12: Field-verified regional ecosystems (mining and production area - NW)

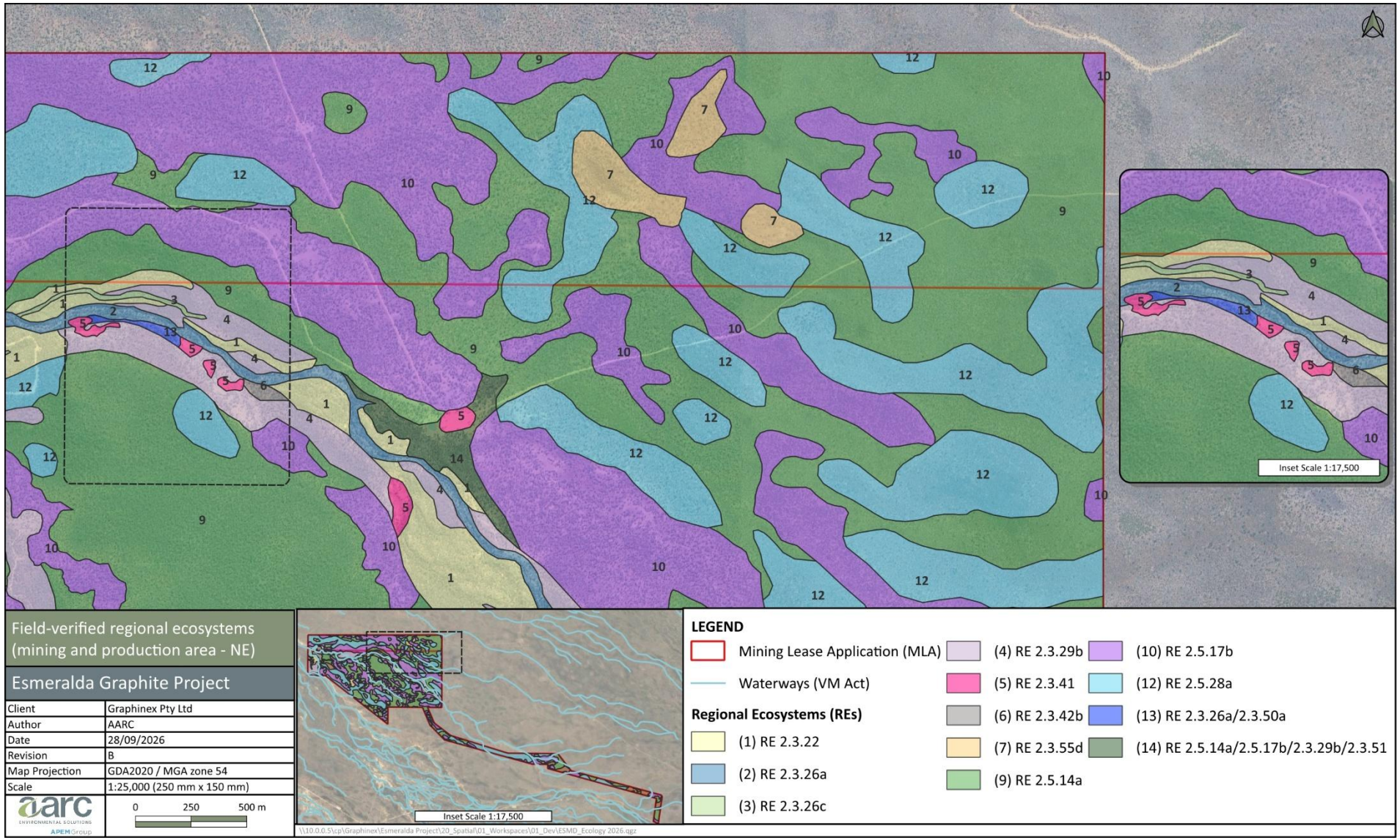


Figure 13: Field-verified regional ecosystems (mining and production area - NE)

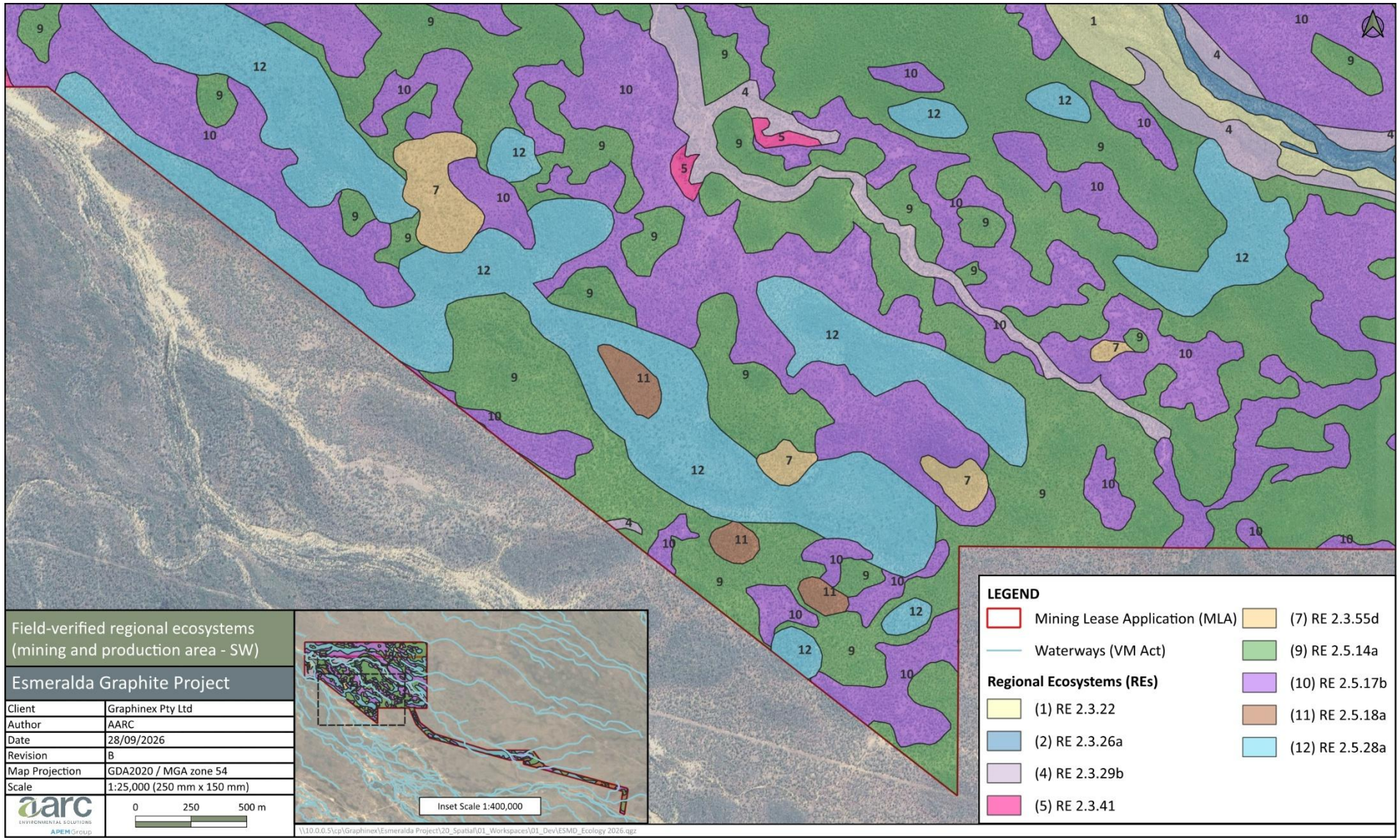


Figure 14: Field-verified regional ecosystems (mining and production area - SW)

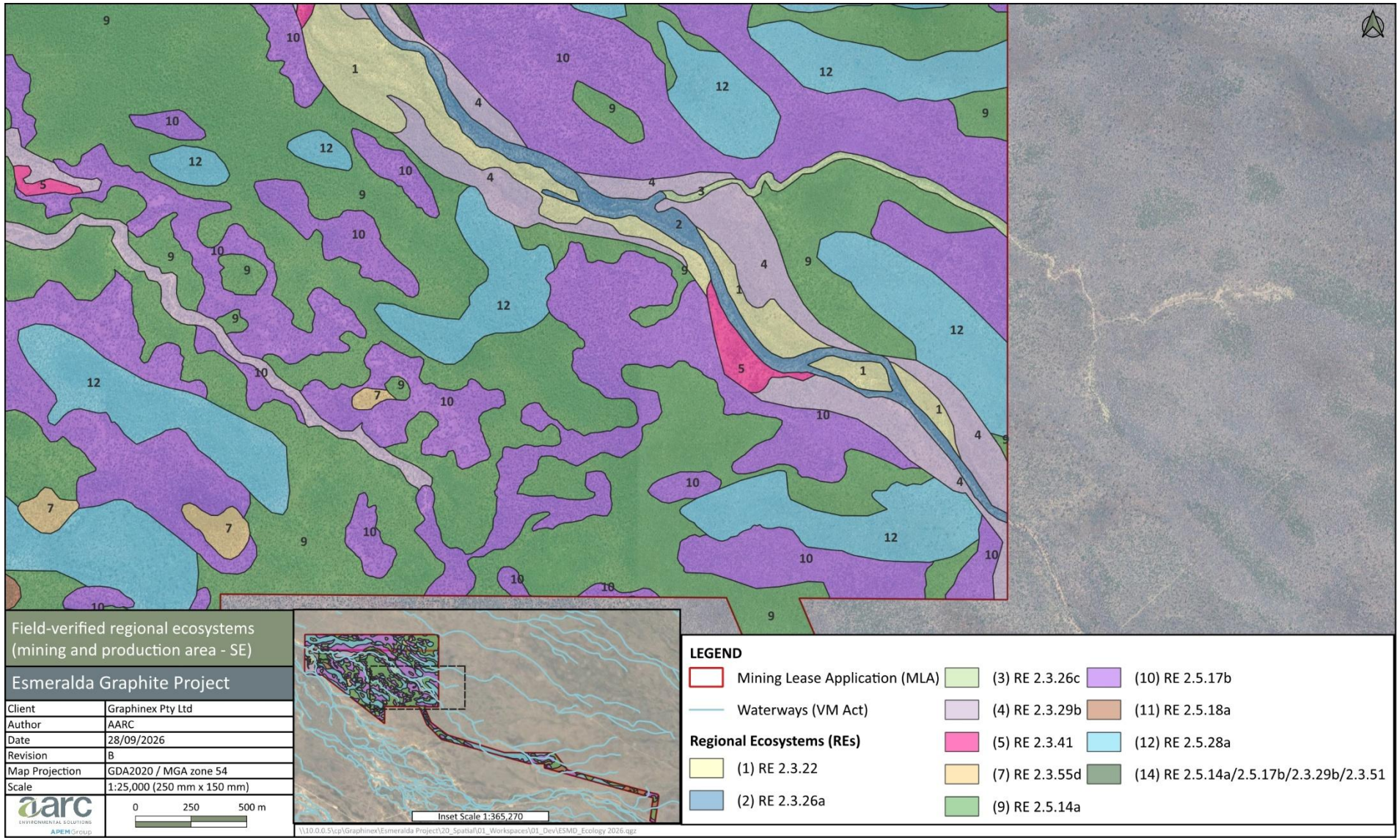


Figure 15: Field-verified regional ecosystems (mining and production area - SE)

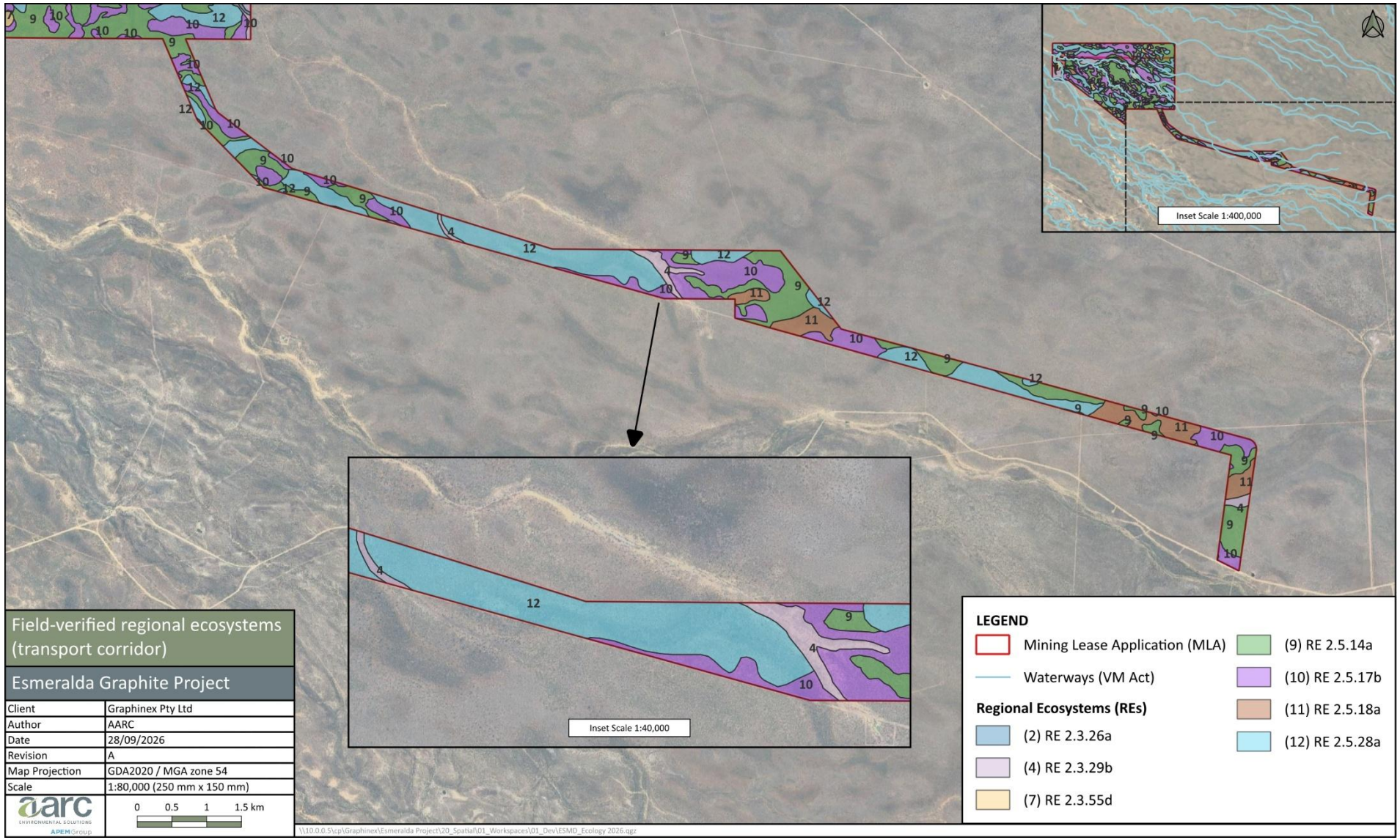


Figure 16: Field-verified regional ecosystems (transport corridor)

5.2.1.1 Long-fruited Bloodwood and *Melaleuca* spp. woodland on alluvial plains

This community is characterised as Long-fruited Bloodwood (*Corymbia polycarpa*) woodland, with mixed *Melaleuca* spp, on sandy channels, levees and alluvial plains associated with recent watercourses. This community is generally consistent with RE 2.3.22 (Plate 1). This community occurs in the northern section of the mining and processing area. It is limited to the alluvial plains associated with the main creek in the study area (the unnamed tributary of the Warrigal Creek). It is commonly found in a narrow linear band of the alluvial plain, adjacent to RE 2.3.26a, which comprises riparian vegetation limited to the creek channel and bank fringes. This community was not found in association with the minor drainage features in the mining and processing area or transport corridor.

The tree canopy was dominated by Long-fruited Bloodwood and Broad-leaved Paperbark (*Melaleuca viridiflora*), with an average height of 7 to 11 m and a canopy cover of approximately 30%. Associated canopy species included Gulbarn (*M. citrolens*) and Torulosa Wattle *(Acacia torulosa*), which were locally dominant in some areas. A sparse shrub layer was present, with an average height of 2 m, dominated by recruiting Torulosa Wattle individuals, where occurring.

Vegetated ground cover was sparse, with ground cover dominated by large areas of bare sand and patches of dense leaf litter at the base of canopy trees. Occasional tussock grasses dominated the vegetated ground cover, primarily *Aristida* spp., Annual Pigeon Grass (*Setaria surgens*) and Firegrass (*Schizachyrium fragile*). On average, vegetated ground cover comprised 20% of the ground layer, while bare ground accounted for 35%, and organic litter comprised 40%.

Within the study area, this vegetation community had varying levels of disturbance that was primarily associated with cleared access tracks and localised cattle grazing practices.



Plate 1: Long-fruited Bloodwood and Melaleuca *spp. woodland on sandy channels and levees*

5.2.1.2 River Red Gum woodland with *Melaleuca* spp. fringing sandy, seasonal channels

This community was characterised by River Red Gum (*Eucalyptus camaldulensis*) with mixed *Melaleuca* spp. woodland, fringing sandy, seasonal channels of larger ephemeral watercourses. This vegetation community was composed of two riparian REs – RE 2.3.26a and RE 2.3.26c – and a small patch of a mixed RE polygon comprising RE 2.3.26a/2.3.50a (Plate 2). These REs contained similar characteristics and occurred in association with the main creek in the north of the mining and processing area (unnamed tributary of the Warrigal Creek).

This community was not associated with the minor drainage features in the mining and processing area, or the transport corridor.

The tree canopy was dominated by Red River Gum, Weeping Tea-tree (*Melaleuca fluviatilis*) and Broad-leaved Paperbark, with an average height of 8 to 12 m and a variable canopy cover of between approximately 30 to 75%.

A sparse shrub layer was present, with an average height of 2 m and reaching approximately 2% cover. Species such as Broad-leaved Paperbark, Liniment Tree (*Asteromyrtus symphyocarpa*) and Torulosa Wattle comprised this layer.

The vegetated ground cover was sparse, covering approximately 15% of the ground layer. It was dominated by tussock grasses, primarily Handsome Lovegrass (*Eragrostis speciosa), Schizachyrium crinizonatum* and *Aristida ingrata*. On average, bare ground accounted for 25 to 50% of ground layer, and organic litter comprised 35 to 60%.

Within the study area, this vegetation community had varying levels of disturbance, primarily associated with localised cattle grazing practices. Known pressures on this RE included grazing, which is a threatening process during the dry season as it leads to habitat loss and weed infestation (DESI 2024). Grazing also has potential to reduce bank stability and lead to increased erosion of the creek bank.



Plate 2: River Red Gum woodland with Melaleuca *spp. fringing sandy, seasonal channels*

5.2.1.3 *Melaleuca* spp. low open woodland to low woodland on alluvial plains and drainage depressions

This vegetation community was characterised by low open woodland to low woodland dominated mixed *Melaleuca* spp., with a sparse shrub layer and tussock grasses on alluvial plains and drainage depressions. The community was consistent with RE 2.3.29b (Plate 3). It was the most common alluvial RE in the study area, occurring in association with the minor drainage features in the transport corridor and mining and processing area, and along the main creek in the north of the mining and processing area (unnamed tributary of Warrigal Creek). It is characteristic of the broad alluvial plains of the main creek, commonly found in older alluvial areas that are located further from the active channel (RE 2.3.26a, RE 2.3.26c) and recent alluvial plain (RE 2.3.22). It also occurred along the minor drainage features across the study area, limited to the narrow strip of alluvial vegetation that occurs within and immediately fringing the drainage feature. The minor drainage features were commonly found intersecting areas of land zone 5 vegetation and, as such, adjacent vegetation in these areas was predominantly RE 2.5.14a, RE 2.5.17b or RE 2.5.28a.

Occasional patches of this community were dominated by Gulbarn in the canopy; however, abundant Broad-leaved Paperbark occurred in the sub-canopy and and/or shrub layers, and these areas were still considered representative of RE 2.3.29b.

The canopy layer was dominated by Broad-leaved Paperbark and/or Gulbarn, and occasionally with Coolibah (*Eucalyptus microtheca*) or Long-fruited Bloodwood. Associated canopy species included Golden Parrot Tree (*Grevillea pteridifolia*), Beefwood (*Grevillea striata*), Cooktown Ironwood (*Erythrophleum chlorostachys*) and Yellowwood (*Terminalia platyptera*). The average tree canopy height was between 4 and 9 m and canopy cover was recorded between 5 to 30%. The sparse emergent layer of Long-fruited Bloodwood and Coolibah also occurred in some areas, reaching a height of 11 m.

The shrub layer was also sparse, dominated by recruiting canopy species, Whitewood (*Atalaya hemiglauca*) and Smoothed-leaved Quinine (*Petalostigma banksii*), with an average height of 2 m and reaching 5% cover. Torulosa Wattle was a locally dominant canopy and shrub species in some areas.

The ground cover was primarily dominated by tussock grasses, including Mountain Wanderrie Grass (*Eriachne mucronata*), *Schizachyrium crinizonatum* and *Aristida ingrata*. On average, live ground cover comprised 25%, while bare ground and organic litter covered 40% and 30% of the ground layer, respectively.

This vegetation community occurred throughout the study area, with different degrees of disturbance associated with grazing.



Plate 3: Melaleuca *spp. low open woodland to low woodland on alluvial plains and drainage depressions*

5.2.1.4 Annual tussock grassland on alluvial plains

This community is characterised as an annual grassland, restricted to small areas of the alluvial plains associated with the main creek in the north of the mining and processing area (unnamed tributary of Warrigal Creek). It was also found in two small, discrete patches associated with the minor drainage feature in the mining and processing area. The ground layer of this community had scattered shallow depressions that temporarily fill with water following rain events. It occurred on hard silty loams and texture contrast soils, often with patches of gravel in areas of bare ground. This community is best represented by RE 2.3.41 (Plate 4).



Plate 4: Annual tussock grassland on alluvial plains

The vegetated ground cover was sparse, covering approximately 10% of the ground layer (at the time of survey), and was dominated by tussock grass species, primarily *Aristida ingrata*, *Schizachyrium crinizonatum* and Mountain Wanderrie Grass. Large areas of bare ground and gravel were common in this community, with bare ground comprising 80% of ground cover. Minimal leaf litter was recorded, with a cover of approximately 5%.

A sparse tree layer was present, consisting of scattered individuals of emergent Coolibah and Gulbarn, to a height of 11 m. The shrub layer was similarly sparse and, when present, consisted of recruiting Gulbarn individuals and Whitewood, to a height of 2 m.

Within the study area, the vegetation community had varying levels of disturbance, primarily associated with localised cattle grazing practices and pig disturbance. Known pressures on this RE include grazing, which is a threatening process during the dry season as it leads to habitat loss and weed infestation (DESI 2024).

There was some evidence of cattle grazing in the small patches of this community across the study area.

5.2.1.5 Coolibah low open woodland to woodland on alluvial plains

This vegetation community was characterised by a woodland of Coolibah and Gulbarn on alluvial plains with coarse-grained parent material and distinct soils of silt and gravel. It is best represented by RE 2.3.42b (Plate 5). This community was mostly found in the west of the mining and processing area, limited to the alluvial plains that are associated with the main creek in the mining and processing area (unnamed tributary of Warrigal Creek). It was commonly found in narrow areas of the alluvial plain, fringing the riparian vegetation that occurs within the active channel (RE 2.3.26a) and recent alluvial plain (RE 2.3.22). The community was not associated with the minor drainage features in the mining and processing area or the transport corridor.

The canopy was dominated by Coolibah, with an average a height of 8 m and cover of 10%, while the sub-canopy comprised Gulbarn, Coolibah and Whitewood, to a height of 4 m and cover of 10%. A sparse low shrub layer occurred, dominated by occasional Currant Bush (*Carissa lanceolata*).

The vegetated ground layer was dominated by tussock grasses, including *Schizachyrium crinizonatum* and *Aristida ingrata*, comprising 30% of the ground cover. Some large patches of bare ground and bare gravel were recorded in this community.

There was some evidence of cattle grazing within this community.



Plate 5: Coolibah low open woodland to woodland on alluvial plains

5.2.1.6 Broad-leaved Paperbark low woodland in shallow closed depressions (seasonal swamps)

This vegetation community was characterised as seasonal swamps (wooded), with a canopy dominated by Broad-leaved Paperbark, and a sub-canopy of Liniment Tree and emergent Long-fruited Bloodwood. This vegetation community was composed of two seasonal swamp REs – RE 2.3.55d and RE 2.3.61c (Plate 6). These REs contained similar characteristics and were located in shallow closed depressions that are periodically inundated. Within the study area, the community occurs in discrete locations in the north-east, north-west and south-west of the mining and processing area. This community was not recorded in the transport corridor.

The canopy layer, formed by large Broad-leaved Paperbark, had a canopy cover ranging between approximately 5% to 15% and a height of 10 to 14 m. An emergent tree layer, featuring Long-fruited Bloodwood, with a height of 12 to 17 m, was present. A sub-canopy layer dominated by Liniment Tree, Beefwood and Silver-leaved Wattle (*Acacia holosericea*) was present with a height range of 5 to 7 m, and a cover of approximately 20 to 40%.

The ground layer was primarily composed of tussock grasses, sedges, and organic litter, interspersed with patches of bare ground.



Plate 6: Broad-leaved Paperbark low woodland in shallow closed depressions (seasonal swamp)

Areas within this community are designated as wetlands under the VM Act. Water was not observed in this community during the field surveys, despite several visits across seasons, but there was evidence to support the description of this vegetation community as a seasonal swamp. Indicators of water presence were observed, including crab exoskeletons, the presence of sedge species, and water inundation markings on large trees (Plate 7). Despite the February 2025 survey event occurring during flood condition, the wetlands were not observed to contain standing water. Ponds of water (no flow) were visible in some waterways during the February 2025 survey, indicating that the area had received water, but the wetlands appear to have held water for short durations only. As such, it is likely the area only contains water during and immediately following extreme flooding events.



Plate 7: Water inundation markings on a large Long-fruited Bloodwood individual

5.2.1.7 Broad-leaved Paperbark low open woodland to low woodland on sand sheets

This vegetation community was characterised by Broad-leaved Paperbark low open woodland to low woodland on broad, flat sand plains, with emergent Long-fruited Bloodwood, a sparse shrub layer and tussock grasses covering the ground layer. The community is consistent with RE 2.5.14a (Plate 8). A mixed polygon of RE 2.5.14a/2.5.17b/2.3.29b/2.3.51 also comprises this community, as it was identified predominantly as a Broad-leaved Paperbark low open woodland.

This vegetation community is the dominant community within the study area, particularly within the mining and processing area. It occurs in areas of higher elevation, adjacent to communities on alluvial plains and seasonal depressions.

The ground layer was dominated by tussock grasses, including Handsome Lovegrass, Golden Beard Grass (*Chrysopogon fallax*), Annual Pigeon Grass, *Schizachyrium crinizonatum* and *Aristida ingrata*. On average, live ground cover comprised approximately 25%, while bare ground averaged 15% and organic litter averaged 60%.

There was moderate evidence of cattle grazing throughout this community.



Plate 8: Broad-leaved Paperbark low open woodland to low woodland on sand sheets

5.2.1.8 Gulbarn low open woodland to low woodland on broad sand sheets

This vegetation community was characterised by Gulbarn low open woodland with a scattered shrub layer and tussock grasses on broad, flat sand plains with yellow to brown sands and loams. The community was generally consistent with RE 2.5.17b (Plate 9). It occurs across a large portion of the study area, particularly in the mining and processing area. Similar to areas of RE 2.5.14a, this community was often found in areas of higher elevation, adjacent to communities on alluvial plains and seasonal depressions.

Gulbarn dominated the canopy layer with occasional Golden Parrot Tree, Beefwood and Broad-leaved Paperbark. The canopy reached an average height of 6 m and 15% cover. An emergent layer of Long-fruited Bloodwood and/or Cabbage Gum (*Blakella grandifolia*) occurred occasionally, to a height of 10 m.

A scattered shrub layer of recruiting canopy species occurred to a height of 2 m and 2% cover.



Plate 9: Gulbarn low open woodland to low woodland on broad sand sheets

The ground layer was dominated by tussock grasses, primarily *Schizachyrium crinizonatum*, Handsome Lovegrass and Golden Beard Grass. On average, live ground cover comprised between approximately 45 to 70% of the layer; while bare ground covered 10 to 35%, and organic litter covered between 15 to 40%.

There was evidence of cattle grazing throughout this community, particularly along the transport corridor and southern portion of the mining and processing area.

5.2.1.9 Rough-leaved Bloodwood low open woodland to woodland on broad sand sheets

This vegetation community was characterised by a Rough-leaved Bloodwood (*Corymbia setosa*) woodland on pale brown sand, with patches of locally dominant Torulosa Wattle in the canopy and shrub layers. The community was consistent with RE 2.5.18a (Plate 10). It occurred in large areas in the east of the transport corridor, and several discrete patches in the south-west of the mining and processing area. The community was most commonly found in broader areas of other land zone 5 vegetation, namely RE 2.5.14a, RE 2.5.17b and/or RE 2.5.28a.

The canopy had a cover of approximately 40%, and a height of 6 to 10 m. It was comprised of Rough-leaved Bloodwood, but was locally dominated by Torulosa Wattle at the time of the survey. The prevalence of Torulosa Wattle in this community was considered to be the result of favourable seasonal conditions in the area. Associated canopy species included Broad-leaved Paperbark, *Melaleuca* sp. (likely *nervosa*), Cooktown Ironwood and Smooth-leaved Quinine. A shrub layer, also dominated by Torulosa Wattle and *Melaleuca* spp. with a height of approximately 2 m and 2% cover occurred.

The ground layer was dominated by Firegrass, with occasional *Aristida ingrata*. On average, live ground cover comprised 5% of the total cover, while bare ground covered 25%, and organic litter accounted for 70% of the total area. This vegetation community occurred in small patches in the southwest of the mining and processing area and the east of the proposed mine access road.



Plate 10: Rough-leaved Bloodwood low open woodland to woodland on broad sand sheets

5.2.1.10 Long-fruited Bloodwood woodland on broad plains of reworked sand deposits

This vegetation community was characterised as a Long-fruited Bloodwood woodland with a sub-canopy and shrub layer of mixed *Melaleuca* spp. and *Acacia* spp. The community, consistent with RE 2.5.28a, occurred on patches of broad, flat sand plains, primarily along the transport corridor and the southern portion of the mining and processing area (Plate 11).

Long-fruited Bloodwood dominated the canopy layer with locally dominant Torulosa Wattle, Broad-Leaved Paperbark and *Melaleuca* sp. (likely *nervosa*). Occasional canopy species included Cabbage Gum, Cooktown Ironwood, Golden Parrot Tree and Rough-leaved Bloodwood. The canopy recorded between 10 and 45% cover, and reached a height of 6 to 10 m.

The shrub layer had a height of approximately 1.5 m and 10% cover; and consisted of recruiting individuals of Broad-leaved Paperbark, Torulosa Wattle and *Melaleuca* sp. (likely *nervosa*), as well as Currant Bush (*Carissa lanceolata*).

The ground layer was dominated by several tussock grasses, including *Schizachyrium crinizonatum*, *Aristida ingrata*, Handsome Lovegrass, Firegrass and Golden Beard Grass. On average, grass cover accounted for approximately 5 to 15% of the total cover, while bare ground ranged from 5 to 30%, and organic litter covered 50 to 85%.

Some mapped patches of this community appeared visually different from the majority of the community in the aerial imagery. They were field-verified to be either mature or young fire-affected *Melaleuca* spp. and were still classified as RE 2.5.28a. There was moderate evidence of cattle grazing throughout the community, particularly along the proposed mine access road located parallel to the boundary access track.



Plate 11: Long-fruited Bloodwood woodland on broad plains of reworked sand deposits

5.2.2 EPBC Act Threatened Ecological Communities

The EPBC Act Protected Matters Search Tool identified one TEC with the potential to occur in the local area. 'The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin' TEC is defined as a combination of native species, not necessarily linked to an RE. Natural discharge from the Great Artesian Basin may occur as springs, mound springs, mud springs, boggomoss springs, spring pools or groundwater seeps (DCCEEW 2021). As detailed in Section 5.1.2.2, no springs have been mapped within the study area.

The survey results confirmed nine distinct vegetation communities in the study area (Section 5.2.1) none of which were associated with springs or the natural discharge of groundwater from the Great Artesian Basin.

Results of the field surveys undertaken across wet and dry seasons concluded that there are no natural discharges of groundwater within or immediately surrounding the study area. This includes springs, mound springs, mud springs, boggomoss springs, spring pools or groundwater seeps. Consequently, no vegetation associated with the fore-mentioned TEC was identified within the proposed disturbance area during the surveys, and the Project is not likely to impact this TEC.

5.2.3 Native flora species

A total of 87 native flora species were confirmed during the field surveys, representing 28 families and 67 genera. The dominant family group was Poaceae (18 species), with Fabaceae (14 species) and Myrtaceae (11 species) also prominent. The dominant family groups demonstrate the overall composition of the vegetation communities surveyed, with the ground layer being the most diverse. A complete list of flora species recorded is provided in Appendix K.

5.2.4 Introduced flora species

One introduced flora species, Rubber Vine (*Cryptostegia grandiflora*), was recorded within the study area in low abundance. Several individuals of this species were recorded within three localities, all located in close proximity (see Figure 17):

- a patch of RE 2.5.28a associated with transect site VT24;

- a patch of RE 2.5.28a associated with transect site VT23; and
- a nearby patch along a creek-line associated with RE 2.3.29b (associated with Quaternary point Q194).

This species is listed as a restricted matter under the Biosecurity Act (Qld).

Introduced flora species may also be classified by the Australian Government as Weeds of National Significance (WoNS) if they present a serious threat to industry, water supply, human health/safety, plant communities and/or cultural values. Rubber Vine is classed as a WoNS.

A complete list of the recorded flora species, including introduced species, is provided in Appendix K.

5.2.5 Flora species of conservation significance

As described in Section 5.1.3.3, two species listed under the NC Act were assessed as potentially occurring within the study area, *Solanum carduiforme* (listed as vulnerable (NC Act)) and *Acacia armitii* (listed as near threatened (NC Act)). No conservation significant flora species listed under the EPBC Act were assessed as having the potential to occur in the study area.

Field surveys, including targeted species searches, identified no flora species of conservation significance under the EPBC Act or NC Act within the study area. The likelihood assessment was reviewed post-survey, with updated assessment finding provided in Table 8. The complete post survey likelihood assessment is provided in Appendix E.

Table 8: Conservation significant flora species potentially occurring in the study area (post-survey assessment)

Scientific Name	Common Name	NC Act status[1]	EPBC Act status[1]	Likelihood of occurrence within the study area (post-survey)
Solanum carduiforme	-	V	Not listed	Unlikely

[1] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern.[2] Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi – Migratory.

5.2.6 Flora species of cultural significance

No flora species of cultural significance to the Tagalaka People were identified during the desktop assessment or field assessments. No evidence of flora species of cultural significance was identified during consultations with representatives of the Tagalaka People and extensive heritage surveys undertaken separately as part of the cultural heritage assessment for the Project.

5.3 Fauna results

5.3.1 Major habitat types

Field surveys identified five major habitat types for fauna in the study area. The major habitat types within the study area are provided in Figure 18 and Figure 19 and are described in Sections 5.3.1.1 to 5.3.1.5.

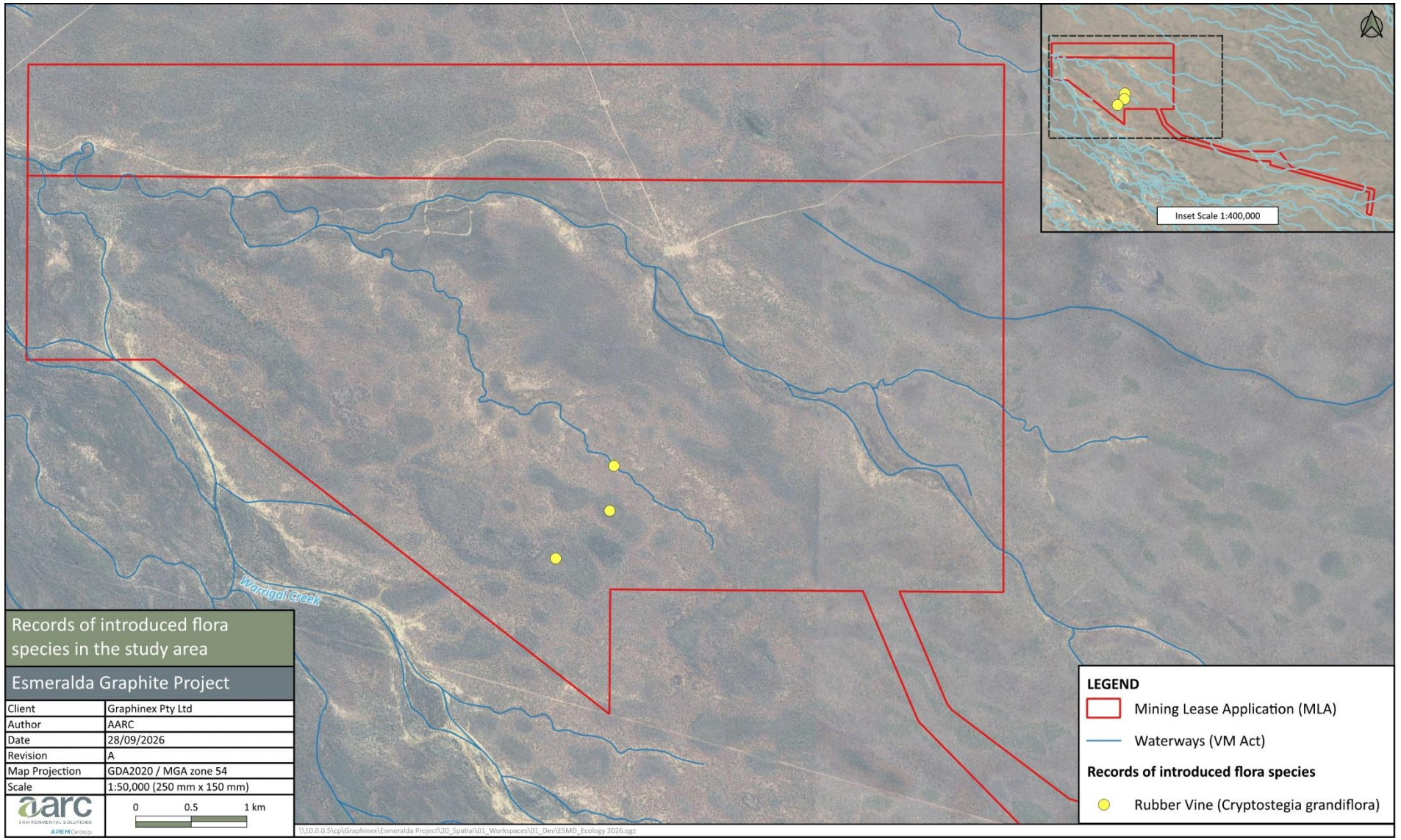


Figure 17: Records of introduced flora species in the study area

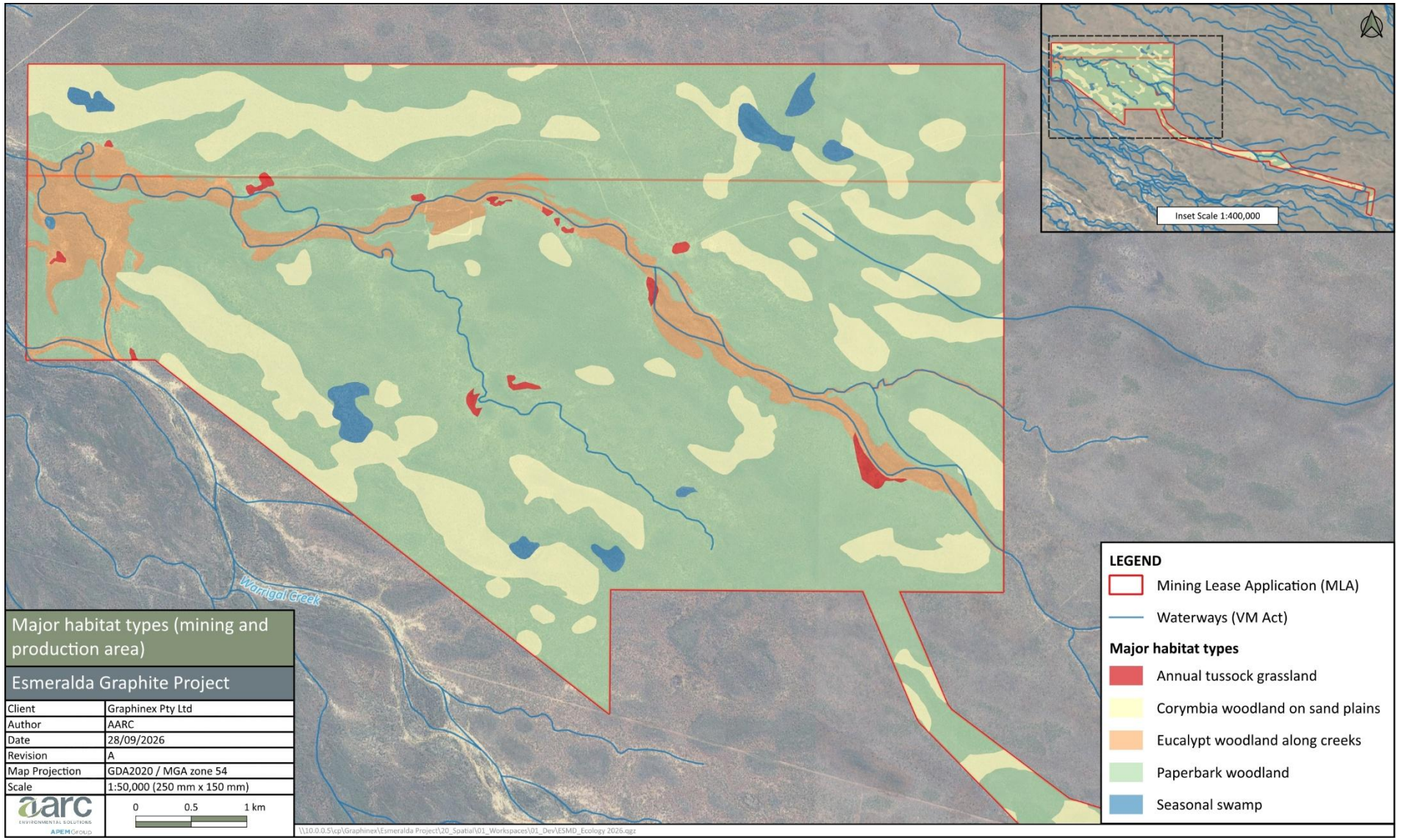


Figure 18: Major habitat types (mining and production area)

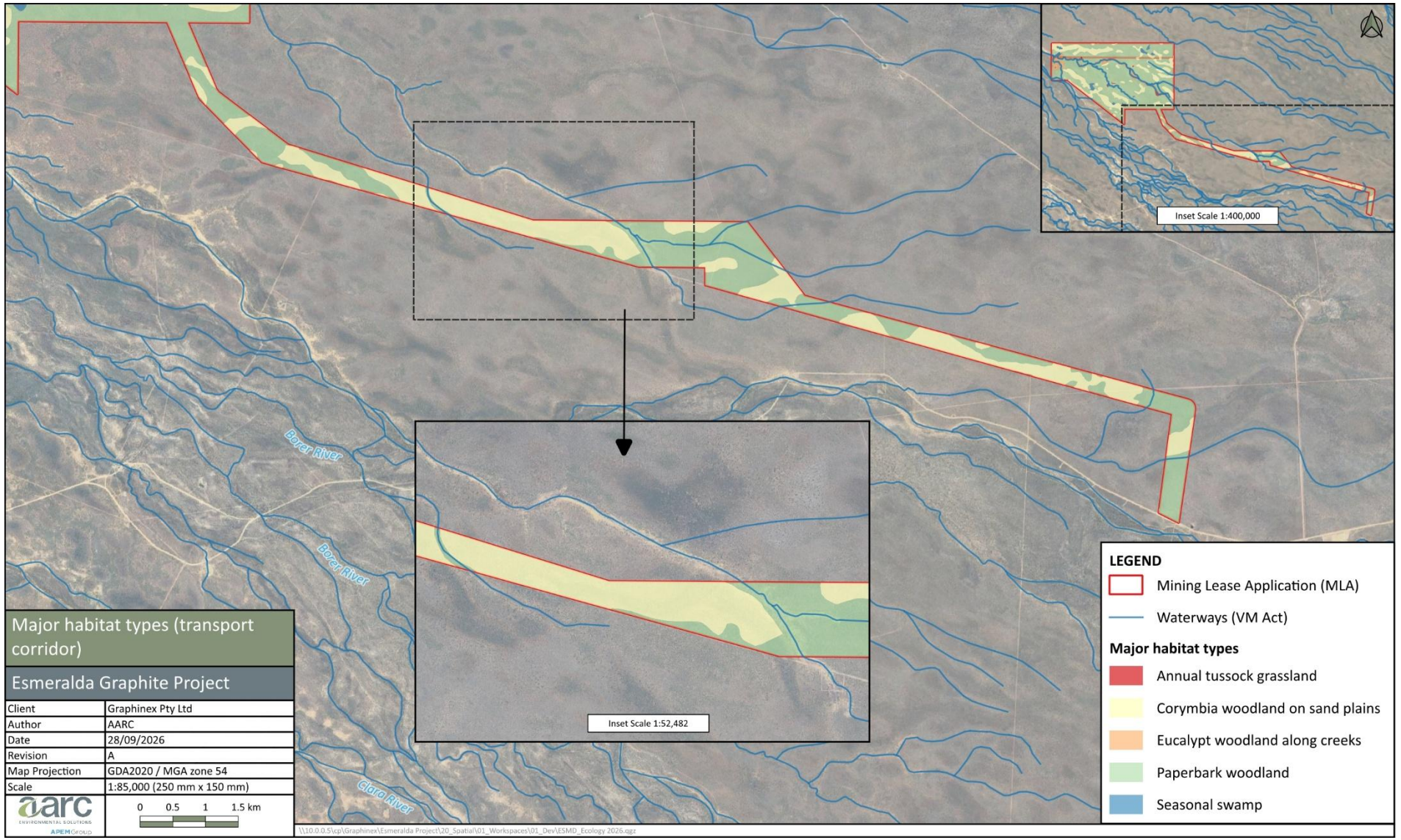


Figure 19: Major habitat types (transport corridor)

5.3.1.1 Eucalypt woodland along creeks

This habitat type is associated with several REs and contains open woodlands to woodlands of River Red Gum, Long-fruited Bloodwood and/or Coolibah with associated *Melaleuca* spp. fringing creeks (Plate 12). This habitat type is limited to the riparian vegetation associated with the main creek in the north and west of the mining and processing area. The REs associated with this habitat type include the following:

- Long-fruited Bloodwood and *Melaleuca* spp. woodland on sandy channels and levees (RE 2.3.22);
- River Red Gum woodland to low woodland, with *Melaleuca* spp., on fringes and in channels of minor watercourses (RE 2.3.26a);
- River Red Gum low woodland, with Broad-leaved Paperbark, on fringes of minor watercourses in broad sand sheets (RE 2.3.26c); and
- Coolibah low open woodland to woodland on alluvial plains (RE 2.3.42b).

Key characteristics for this habitat type include shelter and breeding habitat in the form of occasional small hollow-bearing trees and exposed roots, leaf litter and logs, and occasional tussock grass (Plate 12). Hollow-bearing trees may be utilised by a diverse range of birds, arboreal mammals, and microbat species for roosting and breeding habitat. Logs, leaf litter, exposed roots and tussock grasses provide shelter and foraging habitat for amphibians, reptiles, and ground-dwelling mammals.



Plate 12: Eucalypt woodland along creeks

5.3.1.2 Paperbark woodland

Paperbark woodland includes several REs in the study area, namely:

- *Melaleuca* spp. low open woodland to low woodland on alluvial plains and drainage depressions (RE 2.3.29b);
- Broad-leaved Paperbark low open woodland to low woodland on sand sheets (RE 2.5.14a); and
- Gulbarn low open woodland to low woodland on broad sand sheets (RE 2.5.17b).

This habitat type is widespread across the study area and provides connectivity between and to other habitat types. This habitat type supports a wide variety of wildlife, offering varying levels of shelter and resources. Vegetation communities within this habitat type are characteristic of a floodplain, presenting occasional crusted soil and sedge species (Plate 13).

Key habitat features include a diverse range of shelter types across various vegetation communities, such as tree hollows, fallen logs, leaf litter, and dense grass cover. These provide essential shelter, breeding, and foraging grounds for birds, amphibians, reptiles, and arboreal mammals. Areas of periodic inundation in some locations provide favourable habitat for amphibians.



Plate 13: Paperbark woodland

5.3.1.3 Annual tussock grassland

This habitat type is associated with RE 2.3.41, limited to the distinct patches of this community that occurs in alluvial plains associated with the main creek and the minor drainage feature in the north of the study area. This habitat type features scattered emergent Coolibah and Gulbarn trees, with variable vegetated ground cover dominated by tussock grasses, and large areas of bare ground (Plate 14).

Key characteristics of this habitat include an abundance of tussock grasses that fringe shallow depressions, offering shelter and foraging opportunities for amphibians, reptiles, and small ground-dwelling mammals. The scattered shallow depressions also serve as shelter, breeding, and foraging sites for amphibians, particularly during and after rain events. While this habitat was observed to have minimal leaf litter and fallen woody debris, occasional small hollows (<10 cm) were noted.



Plate 14: Annual tussock grassland

5.3.1.4 *Corymbia* woodland on sand plains

This habitat type is closely linked with areas of RE 2.5.18a and 2.5.28, occurring across large areas of the transport corridor and in scattered patches in the north-east and south-west of the mining and processing area. It contains Rough-leaved Bloodwood and/or Long-fruited Bloodwood on broad sand plains, with patches of locally dominant Torulosa Wattle in the canopy and shrub layers. The prevalence of Torulosa Wattle in this habitat type is considered to be temporary, as it is known to be highly cyclic in the area.

Key habitat characteristics include abundant leaf litter, termite mounds and occasional fallen Torulosa Wattle individuals, which all provide shelter and foraging habitat for amphibians, reptiles, and small ground-dwelling mammals. Tussock grass is sparse with occasional patches throughout the area, which have the potential to be utilised by small amphibians and reptiles (Plate 15). Nesting for small woodland birds has been noted in the Torulosa Wattle and larger nests were found in the Rough-leaved Bloodwoods. Evidence of moderate grazing has been identified from this habitat type.



Plate 15: Corymbia *woodland on sand plains*

5.3.1.5 Seasonal swamp

This habitat type is closely linked with discrete patches of RE 2.3.55d in the north and south of the mining and processing area, as well as one small patch of RE 2.3.61c in the west of the study area. This habitat type contains large mature Broad-leaved Paperbark and Beefwood, as well as occasional emergent Long-fruited Bloodwood (Plate 16).

Key habitat characteristics include minimal leaf litter and occasional fallen logs which provide shelter and foraging habitat for amphibians, reptiles, and small ground-dwelling mammals. An abundance of tussock grass and sedges ranging from 20% to 40% cover have the potential to be utilised by small amphibians and reptiles.

Within the study area, this community was observed to be dry during all survey events. Standing water was observed on the surface at one location, within the community, north-east of the study area (outside the MLA area) during the February 2025 survey. This standing water provides habitat for amphibians, reptiles, birds, small mammals, and freshwater crustaceans. Periodic inundation has resulted in a higher proportion of bare ground recorded within this habitat type, ranging from 30% to 55%. Nesting activity for common Grey-crowned Babblers and Honeyeaters was recorded within the vegetation community, along with burrows, including from monitor lizards (most likely the Yellow-spotted Monitor (*Varanus panoptes*)).



Plate 16: Seasonal swamp

5.3.2 Native fauna species

A total of 144 native vertebrate species were identified during the field surveys, comprising six amphibians, 25 reptiles, 100 birds and 13 mammals. One invertebrate was identified being a Freshwater Crab (exoskeleton).

A description of the amphibian, reptile, bird, and mammal assemblages within the study area is provided in Sections 5.3.2.1 to 5.3.2.4. A complete list of fauna species recorded is provided in Appendix L, together with their conservation status under the EPBC Act.

5.3.2.1 Amphibians

During the field surveys, six common amphibian species were recorded, all from different genera. No amphibian species of conservation significance were recorded on or near the Project.

Amphibian habitat within the study area fluctuates seasonally, influenced by the ephemeral nature of the water features. During the dry season survey, most potential habitats were dry except for permanent livestock dams, and no amphibians were observed except for the Cane Toad (*Rhinella marina*). However, in the early and late wet season surveys, a significant increase in amphibian sightings was recorded, along with the presence of breeding and foraging habitats. This rise in amphibian activity during the surveys is likely a result of preceding rainfall events.

5.3.2.2 Reptiles

Twenty-five species of native reptiles were recorded during the field surveys. The reptile species assemblage includes thirteen skinks, three geckos, three dragons, three legless lizards, and two monitor lizards (Yellow-spotted Monitor (*Varanus panoptes*), Black-tailed Monitor (*Varanus tristis*)). All the recorded reptile species are common and none are listed as conservation significant under the EPBC Act.

The Project area provided a variety of habitat types, including vegetated drainage features and open woodlands to promote reptile diversity. These habitats provided various microhabitats such as tree hollows, fallen timber dense leaf litter and tussock grasses, having the potential to provide shelter and breeding and foraging habitat.

5.3.2.3 Birds

A total of 100 bird species were recorded during the field surveys. A variety of avian feeding guilds were observed within the study area, with the avian assemblage including carnivores, insectivores, granivores, omnivores, nectarivores, and frugivores. Two species of conservation significance were recorded within the study area (refer to Section 5.3.3).

Avian assemblages are generally determined by factors such as food sources (e.g. fruit, nectar, seeds and insects) as well as a mosaic of habitat structures such as open woodlands, with variation in vertical habitat complexity. Generally, the more heterogeneous the habitat, the more diverse the avifauna will be. Habitat observed within the study area is not unique, nor is it considered complex in structure or diverse in nature. The woodland vegetation types present within the study area are known to be common and widespread in the region.

5.3.2.4 Mammals

A total of thirteen native mammal species were recorded in the study area, comprising two small macropods, nine confirmed micro-bat species and one native rodent. No species of conservation significance were recorded in the study area.

The study area provided a variety of habitat types suitable for small ground-dwelling mammals, including the Eucalypt woodland along creeks, Paperbark woodland, seasonal swamp and *Corymbia* woodland on sand plains.

Micro-bats are reliant on roosting sites such as thick foliage, loose decorticating bark, rock caves or cavities and tree hollows (Churchill 2008). Potential roosting sites in the study area included tree hollows and decorticating bark, which were limited within the woodland vegetation communities.

5.3.3 Introduced fauna species

Five introduced fauna species have been recorded in the study area by detecting scats, tracks, sensor camera detection and/or direct observation. Cane Toads (*Rhinella marina*), Dingo (*Canis lupus dingo*), Feral Cat (*Felis catus*), the Feral Pig (*Sus scrofa*) and Cattle (*Bos taurus*) were recorded. Cattle presence in the study area is a result of the current grazing activities.

Three of the introduced species, the Feral Cat, the Feral Pig and the Dingo, are listed as a restricted matter under the Biosecurity Act (Qld). However, none of the species are listed as a prohibited matter under the Biosecurity Act (Qld). These species are also part of the Croydon Shire Biosecurity Plan 2019 (GCB&AI 2019).

The Cane toad is not a prohibited or restricted invasive animal under the *Biosecurity Act 2014*; however, everyone has a general biosecurity obligation (GBO) to take reasonable and practical steps to minimise the risks associated with invasive plants and animals under their control (DPI 2025). Cane Toads are recognised as an invasive species because they pose a serious threat to native wildlife. The Cane Toad consumes a wide variety of native animals, including frogs, small reptiles, mammals and birds and causes the death of native predators that consume its toxins.

Cattle are present in the Project area due to the current operation of the broader underlying property as a cattle station. As there is no exclusion fencing in the study area or wider landscape, it can be assumed that the other four species may also occur throughout the study area, as there are no barriers to their movement and all species are known for their persistence in the landscape and distribution across Northern Australia. None of the introduced species records represented a change in the known distribution of these species in Australia (ALA 2024-2025). Some records of these species, with the exception of cattle, are shown in Figure 17), but it should be noted that evidence of these species, in particular Feral Pigs, was observed throughout the study area during all surveys.

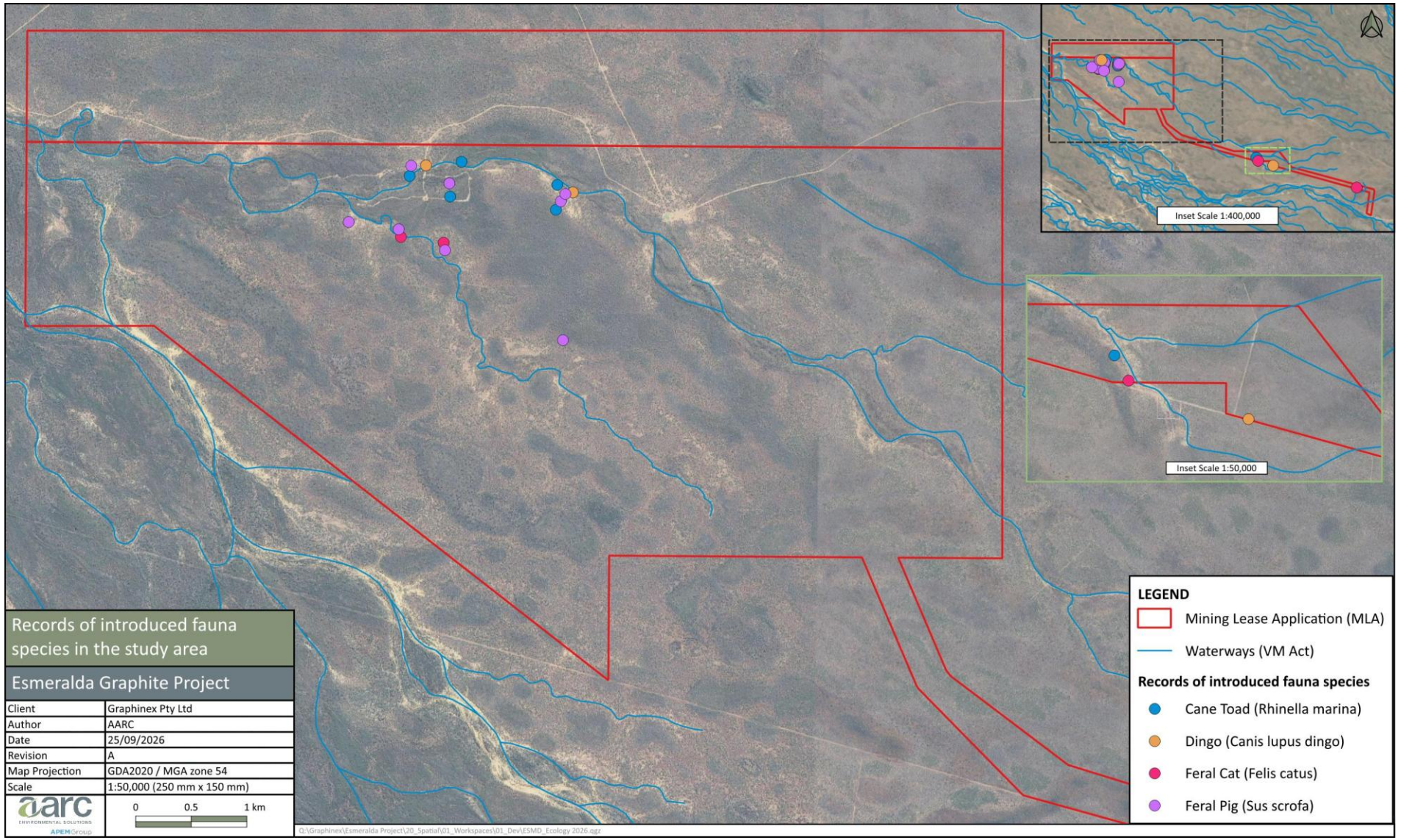


Figure 20: Records of introduced fauna species in the study area

5.3.4 Fauna species of conservation significance

Two bird species of conservation significance, the White-throated Needletail (*Hirundapus caudacutus*), listed as vulnerable and migratory under the EPBC Act, and the Fork-tailed Swift (*Apus pacificus*), listed as migratory under the EPBC Act, were observed during the November 2024 field survey, with the Fork-tailed Swift also being recorded during the February 2025 field survey. The location of conservation significant species records within the study area is provided in Figure 21.

Following the field assessment, the likelihood assessment was reviewed to provide a more accurate representation of presence on the Project site. The White-throated Needletail and Fork-tailed Swift have been assessed as known to occur based on the survey findings. The Short-beaked Echidna has not been recorded during the field surveys, despite the extensive survey effort across multiple seasons. No evidence of the species (scat, burrows) has been identified in the study area. The species was assessed as unlikely to occur in the study area.

Detailed descriptions of the distribution, ecology, survey outcomes and habitat assessment for the White-throated Needletail and the Fork-tailed Swift are provided in Section 6.

A summary of the post-survey likelihood assessment is provided in Table 9 and a description of each threatened fauna species' distribution, habitat, ecology and an assessment of their likelihood of occurrence is provided in Appendix F.

Table 9: Conservation significant fauna species potentially occurring in the study area (post-survey assessment)

Scientific Name	Common Name	NC Act status[1]	EPBC Act status[2]	Likelihood of occurrence within the study area (post-survey)
Birds				
Calidris acuminata	Sharp-tailed Sandpiper	V	V, Mi	Unlikely
Apus pacificus	Fork-tailed Swift	SL	Mi	Known- Species recorded during surveys
Actitis hypoleucos	Common Sandpiper	SL	Mi	Unlikely
Chloebia gouldiae	Gouldian Finch	E	E	Unlikely
Gallinago hardwickii	Latham's Snipe	V	V, Mi	Unlikely
Grantiella picta	Painted Honeyeater	V	V	Unlikely
Poephila cincta cincta	Black-throated Finch (White-rumped subspecies)	V	E	Unlikely
Calidris ruficollis	Red-necked Stint	SL	Mi	Unlikely
Plegadis falcinellus	Glossy Ibis	SL	Mi	Unlikely
Tringa stagnatilis	Marsh Sandpiper	SL	Mi	Unlikely
Hirundapus caudacutus	White-throated Needletail	V	V, Mi	Known - Species was not initially identified in the desktop searches, but was recorded during surveys
Rostratula australis	Australian Painted Snipe	E	E	Unlikely
Mammals				
Tachyglossus aculeatus	Short-beaked Echidna	SL	NL	Unlikely

[1] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern.[2] Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi – Migratory.

5.3.5 Fauna species of cultural significance

The Mertens' Water Monitor (*Varanus mertensi*) is considered a culturally significant species to the Tagalaka People. The likelihood assessment considered the species as unlikely to occur in the study area as potential habitat has not been identified within the study area and there are no confirmed records within the area or surrounds.

The wet season surveys, including active searches at all habitat types within the study area, were undertaken during optimal climatic conditions for the Mertens' Water Monitor. Neither the Mertens' Water Monitor nor its potential aquatic habitat have been identified from the study area. Occasional, small, shallow ponds were observed in larger watercourses; however, the highly ephemeral flow patterns and sandy channel substrate of these streams do not provide sufficient aquatic value to support Merten's Water Monitor habitat. Additionally, consultations with representatives of the Tagalaka People and extensive heritage surveys, undertaken separately as part of the cultural heritage assessment for the Project, identified no evidence suggesting the local presence of Mertens' Water Monitor.

Further, no evidence of fauna species of cultural significance were identified during the above-mentioned consultations and heritage surveys with representatives of the Tagalaka People.

One skink species of cultural significance has been identified as potentially relevant to the Project – *Lerista karichigara* sp. *nov*, known as the Tagalaka slider due to part of its distribution overlapping the Tagalaka Native Title area. This species was first described by Zozaya *et al*. (2025) in March 2025. The species' known distribution is 35 km southeast of the southern-most point of the Project, however, the complete distribution of the species is not currently known. Zozaya *et al*. (2025) suggest *L. karichigara sp. nov.* be treated as a Least Concern species considering that:

- there is no evidence of historical, ongoing, or projected declines in this species and habitat across its distribution is largely intact; and
- it is likely that the Extent of Occurrence and Area of Occupancy of the species are vastly underestimated given that this species is known from a remote and poorly surveyed region.

While the species was not published at the time of the surveys, Zozaya *et al*. (2025) indicate that the field guides and keys available prior to publication of the paper would have identified the species as *Lerista wilkinsi*.

Fauna surveys for the Project have been conducted across all habitat types within the Project area during the dry season (August 2024, November 2024) and wet season (February 2025). Survey conditions were considered suitable for detection of the species. Survey effort for reptiles at fauna trapping sites and supplementary sites accounted for an estimated:

- 16 pitfalls over 8 nights;
- 24 funnels over 8 nights;
- 42 nights of camera trapping;
- 9.5 total person-hours of herpetofauna surveys / habitat searches; and
- opportunistic observations while travelling within the study area.

Although no records of *Lerista wilkinsi* were identified from the study area during the wet and dry season surveys, seven individuals of *Lerista zonulata*, a species in the same genus, were identified during the fauna surveys. *Lerista zonulata* has several distinctive features that make it easily distinguishable from *Lerista wilkinsi* (and, as such, the Tagalaka slider), including its characteristic orange tail, four visible limbs, and bold, dark striations running lengthways down the sides of the skink, all of which are absent in the Tagalaka slider. Given this, and following several seasonal surveys, no records of Lerista wilkinsi or Lerista sp. (not identified to species level) were found, it is considered unlikely that the Tagalaka slider is present within the study area. Nonetheless, mitigations for cultural heritage matters have been developed for the Project in consultation with the Tagalaka People. These will be addressed in the Project's EIS (Chapter 11, First Nations Cultural Heritage) and will not be discussed further in this report.

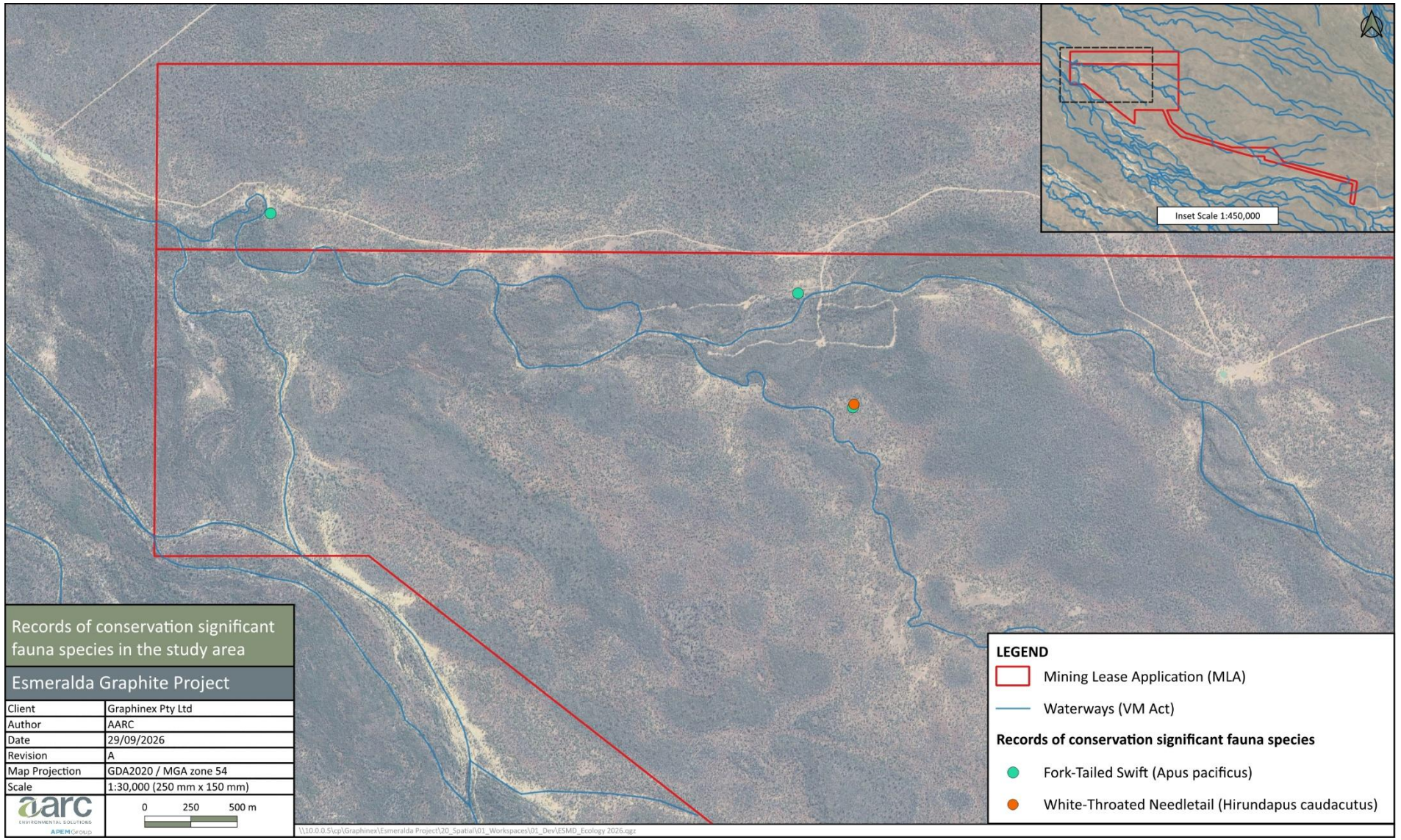


Figure 21: Fauna species of conservation significance identified within the study area

6 Conservation value of significant fauna

This section provides a detailed description of the ecological values associated with fauna species of conservation significance with potential to occur on the site:

- White-throated Needletail (*Hirundapus caudacutus*) – Vulnerable, Migratory (EPBC Act).
- Fork-tailed Swift (*Apus pacificus*) – Migratory (EPBC Act).

Conservation values described in this section inform a significant residual impact assessment of Project impacts (provided in Section 8).

6.1 White-throated Needletail

6.1.1 Species description

The White-throated Needletail is listed as vulnerable and migratory under the EPBC Act and vulnerable under the NC Act.

The White-throated Needletail is a large migratory swift, widespread across eastern and south-eastern Australia during its non-breeding season in September/October (DCCEEW 2024-2025b, TSSC 2019). In eastern Australia, it has been recorded in all coastal regions of Queensland, extending inland to the western slopes of the Great Divide and occasionally onto adjacent inland plains (DCCEEW 2024-2025b). The species is considered to be widespread in eastern and south-eastern Australia, from the islands in Torres Strait south to Tasmania. One of two subspecies of White-throated Needletail occurs in Australia although both occur in the northern hemisphere (DCCEEW 2024-2025b).

Primarily an aerial species, this species is known to occur across a variety of habitats including wooded areas, open forests, and rainforests (DCCEEW 2024-2025b). Large tracts of native vegetation, particularly forest, are considered likely to be a key habitat requirement for this species (DoE 2015a). It has been observed flying over farmland, typically over partially cleared pasture or within remnant vegetation at the edge of paddocks where it predominantly forages at cloud level along the edges of low-pressure systems (DCCEEW 2024-2025b). This species also forages in open habitats or recently disturbed areas (TSSC 2019) feeding on a wide variety of insects (DCCEEW 2024-2025b), occasionally near ground level. White-throated Needletails seldom descend to ground to catch insects and have very occasionally been seen foraging by launching into the air from trees in pursuit of flying insects or clinging to flowers on eucalypts, searching for insects (DCCEEW 2024-2025b).

The species prefers to roost in forests and woodlands, both among dense foliage in the canopy or in tree hollows, as well as on bark or rock faces, and occasionally roost aerially (DCCEEW 2024-2025b, DoE 2015a).

Known threats to the White-throated Needletail include (TSSC 2019):

- collision with wind turbines and overhead wires;
- use of insecticides; and
- habitat loss and fragmentation.

6.1.2 Species survey effort

Fauna surveys for the Project have been conducted in August 2024, November 2024 and February 2025. The surveys fell within the Gulf Plains bioregion recommended survey timing (Eyre et al. 2022).

Survey effort for the White-throated Needletail at fauna trapping sites and supplementary sites account for an estimated:

- 20.5 total person-hours of habitat searches;

- 37 total person-hours of bird surveys (13.6 person-hours of the bird surveys included dam watching at a range of different times, including morning, midday, and dusk); and
- incidental recordings obtained from opportunistic observations while travelling within the general study.

The survey effort and timing meet the requirements of both the Commonwealth Guideline (DCCEEW 2024-2025b) and the Queensland Guideline (Eyre *et al.* 2022).

Further details of the survey timing, effort and methodology are provided in Section 4.2.3 and Appendix G.

6.1.3 Species survey outcomes

Three White-throated Needletail individuals were recorded during the November 2024 survey at one location. The individuals were observed aerially, flying over the canopy of a woodland. Experienced ecologists visually identified the species.

6.1.4 Species habitat assessment

The White-throated Needletail does not breed in Australia (Higgins 1996). During the non-breeding season in Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1,000 m above the ground (DCCEEW 2024-2025b). While the species forages above most habitat types, the White-throated Needletail is predominantly recorded above wooded areas. Although it sometimes roosts aerially, it also roosts in forests and woodlands (TSSC 2019).

Potential foraging (and occasional roosting) habitat for the species corresponds with all the major habitat types within the study area (Figure 22). The study area does not provide potential breeding habitat for the species, as it is a non-breeding visitor to Australia.

Foraging habitat is not limited to the study area, with extensive, equivalent, habitat identified from the broader surrounding area. The study area is located within a large, contiguous area of suitable habitat associated undisturbed remnant vegetation in the broader region (Figure 22).

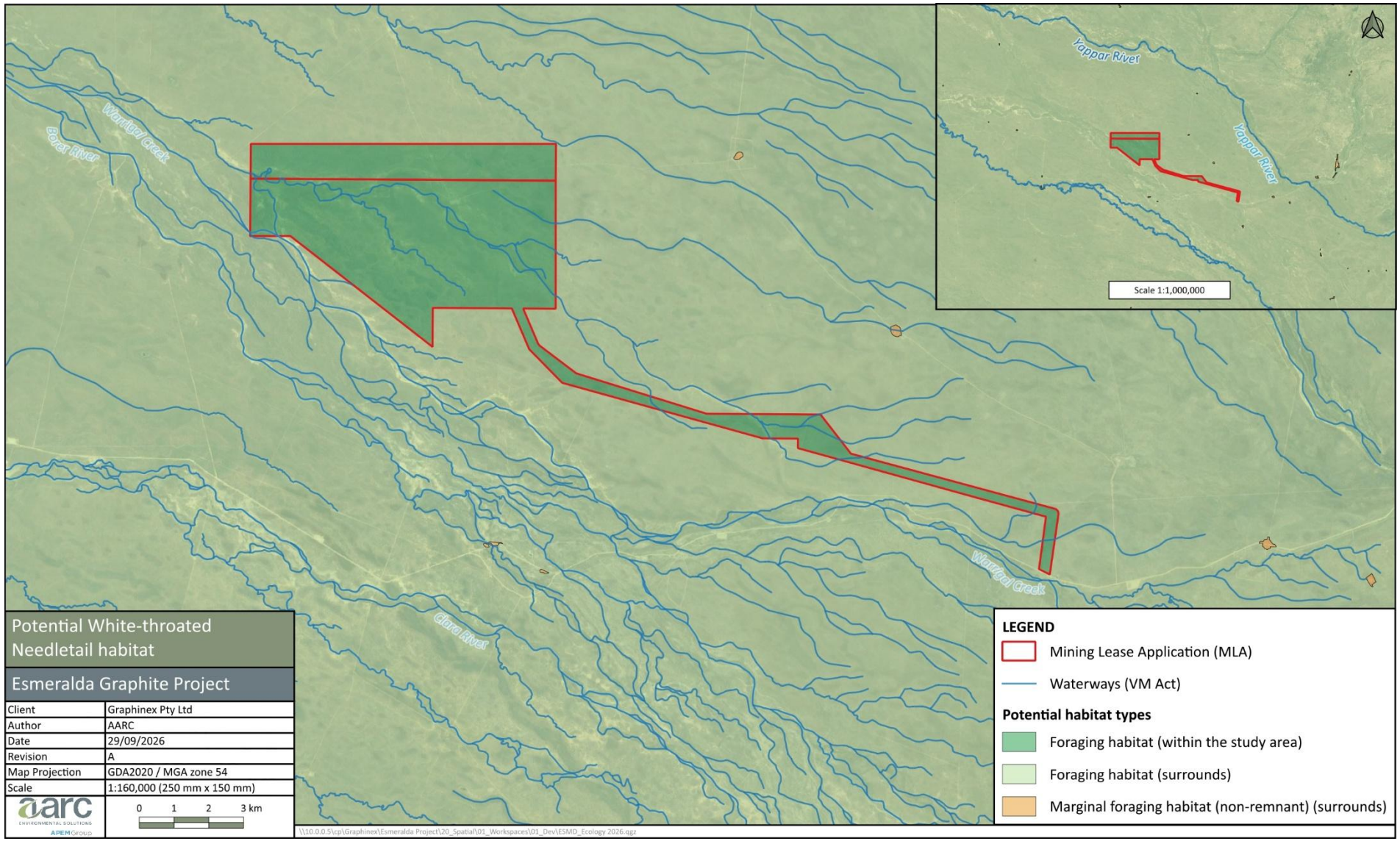


Figure 22: Potential White-throated Needletail habitat in the study area and surrounds

6.2 Fork-tailed Swift

This species has already been assessed in the Referral for the Project. A decision made in June 2025 states that the proposed action is not a controlled action. Since this species does not meet the criteria for an MSES, it does require assessment under the NC Act. Therefore, it will not be discussed further in this report.

The following species description has been included to provide context on the environmental values of the study area.

6.2.1 Species description

The Fork-tailed Swift is listed as migratory under the EPBC Act and special least concern (migratory) under the NC Act. The Fork-tailed Swift is a medium to large member of the Apodidae Family. It has a slim body with long scythe-shaped wings that taper to finely pointed tips and a long and deeply forked tail. It is mainly blackish with a white band across the rump and a white patch on the chin and throat (Higgins 1999).

6.2.2 Species survey effort

Fauna surveys for the Project have been conducted in August 2024, November 2024 and February 2025. The surveys total over 21 days in consideration of relevant Commonwealth and Queensland survey guidelines. The surveys fell within the Gulf Plains bioregion recommended survey timing (Eyre et al. 2022).

Survey effort for the Fork-tailed Swift at fauna trapping sites and supplementary sites accounts for an estimated:

- 20.5 total person-hours of habitat searches;
- 37 total person-hours of bird surveys (13.6 person-hours of the bird surveys included dam watching at a range of different times, including morning, midday, and dusk); and
- incidental recordings obtained from opportunistic observations while travelling within the general study.

The survey effort and timing meet the requirements of both the Commonwealth Guideline (DCCEEW 2024-2025b) and the Queensland Guideline (Eyre *et al.* 2022). Further details of the survey timing, effort and methodology are provided in Section 4.2.3 and Appendix G.

6.2.3 Species survey outcomes

The Fork-tailed Swift was observed during both the November and February surveys. In November 2024, two separate sightings occurred: one involving a large flock of approximately 100 individuals, and the other a smaller flock of 12. On both occasions, the swifts were seen flying over the canopy in a woodland area. In the February survey, a flock of 6 individuals were recorded during a supplementary survey site (Figure 21).

6.2.4 Species habitat assessment

Similar to the White-throated Needletail, the Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia. It is widespread throughout Queensland, with sightings common from February to March. This species is almost exclusively aerial, known to forage and probably roost aerially, but is occasionally observed to land and recorded to roost in trees (DCCEEW 2024-2025b).

Potential foraging habitat for the species corresponds with all the major habitat types within the study area (Figure 23). The study area does not provide potential breeding habitat for the species, as it is a non-breeding visitor to Australia. Foraging habitat is not limited to the study area. The study area is located within a large, contiguous area of suitable habitat, remnant vegetation, in the broader region (Figure 23).

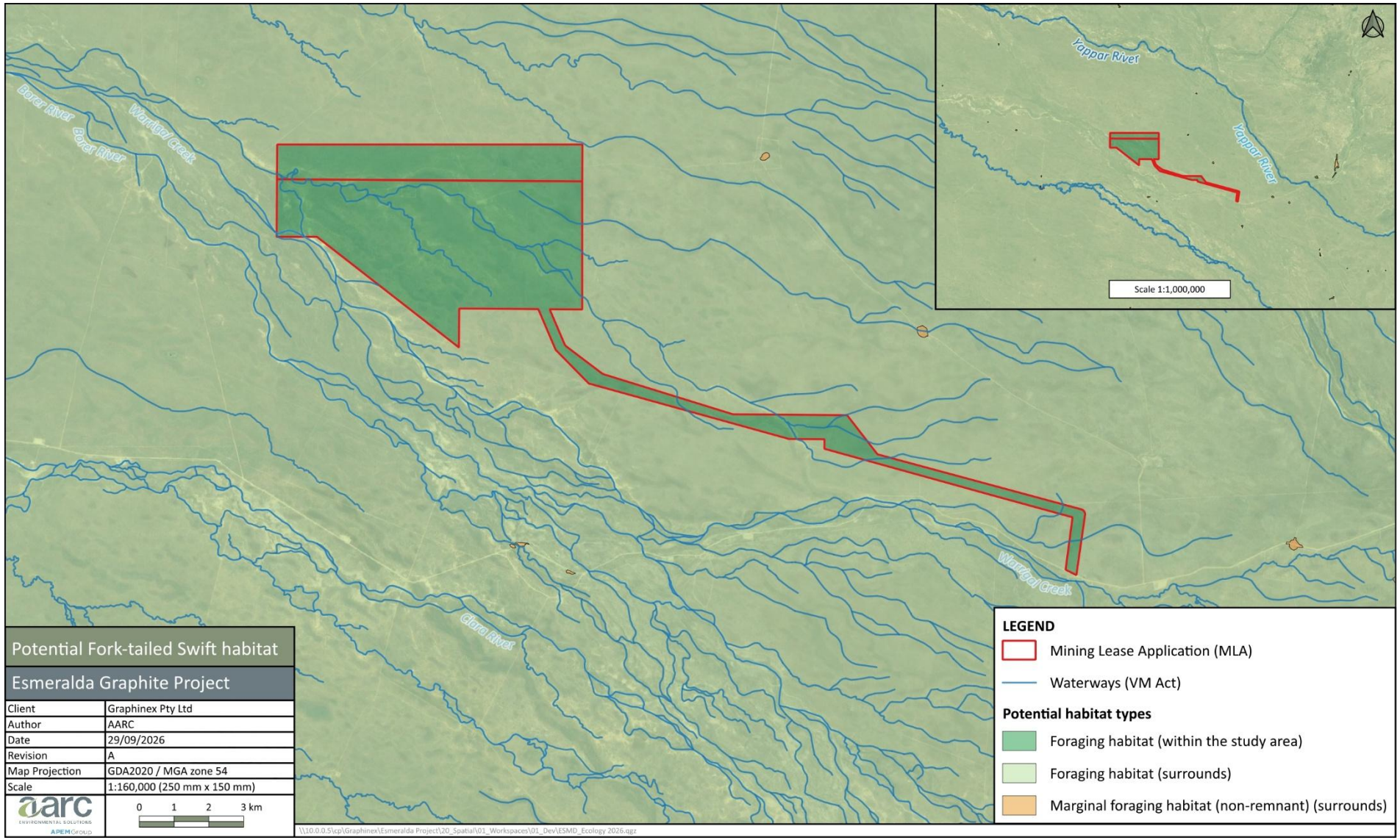


Figure 23: Potential Fork-tailed Swift habitat in the study area and surrounds

7 Potential impacts, avoidance, mitigation and management measures

The proposed Project development comprises three Project stages:

- Stage 1 - Project construction;
- Stage 2 - Mining and processing (ramping up to full production by Project year 3 - 3.5 Mtpa), followed by low-grade ore stockpile reclaim (plant feed from stockpiles after pit depletion); and
- Stage 3 - Final site rehabilitation and monitoring.

The potential Project impacts on terrestrial flora and fauna, and the proposed measures developed to avoid, mitigate and manage those impacts, are described in Sections 7.1, 7.2 and 7.3.

Section 8 provides an impact assessment specific to MSES and assesses the significance of the residual impacts on these matters after adoption of avoidance and mitigation measures.

7.1 Direct impacts

7.1.1 Vegetation clearance and habitat disturbance

The Project Area is entirely covered by remnant vegetation so clearing remnant vegetation is unavoidable; however, the Project design considered the environmental constraints identified in the area, and the layout has been designed to occupy the minimum feasible area for safe and productive operations. Up to 2,413.7 ha of remnant vegetation will be cleared within the Project disturbance area to facilitate project development.

An alternative Project layout and disturbance extent was presented as part of the Project initial advice statement (IAS) submission to the Office of the Coordinator General on 2 July 2025. This included a larger area of maximum disturbance in the main production area, and a variation in general infrastructure layout. The total Project disturbance area for the IAS disturbance extent was approximately 3,042 ha. The Project disturbance area of the EIS Project is 2,413.7 ha. The layout as presented in the IAS would have had a larger direct impact on Matters of State Environmental Significance, watercourses, and land. In consideration of this, the Project layout was revised to reduce residual impacts. A comparison of the initial and current Project disturbance extents is presented in Figure 24. However, complete avoidance was not considered viable given the location of the resource deposit.

Access to the resource will require permanently diverting a section (approximately 1.8 km long) of the unnamed tributary of Warrigal Creek in the north of the Project disturbance area, where the pit is located. The permanent diversion will be designed and managed in accordance with the 'Permanent Watercourse Diversion design criteria' (DNRME 2019).

Minimisation and mitigation measures were considered where avoidance was not feasible. These measures include siting infrastructure away from riparian corridors and providing buffers where possible, as shown in Figure 2, Figure 3, and Figure 24. The Warrigal Creek, Clara River and the Yappar River are all located outside of the study area and will not be impacted by the Project.

The Project and its associated linear infrastructure were also sited to take maximum advantage of existing transport infrastructure without causing unnecessary additional disturbance. This analysis resulted in connecting the Project to the existing Esmeralda Prospect Road that then connects to the Flinders Highway via Richmond. Riparian corridors were also an environmental constraint informing the design of the linear infrastructure connecting to the existing road network; the Project design ensures the new road connects to the existing road at a point upstream of a fording of Warrigal Creek, minimising local impacts from transport infrastructure-related habitat disturbance.

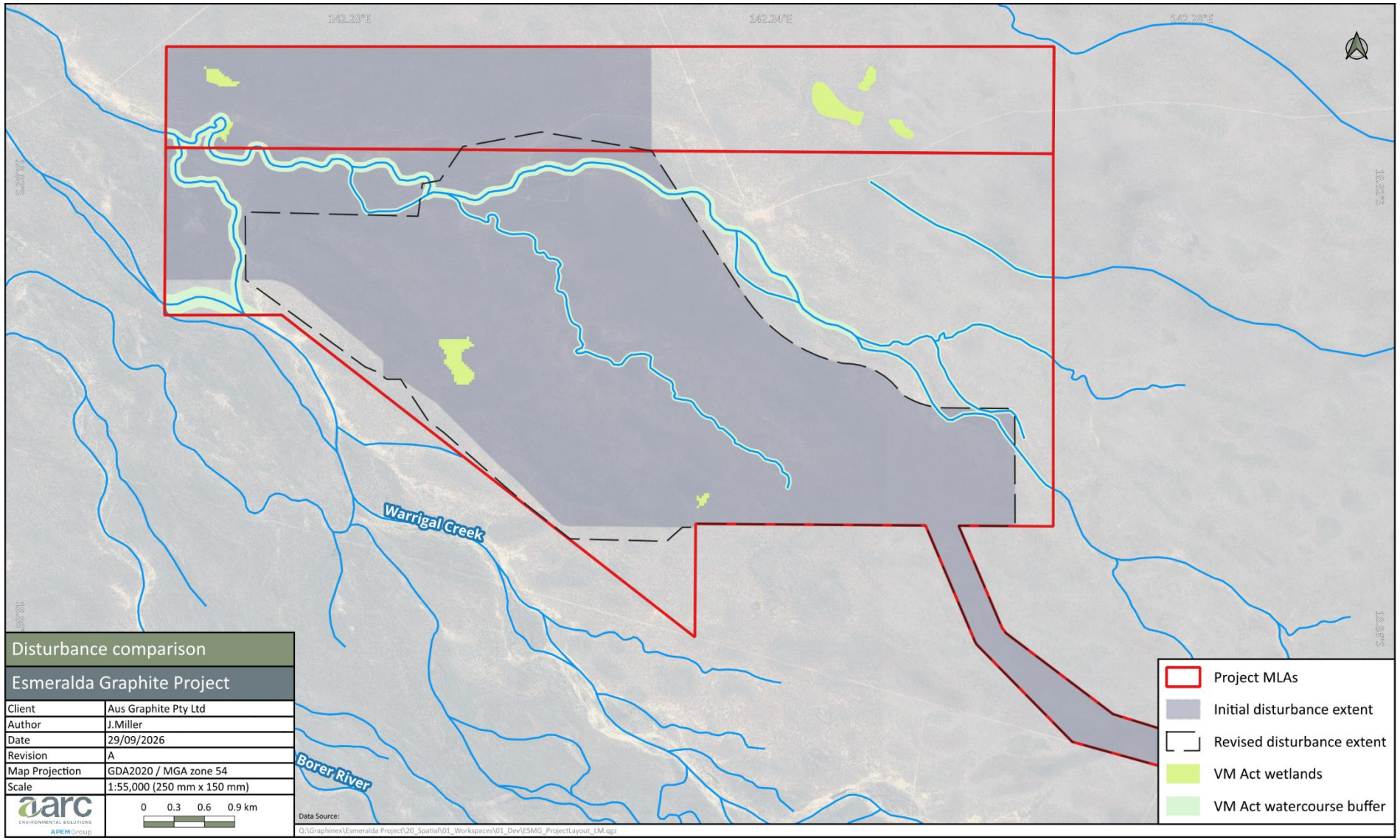


Figure 24: Disturbance extent comparison

The decision to create a permanent creek diversion as opposed to a temporary diversion has also provided several benefits that minimise and mitigate the mine's habitat disturbance impacts. Rehabilitation of the diversion area will be conducted to achieve conditions similar to those of the existing stream. As the rehabilitation of the diverted creek will begin immediately following its creation, prior to Stage 1 of Project development reaching completion, the creek diversion will be set to partially ameliorate some of the indirect impacts of the mine's operation during Stage 2 of Project development, such as habitat fragmentation and connectivity. Choosing a permanent creek diversion also benefits the site's ecological amenity and resilience when rehabilitation and monitoring of the final landform take place during the final stage of the Project's development, as the suite of by then mature ecosystem types will support the local hydrology, soil stability, and seedbank.

Creek crossings will be limited to small tributaries traversed by the transport corridor and will be subject to appropriate controls to prevent wider habitat disturbance (DPI 2025). They will be bed-level or low-level crossings, or culvert crossings, to comply with Western drainage basin standards for a green waterway (AARC 2026a). The Project disturbance area in relation to the REs within the study area is shown in Figure 25, Figure 26, Figure 27 and Figure 28.

Clearing will occur on an as-needed basis, and only when development will be undertaken soon after. Where practicable, native vegetation within the Project disturbance area may be retained. This will minimise land degradation and serve to maintain ecological processes.

Table 10 describes the extent of proposed clearance for each vegetation community in the Project disturbance area.

Table 10: Field-verified regional ecosystems within the study area and Project disturbance area

RE	Description	Extent within study area (ha)	Area of disturbance (ha)
RE 2.3.22	Long-fruited Bloodwood (*Corymbia polycarpa*) and *Melaleuca* spp. woodland on sandy channels and levees	148.32	37.71
RE 2.3.26a	River Red Gum (*Eucalyptus camaldulensis*) woodland to low woodland, with *Melaleuca* spp., on fringes and in channels of minor watercourses	78.76	21.06
RE 2.3.26a / 2.3.50a	River Red Gum (*Eucalyptus camaldulensis*) low woodland, with *Melaleuca* spp., fringing minor watercourses, with areas of bare sand and rock, and scattered vegetation in channels	1.23	1.23
RE 2.3.26c	River Red Gum (*Eucalyptus camaldulensis*) low woodland, with Broad-leaved Paperbark (*Melaleuca viridiflora*), on fringes of minor watercourses in broad sand sheets	8.67	2.64
RE 2.3.29b	*Melaleuca* spp. low open woodland to low woodland on alluvial plains and drainage depressions	321.28	143.49
RE 2.3.41	Annual tussock grassland on alluvial plains	19.88	11.40
RE 2.3.42b	Coolibah (*Eucalyptus microtheca*) low open woodland to woodland on alluvial plains	45.34	5.31
RE 2.3.55d	Seasonal swamp (wooded). Broad-leaved Paperbark (*Melaleuca viridiflora*) low woodland in shallow closed depressions on sand sheets	48.60	23.13
RE 2.3.61c	Seasonal swamp (wooded). Coolibah (*Eucalyptus microtheca*) and Broad-leaved Paperbark (*Melaleuca viridiflora*) woodland in closed depressions on alluvial plains	0.88	0.00
RE 2.5.14a	Broad-leaved Paperbark (*Melaleuca viridiflora*) low open woodland to low woodland on sand sheets	1,400.12	877.76

RE	Description	Extent within study area (ha)	Area of disturbance (ha)
RE 2.5.14a / 2.5.17b / 2.3.29b / 2.3.51	Mixed community of *Melaleuca* spp. low open woodland to low woodland on fringes of alluvial plains and sand sheets, with seasonal swamps of River Red Gum (*Eucalyptus camaldulensis*) woodland	12.23	0.00
RE 2.5.17b	Gulbarn (*Melaleuca citrolens*) low open woodland to low woodland on broad sand sheets	1,281.41	675.36
RE 2.5.18a	Rough-leaved Bloodwood (*Corymbia setosa*) low open woodland to woodland on broad sand sheets	104.16	101.80
RE 2.5.28a	Long-fruited Bloodwood (*Corymbia polycarpa*) woodland on broad plains of reworked sand deposits	973.57	512.83
Total		**4,444**	**2,413.73**

The vegetation within the study area provides terrestrial fauna with opportunities for foraging, breeding, nesting, predator avoidance, and movement between areas; it also facilitates dispersal/migration and promotes genetic diversity by providing connectivity within the broader area. These opportunities could potentially be reduced by clearance activities associated with the Project. Where practicable, the Proponent has efficiently located project infrastructure to avoid and minimise impacts to the woodland communities with connectivity values, such as watercourses.

The Proponent has also built in a buffer zone to its Project disturbance area, ensuring ancillary activities such as vehicle access and mitigation measures such as sediment control or vegetation control for fire risk mitigation can all take place without impacting surrounding riparian and wetland vegetation and their habitat values, connectivity or water quality. This buffer zone also protects vulnerable areas such as the upstream part of the Warrigal Creek tributary that crosses over into the Project disturbance area (Figure 2 and Figure 31), further safeguarding vulnerable environmental values.

The proposed maximum disturbance of each major habitat type within the Project disturbance area is detailed in Table 11: Field-verified major habitat types within the study area and Project disturbance areaTable 11 and illustrated in Figure 29 and Figure 30.

Table 11: Field-verified major habitat types within the study area and Project disturbance area

Major habitat type	Extent within the study area (ha)	Area of disturbance (ha)
Eucalypt woodland along creeks	282.33	67.95
Paperbark woodland	3,015.03	1,696.62
Annual tussock grassland	19.88	11.40
Corymbia woodland on sand plains	1,077.74	614.63
Seasonal swamp	49.48	23.13
Total	**4,444**	**2,413.73**

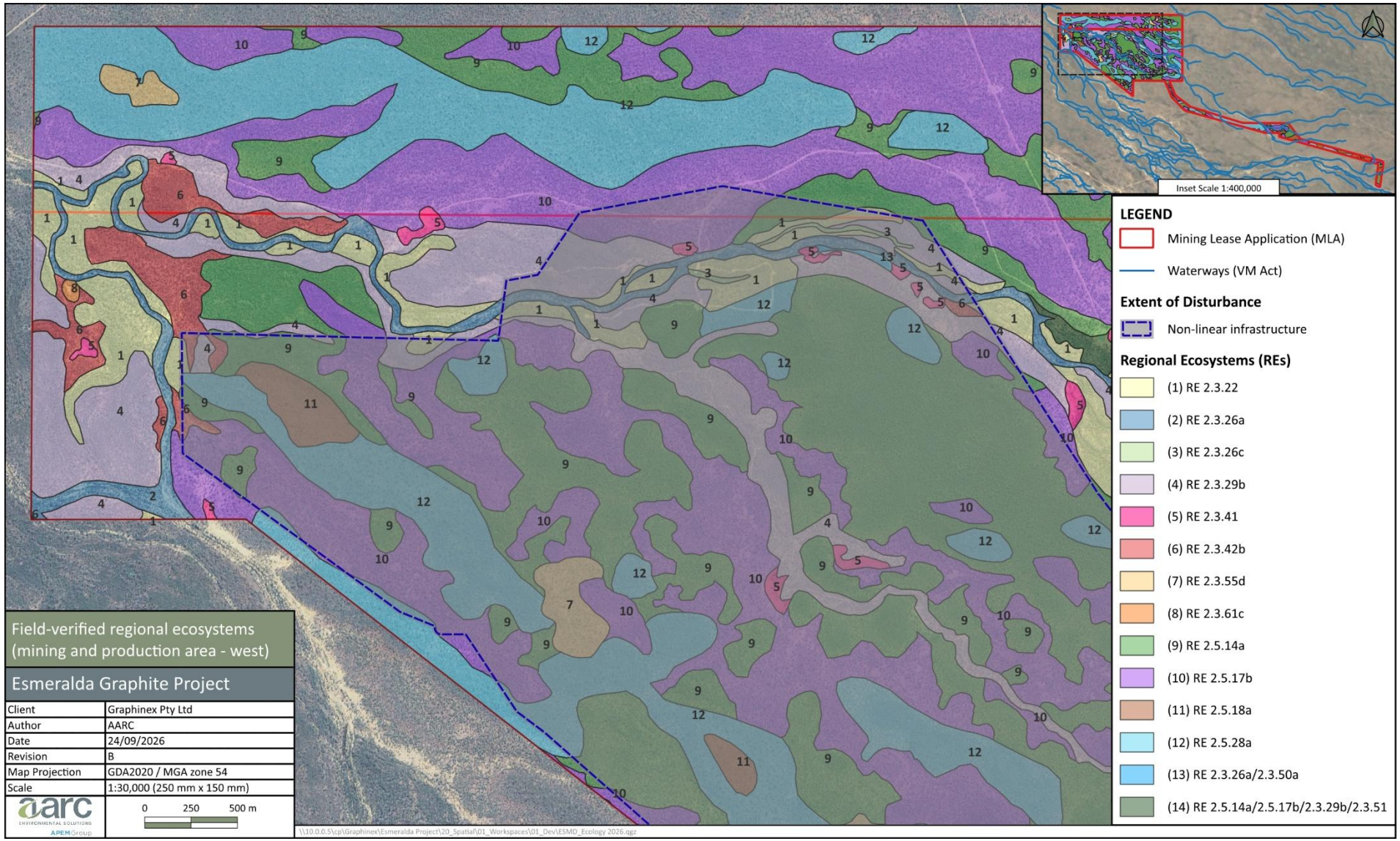


Figure 25: Regional ecosystems and extent of disturbance (mining and production area - west)

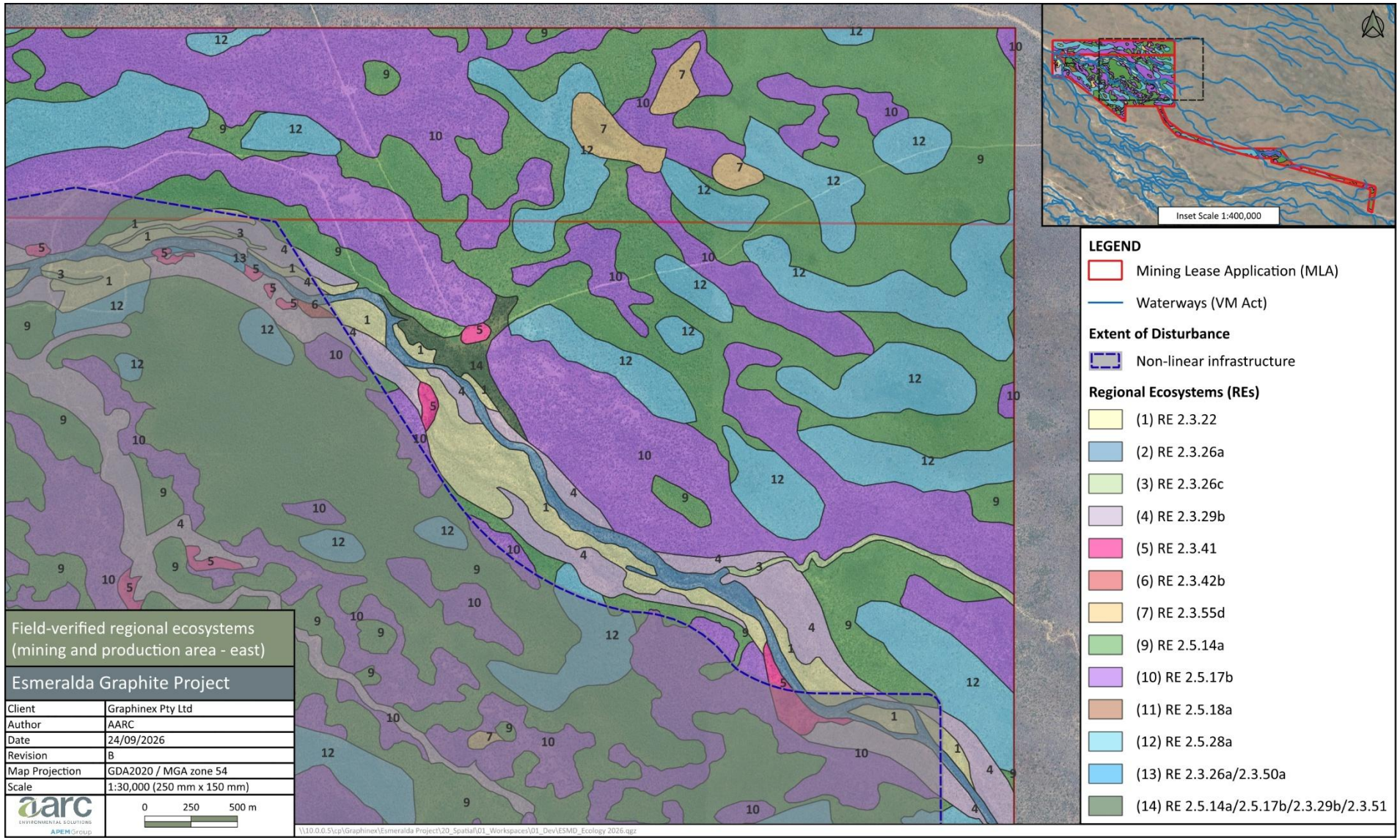


Figure 26: Regional ecosystems and extent of disturbance (mining and production area - east)

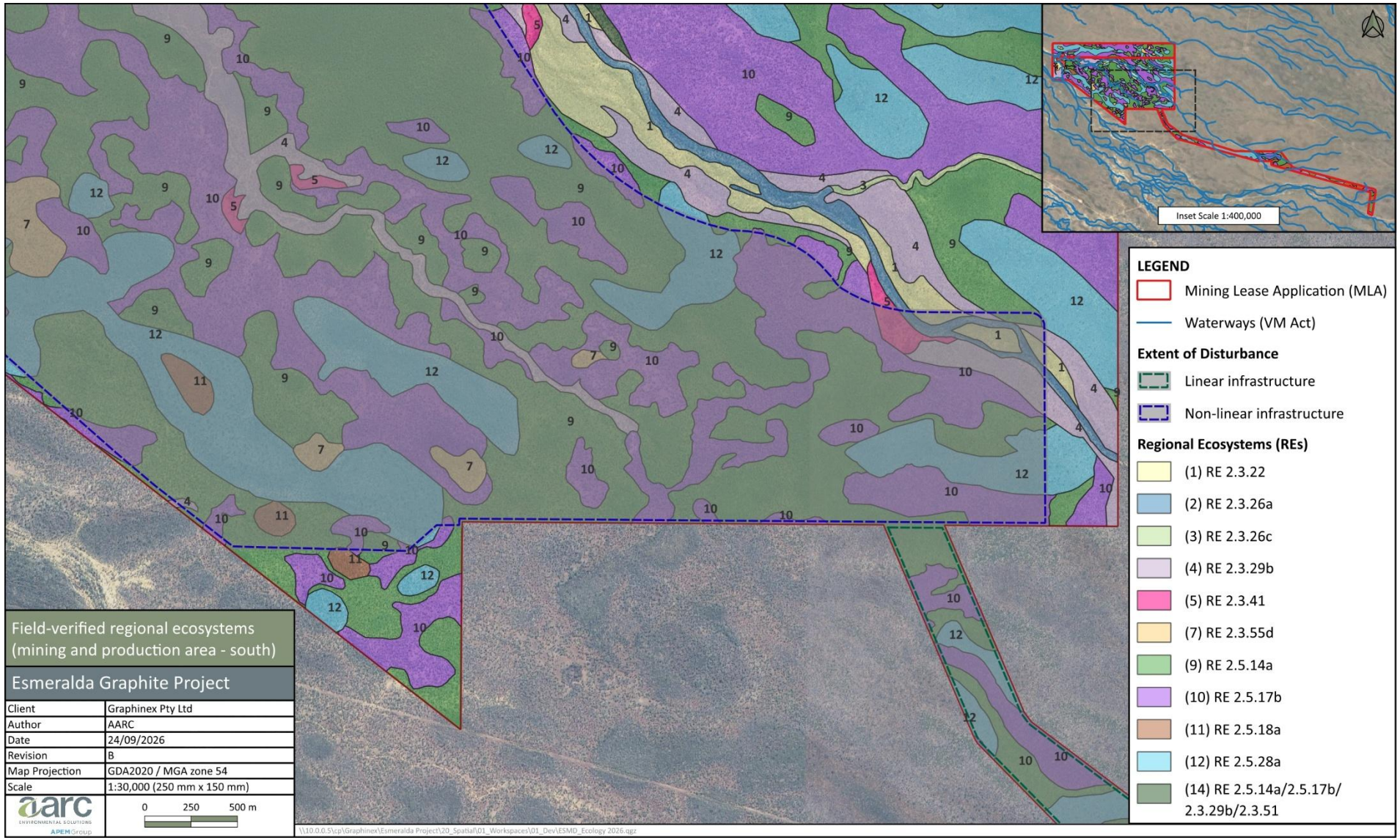


Figure 27: Regional ecosystems and extent of disturbance (mining and production area - south)

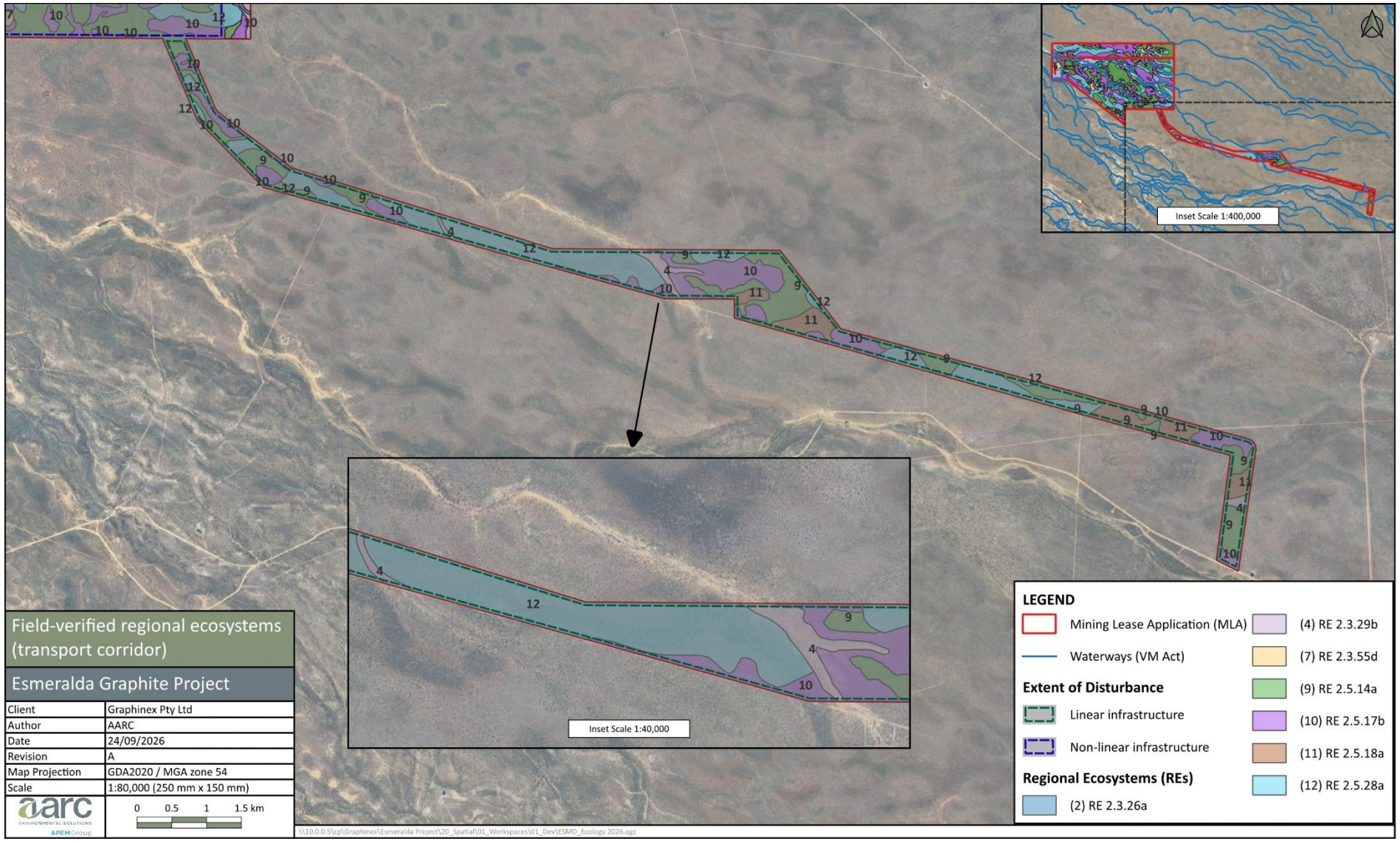


Figure 28: Regional ecosystems and extent of disturbance (transport corridor)

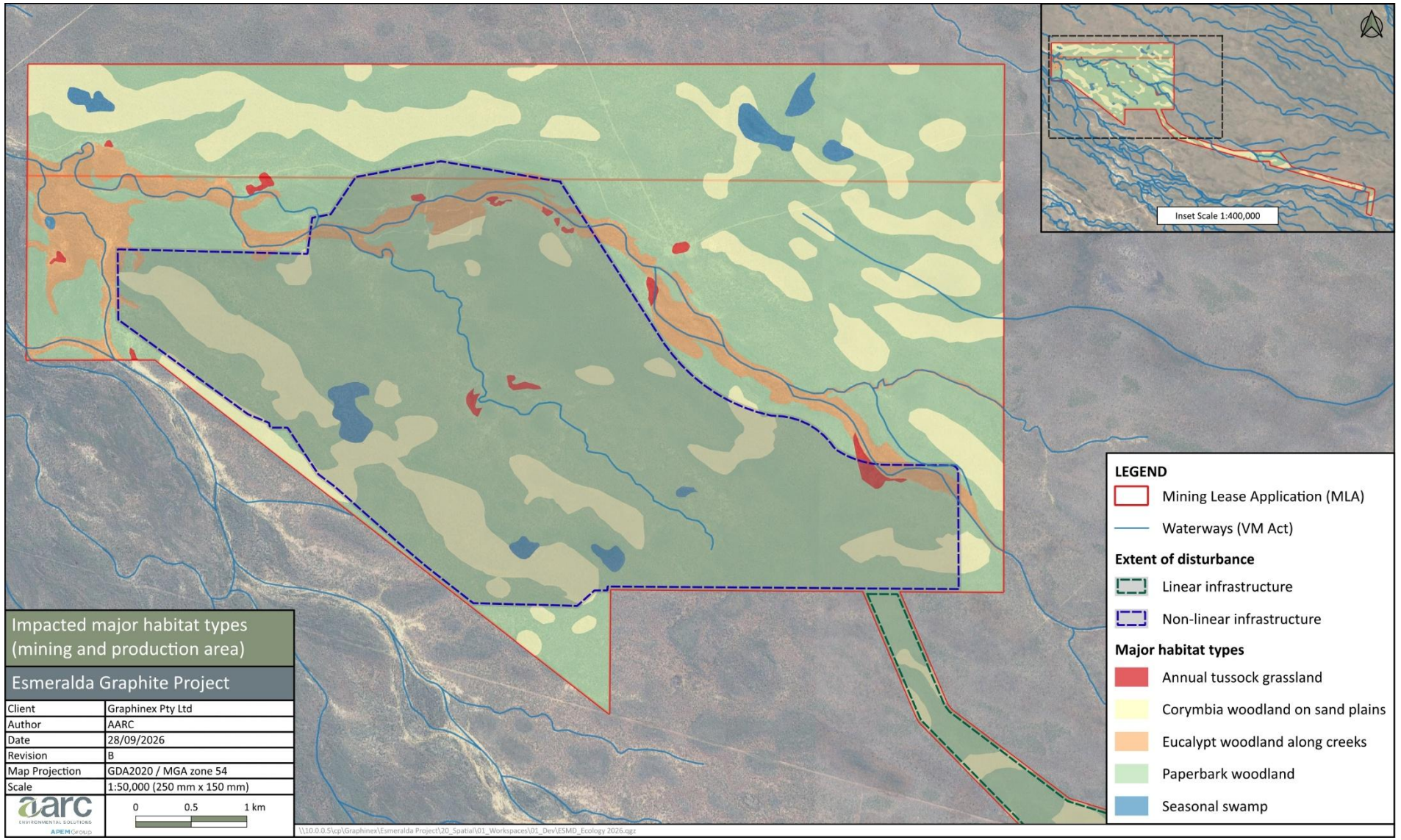


Figure 29: Major habitat types and extent of disturbance (mining and production area)

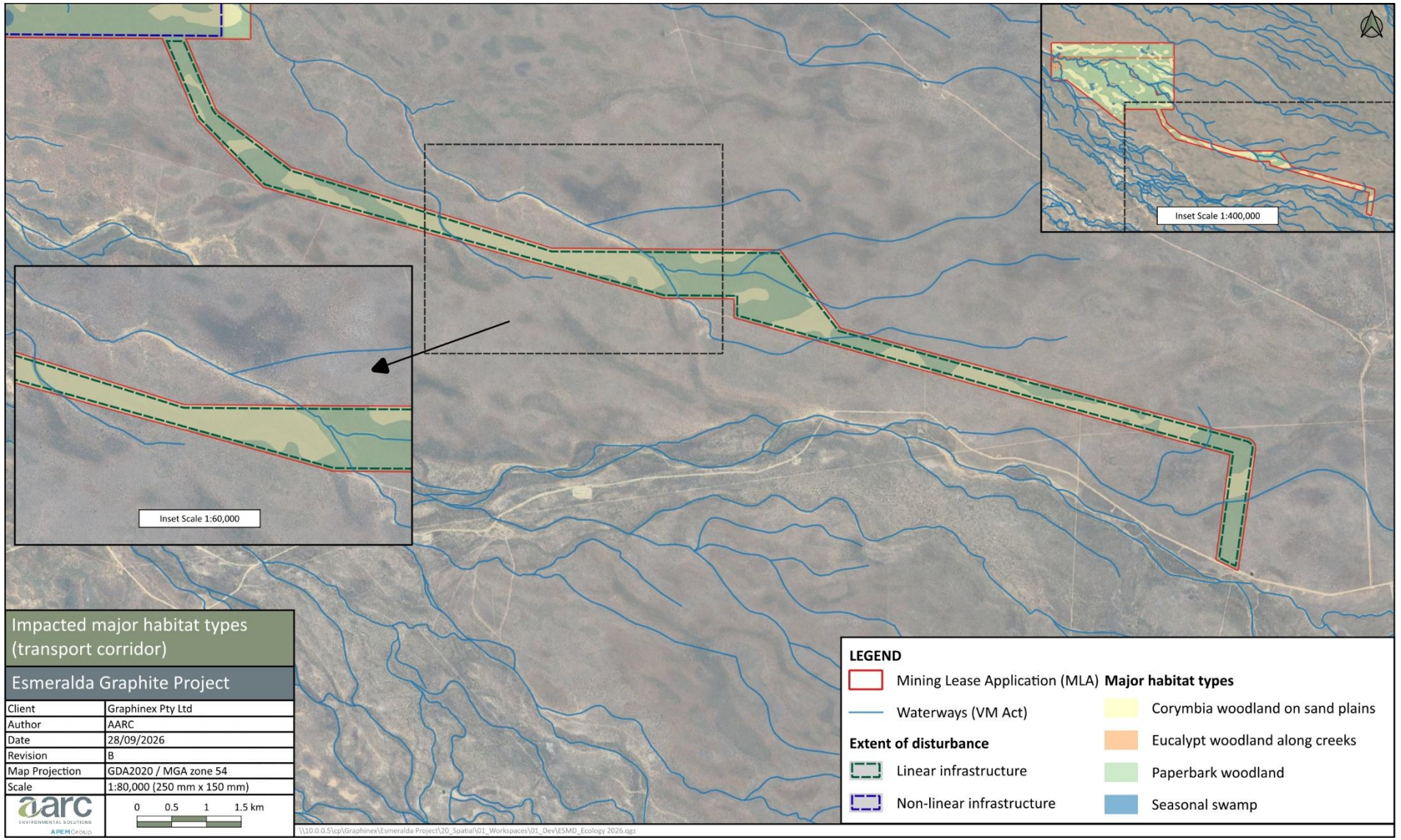


Figure 30: Major habitat types and extent of disturbance (transport corridor)

7.1.1.1 Recommended mitigation measures

The following mitigation measures are recommended to minimise direct impacts of the Project:

- Clearing activities should be undertaken progressively in accordance with the mine schedule and Project requirements and not before necessary, to protect the land.
- Vegetation/habitat adjoining proposed clearance areas should be delineated and clearly marked to limit potential damage through a 'Permit to Disturb' process.
- Prior to vegetation clearing, areas to be impacted should be inspected to identify fauna at direct risk from clearing activities.
- Clearing operations should be managed to maximise the reuse of cleared vegetative material. This will include the potential to salvage and reuse select habitat resources from the cleared vegetation (e.g. logs) for habitat enhancement, either in the rehabilitation program or elsewhere on site, or mulching of removed vegetation for respreading to minimise erosion.
- Clearing activities will be undertaken in accordance with mitigations measures for cultural heritage matters, developed in consultation with the Tagalaka People (detailed in the First Nations Cultural Heritage EIS chapter for the Project).
- Land disturbed by mining activities should be rehabilitated progressively as it becomes available. Details of the proposed rehabilitation program are provided in the Progressive Rehabilitation and Closure Plan (PRC Plan) prepared for the Project.

7.2 Indirect impacts

7.2.1 Habitat fragmentation and connectivity

Vegetation clearing can lead to habitat fragmentation, reducing connectivity and impacting condition of the surrounding habitat (through edge effects).

Edge effects are impacts that occur along the boundary of undisturbed vegetation and cleared or developed land. This boundary is exposed to increased light, wind shear and weed invasions, augmenting the local environment (e.g. altered species and structural composition).

The study area, like the rest of the region, is characterised by large contiguous areas of remnant vegetation. Within the study area, this includes narrow riparian corridors along the unnamed tributaries of the Warrigal Creek, which provide some specific connectivity function. However, no state-significant corridors are mapped in the study area, due to the smaller size and location of waterways within the site, relative to the riparian corridors present in the wider region.

The Project's impacts on habitat fragmentation and connectivity are considered low, given the extent of undisturbed remnant vegetation remaining within the surrounding landscape, including the presence of larger watercourses identified as state biodiversity corridors outside of the Project impact area. Nevertheless, avoiding additional habitat fragmentation and reduced landscape connectivity was an environmental constraint that informed the Project design; for instance, the linear infrastructure connecting the Project to existing transport infrastructure is built over and parallel to an existing access track. Although the new road will have more increased impacts due to its increased width, it will avoid duplication of habitat fragmentation and barriers to connectivity.

Another measure mitigating edge effects impacting the condition and connectivity of surrounding habitats is the incorporation of a buffer area directly into the Project layout, reducing any disturbance additionality in areas surrounding the Project. This allows for space for ancillary activities such as vehicle access, as well as mitigation measures such as sediment control and vegetation control for fire risk management. This ensures the maintenance of the habitat value, connectivity, and water quality of the surrounding riparian and wetland vegetation.

7.2.1.1 Recommended mitigation measures

The avoidance, mitigation and management measures that have been described for direct vegetation clearance/habitat disturbance will aid to minimising habitat fragmentation and impacts on connectivity, including the permanent diversion of the unnamed tributary of the Warrigal Creek.

7.2.2 Vehicle strike

The movement of vehicles has the potential to increase the incidence of fauna mortality via vehicular strike. Ground-dwelling fauna are most susceptible to this potential impact. The risk of injury or mortality from vehicle strike is greatest along the transport corridor.

Contributing risk factors for vehicle strike are the speed of vehicles on roads and tracks, and limiting speed can reduce the threat of vehicle strike to fauna species.

7.2.2.1 Recommended mitigation measures

Speed limits are recommended for roads and tracks within the Project disturbance area, to reduce the risk of vehicle strike on native fauna. Safe driving procedures should also be incorporated into site inductions to increase awareness of the risk of vehicle strike.

7.2.3 Weeds and pests

Some introduced flora species are effective competitors for resources and have the potential to reduce the floristic structure and diversity of native plant communities. One introduced flora species has been recorded within the study area, the Rubber Vine, which is listed as restricted matters under the Biosecurity Act (Qld) and as WONS.

Activities that could introduce or spread weeds include the disturbance and stockpiling of soil, vehicle movements, and vegetation clearing. The potential introduction or spread of weeds can occur during all phases of the Project, including construction, operation, and rehabilitation.

Five introduced fauna species that present a risk to native fauna and their habitat have been recorded in the study area:

- Cane Toad (*Rhinella marina*);
- Dingo (*Canis lupus dingo*);
- Feral Cat (*Felis catus*);
- European Cattle (*Bos taurus*) (as a result of the current grazing activities); and
- Feral Pig (*Sus scrofa*).

Three of the introduced fauna species— Feral Cat, Feral Pig and the Dingo are listed as restricted matters; however, there are no prohibited matters under the Biosecurity Act (Qld).

Inadvertently providing scavenging areas (e.g. discarded food scraps and other rubbish) has the potential to increase populations of introduced fauna species in and around the Project disturbance area.

7.2.3.1 Recommended mitigation measures

A Project Pest and Weed Management Plan will be prepared to incorporate pest and weed management measures for the Project. The Pest and Weed Management Plan will include:

- inspections within the Project disturbance area to identify areas requiring weed management to be implemented;

- weed management measures (e.g. mechanical removal and application of approved herbicides) in consideration of weed control strategies outlined by the Department of Agriculture and Fisheries and the 'North West Queensland Regional Biosecurity Plan 2022–2027' (North West Queensland Regional Council 2022);
- procedures for maintaining a clean, rubbish-free environment to discourage scavenging and reduce the potential for colonisation of these areas by introduced fauna; and
- feral animal control strategies in consideration of pest control strategies outlined by the Department of Agriculture and Fisheries, 'North West Queensland Regional Biosecurity Plan 2022–2027' (North West Queensland Regional Council 2022) and Threat Abatement Plans applicable to the EPBC Act listed key threatening processes.

With the above specific management measures to be implemented, it is considered unlikely that the Project will increase the occurrence or diversity of weeds or feral pests already identified within the study area where any increase would have a significant impact or cannot be managed.

7.2.4 Noise and vibration

Noise and vibration associated with the construction and operation of the Project have the potential to disrupt the routine activities of fauna species in the surrounding habitat areas. Areas close to the source of vibration and noise have the potential to become unused by sensitive fauna species.

Primary sources of noise or vibration in the proposed mining area include the vehicle movements and the operation of equipment (e.g. dump trucks, excavators, loaders, dozers, drill rigs, blasting, compressors and other drilling-related equipment).

The indirect noise impacts on the woodland and other habitats from the mining activities proposed to be undertaken, and from vehicle movements on the haul road, will be localised and are not likely to have a significant long-term impact on wildlife populations given that fauna often readily habituate to continuous noise. While sudden noise (e.g. blasting activities) has the potential to startle native fauna, animals are likely to adapt to the disturbance and/or move to similar habitats in the surrounding landscape (Cumberland Ecology 2015).

7.2.4.1 Recommended mitigation measures

The Proponent should manage noise emissions of the Project. Management and mitigation measures may include regular inspection and servicing of vehicles and equipment to ensure operation in accordance with specifications, and monitoring of noise and vibration impacts at sensitive locations.

7.2.5 Dust

The Project has the potential to increase dust emissions in the vicinity of the Project disturbance area, primarily due to dust generation from the operation of mining equipment, blasting, hauling of ore and waste rock, and vehicles travelling on unsealed roads. Impacts during construction and rehabilitation stages are expected to be lower, as mining equipment and blasting are not expected to be utilised or undertaken, however may occur during operation of vehicles and disturbance of vegetation and soils. Excessive dust generation can impact the health and viability of surrounding vegetation (Reach Environmental 2020, Farmer 1993).

7.2.5.1 Recommended mitigation measures

Management and mitigation measures may include watering of unsealed roads, tracks and stockpiles, chemical surface suppressants, and air quality monitoring programs to ensure protection of ecology and agriculture.

7.2.6 Artificial lighting

Artificial lighting will be established in the Project disturbance area. Project lighting has the potential to affect behavioural patterns of some species. Some bird and bat species, for example, are attracted to insects around lights and could become prey for larger predators (e.g. owls). Artificial lighting can also attract predators and invasive pests, both of which may pose a threat to native fauna (DoEE 2020).

7.2.6.1 Recommended mitigation measures

The exterior lighting design for the Project should consider the Australian Standard AS/NZS 4282:2019, 'Control of the obtrusive effects of outdoor lighting,' which acknowledges the potential impact of artificial light on biota (DoEE 2020).

7.2.7 Hydrological changes

Mine development and associated infrastructure, including the permanent diversion of a tributary of Warrigal Creek, will lead to permanent landform modification and changes in natural runoff patterns. These changes have the potential to impact surrounding vegetation and habitat areas. Impacts may occur through artificial ponding, concentration of flows causing increasing erosion processes, or catchment loss to ecosystems reliant in-flows.

Ephemeral wetlands present within the study area are reliant of overland flows for periodic inundation. These ecosystems may be sensitive to catchment loss.

7.2.7.1 Recommended mitigation measures

A water management plan will be developed and implemented to ensure effective design and management of surface flows around the mining operation, with consideration of surrounding biota, including wetlands (Engeny 2026).

An erosion and sediment control plan will be developed and implemented to mitigate erosion processes and protect downstream ecosystems from increased sediments loads (Engeny 2026).

A water quality monitoring program will be developed and implemented to confirm the effectiveness of management practices and the protection of downstream ecosystems (Engeny 2026).

7.2.7.2 Groundwater Dependent Ecosystems (GDEs)

GDEs that rely on groundwater for survival may experience deteriorating ecosystem condition, changes in vegetation composition, or dieback due to mine-induced drawdown.

A specific assessment of project impacts on GDEs will be detailed in the 'Groundwater Dependent Ecosystem Assessment' to be prepared by Watermark Ecohydrology.

7.2.8 Bushfire

While plants and animals have a range of mechanisms to survive a natural fire regime, the frequency of bushfires may be modified by the mining activity. The operation of mechanical and electrical equipment has potential to cause accidental fires. A change in natural fire patterns can lead to fauna mortality and / or modification of ecosystem condition.

7.2.8.1 Recommended mitigation measures

Bushfire prevention and management measures should be implemented for the Project, and fire awareness included in the induction of personnel and contractors to minimise the risk of bushfire.

The Project infrastructure design should consider a fire break, to act as a stop-gap between possible sources of fire, such as sparks and open flames, and vegetation. Monitoring and management of fuel loads in vegetation surrounding the operation is also recommended.

7.2.9 Erosion

Vegetation clearing and land disturbance may result in topsoil exposure and erosion. In addition, disturbance in proximity to waterways within the Project disturbance area may also reduce bank stability and increase soil erosion and elevated sediment levels in downstream receiving waters.

The Project has the potential to result in erosion of disturbed areas and sedimentation of waterways from clearing vegetation for the development of open-cut pits and constructing haul roads and other infrastructure.

7.2.9.1 Recommended mitigation measures

Vegetation clearance protocols should be implemented to minimise potential impacts.

An erosion and sediment control plan should be developed and implemented to mitigate erosion processes and protect downstream ecosystems from increased sediments loads.

A water quality monitoring program should be developed and implemented to confirm the effectiveness of management practices and the protection of downstream ecosystems (AARC 2026a).

7.3 Cumulative impact

Cumulative impacts can be defined as the total impact on the environment that results from the incremental impacts of the action (the Project) added to other past, existing, and reasonably foreseeable future actions in the region. Cumulative impacts include direct and indirect impacts on the environment.

To withstand threats, ecosystems require a robust diversity of individuals, species, and populations. The cumulative impact assessment has considered the habitat and species occurring (species diversity, abundance and dynamics), patterns of species distribution (the communities and ecosystem present that encompass all species), broad habitat types (the ecological niches for the range of species present) and ecosystem processes.

The provision of biodiversity offsets, consistent with the relevant policies, provides an opportunity to mitigate cumulative impacts on the prescribed matters in the Project disturbance area. Offsets increase the area of protected habitat that will be managed for conservation.

7.3.1 Surrounding activities and projects

The Project is located in a sparsely populated area of North Queensland, within the Gulf Plains Bioregion, specifically in the Claraville Plains subregion. This area primarily supports low-intensity cattle grazing practices (95.45% of land use), with other land uses in the subregion consisting of transport and communication, residential and farm infrastructure, mining, intensive animal production and irrigated cropping and contributing less than 0.1% of the total area (wetlands, marshes, lakes and rivers contribute 4.5% of the subregion area).

Low intensity beef cattle grazing generally occurs within remnant woodland and grassland environments in the Project area. As a result, remnant vegetation communities remain largely in place, relative to more eastern bioregions which have been subject to large-scale clearing practices. However, despite its largely intact state, the Gulf Plains Bioregion faces several threats, including land degradation from inappropriate grazing pressure and exotic plant invasion, such as Rubber Vine.

There are no major towns, industrial developments, or mining projects located in close proximity to the Project. The closest existing development is the town Croydon, a former gold mining and agricultural town, located over 60 km north of the Project, therefore, the Project is expected to have a negligible cumulative impact on noise, vibration, or dust.

Immediately to the north-east of Croydon, Jubillee Metals proposes to recommence mining and processing of gold ore at the historic Croydon Gold Mine. The Project has a target production of 416,098 tonnes over 17 months and is in the construction phase now (accurate at time of reporting, January 2026).

7.3.2 Land clearing

While grazing occurs in the surrounding area and land clearing for tracks and infrastructure has been undertaken, minimal extensive land clearing for grazing is required. Whereas, the Project has the potential to contribute to the cumulative impacts of land clearing with other mining activities, located over 60 km away from the Project.

The Project will result in direct disturbance of up to 2,413.7 ha of remnant vegetation, adding to the remnant vegetation clearing from other development in Croydon which is considered relatively minor. The impacted vegetation represents less than 0.06% of the current extent (Accad *et al*. 2024) of remnant vegetation in the Claraville Plains subregion.

7.3.3 Downstream ecosystems

The Project is unlikely to impact major watercourses, such as the Warrigal Creek or the Clara River. Considering the lack of other development in the local catchment area, key ecosystem cycles are unlikely to be affected by cumulative impacts.

7.3.1 Biodiversity corridors

The Project will not contribute to cumulative impacts on known biodiversity corridors, that provide mobility for fauna, and which may also be considered climate refugia for some species (Reside *et al.* 2014).

Impacts within riparian corridors are limited to the upgrade of existing crossings of small tributaries along the transport corridor and the watercourse diversion.

8 Significant Residual Impact assessments

8.1 Regulated vegetation

8.1.1 Prescribed REs that intersect VM Act wetland

Two VM Act wetlands intersect the Project disturbance area and will be impacted by the Project (Figure 5). Four field-verified REs are associated with these wetlands, namely, RE 2.3.55d, 2.5.14a, 2.5.17b and 2.5.28a. As discussed above in Section 7.1.1, due to the location of the resource these impacts were considered unavoidable. Nevertheless, the Project disturbance area avoids impacting other VM Act wetlands unnecessarily, including multiple situated in MLA100430 and several situated immediately outside the study area within close proximity of the smaller VM Act wetland impacted in the Project disturbance area (Figure 24, and Figure 32).

Under the EO Act, offsets are required for significant residual impacts to remnant REs that lie within a mapped vegetation management wetland. For an activity to have a significant residual impact on a RE that is within a mapped wetland, the following thresholds must be exceeded (DEHP 2014):

- clearing within 50 m of the defining bank of a VM Act wetland; and
- clearing of greater than:
    - For a linear infrastructure: 25 m wide in grassland (structural category) REs, 20 m wide in sparse (structural category) REs or 10 m wide in dense to mid-dense (structural category) REs.
    - For other than a linear infrastructure: 5 ha in grassland (structural category) REs, 2 ha in sparse (structural category) REs or 0.5 ha in dense to mid-dense (structural category) REs.

REs within a mapped wetland that will be disturbed for the Project are associated with non-linear infrastructure in the mining and processing area. No areas of REs within a mapped wetland will be cleared for linear infrastructure associated with the Project– namely the access road, including the airstrip.

REs located within VM Act wetlands that will be disturbed for the Project are shown in Figure 32. A detailed significant residual impact assessment, in accordance with the Significant Residual Impact guidelines (DEHP 2014), including the structural category of each RE within VM Act wetlands and the proposed extent of disturbance, is provided in Table 12.

Table 12: Regional ecosystems that intersect a VM Act wetland assessment summary

Regional ecosystem	Structural category	Assessment criteria	Area of disturbance (ha)	Significant impact assessment against criteria
RE 2.3.55d	Sparse	• Clearing within 50 m of the defining bank of a VM Act wetland; and • Clearing an area greater than 2 ha in a sparse RE.	10.45	Yes, the Project disturbance area will result in the removal of 10.45 ha of this community, which is above the 2 ha threshold for a significant residual impact (clearing other than a linear infrastructure).
RE 2.5.14a	Sparse	• Clearing within 50 m of the defining bank of a VM Act wetland; and • Clearing an area greater than 2 ha in a sparse RE.	0.12	No, clearing is below the 2 ha threshold for a significant residual impact (clearing other than a linear infrastructure).
RE 2.5.17b	Sparse	• Clearing within 50 m of the defining bank of a VM Act wetland; and	0.06	No, clearing is below the 2 ha threshold for a significant residual

Regional ecosystem	Structural category	Assessment criteria	Area of disturbance (ha)	Significant impact assessment against criteria
		• Clearing an area greater than 2 ha in a sparse RE.		impact (clearing other than a linear infrastructure).
RE 2.5.28a	Sparse	• Clearing within 50 m of the defining bank of a VM Act wetland; and • Clearing an area greater than 2 ha in a sparse RE.	0.00	No, clearing is below the 2 ha threshold for a significant residual impact (clearing other than a linear infrastructure).

Offsets are triggered under the EO Act for project impacts to REs intersecting VM Act wetlands for the clearing of 10.45 ha of RE 2.3.55d.

The Proponent is planning to deliver financial settlement offsets in accordance with the Queensland Environmental Offsets Policy. An Environmental Offset Strategy has been prepared for the Project that presents any offset requirements and proposed provision of offsets for impacted matters (AARC 2026b). The environmental offset requirements for the Project are summarised in Section 9.

8.1.2 Prescribed REs located within the defined distance of a VM Act watercourse

The Queensland Government vegetation management watercourse map shows watercourses defined under the VM Act that are used to regulate vegetation clearing in proximity to watercourses (DEHP 2014). The ephemeral watercourses intersecting the Project disturbance area are defined watercourses under the VM Act.

Whilst efforts were taken in the Project design to avoid and minimise impacts to prescribed REs within defined distances of VM Act watercourses, as outlined in Sections 7.1.1 and 7.2.1 and shown in Figure 31, some impacts were unavoidable (Figure 31).

Offsets may be required under the EO Act for significant residual impacts on remnant REs located within defining banks of a VM Act watercourse. For an activity to have a significant residual impact, the following thresholds must be exceeded:

- clearing within 5 m of the defining bank of a VM Act watercourse; and
- clearing of greater than:
    - For a linear infrastructure: 25 m wide in grassland (structural category) REs, 20 m wide in sparse (structural category) REs or 10 m wide in dense to mid-dense (structural category) REs.
    - For other than a linear infrastructure: 5 ha in grassland (structural category) REs, 2 ha in sparse (structural category) REs or 0.5 ha in dense to mid-dense (structural category) REs.

Appendix 3 of the 'Queensland Environmental Offsets Policy', lists the defined distance of REs for measuring significance of impacts to watercourse vegetation. In non-coastal regions, for 1st and 2nd order streams, the defined distance is 25 m from the defining banks. For 3rd and 4th order streams, the defined distance is 50 m from the defining banks. For 5th order streams or larger, the defined distance is 100 m from the defining banks.

REs located within the defining banks of a VM Act watercourse that will be disturbed for the Project are associated with non-linear infrastructure in the mining and production area and associated with linear infrastructure in the transport corridor (access road, including airstrip) and are shown in Figure 32. A detailed significant residual impact assessment, in accordance with the Significant Residual Impact guidelines (DEHP 2014), including the structural category of each RE within the defined distance of VM Act watercourses and the proposed extent of disturbance, is also provided in Table 13.

Table 13: Regional ecosystems that intersect a VM Act watercourse assessment summary

Regional ecosystem	Structural category	Assessment criteria	Area of disturbance (ha)	Significant impact assessment against criteria
Linear infrastructure				
RE 2.3.29b	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing a width greater than 20 m in a sparse RE.	12.10	Yes, the Project disturbance area will involve clearing a width of greater than 20 m in this community, which is above the threshold for a significant residual impact.
RE 2.5.14a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing a width greater than 20 m in a sparse RE.	4.09	Yes, the Project disturbance area will involve clearing a width of greater than 20 m in this community, which is above the threshold for a significant residual impact.
RE 2.5.17b	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing a width greater than 20 m in a sparse RE.	13.32	Yes, the Project disturbance area will involve clearing a width of greater than 20 m in this community, which is above the threshold for a significant residual impact.
RE 2.5.18a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing a width greater than 20 m in a sparse RE.	0.42	Yes, the Project disturbance area will involve clearing a width of greater than 20 m in this community, which is above the threshold for a significant residual impact.
RE 2.5.28a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing a width greater than 20 m in a sparse RE.	1.76	Yes, the Project disturbance area will involve clearing a width of greater than 20 m in this community, which is above the threshold for a significant residual impact.
Non-linear infrastructure				
RE 2.3.22	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	8.99	Yes, the Project disturbance area will result in the removal of 8.99 ha of this community, which is above the 2 ha threshold for a significant residual impact.
RE 2.3.26a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	18.59	Yes, the Project disturbance area will result in the removal of 18.59 ha of this community, which is above the 2 ha threshold for a significant residual impact.
RE 2.3.26c	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	0.15	No, clearing is below the 2 ha threshold for a significant residual impact.
RE 2.3.29b	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and	30.06	Yes, the Project disturbance area will result in the removal of 30.06 ha of this community, which

Regional ecosystem	Structural category	Assessment criteria	Area of disturbance (ha)	Significant impact assessment against criteria
		• Clearing an area greater than 2 ha in a sparse RE.		is above the 2 ha threshold for a significant residual impact.
RE 2.3.41	Grassland	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 5 ha in a grassland RE.	0.99	No, clearing is below the 5 ha threshold for a significant residual impact.
RE 2.3.42b	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	0.33	No, clearing is below the 2 ha threshold for a significant residual impact.
RE 2.3.26a / 2.3.50a (50%/50%)	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	0.48 -RE 2.3.26a	The clearing of RE 2.3.26a within a VM Act watercourse for a non-linear infrastructure already meets the threshold for a significant residual impact; therefore, any additional impact is considered significant.
			0.48 -RE 2.3.50	However, clearing 0.48 ha of RE 2.3.50 is below the 2 ha threshold for a significant residual impact.
RE 2.5.14a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	3.29	Yes, the Project disturbance area will result in the removal of 3.29 ha of this community, which is above the 2 ha threshold for a significant residual impact.
RE 2.5.17b	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	2.81	Yes, the Project disturbance area will result in the removal of 2.81 ha of this community, which is above the 2 ha threshold for a significant residual impact.
RE 2.5.28a	Sparse	• Clearing within 5 m of the defining bank of a VM Act watercourse; and • Clearing an area greater than 2 ha in a sparse RE.	0.14	Yes, while clearing 0.14 ha is below the 2 ha threshold for a significant residual impact, the clearing of RE 2.5.28a within a VM Act watercourse for a linear infrastructure already meets the threshold for a significant residual impact; therefore, any additional impact is considered significant.

Offsets will be required for these impacts to vegetation within the defined distance of a watercourse, as stated in the Significant Residual Impact Guideline (DEHP 2014).

Offsets are triggered under the EO Act for these impacts to REs within the defined distance of a VM Act watercourse for:

- RE 2.3.22 – offset required for 8.99 ha;
- RE 2.3.26a – offset required for 19.07 ha;
- RE 2.3.29b – offset required for 42.15 ha;

- RE 2.5.14a – offset required for 7.38 ha;
- RE 2.5.17b – offset required for 16.13 ha;
- RE 2.5.18a – offset required for 0.42 ha; and
- RE 2.5.28a – offset required for 1.90 ha.

The Proponent is planning to deliver financial settlement offsets in accordance with the Queensland Environmental Offsets Policy. An Environmental Offset Strategy has been prepared for the Project that presents any offset requirements and proposed provision of offsets for impacted matters (AARC 2026b). The environmental offset requirements for the Project are summarised in Section 9 .

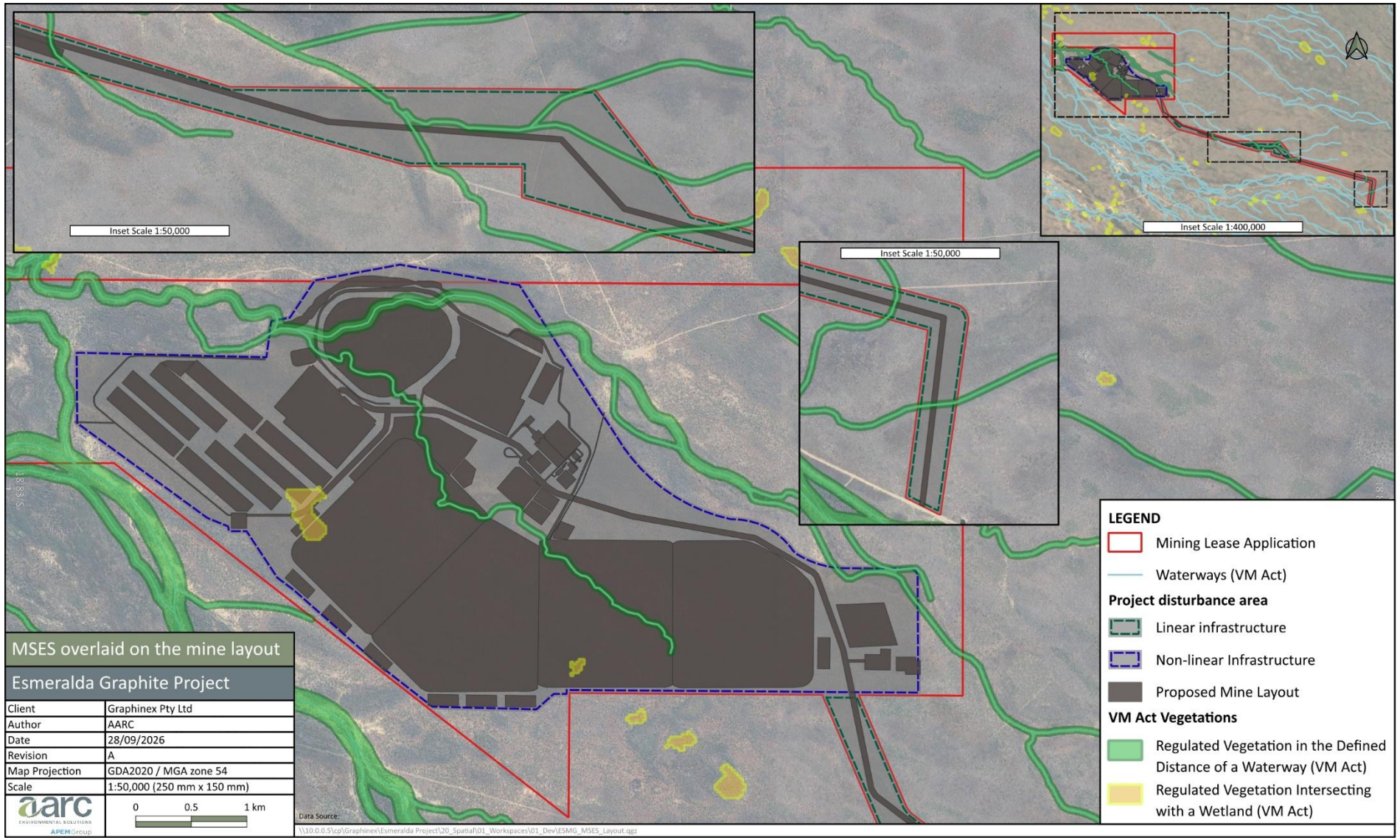


Figure 31: MSES within the study area in relation to the mine layout

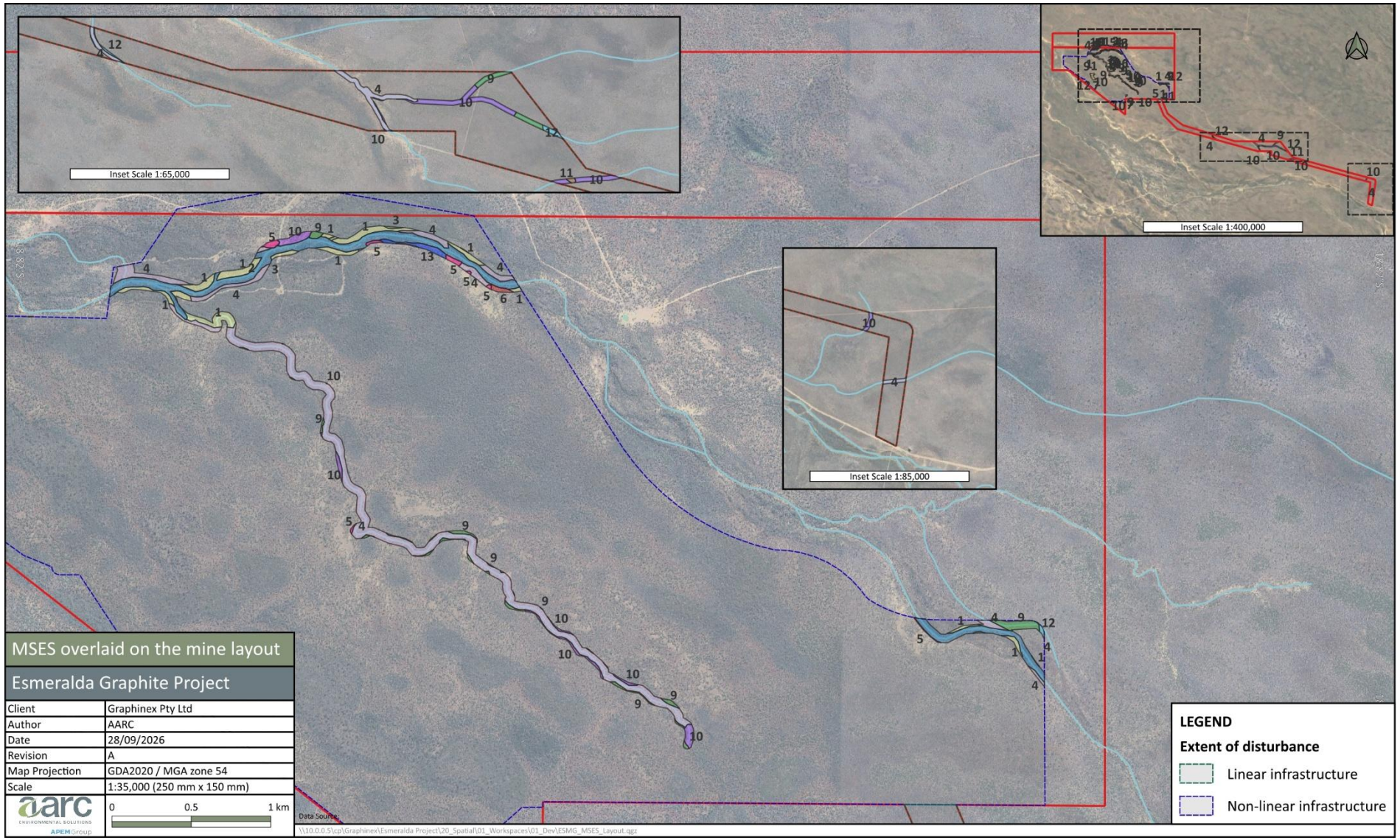


Figure 32: MSES within the study area – Regional Ecosystems

8.1.3 Connectivity areas

In accordance with the Significant Residual Impact Guideline (DEHP 2014), the Landscape Fragmentation and Connectivity Tool has been used to assess the significance of impact on connectivity areas. The output of the Landscape Fragmentation and Connectivity Tool is provided in Appendix M.

An impact on connectivity areas is determined to be significant if:

- the change in the core remnant ecosystem extent at the local scale (post-impact) is greater than a threshold determined by the level of fragmentation at the regional scale; or
- any core area that is greater than or equal to 1 ha is lost or reduced to patch fragments (core to non-core).

The assessment has determined that the Project change in the core remnant ecosystem extent at the local scale is below the threshold of regional fragmentation. The assessment has also determined that the number of core remnant areas occurring on the site will not be reduced by the Project.

The assessment has concluded no significant impact on connectivity.

8.2 Protected wildlife habitat

Protected wildlife habitat includes an area of habitat for critically endangered, endangered, vulnerable or non-migratory special least concern animals (Short-beaked Echidna and Platypus) (DEHP 2014).

Protected wildlife habitat for one fauna species, the White-throated Needletail (Vulnerable), is located at the Project site.

The Fork-tailed Swift is Special Least Concern – migratory species. Associated habitat does not constitute protected wildlife habitat under the EO Act.

An assessment of the likelihood of significant impacts on these species is provided in Section 8.2.1.2.

Key terms relevant to the assessment of the likelihood of significant impacts are defined below in accordance with the Significant Residual Impact Guideline (DEHP 2014).

'Habitat' for a species is defined as an area that is;

- *occupied, or periodically or occasionally occupied, by any species, population or ecological community and includes all the different aspects (both biotic and abiotic) used by species during the different stages of their life cycles.*

A 'long-term decrease' refers to:

- *any decline in a local population that is greater than which would be apparent without the action being present.*

A 'population' for an endangered, vulnerable or special least concern species is defined as an occurrence of the species in a particular area. Occurrences include but are not limited to:

- *geographically distinct regional population, or collection of local populations; or*
- *a population, or collection of local populations, that occurs within a particular bioregion.*

8.2.1 White-throated Needletail

8.2.1.1 Statutory requirements

The following conservation, recovery and threat abatement information has been considered for assessment of the White-throated Needletail:

- The 'Approved Conservation Advice for *Hirundapus caudacutus* (White-throated Needletail)' (TSSC 2019), developed at the time of EPBC Act listing and the '*Hirundapus caudacutus*–White-throated Needletail' SPRAT profile (DCCEEW 2024-2025b) provides information about the White-throated Needletail, including its distribution, biology/ecology, threats and conservation actions and priorities.
- The SPRAT profile for this species indicates there is no adopted or made Recovery Plan for this species, as the approved conservation advice (TSSC 2019) provides sufficient direction to implement priority actions and mitigate against key threats and enable recovery.
- The 'Draft Referral guideline for 14 birds listed as migratory species under the EPBC Act' (DoE 2015a) provides information on 14 migratory species, including the White-throated Needletail. The referral guideline describes important non-breeding habitat for the White-throated Needletail.
- 'Australia's Strategy for Nature 2024–2030' (Commonwealth of Australia 2024), Australia's actions for nature including the 'Threatened Species Strategy 2021–2031' (DAWE 2021), 'Australian Weeds Strategy 2017–2027' (Invasive Plant and Animal Committee 2016a) and 'Australian Pest Animal Strategy 2017–2027' (Invasive Plant and Animal Committee 2016b) outline relevant actions to recover Australia's threatened plants, animals and ecological communities.

8.2.1.2 Significant impact assessment

Up to 2,413.7 ha of White-throated Needletail habitat is proposed to be directly disturbed by the Project activities. An assessment of the likelihood of significant impacts on the White-throated Needletail was undertaken in accordance with the Significant Residual Impact Guideline (DEHP 2014)(Table 14).

Table 14: White-throated Needletail significant impact assessment

Significance criteria	Assessment of significance
An action is likely to have a significant impact on vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Although two subspecies of the White-throated Needletail breed in separate populations in the Northern Hemisphere, only one migrates to Australia in the non-breeding season (DCCEEW 2024-2025b). Clearing of remnant vegetation for the Project is unlikely to decrease the size of the population given the extent of alternate habitat available to this species in the broader region.
Reduce the extent of occurrence of the species	The extent of vegetation clearing required for the Project is unlikely to reduce the extent of occurrence of this species. The Project is not near the edge of the known distribution of the White-throated Needletail. Expansive areas of woodland vegetation will remain within the study area and widespread throughout the region.
Fragment an existing population	The White-throated Needletail migrates to Australia during the non-breeding season and is widespread across eastern and south-eastern Australia. The species is not dependant on habitat values specific to the Project disturbance area. Equivalent woodland habitat is widespread in the region. The clearing associated with the Project development will not fragment the population into two or more populations.

Significance criteria	Assessment of significance
Result in genetically distinct populations forming as a result of habitat isolation	The White-throated Needletail migrates to Australia during the non-breeding season and is widespread across eastern and south-eastern Australia. The species is not dependant on habitat values specific to the Project disturbance area. Equivalent woodland habitat is widespread in the region. The clearing associated with the Project development will not result in habitat isolation as connectivity across the broader region will be retained. The Project will not result in the formation of genetically distinct populations.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species habitat	Invasive species are not a serious threat to the White-throated Needletail. The Project is unlikely to result in invasive species that are harmful to the White-throated Needletail.
Introduce disease that may cause the species to decline	Disease is not a known threat to the White-throated Needletail. The Project activities are not likely to introduce a disease that may cause the species to decline.
Interfere substantially with the recovery of the species	There is no recovery plan for this species. Priority conservation actions identified for this species include working with governments in East Asia to minimise disturbance to breeding habitats and the identification and protection of important habitats in Australia (TSSC 2019). The Project is unlikely to substantially interfere with the recovery of the species.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	Primarily an aerial species, the White-throated Needletail predominantly forages aerially, feeding on a wide variety of insects. They roost in forests and woodlands. While the Project will include some vegetation clearance, it will not reduce the quality or availability of habitat to the extent that it will cause disruptions to the species. The species is not dependant on habitat values within the Project disturbance area. Equivalent woodland habitat is widespread in the Project region. The White-throated Needletail does not breed in Australia. The Project will not disrupt breeding locations for the species.
Conclusion	The Project will not result in a significant residual impact to the White-throated Needletail.

9 Environmental offset requirements

Offsets will be required for the Project for significant residual impacts on regulated vegetation (REs within mapped vegetation management wetlands and REs within the defined distance of a vegetation management watercourse) in accordance with the EO Act and Queensland Environmental Offsets Policy (Table 15).

For all prescribed environmental matters, the size and scale of an offset is that which is necessary to achieve a conservation outcome.

Under the Queensland Environmental Offsets Policy, there are three offset delivery options, which include:

1) Proponent-driven offset: A proponent-driven offset may take the form of a traditional land-based offset; be undertaken through actions under a Direct Benefit Management Plan; or a combination of both. For a proponent-driven offset, the offset delivery liability remains with the proponent and the offset must be delivered in accordance with an Offset Delivery Plan approved by the administering agency.

2) Financial settlement offset: For financial settlement offsets, the payment amount must be calculated in accordance with the methodology set out in the QEOP. A web-based 'financial settlement offset calculator' is available on the Queensland Government website that can assist in this process. The State is responsible for delivering a conservation outcome from the financial settlement offset payment.

3) A combination of a proponent-driven offset and financial settlement offset may be utilised. However, the Direct Benefit Management Plan can only contribute up to 10% of the offset delivery.

The Proponent will deliver offsets in accordance with the Queensland Environmental Offsets Policy. The preferred delivery mechanism is financial settlement; however, proponent-driven offsets or a combination may be considered, subject to availability of suitable land and conditions at the time of offset delivery.

An Environmental Offset Strategy will be prepared for the Project that presents the offset requirements for the MSES and proposed provision of offsets for impacted matters.

The total cost required to secure an offset for the removal of REs that intersect with an area shown on the vegetation management wetlands map and REs within a defined distance of a watercourse (Table 15) has been calculated as part of the Environmental Offset Strategy prepared for the Project (AARC 2026b).

Table 15: Summary of impacts to MSES

Matter of State Environmental Significance			**Extent of disturbance (ha)**	**Offset required**
Regulated vegetation	REs within mapped vegetation management wetlands	RE 2.3.55d	10.45	Yes
	REs within the defined distance of a vegetation management watercourse	RE 2.3.22	8.99	Yes
		RE 2.3.26a	19.07	Yes
		RE 2.3.29b	42.15	Yes
		RE 2.5.14a	7.38	Yes
		RE 2.5.17b	16.13	Yes
		RE 2.5.18a	0.42	Yes
		RE 2.5.28a	1.90	Yes

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Appendix A. Relevant Terms of Reference

Terms of reference – Content requirement of the EIS		Section
Section 18 – Flora and fauna		
18.1	Guidance material relevant for the flora and fauna assessment includes: (a) Queensland Government, *Aquatic ecology - EIS information guidelines*, ESR/2020/5295 (b) Queensland Government, *Terrestrial ecology - EIS information guideline*, ESR/2020/5309. (c) Queensland Government, *Groundwater dependent ecosystems - EIS information guideline*, ESR/2020/5301 (d) Queensland Government, Water - EIS information guideline, ESR/2020/5312 (e) Queensland Government, Business Queensland, Fish salvage (website), available at: **www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/development/waterways/salvage** (f) Queensland Government, Policy for Vegetation Management, VEG/2014/1084 (g) Queensland Government, Waterway Barrier Works (website), available at: **https://www.business.qld.gov.au/industries/farms-fishing-forestry/fisheries/development/waterways/barriers**.	Section 1 to Section 9 Appendices A-M The requirements for Aquatic ecology will be discussed in the Aquatic Ecology Report prepared for the Project.
Flora and fauna – Existing environment		
18.2	Describe the legislative context for flora and fauna in the project footprint and surrounding area, including the protection and conservation status of each identified ecological value under the *Nature Conservation Act 1992* (NC Act), *Vegetation Management Act 1999* (VM Act), *Fisheries Act 1994*, *Marine Parks Act 2004* (MP Act), EP Act, EPBC Act, local government planning scheme and any other relevant statutory instrument	Section 3 Section 4 Section 5 Appendix B Appendix C Appendix D Appendix E Appendix F Appendix G
18.3	Identify and describe matters of national environmental significance (MNES), matters of state environmental significance (MSES), matters of local environmental significance (MLES), fauna and flora of cultural significance to Aboriginal peoples and/or Torres Strait Islander peoples, state and regionally significant biodiversity, and the environmental values of the terrestrial and aquatic ecosystems likely to be impacted by the project. The description should include flora and fauna environmental values in the project area, and surrounding areas, identified in desktop analysis and field surveys, and shown on maps in relation to their habitat and connectivity in the landscape (including upstream and downstream of the project). This includes, but is not limited to the following: (a) regulated vegetation under the VM Act (b) regional ecosystems and biodiversity status (c) connectivity areas (d) wetlands and waterways (e) threatened ecological communities and wildlife habitat (f) migratory species	Section 1 Section 4 Section 5 Section 8 Appendix E Appendix F The requirements for Aquatic ecology will be discussed in the Aquatic Ecology Report prepared for the Project.

Terms of reference – Content requirement of the EIS		Section
	(g) protected areas and conservation areas (h) waterways providing for fish passage (i) designated precincts in a strategic environmental area under the Regional Planning Interests Regulation 2014 (j) biodiversity offset areas approved by the State or Australian governments (if any)	
18.4	Describe, with photographs and detailed mapping (at a suitable scale), the context of the project footprint in relation to surrounding MSES/MLES (or any matter identified at TOR item 18.3) including the location of project activities, disturbance footprint, infrastructure and buffers.	Section 1 Section 8
18.5	Provide details of the scope, methodology, timing, effort and results of the field surveys (including spatial data for the survey sites, extent and location of transects, and fauna and flora records on site) undertaken in the EIS. Field surveys should appropriately cover seasonal fluctuations in conditions (i.e. wet and dry seasons). Ecological survey reports (including field proformas and data sheets) should be provided as searchable and hyperlinked appendices.	Section 1 Section 2 Section 4 Section 5 Appendix E Appendix F Appendix G Appendix H Appendix I Appendix J
18.6	Describe, using relevant literature, habitat mapping, and the results of surveys, the natural and existing upstream and downstream movement and habitat requirements of all aquatic and terrestrial flora and fauna species in the project area and surrounding area. Identify sensitivity to change of aquatic and terrestrial flora and fauna groups, REs, and significant species.	Section 5
18.7	Describe the existing quality and suitability of habitat for all flora and fauna species that are known to occur, likely to occur, or have the potential to occur in the project footprint. Provide the area of existing habitat in hectares for each species in the project footprint based on field verification. For habitat area calculations, identify the use (if any) of high value regrowth vegetation and non-remnant areas.	Section 5 Appendix E Appendix F
18.8	Discuss how the environmental values relating to flora and fauna informed the project design (i.e. constraints, impact mitigation).	Section 7
18.9	Address any obligations imposed by State or Commonwealth legislation or policy or international treaty obligations, such as the China–Australia Migratory Bird Agreement, Japan–Australia Migratory Bird Agreement, Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention) (if relevant) or Republic of Korea–Australia Migratory Bird Agreement.	Section 3
Flora and fauna – Impact assessment		
18.10	Describe all relevant impacts (direct, indirect, cumulative and facilitated) on biodiversity and natural environmental values identified at TOR item 18.3 (including the type of habitat impacted, such as breeding, roosting, nesting and foraging habitat) from the project across all stages. The assessment should consider known and potential impacts of the project, and must include: (a) terrestrial and aquatic ecosystems including groundwater-dependent ecosystems	Section 5 Section 7 Section 8

Terms of reference – Content requirement of the EIS		Section
	(b) biological diversity (c) the integrity of ecological processes, including habitats of listed threatened, near threatened or special least concern species (d) connectivity within and between aquatic and terrestrial habitats and ecosystems (e) identification of analogous (reference) sites and the collection of sufficient baseline information to inform rehabilitation criteria post mining (f) the integrity of landscapes and places, including wilderness and similar natural places (g) chronic, low-level exposure to contaminants or the bioaccumulation of contaminants (h) direct and indirect impacts on terrestrial and aquatic species and ecosystems, whether due to: vegetation clearing; hydrological changes; discharges of contaminants to water, air or land; noise; artificial light; and other relevant matters (i) impacts of waterway barriers on fish passage in all waterways (consider waterways that are mapped on the Queensland Waterways for Waterway Barrier Works spatial data layer and waterways that are present on the ground that are not mapped), including details of any significant diversion or interception of water flows and the effects of subsidence and groundwater drawdown	The requirements for Aquatic ecology will be discussed in the Aquatic Ecology Report prepared for the Project.
18.11	When identifying impacts, ensure figures are appropriately scaled and provided for each activity/component and for each phase of the project.	Section 7
18.12	Describe any actions of the project that require an authority under the NC Act, and/or would be assessable development for the purposes of the VM Act, Regional Planning Interests Act 2014, Fisheries Act 1994, and Planning Act 2016. Features to consider include RE, environmentally sensitive areas, wetlands, nature refuges, protected areas and strategic environmental areas.	Section 3.2 Section 4 Section 5 Section 7 Discussed in the Aquatic Ecology Report and Soils and Land Suitability Assessment to be prepared for the Project.
18.13	Identify where any proposed clearing is accepted or exempt development under relevant planning instruments.	Section 3.2 Section 8
18.14	Provide an assessment against the relevant prescribed solution(s) for strategic environmental areas impacted by the project, if relevant.	Section 3.2
18.15	Provide an assessment against SDAP State code 16: Native vegetation clearing addressing the relevant assessment benchmarks, if relevant	Section 3.2 Discussed in the Aquatic Ecology Report to be prepared for the Project.
18.16	Provide an assessment against SDAP State code 18: Constructing or raising waterway barrier works in fish habitats for any assessable waterway barrier works required for the project, including construction activities, if relevant	Discussed in the Aquatic Ecology Report to be prepared for the Project

Terms of reference – Content requirement of the EIS		Section
Flora and fauna - Mitigation measures		
18.17	Demonstrate how the proposal avoids native vegetation clearing, or where avoidance is not reasonably possible, minimises clearing to conserve vegetation, avoid land degradation and maintain ecological processes.	Section 7
18.18	Describe how the project will be designed, constructed and operated to avoid direct or indirect impacts on ecological environmental values.	Section 1 Section 7
18.19	Where impacts to MSES cannot reasonably be avoided, describe measures to minimise and then mitigate the direct or indirect impacts on ecological values.	Section 7 Section 8
18.20	Assess how nominated quantifiable indicators and standards may be achieved for nature conservation management. Address measures to protect or preserve any listed threatened, near threatened or special least concern species. Describe the practicality, effectiveness and risks for each avoidance and mitigation measure. Include the timeframes in which results would be achieved, frequency of monitoring, and how corrective actions will be managed for all phases of the project.	Section 7 Section 8
18.21	Justify how applying all proposed avoidance and management measures would result in acceptable outcomes for terrestrial and aquatic ecology. Describe how achieving the measures successfully will be monitored, measured and audited. Include provisions to regularly evaluate all the mitigation measures so that improvements may be made as new technologies and best practices evolve.	Section 7 Section 8
18.22	Propose measures that would avoid the need for waterway barriers. Where waterway barrier works cannot be reasonably avoided, propose measures to mitigate the impacts of their construction and operation.	Discussed in the Aquatic Ecology Report to be prepared for the Project
18.23	Describe, illustrate, and demonstrate how the project provides safe and adequate upstream and downstream aquatic fauna passage, including all monitoring and maintenance measures.	Section 7 Section 8 Discussed in the Aquatic Ecology Report to be prepared for the Project
18.24	Detail measures to ensure waterway diversions are designed and constructed to resemble the natural waterway they replace. Demonstrate waterway diversions tie in with the natural bed and banks of waterways upstream and downstream of the diversion. Demonstrate any proposed diversion will function as a natural waterway and will provide and maintain similar connectivity, hydrological, hydraulic and environmental conditions and include similar profiles, fish habitat and fish passage features.	Discussed in the Aquatic Ecology Report to be prepared for the Project
18.25	Describe and illustrate any screening incorporated to prevent the entrainment of fish into water pumping infrastructure.	Discussed in the Aquatic Ecology Report to be prepared for the Project
18.26	Assess the need for buffer zones and the retention, rehabilitation or planting of movement corridors. The assessment must take into account the role of buffer zones in maintaining and enhancing riparian vegetation and wetlands to improve water quality, promote habitat connectivity and provide habitat.	Section 7 Section 8
18.27	Propose rehabilitation criteria, in relation to natural values, that would be used to measure progressive rehabilitation of disturbed areas. Describe how the achievement of the objectives will be monitored and audited, and how corrective actions will be managed. Proposals for rehabilitation of disturbed areas must, in	Addressed elsewhere in the EIS

Terms of reference – Content requirement of the EIS		Section
	suitable habitat, describe terrestrial and aquatic fauna habitat features to achieve rehabilitation outcomes.	
18.28	Demonstrate how the project will meet the environmental objectives and performance outcome of the EP Regulation.	Discussed in the technical reports to be prepared for the prepared, including, but not limited to an Air Quality and Greenhouse Gas (GHG) Report, Surface Water Report, Groundwater Report, Aquatic Ecology Report, Noise and Vibration Report, and Soils and Land Suitability Assessment Report.
Flora and fauna – Environmental offsets		
18.29	After demonstrating that all reasonable steps have been taken to avoid and then mitigate impacts, identify whether the project will result in a significant residual impact (SRI) to MSES/MLES requiring an environmental offset with reference to the Queensland Environmental Offsets policy, Significant Residual Impact Guideline, and Queensland environmental offset framework. Characterise the scale of SRI in hectares.	Section 8 Section 9
18.30	Propose offsets consistent with the relevant State legislation or policies for any SRI. If an SRI will occur on a prescribed environmental matter as outlined in the Environmental Offsets Regulation 2014, offset(s) must be consistent with the requirements of the Environmental Offsets Act 2014 and the latest version of the Queensland Environmental Offsets Policy.	Section 8 Section 9
9.67	In addition to TOR item 18.30, propose environmental offsets, that at a minimum: (a) consider the full extent of potential impacts on prescribed environmental matters for the entire project as part of the SRI assessment (b) identify whether an SRI to MSES will be addressed through a financial or proponent driven offset (land-based offset) (c) evaluate how the proposed offset will achieve a conservation outcome for the impacted matter (d) for land-based offsets: (i) provide results of a habitat quality assessment on both the impact area and the proposed offset area(s) to compensate for impacts (ii) assess the vulnerability and resilience of any proposed offset site(s) under climate change scenarios (e.g. reduced water availability, increased bushfire risk, increased flood risk, sea level rise) (iii) describe any active restoration actions that would be undertaken to improve, enhance and manage native vegetation or threatened species habitat at the proposed offset site (e) for financial offsets, provide a financial offset calculation.	Relevant MSES discussed in the State Environmental Offsets Strategy to be prepared for the Project.
18.32	Describe how the achievement of the offset will be monitored and audited, and how corrective actions will be managed.	Relevant MSES discussed in the State Environmental Offsets Strategy to be prepared for the Project.

Terms of reference – Content requirement of the EIS		Section
18.33	Describe any proposed measures that would be used to avoid, minimise, or mitigate any impact on agricultural land of state or regional significance when meeting environmental offset requirements required for the project.	Relevant MSES discussed in the State Environmental Offsets Strategy to be prepared for the Project.
Section 19 – Biosecurity		
19.1	The following guidance is relevant for the biosecurity assessment: (a) Queensland Government, Biosecurity – EIS information guideline, ESR/2020/5297	Section 4 Section 5
Biosecurity – Existing environment		
19.2	Survey terrestrial and aquatic pest animals and weeds and describe their current distribution and abundance in the project footprint and surrounds. Field surveys should appropriately cover seasonal fluctuations in conditions (i.e. wet and dry seasons). Provide maps showing pest animal and weeds distribution in relation to the project footprint and ecologically significant areas identified as containing, or likely to contain, listed flora, fauna, and ecological communities of MSES or MNES. This survey is to include prohibited and restricted matters listed in the Biosecurity Act 2014 and Biosecurity Regulation 2016, Weeds of National Significance, pests and weeds declared under local laws, and designated pests under the Public Health Act 2005	Section 4 Section 5
Biosecurity – Impact assessment		
19.3	Describe for each project phase, the potential spread of terrestrial and aquatic pest animals, terrestrial and aquatic weed species, and disease within the project footprint, construction and operations access routes, and into adjoining properties (where relevant).	Section 7 The requirements for Aquatic ecology will be discussed in the Aquatic Ecology Report prepared for the Project.
Biosecurity – Mitigation measures		
19.4	Propose detailed measures using best practice to prevent, remove, control and limit the spread of pests, weeds, diseases, pathogens and contaminants within and surrounding the project footprint and adjacent areas. Detail alignment with any relevant local government area Biosecurity Plans and pest management priorities or initiatives undertaken by Biosecurity Queensland. Include a discussion on minimising any susceptibility to biosecurity risks with the introduction and/or expansion of temporary and permanent infrastructure.	Section 7 Section 8
19.5	All proposed measures are to be in accordance with any relevant biosecurity surveillance or prevention measures authorised under the Biosecurity Act 2014, any requirements under the VM Act or Planning Act 2016 and aligned with local government pest management priorities.	Section 7 Section 8
19.6	Detail a monitoring program that would audit the success of biosecurity measures, identify whether objectives have been met, and describe corrective actions to be used if monitoring indicates objectives are not being met. Performance outcomes should correspond to the relevant policies, legislation and guidelines, and sufficient evidence should be supplied (through studies and proposed management measures) to show these outcomes can be achieved	Section 7 Section 8

Appendix B. Desktop search results

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

EPM: 28274

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Please direct queries about these reports to: biodiversity.planning@qld.gov.au

Disclaimer

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Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Details for area of interest: EPM: 28274, with area 5184.83 ha

Local Government(s)	
Croydon Shire	
Bioregion(s)	**Subregion(s)**
Gulf Plains	Claraville Plains
Catchment(s)	
Norman	

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Biodiversity Planning Assessment(s)	Aquatic Conservation Assessment(s) (riverine)	Aquatic Conservation Assessment(s) (non-riverine)
Gulf Plains v1.1	Eastern Gulf of Carpentaria v1.1	Eastern Gulf of Carpentaria v.1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	1,061.25	20.47
No concern at present	4,123.58	79.53

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	3,504.67	67.59
Regional	1,386.21	26.74
Local or Other Values	293.95	5.67

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	3
Total number of non-riverine wetlands	3

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

Name	Permanency
BORER RIVER	Non-perennial
WARRIGAL CREEK	Non-perennial

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	5,184.83	100.00

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
High	1.06	0.02
Medium	10.63	0.21

Biodiversity Planning Assessments

Introduction

The Department of the Environment, Tourism, Science and Innovation (DETSI) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DETSI. Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	3,504.67	67.59
Regional	1,386.21	26.74
Local or Other Values	293.95	5.67

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains at least one Of Concern RE (B1) & Remnant contains an RE that is one of the largest of its type in the bioregion (D1)	3,504.67	67.59
Regional	Remnant contains at least one Of Concern RE (B1)	1,386.21	26.74
Local or Other Values	Refer to diagnostic data for additional information	293.95	5.67

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa	0.00	0.00	0.00	0.00	656.81	12.67	4,528.02	87.33
B1: Ecosystem Value (Bioregion)	0.00	0.00	4,890.88	94.33	293.95	5.67	0.00	0.00
B2: Ecosystem Value (Subregion)	0.00	0.00	0.00	0.00	5,184.83	100.00	0.00	0.00
C: Tract Size	0.00	0.00	5,184.83	100.00	0.00	0.00	0.00	0.00
D1: Relative RE Size (Bioregion)	3,504.67	67.59	0.00	0.00	0.00	0.00	1,680.16	32.41

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
D2: Relative RE Size (Subregion)	3,504.67	67.59	0.00	0.00	1,017.74	19.63	662.42	12.78
F: Ecosystem Diversity	1,363.56	26.30	316.60	6.11	3,504.67	67.59	0.00	0.00
G: Context and Connection	5,184.83	100.00	0.00	0.00	0.00	0.00	0.00	0.00

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

(No Records)

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ia: Centres of Endemism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ie: High Species Richness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
If: Relictual Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ih: Artificial Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ii: Hollow Bearing Trees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ij: Breeding or Roosting Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ik: Climate Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

- Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
- Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
- Maintaining large scale seasonal/migratory species processes and movement of fauna;
- Maximising connectivity between large tracts/patches of remnant vegetation;
- Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

(No Records)

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

(No Records)

Expert panel decision descriptions:

(No Records)

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	5,184.83	100.00

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	5,184.83	100.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	515.09	9.93	0.00	0.00	4,669.74	90.07	0.00	0.00
3. Diversity and richness	0.00	0.00	5,184.83	100.00	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	5,184.83	100.00	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	4,103.88	79.15	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	10.63	0.21
High	1.06	0.02

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	11.69	0.23	0.00	0.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	1.06	0.02	0.00	0.00	10.63	0.21	0.00	0.00
3. Diversity and richness	0.00	0.00	11.69	0.23	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	11.69	0.23	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	10.63	0.21	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	11.69	0.23	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/ Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

(No Records)

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DETSI internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**B - Convention on the Conservation of Migratory Species; C - China-Australia Migratory Bird Agreement; J - Japan-Australia Migratory Bird Agreement; E - East Asian-Australasian Flyway Partnership; R - Republic of Korea-Australia Migratory Bird Agreement.*

***I - wetland indicator species; D - wetland dependent species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

(No Records)

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

(No Records)

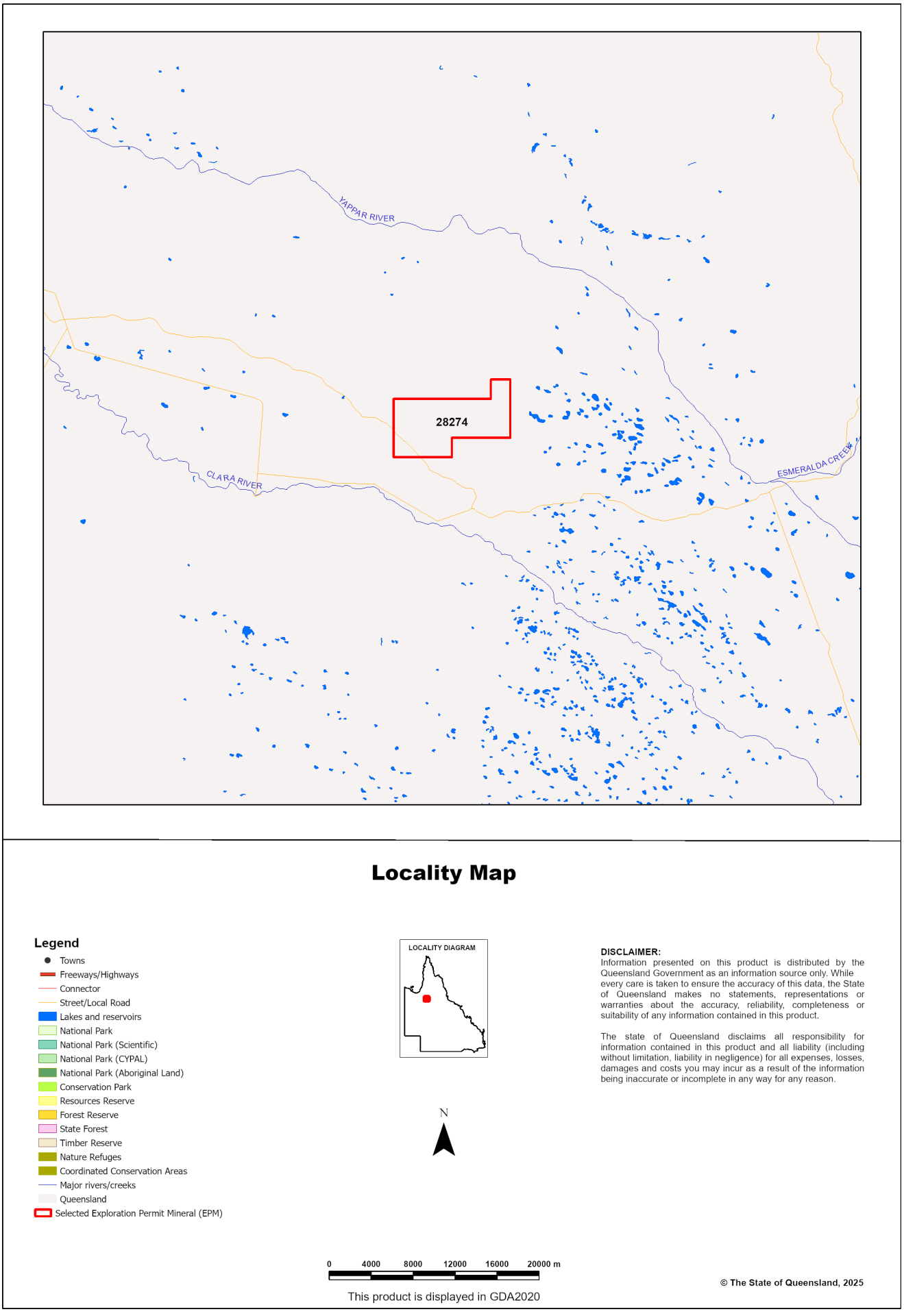
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

(No Records)

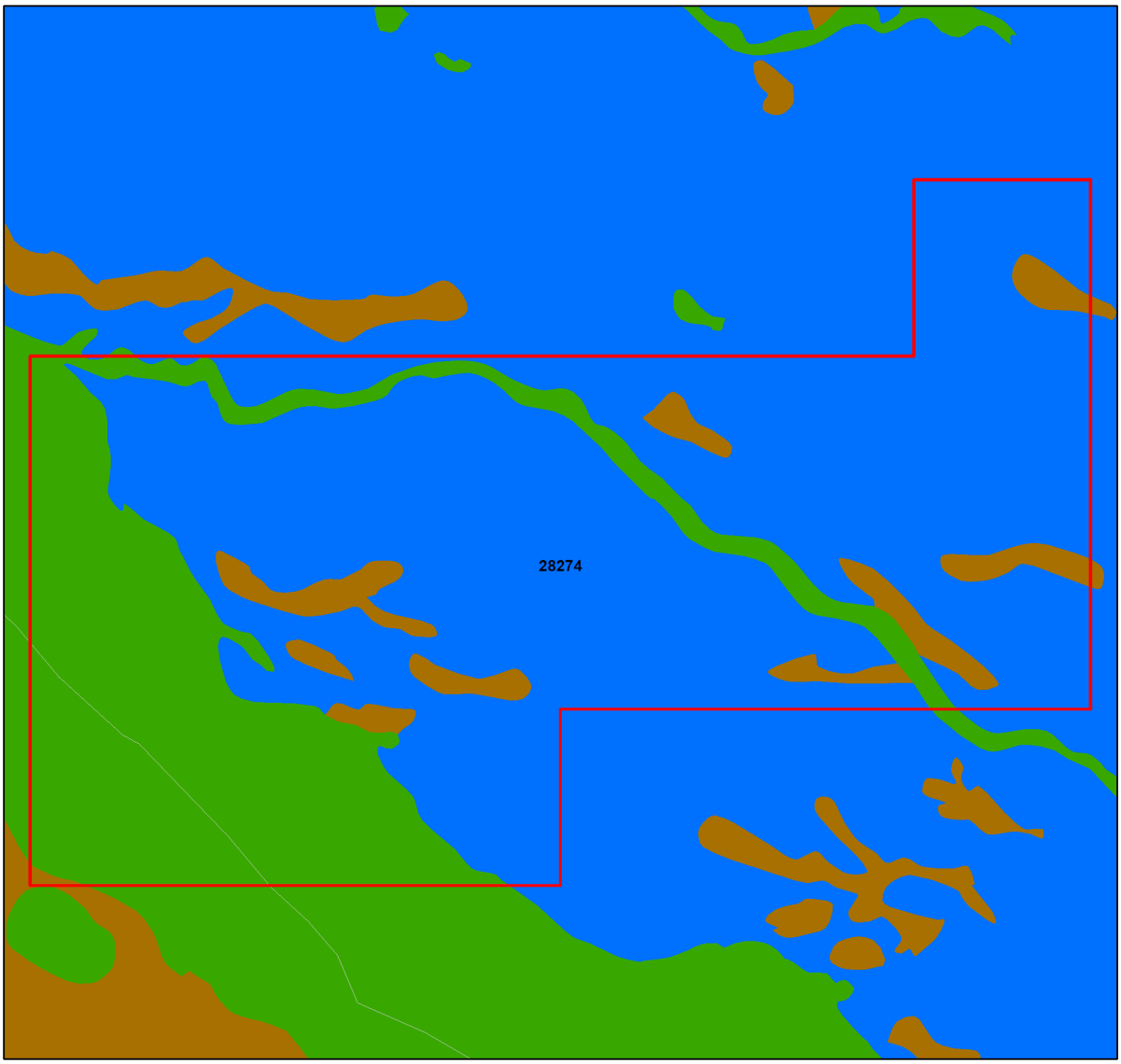
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

Map 1 - Locality Map



Map 2 - Biodiversity Planning Assessment (BPA)



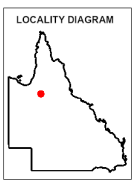
Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

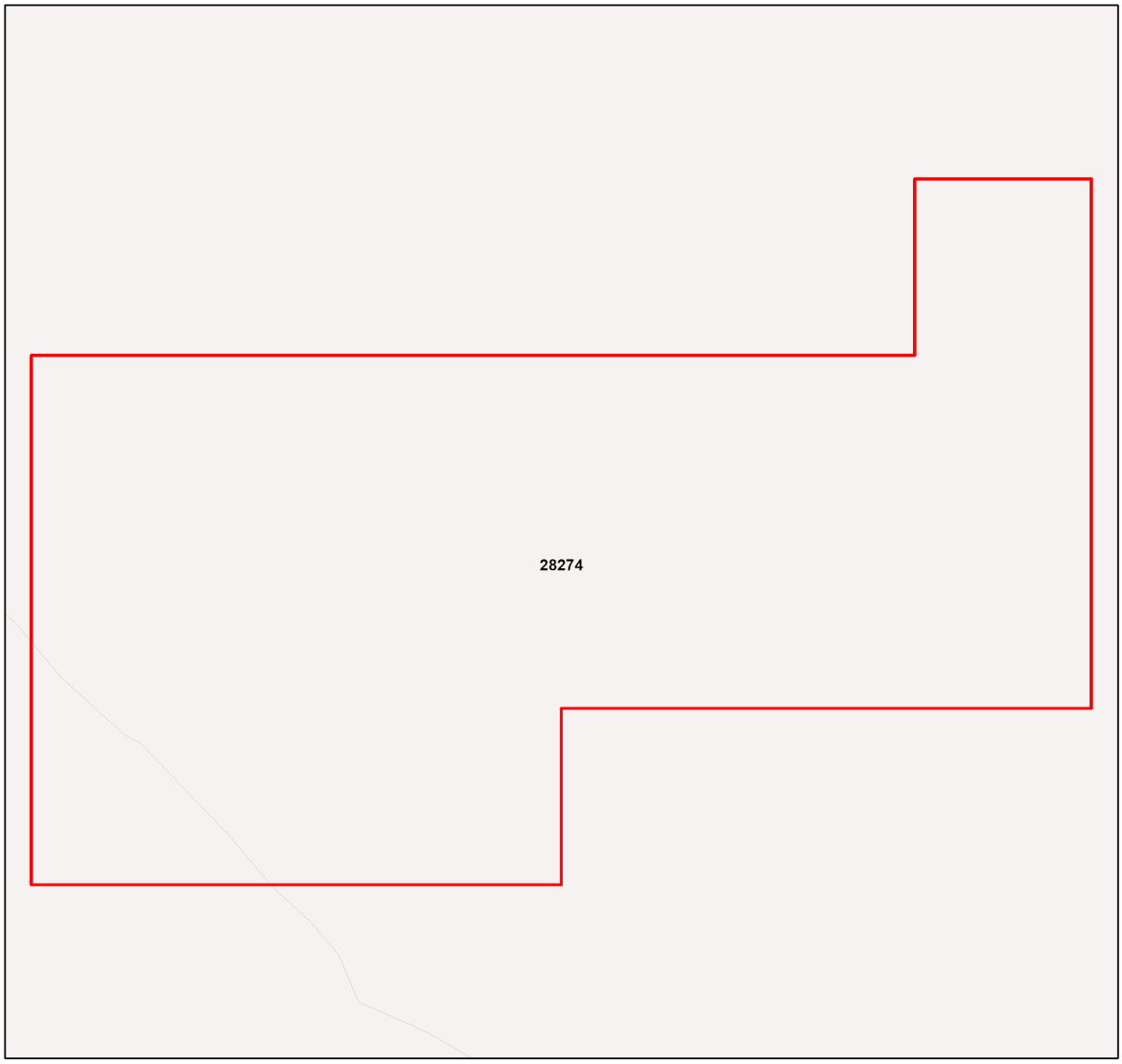
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Map 3 - Corridors



Corridors

- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM

N

0 640 1280 1920 2560 3200 m

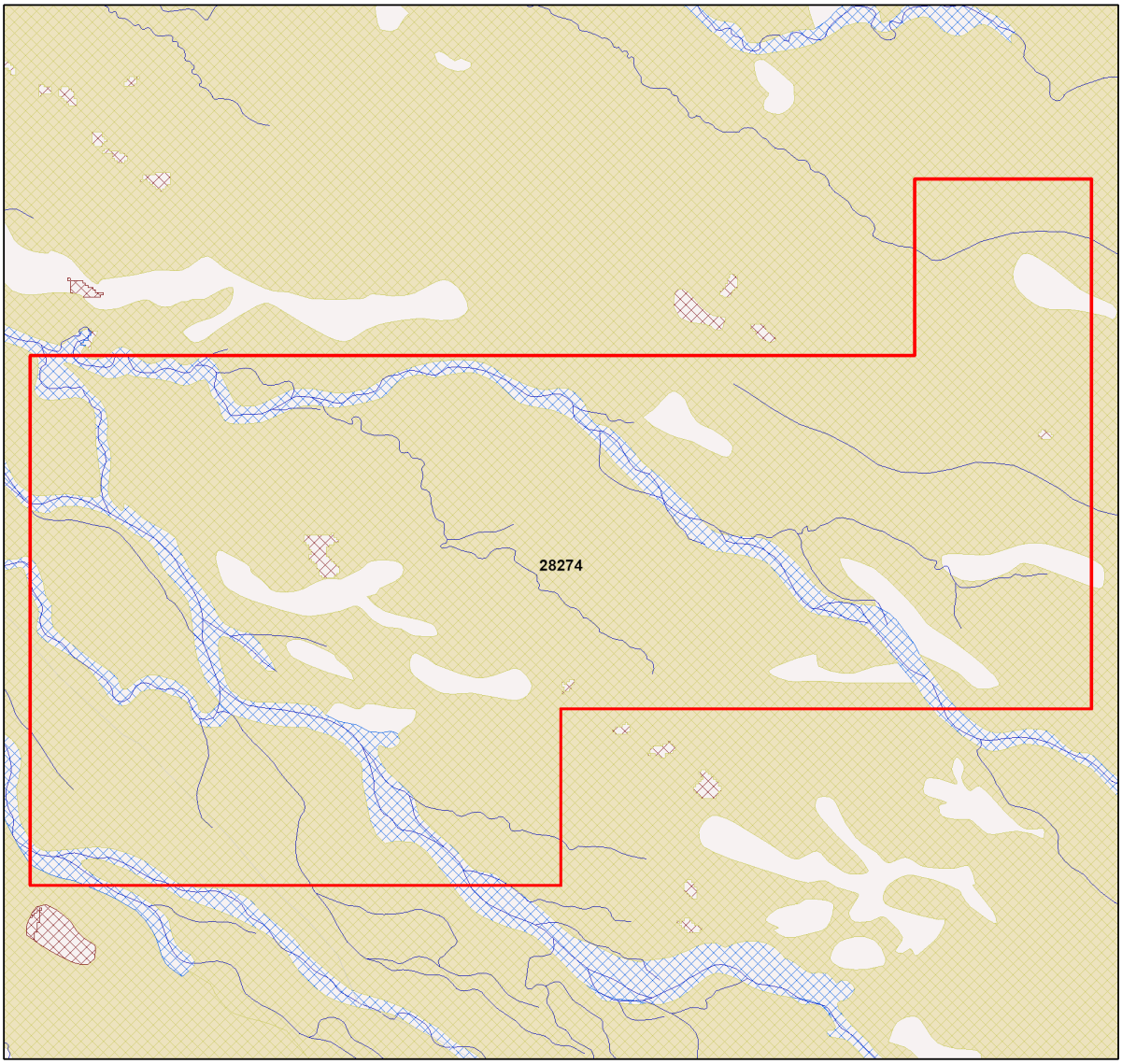
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Map 4 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

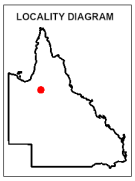
Wetland Type

Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)



N

0 640 1280 1920 2560 3200 m

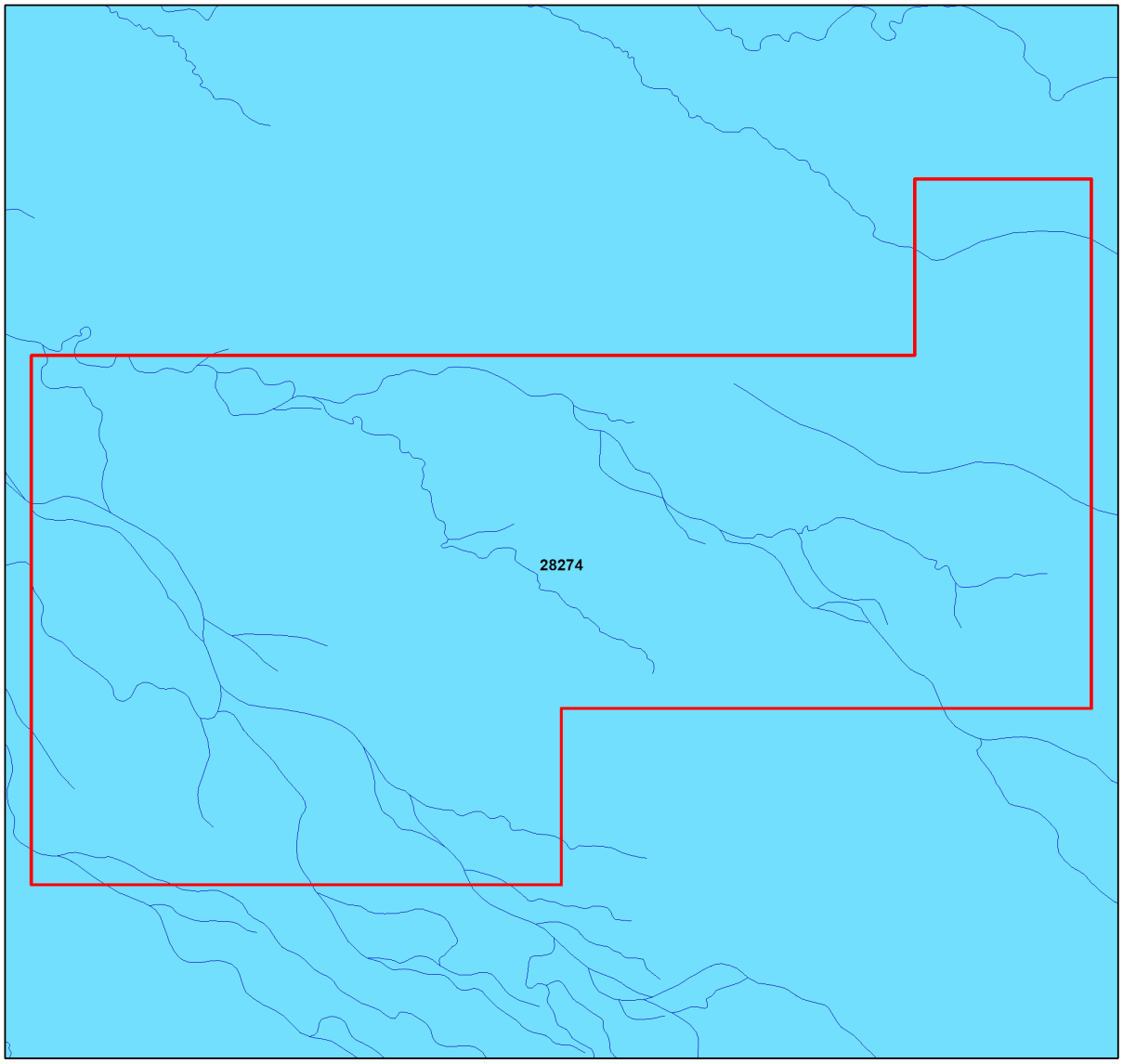
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Map 5 - Aquatic Conservation Assessment (ACA) - riverine



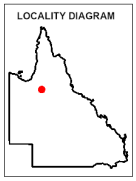
Aquatic Conservation Assessment (ACA) - riverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Riverine - Subcatchment Significance

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

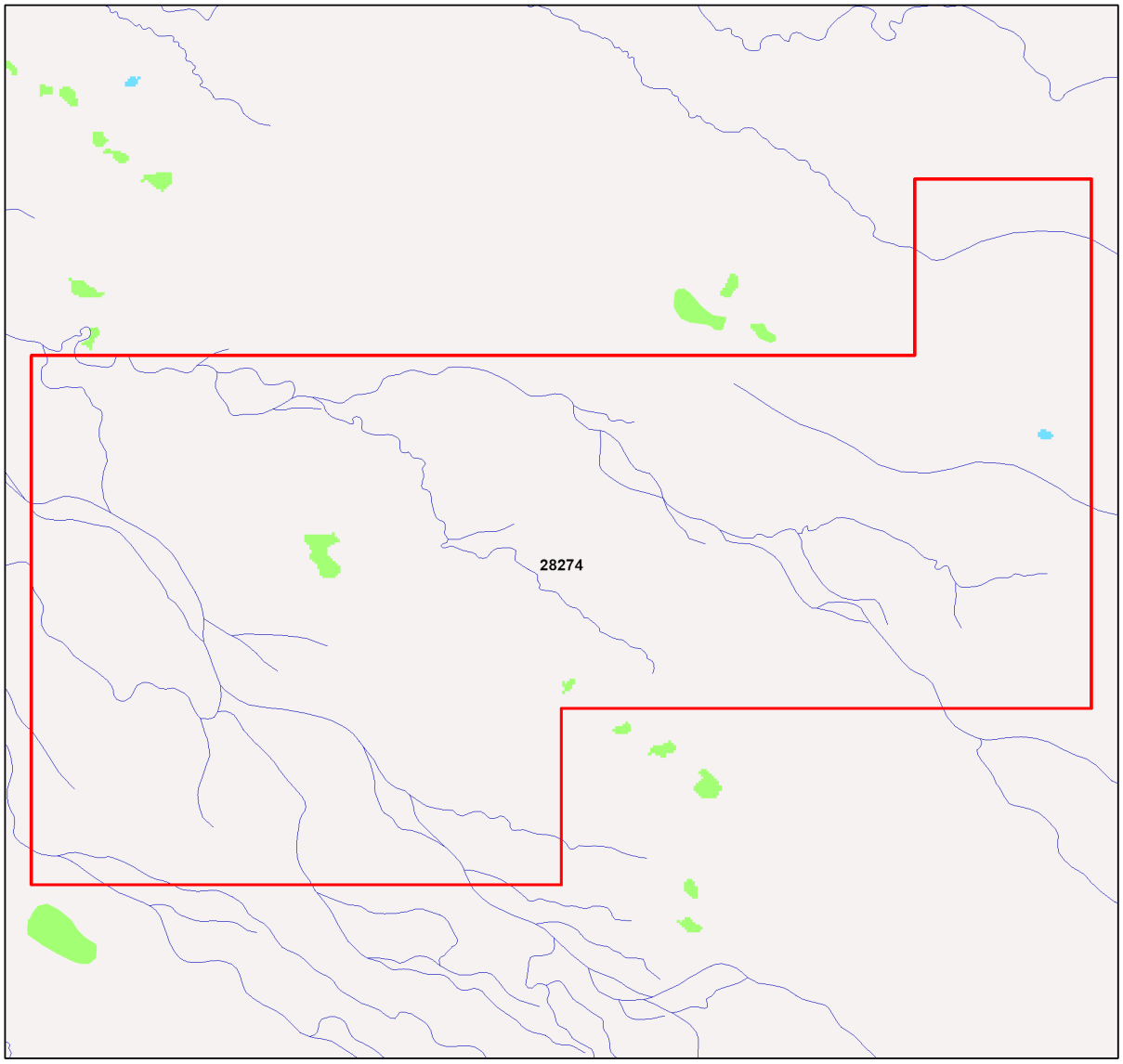
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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



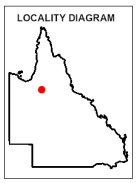
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

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http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

Environment and Heritage Protection 2014*, Biodiversity Assessment and Mapping Methodology.* Version 2.2. Department of Environment and Heritage Protection, Brisbane.

Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series*, Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDBB Non-riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1 Southern Gulf Catchments Non-riverine ACA v1.1 WBBGBRCC Non-riverine ACA v2.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDBB Riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1 Southern Gulf Catchments Riverine ACA v1.1 WBBGBRCC Riverine ACA v2.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v3.1 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.7
Threatened Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

These datasets are available at:
http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DETSI	- Department of the Environment, Tourism, Science and Innovation
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA2020	- Geocentric Datum of Australia 2020
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

EPM: 25210

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Please direct queries about these reports to: biodiversity.planning@qld.gov.au

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Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Details for area of interest: EPM: 25210, with area 20099.51 ha

Local Government(s)	
Croydon Shire	
Bioregion(s)	**Subregion(s)**
Gulf Plains	Claraville Plains
Catchment(s)	
Norman	

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Biodiversity Planning Assessment(s)	Aquatic Conservation Assessment(s) (riverine)	Aquatic Conservation Assessment(s) (non-riverine)
Gulf Plains v1.1	Eastern Gulf of Carpentaria v1.1	Eastern Gulf of Carpentaria v.1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	281.41	1.40
No concern at present	19,807.06	98.54

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	16,336.71	81.28
Regional	1,439.12	7.16
Local or Other Values	2,254.61	11.22

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	26
Total number of non-riverine wetlands	26

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

(No Records)

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	15,423.67	76.74
Very High	4,675.83	23.26

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
High	78.19	0.39
Medium	31.35	0.16

Biodiversity Planning Assessments

Introduction

The Department of the Environment, Tourism, Science and Innovation (DETSI) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DETSI. Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	16,336.71	81.28
Regional	1,439.12	7.16
Local or Other Values	2,254.61	11.22

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains at least one Of Concern RE (B1) & Remnant contains an RE that is one of the largest of its type in the bioregion (D1)	16,336.71	81.28
Regional	Remnant contains at least one Of Concern RE (B1)	1,396.73	6.95
Local or Other Values	Refer to diagnostic data for additional information	2,297.00	11.43

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa	0.00	0.00	0.00	0.00	0.00	0.00	20,030.44	99.66
B1: Ecosystem Value (Bioregion)	0.00	0.00	17,733.44	88.23	2,297.00	11.43	0.00	0.00
B2: Ecosystem Value (Subregion)	0.00	0.00	0.00	0.00	20,030.44	99.66	0.00	0.00
C: Tract Size	0.00	0.00	19,948.26	99.25	0.00	0.00	82.18	0.41
D1: Relative RE Size (Bioregion)	16,336.71	81.28	0.00	0.00	0.00	0.00	3,693.73	18.38

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
D2: Relative RE Size (Subregion)	16,336.71	81.28	0.00	0.00	12.29	0.06	3,681.44	18.32
F: Ecosystem Diversity	283.98	1.41	11,445.85	56.95	7,976.86	39.69	323.75	1.61
G: Context and Connection	19,904.06	99.03	60.97	0.30	65.41	0.33	0.00	0.00

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
Regional	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	106.97	0.53

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ia: Centres of Endemism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	0.00	0.00	106.97	0.53	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ie: High Species Richness	0.00	0.00	106.97	0.53	0.00	0.00	0.00	0.00
If: Relictual Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ih: Artificial Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ii: Hollow Bearing Trees	0.00	0.00	106.97	0.53	0.00	0.00	0.00	0.00
Ij: Breeding or Roosting Site	0.00	0.00	106.97	0.53	0.00	0.00	0.00	0.00
Ik: Climate Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

- Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
- Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
- Maintaining large scale seasonal/migratory species processes and movement of fauna;
- Maximising connectivity between large tracts/patches of remnant vegetation;
- Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

(No Records)

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
gup_l_45	Wetlands	Regional	Ib (wildlife refugia): HIGH Ie (high species diversity):HIGH Ii (high density of hollow-bearing habitat trees): HIGH Ij (significant breeding or roosting sites): HIGH

Expert panel decision descriptions:

Decision Number	Description
gup_l_45	Wetlands have a range of biodiversity values, both in their own right, and for the role they play in maintaining water quality, protecting downstream aquatic ecosystems, and as part of the wetland ecosystem continuum where they are periodically connected with other aquatic ecosystems. Wetlands act as refugia for many species, and play a vital role in the life cycle of others. Wetlands are a defining characteristic of the bioregion, in their extent, diversity, and condition. Wetlands were given a 200m buffer with the same significance rating to ensure that all areas adjacent to them, and the areas most likely to have higher values, were also included. Numerous decisions in southern Gulf of Carpentaria ACA relate to wetlands within the Flinders, Norman and Gilbert river catchments (Rollason and Howell 2010).

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	15,423.67	76.74
Very High	4,675.83	23.26

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	20,099.51	100.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	18,714.65	93.11	0.00	0.00	1,384.85	6.89	0.00	0.00
3. Diversity and richness	0.00	0.00	20,099.51	100.00	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	20,099.51	100.00	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	4,675.83	23.26	6,654.97	33.11	0.00	0.00
6. Special features	4,675.83	23.26	5,270.12	26.22	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	4,675.83	23.26	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
nn_r_ec_03	Carron Forrest country	Norman	6.2.1,6.4.1	3,3
nn_r_ec_04	Perennial waterholes in active streams	Norman	5.2.1,6.1.1,6.2.1,6.3.1,6.3.4,6.4.1,7.1.2	3,3,3,4,3,3,3

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
nn_r_ec_03	The Carron Forrest country contains tiny wetlands along coolibah flats. The area has value as a large interconnected aggregation rather than as individual wetlands. Overflow from the Gilbert is associated with the back swamps however on the sand surfaces, the circular wetlands are groundwater recharged. The wetland systems have significant diversity and longevity and contain very thick vegetation including melaleuca, swamp box *Lophostemon suaveolens* and spear grass. The area is also subject to flash flooding from the Gilbert River.
nn_r_ec_04	In the seasonally dry tropics of the Eastern Gulf, perennial waterholes in active streams provide critical refugial (6.3.1) dry season habitat for obligate freshwater species including conservation dependent and listed species such as juvenile freshwater sawfish *Pristis pristis* and snapping turtles and represent a priority aquatic ecosystems (5.2.1). They are also important for migratory fish species (7.1.2) in particular sooty grunter *Hephaestus fuliginosus* and adult phase eel tailed catfish. Permanent waterholes in active streams support a range of ecological processes that are distinct relative to the more extensive seasonal aquatic habitats that characterise the eastern Gulf (6.2.1). Within the seasonally dry climate of the eastern Gulf the presence of permanent freshwater usually owes its existence to a combination of special geomorphic features (6.1.1) and hydrological regimes (6.4.1). Within the suite of exiting perennial waterholes are subset will also have an increasingly important role as refugia within the increasingly variable rainfall and elevated temperature regimes predicted under climate change (6.4.1).

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	31.35	0.16
High	78.19	0.39

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	109.54	0.55	0.00	0.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	78.19	0.39	0.00	0.00	31.35	0.16	0.00	0.00
3. Diversity and richness	0.00	0.00	109.54	0.55	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	99.14	0.49	10.40	0.05	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	31.35	0.16	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	109.54	0.55	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/ Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

(No Records)

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DETSI internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**B - Convention on the Conservation of Migratory Species; C - China-Australia Migratory Bird Agreement; J - Japan-Australia Migratory Bird Agreement; E - East Asian-Australasian Flyway Partnership; R - Republic of Korea-Australia Migratory Bird Agreement.*

***I - wetland indicator species; D - wetland dependent species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

(No Records)

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

(No Records)

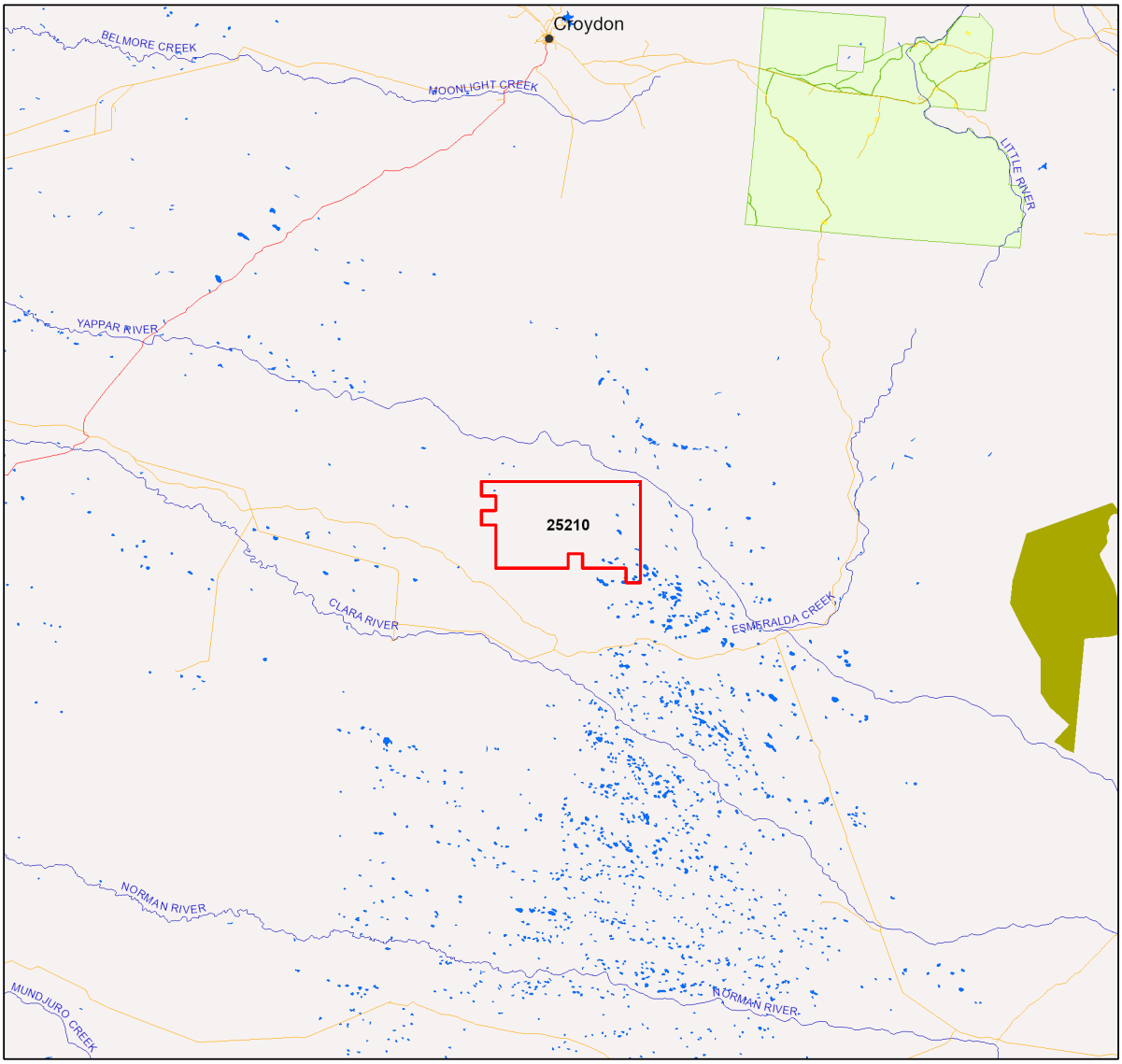
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

(No Records)

NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

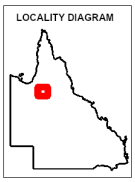
Map 1 - Locality Map



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Exploration Permit Mineral (EPM)



N

0 7500 15000 22500 30000 37500 m

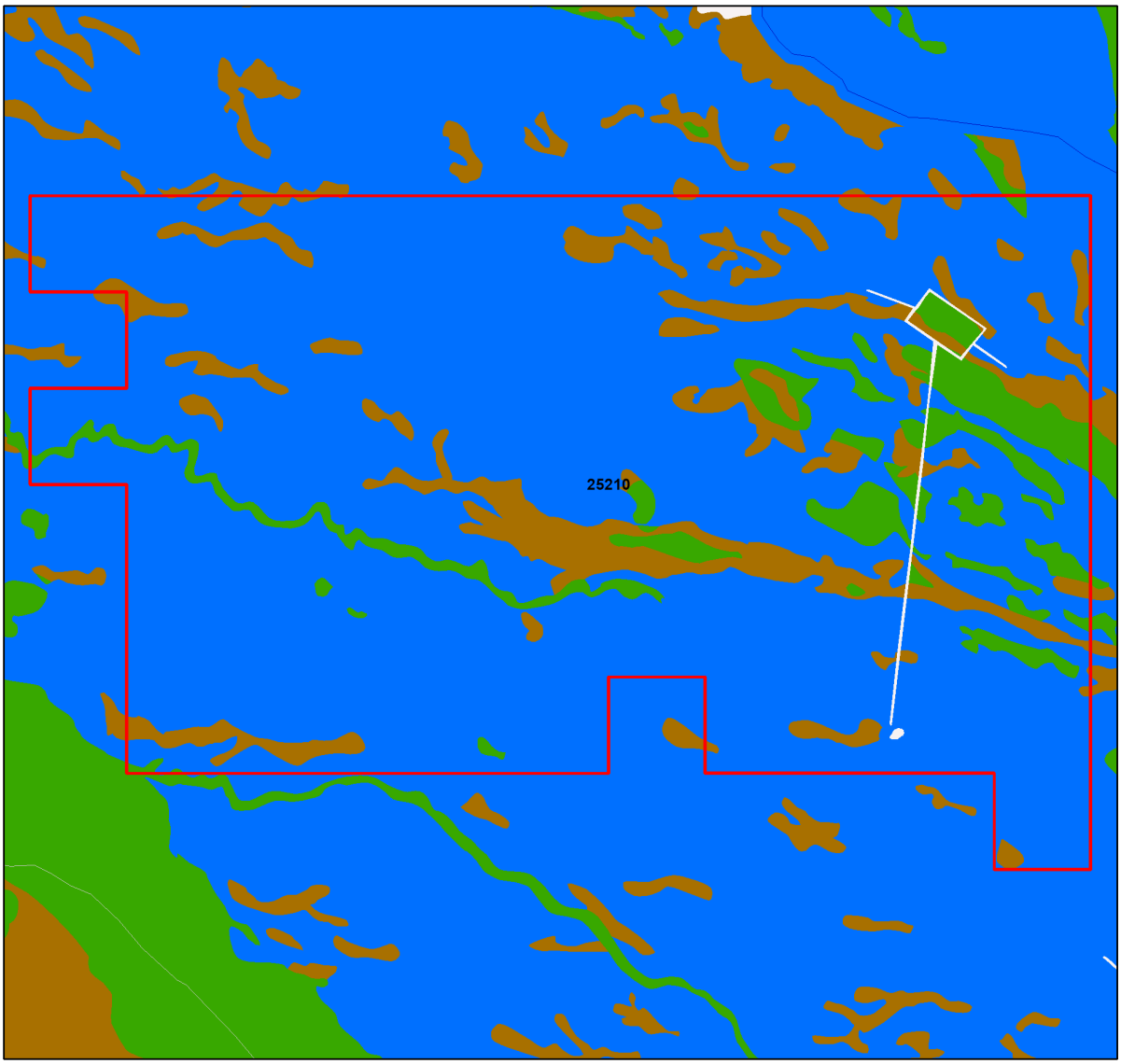
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Map 2 - Biodiversity Planning Assessment (BPA)



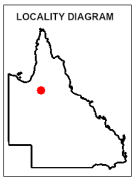
Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

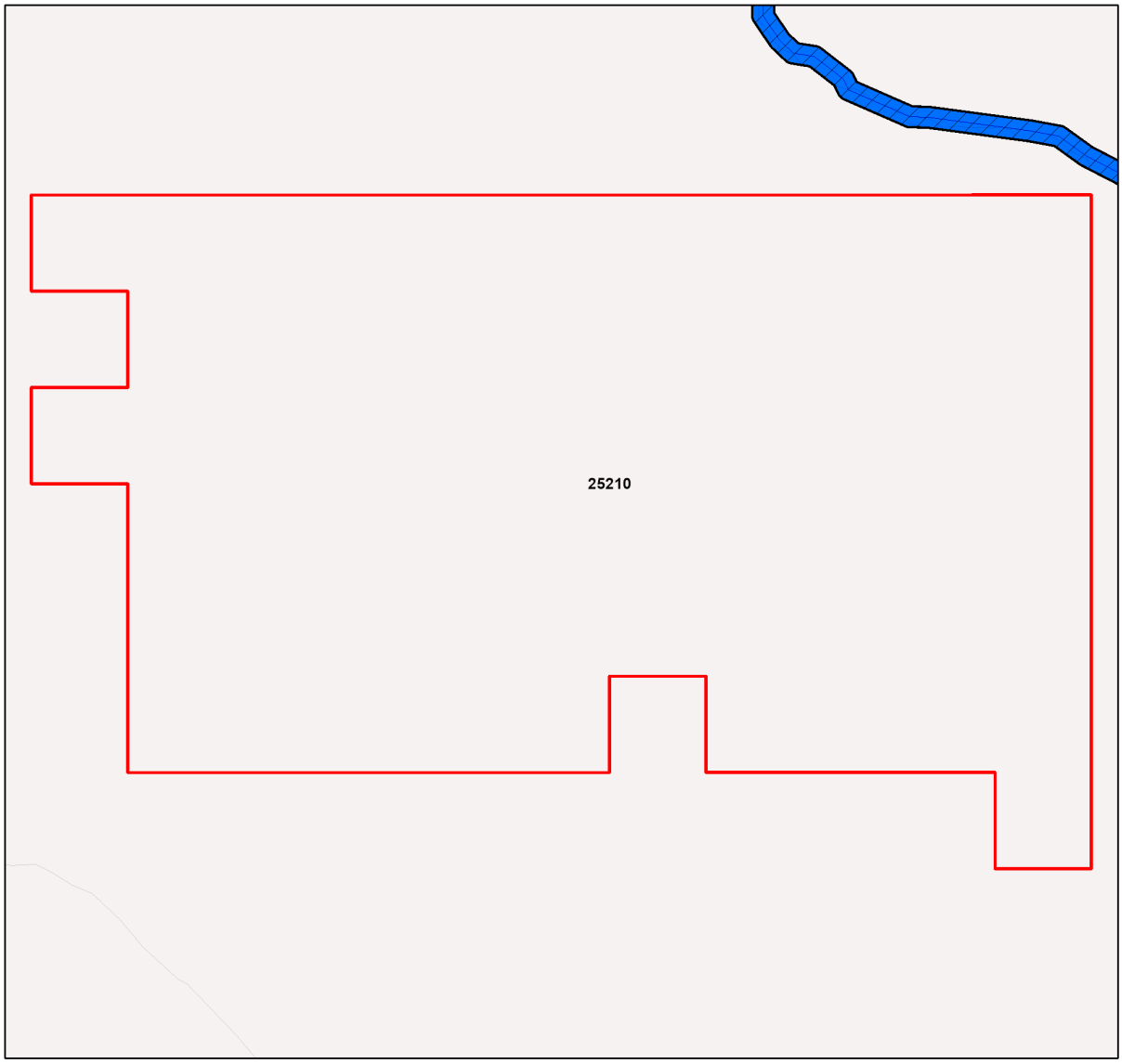
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Map 3 - Corridors



Corridors

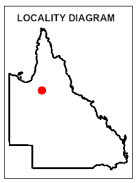
- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

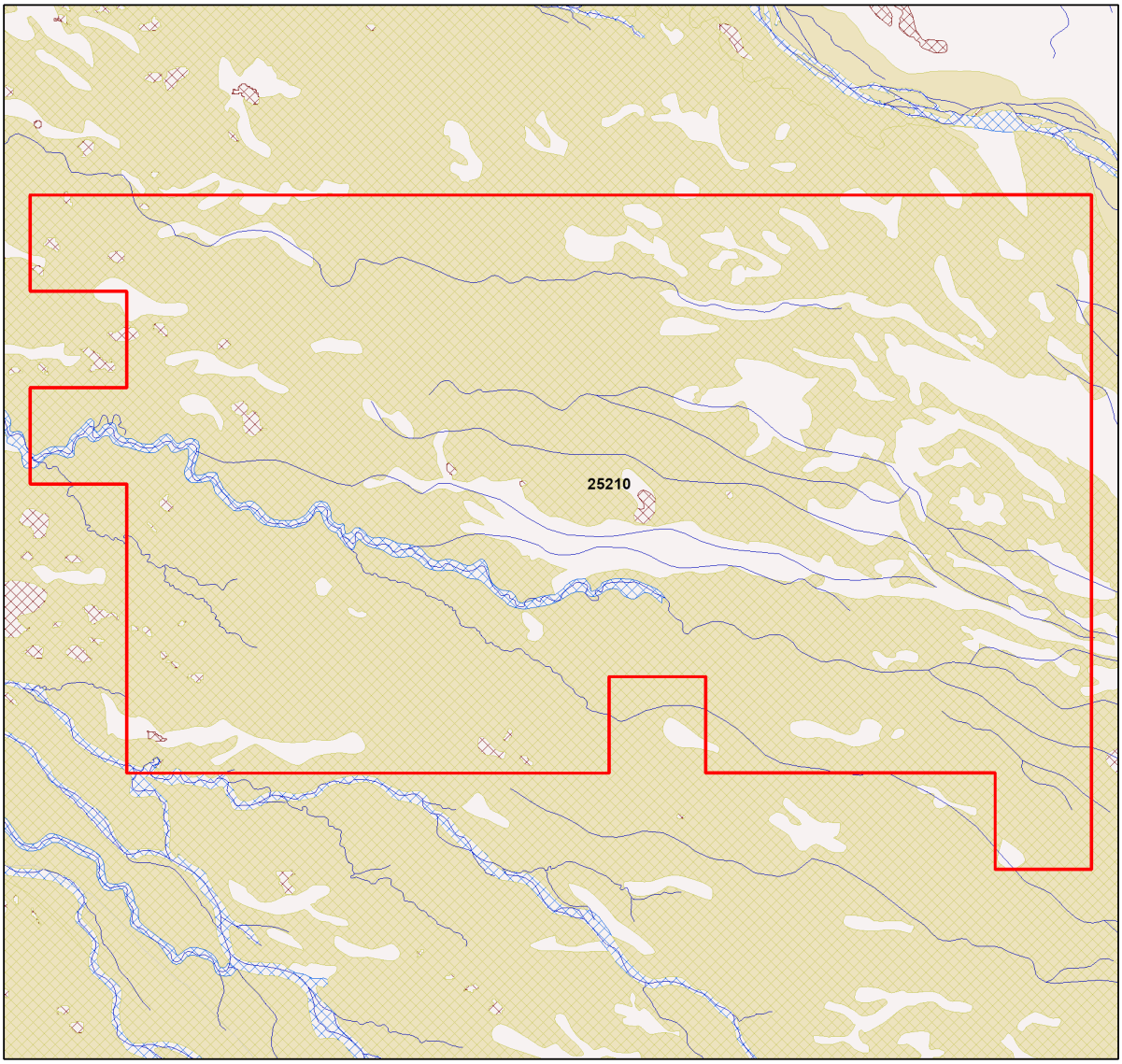
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Map 4 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

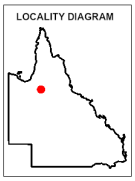
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

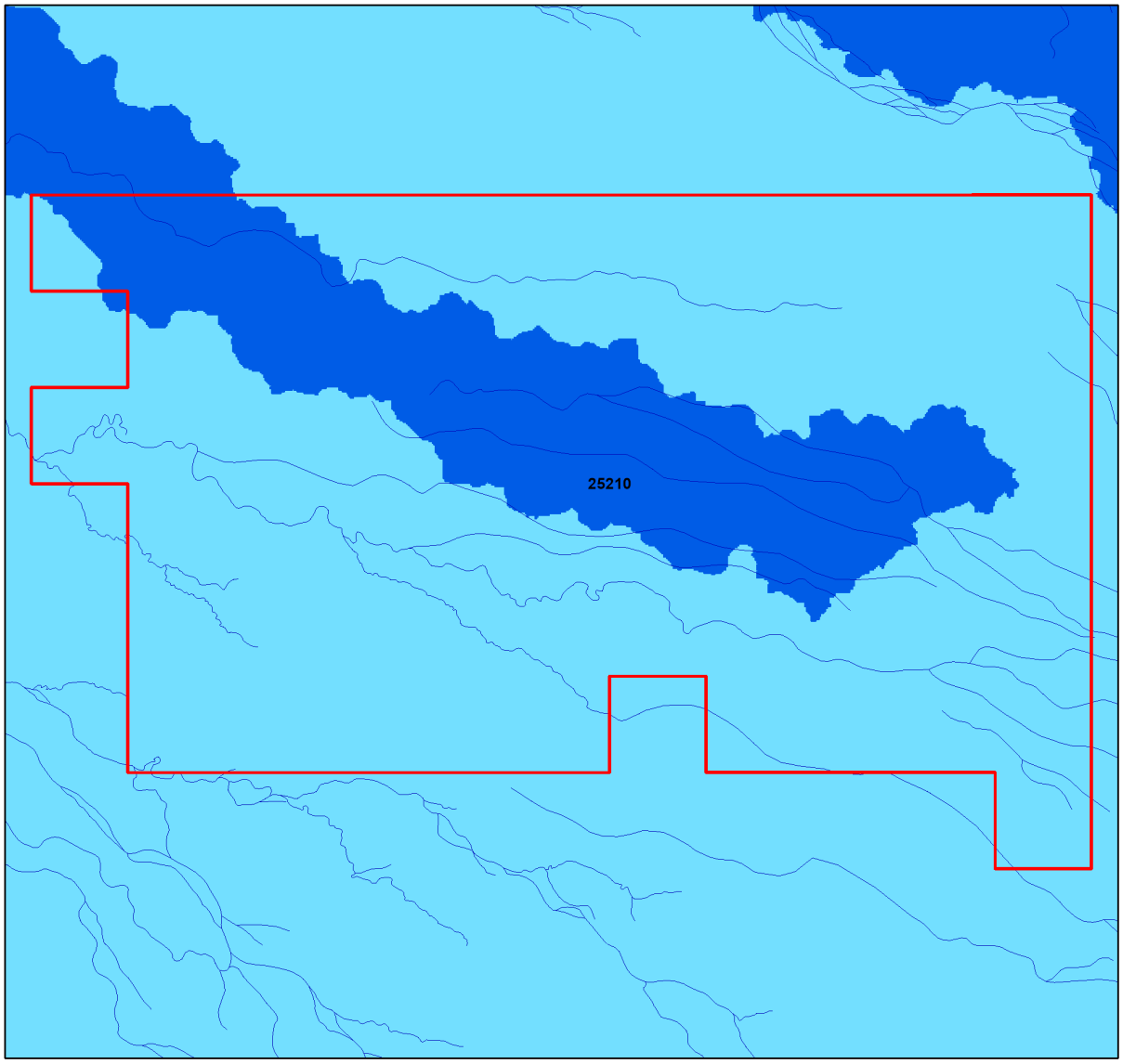
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Map 5 - Aquatic Conservation Assessment (ACA) - riverine



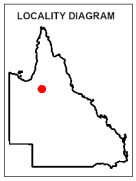
Aquatic Conservation Assessment (ACA) - riverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Riverine - Subcatchment Significance

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

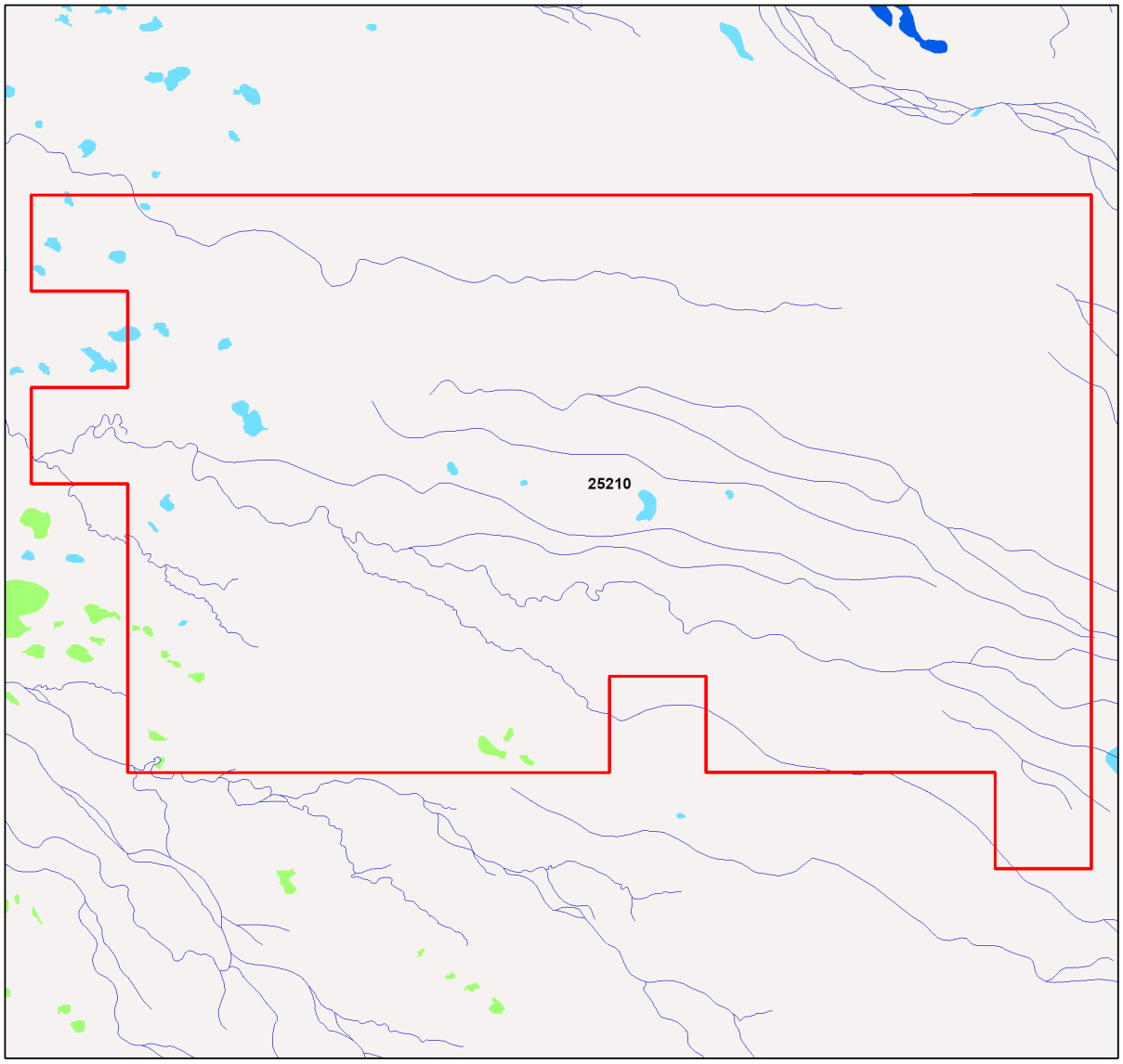
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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



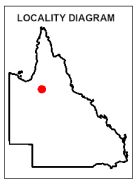
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

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http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

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Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series*, Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDBB Non-riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1 Southern Gulf Catchments Non-riverine ACA v1.1 WBBGBRCC Non-riverine ACA v2.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDBB Riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1 Southern Gulf Catchments Riverine ACA v1.1 WBBGBRCC Riverine ACA v2.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v3.1 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.7
Threatened Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

These datasets are available at:
http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DETSI	- Department of the Environment, Tourism, Science and Innovation
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA2020	- Geocentric Datum of Australia 2020
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

EPM: 27195

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Please direct queries about these reports to: biodiversity.planning@qld.gov.au

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Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Details for area of interest: EPM: 27195, with area 23644.37 ha

Local Government(s)	
Croydon Shire	
Bioregion(s)	**Subregion(s)**
Gulf Plains	Claraville Plains
Catchment(s)	
Norman	

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Biodiversity Planning Assessment(s)	Aquatic Conservation Assessment(s) (riverine)	Aquatic Conservation Assessment(s) (non-riverine)
Gulf Plains v1.1	Eastern Gulf of Carpentaria v1.1	Eastern Gulf of Carpentaria v.1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	2,511.08	10.62
No concern at present	21,112.58	89.29

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	7,216.75	30.52
Regional	3,459.50	14.63
Local or Other Values	12,791.19	54.10

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	16
Total number of non-riverine wetlands	16

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

Name	Permanency
BORER RIVER	Non-perennial
DINNER CREEK	Non-perennial
GREGORY CREEK	Non-perennial
WARRIGAL CREEK	Non-perennial
YAPPAR RIVER	Non-perennial

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	23,154.89	97.93
Very High	489.48	2.07

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
High	4.00	0.02
Medium	111.81	0.47

Biodiversity Planning Assessments

Introduction

The Department of the Environment, Tourism, Science and Innovation (DETSI) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DETSI. Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	7,216.75	30.52
Regional	3,459.50	14.63
Local or Other Values	12,791.19	54.10

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains at least one Of Concern RE (B1) & Remnant contains an RE that is one of the largest of its type in the bioregion (D1)	6,898.61	29.18
Regional	Remnant contains at least one Of Concern RE (B1)	3,166.31	13.39
Local or Other Values	Refer to diagnostic data for additional information	13,393.66	56.65

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa	0.00	0.00	0.00	0.00	19.60	0.08	23,438.98	99.13
B1: Ecosystem Value (Bioregion)	0.00	0.00	10,064.91	42.57	13,393.66	56.65	0.00	0.00
B2: Ecosystem Value (Subregion)	0.00	0.00	0.00	0.00	23,458.57	99.21	0.00	0.00
C: Tract Size	0.00	0.00	22,895.49	96.83	545.10	2.31	17.98	0.08
D1: Relative RE Size (Bioregion)	6,898.61	29.18	0.00	0.00	3,984.51	16.85	12,575.46	53.19

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
D2: Relative RE Size (Subregion)	7,639.11	32.31	75.17	0.32	3,290.54	13.92	12,453.75	52.67
F: Ecosystem Diversity	7,319.89	30.96	9,206.31	38.94	6,932.37	29.32	0.00	0.00
G: Context and Connection	20,224.70	85.54	2,325.02	9.83	908.86	3.84	0.00	0.00

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	61.85	0.26
State	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I) & Remnant forms part of a bioregional corridor (J)	28.68	0.12
State	Remnant forms part of a bioregional corridor (J)	0.07	0.00
State	Refer to Expert Panel data for additional information	306.74	1.30
Regional	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	355.02	1.50
Regional	Refer to Expert Panel data for additional information	124.24	0.53

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological

significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	306.74	1.30	124.24	0.53	0.00	0.00	0.00	0.00
Ia: Centres of Endemism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	90.53	0.38	355.02	1.50	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ie: High Species Richness	90.53	0.38	355.02	1.50	0.00	0.00	0.00	0.00
If: Relictual Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	90.53	0.38	63.64	0.27	0.00	0.00	0.00	0.00
Ih: Artificial Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ii: Hollow Bearing Trees	90.53	0.38	291.38	1.23	0.00	0.00	0.00	0.00
Ij: Breeding or Roosting Site	90.53	0.38	291.38	1.23	0.00	0.00	0.00	0.00
Ik: Climate Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

- Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
- Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
- Maintaining large scale seasonal/migratory species processes and movement of fauna;
- Maximising connectivity between large tracts/patches of remnant vegetation;
- Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

- Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
- Follow major watershed/catchment and/or coastal boundaries;
- Incorporate major altitudinal/geological/climatic gradients;
- Include and maximise connectivity between large tracts/patches of remnant vegetation;
- Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

- Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

Biodiversity Significance	Area (Ha)	% of AOI
State	28.75	0.12

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

Decision Number	Description	Panel Recommended Significance	Criteria Values
gup_fl_19	High precision records for priority taxa of State significance are contained within the remnant.	State	Criteria H: VERY HIGH
gup_l_45	Wetlands	Regional	Ib (wildlife refugia): HIGH Ie (high species diversity):HIGH Ii (high density of hollow-bearing habitat trees): HIGH Ij (significant breeding or roosting sites): HIGH
gup_l_41	Riparian ecosystems and associated areas	State	Ib (wildlife refugia): VERY HIGH Ie (high species diversity): VERY HIGH Ig (REs show distinct variation in species composition): VERY HIGH Ii (high density of hollow-bearing habitat trees):VERY HIGH Ij (significant breeding or roosting sites): VERY HIGH
gup_l_47	Riparian corridors	State	Criterion J (corridors): State
gup_fa_05	Bauhinia woodlands	Regional	Ib (wildlife refugia): HIGH Ie (high species diversity): HIGH Ig (REs show distinct variation in species composition): HIGH
gup_fa_17	High precision records for priority taxa of Regional significance are contained within the remnant.	Regional	Criteria H: HIGH

Expert panel decision descriptions:

Decision Number	Description
gup_fl_19	Remnant contains core habitat for priority taxa with high precision records.
gup_l_45	Wetlands have a range of biodiversity values, both in their own right, and for the role they play in maintaining water quality, protecting downstream aquatic ecosystems, and as part of the wetland ecosystem continuum where they are periodically connected with other aquatic ecosystems. Wetlands act as refugia for many species, and play a vital role in the life cycle of others. Wetlands are a defining characteristic of the bioregion, in their extent, diversity, and condition. Wetlands were given a 200m buffer with the same significance rating to ensure that all areas adjacent to them, and the areas most likely to have higher values, were also included. Numerous decisions in southern Gulf of Carpentaria ACA relate to wetlands within the Flinders, Norman and Gilbert river catchments (Rollason and Howell 2010).
gup_l_41	Riparian ecosystems in the Gulf Plains provide a refuge in otherwise seasonally droughty and sparsely vegetated landscapes that dominate non-riparian areas. See also gup_fa_08 for specific values of western riparian systems.
gup_l_47	Riparian corridors in the Gulf Plains are particularly significant for biodiversity, both as a climatic refuge and as a major element of habitat continuity. This decision is based on the bioregional corridor values of major riparian areas. The refugial and other values of riparian areas are covered by decision gup_l_41.
gup_fa_05	Seasonally important for nectarivores (honeyeaters, white-browed woodswallows Artamus supercilious, white-winged trillers Lalage sueurii and varied lorikeets Psitteuteles versicolor) (Richard Johnson in lit). Important for honeyeater diversity given relatively high fertility and productivity with shallow sands over shales. Bauhinia woodland on alluvium may be at risk given possible future development of agriculture in the region (Richard Johnson in lit).
gup_fa_17	Remnant contains habitat for priority taxa with high precision records.

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	23,154.89	97.93
Very High	489.48	2.07

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	23,644.37	100.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	3,273.76	13.85	0.00	0.00	20,370.60	86.15	0.00	0.00
3. Diversity and richness	0.00	0.00	23,280.01	98.46	364.36	1.54	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	23,644.37	100.00	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	125.12	0.53	18,368.08	77.68	0.00	0.00
6. Special features	489.48	2.07	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	125.12	0.53	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
nn_r_ec_01	Sandstone gorges	Norman	6.1.1,6.3.1	4,4
nn_r_ec_04	Perennial waterholes in active streams	Norman	5.2.1,6.1.1,6.2.1,6.3.1,6.3.4,6.4.1,7.1.2	3,3,3,4,3,3,3

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
nn_r_ec_01	This special feature is a high gorge section in the upper reaches of the Norman catchment that uncharacteristically flow out of sandstone springs. The area is thought to have similar physical characteristics Cobbold Gorge decision. The area is characterised by highly dissected sandstone that supports unique unstable wetlands. The area also has good connectivity, contains permanent waterholes with refugial values and refugial rainforest flora species in riparian communities.
nn_r_ec_04	In the seasonally dry tropics of the Eastern Gulf, perennial waterholes in active streams provide critical refugial (6.3.1) dry season habitat for obligate freshwater species including conservation dependent and listed species such as juvenile freshwater sawfish *Pristis pristis* and snapping turtles and represent a priority aquatic ecosystems (5.2.1). They are also important for migratory fish species (7.1.2) in particular sooty grunter *Hephaestus fuliginosus* and adult phase eel tailed catfish. Permanent waterholes in active streams support a range of ecological processes that are distinct relative to the more extensive seasonal aquatic habitats that characterise the eastern Gulf (6.2.1). Within the seasonally dry climate of the eastern Gulf the presence of permanent freshwater usually owes its existence to a combination of special geomorphic features (6.1.1) and hydrological regimes (6.4.1). Within the suite of exiting perennial waterholes are subset will also have an increasingly important role as refugia within the increasingly variable rainfall and elevated temperature regimes predicted under climate change (6.4.1).

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	111.81	0.47
High	4.00	0.02

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	115.81	0.49	0.00	0.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	0.00	0.00	0.00	0.00	115.81	0.49	0.00	0.00
3. Diversity and richness	0.00	0.00	115.81	0.49	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	34.27	0.14	81.54	0.34	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	115.81	0.49	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	4.00	0.02	111.81	0.47	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/ Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

Species	Common name	NCA status	EPBC status	Migratory species*	Wetland species**	Identified flora/fauna
Acacia armitii		NT				FL
Poephila cincta cincta	black-throated finch (white-rumped subspecies)	E	E			FA

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DETSI internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**B - Convention on the Conservation of Migratory Species; C - China-Australia Migratory Bird Agreement; J - Japan-Australia Migratory Bird Agreement; E - East Asian-Australasian Flyway Partnership; R - Republic of Korea-Australia Migratory Bird Agreement.*

***I - wetland indicator species; D - wetland dependent species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Identified flora/fauna
Artamus cinereus	black-faced woodswallow	FA
Bonamia sp. (Croydon K.R.McDonald KRM4000)		FL
Climacteris picumnus	brown treecreeper	FA
Corymbia setosa subsp. setosa		FL
Crotalaria inaequalis		FL

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Identified flora/fauna
Melaleuca fluviatilis		FL

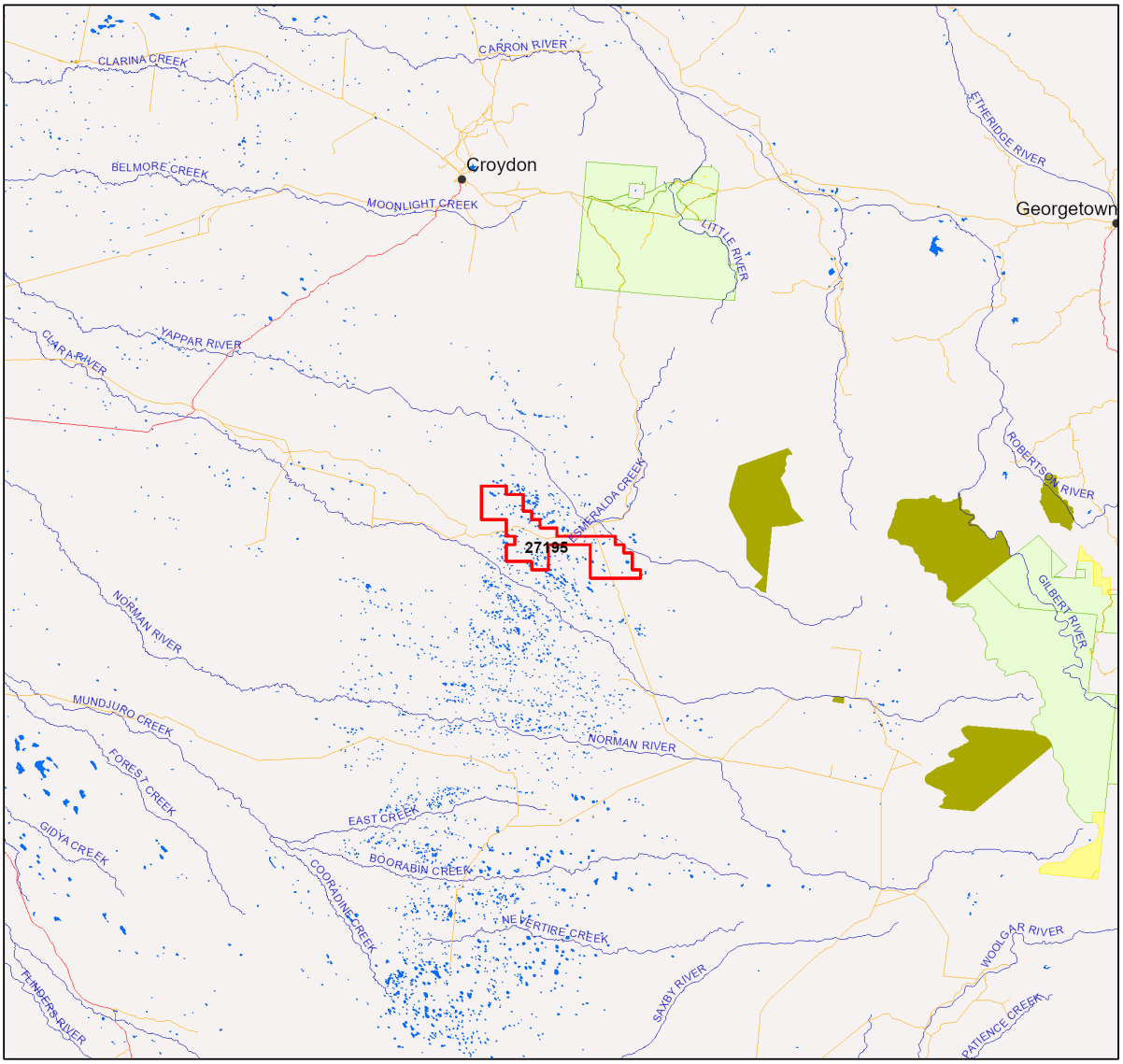
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Identified flora/fauna
Pseudoraphis spinescens	spiny mudgrass	FL

NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

Map 1 - Locality Map

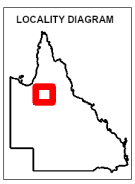


Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 10000 20000 30000 40000 50000 m

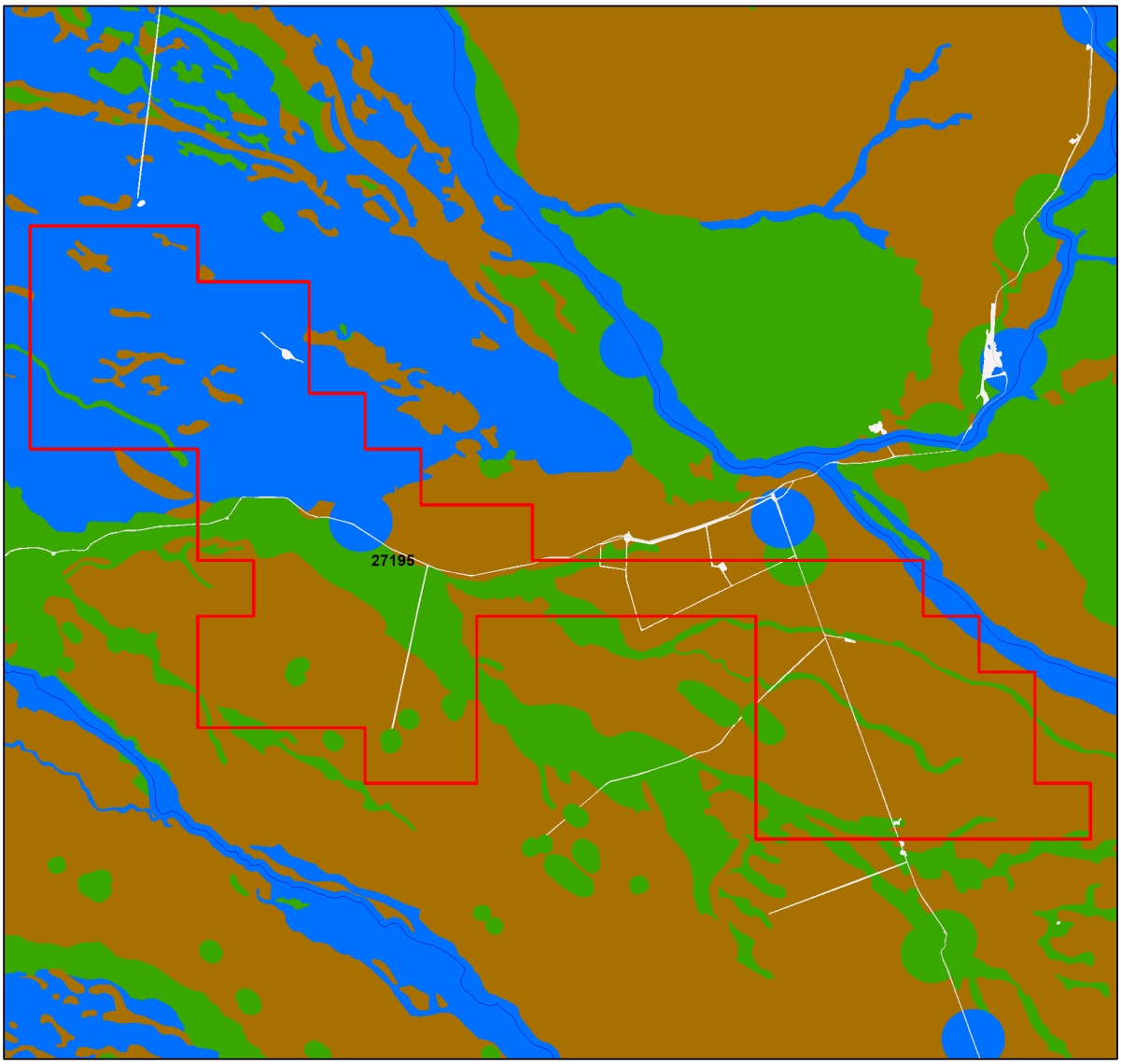
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Map 2 - Biodiversity Planning Assessment (BPA)



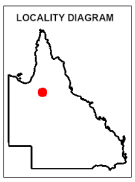
Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

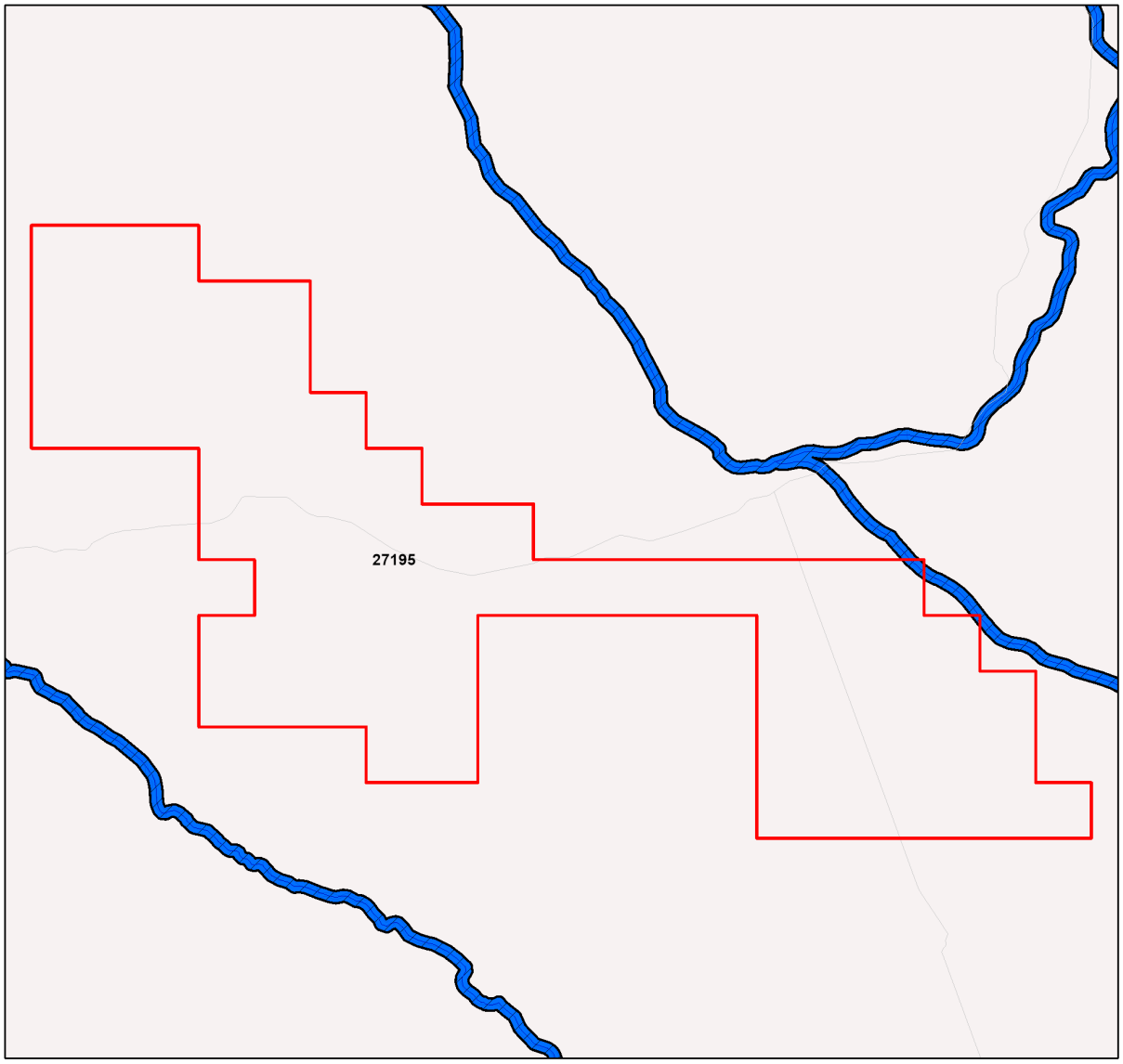
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Map 3 - Corridors



Corridors

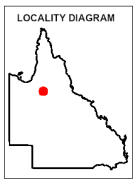
- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

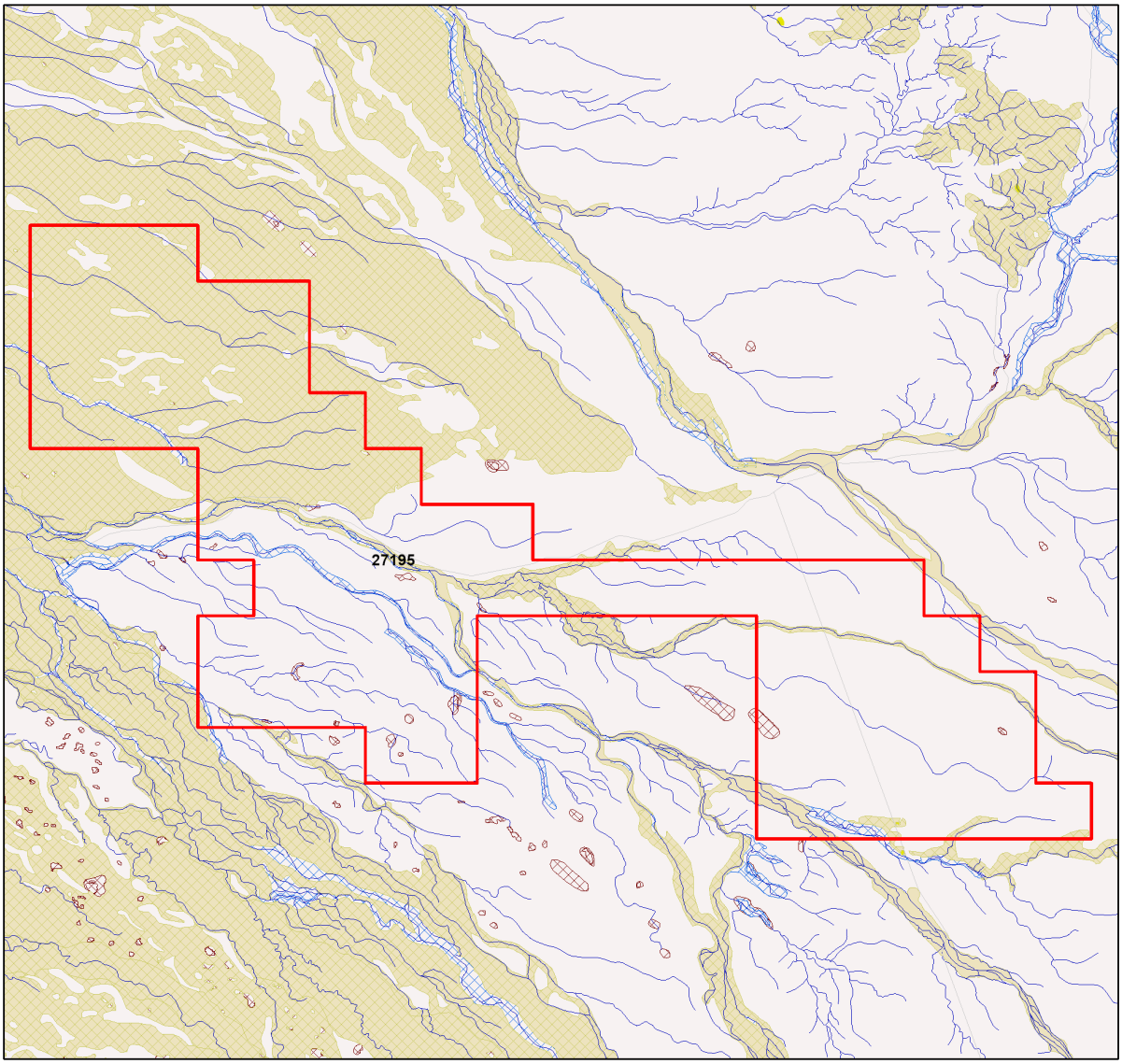
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Map 4 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

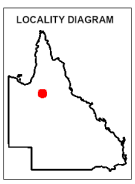
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

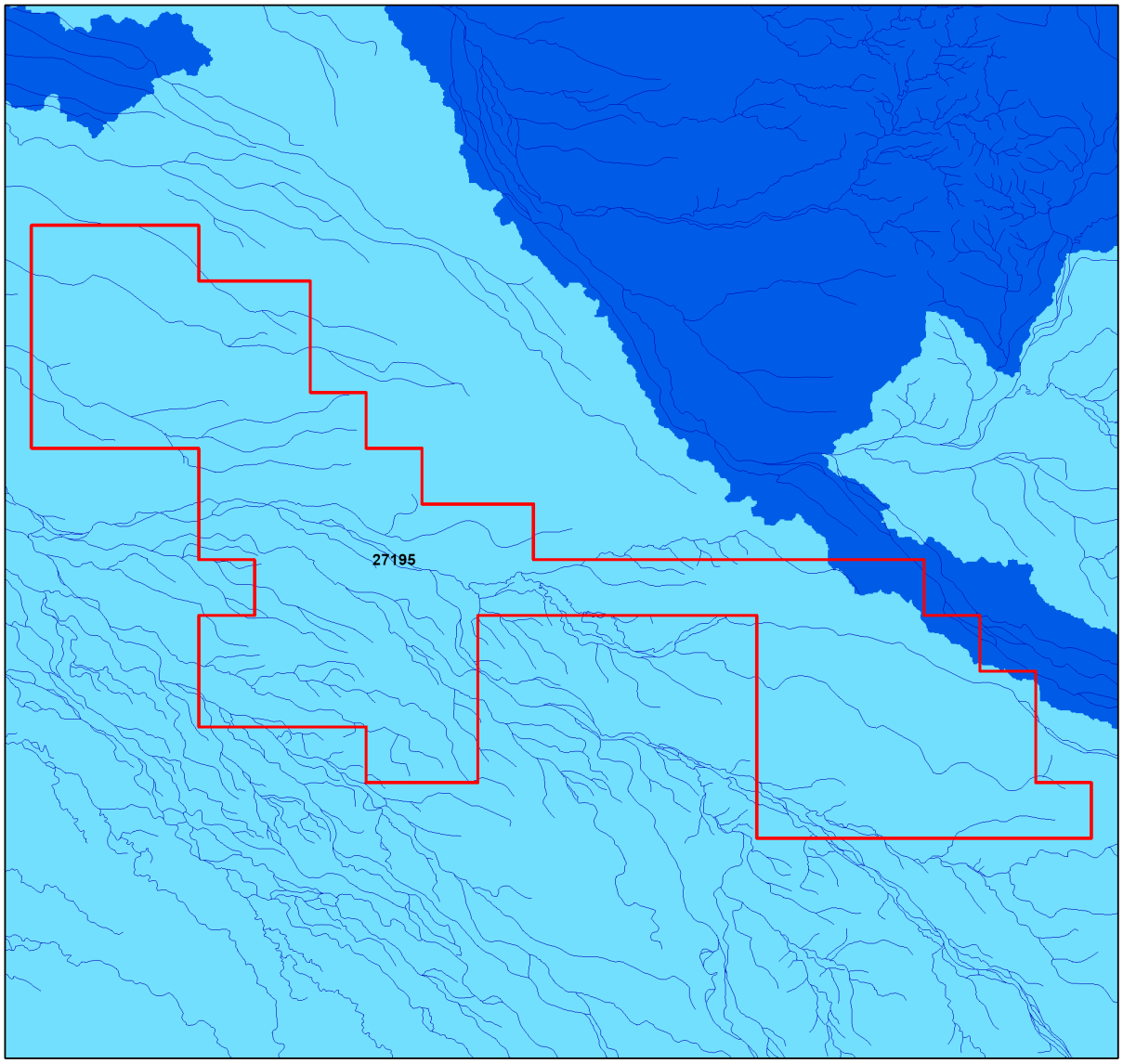
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Map 5 - Aquatic Conservation Assessment (ACA) - riverine



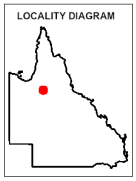
Aquatic Conservation Assessment (ACA) - riverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Riverine - Subcatchment Significance

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

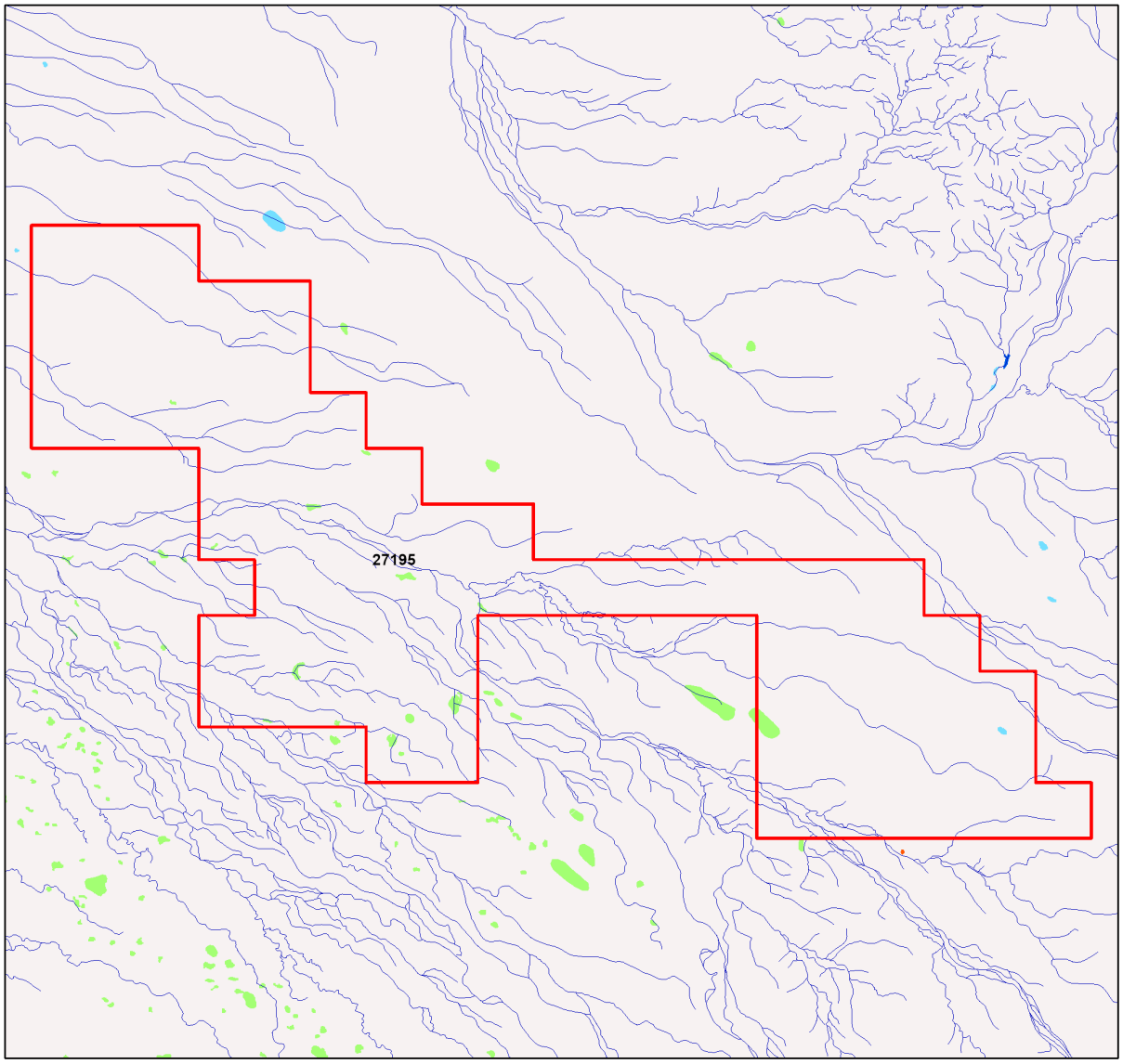
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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



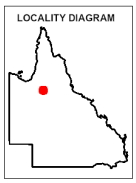
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

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http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca/

Environment and Heritage Protection 2014*, Biodiversity Assessment and Mapping Methodology.* Version 2.2. Department of Environment and Heritage Protection, Brisbane.

Morton, S. R., Short, J. and Barker, R. D. with an Appendix by G.F. Griffin and G. Pearce (1995). *Refugia for Biological Diversity in Arid and Semi-arid Australia. Biodiversity Series*, Paper No. 4, Biodiversity Unit, Environment Australia.

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems*. Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDBB Non-riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1 Southern Gulf Catchments Non-riverine ACA v1.1 WBBGBRCC Non-riverine ACA v2.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDBB Riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1 Southern Gulf Catchments Riverine ACA v1.1 WBBGBRCC Riverine ACA v2.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v3.1 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.7
Threatened Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

These datasets are available at:
http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DETSI	- Department of the Environment, Tourism, Science and Innovation
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA2020	- Geocentric Datum of Australia 2020
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

EPM: 27818

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Please direct queries about these reports to: biodiversity.planning@qld.gov.au

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Summary Information

Tables 1 to 8 provide an overview of the AOI with respect to selected topographic and environmental values.

Table 1: Details for area of interest: EPM: 27818, with area 2267.95 ha

Local Government(s)	
Croydon Shire	
Bioregion(s)	**Subregion(s)**
Gulf Plains	Claraville Plains
Catchment(s)	
Norman	

The following table identifies available Biodiversity Planning Assessments (BPAs) and Aquatic Conservation Assessments (ACAs) with respect to the AOI.

Table 2: Available Biodiversity Planning and Aquatic Conservation Assessments

Biodiversity Planning Assessment(s)	Aquatic Conservation Assessment(s) (riverine)	Aquatic Conservation Assessment(s) (non-riverine)
Gulf Plains v1.1	Eastern Gulf of Carpentaria v1.1	Eastern Gulf of Carpentaria v.1.1

Table 3: Remnant regional ecosystems within the AOI as per the Qld Herbarium's 'biodiversity status'

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	573.76	25.30
No concern at present	1,694.19	74.70

The following table identifies the extent and proportion of the user specified area of interest (AOI) which is mapped as being of "State", "Regional" or "Local" significance via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	1,395.48	61.53
Regional	670.38	29.56
Local or Other Values	202.09	8.91

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Palustrine wetlands	5
Total number of non-riverine wetlands	5

NB. The figures presented in the table above are derived from the relevant non-riverine Aquatic Conservation Assessment(s). Later releases of wetland mapping produced via the Queensland Wetland Mapping Program may provide more recent information in regards to wetland extent.

Table 6: Named waterways intersecting the AOI

Name	Permanency
BORER RIVER	Non-perennial
WARRIGAL CREEK	Non-perennial

Refer to **Map 1** for general locality information.

The following two tables identify the extent and proportion of the user specified AOI which is mapped as being of "Very High", "High", "Medium", "Low", or "Very Low" aquatic conservation value for riverine and non-riverine wetlands via application of the Queensland Department of the Environment, Tourism, Science and Innovation's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM).

Table 7: Summary table, aquatic conservation significance (riverine)

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	2,267.95	100.00

Table 8: Summary table, aquatic conservation significance (non-riverine)

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	12.82	0.57

Biodiversity Planning Assessments

Introduction

The Department of the Environment, Tourism, Science and Innovation (DETSI) attributes biodiversity significance on a bioregional scale through a Biodiversity Planning Assessment (BPA). A BPA involves the integration of ecological criteria using the *Biodiversity assessment and Mapping Methodology* (BAMM) and is developed in two stages: 1) **diagnostic criteria**, and 2) **expert panel criteria**. The diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion, while the expert panel criteria allows for the refinement of the mapped information from the diagnostic output by incorporating local knowledge and expert opinion.

The BAMM methodology has application for identifying areas with various levels of significance solely for biodiversity reasons. These include threatened ecosystems or taxa, large tracts of habitat in good condition, ecosystem diversity, landscape context and connection, and buffers to wetlands or other types of habitat important for the maintenance of biodiversity or ecological processes. While natural resource values such as dryland salinity, soil erosion potential or land capability are not dealt with explicitly, they are included to some extent within the biodiversity status of regional ecosystems recognised by the DETSI. Biodiversity Planning Assessments (BPAs) assign three levels of overall biodiversity significance.

- **State significance** - areas assessed as being significant for biodiversity at the bioregional or state scales. They also include areas assessed by other studies/processes as being significant at national or international scales. In addition, areas flagged as being of State significance due to the presence of endangered, vulnerable and/or near threatened taxa, are identified as "State Habitat for EVNT taxa".
- **Regional significance** - areas assessed as being significant for biodiversity at the subregional scale. These areas have lower significance for biodiversity than areas assessed as being of State significance.
- **Local significance and/or other values** - areas assessed as not being significant for biodiversity at state or regional scales. Local values are of significance at the local government scale.

For further information on released BPAs and a copy of the underlying methodology, go to:

http://www.qld.gov.au/environment/plants-animals/biodiversity/planning/

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

The following table identifies the extent and proportion of the user specified AOI which is mapped as being of "State", "Regional" or "Local" significance via application of the BAMM.

Table 9: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
State	1,395.48	61.53
Regional	670.38	29.56
Local or Other Values	202.09	8.91

Refer to **Map 2** for further information.

Diagnostic Criteria

Diagnostic criteria are based on existing data which is reliable and uniformly available across a bioregion. These criteria are diagnostic in that they are used to filter the available data and provide a "first-cut" or initial determination of biodiversity significance. This initial assessment is then combined through a second group of other essential criteria.

A description of the individual diagnostic criteria is provided in the following sections.

Criteria A. Habitat for EVNT taxa: Classifies areas according to their significance based on the presence of endangered, vulnerable and/or rare (EVNT) taxa. EVNT taxa are those scheduled under the *Nature Conservation Act 1992* and/or the *Environment Protection and Biodiversity Conservation Act 1999*. It excludes highly mobile fauna taxa which are instead considered in Criterion H and brings together information on EVNT taxa using buffering of recorded sites or habitat suitability models (HSM) where available.

Criteria B. Ecosystem value: Classifies on the basis of biodiversity status of regional ecosystems, their extent in protected areas (presence of poorly conserved regional ecosystems), the presence of significant wetlands; and areas of national importance such as the presence of Threatened Ecological Communities, World Heritage areas and Ramsar sites. Ecosystem value is applied at a bioregional (**B1**) and regional (**B2**) scale.

Criteria C. Tract size: Measures the relative size of tracts of vegetation in the landscape. The size of any tract is a major indicator of ecological significance, and is also strongly correlated with the long-term viability of biodiversity values. Larger tracts are less susceptible to ecological edge effects and are more likely to sustain viable populations of native flora and fauna than smaller tracts.

Criteria D. Relative size of regional ecosystems: Classifies the relative size of each regional ecosystem unit within its bioregion (**D1**) and its subregion (**D2**). Remnant units are compared with all other occurrences with the same regional ecosystem. Large examples of a regional ecosystem are more significant than smaller examples of the same regional ecosystem because they are more representative of the biodiversity values particular to the regional ecosystem, are more resilient to the effects of disturbance, and constitute a significant proportion of the total area of the regional ecosystem.

Criteria F. Ecosystem diversity: Is an indicator of the number of regional ecosystems occurring within an area. An area with high ecosystem diversity will have many regional ecosystems and ecotones relative to other areas within the bioregion.

Criteria G. Context and connection: Represents the extent to which a remnant unit incorporates, borders or buffers areas such as significant wetlands, endangered ecosystems; and the degree to which it is connected to other vegetation.

A summary of the biodiversity status based upon the diagnostic criteria is provided in the following table.

Table 10: Summary of biodiversity significance based upon diagnostic criteria with respect to the AOI

Biodiversity significance	Description	Area (Ha)	% of AOI
State	Remnant contains at least one Of Concern RE (B1) & Remnant contains an RE that is one of the largest of its type in the bioregion (D1)	1,395.48	61.53
Regional	Remnant contains at least one Of Concern RE (B1)	670.38	29.56
Local or Other Values	Refer to diagnostic data for additional information	202.09	8.91

Assessment of diagnostic criteria with respect to the AOI

The following table reflects an assessment of the individual diagnostic criteria noted above in regards to the AOI.

Table 11: Assessment of individual diagnostic criteria with respect to the AOI

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
A: Habitat for EVNT Taxa	0.00	0.00	0.00	0.00	482.02	21.25	1,785.94	78.75
B1: Ecosystem Value (Bioregion)	0.00	0.00	2,065.86	91.09	202.09	8.91	0.00	0.00
B2: Ecosystem Value (Subregion)	0.00	0.00	0.00	0.00	2,267.95	100.00	0.00	0.00
C: Tract Size	0.00	0.00	2,267.95	100.00	0.00	0.00	0.00	0.00
D1: Relative RE Size (Bioregion)	1,395.48	61.53	0.00	0.00	0.00	0.00	872.48	38.47

Diagnostic Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
D2: Relative RE Size (Subregion)	1,395.48	61.53	0.00	0.00	574.86	25.35	297.62	13.12
F: Ecosystem Diversity	574.86	25.35	297.62	13.12	1,395.48	61.53	0.00	0.00
G: Context and Connection	2,267.95	100.00	0.00	0.00	0.00	0.00	0.00	0.00

Other Essential Criteria

Other essential criteria (also known as expert panel criteria) are based on non-uniform information sources and which may rely more upon expert opinion than on quantitative data. These criteria are used to provide a "second-cut" determination of biodiversity significance, which is then combined with the diagnostic criteria for an overall assessment of relative biodiversity significance. A summary of the biodiversity status based upon the other essential criteria is provided in the following table.

Table 12: Summary of biodiversity significance based upon other essential criteria with respect to the AOI

(No Records)

A description of each of the other essential criteria and associated assessment in regards to the AOI is provided in the following sections.

Criteria H. Essential and general habitat for priority taxa: Priority taxa are those which are at risk or of management concern, taxa of scientific interest as relictual (ancient or primitive), endemic taxa or locally significant populations (such as a flying fox camp or heronry), highly specialised taxa whose habitat requirements are complex and distributions are not well correlated with any particular regional ecosystem, taxa important for maintaining genetic diversity (such as complex spatial patterns of genetic variation, geographic range limits, highly disjunct populations), taxa critical for management or monitoring of biodiversity (functionally important or ecological indicators), or economic and culturally important taxa.

Criteria I. Special biodiversity values: areas with special biodiversity values are important because they contain multiple taxa in a unique ecological and often highly biodiverse environment. Areas with special biodiversity values can include the following:

- Ia - centres of endemism - areas where concentrations of taxa are endemic to a bioregion or subregion are found.
- Ib - wildlife refugia (Morton *et al*. 1995), for example, islands, mound springs, caves, wetlands, gorges, mountain ranges and topographic isolates, ecological refuges, refuges from exotic animals, and refuges from clearing. The latter may include large areas that are not suitable for clearing because of land suitability/capability.
- Ic - areas with concentrations of disjunct populations.
- Id - areas with concentrations of taxa at the limits of their geographic ranges.
- Ie - areas with high species richness.
- If - areas with concentrations of relictual populations (ancient and primitive taxa).
- Ig - areas containing REs with distinct variation in species composition associated with geomorphology and other environmental variables.
- Ih - an artificial waterbody or managed/manipulated wetland considered by the panel/s to be of ecological significance.
- Ii - areas with a high density of hollow-bearing trees that provide habitat for animals.
- Ij - breeding or roosting sites used by a significant number of individuals.
- Ik - climate change refuge.

The following table identifies the value and extent area of the Other Essential Criteria H and I within the AOI.

Table 13: Relative importance of expert panel criteria (H and I) used to access overall biodiversity significance with respect to the AOI

Expert Panel	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
H: Core Habitat Priority Taxa	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ia: Centres of Endemism	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ie: High Species Richness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
If: Relictual Populations	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ih: Artificial Wetland	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ii: Hollow Bearing Trees	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ij: Breeding or Roosting Site	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Ik: Climate Refugia	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NB. Whilst biodiversity values associated with Criteria I may be present within the site (refer to tables 12 and 15), for the New England Tableland and Central Queensland Coast BPAs, area and % area figures associated with Criteria Ia through to Ij cannot be listed in the table above (due to slight variations in data formats between BPAs).

Criteria J. Corridors: areas identified under this criterion qualify either because they are existing vegetated corridors important for contiguity, or cleared areas that could serve this purpose if revegetated. Some examples of corridors include riparian habitats, transport corridors and "stepping stones".

Bioregional and subregional conservation corridors have been identified in the more developed bioregions of Queensland through the BPAs, using an intensive process involving expert panels. Map 3 displays the location of corridors as identified under the Statewide Corridor network. The Statewide Corridor network incorporates BPA derived corridors and for bioregions where no BPA has been assessed yet, corridors derived under other planning processes. *Note: as a result of updating and developing a statewide network, the alignment of corridors may differ slightly in some instances when compared to those used in individual BPAs.*

The functions of these corridors are:

- **Terrestrial** Bioregional corridors, in conjunction with large tracts of remnant vegetation, maintain ecological and evolutionary processes at a landscape scale, by:

- Maintaining long term evolutionary/genetic processes that allow the natural change in distributions of species and connectivity between populations of species over long periods of time;
- Maintaining landscape/ecosystems processes associated with geological, altitudinal and climatic gradients, to allow for ecological responses to climate change;
- Maintaining large scale seasonal/migratory species processes and movement of fauna;
- Maximising connectivity between large tracts/patches of remnant vegetation;
- Identifying key areas for rehabilitation and offsets; and

- **Riparian** Bioregional Corridors also maintain and encourage connectivity of riparian and associated ecosystems.

The location of the corridors is determined by the following principles:

- Terrestrial

  - Complement riparian landscape corridors (i.e. minimise overlap and maximise connectivity);
  - Follow major watershed/catchment and/or coastal boundaries;
  - Incorporate major altitudinal/geological/climatic gradients;
  - Include and maximise connectivity between large tracts/patches of remnant vegetation;
  - Include and maximise connectivity between remnant vegetation in good condition; and

- Riparian

  - Located on the major river or creek systems within the bioregion in question.

The total extent of remnant vegetation triggered as being of "State", "Regional" or "Local" significance due to the presence of an overlying BPA derived terrestrial or riparian corridor within the AOI, is provided in the following table. For further information on how remnant vegetation is triggered due to the presence of an overlying BPA derived corridor, refer to the relevant landscape BPA expert panel report(s).

Table 14: Extent of triggered remnant vegetation due to the presence of BPA derived corridors with respect to the AOI

(No Records)

NB: area figures associated with the extent of corridor triggered remnant vegetation are only available for those bioregions where a BPA has been undertaken.

Refer to **Map 3** for further information.

Threatening process/condition (Criteria K) - areas identified by experts under this criterion may be used to amend (upgrade or downgrade) biodiversity significance arising from the "first-cut" analysis. The condition of remnant vegetation is affected by threatening processes such as weeds, ferals, grazing and burning regime, selective timber harvesting/removal, salinity, soil erosion, and climate change.

Assessment of Criteria K with respect to the AOI is not currently included in the "Biodiversity and Conservation Values" report, as it has not been applied to the majority of Queensland due to data/information limitations and availability.

Special Area Decisions

Expert panel derived "Special Area Decisions" are used to assign values to Other Essential Criteria. The specific decisions which relate to the AOI in question are listed in the table below.

Table 15: Expert panel decisions for assigning levels of biodiversity significance with respect to the AOI

(No Records)

Expert panel decision descriptions:

(No Records)

Aquatic Conservation Assessments

Introduction

The Aquatic Biodiversity Assessment and Mapping Method or AquaBAMM (Clayton *et al.* 2006), was developed to assess conservation values of wetlands in queensland, and may also have application in broader geographical contexts. It is a comprehensive method that uses available data, including data resulting from expert opinion, to identify relative wetland conservation/ecological values within a specified study area (usually a catchment). The product of applying this method is an Aquatic Conservation Assessment (ACA) for the study area.

An ACA using AquaBAMM is non-social, non-economic and identifies the conservation/ecological values of wetlands at a user-defined scale. It provides a robust and objective conservation assessment using criteria, indicators and measures that are founded upon a large body of national and international literature. The criteria, each of which may have variable numbers of indicators and measures, are naturalness (aquatic), naturalness (catchment), diversity and richness, threatened species and ecosystems, priority species and ecosystems, special features, connectivity and representativeness. An ACA using AquaBAMM is a powerful decision support tool that is easily updated and simply interrogated through a geographic information system (GIS).

Where they have been conducted, ACAs can provide a source of baseline wetland conservation/ecological information to support natural resource management and planning processes. They are useful as an independent product or as an important foundation upon which a variety of additional environmental and socio-economic elements can be added and considered (i.e. an early input to broader 'triple-bottom-line' decision-making processes). An ACA can have application in:

- determining priorities for protection, regulation or rehabilitation of wetlands and other aquatic ecosystems
- on-ground investment in wetlands and other aquatic ecosystems
- contributing to impact assessment of large-scale development (e.g. dams)
- water resource and strategic regional planning prcesses

For a detailed explanation of the methodology please refer to the summary and expert panel reports relevant to the ACA utilised in this assessment. These reports can be accessed at Wetland *Info*:

http://wetlandinfo.des.qld.gov.au/wetlands/assessment/assessment-methods/aca

The GIS results can be downloaded from the Queensland Spatial Catalogue at:

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

Explanation of Criteria

Under the AquaBAMM, eight criteria are assessed to derive an overall conservation value. Similar to the Biodiversity Assessment and Mapping Methodology, the criteria may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature. The following sections provide a brief description of each of the 8 criteria.

Criteria 1. Naturalness - Aquatic: This attribute reflects the extent to which a wetland's (riverine, non-riverine, estuarine) aquatic state of naturalness is affected through relevant influencing indicators which include: presence of exotic flora and fauna; presence of aquatic communities; degree of habitat modification and degree of hydrological modification.

Criteria 2. Naturalness - Catchment: The naturalness of the terrestrial systems of a catchment can have an influence on many wetland characteristics including: natural ecological processes e.g. nutrient cycling, riparian vegetation, water chemistry, and flow. The indicators utilised to assess this criterion include: presence of exotic flora and/or fauna; riparian, catchment and flow modification.

Criteria 3. Naturalness - Diversity and Richness: This criterion is common to many ecological assessment methods and can include both physical and biological features. It includes such indicators as species richness, riparian ecosystem richness and geomorphological diversity.

Criteria 4. Threatened Species and Ecosystems: This criterion evaluates ecological rarity characteristics of a wetland. This includes both species rarity and rarity of communities / assemblages. The communities and assemblages are best represented by regional ecosystems. Species rarity is determined by NCA and EPBC status with Endangered, Vulnerable or Near-threatened species being included in the evaluation. Ecosystem rarity is determined by regional ecosystem biodiversity status i.e. Endangered, Of Concern, or Not of Concern.

Criteria 5. Priority Species and Ecosystems: Priority flora and fauna species lists are expert panel derived. These are aquatic, semi-aquatic and riparian species which exhibit at least 1 particular trait in order to be eligible for consideration. For flora species the traits included:

- It forms significant macrophyte beds (in shallow or deep water).
- It is an important food source.
- It is important/critical habitat.
- It is implicated in spawning or reproduction for other fauna and/or flora species.
- It is at its distributional limit or is a disjunct population.
- It provides stream bank or bed stabilisation or has soil binding properties.
- It is a small population and subject to threatening processes.

Fauna species are included if they meet at least one of the following traits:

- It is endemic to the study area (>75 per cent of its distribution is in the study area/catchment).
- It has experienced, or is suspected of experiencing, a serious population decline.
- It has experienced a significant reduction in its distribution and has a naturally restricted distribution in the study area/catchment.
- It is currently a small population and threatened by loss of habitat.
- It is a significant disjunct population.
- It is a migratory species (other than birds).
- A significant proportion of the breeding population (>one per cent for waterbirds, >75 per cent other species) occurs in the waterbody (see Ramsar criterion 6 for waterbirds).
- Limit of species range.

See the individual expert panel reports for the priority species traits specific to an ACA.

Criteria 6. Special Features: Special features are areas identified by flora, fauna and ecology expert panels which exhibit characteristics beyond those identified in other criteria and which the expert panels consider to be of the highest ecological importance. Special feature traits can relate to, but are not solely restricted to geomorphic features, unique ecological processes, presence of unique or distinct habitat, presence of unique or special hydrological regimes e.g. spring-fed streams. Special features are rated on a 1 - 4 scale (4 being the highest).

Criteria 7. Connectivity: This criterion is based on the concept that appropriately connected aquatic ecosystems are healthy and resilient, with maximum potential biodiversity and delivery of ecosystem services.

Criteria 8. Representativeness: This criterion applies primarily to non-riverine assessments, evaluates the rarity and uniqueness of a wetland type in relation to specific geographic areas. Rarity is determined by the degree of wetland protection within "protected Areas" estate or within an area subject to the *Fisheries Act 1994*, *Coastal Protection and Management Act 1995*, or *Marine Parks Act 2004*. Wetland uniqueness evaluates the relative abundance and size of a wetland or wetland management group within geographic areas such as catchment and subcatchment.

Riverine Wetlands

Riverine wetlands are all wetlands and deepwater habitats within a channel. The channels are naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water. AquaBAMM, when applied to riverine wetlands uses a discrete spatial unit termed subsections. A subsection can be considered as an area which encompasses discrete homogeneous stream sections in terms of their natural attributes (i.e. physical, chemical, biological and utilitarian values) and natural resources. Thus in an ACA, an aquatic conservation significance score is calculated for each subsection and applies to all streams within a subsection, rather than individual streams as such.

Please note, the area figures provided in Tables 16 and 17, are derived using the extent of riverine subsections within the AOI. Refer to **Map 5** for further information. A summary of the conservation significance of riverine wetlands within the AOI is provided in the following table.

Table 16: Overall level/s of riverine aquatic conservation significance

Aquatic conservation significance (riverine wetlands)	Area (Ha)	% of AOI
High	2,267.95	100.00

The individual aquatic conservation criteria ratings for riverine wetlands within the AOI are listed below.

Table 17: Level/s of riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	0.00	0.00	2,267.95	100.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	0.00	0.00	0.00	0.00	2,267.95	100.00	0.00	0.00
3. Diversity and richness	0.00	0.00	2,267.95	100.00	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	2,267.95	100.00	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	2,131.16	93.97	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to riverine wetlands within the AOI.

Table 18: Expert panel decisions for assigning overall levels of riverine aquatic conservation significance

Decision number	Special feature	Catchment	Criteria/Indicator/Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Non-riverine Wetlands

Non-riverine wetlands include both lacustrine and palustrine wetlands, however, do not currently incorporate estuarine, marine or subterranean wetland types. A summary of the conservation significance of non-riverine wetlands within the AOI is provided in the following table. Refer to **Map 6** for further information.

Table 19: Overall level/s of non-riverine aquatic conservation significance

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	12.82	0.57

The following table provides an assessment of non-riverine wetlands within the AOI and associated aquatic conservation criteria values.

Table 20: Level/s of non-riverine aquatic conservation significance based on selected criteria

Criteria	Very High Rating - Area (Ha)	Very High Rating - % of AOI	High Rating - Area (Ha)	High Rating - % of AOI	Medium Rating - Area (Ha)	Medium Rating - % of AOI	Low Rating - Area (Ha)	Low Rating - % of AOI
1. Naturalness aquatic	12.82	0.57	0.00	0.00	0.00	0.00	0.00	0.00
2. Naturalness catchment	0.00	0.00	0.00	0.00	12.82	0.57	0.00	0.00
3. Diversity and richness	0.00	0.00	12.82	0.57	0.00	0.00	0.00	0.00
4. Threatened species and ecosystems	0.00	0.00	12.82	0.57	0.00	0.00	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	0.00	0.00	12.82	0.57	0.00	0.00
6. Special features	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
8. Representativeness	0.00	0.00	0.00	0.00	12.82	0.57	0.00	0.00

The table below lists and describes the relevant expert panel decisions used to assign conservation significance values to non-riverine wetlands within the AOI.

Table 21: Expert panel decisions for assigning overall levels of non-riverine aquatic conservation significance.

Decision number	Special feature	Catchment	Criteria/Indicator/ Measure	Conservation rating (1-4)
(No Records)				

4 is the highest rating/value

Expert panel decision descriptions:

Decision number	Description
(No Records)	

Threatened and Priority Species

Introduction

This chapter contains a list of threatened and priority flora and/or fauna species that have been recorded on, or within 4km of the Assessment Area.

The information presented in this chapter with respect to species presence is derived from compiled databases developed primarily for the purpose of BPAs and ACAs. Data is collated from a number of sources and is updated periodically.

It is important to note that the list of species provided in this report, may differ when compared to other reports generated from other sources such as the State government's WildNet, Herbrecs or the federal government's EPBC database for a number of reasons.

Records for threatened and priority species are filtered and checked based on a number of rules including:

- Taxonomic nomenclature - current scientific names and status,
- Location - cross-check co-ordinates with location description,
- Taxon by location - requires good knowledge of the taxon and history of the record,
- Duplicate records - identify and remove,
- Expert panels - check records and provide new records,
- Flora cultivated records excluded,
- Use precise records less than or equal to 2000m,
- Use recent records greater than or equal to 1975 animals, greater than or equal to 1950 plants.

Threatened Species

Threatened species are those species classified as "Endangered" or "Vulnerable" under the *Environment Protection and Biodiversity Conservation Act 1999* or "Endangered", "Vulnerable" or "Near threatened" under the *Nature Conservation Act 1992*.

The following threatened species have been recorded on, or within approximately 4km of the AOI.

Table 22: Threatened species recorded on, or within 4km of the AOI

(No Records)

NB. Please note that the threatened species listed in this section are based upon the most recently compiled DETSI internal state-wide threatened species dataset. This dataset may contain additional records that were not originally available for inclusion in the relevant individual BPAs and ACAs.

**B - Convention on the Conservation of Migratory Species; C - China-Australia Migratory Bird Agreement; J - Japan-Australia Migratory Bird Agreement; E - East Asian-Australasian Flyway Partnership; R - Republic of Korea-Australia Migratory Bird Agreement.*

***I - wetland indicator species; D - wetland dependent species.*

BPA Priority Species

A list of BPA priority species that have been recorded on, or within approximately 4km of the AOI is contained in the following table.

Table 23: Priority species recorded on, or within 4km of the AOI

Species	Common name	Identified flora/fauna
Artamus cinereus	black-faced woodswallow	FA
Climacteris picumnus	brown treecreeper	FA

NB. Please note that the list of priority species is based on those species identified in the BPAs, however records for these species may be more recent than the originals used. furthermore, the BPA priority species databases are updated from time to time. At each update, the taxonomic details for all species are amended as necessary to reflect current taxonomic name and/or status changes.

ACA Priority Species

A list of ACA priority species used in riverine and non-riverine ACAs that have been recorded on, or within approximately 4km of the AOI are contained in the following tables.

Table 24: Priority species recorded on, or within 4 km of the AOI - riverine

Species	Common name	Identified flora/fauna
Eucalyptus camaldulensis		FL

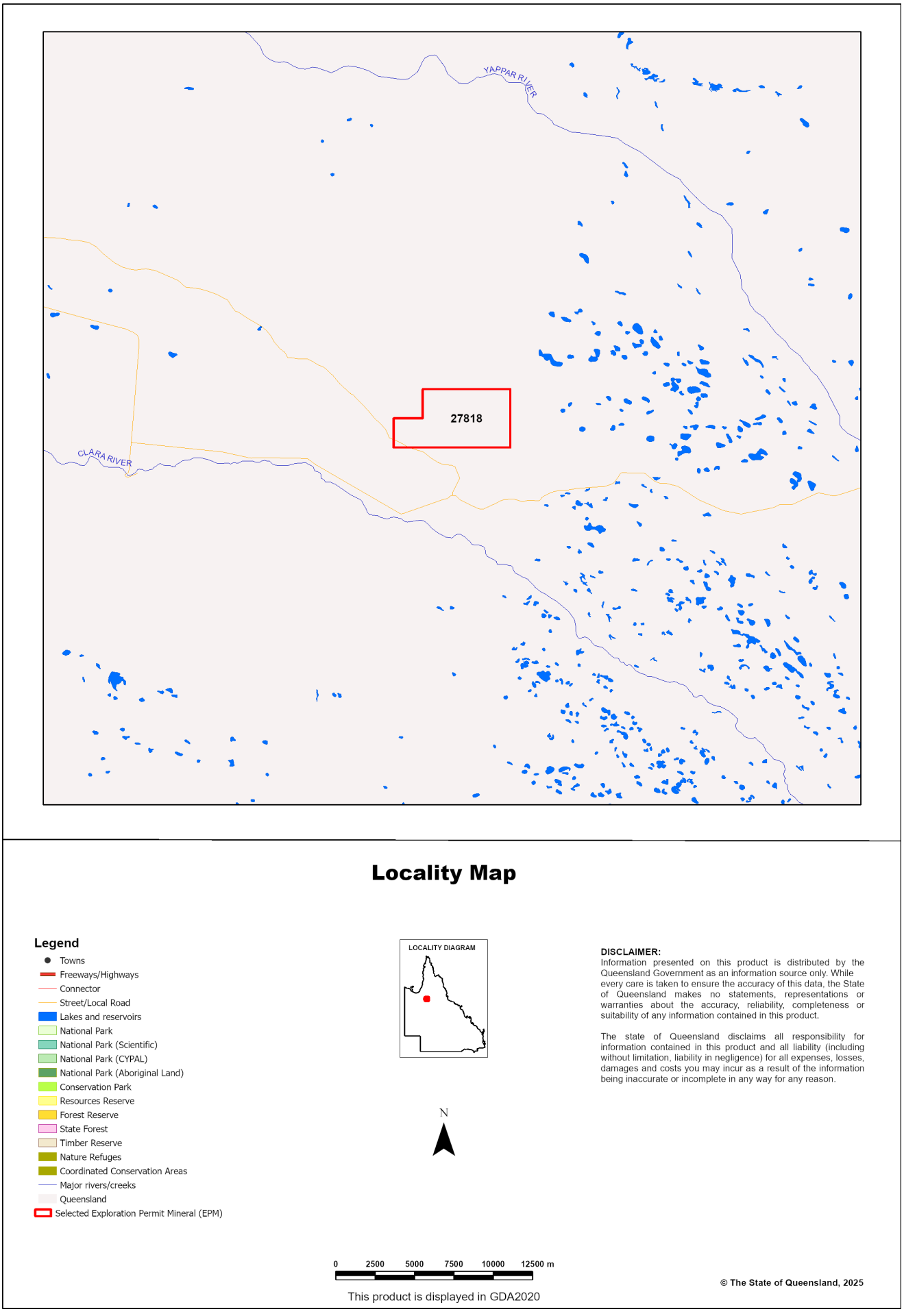
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

Species	Common name	Identified flora/fauna
Eucalyptus camaldulensis		FL

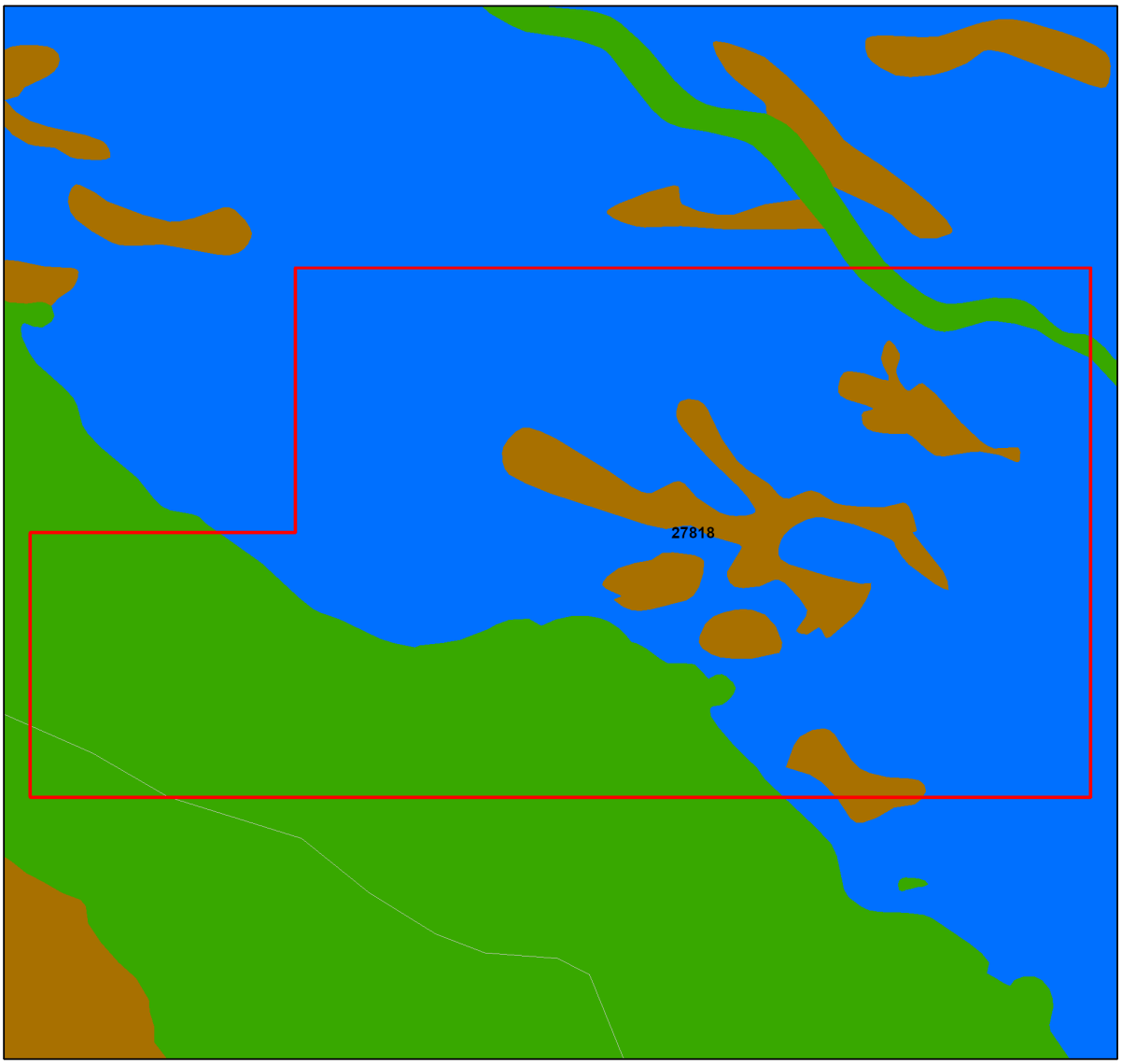
NB. Please note that the priority species records used in the above two tables are comprised of those adopted for the released individual ACAs. The ACA riverine and non-riverine priority species databases are updated from time to time to reflect new release of ACAs. At each update, the taxonomic details for all ACAs records are amended as necessary to reflect current taxonomic name and/or status changes.

Maps

Map 1 - Locality Map



Map 2 - Biodiversity Planning Assessment (BPA)



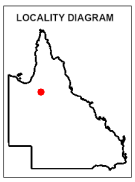
Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 420 840 1260 1680 2100 m

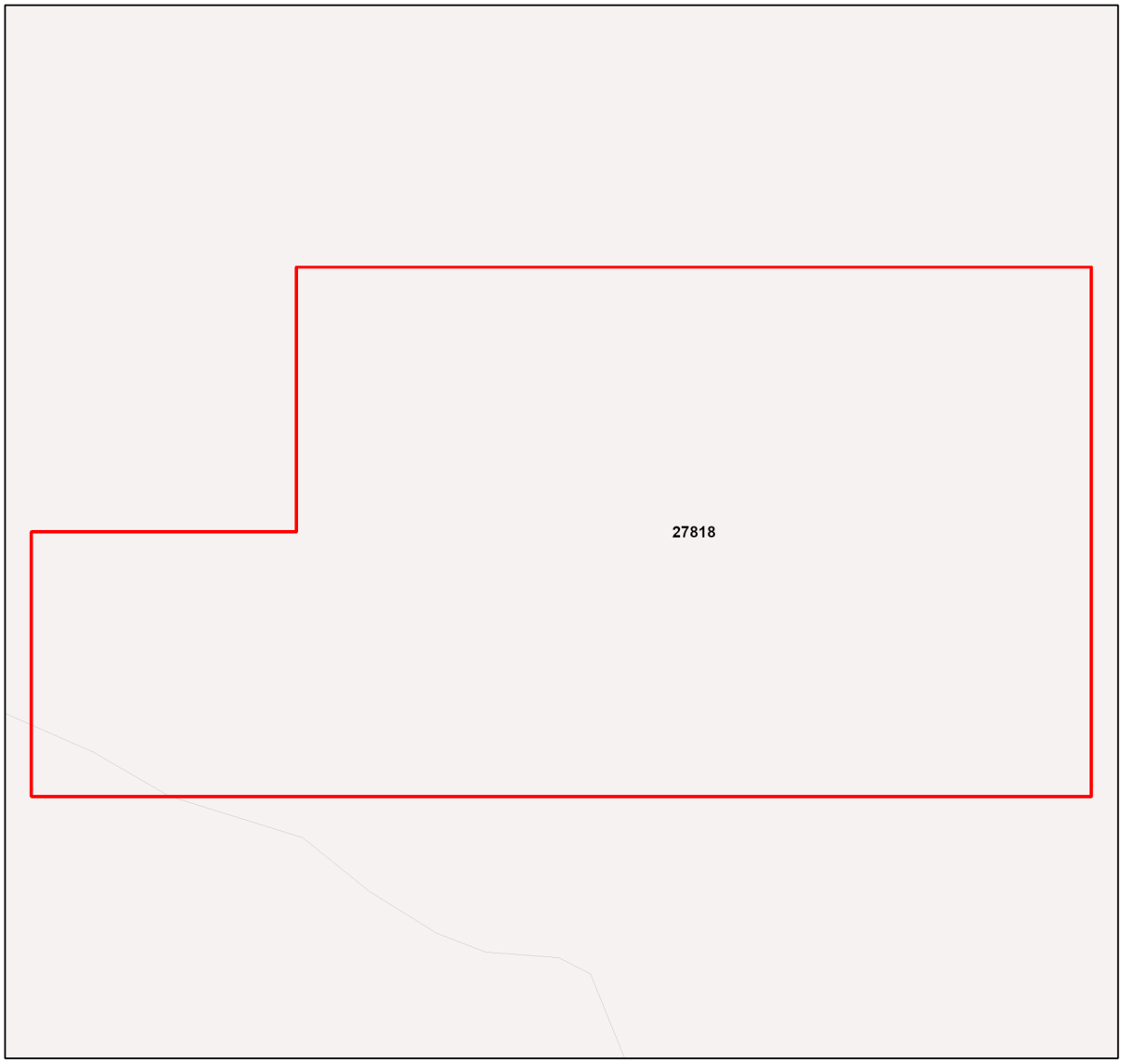
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Map 3 - Corridors



Corridors

- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM

N

0 420 840 1260 1680 2100 m

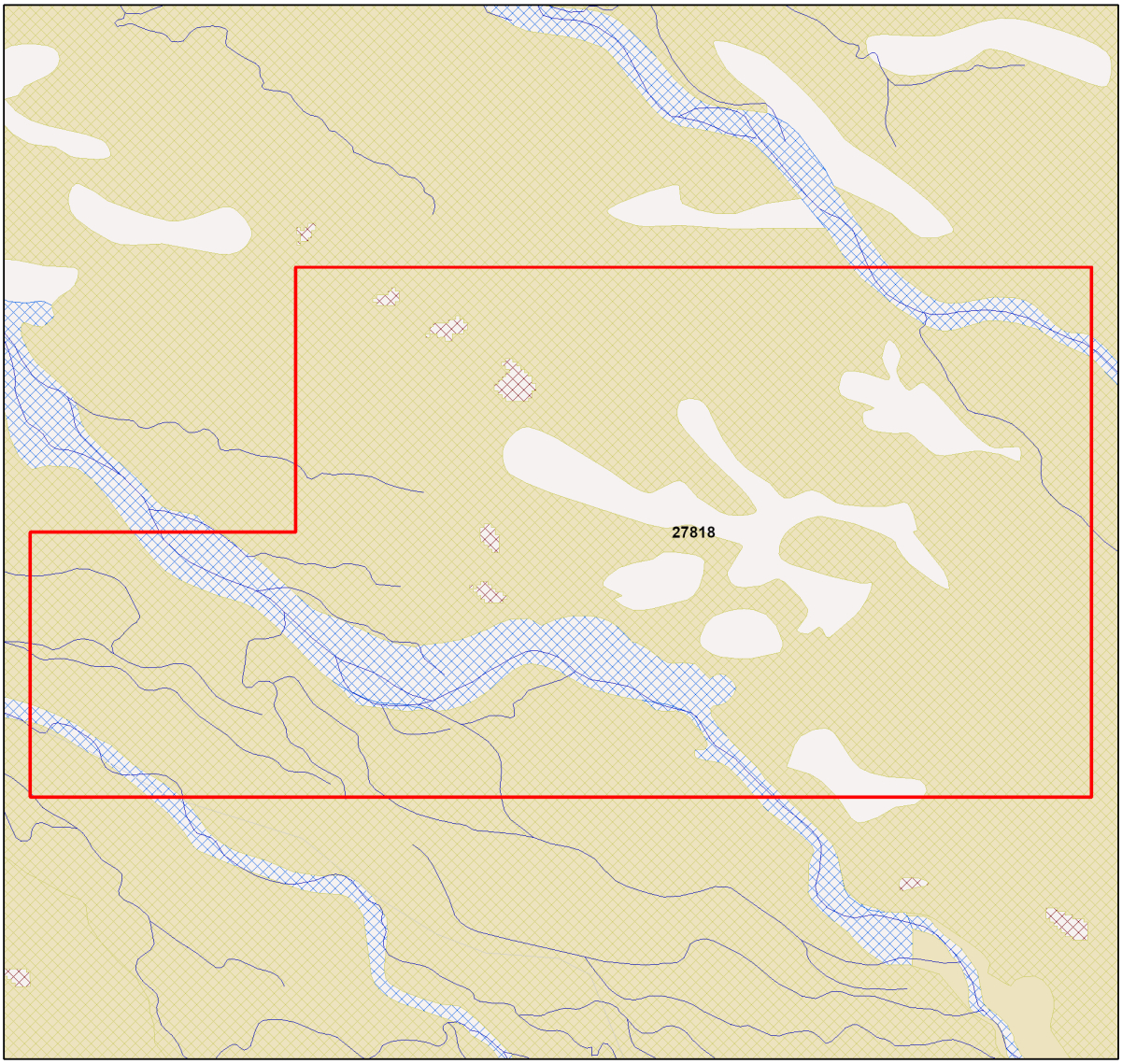
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Map 4 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

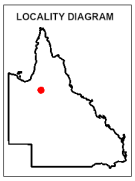
Wetland Type

Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)



N

0 420 840 1260 1680 2100 m

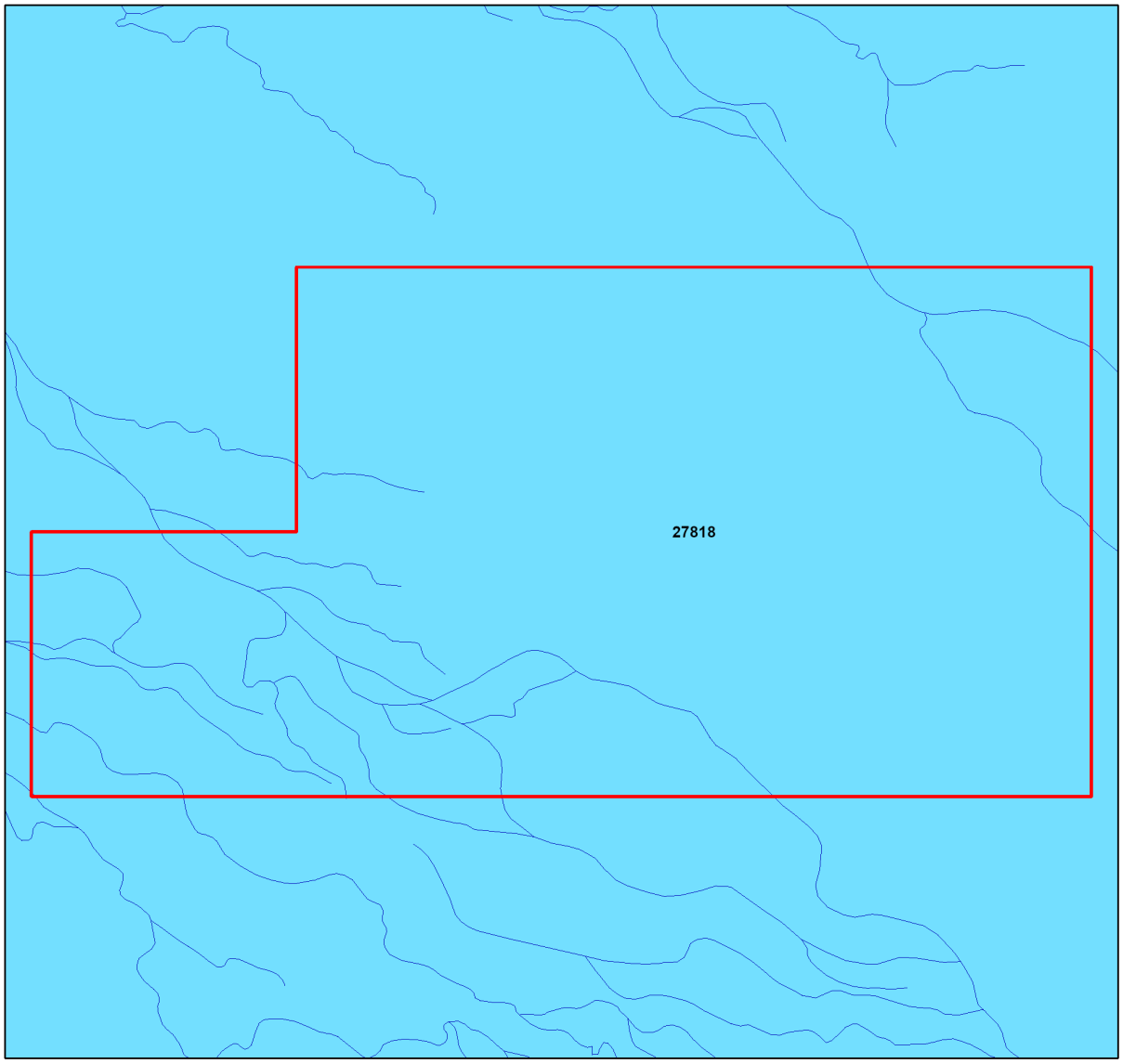
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Map 5 - Aquatic Conservation Assessment (ACA) - riverine



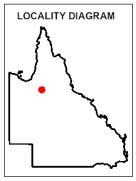
Aquatic Conservation Assessment (ACA) - riverine

Towns
Roads
Rivers/Creeks
Queensland

ACA Riverine - Subcatchment Significance

Very High
High
Medium
Low
Very Low
Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 420 840 1260 1680 2100 m

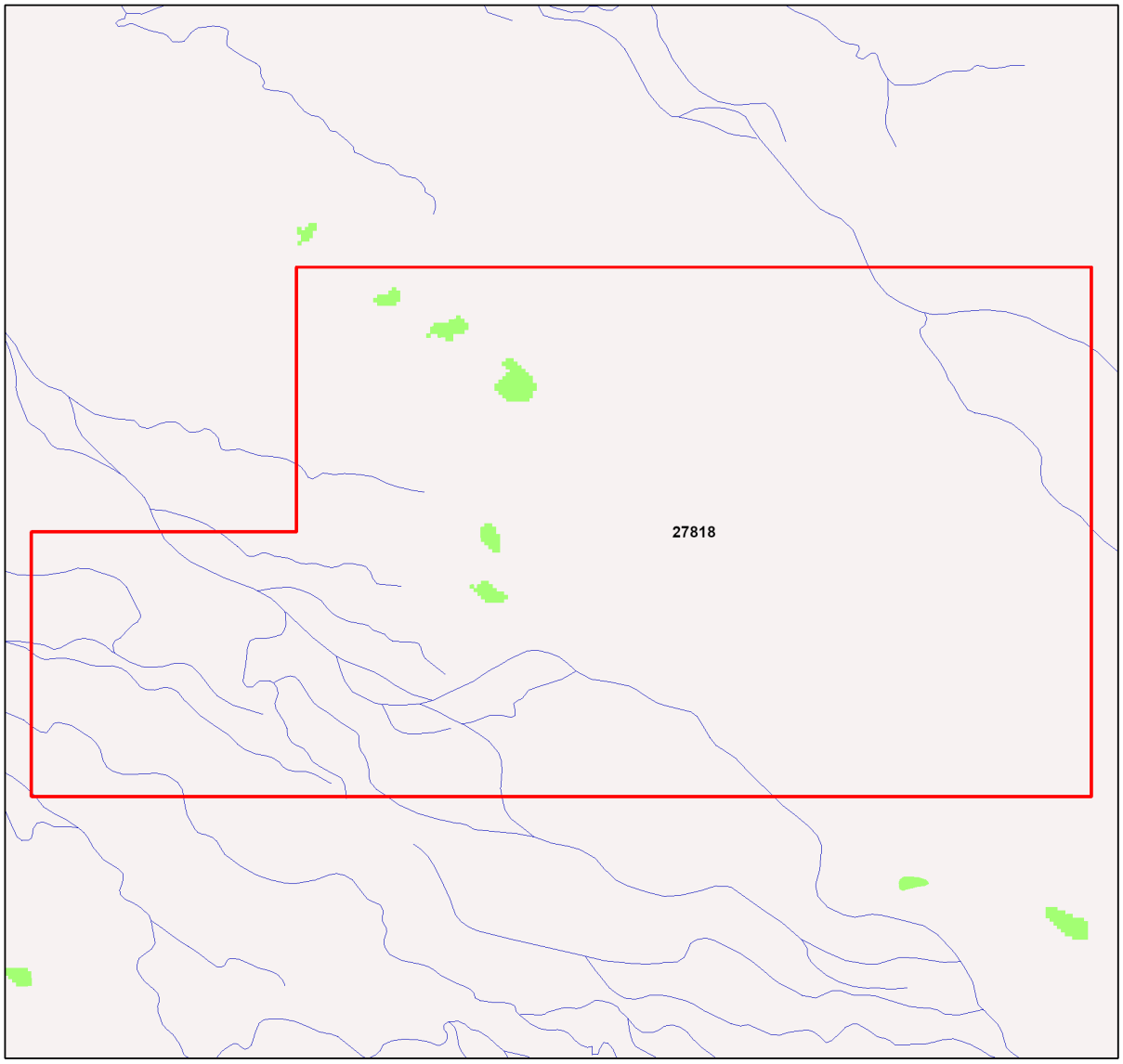
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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



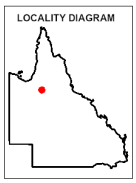
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 420 840 1260 1680 2100 m

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References

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Appendices

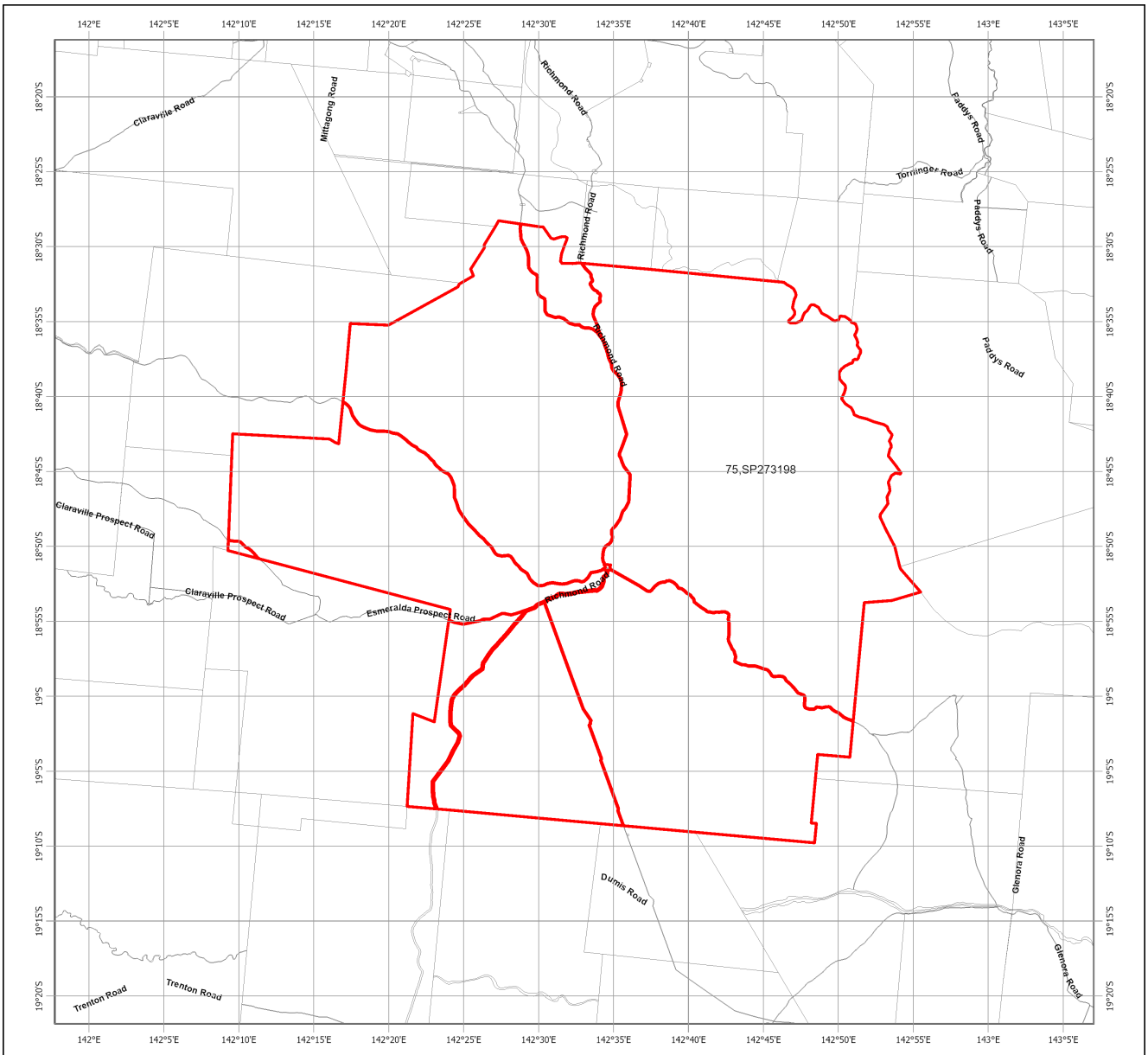
Appendix 1 - Source Data

Theme	Datasets
Aquatic Conservation Assessments Non-riverine*	Combination of the following datasets: Cape York Peninsula Non-riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Non-riverine v1.3 Lake Eyre and Bulloo Basins v1.1 QMDBB Non-riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Non-riverine ACA v1.1 Southern Gulf Catchments Non-riverine ACA v1.1 WBBGBRCC Non-riverine ACA v2.1
Aquatic Conservation Assessments Riverine*	Combination of the following datasets: Cape York Peninsula Riverine v1.1 Eastern Gulf of Carpentaria v1.1 Great Barrier Reef Catchment Riverine v1.1 Lake Eyre and Bulloo Basins v1.1 QMDBB Riverine ACA v2.1 Southeast Queensland ACA v1.1 WBB Riverine ACA v1.1 Southern Gulf Catchments Riverine ACA v1.1 WBBGBRCC Riverine ACA v2.1
Biodiversity Planning Assessments*	Combination of the following datasets: Brigalow Belt BPA v2.1 Cape York Peninsula BPA v1.1 Central Queensland Coast BPA v1.3 Channel Country BPA v1.1 Desert Uplands BPA v1.3 Einasleigh Uplands BPA v1.1 Gulf Plains BPA v1.1 Mitchell Grass Downs BPA v1.1 Mulga Lands BPA v1.4 New England Tableland v3.1 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.7
Threatened Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DETSI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.

These datasets are available at:
http://dds.information.qld.gov.au/DDS

Appendix 2 - Acronyms and Abbreviations

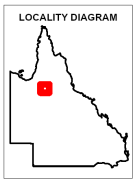
AOI	- Area of Interest
ACA	- Aquatic Conservation Assessment
AQUABAMM	- Aquatic Biodiversity Assessment and Mapping Methodology
BAMM	- Biodiversity Assessment and Mapping Methodology
BoT	- Back on Track
BPA	- Biodiversity Planning Assessment
CAMBA	- China-Australia Migratory Bird Agreement
DETSI	- Department of the Environment, Tourism, Science and Innovation
EPBC	- *Environment Protection and Biodiversity Conservation Act 1999*
EVNT	- Endangered, Vulnerable, Near Threatened
GDA2020	- Geocentric Datum of Australia 2020
GIS	- Geographic Information System
JAMBA	- Japan-Australia Migratory Bird Agreement
NCA	- *Nature Conservation Act 1992*
RE	- Regional Ecosystem
REDD	- Regional Ecosystem Description Database
ROKAMBA	- Republic of Korea-Australia Migratory Bird Agreement



Map of Great Barrier Reef Wetland Protection Areas

Cadastral Boundary
Wetland in a wetland protection area
Great Barrier Reef wetland protection area
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 6000 12000 18000 24000 30000 m

This product is displayed in GDA2020

Note:
This map shows the location of wetland protection areas which are defined under the Environmental Protection Regulation 2019. Within wetland protection areas, certain types of development involving high impact earthworks are made assessable under the Planning Regulation 2017.

The State Assessment and Referral Agency (SARA) is part of the State government department administering the Planning Act 2016. SARA is the assessment manager for assessable development involving high impact earthworks within wetland protection areas. The Department of the Environment, Tourism, Science and Innovation is a technical agency.

The policy outcome and assessment criteria for assessing these applications are described in the State Development Assessment Provisions (SDAP) State Code 9 : Great Barrier Reef Wetland Protection Areas.

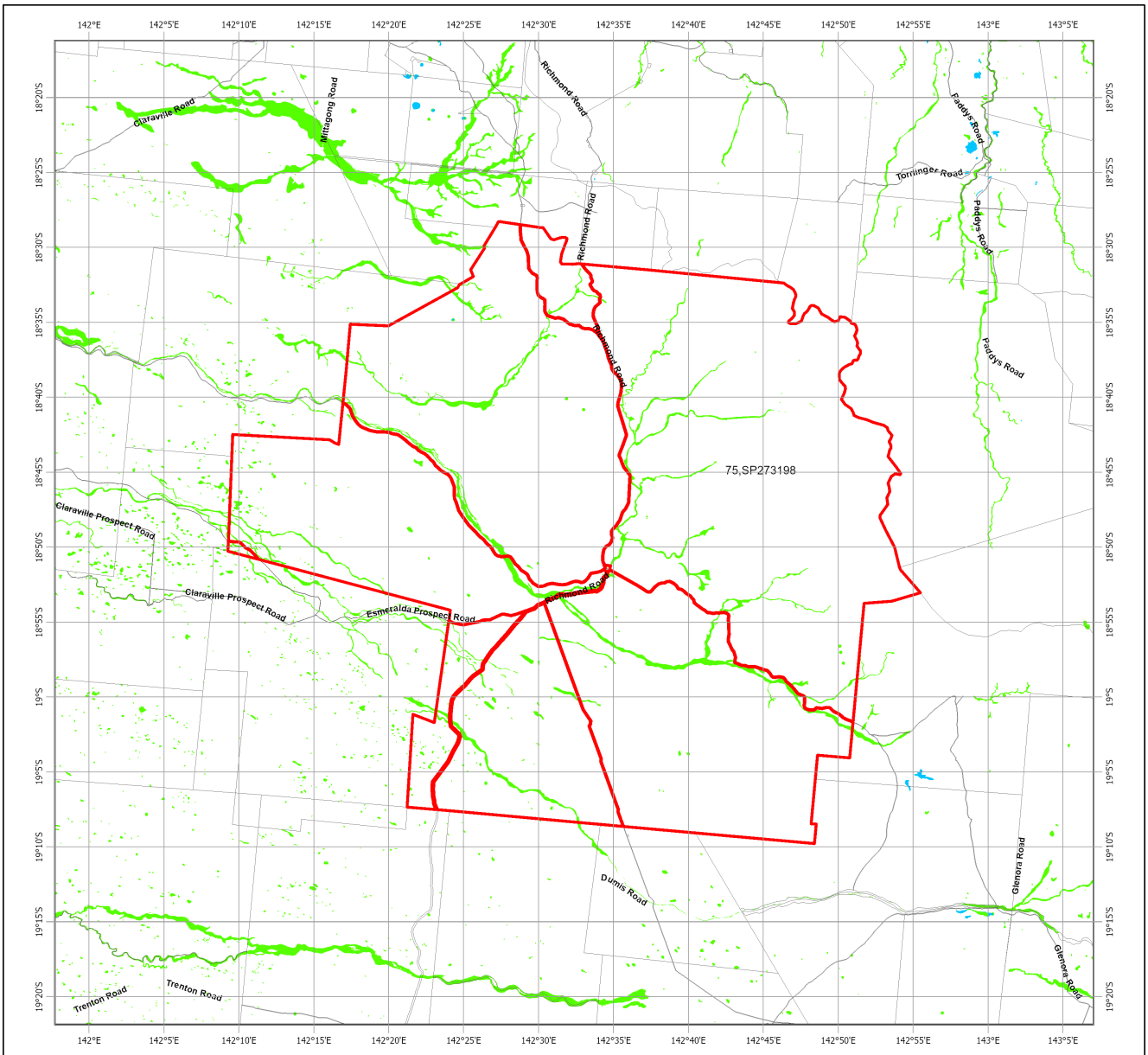
High impact earthworks carried out for electricity operating works or government supported transport infrastructure is accepted development if it complies with schedule 14 of the Planning Regulation 2017.

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Map of Queensland Wetland Environmental Values

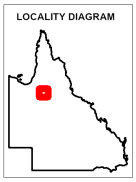
Cadastral Boundary

High ecological values waters management intent

Wetlands assessed under section 7

- GBR wetland of high ecological significance
- Wetland of high ecological significance
- Wetland of general ecological significance

Selected Lot and Plan



N

Note:
This map shows the location of wetlands on the Map of Queensland Wetland Environmental Values under the Environmental Protection (Wetland and Water Biodiversity) Policy 2019. The map also shows high ecological value waters management intent under Schedule 2 of the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.

Wetlands are assessed for ecological significance using the environmental values for wetlands in section 7 of the Environmental Protection (Wetland and Water Biodiversity) Policy 2019. Wetlands are considered either High Ecological Significance (HES) or of General Ecological Significance (GES) for the purposes of the environmental values.

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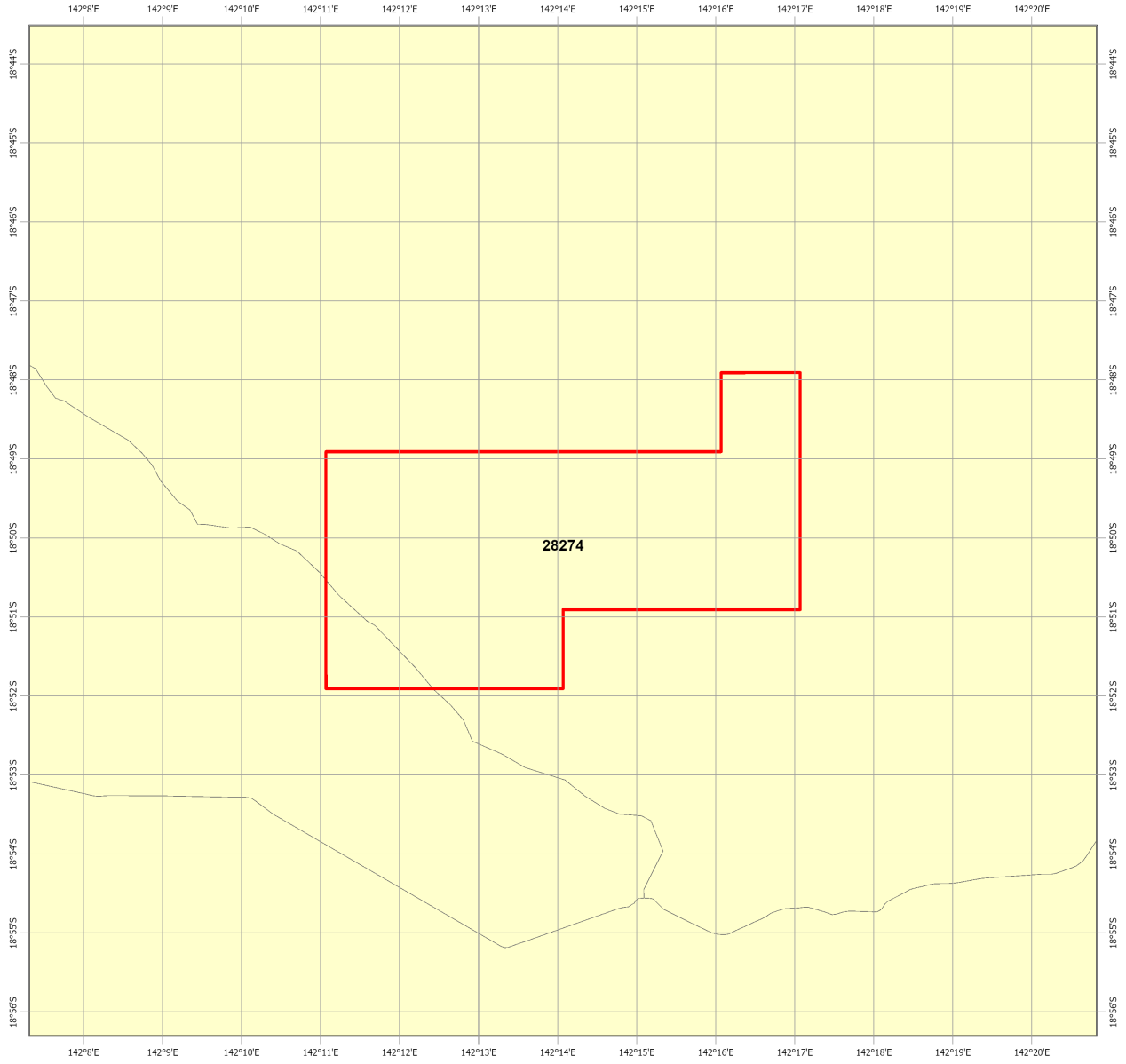
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Centred on tenure: EPM: 28274

Map requested: 03/12/2025 18:45:35



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Seaward Side of Highest Astronomical Tide
- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Exploration Permit Mineral (EPM)

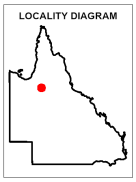
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

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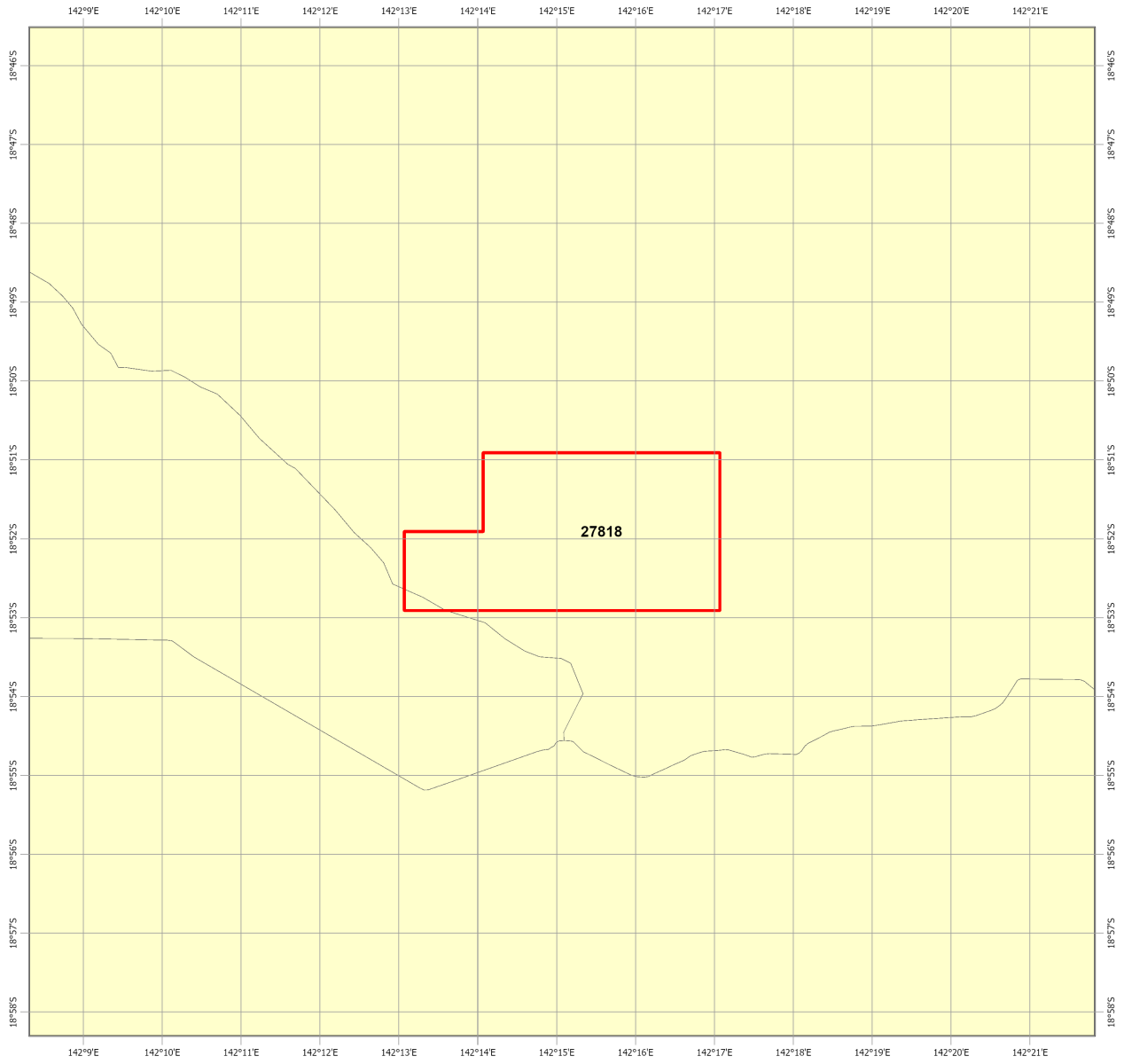
Appendix 1 - Source Data

Environmentally Sensitive Areas - Category A
Queensland Spatial Catalogue : Queensland Government

Environmentally Sensitive Areas - Category B
Queensland Spatial Catalogue : Queensland Government

Centred on tenure: EPM: 27818

Map requested: 03/12/2025 18:46:27



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Seaward Side of Highest Astronomical Tide
- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Exploration Permit Mineral (EPM)

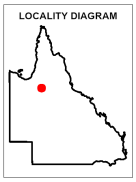
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

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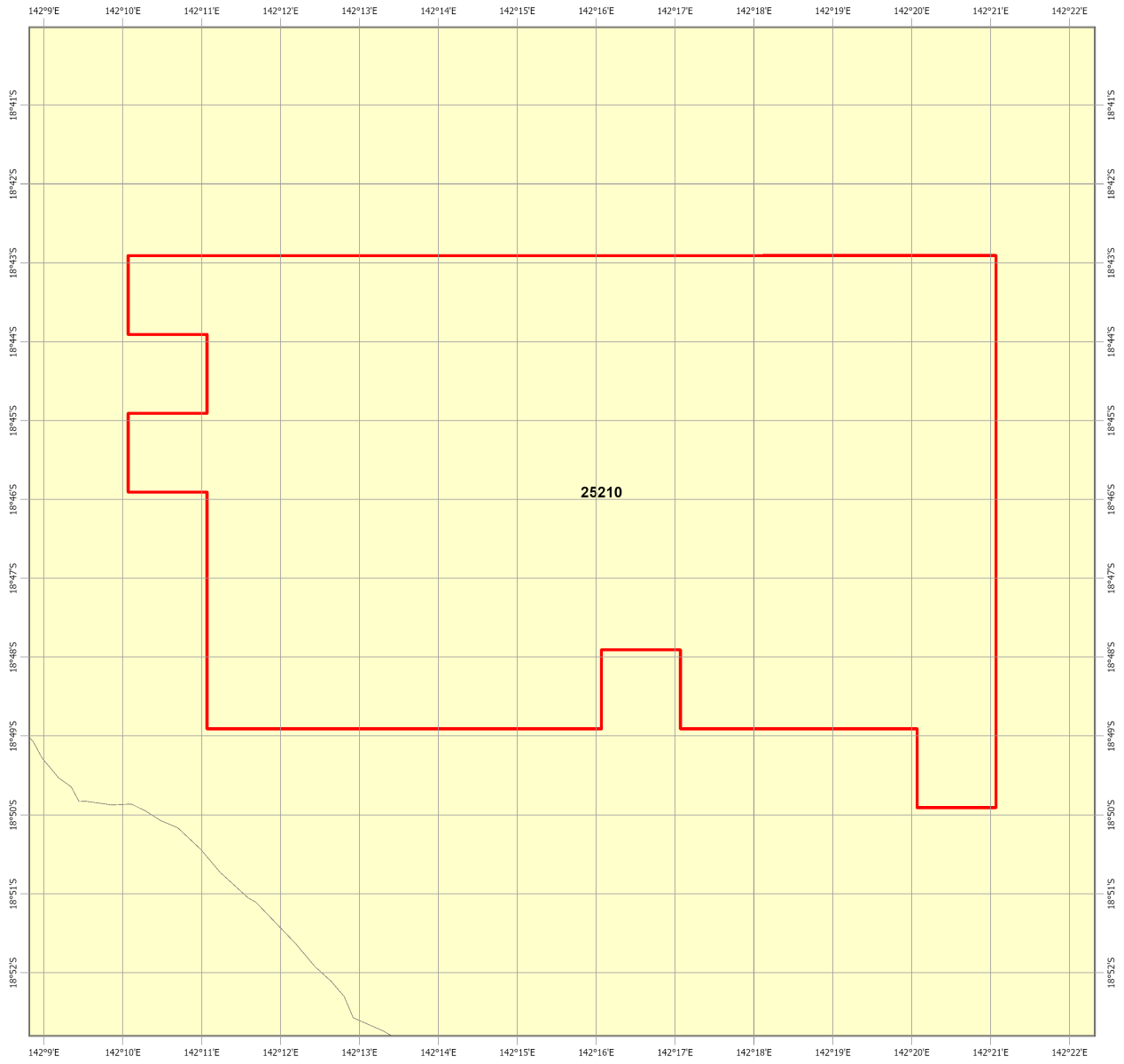
Appendix 1 - Source Data

Environmentally Sensitive Areas - Category A
Queensland Spatial Catalogue : Queensland Government

Environmentally Sensitive Areas - Category B
Queensland Spatial Catalogue : Queensland Government

Centred on tenure: EPM: 25210

Map requested: 03/12/2025 18:46:41



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
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- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Exploration Permit Mineral (EPM)

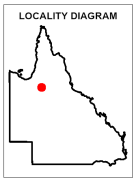
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

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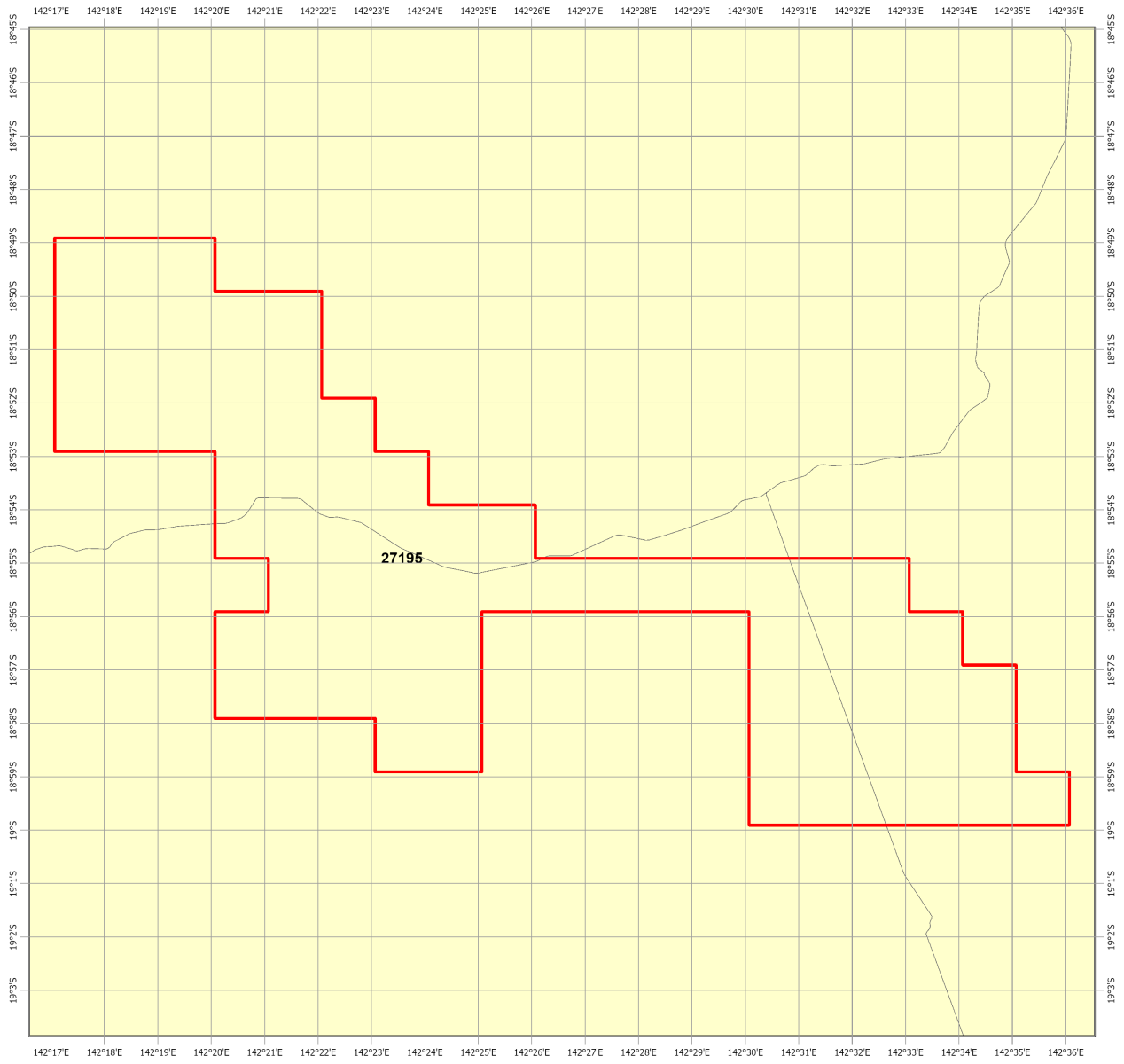
Appendix 1 - Source Data

Environmentally Sensitive Areas - Category A
Queensland Spatial Catalogue : Queensland Government

Environmentally Sensitive Areas - Category B
Queensland Spatial Catalogue : Queensland Government

Centred on tenure: EPM: 27195

Map requested: 03/12/2025 18:47:28



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
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- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Exploration Permit Mineral (EPM)

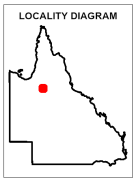
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

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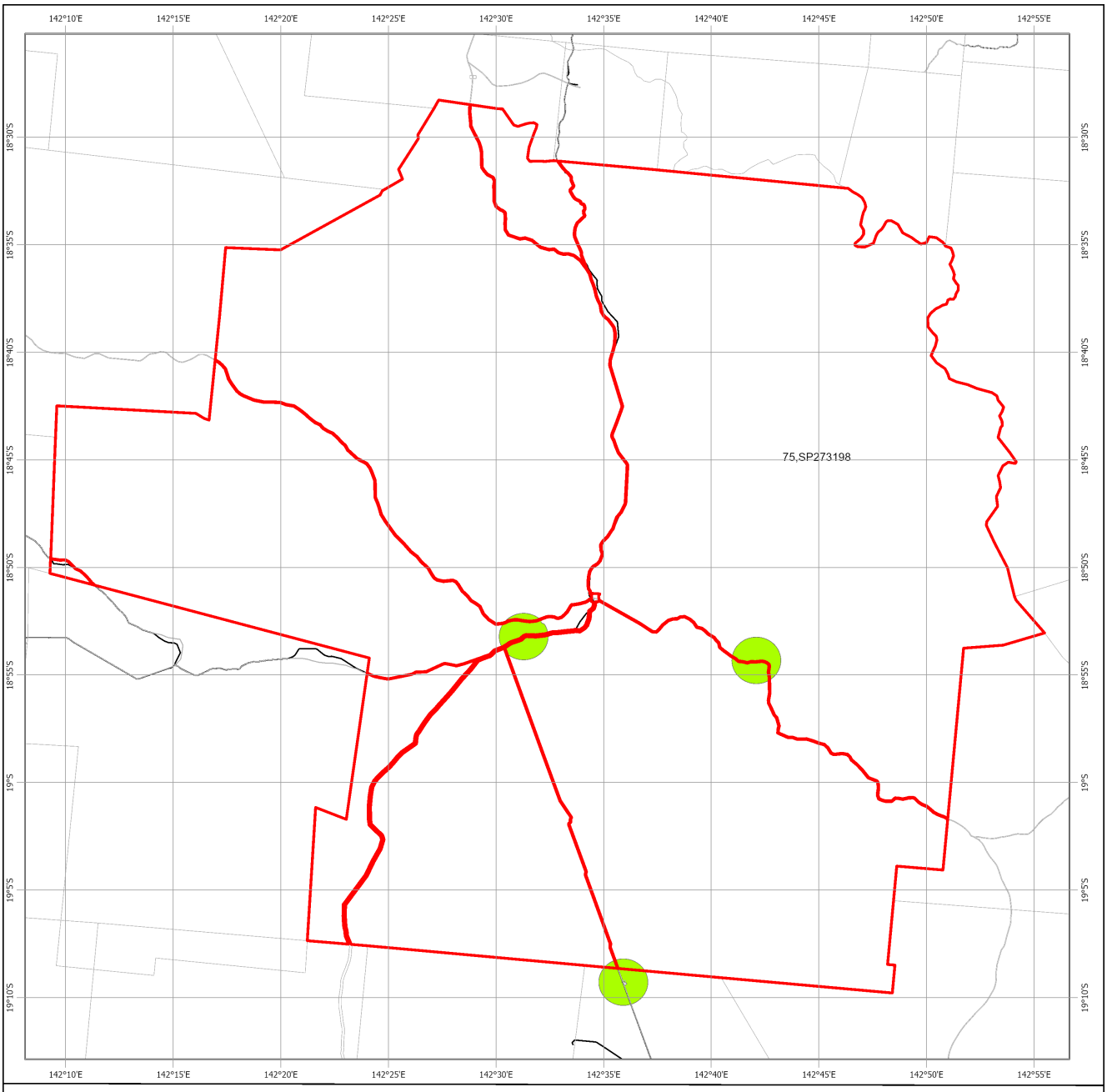
Queensland Government

Appendices

Appendix 1 - Source Data

Environmentally Sensitive Areas - Category A
Queensland Spatial Catalogue : Queensland Government

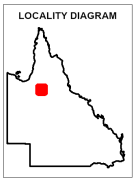
Environmentally Sensitive Areas - Category B
Queensland Spatial Catalogue : Queensland Government



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 3,000 6,000 9,000 12,000 15,000 m

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

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Protected plants flora survey trigger map

The protected plants flora survey trigger map identifies 'high risk areas' where endangered, vulnerable or near threatened plants are known to exist or are likely to exist. Under the *Nature Conservation Act 1992* (the Act) it is an offence to clear protected plants that are 'in the wild' unless you are authorised or the clearing is exempt, for more information see section 89 of the Act.

Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for information on what exemptions may apply in your circumstances, whether you may need to undertake a flora survey, and whether you may need a protected plants clearing permit.

Updates to the data informing the flora survey trigger map
The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information
Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.

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Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

EPM: 28274

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

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

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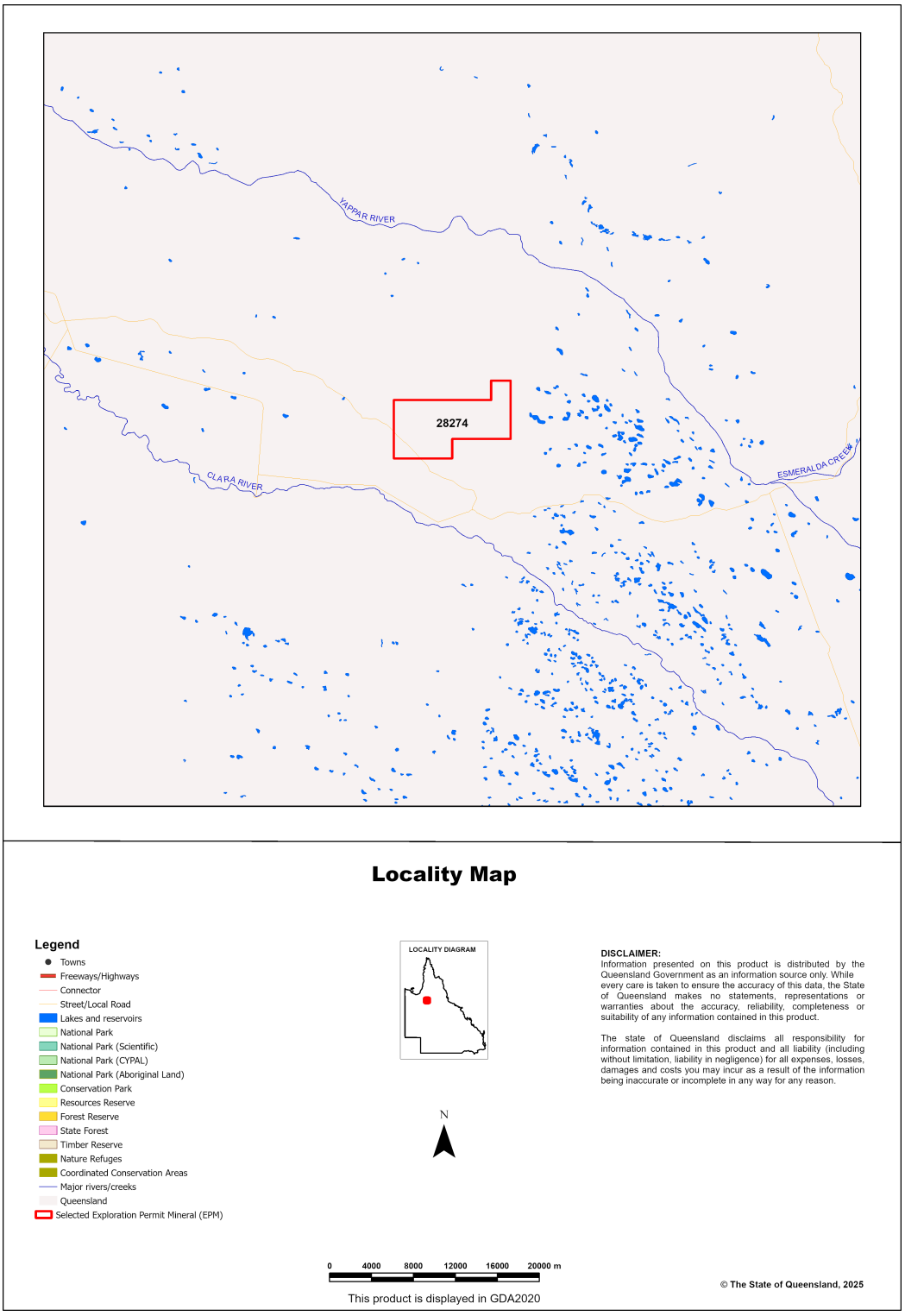
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Assessment Area Details

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

Table 1: Summary table, details for AOI: EPM: 28274, with area 5184.83 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains



Matters of State Environmental Significance (MSES)

MSES Categories

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

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

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

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

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

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

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

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

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

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

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

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

MSES Values Present

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

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0 ha	0.0%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0 ha	0.0%
8e Regulated Vegetation - intersecting a watercourse	55.7 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	47.77 ha	0.9%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

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

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

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

(no results)

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

(no results)

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

(no results)

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

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Not applicable

7b. Special least concern animals

Not applicable

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

Not applicable

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

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

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

Threatened (endangered or vulnerable) wildlife species records

(No results)

Special least concern animal species records

(No results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

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

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

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

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

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

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

Not applicable

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

Not applicable

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

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

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

Regulated vegetation map category	Map number
B	7360

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

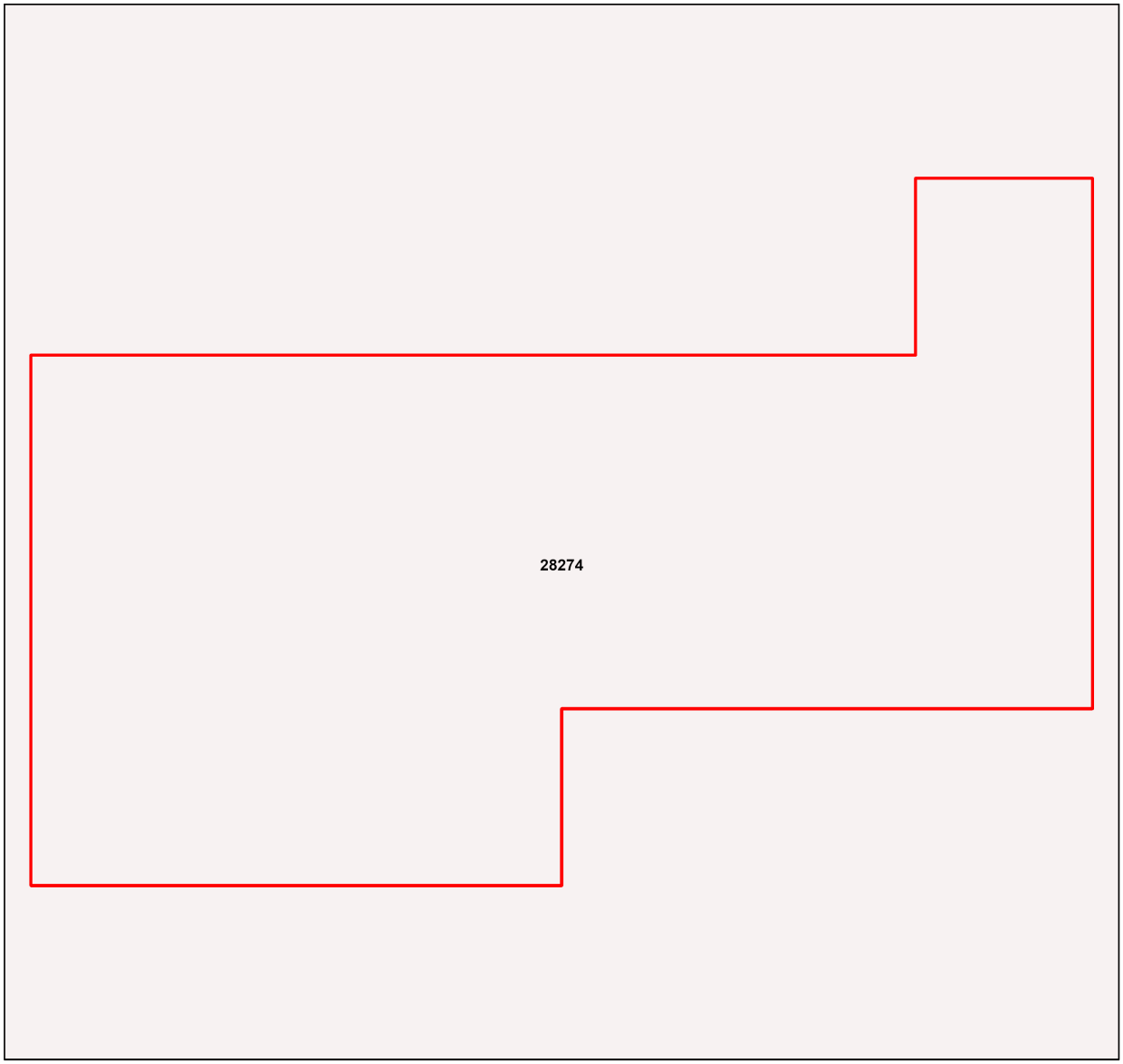
(No results)

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

(No results)

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

Map 1 - MSES - State Conservation Areas



MSES - State Conservation Areas

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



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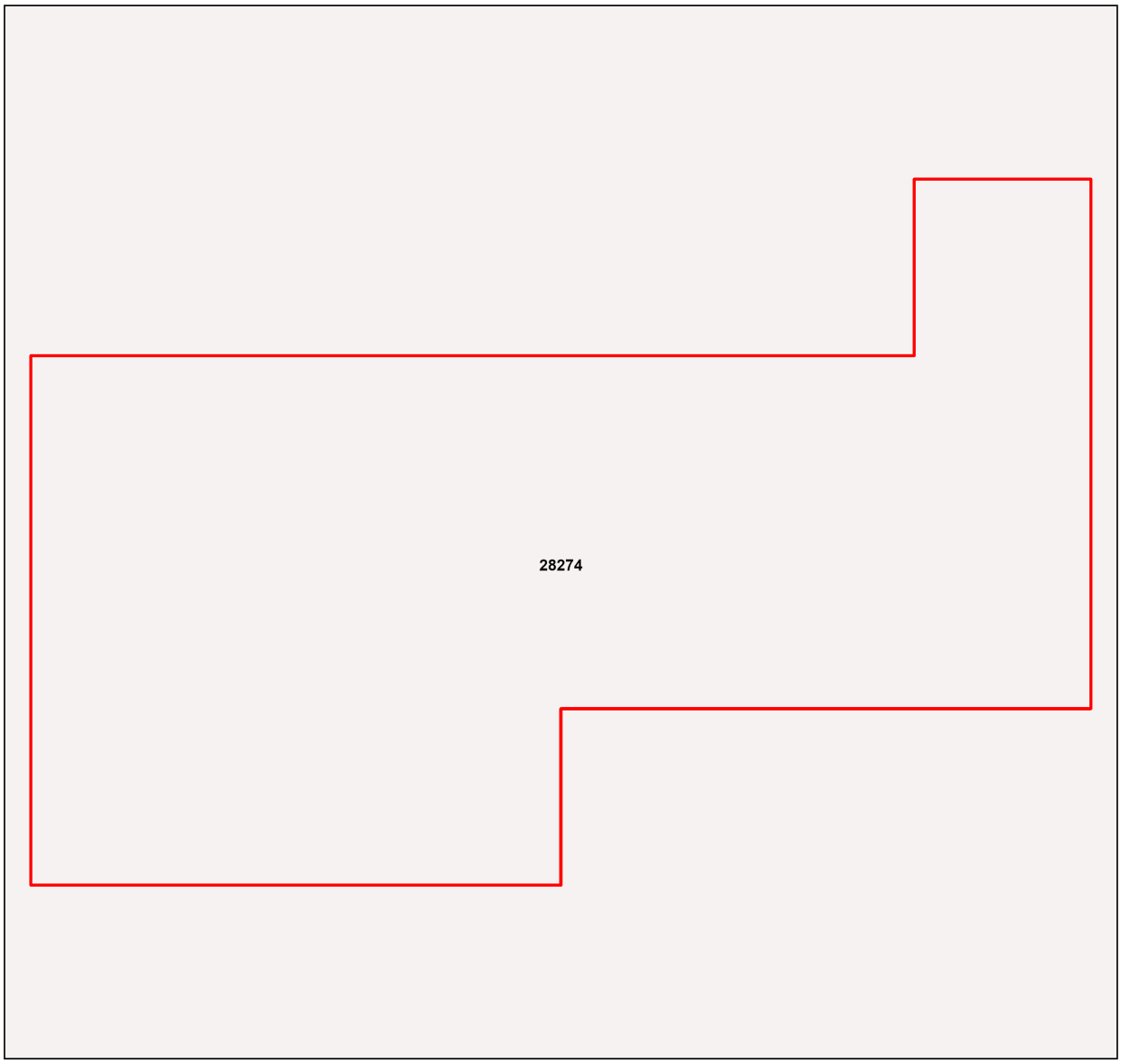




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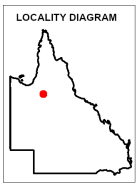
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Map 2 - MSES - Wetlands and Waterways



MSES - Wetlands and Waterways

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands
- Selected Exploration Permit Mineral (EPM)



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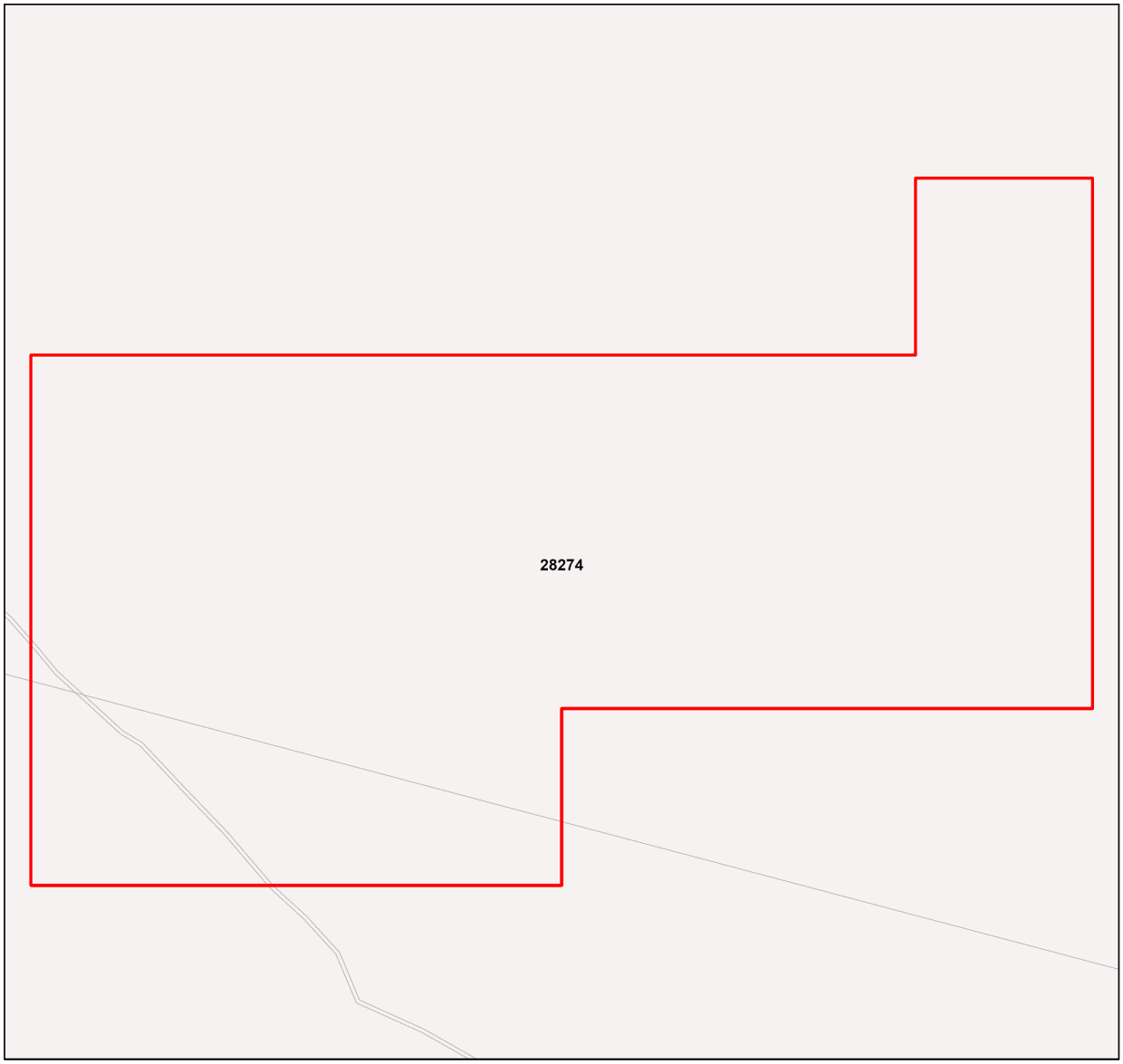
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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



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

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)
- Selected Exploration Permit Mineral (EPM)



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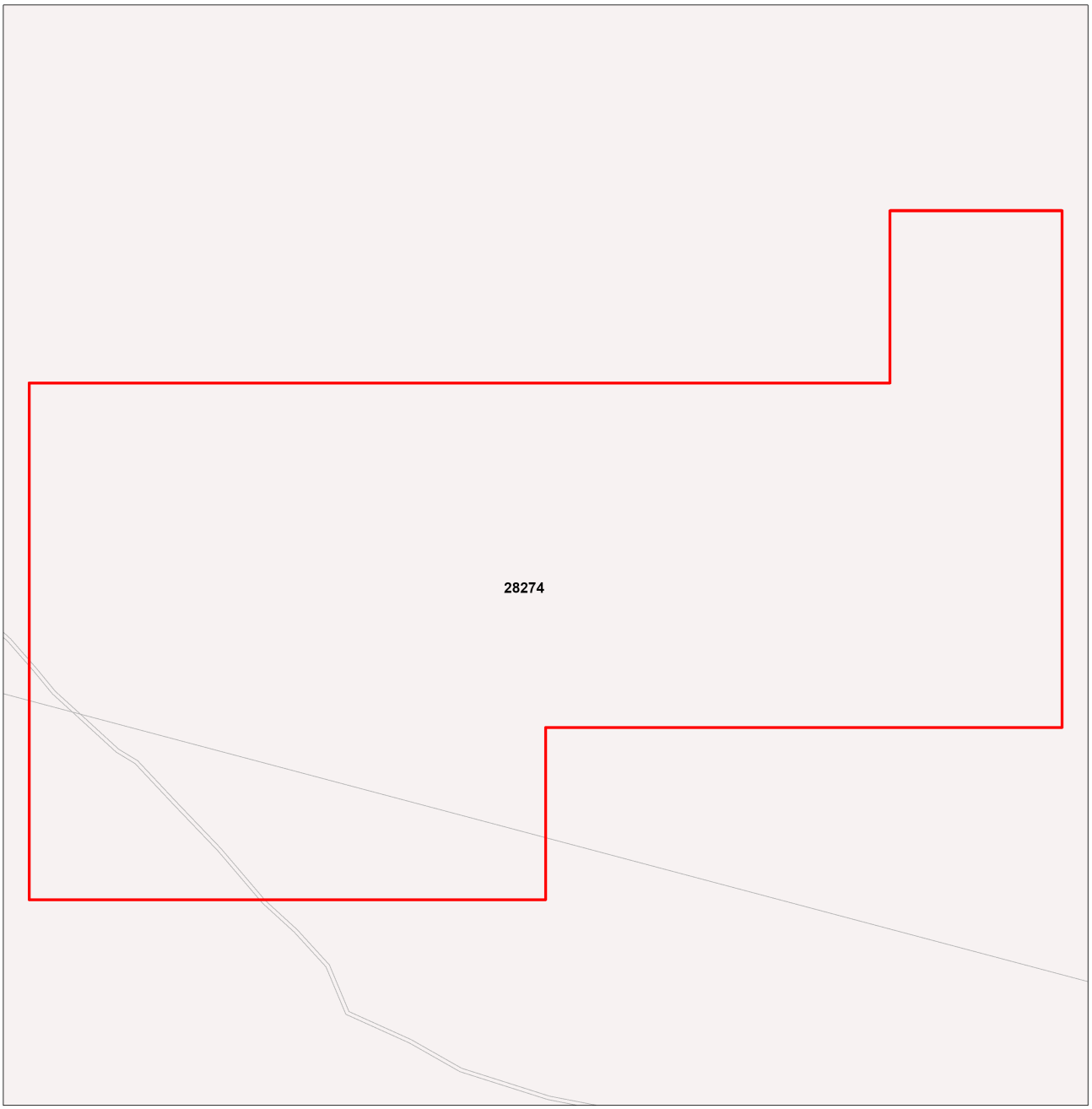
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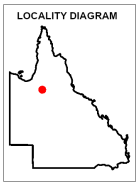
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



0 600 1,200 1,800 2,400 3,000 m

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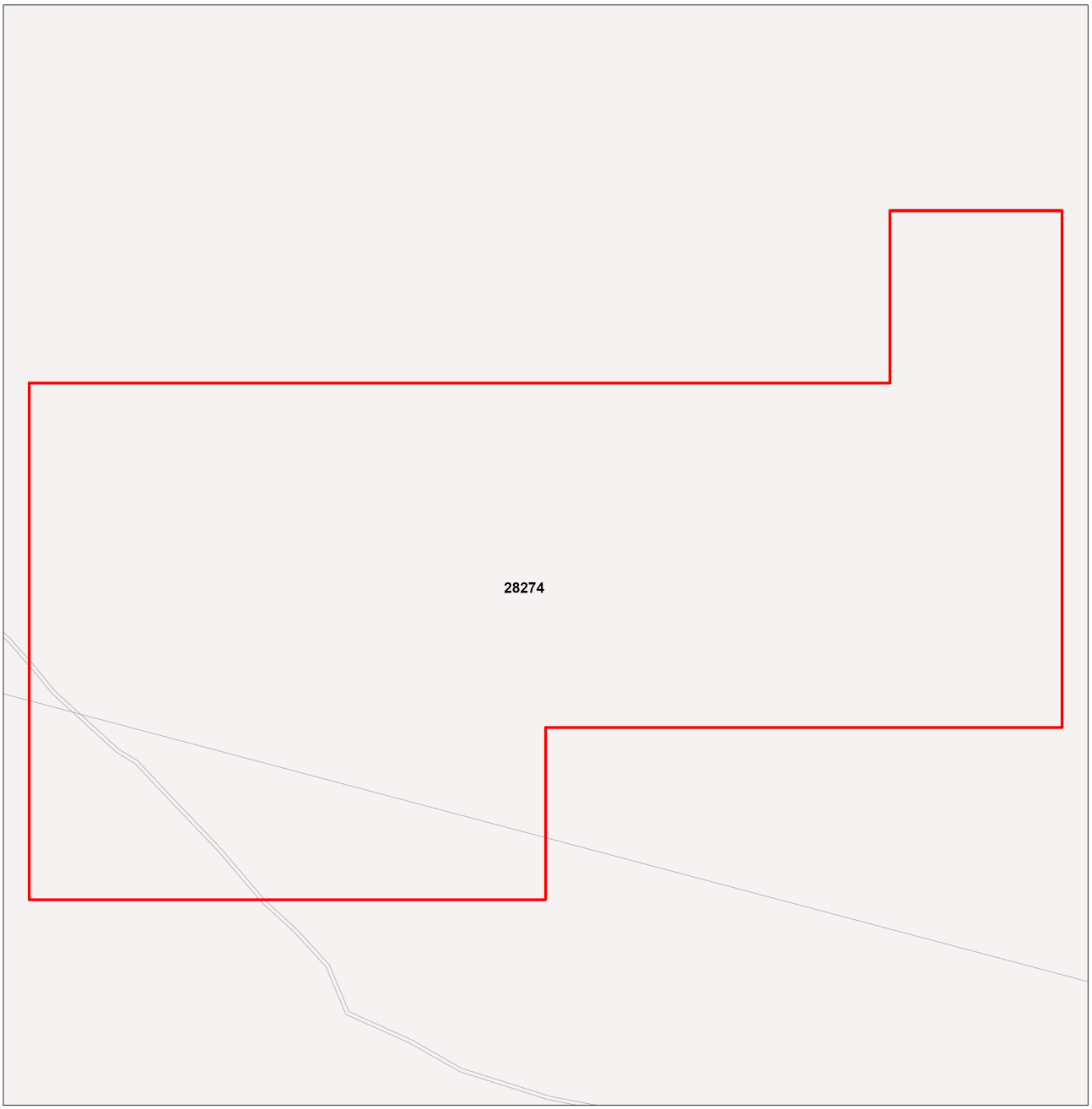
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The represented layers for SEQ 'koala habitat area-core' and 'koala habitat area- locally refined' in MSES are sourced directly from the regulatory mapping under the Nature Conservation (Koala) Conservation Plan 2017. Whilst every effort is made to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

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

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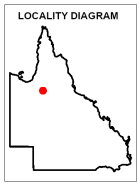
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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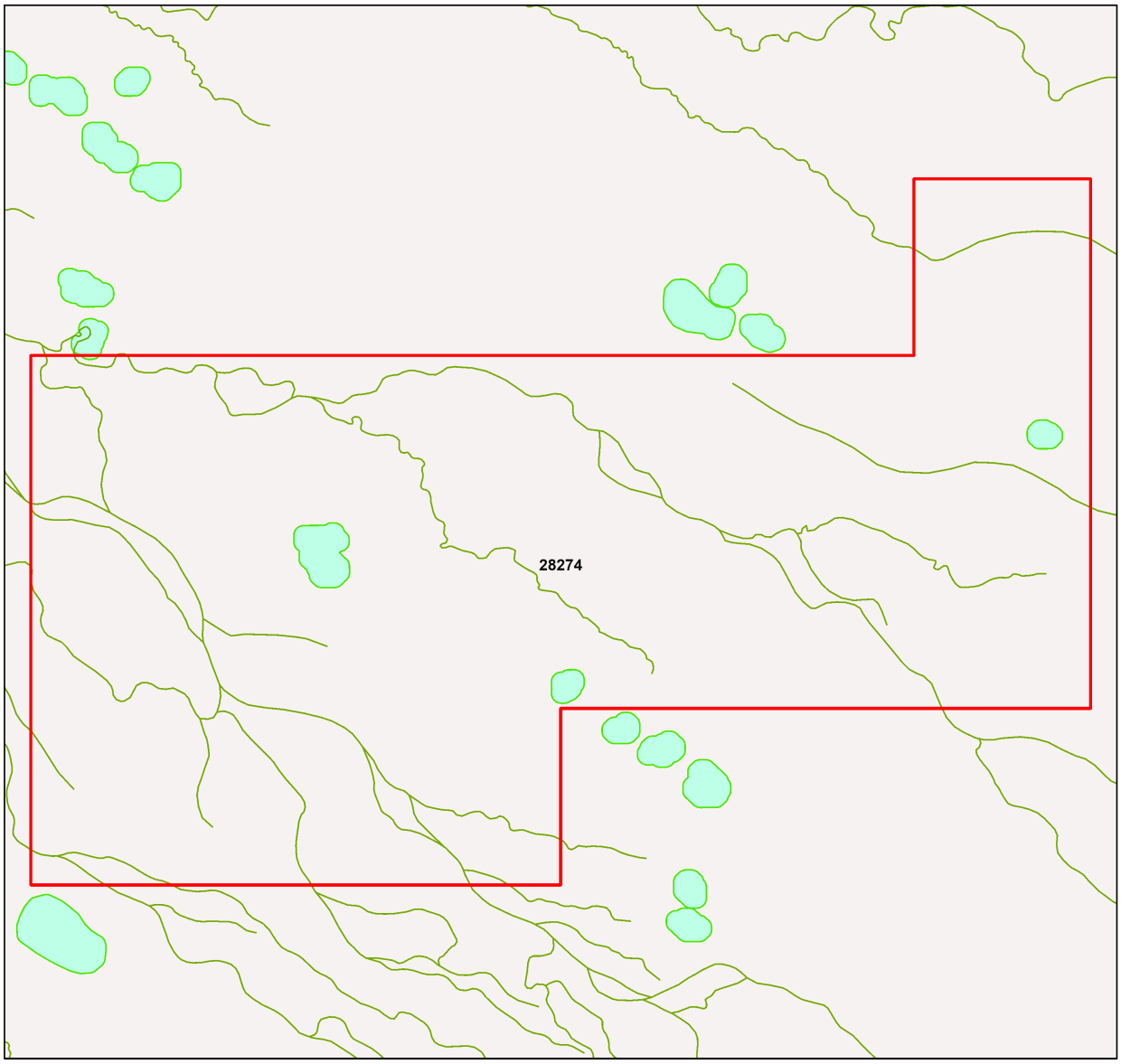
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and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

0 600 1,200 1,800 2,400 3,000 m

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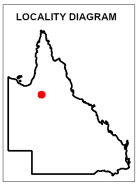
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Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)
- Selected Exploration Permit Mineral (EPM)



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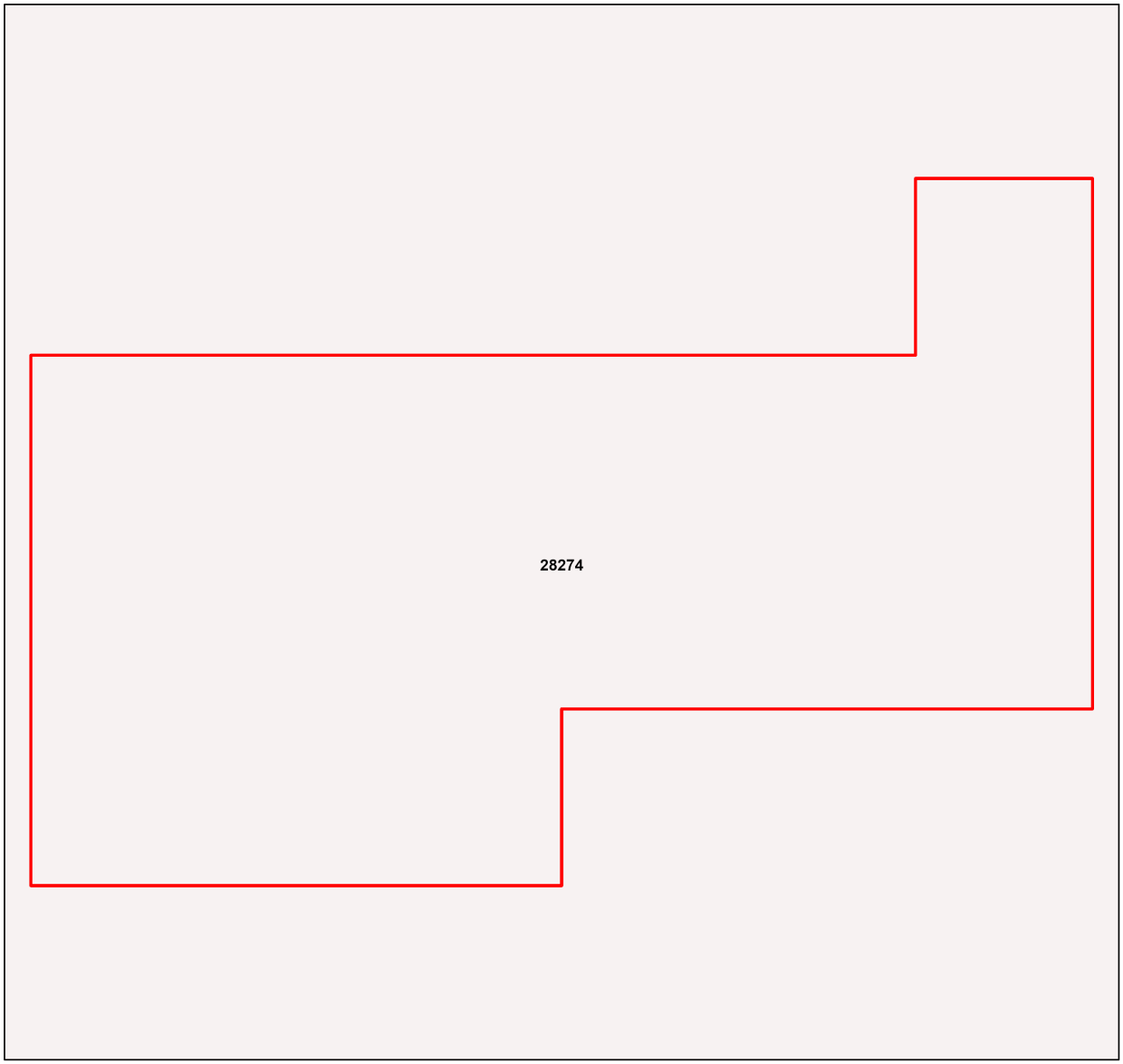
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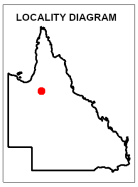
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Map 5 - MSES - Offset Areas



MSES - Offsets

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Legally secured offset area (offset register)
- Legally secured offset area (vegetation offsets)
- Selected Exploration Permit Mineral (EPM)



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Appendices

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

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

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

Appendix 2 - Source Data

The datasets listed below are available on request from:

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

- Matters of State environmental significance

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

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

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

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

EPM: 25210

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

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

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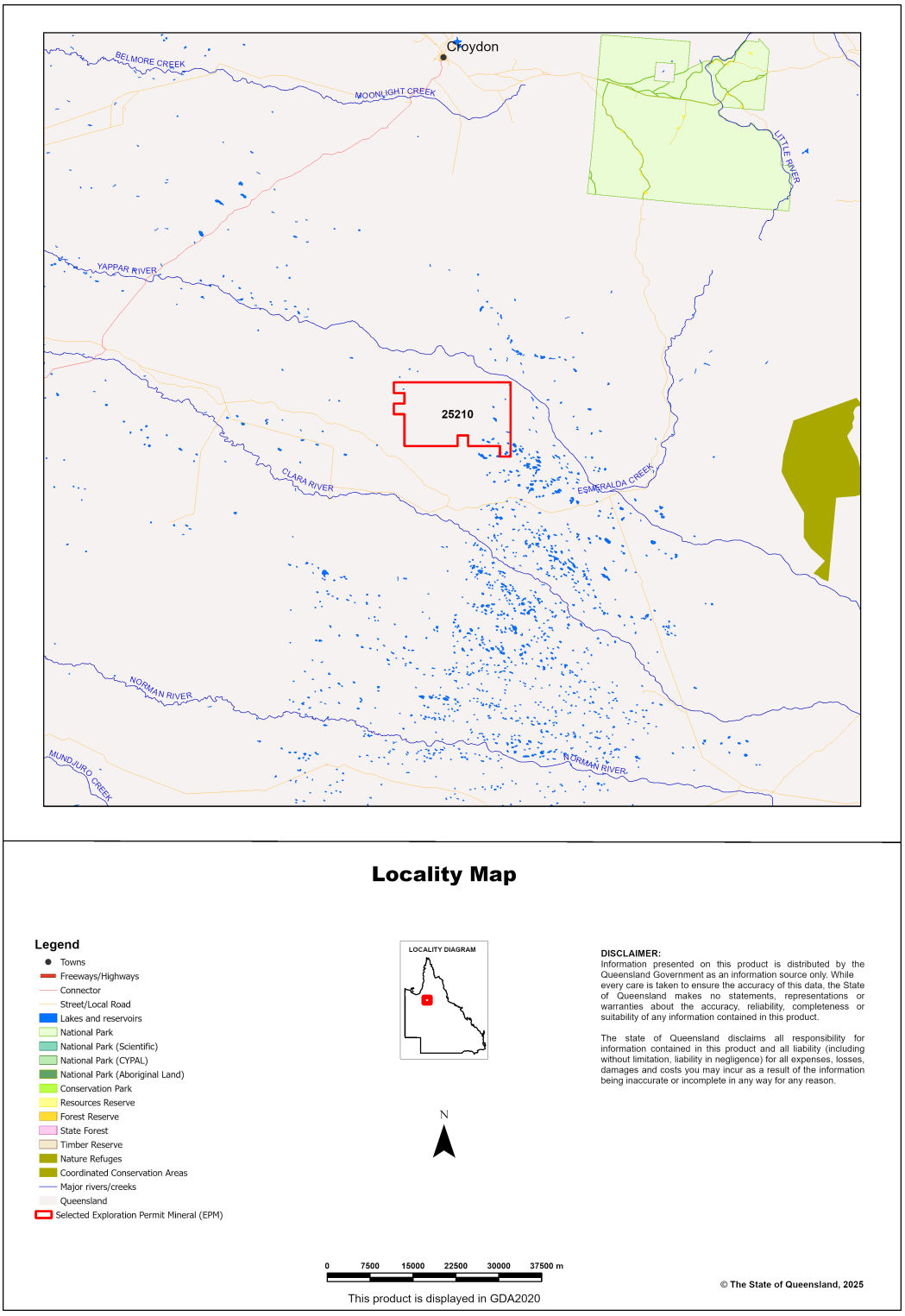
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Assessment Area Details

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

Table 1: Summary table, details for AOI: EPM: 25210, with area 20099.51 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains



Matters of State Environmental Significance (MSES)

MSES Categories

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

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

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

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

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

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

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

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

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

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

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

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

MSES Values Present

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

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0 ha	0.0%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0 ha	0.0%
8e Regulated Vegetation - intersecting a watercourse	133.8 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	403.14 ha	2.0%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

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

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

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

(no results)

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

(no results)

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

(no results)

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

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Not applicable

7b. Special least concern animals

Not applicable

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

Not applicable

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

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

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

Threatened (endangered or vulnerable) wildlife species records

(No results)

Special least concern animal species records

(No results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

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

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

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

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

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

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

Not applicable

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

Not applicable

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

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

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

Regulated vegetation map category	Map number
B	7360

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

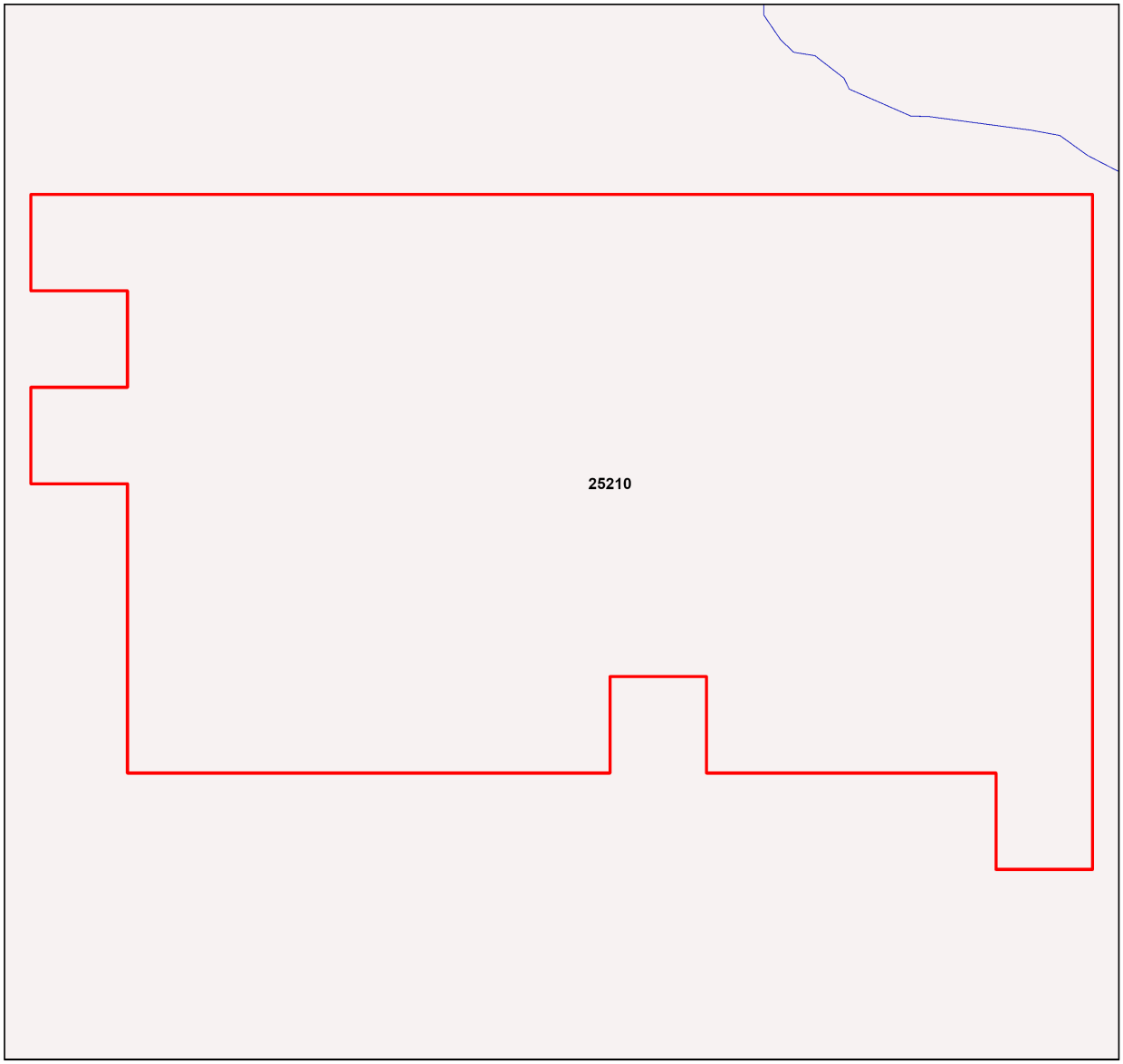
(No results)

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

(No results)

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

Map 1 - MSES - State Conservation Areas



MSES - State Conservation Areas

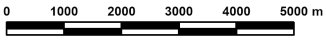
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Protected area (estates, nature refuges, special wildlife reserves)
- Declared fish habitat area (A and B areas)
- Marine park (highly protected)
- Selected Exploration Permit Mineral (EPM)



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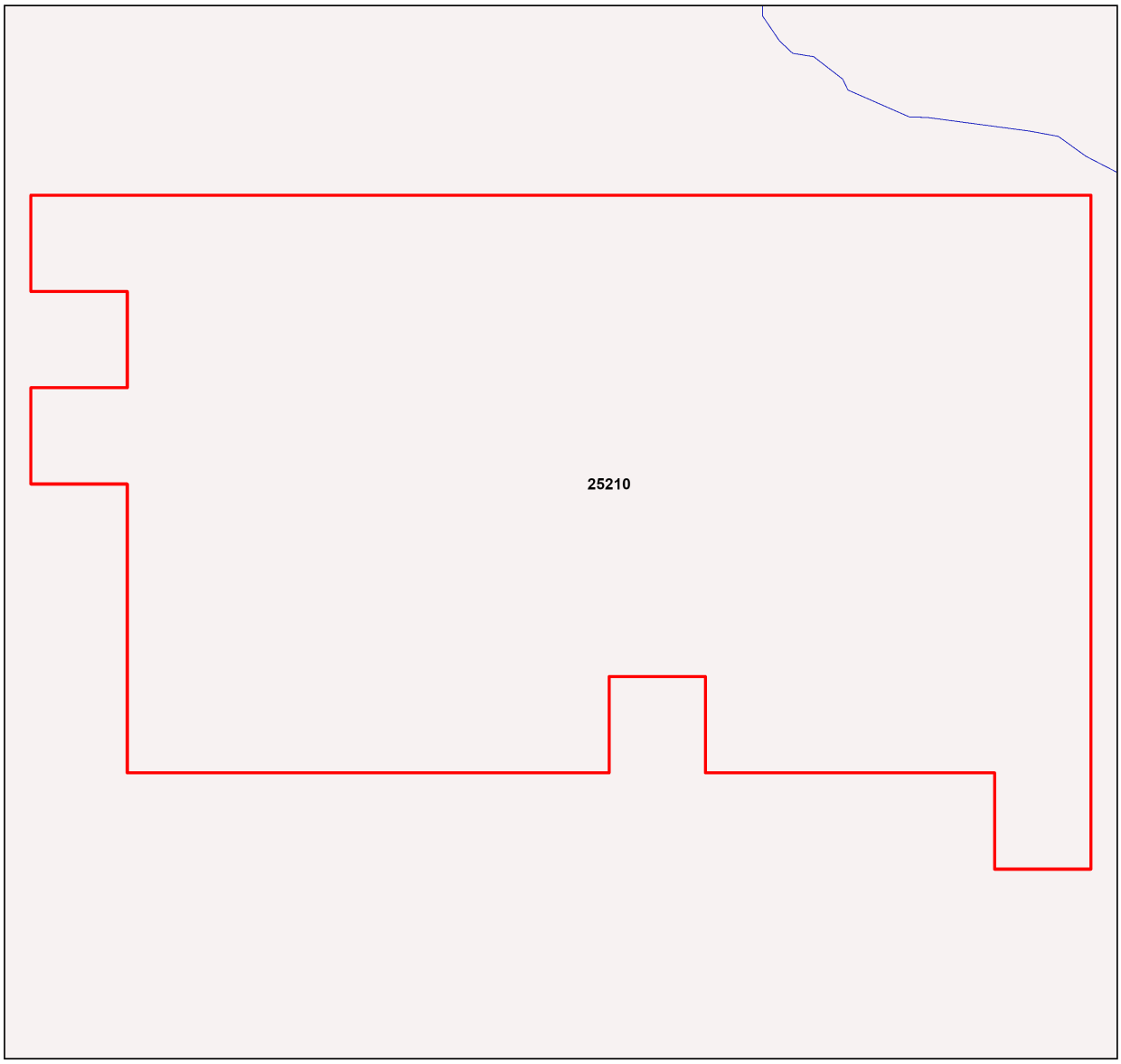




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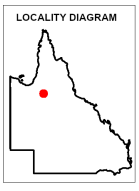
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Map 2 - MSES - Wetlands and Waterways



MSES - Wetlands and Waterways

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands
- Selected Exploration Permit Mineral (EPM)



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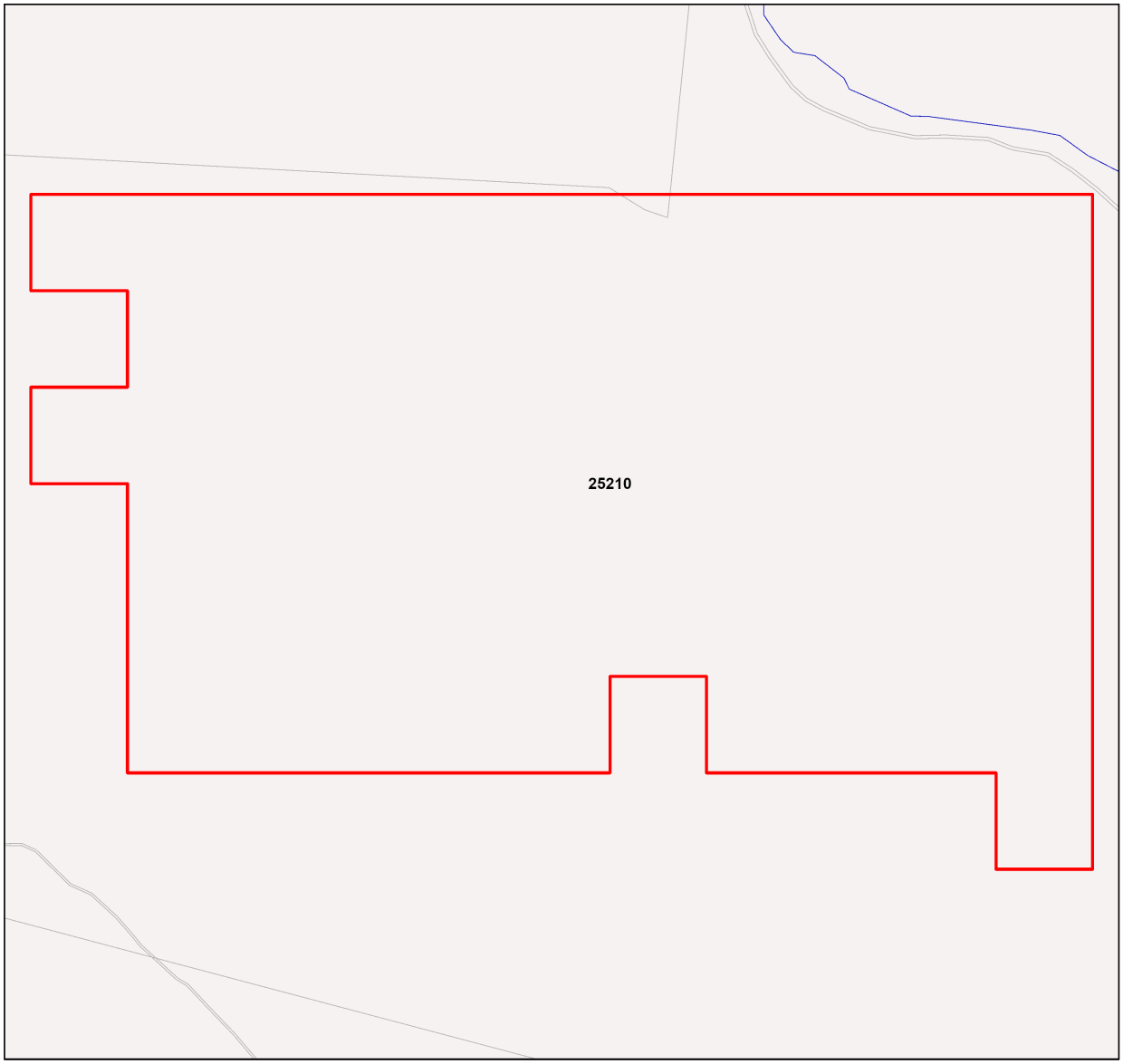
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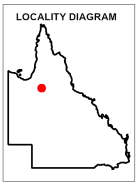
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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



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

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)
- Selected Exploration Permit Mineral (EPM)



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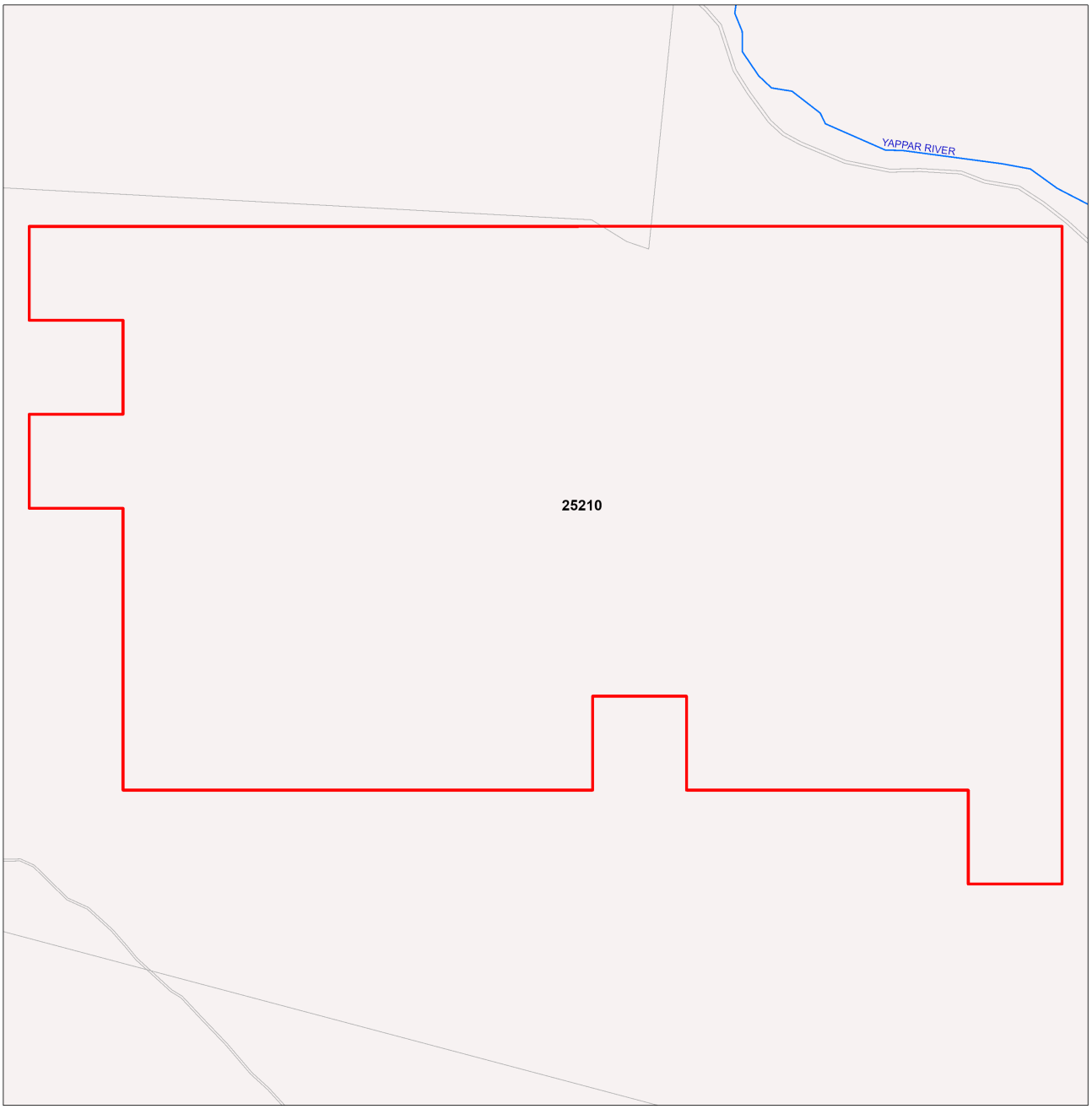
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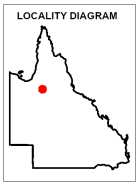
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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

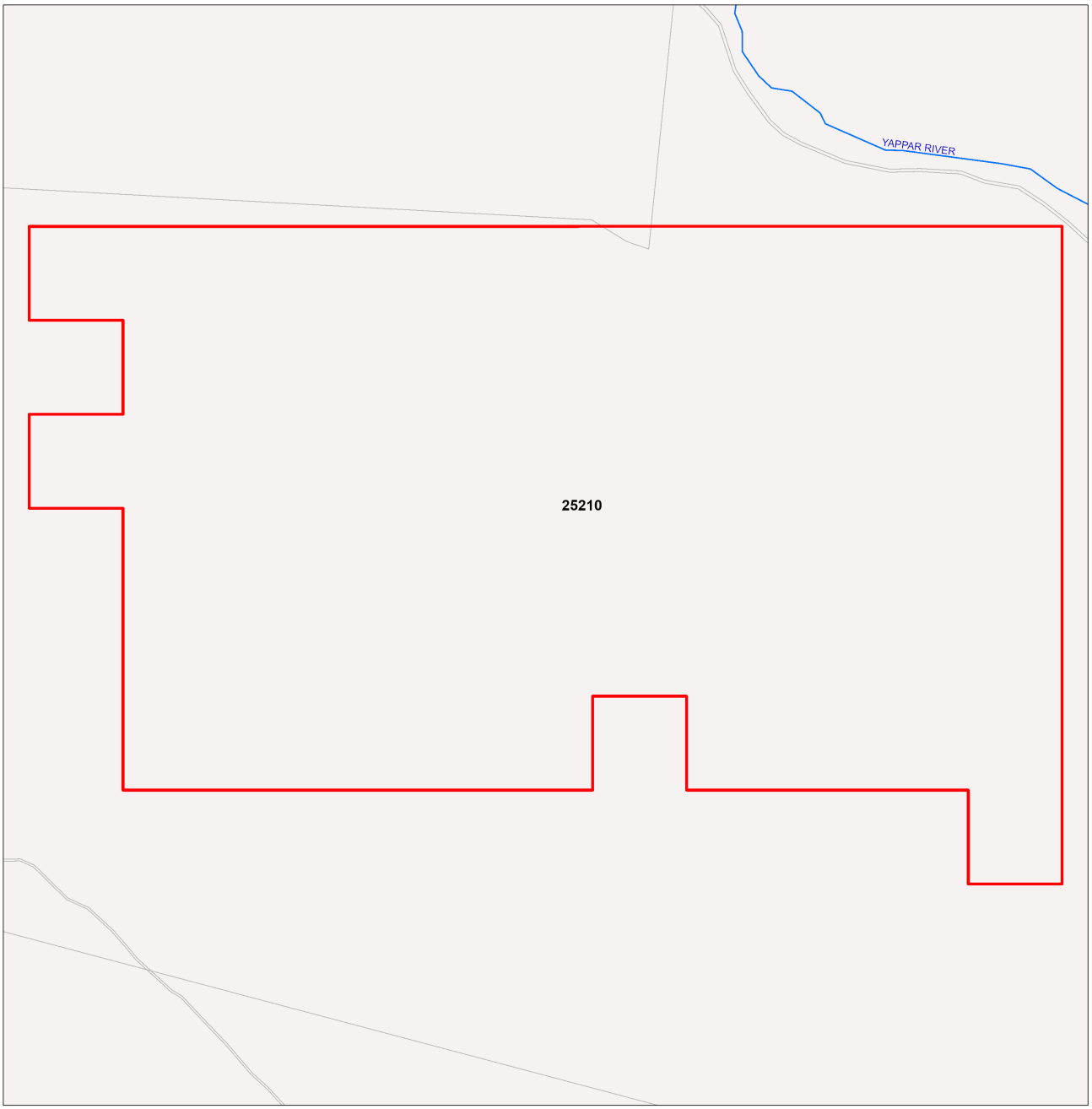
The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

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0 1,000 2,000 3,000 4,000 5,000 m

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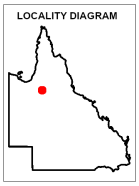
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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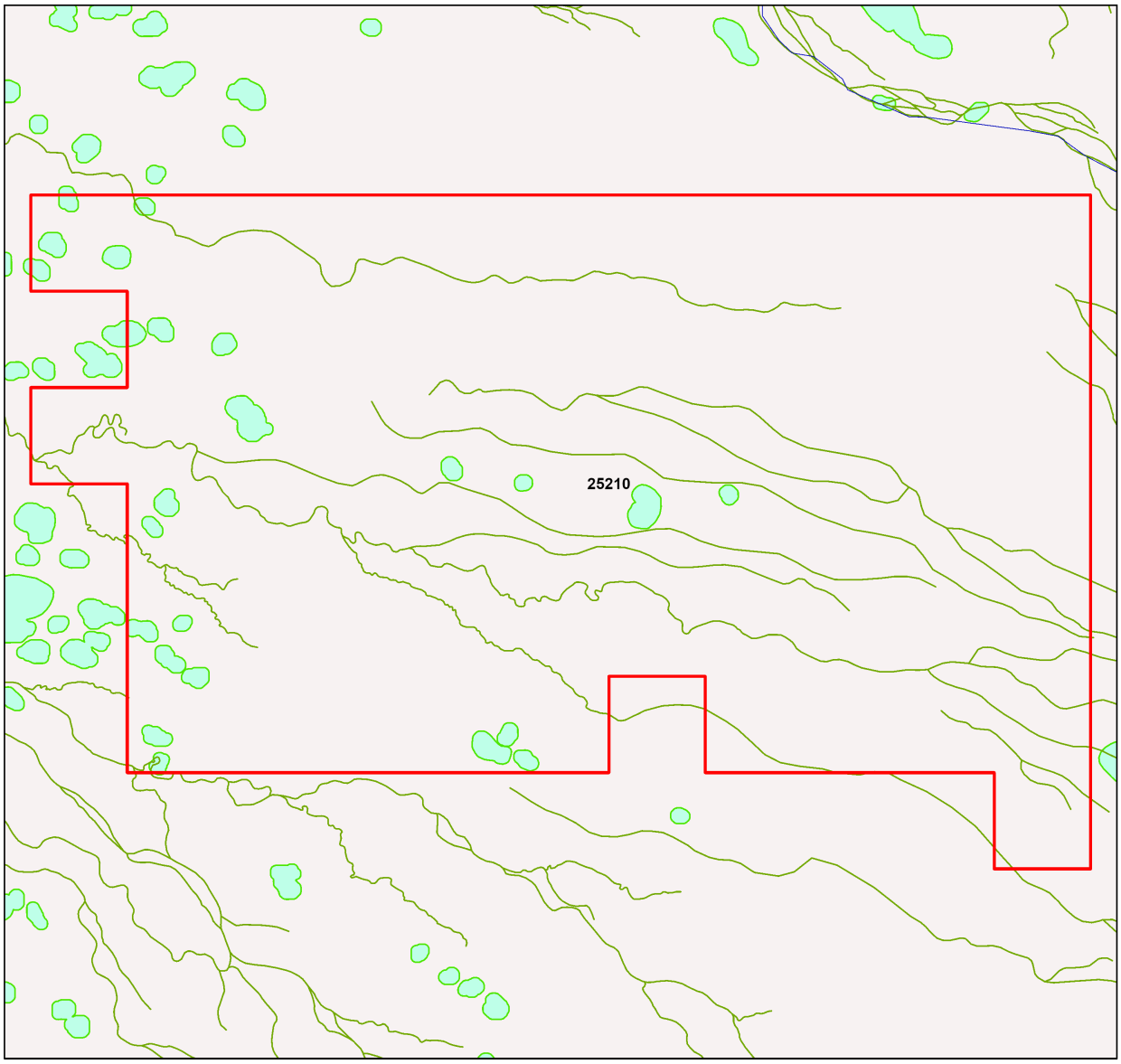
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and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

0 1,000 2,000 3,000 4,000 5,000 m

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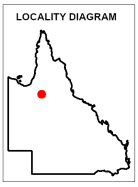
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Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)
- Selected Exploration Permit Mineral (EPM)



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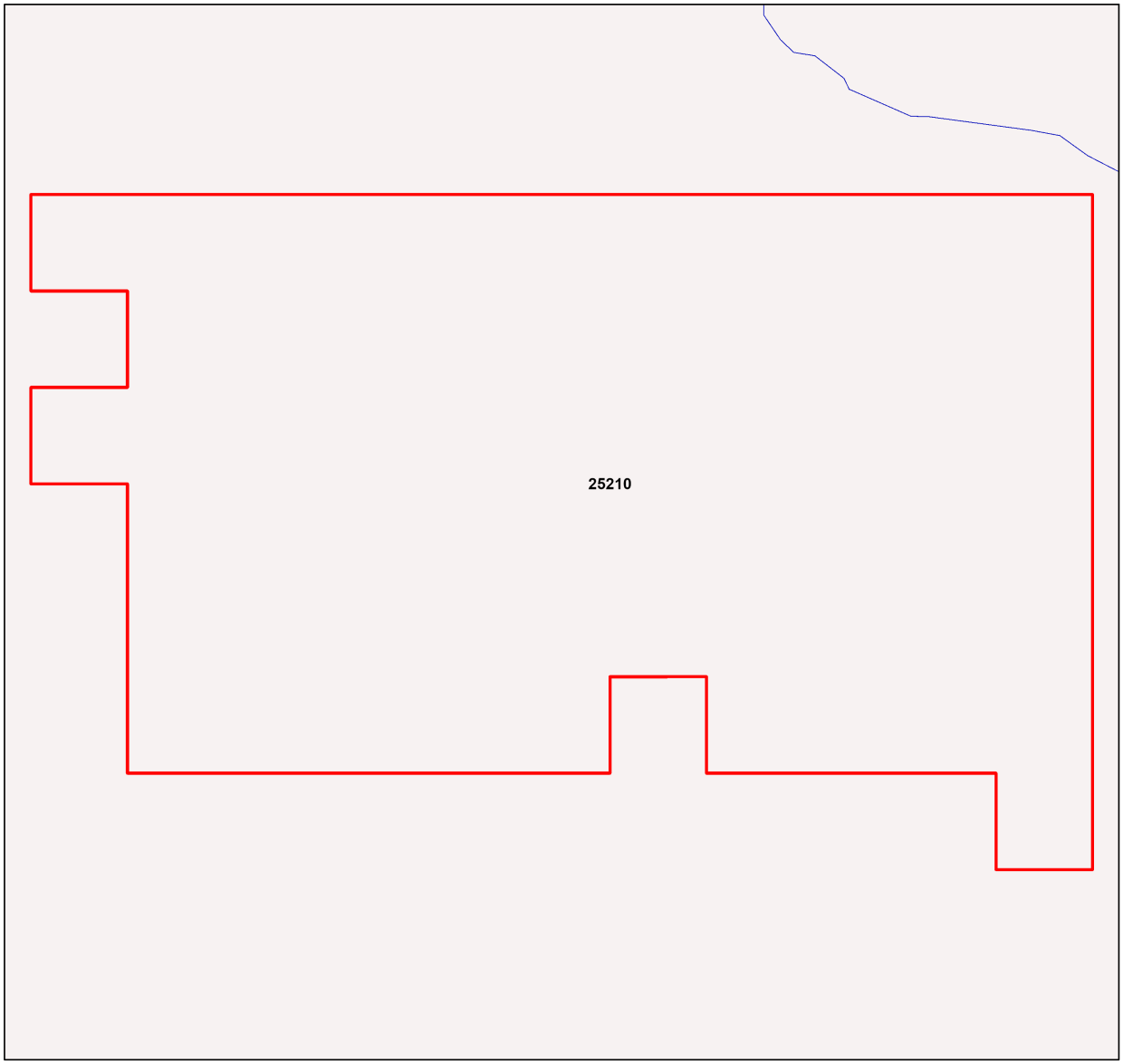
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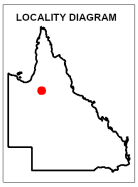
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Map 5 - MSES - Offset Areas



MSES - Offsets

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Legally secured offset area (offset register)
- Legally secured offset area (vegetation offsets)
- Selected Exploration Permit Mineral (EPM)



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Appendices

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

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

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

Appendix 2 - Source Data

The datasets listed below are available on request from:

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

- Matters of State environmental significance

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

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

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

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

EPM: 27818

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

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

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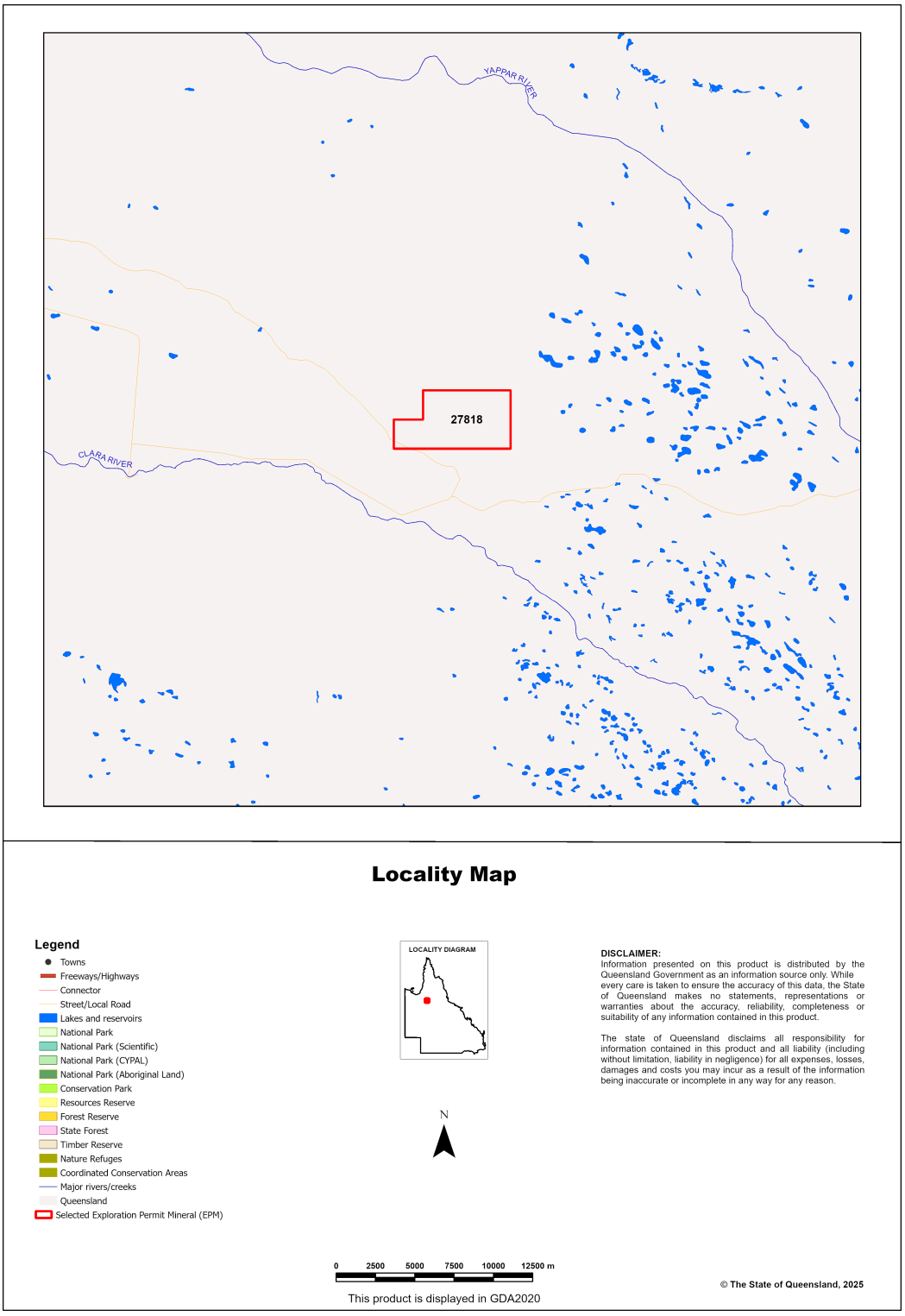
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Assessment Area Details

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

Table 1: Summary table, details for AOI: EPM: 27818, with area 2267.95 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains



Matters of State Environmental Significance (MSES)

MSES Categories

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

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

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

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

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

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

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

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

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

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

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

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

MSES Values Present

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

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	0 ha	0.0%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	0 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	0 ha	0.0%
8e Regulated Vegetation - intersecting a watercourse	24.9 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	64.35 ha	2.8%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

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

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

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

(no results)

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

(no results)

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

(no results)

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

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Not applicable

7b. Special least concern animals

Not applicable

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

Not applicable

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

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

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

Threatened (endangered or vulnerable) wildlife species records

(No results)

Special least concern animal species records

(No results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

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

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

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

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

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

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

Not applicable

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

Not applicable

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

Not applicable

8d. Regulated Vegetation - Essential habitat

Not applicable

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

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

Regulated vegetation map category	Map number
B	7360

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

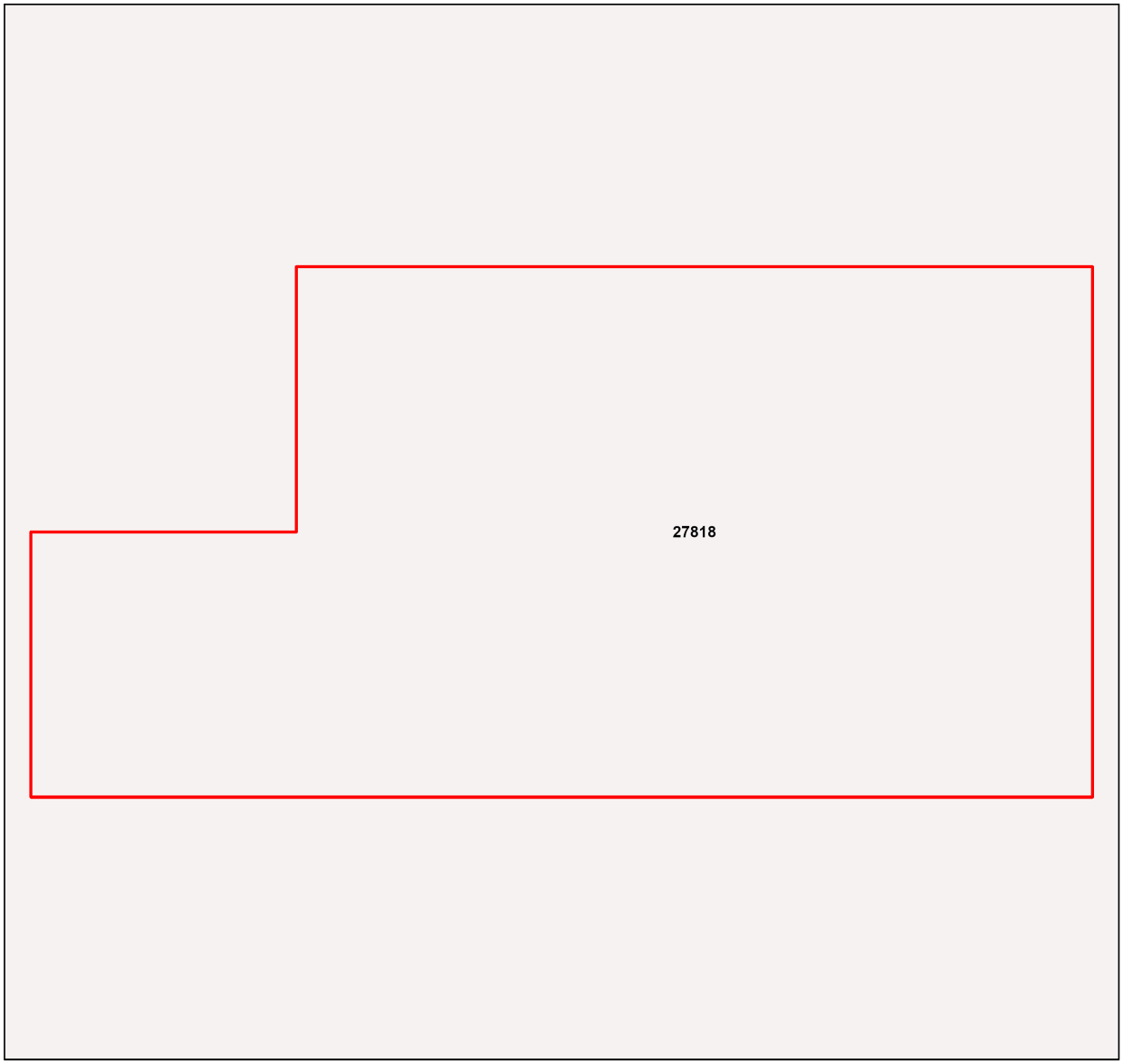
(No results)

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

(No results)

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

Map 1 - MSES - State Conservation Areas



MSES - State Conservation Areas

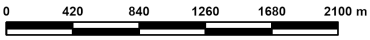
- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Protected area (estates, nature refuges, special wildlife reserves)
- Declared fish habitat area (A and B areas)
- Marine park (highly protected)
- Selected Exploration Permit Mineral (EPM)



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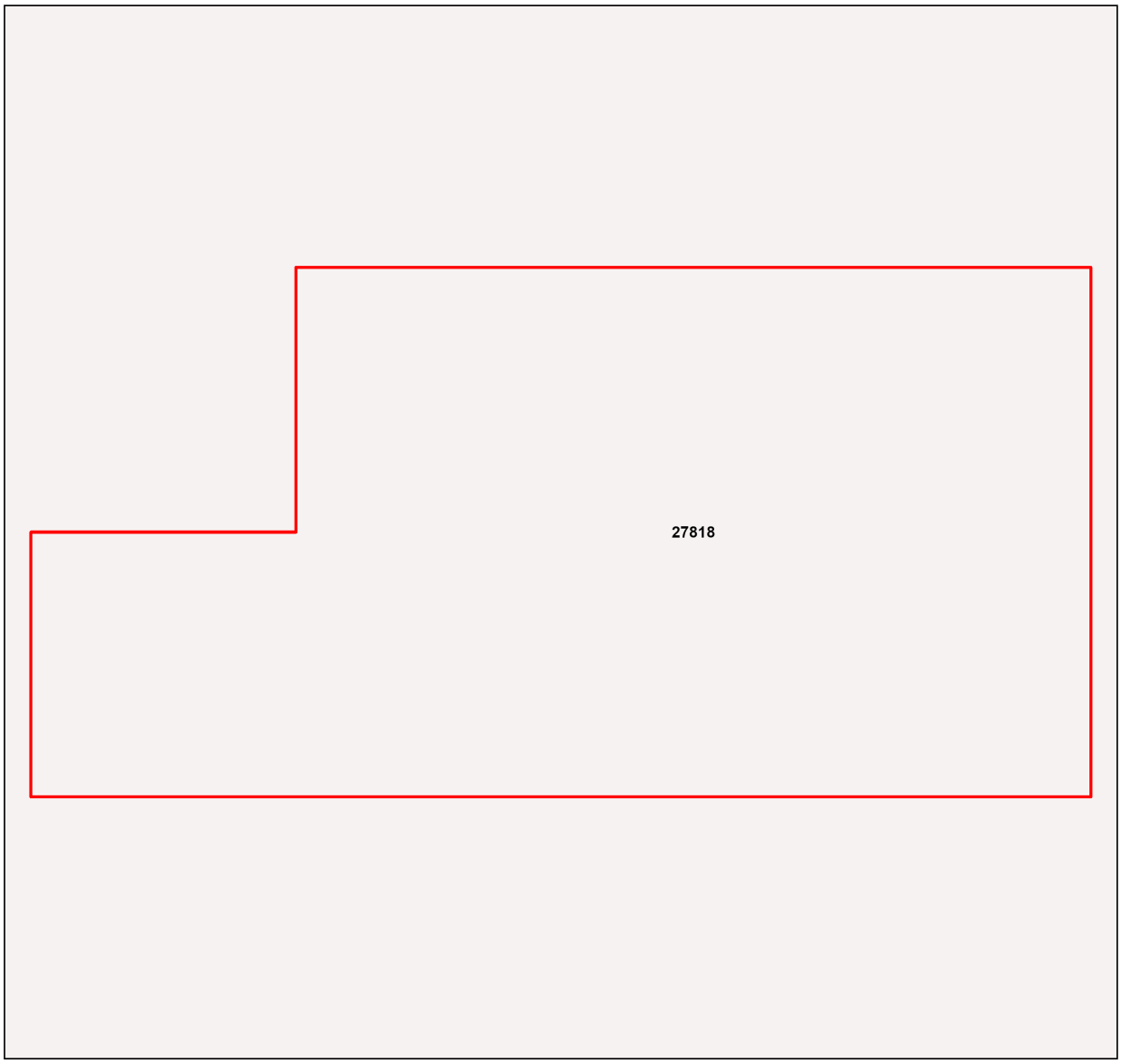




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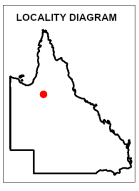
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Map 2 - MSES - Wetlands and Waterways



MSES - Wetlands and Waterways

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands
- Selected Exploration Permit Mineral (EPM)



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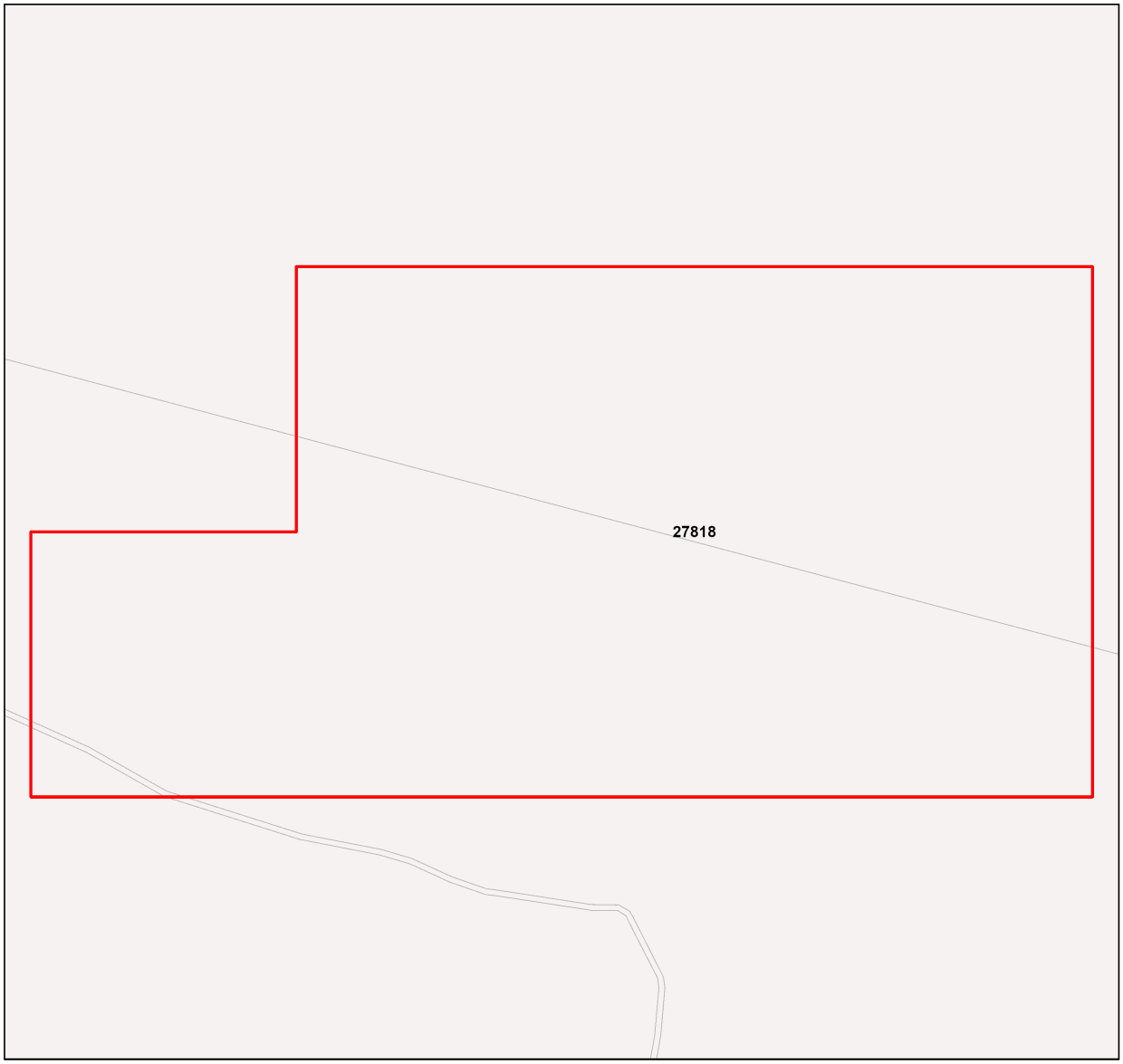




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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



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

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)
- Selected Exploration Permit Mineral (EPM)



N

0 420 840 1260 1680 2100 m

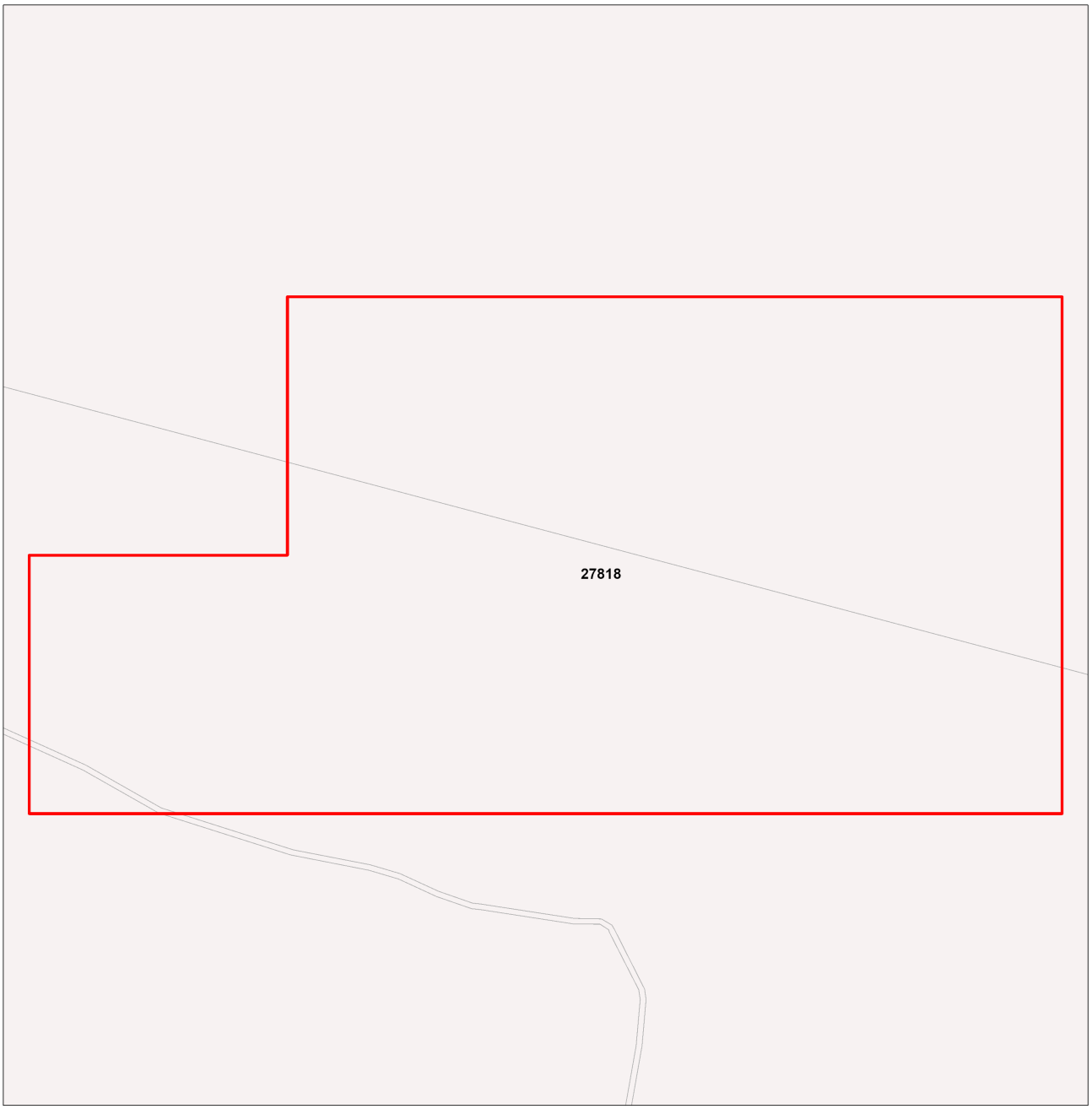
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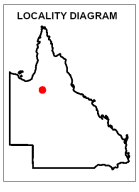
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



0 400 800 1,200 1,600 2,000 m

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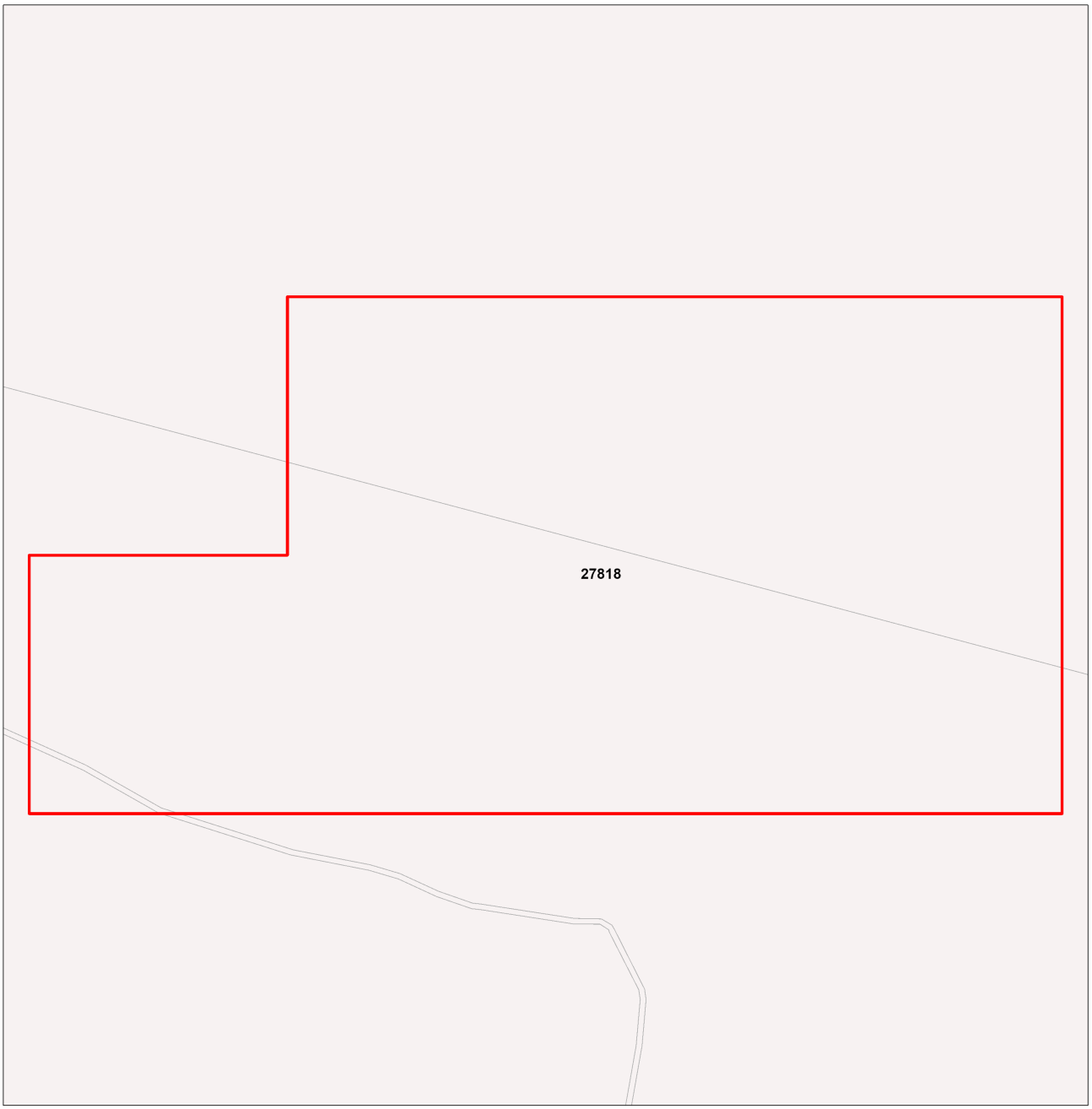
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The represented layers for SEQ 'koala habitat area-core' and 'koala habitat area- locally refined' in MSES are sourced directly from the regulatory mapping under the Nature Conservation (Koala) Conservation Plan 2017. Whilst every effort is made to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

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

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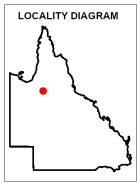
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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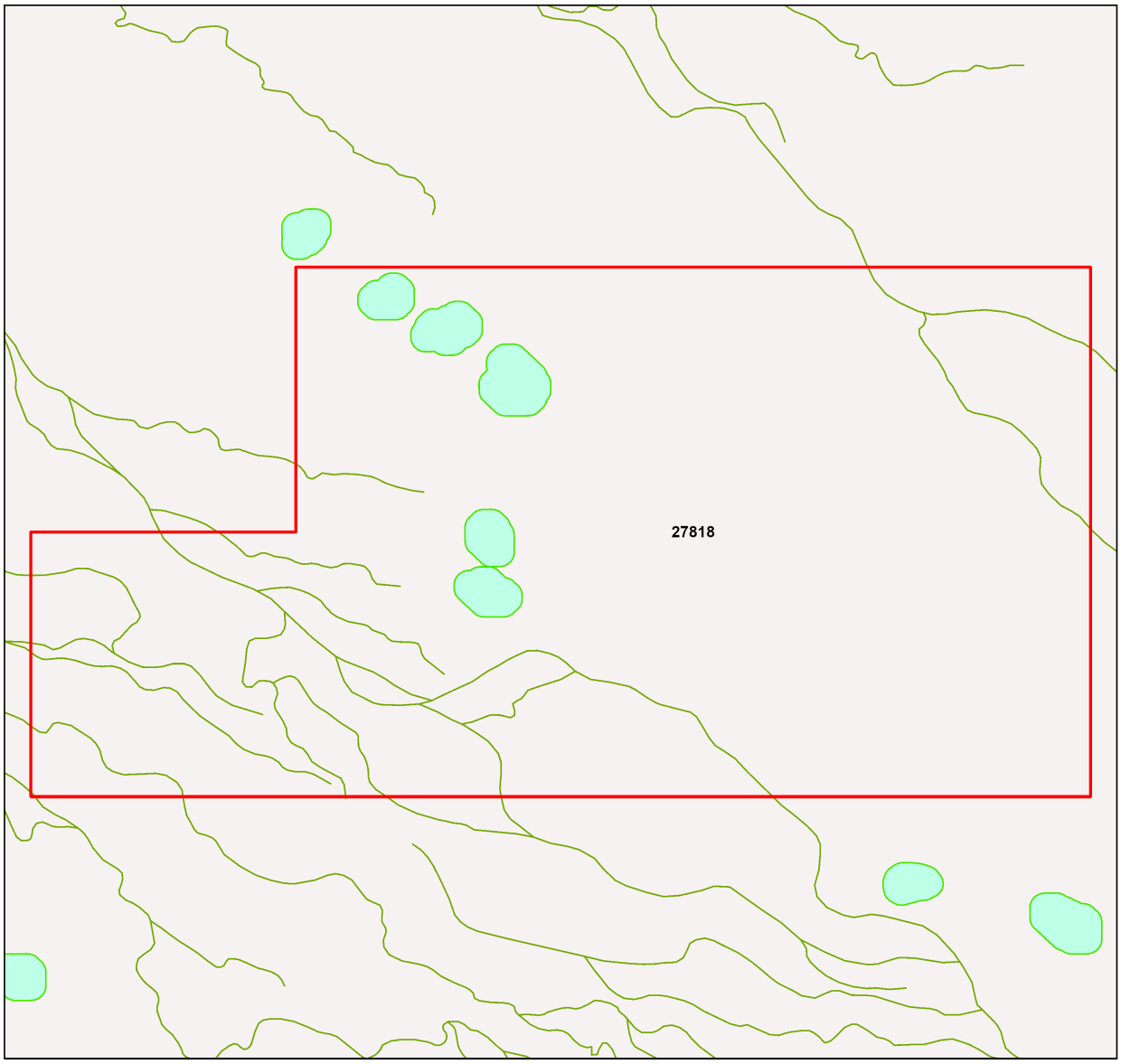
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and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

0 400 800 1,200 1,600 2,000 m

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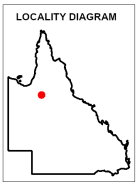
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Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)
- Selected Exploration Permit Mineral (EPM)



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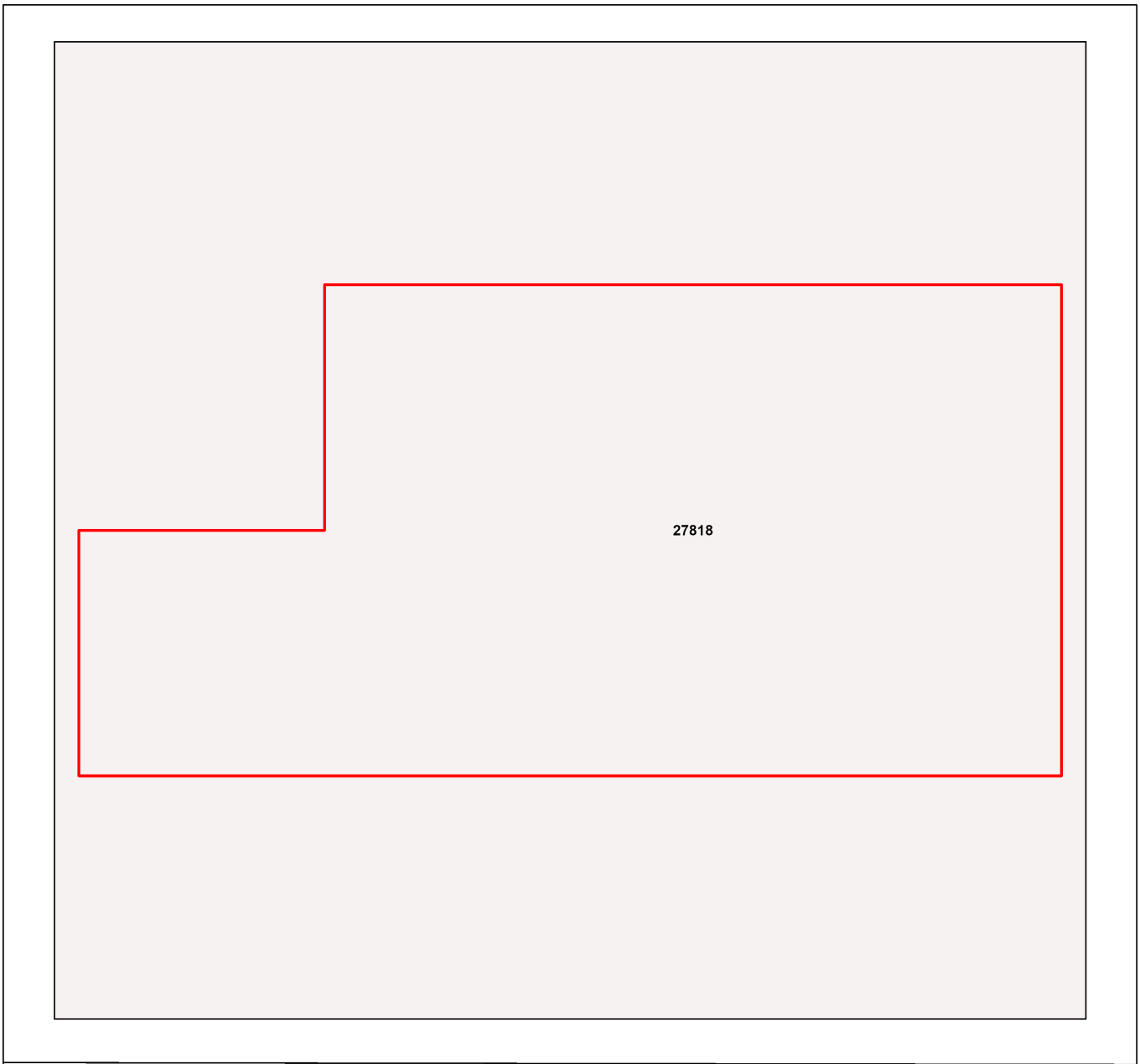
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Map 5 - MSES - Offset Areas



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Appendices

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

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

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

Appendix 2 - Source Data

The datasets listed below are available on request from:

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

- Matters of State environmental significance

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

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

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

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

EPM: 27195

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

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

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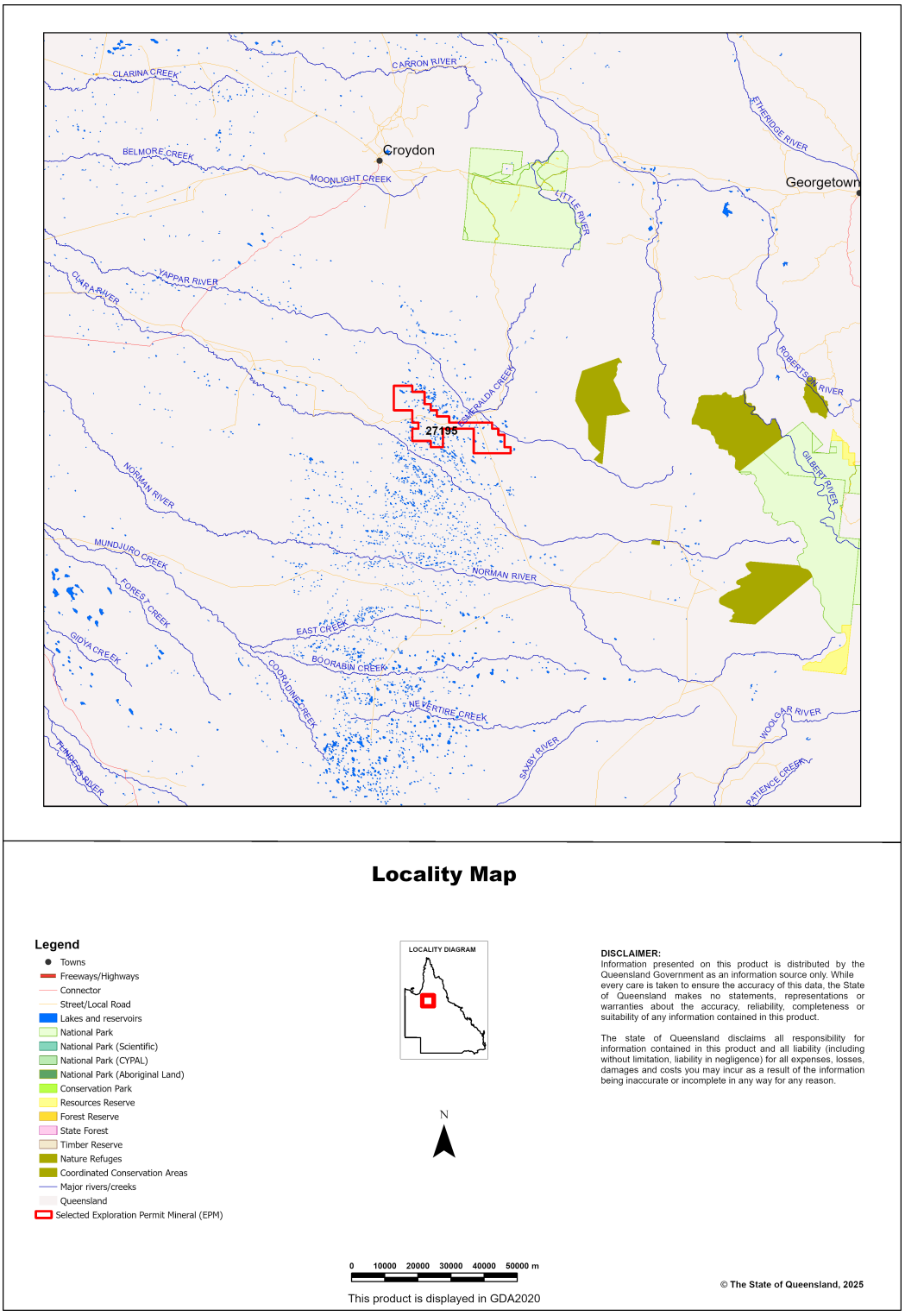
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Assessment Area Details

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

Table 1: Summary table, details for AOI: EPM: 27195, with area 23644.37 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains



Matters of State Environmental Significance (MSES)

MSES Categories

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

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

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

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

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

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

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

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

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

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

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

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

MSES Values Present

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

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	268.74 ha	1.1%
7b Special least concern animals	0 ha	0.0%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	4.24 ha	0.0%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	268.98 ha	1.1%
8e Regulated Vegetation - intersecting a watercourse	235.4 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	318.9 ha	1.3%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

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

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

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

(no results)

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

(no results)

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

(no results)

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

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Not applicable

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

Not applicable

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

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

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

Threatened (endangered or vulnerable) wildlife species records

Scientific name	Common name	NCA status	EPBC status	Migratory status
Poephila cincta cincta	black-throated finch (white-rumped subspecies)	E	E	None

Special least concern animal species records

(No results)

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

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

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

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

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

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

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

Regional ecosystem	Vegetation management polygon	Vegetation management status
2.3.21j/2.3.71	O-subdom	rem_oc

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

Not applicable

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

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

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

Regulated vegetation map category	Map number
B	7360
B	7460

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

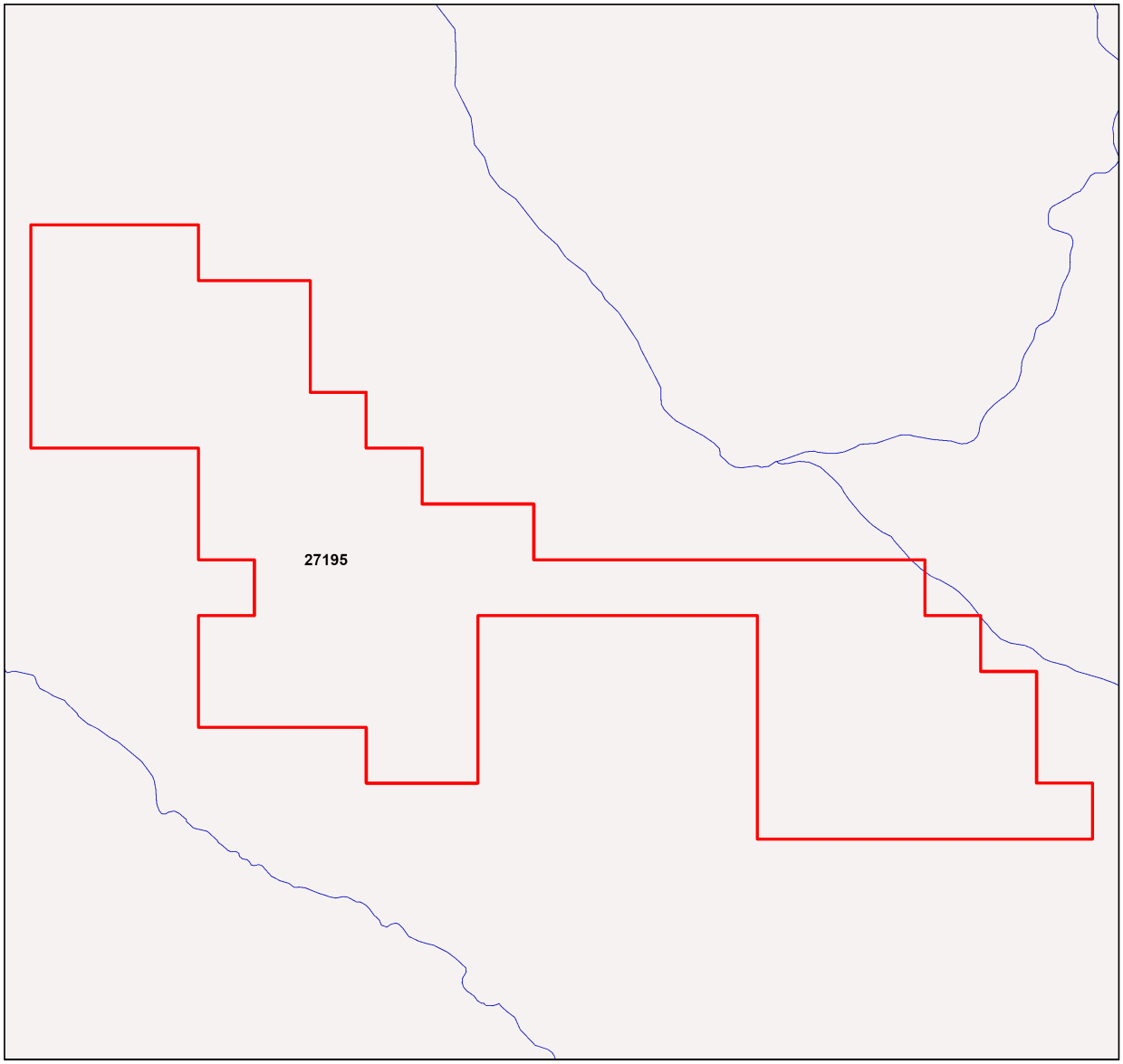
(No results)

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

(No results)

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

Map 1 - MSES - State Conservation Areas



MSES - State Conservation Areas

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



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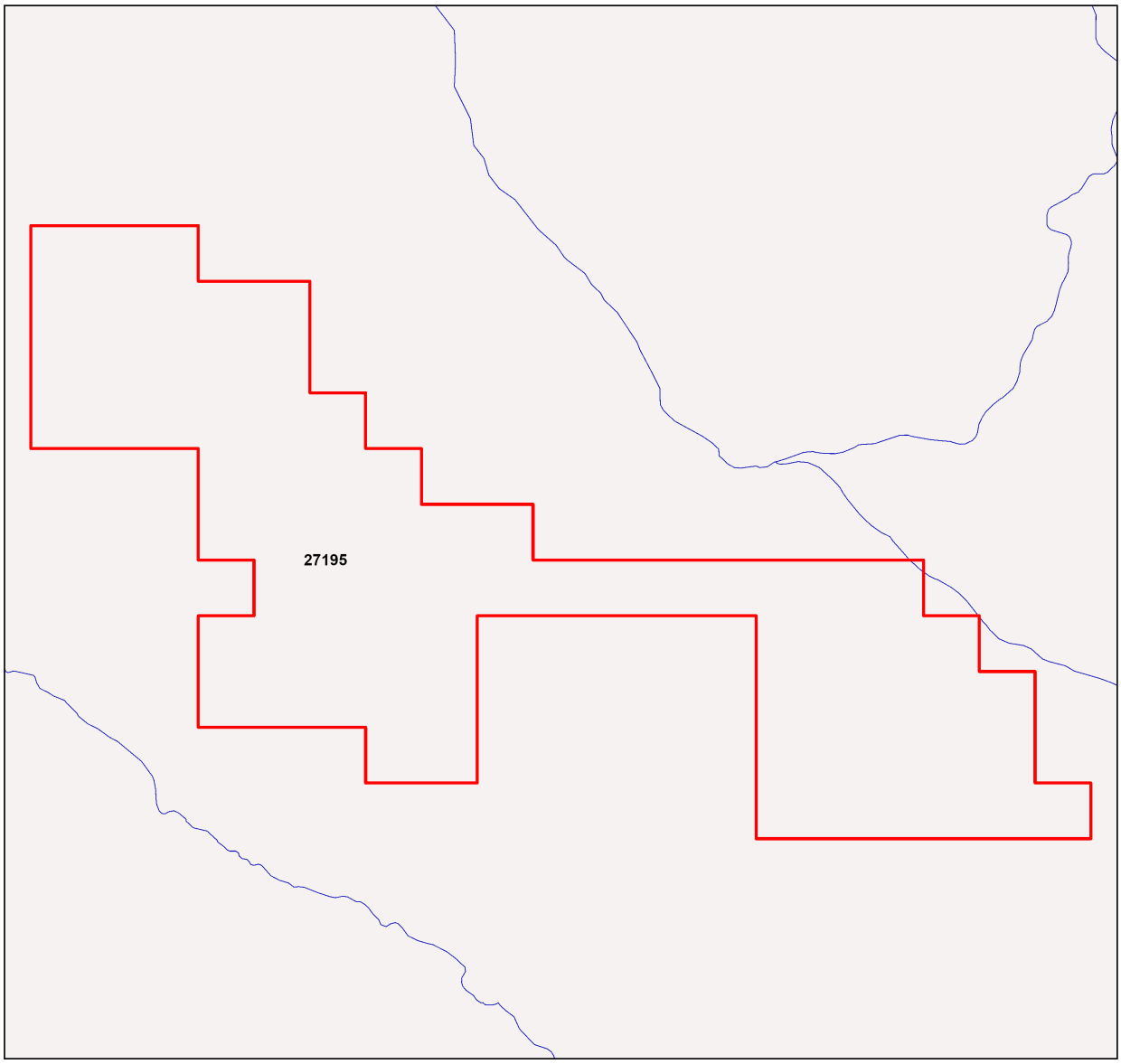
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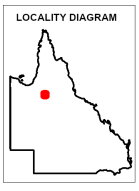
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Map 2 - MSES - Wetlands and Waterways



MSES - Wetlands and Waterways

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Declared high ecological value waters (watercourse)
- Strategic environmental area (designated precinct)
- Declared high ecological value waters (wetland)
- High ecological significance wetlands
- Selected Exploration Permit Mineral (EPM)



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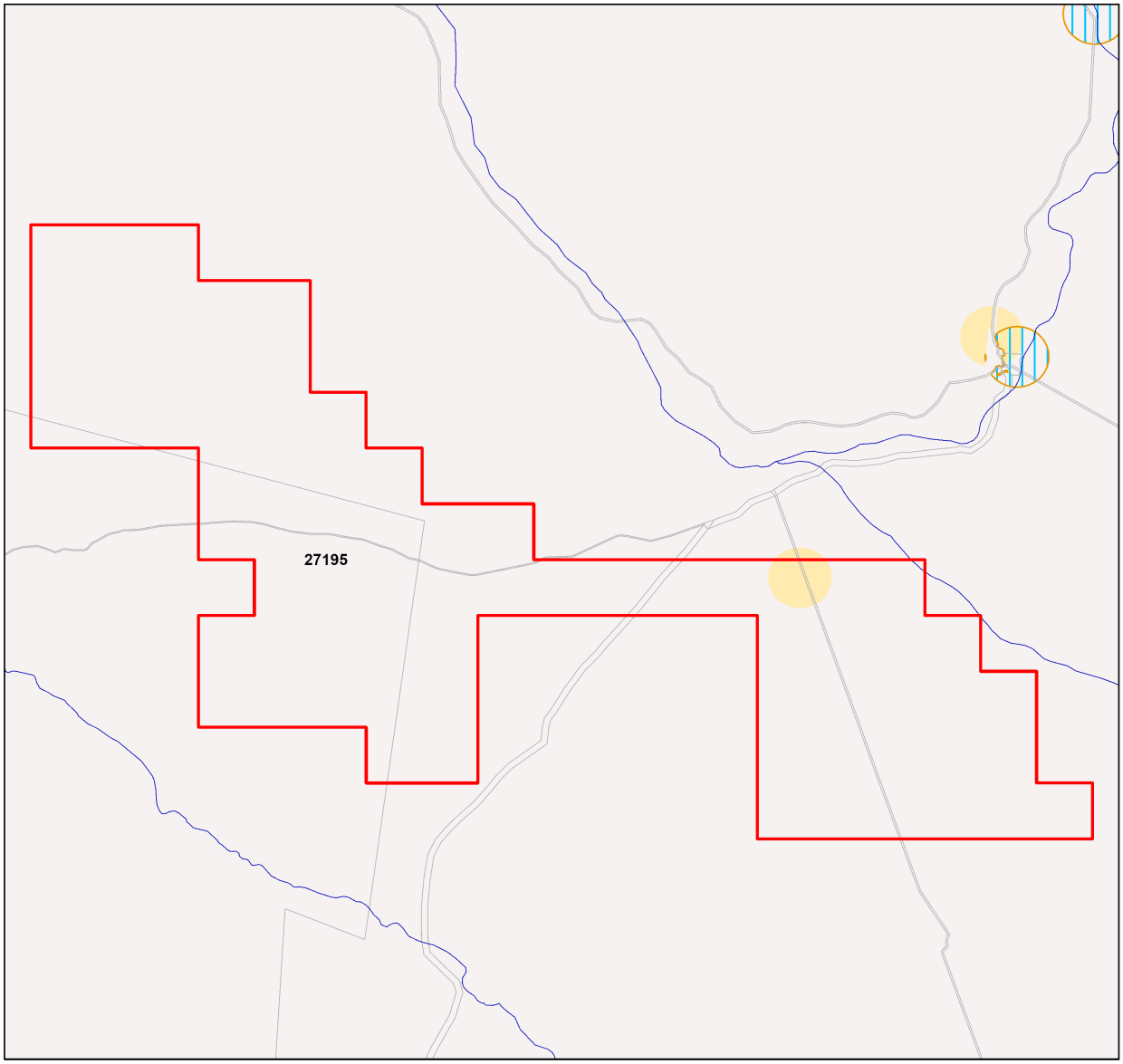
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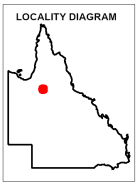
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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



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

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)
- Selected Exploration Permit Mineral (EPM)



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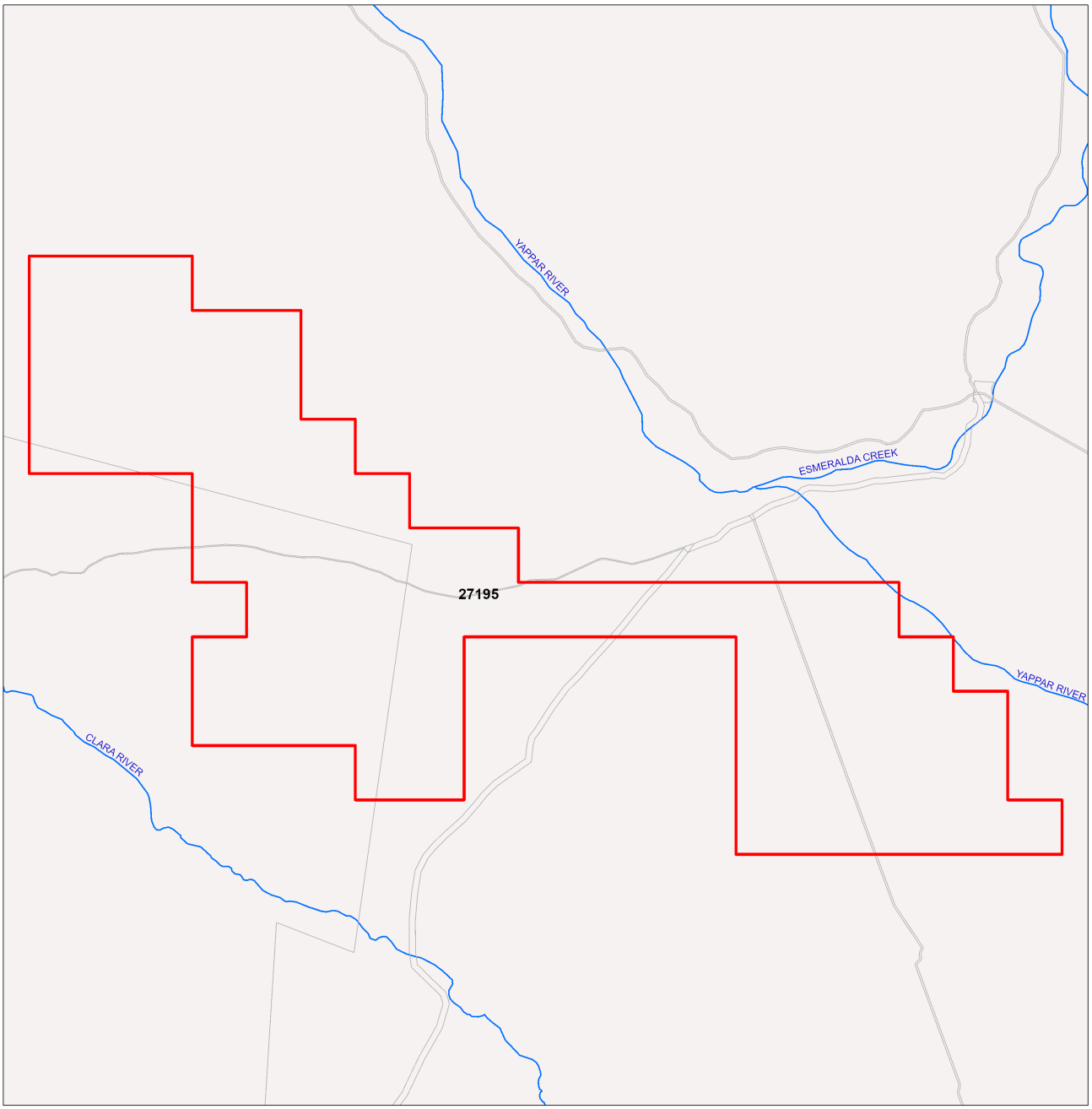
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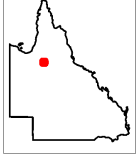
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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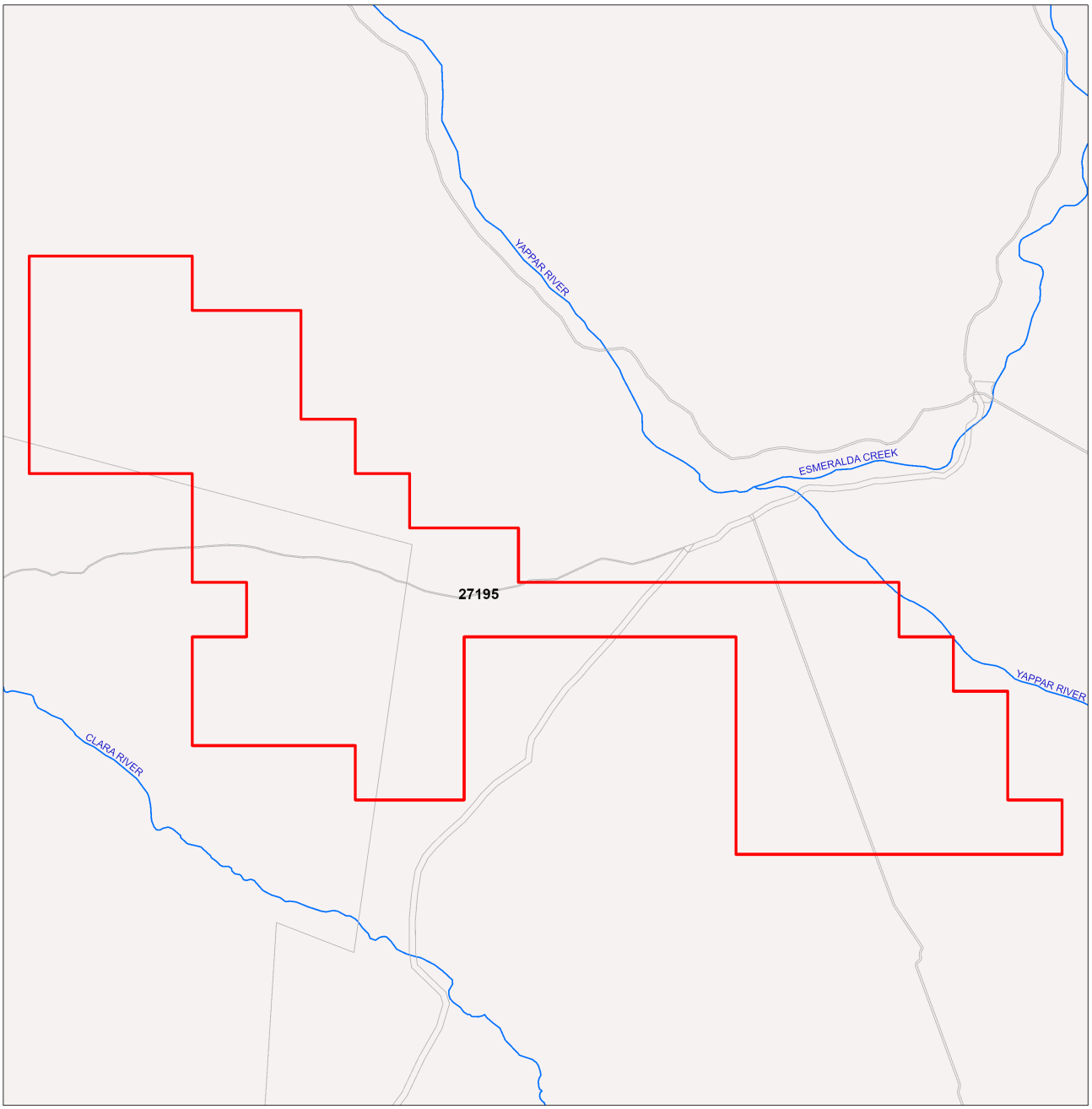
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The represented layers for SEQ 'koala habitat area-core' and 'koala habitat area- locally refined' in MSES are sourced directly from the regulatory mapping under the Nature Conservation (Koala) Conservation Plan 2017. Whilst every effort is made to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

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

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



MSES - Wildlife habitat (sea turtle nesting areas)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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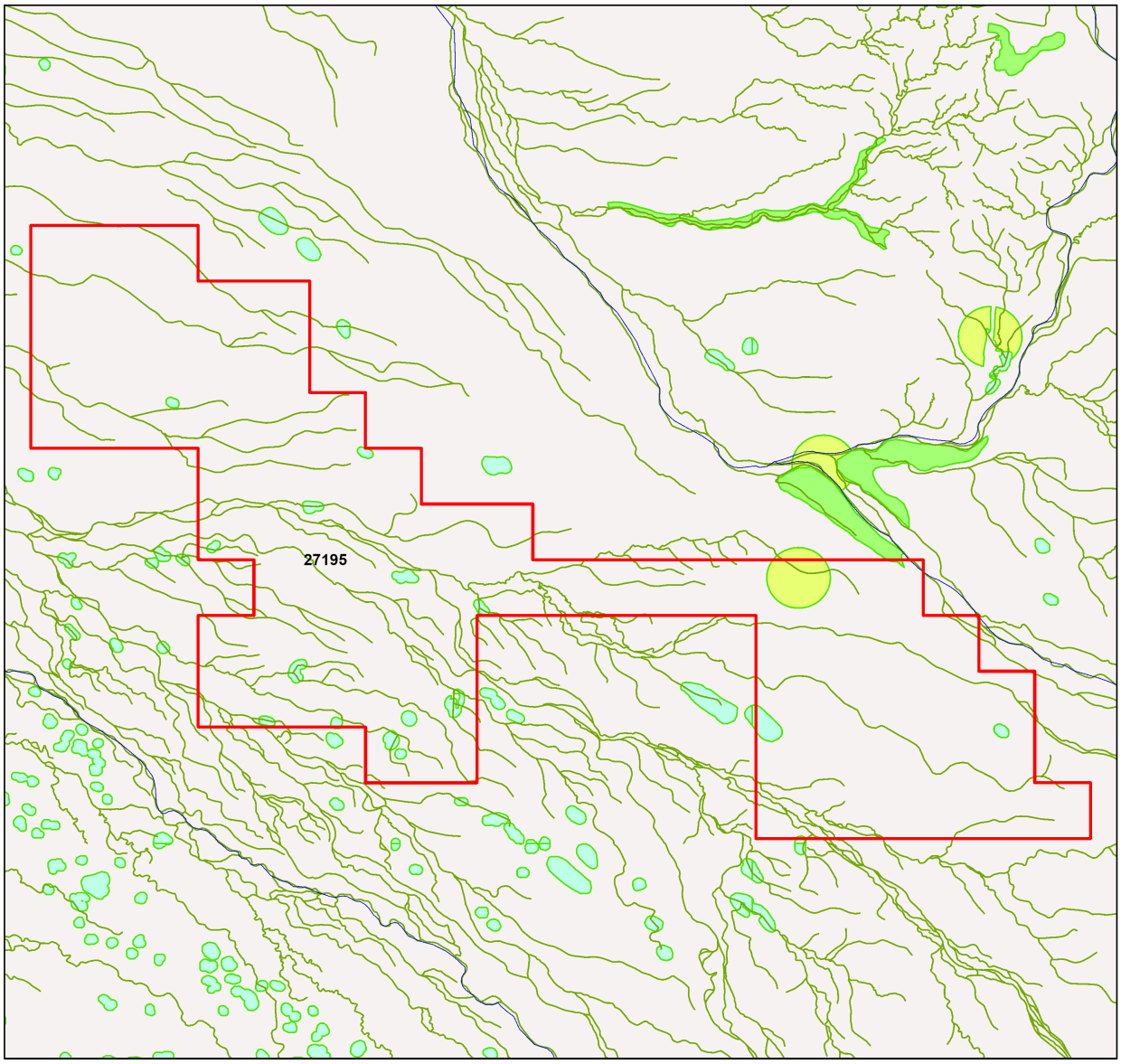
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and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

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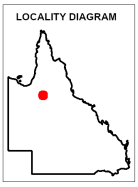
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Map 4 - MSES - Regulated Vegetation



MSES - Regulated Vegetation

- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Regulated vegetation (intersecting a watercourse)
- Regulated vegetation (100m from wetland)
- Regulated vegetation (category B - endangered or of concern)
- Regulated vegetation (category C - endangered or of concern)
- Regulated vegetation (category R - GBR riverine)
- Regulated vegetation (essential habitat)
- Selected Exploration Permit Mineral (EPM)



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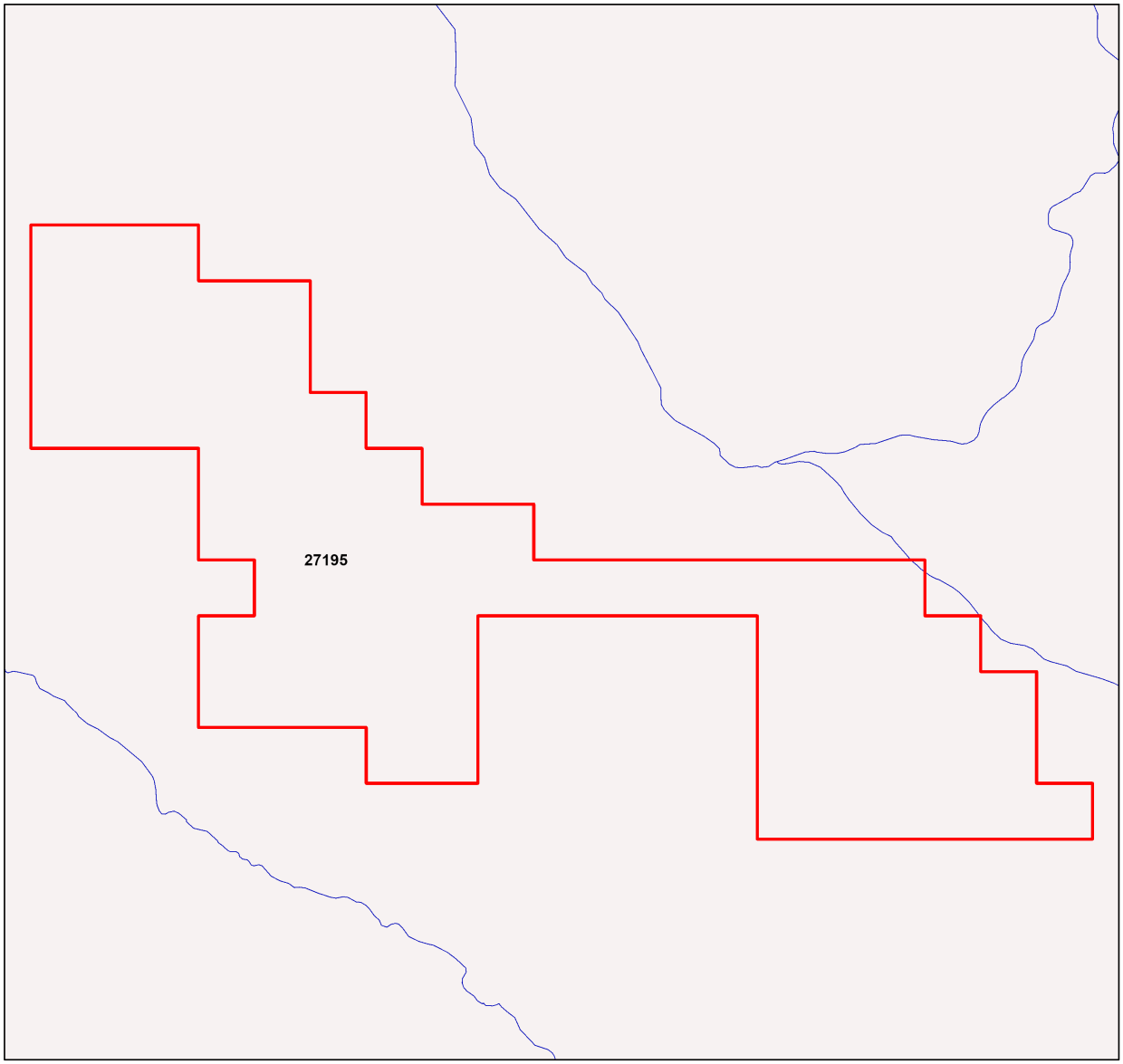
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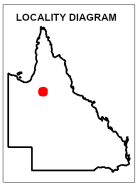
Map 5 - MSES - Offset Areas



MSES - Offsets

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Legally secured offset area (offset register)
- Legally secured offset area (vegetation offsets)
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



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Appendices

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

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

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

Appendix 2 - Source Data

The datasets listed below are available on request from:

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

- Matters of State environmental significance

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

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

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

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DETSI	- Department of the Environment, Tourism, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA2020	- Geocentric Datum of Australia 2020
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

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: 03-Dec-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	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	1
Listed Threatened Species:	13
Listed Migratory Species:	14

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:	19
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

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

State and Territory Reserves:	3
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
The community of native species dependent on natural discharge of groundwater from the Great Artesian Basin	Endangered	Community likely to occur within area	In buffer area only

Listed Threatened Species [Resource Information]

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Chloebia gouldiae listed as Erythrura gouldiae			
Gouldian Finch [90091]	Endangered	Species or species habitat known to occur within area	In feature area
Erythrotriorchis radiatus			
Red Goshawk [942]	Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos			
Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Tyto novaehollandiae kimberli			
Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Petauroides minor			
Greater Glider (northern), Greater Glider (north-eastern Queensland) [92008]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Saccolaimus saccolaimus nudicluniatus			
Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat may occur within area	In buffer area only
REPTILE			
Varanus mertensi			
Mertens' Water Monitor [1568]	Endangered	Species or species habitat may occur within area	In feature area
SHARK			
Pristis pristis			
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area	In feature area

Listed Migratory Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
Pristis pristis			
Largetooth Sawfish, Freshwater Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Terrestrial Species			
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Pandion haliaetus](#) Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Anseranas semipalmata](#) Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat may occur within area overfly marine area	In feature area
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area overfly marine area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may 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
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato)			
Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Reptile			
Crocodylus johnstoni			
Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Esmeralda	Nature Refuge	QLD	In buffer area only
Littleton	Resources Reserve	QLD	In buffer area only
Tagalaka	National Park	QLD	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Esmeralda Graphite Project	2025/10140		Referral Decision	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	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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Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
EPM: 28274

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Important Note to User

Information presented in this report is based upon the Queensland Herbarium & Biodiversity Science's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium & Biodiversity Science's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@qld.gov.au

Disclaimer

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

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Details for area of interest:
EPM: 28274, with area 5184.83 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	1,061.25	20.47
No concern at present	4,123.58	79.53
Total remnant vegetation	5,184.83	100.00

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and may be distinguished by differences in structure or sub-dominant species in the ecologically dominant layer. Vegetation communities with different dominant species in the ecologically dominant layer may be amalgamated in to a regional ecosystem if they are not mappable and predictable in the landscape at 1:100 000 scale. Vegetation communities may be mappable at a scale larger than 1:100 000. Vegetation communities within a regional ecosystem are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2023) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium & Biodiversity Science's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/.

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 percent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 percent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (<1000 ha); or patch size (<100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
2.3.21j	Eucalyptus leptophleba, Corymbia polycarpa, Blakella confertiflora, Blakella bella woodland on active levees and terraces associated with major watercourses in the east	Of concern	153.85	2.97
2.3.26b	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	633.73	12.22
2.3.29b	Melaleuca viridiflora +/- M. citrolens, M. stenostachya low woodland in depressions and broad valleys on solodised soils in the east	No concern at present	465.08	8.97
2.3.42b	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. woodland on Quaternary alluvial plains with coarse-grained parent material	Of concern	66.22	1.28
2.3.50a	Waterholes, bare sand and rock in the channels of major watercourses	Of concern	207.45	4.00
2.3.51	Seasonal swamps. Eucalyptus camaldulensis +/- Melaleuca viridiflora low open woodland in closed depressions on Tertiary sand sheets	No concern at present	175.78	3.39
2.5.14a	Melaleuca spp. low woodland on plains on earths and podsolics (south)	No concern at present	1,756.13	33.87
2.5.17b	Melaleuca citrolens and/or M. stenostachya low open woodland on Tertiary outwash deposits and sand sheets in the east	No concern at present	1,255.02	24.21
2.5.28a	Corymbia polycarpa and/or Blakella grandifolia +/- Blakella confertiflora, Erythrophleum chlorostachys open woodland on reworked sand deposits on broad plains and plateau surfaces	No concern at present	471.58	9.10

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
2.3.21j	Pre-clearing 371000 ha; Remnant 2023 359000 ha	16b	Not a Wetland	Medium
2.3.26b	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.29b	Pre-clearing 1054000 ha; Remnant 2023 1052000 ha	21a	Not a Wetland	High
2.3.42b	Pre-clearing 504000 ha; Remnant 2023 503000 ha	16c	Not a Wetland	No representation
2.3.50a	Pre-clearing 81000 ha; Remnant 2023 81000 ha	16d	Riverine	Low
2.3.51	Pre-clearing 72000 ha; Remnant 2023 72000 ha	34d	Palustrine	No representation
2.5.14a	Pre-clearing 1369000 ha; Remnant 2023 1368000 ha	21a	Not a Wetland	Medium
2.5.17b	Pre-clearing 451000 ha; Remnant 2023 451000 ha	21b	Not a Wetland	Low
2.5.28a	Pre-clearing 232000 ha; Remnant 2023 232000 ha	18a	Not a Wetland	No representation

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
2.3.21j	2.3.21: Significant habitat for arboreal mammals and for animals using hollows. 2.3.21j: Provincial refuge for some woodland flora and fauna. 2.3.21x12: Supports locally uncommon plant species. 2.3.21x3b: The only mappable occurrence of Neofabricia mjoebergii in the bioregion.

Regional Ecosystem	Special Values
2.3.26b	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.29b	2.3.29: Provides wetland habitat for a flora and fauna. 2.3.29a: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius). 2.3.29b: Provides wetland habitat for a flora and fauna. 2.3.29c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.3.42b	None
2.3.50a	2.3.50b: Important sites for feeding and movement of birds, fish and reptiles. Potential habitat for Pristis pristis (freshwater sawfish), Elseya lavarackorum (Gulf snapping turtle) and Malurus coronatus (purple-crowned fairy wren).
2.3.51	2.3.51: Seasonal wetland. Important feeding and moulting sites for water birds.
2.5.14a	2.5.14: Potential habitat for NCA listed species: Solanum carduiforme. 2.5.14c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.5.17b	None
2.5.28a	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at: https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Blakella tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	633.73	12.22
16b	Woodlands dominated by Eucalyptus leptophleba (Molloy red box), with Blakella tessellaris (carbeen), B. dallachiana or Corymbia clarksoniana (grey bloodwood); or dominated by Blakella spp., Corymbia terminalis (desert bloodwood) or other Corymbia spp. in the Gulf Plains and Northwest Highlands bioregions. On sandy levees.	153.85	2.97
16c	Woodlands and open woodlands dominated by Eucalyptus coolabah (coolabah) or E. microtheca (coolabah) or E. largiflorens (black box) or E. tereticornis (blue gum) or E. chlorophylla on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	66.22	1.28
16d	River beds, open water or sand, or rock, frequently unvegetated.	207.45	4.00
18a	Dry woodlands to open woodlands, dominated by bloodwoods (Blakella dallachiana, Corymbia terminalis (desert bloodwood), C. plena, or Blakella leichhardtii (rustyjacket)) or ironbarks (Eucalyptus quadricostata (Pentland ironbark), E. crebra (narrow-leaved red ironbark) or E. exilipes (fine-leaved ironbark)), often with E. acmenoides (narrow-leaved white stringybark), Angophora leiocarpa (rusty gum) and Callitris glaucophylla (white cypress pine) in the Brigalow Belt, on sandy plateaus and plains.	471.58	9.10
21a	Low woodlands and low open woodlands dominated by Melaleuca viridiflora (coarse-leaved paperbark) on depositional plains.	2,221.21	42.84
21b	Low open woodlands and tall shrublands of Melaleuca stenostachya or M. citrolens or other Melaleuca spp.	1,255.02	24.21
34d	Palustrine wetlands. Freshwater swamps/springs/billabongs on floodplains ranging from permanent and semi-permanent to ephemeral.	175.78	3.39

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium & Biodiversity Science's QBEIS database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2023 (PDF)* section 3.3 of: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community. http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

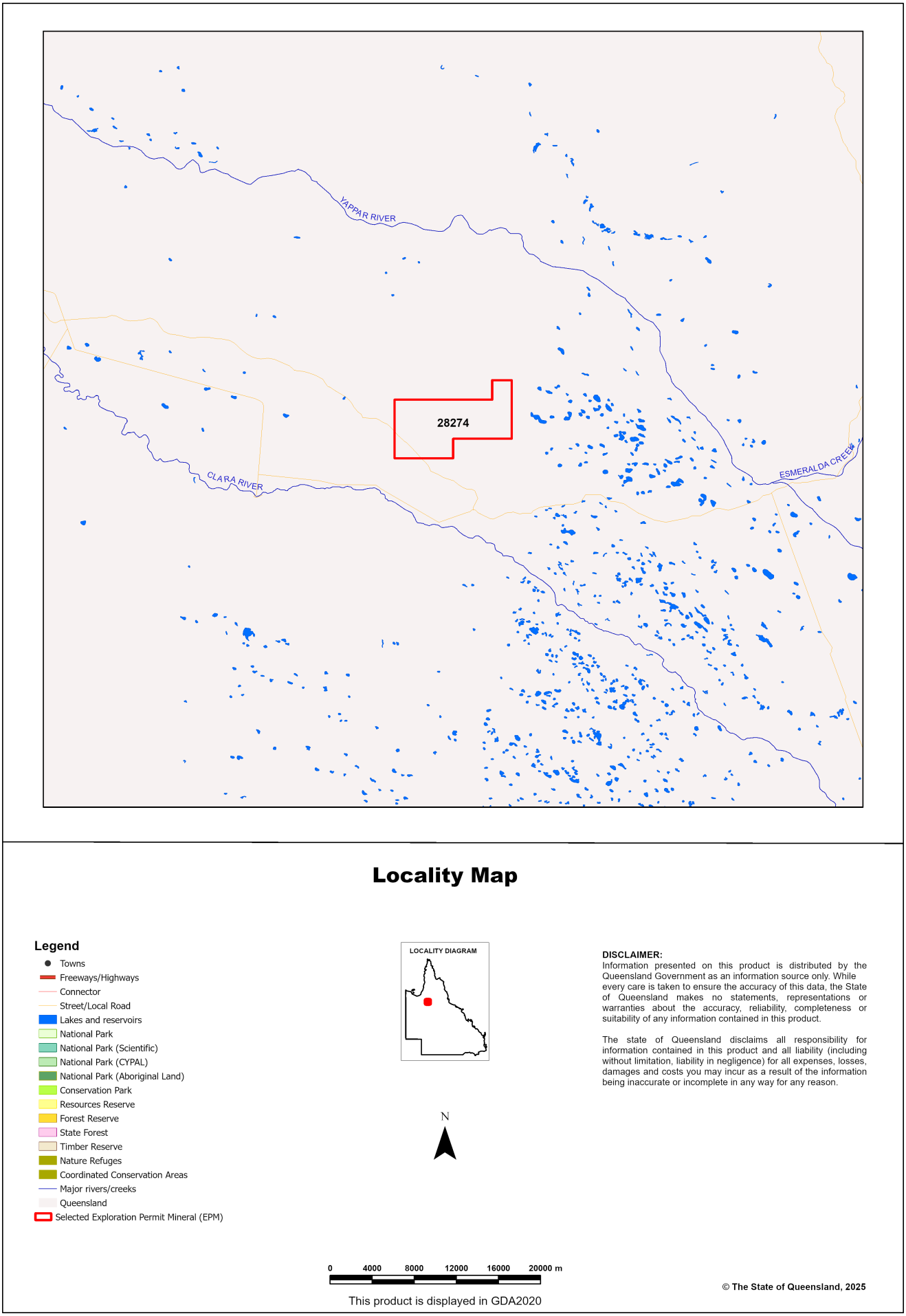
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

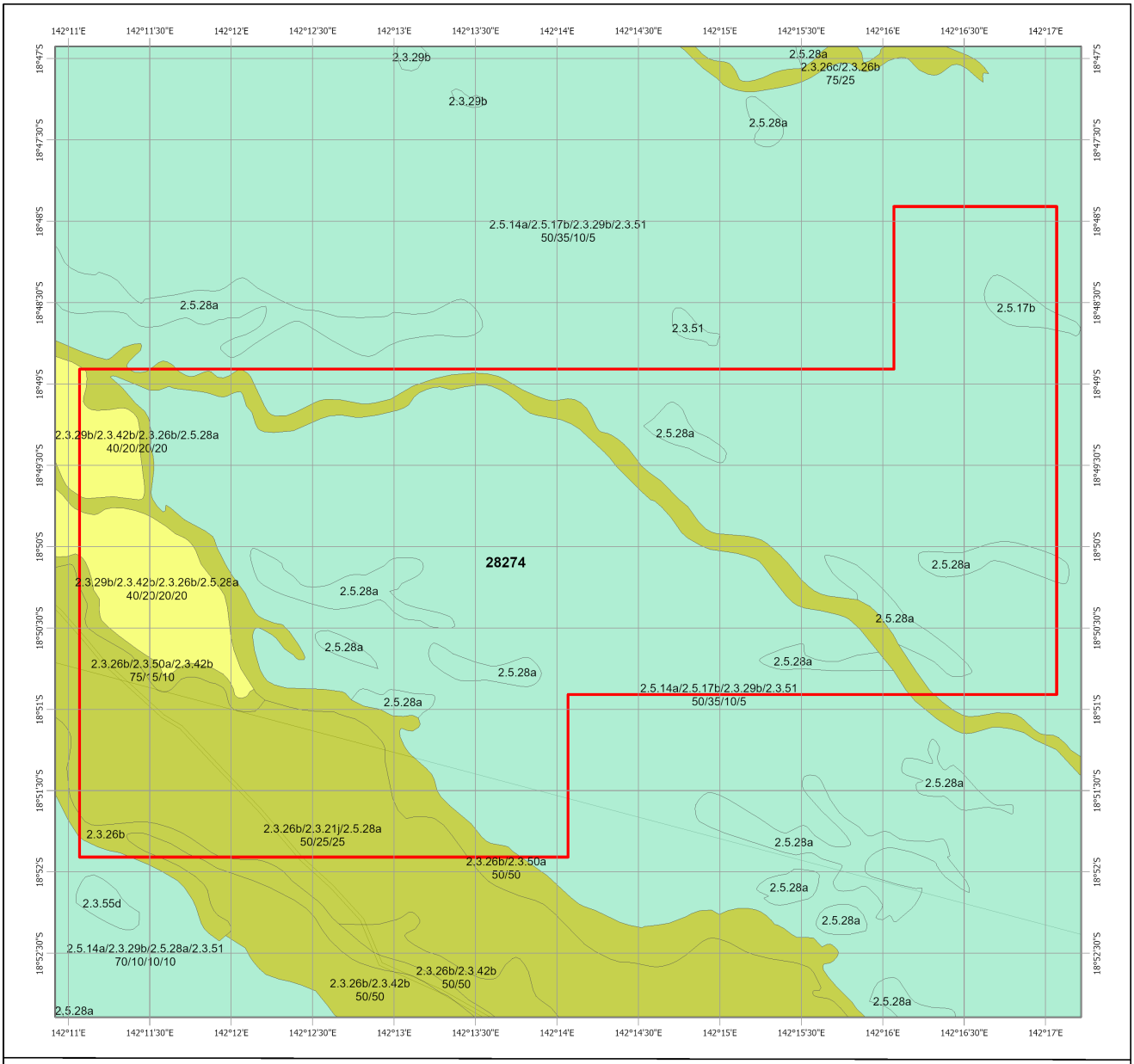
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
2.3.21j	Not currently available	Not currently available
2.3.26b	Not currently available	Not currently available
2.3.29b	Not currently available	Not currently available
2.3.42b	Not currently available	Not currently available
2.3.50a	Not currently available	Not currently available
2.3.51	Not currently available	Not currently available
2.5.14a	Not currently available	Not currently available
2.5.17b	Not currently available	Not currently available
2.5.28a	Not currently available	Not currently available

Maps

Map 1 - Location



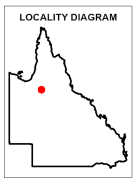
Map 2 - Remnant 2021 regional ecosystems

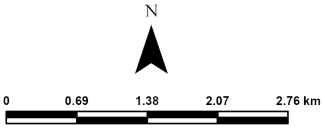


Remnant 2021 Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Non-remnant vegetation, cultivated or built environment
- Plantation
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



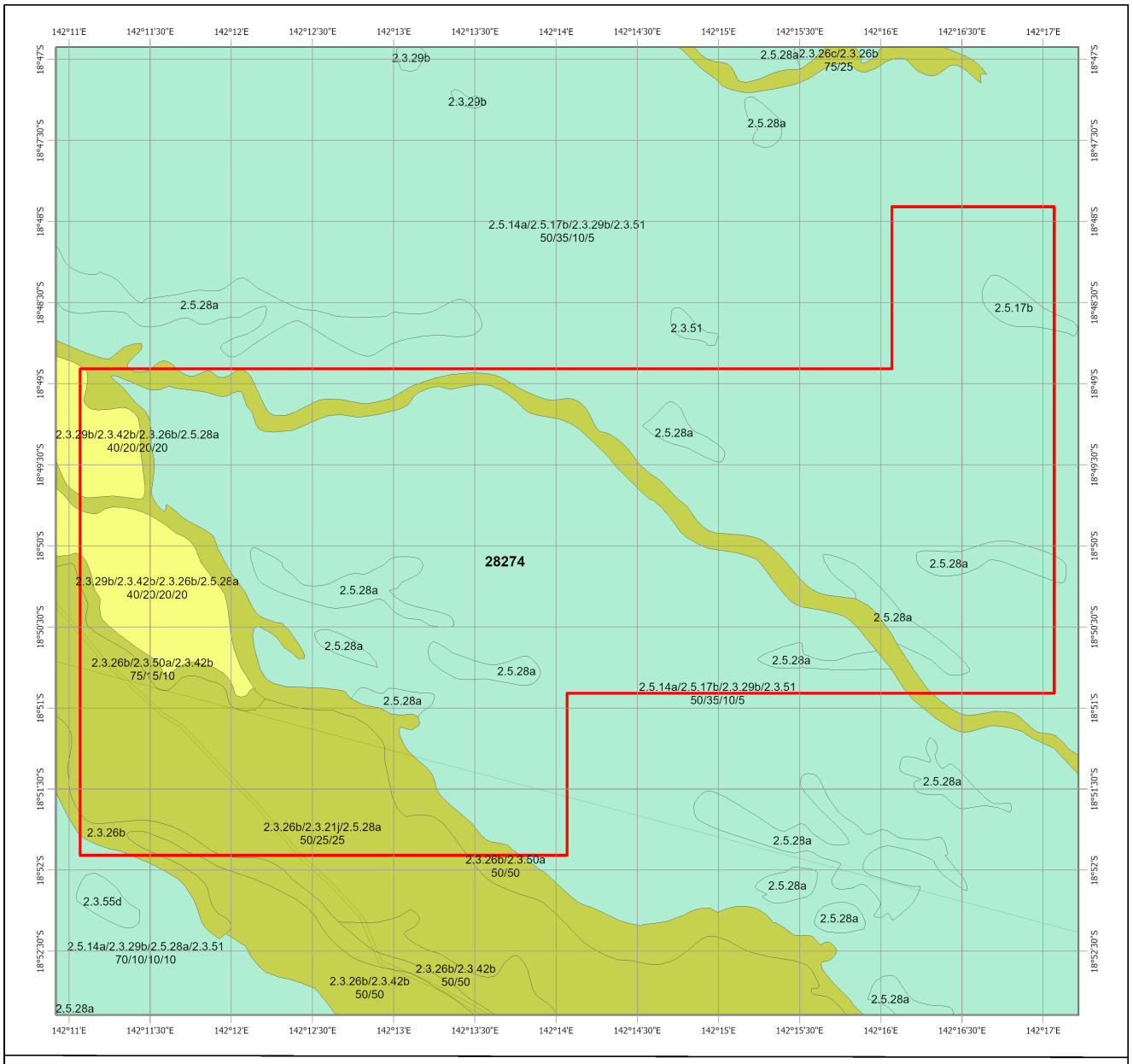


This product is projected into GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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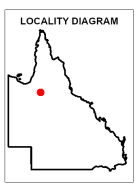
Map 3 - Pre-clearing regional ecosystems



Pre-clearing Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

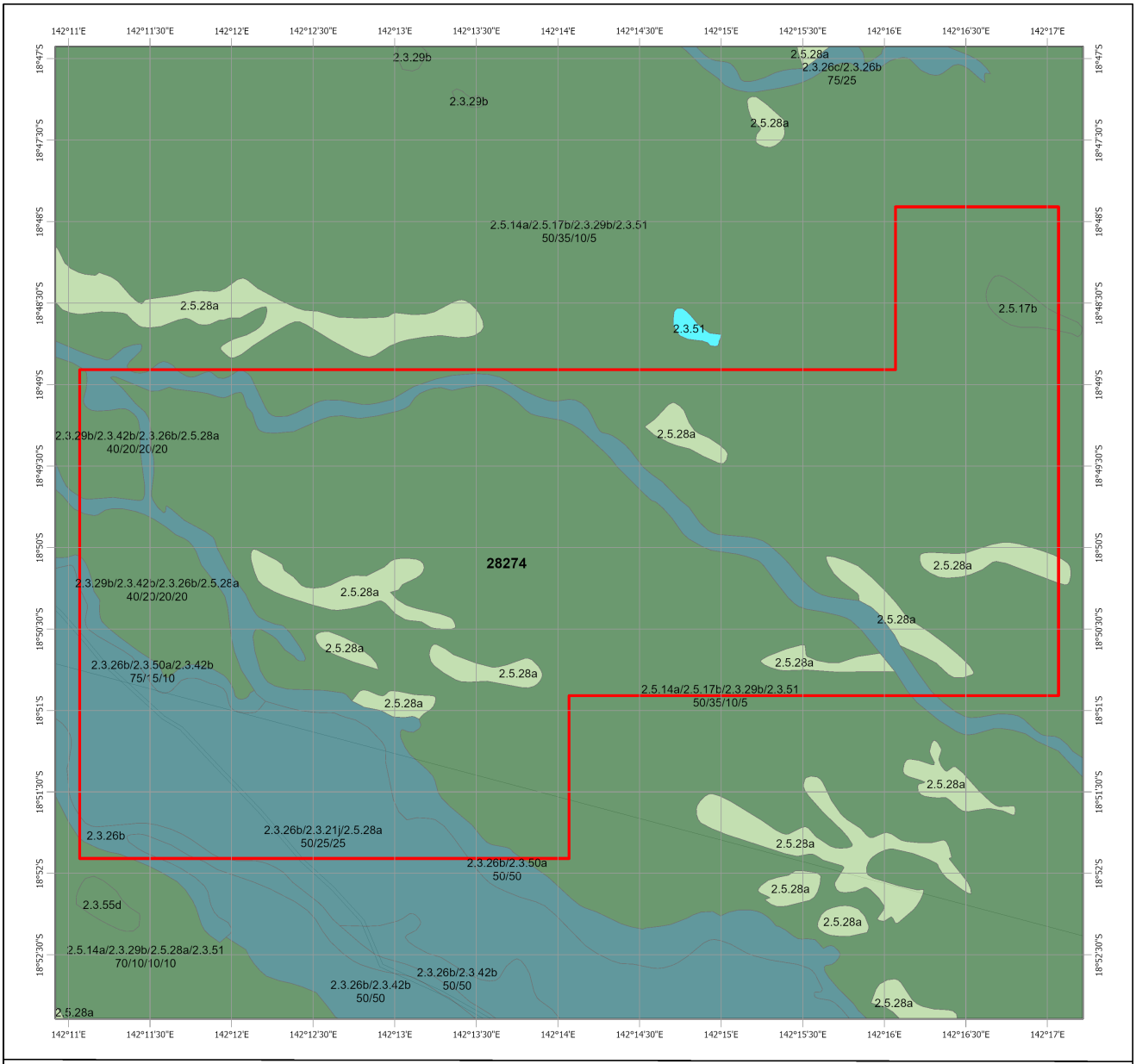
0 0.7 1.4 2.1 2.8 km

This product is displayed in GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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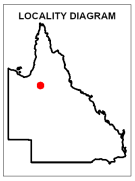
Map 4 - Remnant 2021 regional ecosystems by BVG (5M)

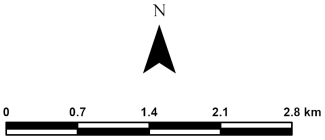


Remnant 2021 Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Non-remnant vegetation, cultivated or built environment
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)





This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.
Remnant woody vegetation is defined as vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Non-remnant vegetation includes regrowth and disturbed native vegetation.

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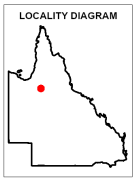
Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Pre-clearing Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

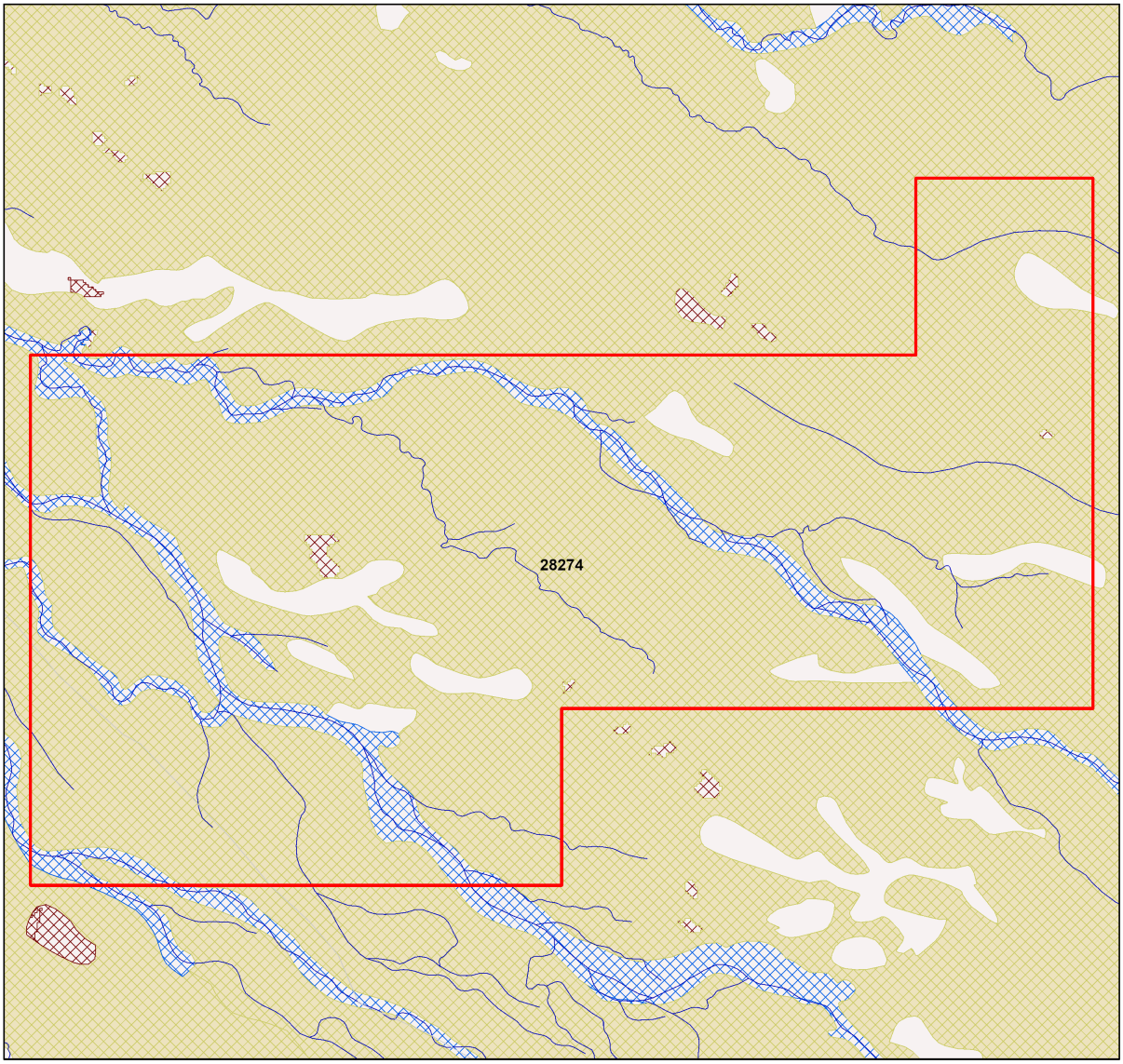
0 0.71 1.42 2.13 2.84 km

This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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Map 6 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

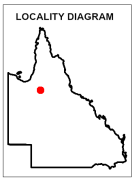
Wetland Type

Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)



N

0 640 1280 1920 2560 3200 m

This product is displayed in GDA2020

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Links and Other Information Sources

The Department of the Environment, Tourism, Science and Innovation's Website - http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/ provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from: https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/broad-vegetation

The methodology for mapping regional ecosystems can be downloaded from: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

Technical descriptions for regional ecosystems can be obtained from: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from: http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Spatial Catalogue, Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link: https://qldglobe.information.qld.gov.au/

References

Neldner, V.J., Niehus, R.E., Wilson, B.A., McDonald, W.J.F., Ford, A.J. and Accad, A. (2023). The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 6.0. Queensland Herbarium, Department of Environment and Science. (https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Richter,D., Addicott, E.P. and Appelman, C.N. (2023) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 7.0. Updated December 2023. Queensland Herbarium, Queensland Department of Environment, Science and Innovation, Brisbane. (https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf).

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems.* Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:
http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:
Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

- Biodiversity status of pre-clearing and 2021 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas
- Pre-clearing broad vegetation groups of Queensland
- Remnant 2021 broad vegetation groups of Queensland

Appendix 2 - Acronyms and Abbreviations

AOI - Area of Interest
GIS - Geographic Information System
RE - Regional Ecosystem
REDD - Regional Ecosystem Description Database
VMA - *Vegetation Management Act 1999*

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
EPM: 25210

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Important Note to User

Information presented in this report is based upon the Queensland Herbarium & Biodiversity Science's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium & Biodiversity Science's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@qld.gov.au

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Details for area of interest:
EPM: 25210, with area 20099.51 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	281.41	1.40
No concern at present	19,807.06	98.54
Total remnant vegetation	20,088.47	99.95

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and may be distinguished by differences in structure or sub-dominant species in the ecologically dominant layer. Vegetation communities with different dominant species in the ecologically dominant layer may be amalgamated in to a regional ecosystem if they are not mappable and predictable in the landscape at 1:100 000 scale. Vegetation communities may be mappable at a scale larger than 1:100 000. Vegetation communities within a regional ecosystem are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2023) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium & Biodiversity Science's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/.

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 percent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 percent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (<1000 ha); or patch size (<100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
2.3.26b	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	71.55	0.36
2.3.26c	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	196.16	0.98
2.3.29b	Melaleuca viridiflora +/- M. citrolens, M. stenostachya low woodland in depressions and broad valleys on solodised soils in the east	No concern at present	2,694.53	13.41
2.3.41	Aristida dominii, Eriachne spp., Chloris lobata +/- Eragrostis basedowii, Iseilema sp. tussock grassland on active Quaternary alluvial plains of major watercourses	Of concern	7.54	0.04
2.3.42b	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. woodland on Quaternary alluvial plains with coarse-grained parent material	Of concern	0.02	less than 0.01
2.3.50a	Waterholes, bare sand and rock in the channels of major watercourses	Of concern	6.14	0.03
2.3.51	Seasonal swamps. Eucalyptus camaldulensis +/- Melaleuca viridiflora low open woodland in closed depressions on Tertiary sand sheets	No concern at present	849.89	4.23
2.5.14a	Melaleuca spp. low woodland on plains on earths and podsolics (south)	No concern at present	8,223.73	40.92
2.5.17b	Melaleuca citrolens and/or M. stenostachya low open woodland on Tertiary outwash deposits and sand sheets in the east	No concern at present	5,888.87	29.30
2.5.28a	Corymbia polycarpa and/or Blakella grandifolia +/- Blakella confertiflora, Erythrophleum chlorostachys open woodland on reworked sand deposits on broad plains and plateau surfaces	No concern at present	2,150.03	10.70
non-remnant	None	None	11.03	0.05

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
2.3.26b	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.26c	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.29b	Pre-clearing 1054000 ha; Remnant 2023 1052000 ha	21a	Not a Wetland	High
2.3.41	Pre-clearing 84000 ha; Remnant 2023 81000 ha	31a	Not a Wetland	Low
2.3.42b	Pre-clearing 504000 ha; Remnant 2023 503000 ha	16c	Not a Wetland	No representation
2.3.50a	Pre-clearing 81000 ha; Remnant 2023 81000 ha	16d	Riverine	Low
2.3.51	Pre-clearing 72000 ha; Remnant 2023 72000 ha	34d	Palustrine	No representation
2.5.14a	Pre-clearing 1369000 ha; Remnant 2023 1368000 ha	21a	Not a Wetland	Medium
2.5.17b	Pre-clearing 451000 ha; Remnant 2023 451000 ha	21b	Not a Wetland	Low
2.5.28a	Pre-clearing 232000 ha; Remnant 2023 232000 ha	18a	Not a Wetland	No representation
non-remnant	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
2.3.26b	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.26c	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.29b	2.3.29: Provides wetland habitat for a flora and fauna. 2.3.29a: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius). 2.3.29b: Provides wetland habitat for a flora and fauna. 2.3.29c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.3.41	None
2.3.42b	None
2.3.50a	2.3.50b: Important sites for feeding and movement of birds, fish and reptiles. Potential habitat for Pristis pristis (freshwater sawfish), Elseya lavarackorum (Gulf snapping turtle) and Malurus coronatus (purple-crowned fairy wren).
2.3.51	2.3.51: Seasonal wetland. Important feeding and moulting sites for water birds.
2.5.14a	2.5.14: Potential habitat for NCA listed species: Solanum carduiforme. 2.5.14c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.5.17b	None
2.5.28a	None
non-remnant	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at: https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	11.03	0.05
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Blakella tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	267.71	1.33
16c	Woodlands and open woodlands dominated by Eucalyptus coolabah (coolabah) or E. microtheca (coolabah) or E. largiflorens (black box) or E. tereticornis (blue gum) or E. chlorophylla on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	0.02	less than 0.01
16d	River beds, open water or sand, or rock, frequently unvegetated.	6.14	0.03
18a	Dry woodlands to open woodlands, dominated by bloodwoods (Blakella dallachiana, Corymbia terminalis (desert bloodwood), C. plena, or Blakella leichhardtii (rustyjacket)) or ironbarks (Eucalyptus quadricostata (Pentland ironbark), E. crebra (narrow-leaved red ironbark) or E. exilipes (fine-leaved ironbark)), often with E. acmenoides (narrow-leaved white stringybark), Angophora leiocarpa (rusty gum) and Callitris glaucophylla (white cypress pine) in the Brigalow Belt, on sandy plateaus and plains.	2,150.03	10.70
21a	Low woodlands and low open woodlands dominated by Melaleuca viridiflora (coarse-leaved paperbark) on depositional plains.	10,918.26	54.32
21b	Low open woodlands and tall shrublands of Melaleuca stenostachya or M. citrolens or other Melaleuca spp.	5,888.87	29.30
31a	Open forblands to open tussock grasslands which may be composed of Atriplex spp. (saltbush), Sclerolaena spp. (burr), Asteraceae spp. and/or short grasses on alluvial plains.	7.54	0.04
34d	Palustrine wetlands. Freshwater swamps/springs/billabongs on floodplains ranging from permanent and semi-permanent to ephemeral.	849.89	4.23

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium & Biodiversity Science's QBEIS database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2023 (PDF)* section 3.3 of: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community. http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

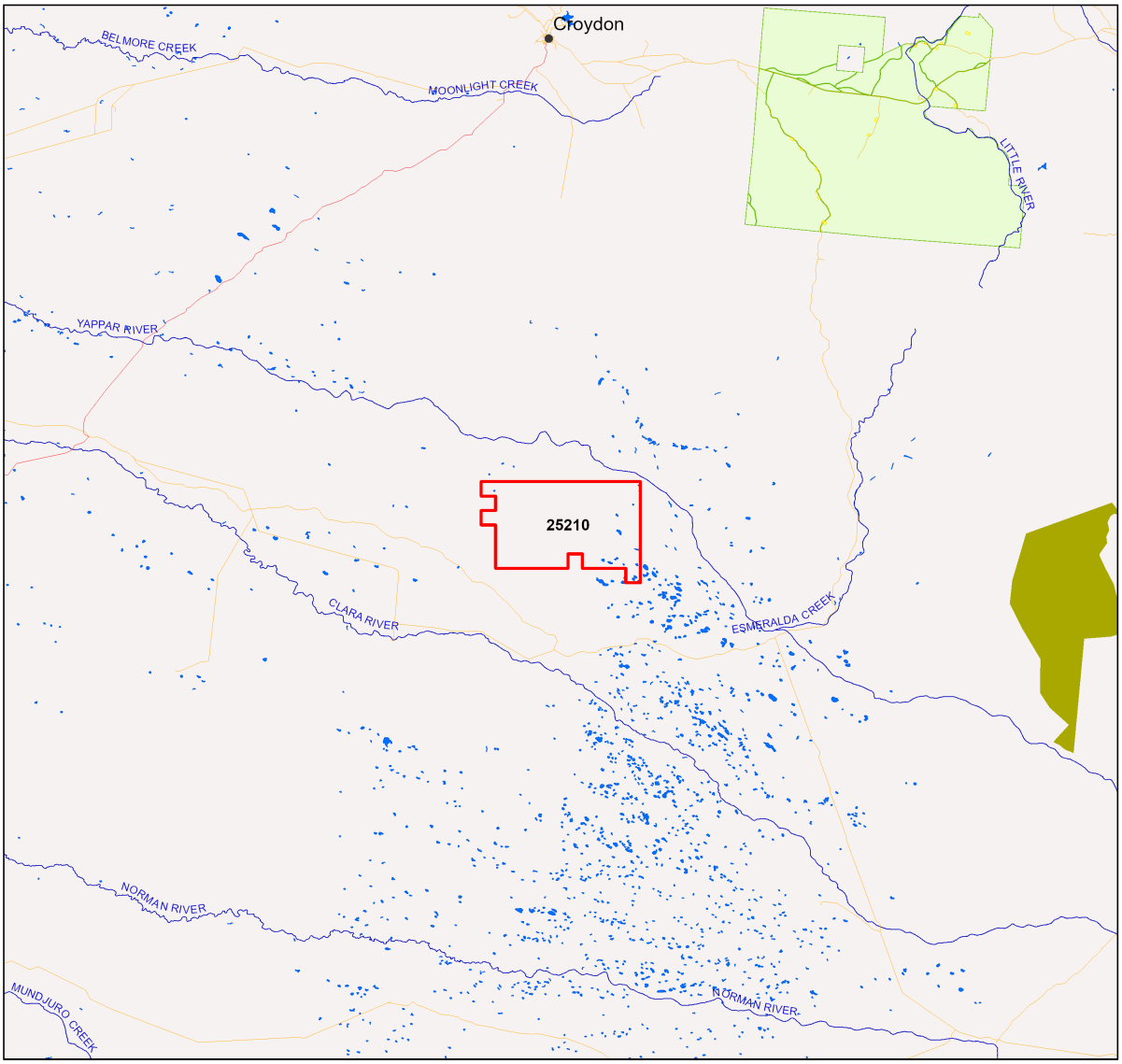
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
2.3.26b	Not currently available	Not currently available
2.3.26c	Not currently available	Not currently available
2.3.29b	Not currently available	Not currently available
2.3.41	Not currently available	Not currently available
2.3.42b	Not currently available	Not currently available
2.3.50a	Not currently available	Not currently available
2.3.51	Not currently available	Not currently available
2.5.14a	Not currently available	Not currently available
2.5.17b	Not currently available	Not currently available
2.5.28a	Not currently available	Not currently available
non-remnant	Not currently available	Not currently available

Maps

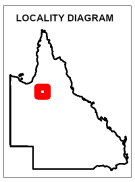
Map 1 - Location



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Exploration Permit Mineral (EPM)



N

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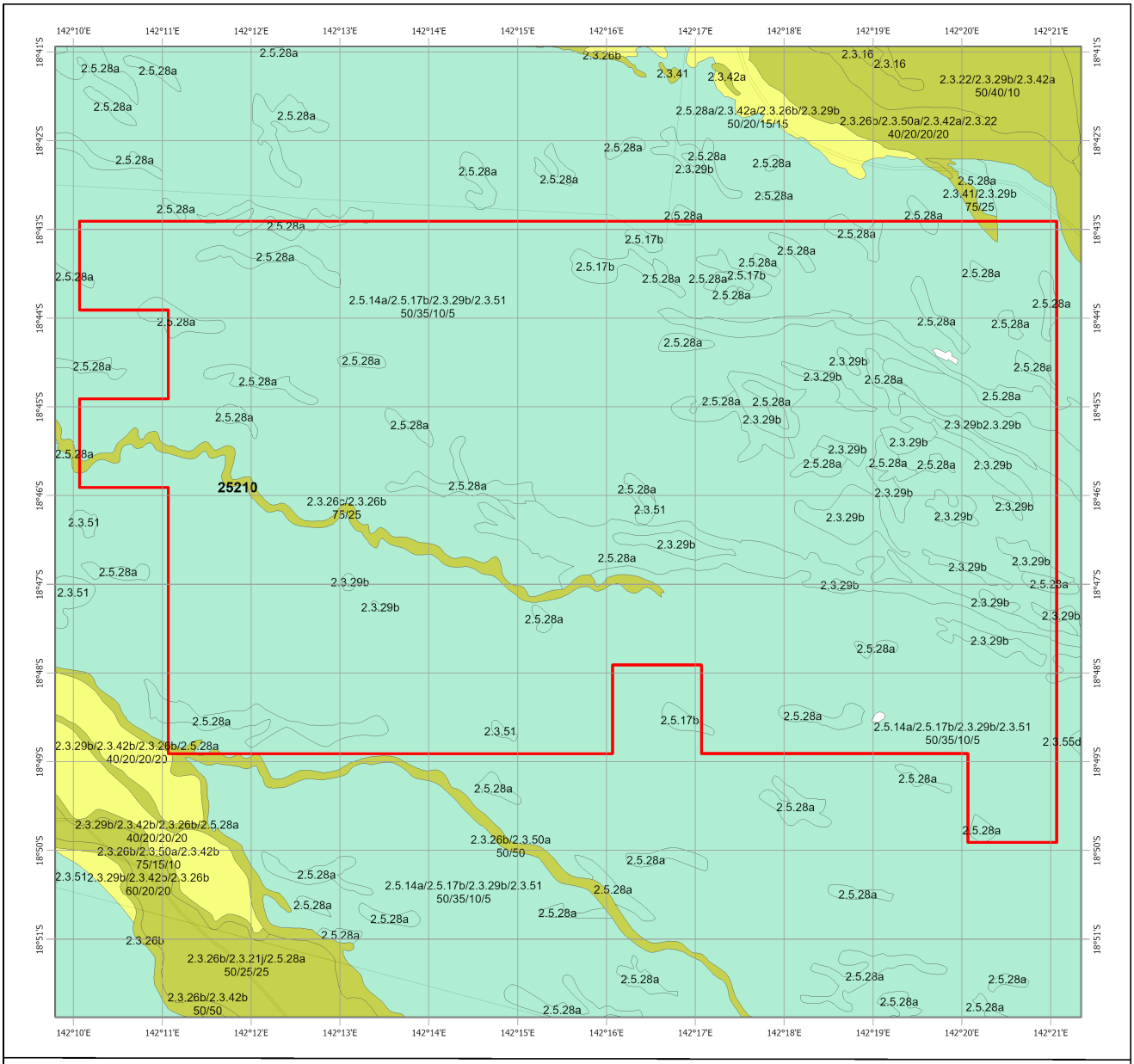
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Map 2 - Remnant 2021 regional ecosystems



Remnant 2021 Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Non-remnant vegetation, cultivated or built environment
- Plantation
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

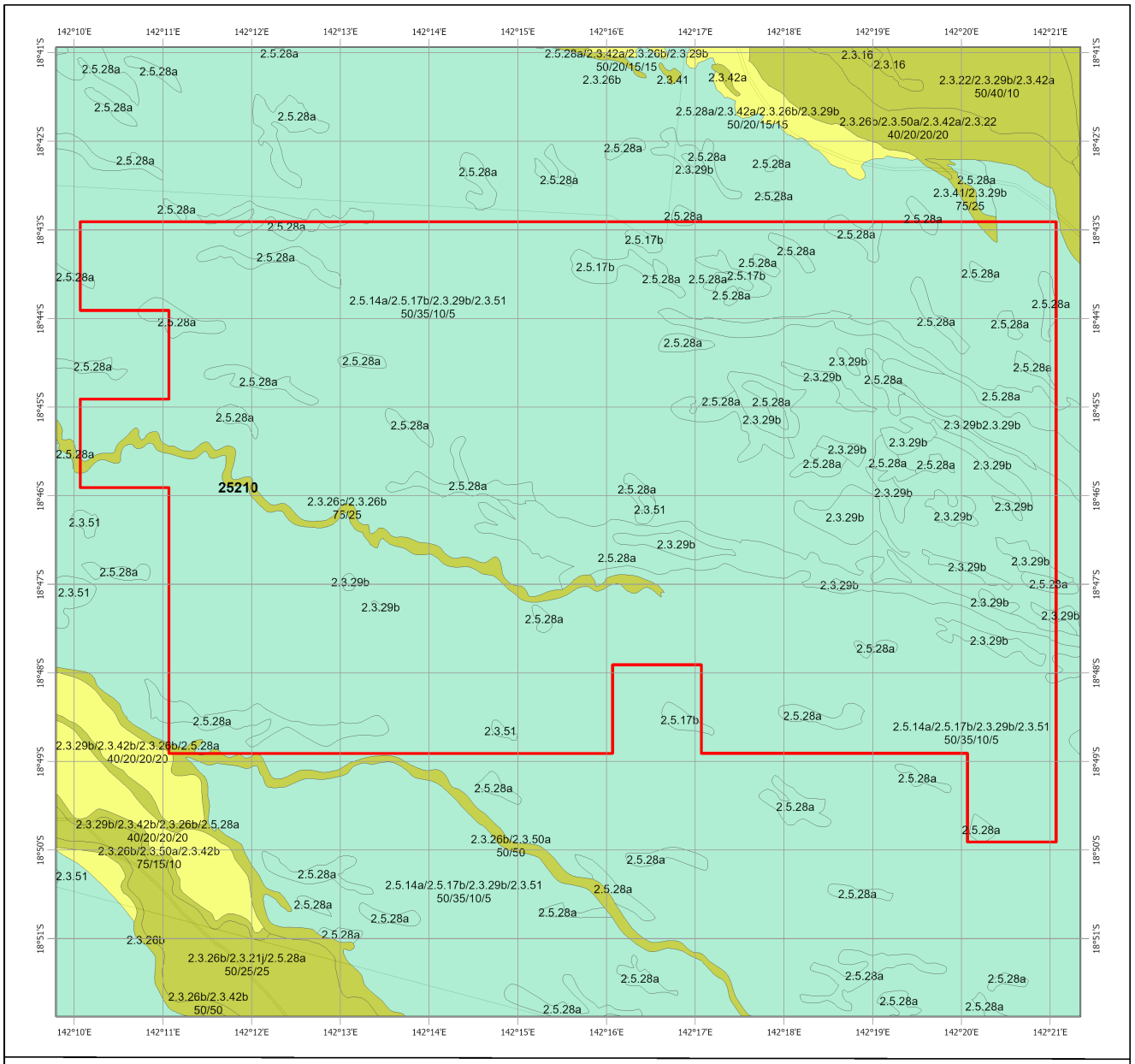
0 1.25 2.5 3.75 5 km

This product is projected into GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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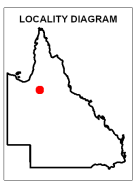
Map 3 - Pre-clearing regional ecosystems



Pre-clearing Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

0 1.3 2.6 3.9 5.2 km

This product is displayed in GDA2020

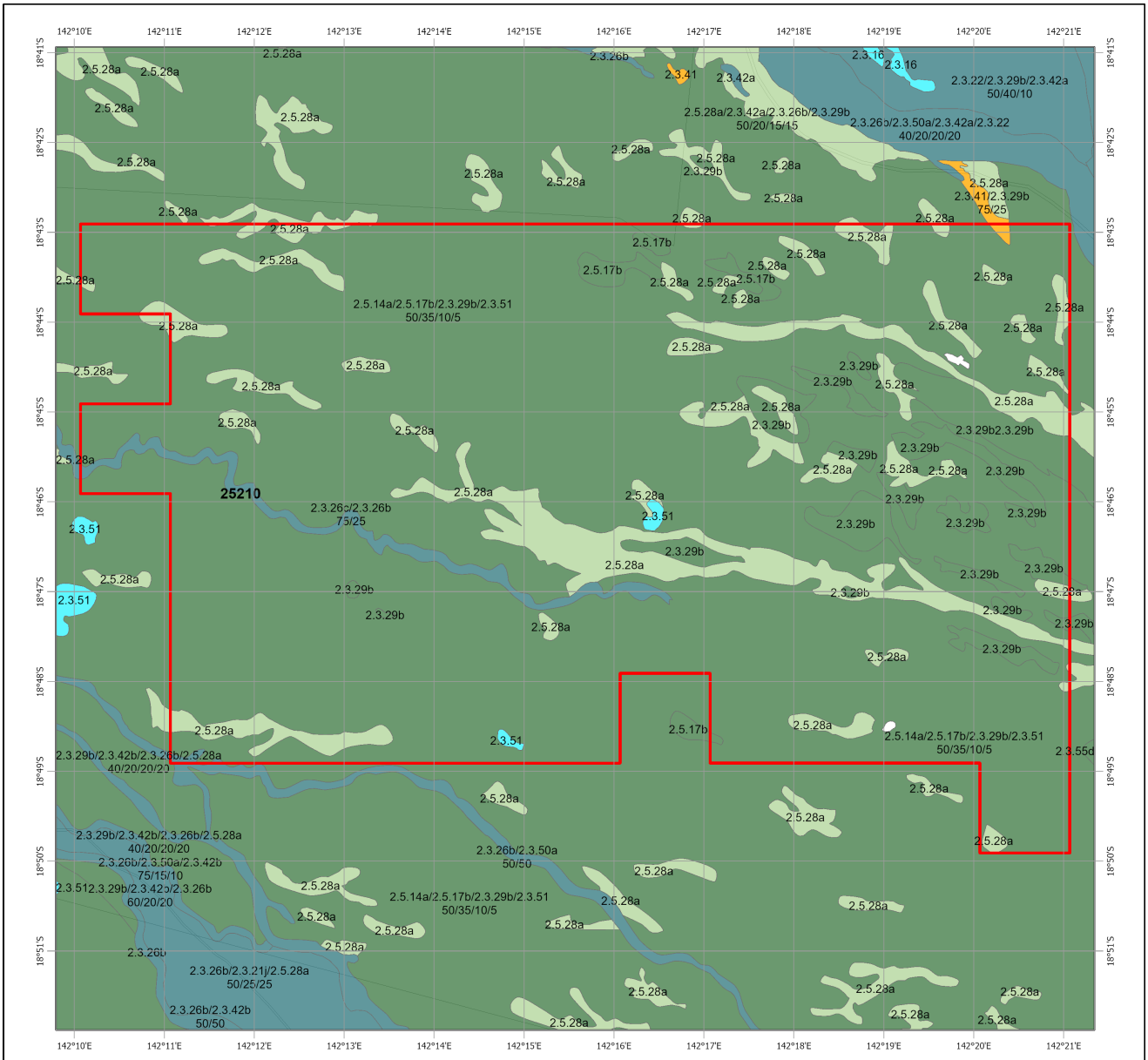
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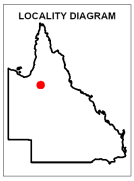
Map 4 - Remnant 2021 regional ecosystems by BVG (5M)



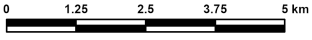
Remnant 2021 Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Non-remnant vegetation, cultivated or built environment
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)





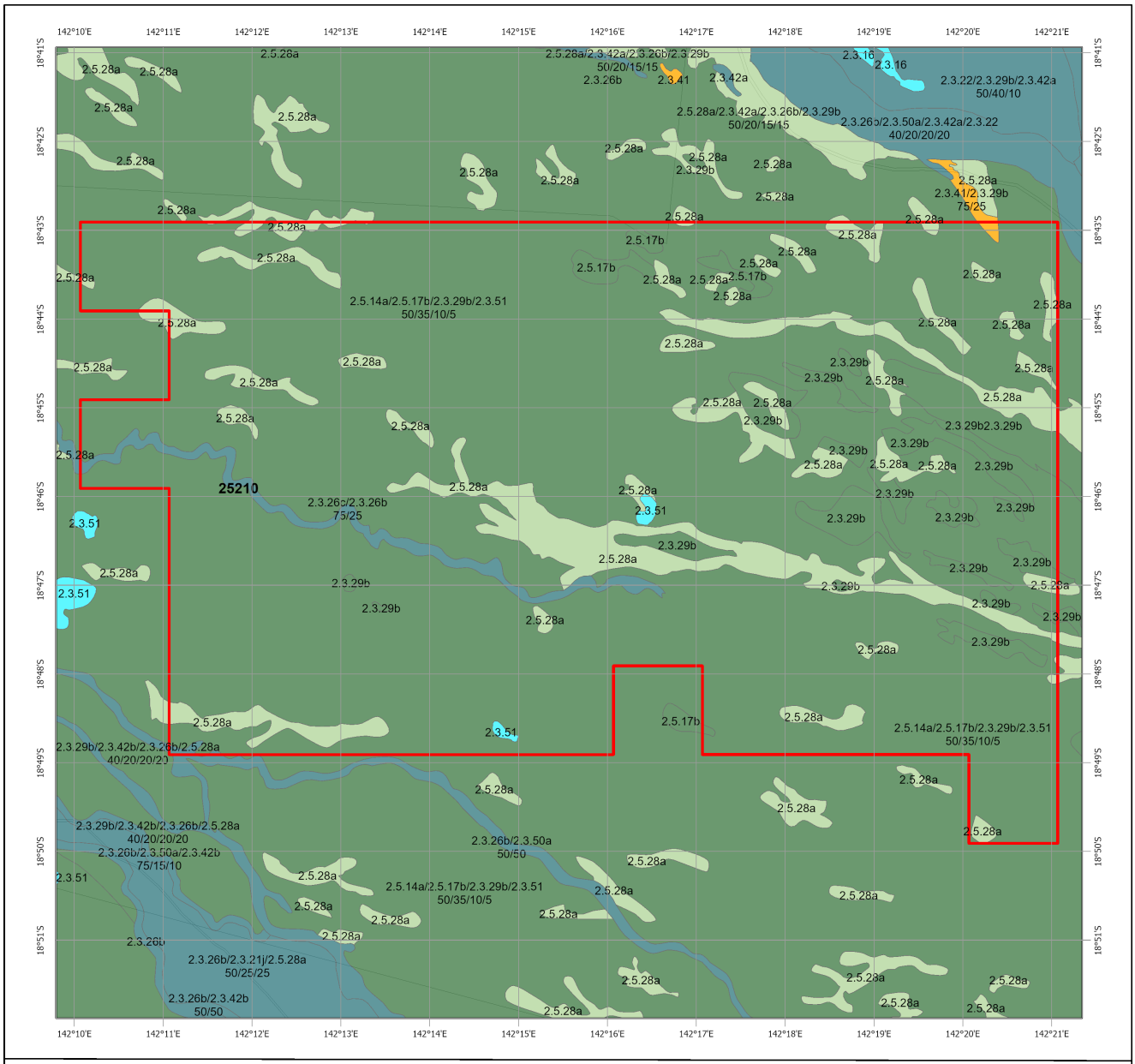


This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.
Remnant woody vegetation is defined as vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Non-remnant vegetation includes regrowth and disturbed native vegetation.

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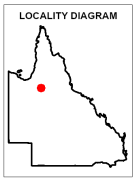
Map 5 - Pre-clearing regional ecosystems by BVG (5M)

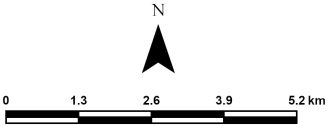


Pre-clearing Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



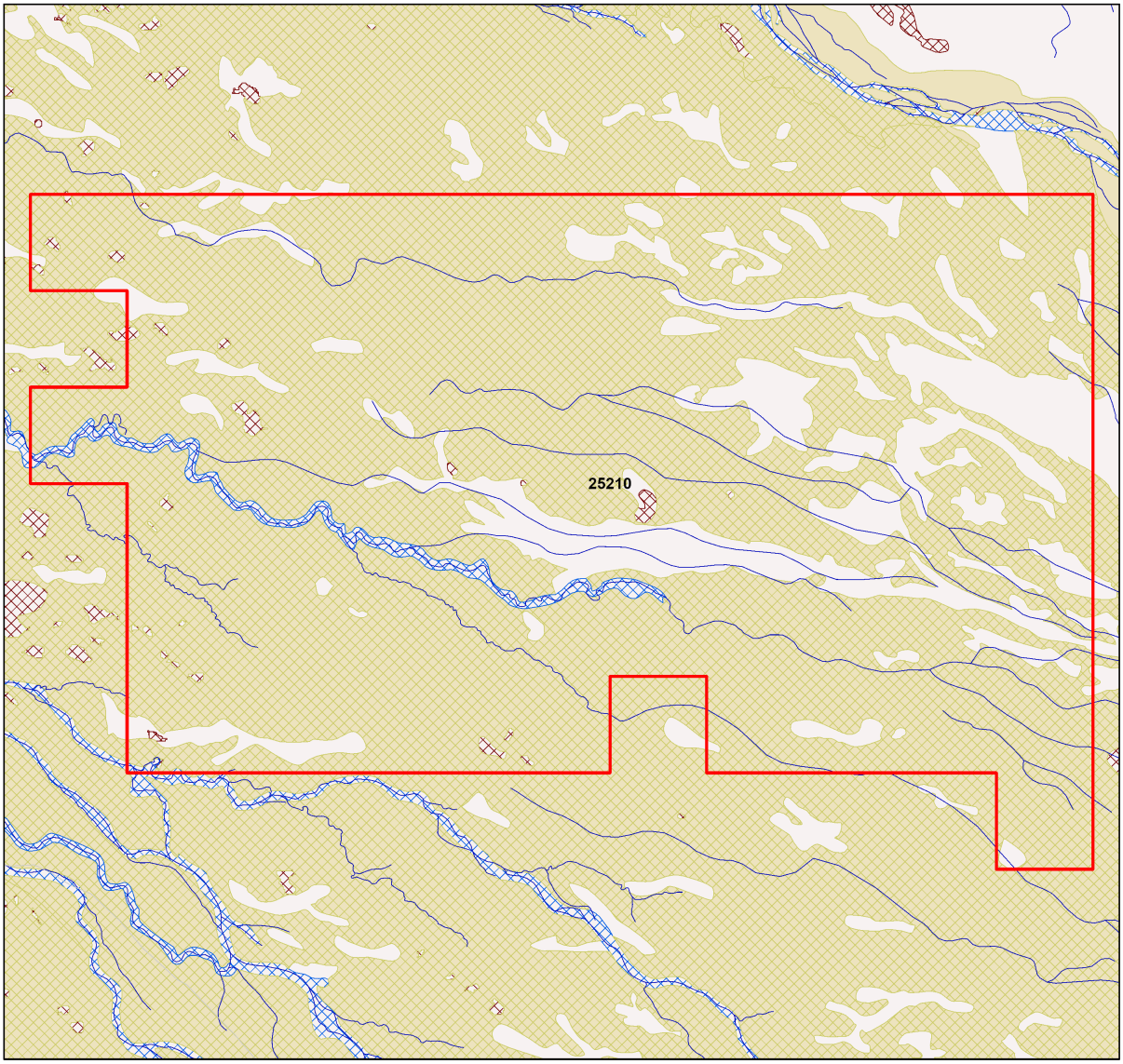


This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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Map 6 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

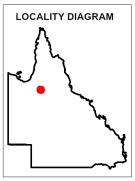
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 1000 2000 3000 4000 5000 m

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Links and Other Information Sources

The Department of the Environment, Tourism, Science and Innovation's Website - http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/ provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from: https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/broad-vegetation

The methodology for mapping regional ecosystems can be downloaded from: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

Technical descriptions for regional ecosystems can be obtained from: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from: http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Spatial Catalogue, Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link: https://qldglobe.information.qld.gov.au/

References

Neldner, V.J., Niehus, R.E., Wilson, B.A., McDonald, W.J.F., Ford, A.J. and Accad, A. (2023). The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 6.0. Queensland Herbarium, Department of Environment and Science. (https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Richter,D., Addicott, E.P. and Appelman, C.N. (2023) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 7.0. Updated December 2023. Queensland Herbarium, Queensland Department of Environment, Science and Innovation, Brisbane. (https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf).

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems.* Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:
http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:
Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

- Biodiversity status of pre-clearing and 2021 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas
- Pre-clearing broad vegetation groups of Queensland
- Remnant 2021 broad vegetation groups of Queensland

Appendix 2 - Acronyms and Abbreviations

AOI - Area of Interest
GIS - Geographic Information System
RE - Regional Ecosystem
REDD - Regional Ecosystem Description Database
VMA - *Vegetation Management Act 1999*

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
EPM: 27818

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Important Note to User

Information presented in this report is based upon the Queensland Herbarium & Biodiversity Science's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium & Biodiversity Science's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@qld.gov.au

Disclaimer

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Details for area of interest:
EPM: 27818, with area 2267.95 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	573.76	25.30
No concern at present	1,694.19	74.70
Total remnant vegetation	2,267.95	100.00

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and may be distinguished by differences in structure or sub-dominant species in the ecologically dominant layer. Vegetation communities with different dominant species in the ecologically dominant layer may be amalgamated in to a regional ecosystem if they are not mappable and predictable in the landscape at 1:100 000 scale. Vegetation communities may be mappable at a scale larger than 1:100 000. Vegetation communities within a regional ecosystem are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2023) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium & Biodiversity Science's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/.

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 percent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 percent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (<1000 ha); or patch size (<100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
2.3.21j	Eucalyptus leptophleba, Corymbia polycarpa, Blakella confertiflora, Blakella bella woodland on active levees and terraces associated with major watercourses in the east	Of concern	96.62	4.26
2.3.26b	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	341.57	15.06
2.3.29b	Melaleuca viridiflora +/- M. citrolens, M. stenostachya low woodland in depressions and broad valleys on solodised soils in the east	No concern at present	139.55	6.15
2.3.42b	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. woodland on Quaternary alluvial plains with coarse-grained parent material	Of concern	41.38	1.82
2.3.50a	Waterholes, bare sand and rock in the channels of major watercourses	Of concern	94.18	4.15
2.3.51	Seasonal swamps. Eucalyptus camaldulensis +/- Melaleuca viridiflora low open woodland in closed depressions on Tertiary sand sheets	No concern at present	69.77	3.08
2.5.14a	Melaleuca spp. low woodland on plains on earths and podsolics (south)	No concern at present	697.74	30.77
2.5.17b	Melaleuca citrolens and/or M. stenostachya low open woodland on Tertiary outwash deposits and sand sheets in the east	No concern at present	488.42	21.54
2.5.28a	Corymbia polycarpa and/or Blakella grandifolia +/- Blakella confertiflora, Erythrophleum chlorostachys open woodland on reworked sand deposits on broad plains and plateau surfaces	No concern at present	298.72	13.17

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
2.3.21j	Pre-clearing 371000 ha; Remnant 2023 359000 ha	16b	Not a Wetland	Medium
2.3.26b	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.29b	Pre-clearing 1054000 ha; Remnant 2023 1052000 ha	21a	Not a Wetland	High
2.3.42b	Pre-clearing 504000 ha; Remnant 2023 503000 ha	16c	Not a Wetland	No representation
2.3.50a	Pre-clearing 81000 ha; Remnant 2023 81000 ha	16d	Riverine	Low
2.3.51	Pre-clearing 72000 ha; Remnant 2023 72000 ha	34d	Palustrine	No representation
2.5.14a	Pre-clearing 1369000 ha; Remnant 2023 1368000 ha	21a	Not a Wetland	Medium
2.5.17b	Pre-clearing 451000 ha; Remnant 2023 451000 ha	21b	Not a Wetland	Low
2.5.28a	Pre-clearing 232000 ha; Remnant 2023 232000 ha	18a	Not a Wetland	No representation

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
2.3.21j	2.3.21: Significant habitat for arboreal mammals and for animals using hollows. 2.3.21j: Provincial refuge for some woodland flora and fauna. 2.3.21x12: Supports locally uncommon plant species. 2.3.21x3b: The only mappable occurrence of Neofabricia mjoebergii in the bioregion.

Regional Ecosystem	Special Values
2.3.26b	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.29b	2.3.29: Provides wetland habitat for a flora and fauna. 2.3.29a: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius). 2.3.29b: Provides wetland habitat for a flora and fauna. 2.3.29c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.3.42b	None
2.3.50a	2.3.50b: Important sites for feeding and movement of birds, fish and reptiles. Potential habitat for Pristis pristis (freshwater sawfish), Elseya lavarackorum (Gulf snapping turtle) and Malurus coronatus (purple-crowned fairy wren).
2.3.51	2.3.51: Seasonal wetland. Important feeding and moulting sites for water birds.
2.5.14a	2.5.14: Potential habitat for NCA listed species: Solanum carduiforme. 2.5.14c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.5.17b	None
2.5.28a	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at: https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Blakella tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	341.57	15.06
16b	Woodlands dominated by Eucalyptus leptophleba (Molloy red box), with Blakella tessellaris (carbeen), B. dallachiana or Corymbia clarksoniana (grey bloodwood); or dominated by Blakella spp., Corymbia terminalis (desert bloodwood) or other Corymbia spp. in the Gulf Plains and Northwest Highlands bioregions. On sandy levees.	96.62	4.26
16c	Woodlands and open woodlands dominated by Eucalyptus coolabah (coolabah) or E. microtheca (coolabah) or E. largiflorens (black box) or E. tereticornis (blue gum) or E. chlorophylla on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	41.38	1.82
16d	River beds, open water or sand, or rock, frequently unvegetated.	94.18	4.15
18a	Dry woodlands to open woodlands, dominated by bloodwoods (Blakella dallachiana, Corymbia terminalis (desert bloodwood), C. plena, or Blakella leichhardtii (rustyjacket)) or ironbarks (Eucalyptus quadricostata (Pentland ironbark), E. crebra (narrow-leaved red ironbark) or E. exilipes (fine-leaved ironbark)), often with E. acmenoides (narrow-leaved white stringybark), Angophora leiocarpa (rusty gum) and Callitris glaucophylla (white cypress pine) in the Brigalow Belt, on sandy plateaus and plains.	298.72	13.17
21a	Low woodlands and low open woodlands dominated by Melaleuca viridiflora (coarse-leaved paperbark) on depositional plains.	837.29	36.92
21b	Low open woodlands and tall shrublands of Melaleuca stenostachya or M. citrolens or other Melaleuca spp.	488.42	21.54
34d	Palustrine wetlands. Freshwater swamps/springs/billabongs on floodplains ranging from permanent and semi-permanent to ephemeral.	69.77	3.08

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium & Biodiversity Science's QBEIS database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2023 (PDF)* section 3.3 of: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community. http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

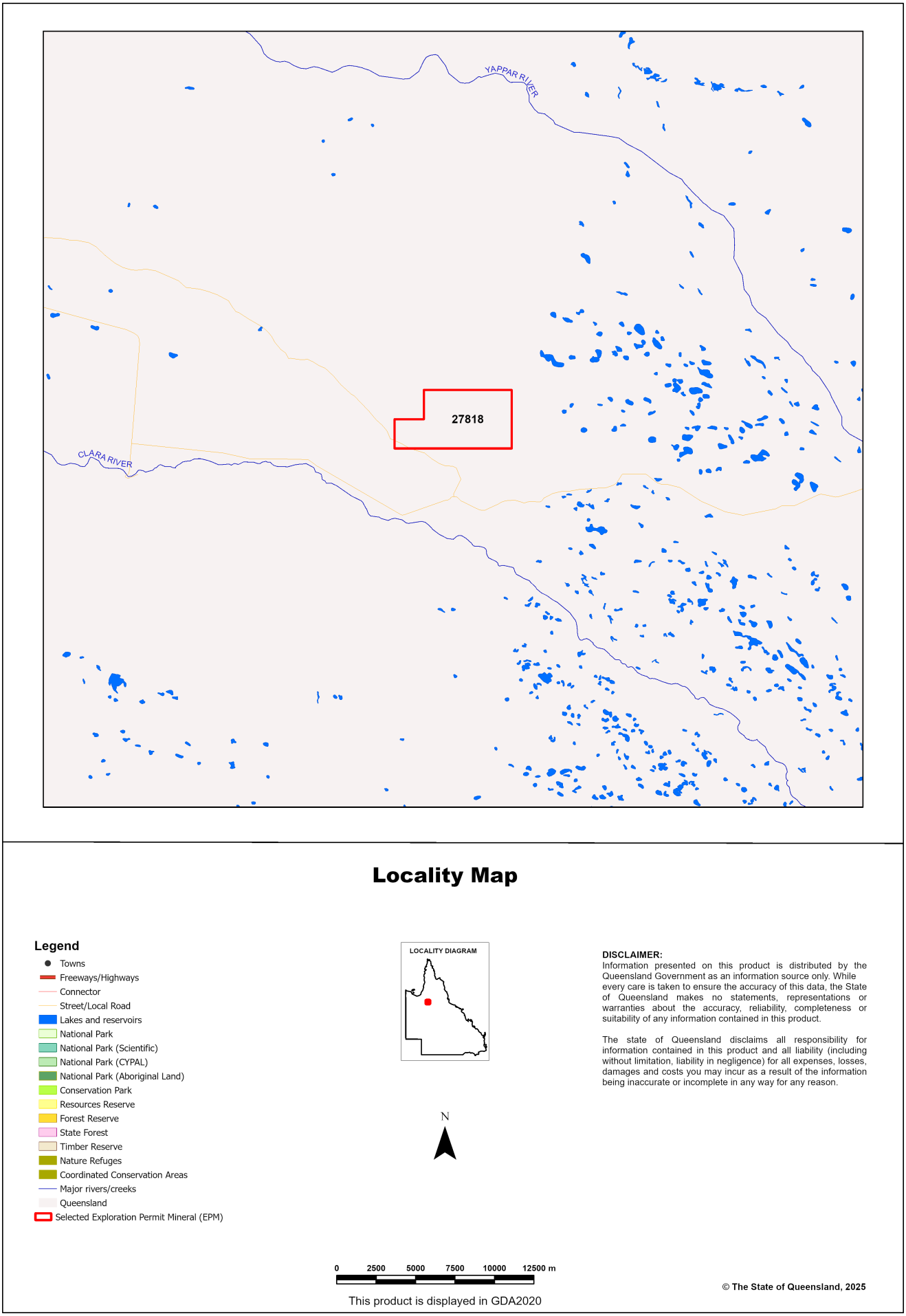
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

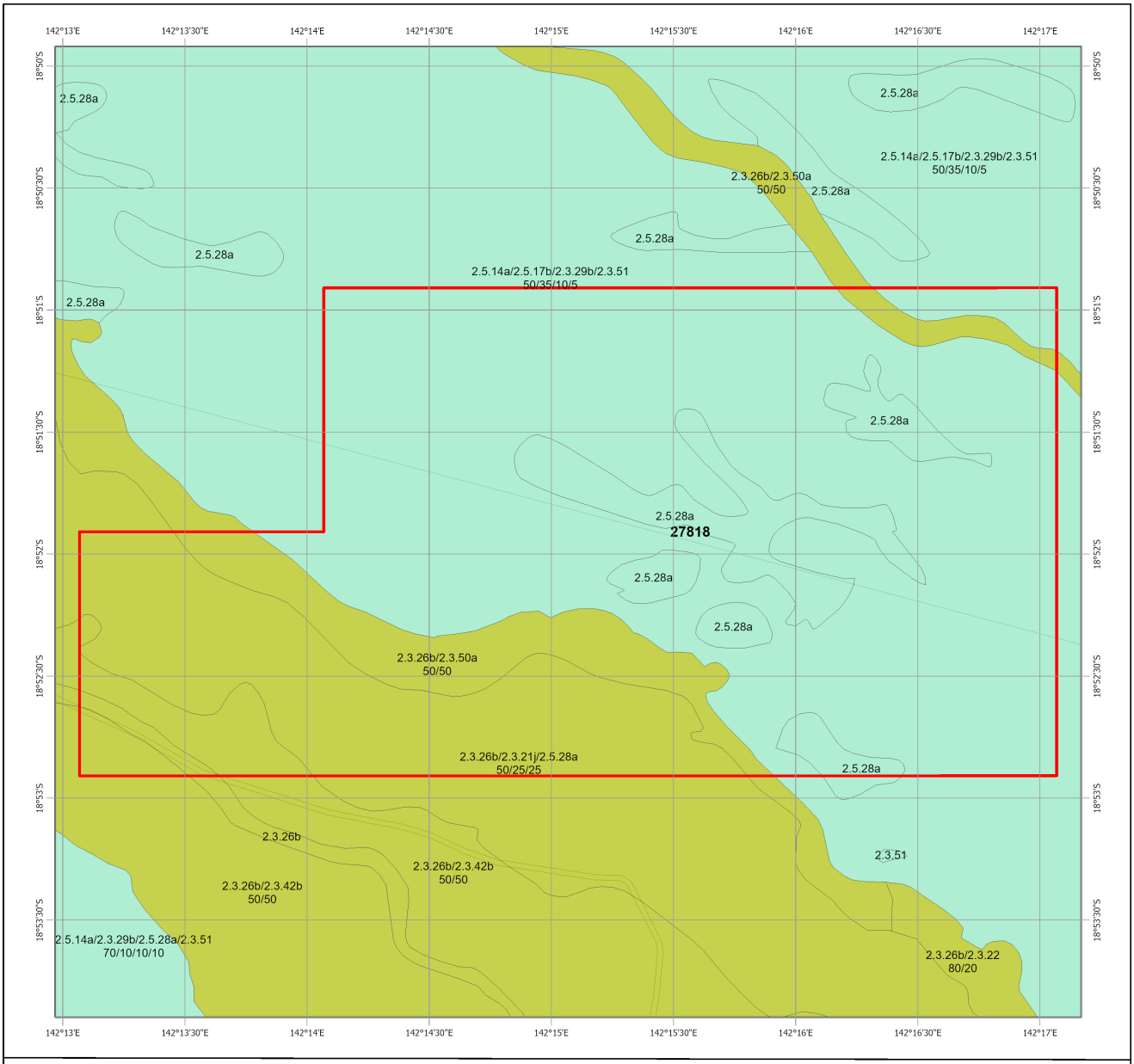
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
2.3.21j	Not currently available	Not currently available
2.3.26b	Not currently available	Not currently available
2.3.29b	Not currently available	Not currently available
2.3.42b	Not currently available	Not currently available
2.3.50a	Not currently available	Not currently available
2.3.51	Not currently available	Not currently available
2.5.14a	Not currently available	Not currently available
2.5.17b	Not currently available	Not currently available
2.5.28a	Not currently available	Not currently available

Maps

Map 1 - Location



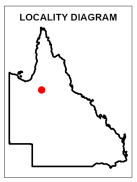
Map 2 - Remnant 2021 regional ecosystems

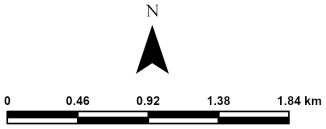


Remnant 2021 Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Non-remnant vegetation, cultivated or built environment
- Plantation
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



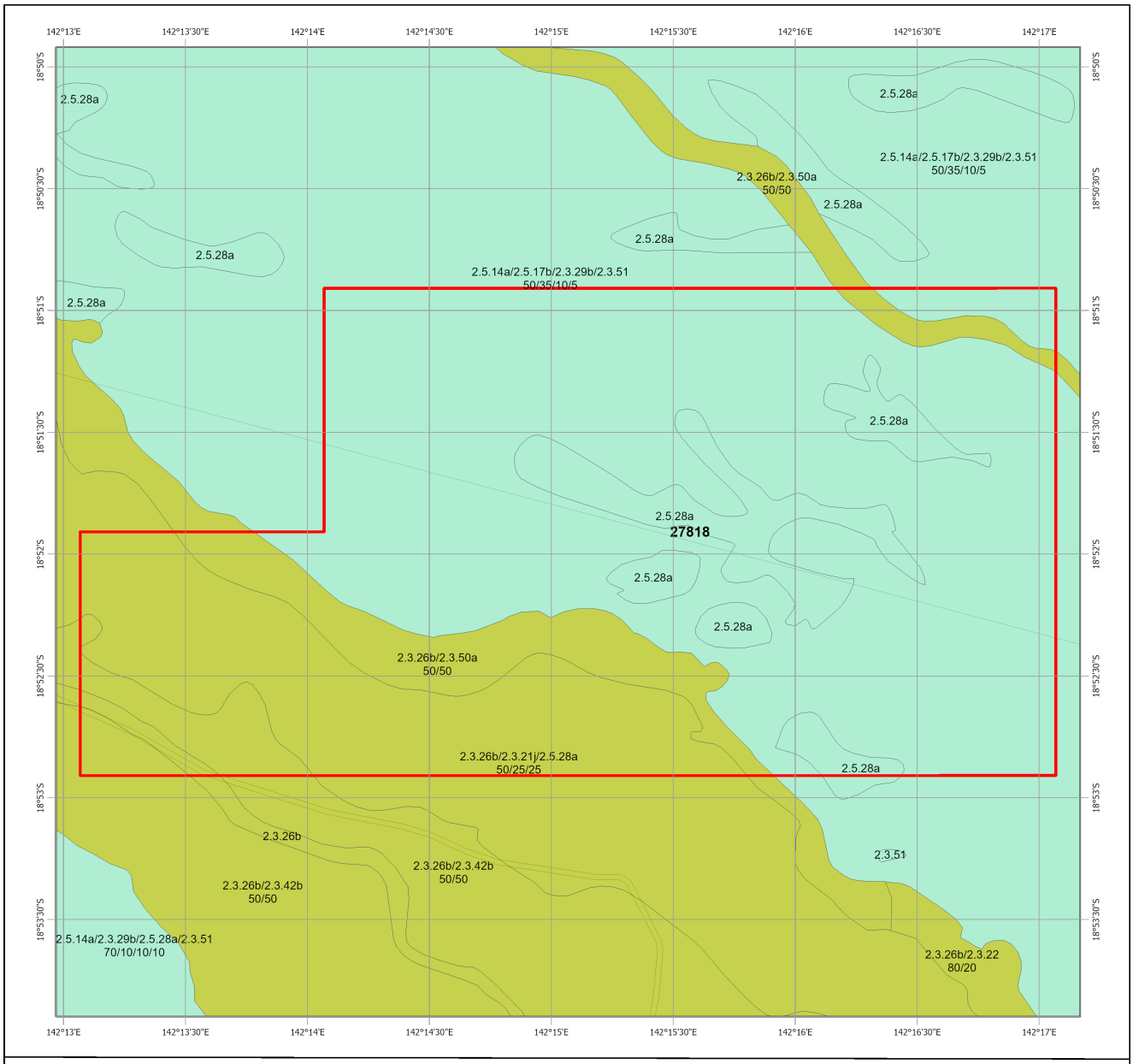


This product is projected into GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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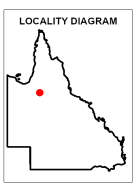
Map 3 - Pre-clearing regional ecosystems



Pre-clearing Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

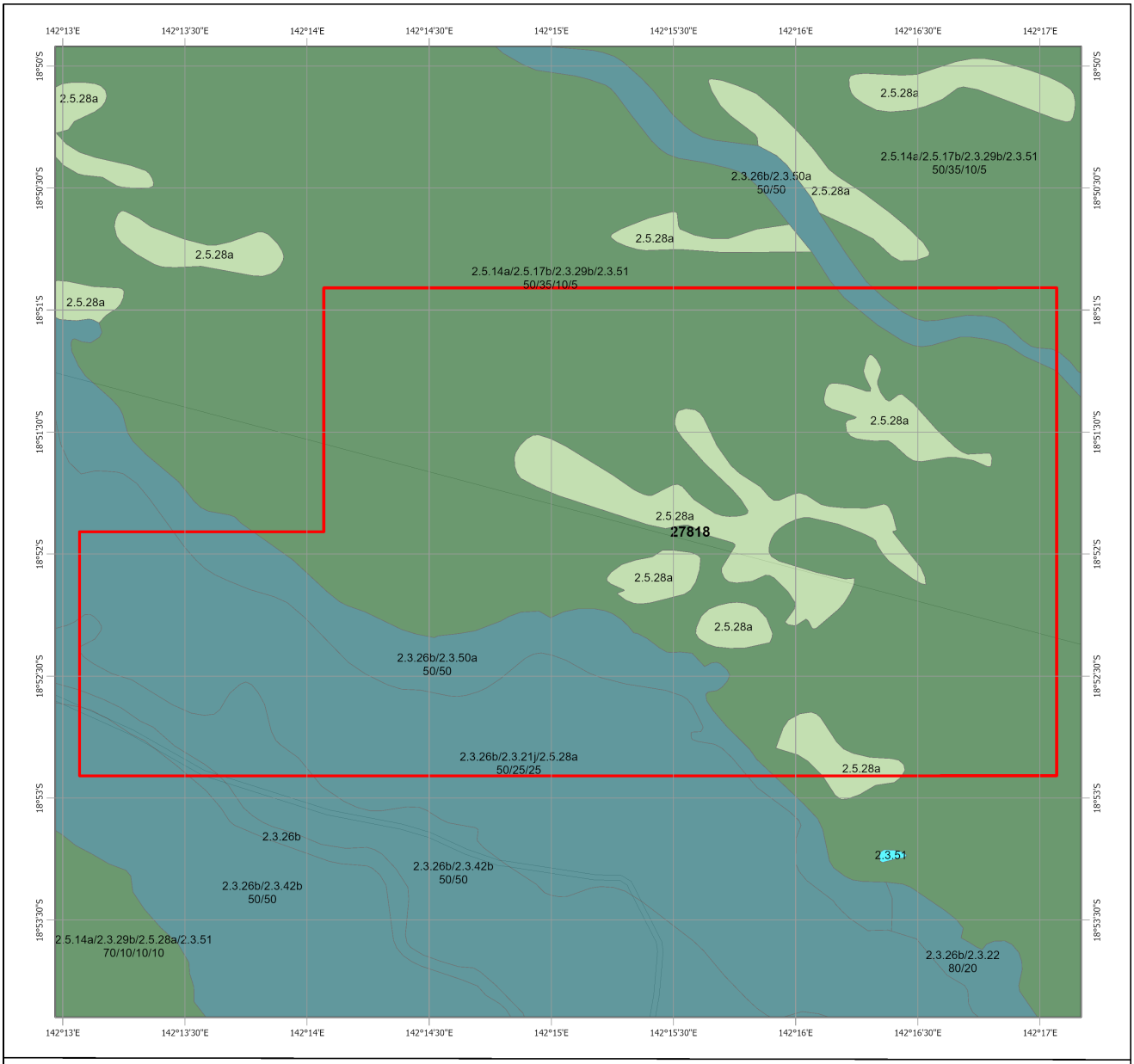
0 0.47 0.93 1.4 1.86 km

This product is displayed in GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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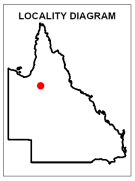
Map 4 - Remnant 2021 regional ecosystems by BVG (5M)



Remnant 2021 Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Non-remnant vegetation, cultivated or built environment
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

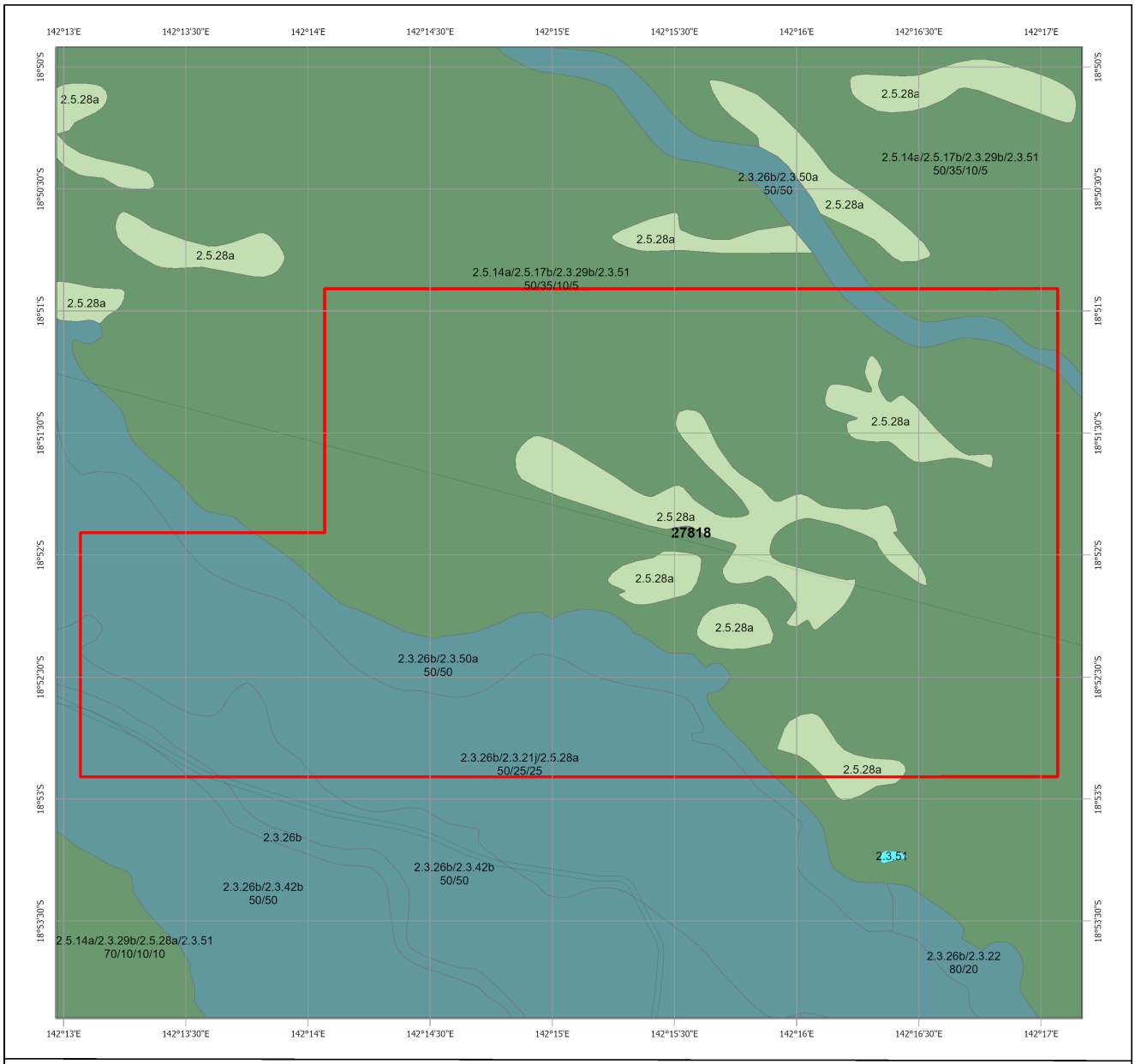
0 0.46 0.92 1.38 1.84 km

This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.
Remnant woody vegetation is defined as vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Non-remnant vegetation includes regrowth and disturbed native vegetation.

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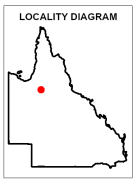
Map 5 - Pre-clearing regional ecosystems by BVG (5M)



Pre-clearing Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
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- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

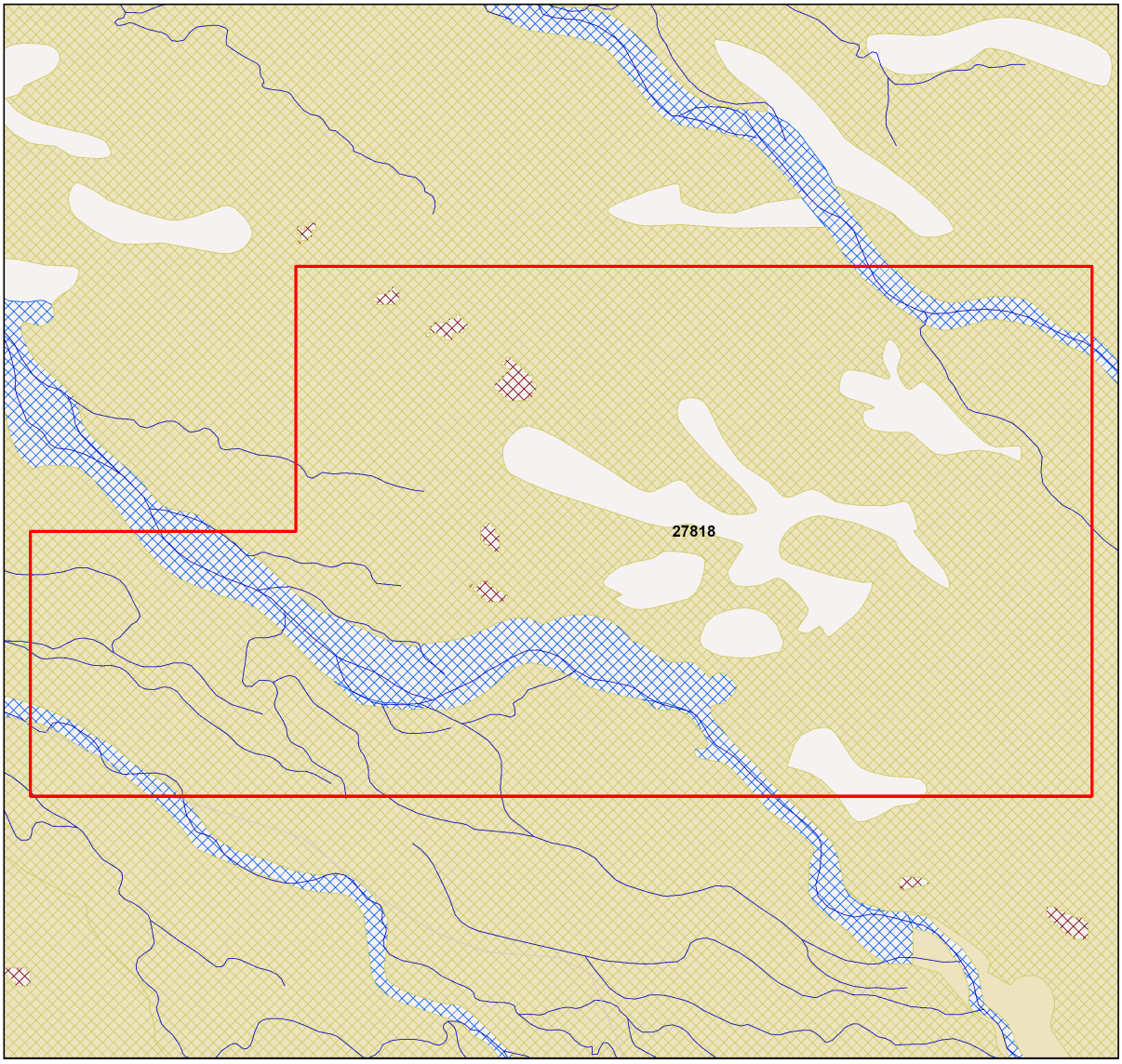
0 0.47 0.94 1.41 1.88 km

This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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Map 6 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

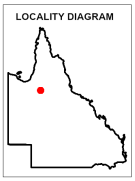
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 420 840 1260 1680 2100 m

This product is displayed in GDA2020

DISCLAIMER:
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Links and Other Information Sources

The Department of the Environment, Tourism, Science and Innovation's Website - http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/ provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from: https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/broad-vegetation

The methodology for mapping regional ecosystems can be downloaded from: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

Technical descriptions for regional ecosystems can be obtained from: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from: http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Spatial Catalogue, Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link: https://qldglobe.information.qld.gov.au/

References

Neldner, V.J., Niehus, R.E., Wilson, B.A., McDonald, W.J.F., Ford, A.J. and Accad, A. (2023). The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 6.0. Queensland Herbarium, Department of Environment and Science. (https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Richter,D., Addicott, E.P. and Appelman, C.N. (2023) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 7.0. Updated December 2023. Queensland Herbarium, Queensland Department of Environment, Science and Innovation, Brisbane. (https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf).

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems.* Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:
http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:
Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

- Biodiversity status of pre-clearing and 2021 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas
- Pre-clearing broad vegetation groups of Queensland
- Remnant 2021 broad vegetation groups of Queensland

Appendix 2 - Acronyms and Abbreviations

AOI - Area of Interest
GIS - Geographic Information System
RE - Regional Ecosystem
REDD - Regional Ecosystem Description Database
VMA - *Vegetation Management Act 1999*

Queensland Government

Department of the Environment, Tourism, Science and Innovation

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
EPM: 27195

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 2020). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Important Note to User

Information presented in this report is based upon the Queensland Herbarium & Biodiversity Science's Regional Ecosystem framework. The Biodiversity Status has been used to depict the extent of "Endangered", "Of Concern" and "No Concern at Present" regional ecosystems in all cases, rather than the classes used for the purposes of the *Vegetation Management Act 1999* (VMA). Mapping and figures presented in this document reflect the Queensland Herbarium & Biodiversity Science's Remnant and Pre-clearing Regional Ecosystem Datasets, and not the certified mapping used for the purpose of the VMA.

For matters relevant to vegetation management under the VMA, please refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/

Please direct queries about these reports to: Queensland.Herbarium@qld.gov.au

Disclaimer

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Summary Information

The following table provides an overview of the AOI with respect to selected topographic and environmental themes. Refer to **Map 1** for locality information.

Table 1: Details for area of interest:
EPM: 27195, with area 23644.37 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Croydon Shire	Norman	Gulf Plains	Claraville Plains

The table below summarizes the extent of remnant vegetation classed as "Endangered", "Of concern" and "No concern at present" regional ecosystems classified by Biodiversity Status within the area of interest (AOI).

Table 2: Summary table, biodiversity status of regional ecosystems within the AOI

Biodiversity Status	Area (Ha)	% of AOI
Endangered	0.00	0.00
Of concern	2,511.08	10.62
No concern at present	21,112.58	89.29
Total remnant vegetation	23,623.66	99.91

Refer to **Map 2** for further information.

Regional Ecosystems

1. Introduction

Regional ecosystems are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (Sattler and Williams 1999). Descriptions of Queensland's Regional ecosystems are available online from the Regional Ecosystem Description Database (REDD). Descriptions are compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data. The regional ecosystem classification and descriptions are reviewed as new information becomes available. A number of vegetation communities may form a single regional ecosystem and may be distinguished by differences in structure or sub-dominant species in the ecologically dominant layer. Vegetation communities with different dominant species in the ecologically dominant layer may be amalgamated in to a regional ecosystem if they are not mappable and predictable in the landscape at 1:100 000 scale. Vegetation communities may be mappable at a scale larger than 1:100 000. Vegetation communities within a regional ecosystem are denoted by a letter following the regional ecosystem code (e.g. a, b, c). Vegetation communities and regional ecosystems are amalgamated into a higher level classification of broad vegetation groups (BVGs).

A published methodology for survey and mapping of regional ecosystems across Queensland (Neldner et al 2023) provides further details on regional ecosystem concepts and terminology.

This report provides information on the type, status, and extent of vegetation communities, regional ecosystems and broad vegetation groups present within a user specified area of interest. Please note, for the purpose of this report, the Biodiversity Status is used. This report has not been developed for application of the *Vegetation Management Act 1999* (VMA). Additionally, information generated in this report has been derived from the Queensland Herbarium & Biodiversity Science's Regional Ecosystem Mapping, and not the regulated mapping certified for the purposes of the VMA. If your interest/matter relates to regional ecosystems and the VMA, users should refer to the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development website https://www.nrmmrrd.qld.gov.au/.

With respect to the Queensland Biodiversity Status,

"Endangered" regional ecosystems are described as those where:

- remnant vegetation is less than 10 per cent of its pre-clearing extent across the bioregion; or 10-30% of its pre-clearing extent remains and the remnant vegetation is less than 10,000 hectares, or
- less than 10 per cent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss*, or
- 10-30 percent of its pre-clearing extent remains unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10,000 hectares; or
- it is a rare** regional ecosystem subject to a threatening process.***

"Of concern" regional ecosystems are described as those where:

- the degradation criteria listed above for 'Endangered' regional ecosystems are not met and,
- remnant vegetation is 10-30 per cent of its pre-clearing extent across the bioregion; or more than 20 per cent of its pre-clearing extent remains and the remnant extent is less than 10,000 hectares, or
- 10-30 percent of its pre-clearing extent remains unaffected by moderate degradation and/or biodiversity loss.****

and "No concern at present" regional ecosystems are described as those where:

- remnant vegetation is over 30 percent of its pre-clearing extent across the bioregion, and the remnant area is greater than 10,000 hectares, and
- the degradation criteria listed above for 'Endangered' or 'Of concern' regional ecosystems are not met.

**Severe degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example, by loss of A horizon, surface expression of salinity; surface compaction, loss of organic matter or sheet erosion.*

***Rare regional ecosystem: pre-clearing extent (<1000 ha); or patch size (<100 ha and of limited total extent across its range).*

****Threatening processes are those that are reducing or will reduce the biodiversity and ecological integrity of a regional ecosystem. For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing pressure, or infrastructure development.*

*****Moderate degradation and/or biodiversity loss is defined as: floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded.*

2. Remnant Regional Ecosystems

The following table identifies the remnant regional ecosystems and vegetation communities mapped within the AOI and provides their short descriptions, Biodiversity Status, and remnant extent within the selected AOI. Please note, where heterogeneous vegetated patches (mixed patches of remnant vegetation mapped as containing multiple regional ecosystems) occur within the AOI, they have been split and listed as individual regional ecosystems (or vegetation communities where present) for the purposes of the table below. In such instances, associated area figures have been generated based upon the estimated proportion of each regional ecosystem (or vegetation community) predicted to be present within the larger mixed patch.

Table 3: Remnant regional ecosystems, description and status within the AOI

Regional Ecosystem	Short Description	BD Status	Area (Ha)	% of AOI
2.3.17a	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Atalaya hemiglauca woodland fringing channels in fine-textured alluvial systems	Of concern	2.00	less than 0.01
2.3.21j	Eucalyptus leptophleba, Corymbia polycarpa, Blakella confertiflora, Blakella bella woodland on active levees and terraces associated with major watercourses in the east	Of concern	1,149.73	4.86
2.3.22	Corymbia polycarpa and Melaleuca spp. woodland on sandy channels and levees	Of concern	109.63	0.46
2.3.26b	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	760.23	3.22
2.3.26c	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Of concern	258.80	1.09
2.3.29b	Melaleuca viridiflora +/- M. citrolens, M. stenostachya low woodland in depressions and broad valleys on solodised soils in the east	No concern at present	1,634.98	6.91
2.3.41	Aristida dominii, Eriachne spp., Chloris lobata +/- Eragrostis basedowii, Iseilema sp. tussock grassland on active Quaternary alluvial plains of major watercourses	Of concern	13.21	0.06
2.3.42a	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. woodland on Quaternary alluvial plains with coarse-grained parent material	Of concern	92.85	0.39
2.3.42b	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. woodland on Quaternary alluvial plains with coarse-grained parent material	Of concern	71.61	0.30
2.3.50a	Waterholes, bare sand and rock in the channels of major watercourses	Of concern	50.91	0.22
2.3.51	Seasonal swamps. Eucalyptus camaldulensis +/- Melaleuca viridiflora low open woodland in closed depressions on Tertiary sand sheets	No concern at present	425.30	1.80
2.3.71	Eucalyptus microneura +/- E. leptophleba and Blakella confertiflora woodland on active Quaternary alluvial plains of watercourses from the Einasleigh Uplands Bioregion	Of concern	2.12	less than 0.01
2.5.14a	Melaleuca spp. low woodland on plains on earths and podsolics (south)	No concern at present	8,376.86	35.43

2.5.17b	Melaleuca citrolens and/or M. stenostachya low open woodland on Tertiary outwash deposits and sand sheets in the east	No concern at present	3,381.62	14.30
2.5.18a	Corymbia setosa +/- C. polycarpa, Erythrophleum chlorostachys, C. pocillum low open woodland on Tertiary sand sheets	No concern at present	4,796.46	20.29
2.5.1a	Lysiphyllum cunninghamii, Atalaya hemiglauca and Grevillea striata low woodland on plains on earths and sandy soils	No concern at present	63.64	0.27
2.5.28a	Corymbia polycarpa and/or Blakella grandifolia +/- Blakella confertiflora, Erythrophleum chlorostachys open woodland on reworked sand deposits on broad plains and plateau surfaces	No concern at present	2,422.77	10.25
2.5.9	Eucalyptus microneura woodland on plains and plateaus on earths, podsolics and skeletal soils	No concern at present	10.96	0.05
non-remnant	None	None	20.70	0.09

Refer to **Map 2** for further information. **Map 3** also provides a visual estimate of the distribution of regional ecosystems present before clearing.

Table 4 provides further information in regards to the remnant regional ecosystems present within the AOI. Specifically, the extent of remnant vegetation remaining within the bioregion, the 1:1,000,000 broad vegetation group (BVG) classification, whether the regional ecosystem is identified as a wetland, and extent of representation in Queensland's Protected Area Estate. For a description of the vegetation communities within the AOI and classified according to the 1:1,000,000 BVG, refer to **Table 6**.

Table 4: Remnant regional ecosystems within the AOI, additional information

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
2.3.17a	Pre-clearing 351000 ha; Remnant 2023 348000 ha	16a	Riverine	Low
2.3.21j	Pre-clearing 371000 ha; Remnant 2023 359000 ha	16b	Not a Wetland	Medium
2.3.22	Pre-clearing 90000 ha; Remnant 2023 90000 ha	16b	Not a Wetland	No representation
2.3.26b	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.26c	Pre-clearing 234000 ha; Remnant 2023 233000 ha	16a	Riverine	Low
2.3.29b	Pre-clearing 1054000 ha; Remnant 2023 1052000 ha	21a	Not a Wetland	High
2.3.41	Pre-clearing 84000 ha; Remnant 2023 81000 ha	31a	Not a Wetland	Low
2.3.42a	Pre-clearing 504000 ha; Remnant 2023 503000 ha	16c	Not a Wetland	No representation

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
2.3.42b	Pre-clearing 504000 ha; Remnant 2023 503000 ha	16c	Not a Wetland	No representation
2.3.50a	Pre-clearing 81000 ha; Remnant 2023 81000 ha	16d	Riverine	Low
2.3.51	Pre-clearing 72000 ha; Remnant 2023 72000 ha	34d	Palustrine	No representation
2.3.71	Pre-clearing 7000 ha; Remnant 2023 7000 ha	18d	Not a Wetland	No representation
2.5.14a	Pre-clearing 1369000 ha; Remnant 2023 1368000 ha	21a	Not a Wetland	Medium
2.5.17b	Pre-clearing 451000 ha; Remnant 2023 451000 ha	21b	Not a Wetland	Low
2.5.18a	Pre-clearing 277000 ha; Remnant 2023 277000 ha	18a	Not a Wetland	Low
2.5.1a	Pre-clearing 646000 ha; Remnant 2023 631000 ha	27b	Not a Wetland	No representation
2.5.28a	Pre-clearing 232000 ha; Remnant 2023 232000 ha	18a	Not a Wetland	No representation
2.5.9	Pre-clearing 302000 ha; Remnant 2023 298000 ha	18d	Not a Wetland	Low
non-remnant	None	None	None	None

Representation in Protected Area Estate: High greater than 10% of pre-clearing extent is represented; Medium 4 - 10% is represented; Low less than 4% is represented, No representation.

The distribution of mapped wetland systems within the area of interest is displayed in **Map 6**.

The following table lists known special values associated with a regional ecosystem type.

Table 5: Remnant regional ecosystems within the AOI, special values

Regional Ecosystem	Special Values
2.3.17a	2.3.17: Bioregional refuge for fauna, including macropods. 2.3.17a: Bioregional refuge for fauna, including macropods.
2.3.21j	2.3.21: Significant habitat for arboreal mammals and for animals using hollows. 2.3.21j: Provincial refuge for some woodland flora and fauna. 2.3.21x12: Supports locally uncommon plant species. 2.3.21x3b: The only mappable occurrence of Neofabricia mjoebergii in the bioregion.

Regional Ecosystem	Special Values
2.3.22	2.3.22: Seasonal refuge for fauna.
2.3.26b	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.26c	2.3.26: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26a: Significant provincial refuges for fauna. Includes areas of permanent water with high habitat values for aquatic and other species. 2.3.26b: Provincial refuge for flora and fauna. 2.3.26d: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26e: Provincial refuge for flora and fauna. 2.3.26f: Provincial refuge for flora and fauna. 2.3.26x1a: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1b: Significant provincial refuges for fauna. Includes permanent, spring-fed water with high habitat values for aquatic and other species. 2.3.26x1c: Provincial refuge for flora and fauna. 2.3.26x1d: Provincial refuge for flora and fauna. 2.3.26x2: Supports plant growth well into the dry season. Provincial refuge for flora and fauna.
2.3.29b	2.3.29: Provides wetland habitat for a flora and fauna. 2.3.29a: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius). 2.3.29b: Provides wetland habitat for a flora and fauna. 2.3.29c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.3.41	None
2.3.42a	None
2.3.42b	None
2.3.50a	2.3.50b: Important sites for feeding and movement of birds, fish and reptiles. Potential habitat for Pristis pristis (freshwater sawfish), Elseya lavarackorum (Gulf snapping turtle) and Malurus coronatus (purple-crowned fairy wren).
2.3.51	2.3.51: Seasonal wetland. Important feeding and moulting sites for water birds.
2.3.71	None
2.5.14a	2.5.14: Potential habitat for NCA listed species: Solanum carduiforme. 2.5.14c: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).

Regional Ecosystem	Special Values
2.5.17b	None
2.5.18a	2.5.18a: Potential habitat for the golden-shouldered parrot (Psephotus chrysopterygius).
2.5.1a	None
2.5.28a	None
2.5.9	2.5.9: Potential habitat for NCA listed species: Solanum carduiforme.
non-remnant	None

3. Remnant Regional Ecosystems by Broad Vegetation Group

BVGs are a higher-level grouping of vegetation communities. Queensland encompasses a wide variety of landscapes across temperate, wet and dry tropics and semi-arid climatic zones. BVGs provide an overview of vegetation communities across the state or a bioregion and allow comparison with other states. There are three levels of BVGs which reflect the approximate scale at which they are designed to be used: the 1:5,000,000 (national), 1:2,000,000 (state) and 1:1,000,000 (regional) scales.

A comprehensive description of BVGs is available at: https://publications.qld.gov.au/dataset/redd/resource/

The following table provides a description of the 1:1,000,000 BVGs present and their associated extent within the AOI.

Table 6: Broad vegetation groups (1 million) within the AOI

BVG (1 Million)	Description	Area (Ha)	% of AOI
None	None	20.70	0.09
16a	Open forest and woodlands dominated by Eucalyptus camaldulensis (river red gum) (or E. tereticornis (blue gum)) and/or E. coolabah (coolabah) (or E. microtheca (coolabah)) fringing drainage lines. Associated species may include Melaleuca spp., Blakella tessellaris (carbeen), Angophora spp., Casuarina cunninghamiana (riveroak). Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	1,021.02	4.32
16b	Woodlands dominated by Eucalyptus leptophleba (Molloy red box), with Blakella tessellaris (carbeen), B. dallachiana or Corymbia clarksoniana (grey bloodwood); or dominated by Blakella spp., Corymbia terminalis (desert bloodwood) or other Corymbia spp. in the Gulf Plains and Northwest Highlands bioregions. On sandy levees.	1,259.37	5.33

BVG (1 Million)	Description	Area (Ha)	% of AOI
16c	Woodlands and open woodlands dominated by Eucalyptus coolabah (coolabah) or E. microtheca (coolabah) or E. largiflorens (black box) or E. tereticornis (blue gum) or E. chlorophylla on floodplains. Does not include alluvial areas dominated by herb and grasslands or alluvial plains that are not flooded.	164.46	0.70
16d	River beds, open water or sand, or rock, frequently unvegetated.	50.91	0.22
18a	Dry woodlands to open woodlands, dominated by bloodwoods (Blakella dallachiana, Corymbia terminalis (desert bloodwood), C. plena, or Blakella leichhardtii (rustyjacket)) or ironbarks (Eucalyptus quadricostata (Pentland ironbark), E. crebra (narrow-leaved red ironbark) or E. exilipes (fine-leaved ironbark)), often with E. acmenoides (narrow-leaved white stringybark), Angophora leiocarpa (rusty gum) and Callitris glaucophylla (white cypress pine) in the Brigalow Belt, on sandy plateaus and plains.	7,219.23	30.53
18d	Woodlands to low open woodlands dominated by Eucalyptus microneura (Gilbert River box) sometimes with Corymbia spp.	13.08	0.06
21a	Low woodlands and low open woodlands dominated by Melaleuca viridiflora (coarse-leaved paperbark) on depositional plains.	10,011.84	42.34
21b	Low open woodlands and tall shrublands of Melaleuca stenostachya or M. citrolens or other Melaleuca spp.	3,381.62	14.30
27b	Low woodlands of a variety of species including Lysiphyllum cunninghamii, Grevillea striata (beefwood) Atalaya hemiglauca (whitewood) occurring on sandplains.	63.64	0.27
31a	Open forblands to open tussock grasslands which may be composed of Atriplex spp. (saltbush), Sclerolaena spp. (burr), Asteraceae spp. and/or short grasses on alluvial plains.	13.21	0.06
34d	Palustrine wetlands. Freshwater swamps/springs/billabongs on floodplains ranging from permanent and semi-permanent to ephemeral.	425.30	1.80

Refer to **Map 4** for further information. **Map 5** also provides a representation of the distribution of vegetation communities as per the 1:5,000,000 BVG believed to be present prior to European settlement.

4. Technical and BioCondition Benchmark Descriptions

Technical descriptions provide a detailed description of the full range in structure and floristic composition of regional ecosystems (e.g. 11.3.1) and their component vegetation communities (e.g. 11.3.1a, 11.3.1b). See: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

The descriptions are compiled using site survey data from the Queensland Herbarium & Biodiversity Science's QBEIS database. Distribution maps, representative images (if available) and the pre-clearing and remnant extent (hectares) of each vegetation community derived from the regional ecosystem mapping data are included. The technical descriptions should be used in conjunction with the fields from the regional ecosystem description database (REDD) for a full description of the regional ecosystem.

Technical descriptions include data on canopy height, canopy cover and native plant species composition of the predominant layer, which are attributes relevant to assessment of the remnant status of vegetation under the *Vegetation Management Act 1999*. However, as technical descriptions reflect the full range in structure and floristic composition across the climatic, natural disturbance and geographic range of the regional ecosystem, local reference sites should be used for remnant assessment where possible (Neldner et al. 2023 (PDF)* section 3.3 of: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

The technical descriptions are subject to review and are updated as additional data becomes available.

When conducting a BioCondition assessment, these technical descriptions should be used in conjunction with BioCondition benchmarks for the specific regional ecosystem, or component vegetation community. http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

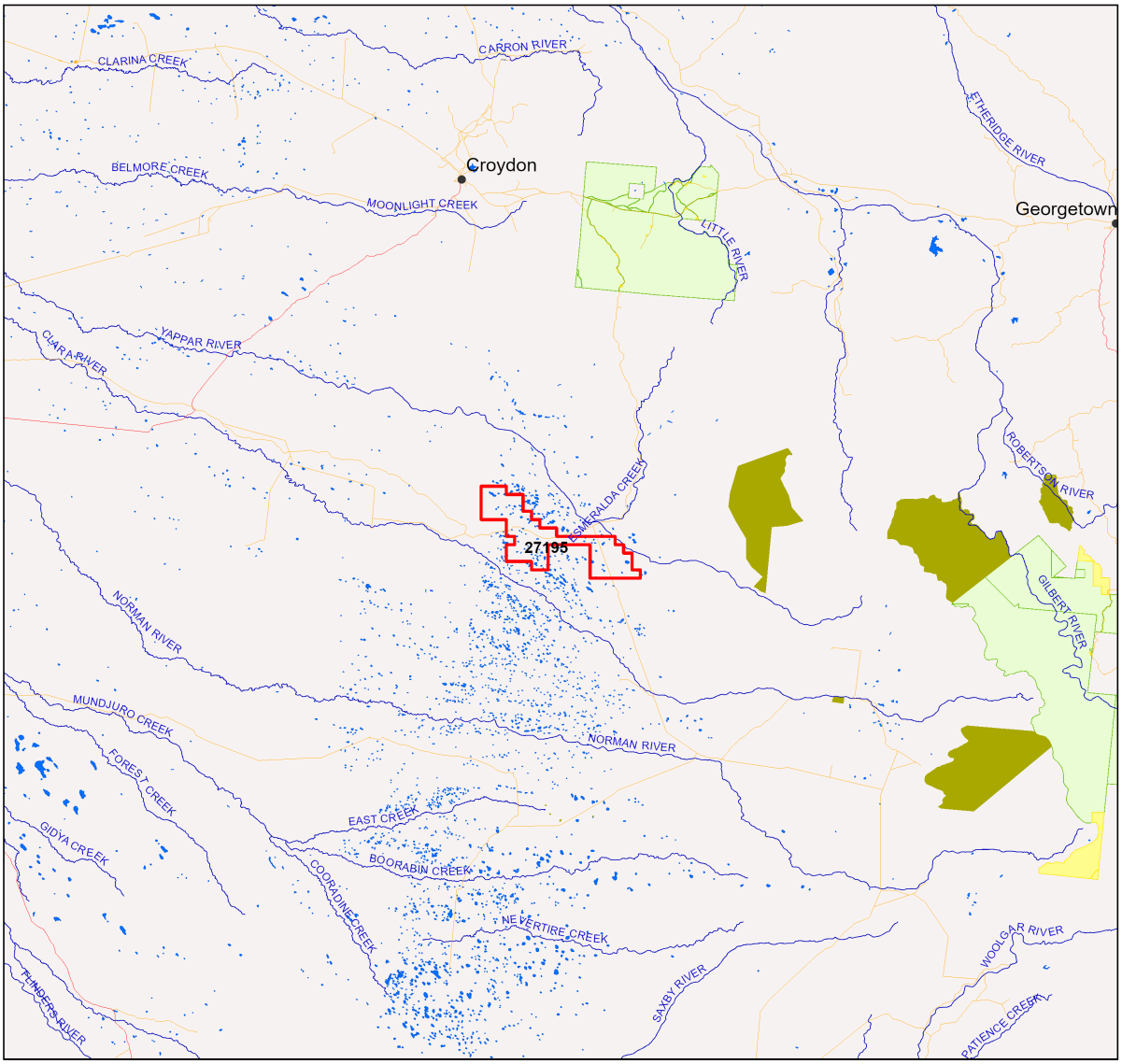
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance regimes has been considered throughout the geographic extent of the regional ecosystem. Local reference sites should be used for this spatial and temporal (seasonal and annual) variability.

Table 7: List of remnant regional ecosystems within the AOI for which technical and biocondition benchmark descriptions are available

Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
2.3.17a	Not currently available	Available
2.3.21j	Not currently available	Not currently available
2.3.22	Not currently available	Not currently available
2.3.26b	Not currently available	Not currently available
2.3.26c	Not currently available	Not currently available
2.3.29b	Not currently available	Not currently available
2.3.41	Not currently available	Not currently available
2.3.42a	Not currently available	Not currently available
2.3.42b	Not currently available	Not currently available
2.3.50a	Not currently available	Not currently available
2.3.51	Not currently available	Not currently available
2.3.71	Not currently available	Not currently available
2.5.14a	Not currently available	Not currently available
2.5.17b	Not currently available	Not currently available
2.5.18a	Not currently available	Not currently available
2.5.1a	Not currently available	Not currently available
2.5.28a	Not currently available	Not currently available
2.5.9	Not currently available	Not currently available
non-remnant	Not currently available	Not currently available

Maps

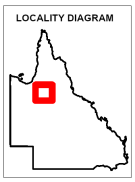
Map 1 - Location



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Lakes and reservoirs
- National Park
- National Park (Scientific)
- National Park (CYPAL)
- National Park (Aboriginal Land)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Exploration Permit Mineral (EPM)



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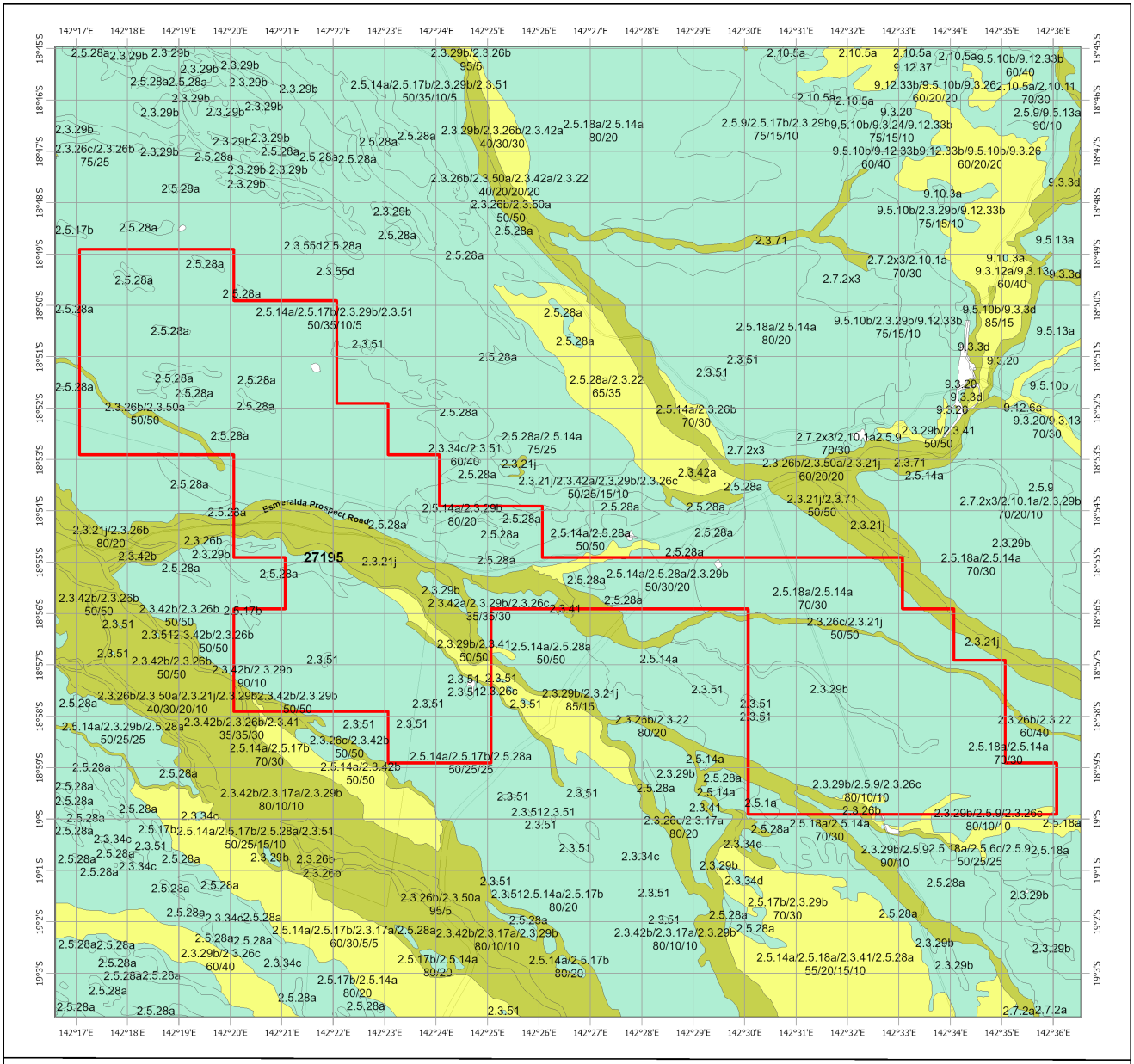
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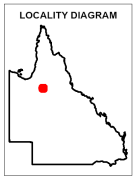
Map 2 - Remnant 2021 regional ecosystems



Remnant 2021 Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Non-remnant vegetation, cultivated or built environment
- Plantation
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

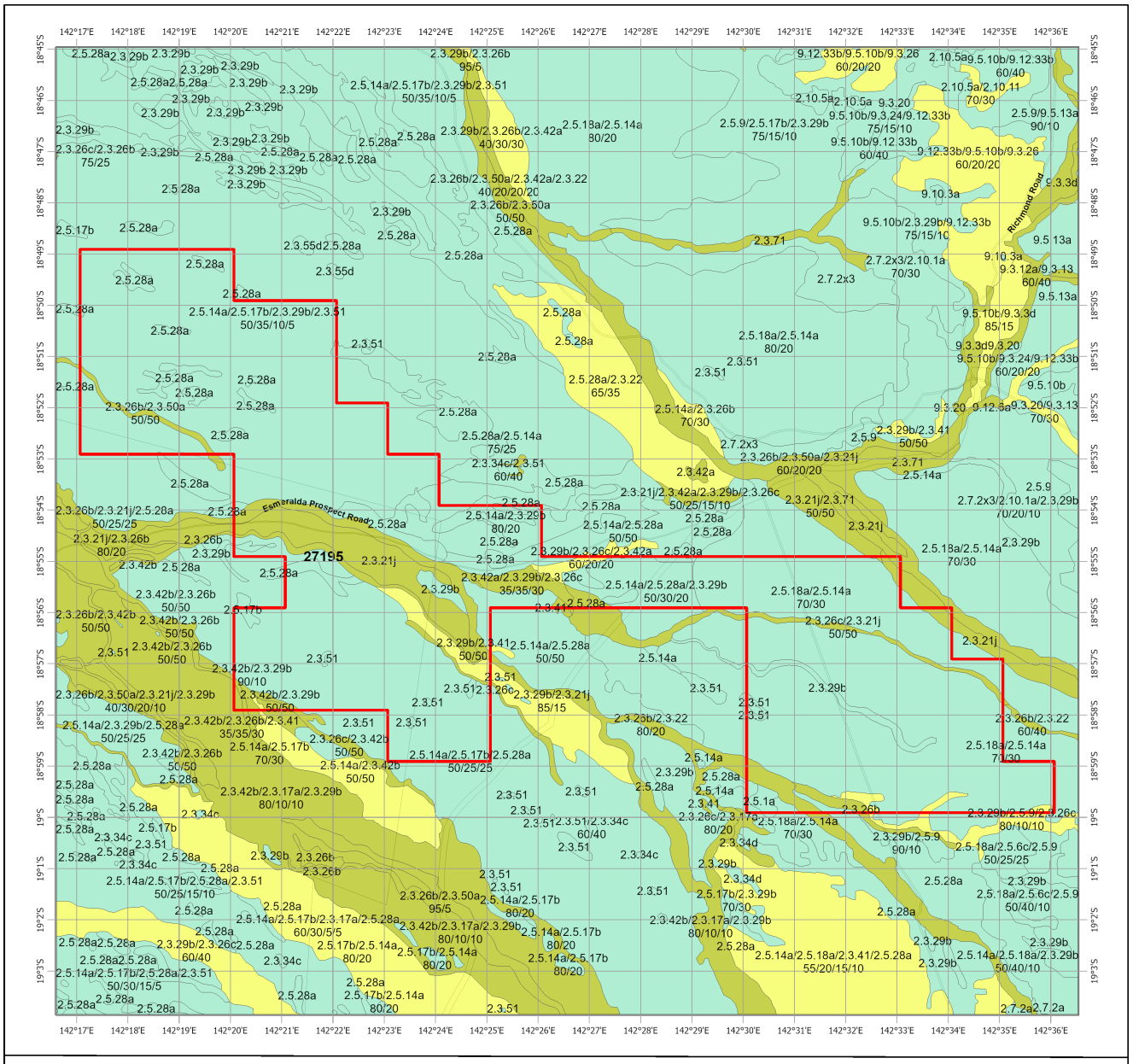
0 2.2 4.4 6.6 8.8 km

This product is projected into GDA2020

Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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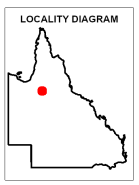
Map 3 - Pre-clearing regional ecosystems



Pre-clearing Regional Ecosystems

Biodiversity Status

- Endangered - Dominant vegetation
- Endangered - Sub-dominant
- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



N

0 2.25 4.5 6.75 9 km

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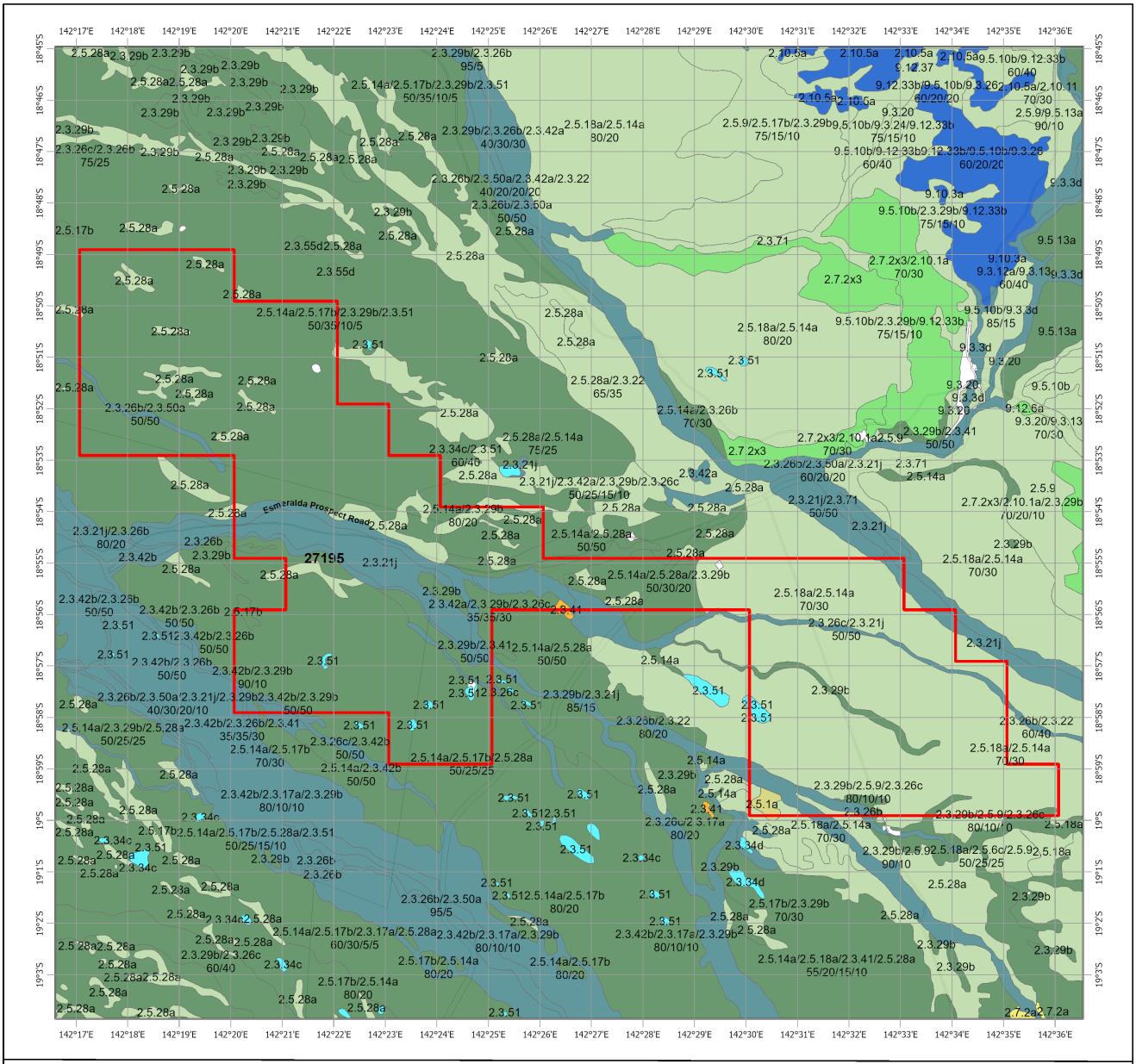
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.

Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The polygons are labelled by regional ecosystem (RE); where more than one RE occurs, the percentage of each is labelled. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".

Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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Map 4 - Remnant 2021 regional ecosystems by BVG (5M)

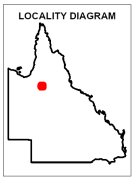


Remnant 2021 Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

1. Rainforests and scrubs (1-7b)
2. Wet eucalypt open forests (8-8b)
3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
4. Eucalypt open forests to woodlands on floodplains (16-16d)
5. Eucalypt dry woodlands on inland depositional plains (17-18d)
6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
7. Callitris woodland - open forests (20a)
8. Melaleuca open woodlands on depositional plains (21-22c)
9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
12. Other coastal communities or heaths (28-29b)
13. Tussock grasslands, forblands (30-32b)
14. Hummock grasslands (33-33b)
15. Wetlands (swamps and lakes) (34-34g)
16. Mangroves and saltmarshes (35-35b)

Non-remnant vegetation, cultivated or built environment
Water
Cadastral Boundaries
Selected Exploration Permit Mineral (EPM)



N

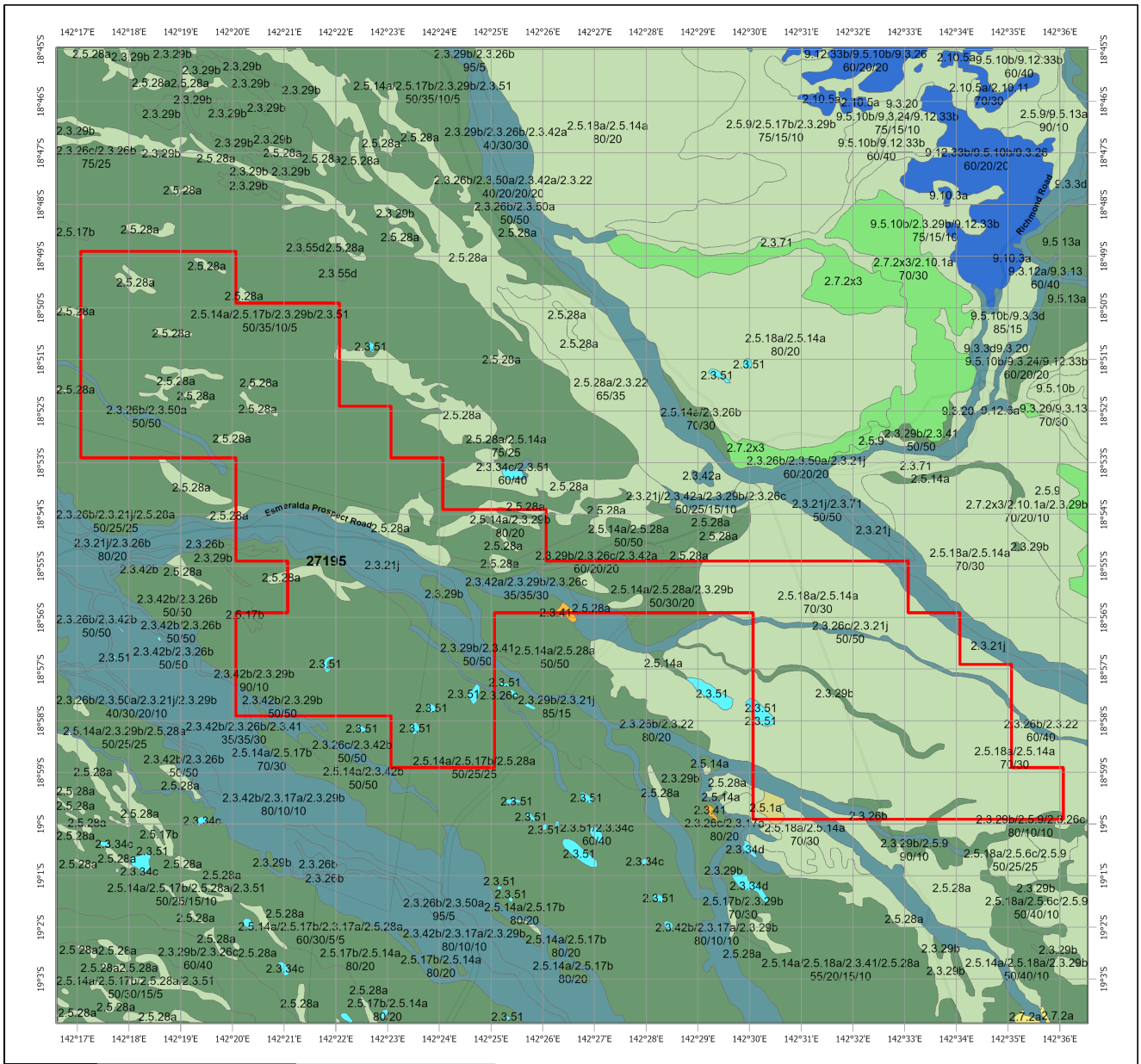
0 2.25 4.5 6.75 9 km

This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled. Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.
The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.
Remnant woody vegetation is defined as vegetation that has not been cleared or vegetation that has been cleared but where the dominant canopy has >70% of the height and >50% of the cover relative to the undisturbed height and cover of that stratum and is dominated by species characteristic of the vegetation's undisturbed canopy.
Non-remnant vegetation includes regrowth and disturbed native vegetation.

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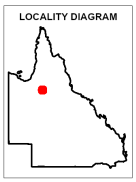
Map 5 - Pre-clearing regional ecosystems by BVG (5M)

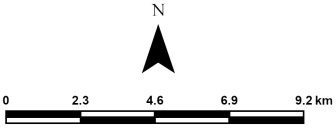


Pre-clearing Regional Ecosystems coloured by Broad Vegetation Groups

Broad Vegetation Groups
BVG5M Description (BVG1M codes)

- 1. Rainforests and scrubs (1-7b)
- 2. Wet eucalypt open forests (8-8b)
- 3. Eucalypt woodlands to open forests (mainly eastern Qld) (9-15b)
- 4. Eucalypt open forests to woodlands on floodplains (16-16d)
- 5. Eucalypt dry woodlands on inland depositional plains (17-18d)
- 6. Eucalypt low open woodlands usually with spinifex understorey (19-19d)
- 7. Callitris woodland - open forests (20a)
- 8. Melaleuca open woodlands on depositional plains (21-22c)
- 9. Acacia aneura (mulga) dominated open forests, woodlands and shrublands (23-23b)
- 10. Other acacia dominated open forests, woodlands and shrublands (24-26a)
- 11. Mixed species woodlands, open woodland - (inland bioregions) includes wooded downs (27-27c)
- 12. Other coastal communities or heaths (28-29b)
- 13. Tussock grasslands, forblands (30-32b)
- 14. Hummock grasslands (33-33b)
- 15. Wetlands (swamps and lakes) (34-34g)
- 16. Mangroves and saltmarshes (35-35b)
- Water
- Cadastral Boundaries
- Selected Exploration Permit Mineral (EPM)



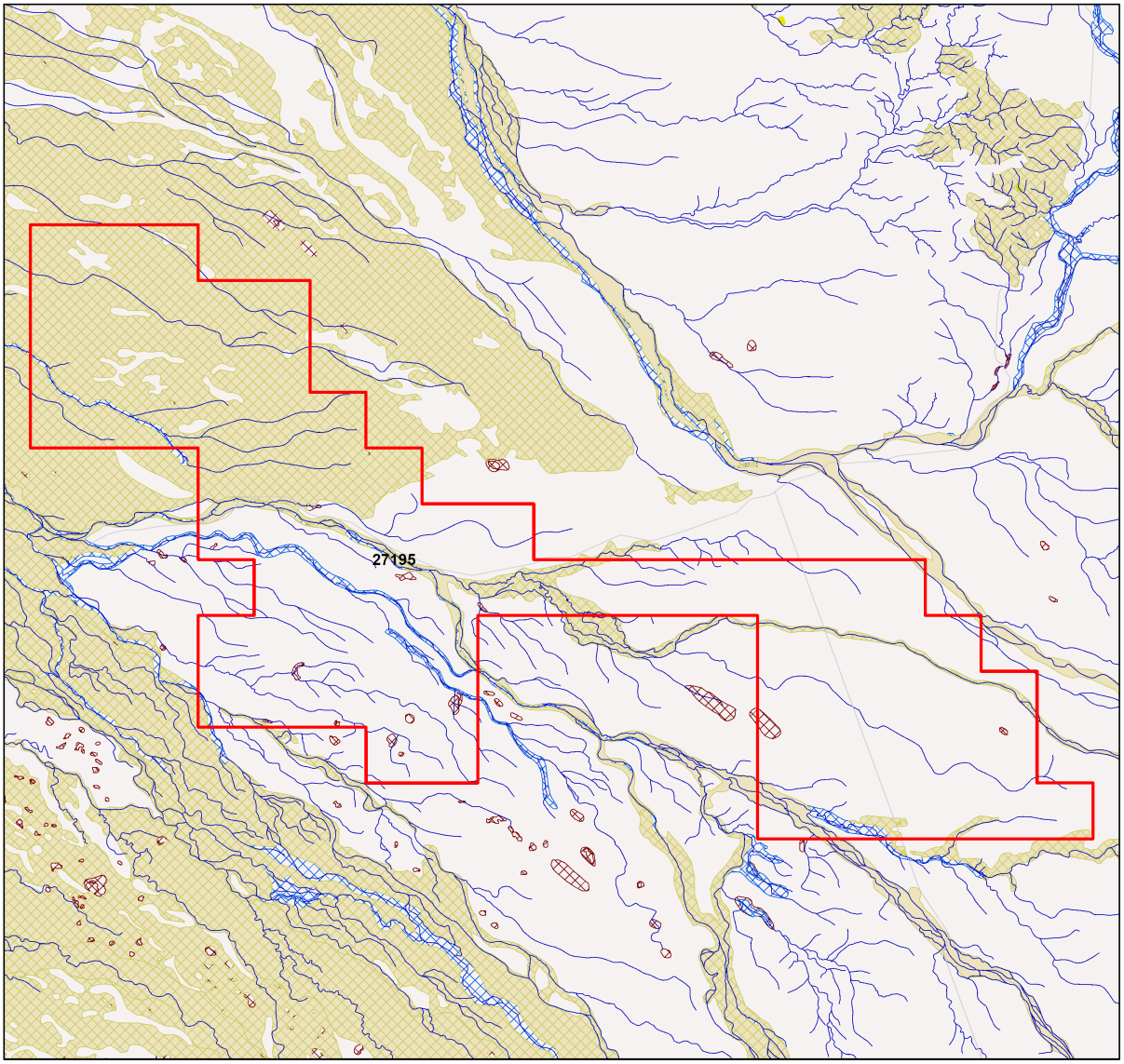


This product is displayed in GDA2020

Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
Regional ecosystem mapping over the majority of Queensland is produced at a scale of 1:100,000. At this scale, the minimum remnant polygon area is 5 hectares or minimum remnant width of 75 metres. Regional ecosystem linework reproduced at a scale greater than 1:100,000, except in designated areas, should be used as a guide only. The precision of polygon boundaries or positional accuracy of linework is 100 metres.
Regional ecosystems are defined as vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. The label consists of 3 components: bioregion, land zone, and vegetation community – the dominant canopy species. e.g.: RE 12.3.3. Descriptions of REs are found online. Use the search term "Regional Ecosystem Framework".
Regional ecosystem mapping at 1:100,000 map scale is derived from the following sources: 1:80,000 B&W 1960's aerial photography, Landsat TM imagery, geology, soils, land systems data, field survey and historical records.

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Map 6 - Wetlands and waterways



Wetlands and Waterways

- Towns
- Roads
- Springs
- Rivers/Creeks
- Directory of Important Wetlands
- Ramsar Sites - QLD

Wetland Type

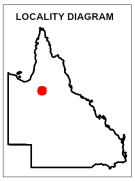
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically natural)

Hydrologically Modified and Artificial Wetlands
- Lacustrine Wetlands (hydrologically modified or artificial)
- Palustrine Wetlands (hydrologically modified or artificial)
- Riverine Wetlands (hydrologically modified or artificial)
- Intertidal Wetlands (hydrologically modified or artificial)
- Subtidal Wetlands (hydrologically modified or artificial)
- Intertidal/Subtidal Wetlands (hydrologically modified or artificial)

Subdominant Wetlands
- Subdominant Wetlands (51 - 80%)

Contains Wetlands
- Contains Wetlands (1 - 50%)
- Queensland
- Selected Exploration Permit Mineral (EPM)

LOCALITY DIAGRAM



N

0 2000 4000 6000 8000 10000 m

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Links and Other Information Sources

The Department of the Environment, Tourism, Science and Innovation's Website - http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/ provides further information on the regional ecosystem framework, including access to links to the Regional Ecosystem Database, Broad Vegetation Group Definitions, Regional Ecosystem and Land zone descriptions.

Descriptions of the broad vegetation groups of Queensland can be downloaded from: https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/broad-vegetation

The methodology for mapping regional ecosystems can be downloaded from: https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf

Technical descriptions for regional ecosystems can be obtained from: http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/technical-descriptions/

Benchmarks can be obtained from: http://www.qld.gov.au/environment/plants-animals/biodiversity/benchmarks/

For further information associated with the remnant regional ecosystem dataset used by this report, refer to the metadata associated with the Biodiversity status of pre-clearing and Remnant Regional Ecosystems of Queensland dataset (version listed in **Appendix 1**) which is available through the Queensland Spatial Catalogue, Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

The Queensland Globe is a mapping and data application. As an interactive online tool, Queensland Globe allows you to view and explore Queensland maps, imagery (including up-to-date satellite images) and other spatial data, including regional ecosystem mapping. To further view and explore regional ecosystems over an area of interest, access the Biota Globe (a component of the Queensland Globe). The Queensland Globe can be accessed via the following link: https://qldglobe.information.qld.gov.au/

References

Neldner, V.J., Niehus, R.E., Wilson, B.A., McDonald, W.J.F., Ford, A.J. and Accad, A. (2023). The Vegetation of Queensland. Descriptions of Broad Vegetation Groups. Version 6.0. Queensland Herbarium, Department of Environment and Science. (https://publications.qld.gov.au/dataset/redd/resource/78209e74-c7f2-4589-90c1-c33188359086)

Neldner, V.J., Wilson, B.A., Dillewaard, H.A., Ryan, T.S., Butler, D.W., McDonald, W.J.F, Richter,D., Addicott, E.P. and Appelman, C.N. (2023) Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland. Version 7.0. Updated December 2023. Queensland Herbarium, Queensland Department of Environment, Science and Innovation, Brisbane. (https://www.qld.gov.au/__data/assets/pdf_file/0033/459186/methodology-mapping-surveying-v7.pdf).

Sattler, P.S. and Williams, R.D. (eds) (1999). *The Conservation Status of Queensland's Bioregional Ecosystems.* Environmental Protection Agency, Brisbane.

Appendices

Appendix 1 - Source Data

The dataset listed below is available for download from:
http://www.qld.gov.au/environment/plants-animals/plants/ecosystems/download/

- Regional Ecosystem Description Database

The datasets listed below are available for download from:
Queensland Spatial Catalogue : Queensland Government (information.qld.gov.au)

- Biodiversity status of pre-clearing and 2021 remnant regional ecosystems of Queensland
- Pre-clearing Vegetation Communities and Regional Ecosystems of Queensland
- Queensland Wetland Data Version - Wetland lines
- Queensland Wetland Data Version - Wetland points
- Queensland Wetland Data Version - Wetland areas
- Pre-clearing broad vegetation groups of Queensland
- Remnant 2021 broad vegetation groups of Queensland

Appendix 2 - Acronyms and Abbreviations

AOI - Area of Interest
GIS - Geographic Information System
RE - Regional Ecosystem
REDD - Regional Ecosystem Description Database
VMA - *Vegetation Management Act 1999*



Vegetation management report

For Lot: 75 Plan: SP273198
03/12/2025

nrmmrrd.qld.gov.au

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

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Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

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1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 75 Plan: SP273198 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
75	SP273198	Lands Lease	4,060,000,000

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 75 Plan: SP273198 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 75 Plan: SP273198, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Croydon Shire

Catchment(s)
Gilbert
Norman

Bioregion(s)	Subregion(s)
Einasleigh Uplands	Georgetown - Croydon
Gulf Plains	Gilberton Plateau
Gulf Plains	Claraville Plains

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@nrmmrrd.qld.gov.au

Visit https://www.nrmmrrd.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 75 Plan: SP273198

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	398,898.88
Category C	12.62
Category Water	7.04
Category X	143.94

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

There is no Property Map of Assessable Vegetation (PMAV) present on this property.

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
2.10.1	Least concern	B	4,616.16	Eucalyptus microneura woodland on undulating plains on sandstones with sands and earths	Sparse
2.10.11	Of concern	B	4,242.62	Triodia spp. grassland on slopes or crests of Mesozoic sandstone ranges.	Woody grassland
2.10.14	Of concern	B	10.95	Acacia leptostachya and/or Acacia julifera subsp. julifera +/- Corymbia spp. and/or Eucalyptus spp. low woodland on Mesozoic sandstone outcrops.	Sparse
2.10.2	Least concern	B	725.15	Mixed eucalypt woodland on plateaus, mesas and scarps on shallow soils	Sparse
2.10.5	Least concern	B	23,257.13	Acacia shirleyi woodland and Triodia pungens hummock grassland on scarps and stony ledges	Sparse
2.10.8	Of concern	B	8.45	Springs associated with quartzose sandstone or lateritised sandstone gullies and gorges	Other
2.3.16	Least concern	B	61.04	Billabongs (preferential channel waterholes) on active Quaternary alluvial plains, fringed with Eucalyptus spp., Corymbia spp., and Melaleuca spp.	Sparse
2.3.17	Least concern	B	1,113.11	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Atalaya hemiglauca woodland fringing channels in fine-textured alluvial systems	Sparse
2.3.21	Least concern	B	2,489.64	Eucalyptus leptophleba, Corymbia polycarpa, C. confertiflora, C. bella woodland on active levees and terraces associated with major watercourses in the east	Sparse
2.3.21	Least concern	C	0.14	Eucalyptus leptophleba, Corymbia polycarpa, C. confertiflora, C. bella woodland on active levees and terraces associated with major watercourses in the east	Sparse
2.3.22	Least concern	B	6,389.35	Corymbia polycarpa and Melaleuca spp. woodland on sandy channels and levees	Sparse
2.3.26	Least concern	B	9,887.72	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Sparse

2.3.26	Least concern	C	0.42	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Sparse
2.3.29	Least concern	B	24,140.25	Melaleuca viridiflora +/- M. citrolens, M. stenostachya low woodland in depressions and broad valleys on solodised soils in the east	Sparse
2.3.34	Least concern	B	115.70	Seasonal swamps. Mixed sedgelands, grasslands and forblands in circular depressions on podsolic soils	Other
2.3.36	Least concern	B	29.73	Melaleuca spp. low woodland in bottoms of shallow valleys, on solodised soils	Sparse
2.3.41	Least concern	B	1,358.57	Aristida dominii, Eriachne spp., Chloris lobata +/- Eragrostis basedowii, Iseilema sp. tussock grassland on active Quaternary alluvial plains of major watercourses	Woody grassland
2.3.42	Least concern	B	7,924.13	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. open woodland on Quaternary alluvial plains with coarse-grained parent material	Very sparse
2.3.50	Least concern	B	1,887.03	Waterholes, bare sand and rock in the channels of major watercourses	Other
2.3.50	Least concern	C	0.14	Waterholes, bare sand and rock in the channels of major watercourses	Other
2.3.51	Least concern	B	2,593.84	Seasonal swamps. Eucalyptus camaldulensis +/- Melaleuca viridiflora open woodland in closed depressions on Tertiary sand sheets	Very sparse
2.3.55	Least concern	B	50.28	Seasonal swamps (wooded). Melaleuca viridiflora and/or M. clarksonii low woodland in closed depressions on Tertiary to Quaternary deposits in the north	Sparse
2.3.61	Least concern	B	43.09	Eucalyptus microtheca woodland in seasonal swamps on active Quaternary alluvial plains	Sparse
2.3.71	Of concern	B	1,297.92	Eucalyptus microneura +/- E. leptophleba and Corymbia confertiflora woodland on active Quaternary alluvial plains of watercourses from the Einasleigh Uplands Bioregion	Sparse
2.5.1	Least concern	B	70.03	Lysiphyllum cunninghamii, Atalaya hemiglauca and Grevillea striata low woodland on plains on earths and sandy soils	Sparse
2.5.14	Least concern	B	47,912.74	Melaleuca spp. low woodland on plains on earths and podsolics (south)	Sparse
2.5.17	Least concern	B	20,071.07	Melaleuca citrolens and/or M. stenostachya low open woodland on Tertiary outwash deposits and sand sheets in the east	Sparse

2.5.18	Least concern	B	31,656.35	Corymbia setosa +/- C. polycarpa, Erythrophleum chlorostachys, C. pocillum low open woodland on Tertiary sand sheets	Very sparse
2.5.19	Least concern	B	593.68	Eucalyptus tetrodonta, E. chartaboma, Erythrophleum chlorostachys, Corymbia pocillum in mixed woodlands on sand sheets on Mesozoic sandstone plateaus	Sparse
2.5.24	Least concern	B	1,582.98	Eucalyptus crebra and/or Corymbia citriodora +/- C. brachycarpa, E. mediocris open forest on sand sheets on Mesozoic sandstone plateaus	Sparse
2.5.25	Least concern	B	1,543.07	Eucalyptus similis and E. crebra +/- Corymbia brachycarpa woodland on sand sheets on Mesozoic sandstone plateaus	Sparse
2.5.28	Least concern	B	18,149.37	Corymbia polycarpa and/or C. grandifolia +/- C. confertiflora, Erythrophleum chlorostachys open woodland on reworked sand deposits on broad plains and plateau surfaces	Sparse
2.5.6	Least concern	B	10,186.48	Eucalyptus tetrodonta and Corymbia spp. woodland to open forest on plains on red and yellow earths	Sparse
2.5.9	Least concern	B	15,285.08	Eucalyptus microneura woodland on plains and plateaus on earths, podsolics and skeletal soils	Sparse
2.7.2	Least concern	B	11,234.33	Acacia shirleyi, Eucalyptus shirleyi, Corymbia setosa subsp. pedicellaris or Melaleuca acacioides woodland on low scarps on skeletal soils	Sparse
2.7.20	Of concern	B	59.59	Petalostigma banksii +/- Gardenia vilhelmii tall shrubland +/-emergent Eucalyptus persistens, Melaleuca citrolens on sandstone hillslopes and colluvial deposits	Sparse
9.10.1	Least concern	B	42.89	Eucalyptus chartaboma +/- E. tetrodonta woodland on sandstone scarps and plateaus with shallow sandy soils	Sparse
9.10.3	Least concern	B	3,605.21	Acacia shirleyi +/- mixed species woodland to open forest on sandstone	Sparse
9.12.27	Least concern	B	21,204.58	Eucalyptus melanophloia and/or E. shirleyi +/- Corymbia erythrophloia low open woodland on igneous rocks	Very sparse
9.12.33	Least concern	B	75,775.80	Eucalyptus microneura +/- Corymbia pocillum low open woodland on igneous rocks	Very sparse
9.12.37	Least concern	B	1,852.92	Acacia shirleyi +/- Corymbia pocillum +/- Eucalyptus microneura woodland on igneous rocks	Sparse
9.12.6	Least concern	B	1,177.50	Eucalyptus microneura +/- Terminalia spp. +/- Corymbia spp. low open woodland on igneous hills	Very sparse

9.3.12	Least concern	B	1,340.22	River beds and associated waterholes on major rivers and channels	Other
9.3.13	Least concern	B	1,998.57	Melaleuca spp., Eucalyptus camaldulensis and Casuarina cunninghamiana fringing open forest on streams and channels	Mid-dense
9.3.20	Least concern	B	3,040.84	Eucalyptus microneura +/- Corymbia spp. +/- E. leptophleba woodland on alluvial plains	Sparse
9.3.20	Least concern	C	4.01	Eucalyptus microneura +/- Corymbia spp. +/- E. leptophleba woodland on alluvial plains	Sparse
9.3.24	Least concern	B	6,627.96	Melaleuca viridiflora and/or M. citrolens low woodland +/- Corymbia spp. emergents on alluvial deposits	Sparse
9.3.26	Least concern	B	6,176.35	Mixed grassland to open grassland including Eragrostis sp., Aristida sp., Enneapogon sp., Iseilema sp., Chloris sp. or Dichanthium sp. on non-basalt derived alluvial deposits	Woody grassland
9.3.3	Least concern	B	1,069.29	Corymbia spp. and Eucalyptus spp. dominated mixed woodland on alluvial flats, levees and plains	Sparse
9.3.3	Least concern	C	7.91	Corymbia spp. and Eucalyptus spp. dominated mixed woodland on alluvial flats, levees and plains	Sparse
9.5.10	Least concern	B	16,824.99	Eucalyptus microneura +/- Terminalia spp. low woodland on sand sheets	Sparse
9.5.13	Least concern	B	7,500.40	Melaleuca citrolens and/or Macropteranthes montana low woodland with Eucalyptus spp. emergents on Tertiary sand sheets	Sparse
9.7.6	Of concern	B	74.75	Eucalyptus chartaboma +/- Corymbia clarksoniana +/- Acacia shirleyi woodland on lateritised remnant sand sheets	Sparse
non-rem	None	X	143.94	None	None
water	None	Water	7.04	None	None

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

Vegetation management wetlands are present on this property and are shown on the vegetation management supporting map in section 4.2 of this report.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
1365	Poephila cincta cincta	black-throated finch (white-rumped subspecies)	E	Grassy open woodland dominated by Eucalyptus, Acacia and Melaleuca spp. (e.g. E. platyphylla, E. erythrophloia, E. melanophloia, E. brownii, E. whitei, E. similis, E. camaldulensis, Corymbia plena, C. dallachiana, C. setosa, M. viridiflora, M. leucodendra) with high diversity ground cover of perennial grasses (e.g. Heteropogon, Themeda, Bothriochloa, Eulalia, Enneapogon, Triodia, Triopogon, Chrysopogon, Aristida) and shrub layer usually sparse or absent. Nest in topmost twiggy branches of eucalypt, occasionally in tree hollow or termite mound, up to 12m above ground.	50-350m.		
11574	Acacia armitii		NT	tall shrubland; low woodland with Thryptomene oligandra; open woodland to woodland with Eucalyptus camaldulensis, Lophostemon grandiflorus, Pandanus; or Eucalyptus whitei and E. similis and Corymbia dallachiana; or Eucalyptus camaldulensis and Melaleuca fluviatilis	0 to 500 m	sandy to sandy loam derived from sandstone or granite substrates	creek bank, ephemeral drainage lines dissecting sand plain, granite rock pavement on steep hill slope or hill crest, gently sloping low sand ridge

Label	Regional Ecosystem (mandatory unless otherwise specified)
1365	9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.9, 9.3.10, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.18, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.23, 9.4.1, 9.4.2, 9.4.3, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.14, 9.5.16, 9.7.1, 9.7.2, 9.7.3, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.4, 9.8.5, 9.8.6, 9.8.9, 9.8.10, 9.8.11, 9.10.1, 9.10.3, 9.10.6, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.11, 9.11.12, 9.11.13, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.21, 9.11.23, 9.11.24, 9.11.26, 9.11.28, 9.11.29, 9.11.31, 9.11.32, 9.12.1, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.14, 9.12.15, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.25, 9.12.26, 9.12.27, 9.12.28, 9.12.29, 9.12.30, 9.12.31, 9.12.33, 9.12.35, 9.12.37, 9.12.39, 10.3.1, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.17, 10.3.19, 10.3.20, 10.3.21, 10.3.22, 10.3.23, 10.3.25, 10.3.27, 10.3.28, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.4, 10.4.5, 10.4.6, 10.4.8, 10.4.9, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.6, 10.7.7, 10.7.8, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.7.13, 10.9.1, 10.9.2, 10.9.3, 10.9.5, 10.9.6, 10.9.8, 10.10.1, 10.10.2, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.20, 11.3.23, 11.3.25, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.32, 11.3.33, 11.3.35, 11.3.36, 11.3.37, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.8, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.3, 11.7.4, 11.7.6, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.2, 11.9.3, 11.9.7, 11.9.9, 11.9.14, 11.10.1, 11.10.4, 11.10.6, 11.10.7, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.2, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.12, 11.11.15, 11.11.16, 11.11.17, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.20.
11574	2.3.26, 3.5.39, 3.12.34, 9.5.13, 9.11.25, 9.12.13, 10.5.4, 11.3.10, 11.3.25

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 75 Plan: SP273198.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request

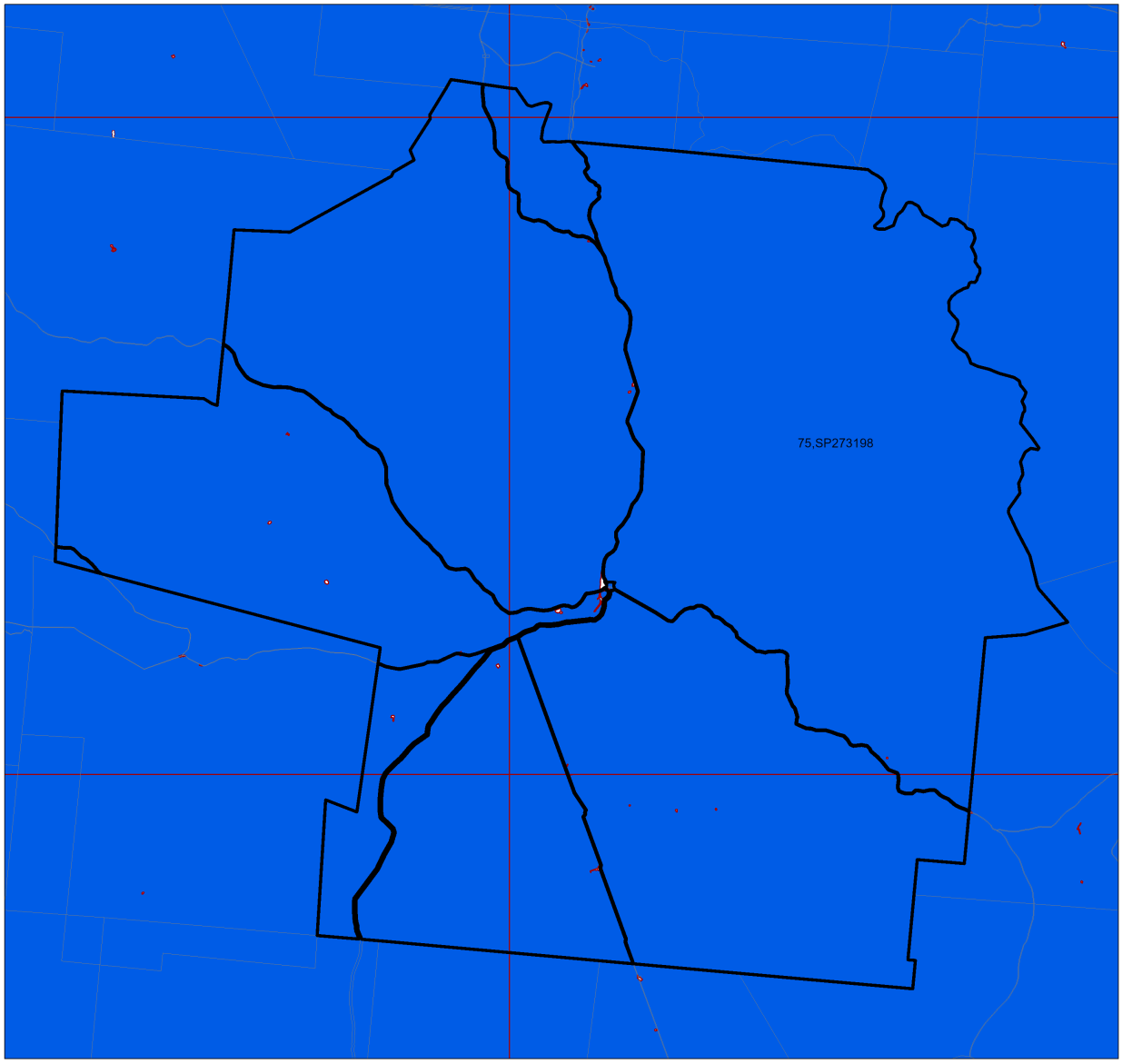
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map

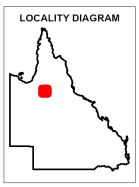


Regulated Vegetation Management Map

Queensland Government

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

LOCALITY DIAGRAM



N

0 5,000 10,000 15,000 20,000 25,000 m

This product is displayed in:
GDA2020

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

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

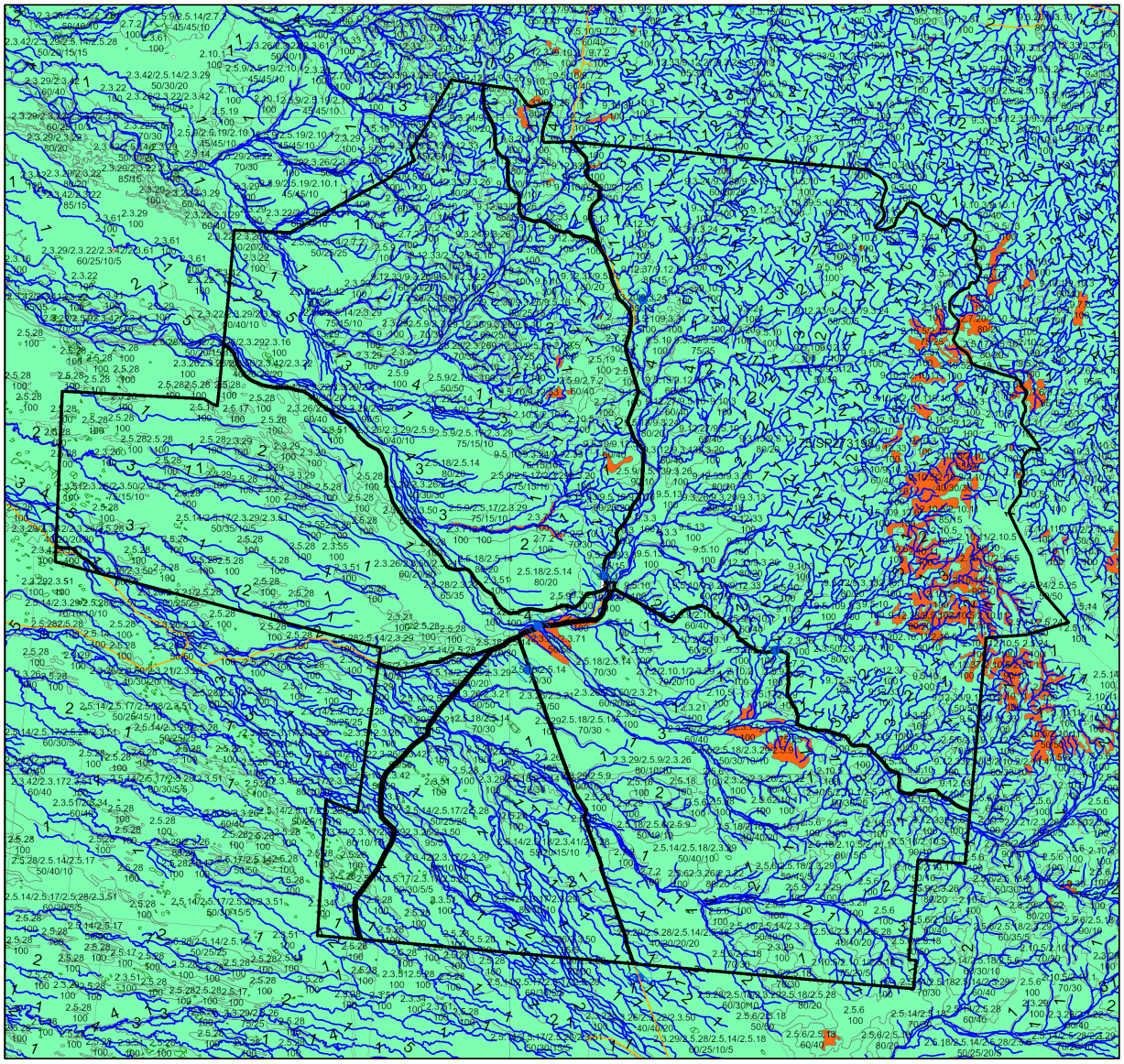
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

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

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4.2 Vegetation management supporting map

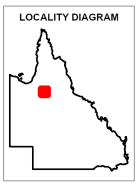


Vegetation Management Supporting Map

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

Queensland Government

LOCALITY DIAGRAM



N

0 3,000 6,000 9,000 12,000 15,000 m

This product is displayed in: GDA2020

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

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

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

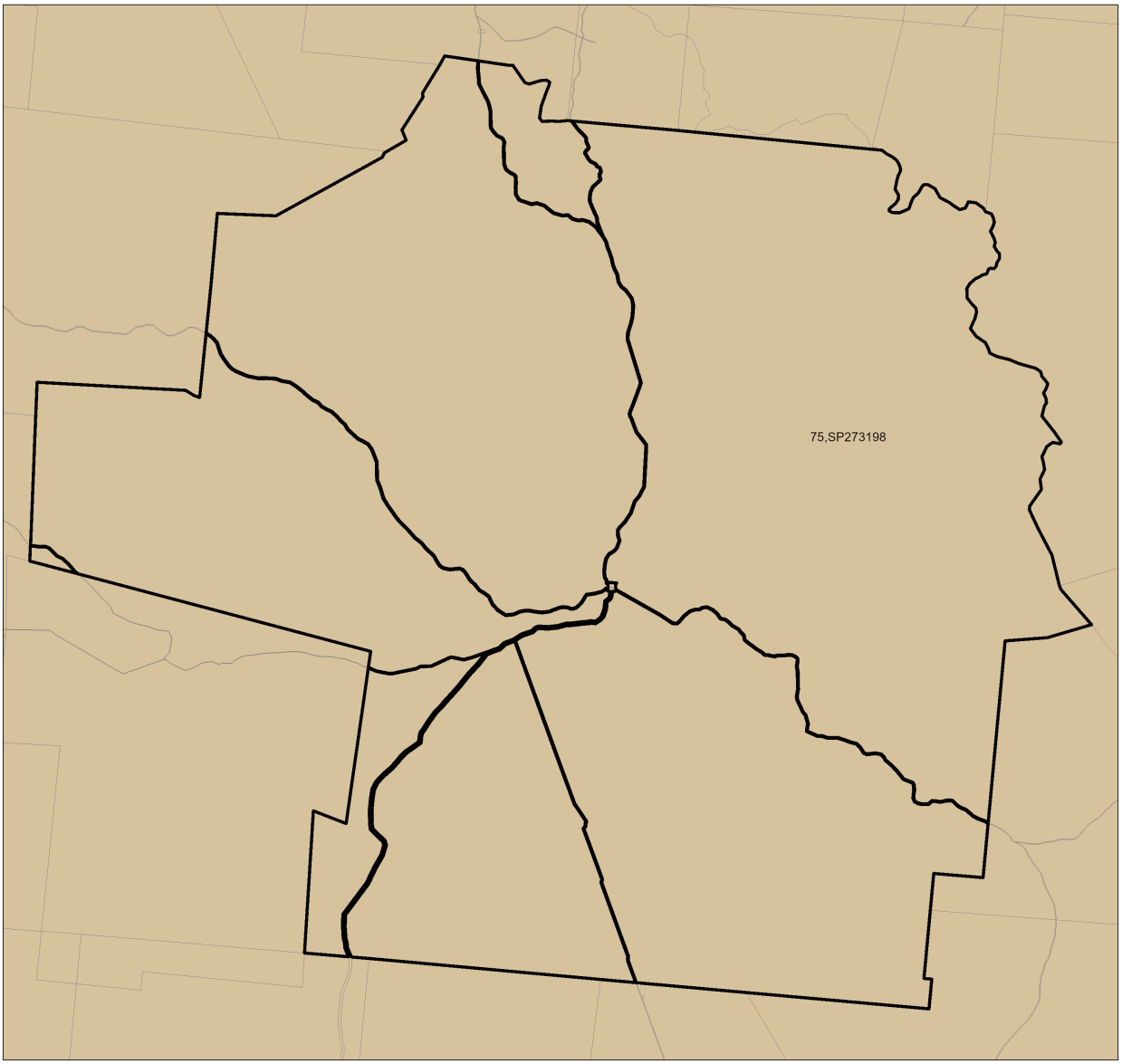
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

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

Land parcel boundaries are provided as locational aid only.

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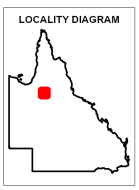
4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 4,000 8,000 12,000 16,000 20,000 m

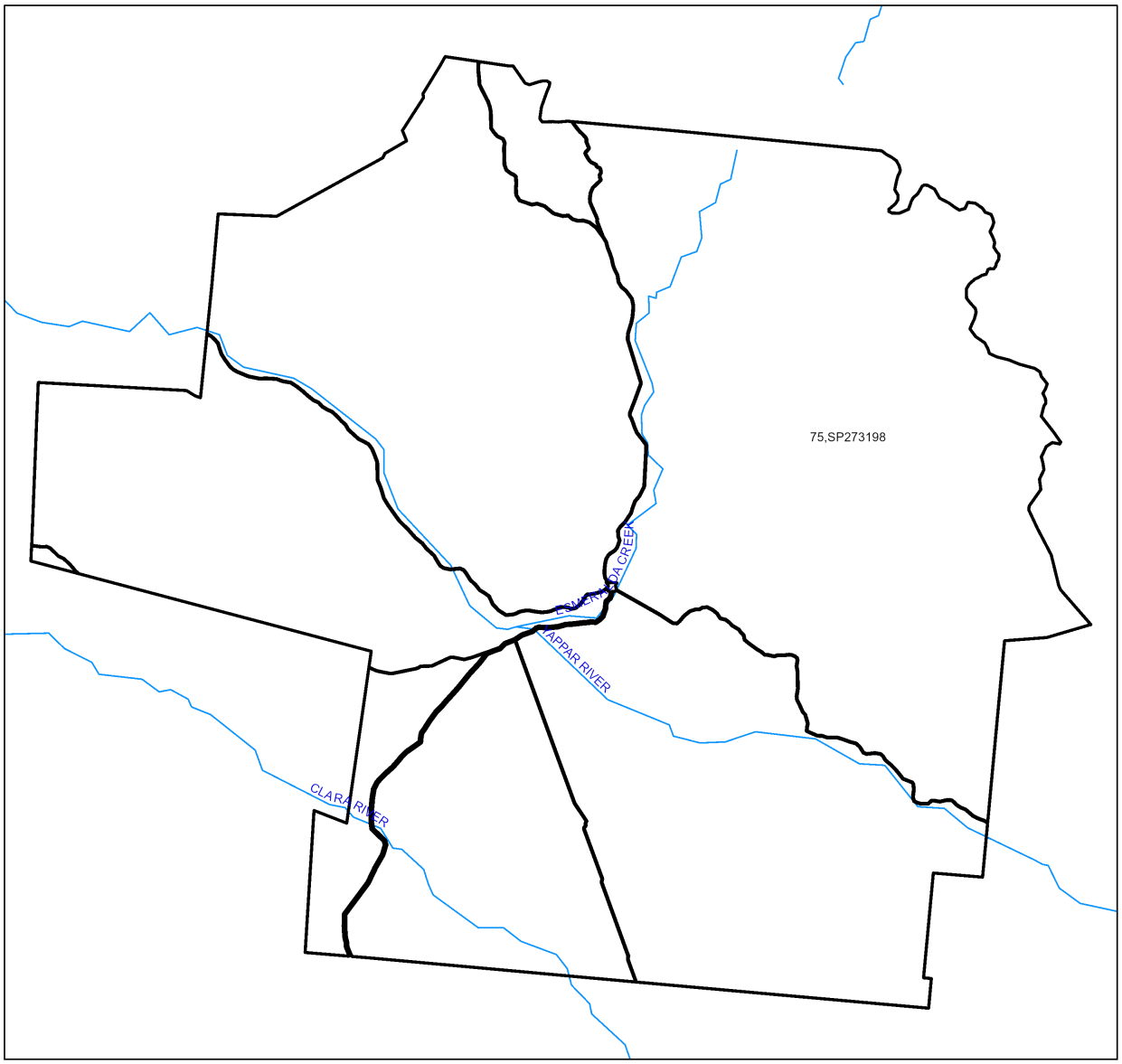
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Land parcel boundaries shown are provided as a locational aid only.

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4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



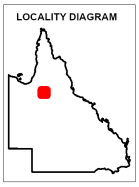
Agricultural Land Class A or B
as per State Planning Policy: State Interest for Agriculture

- Towns
- Rivers and creeks
- Freeways / motorways; Highways
- Secondary roads; Streets

Agricultural land class A or B

- A
- B
- Not class A or B
- Selected Lot and Plan

LOCALITY DIAGRAM



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5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@detsi.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

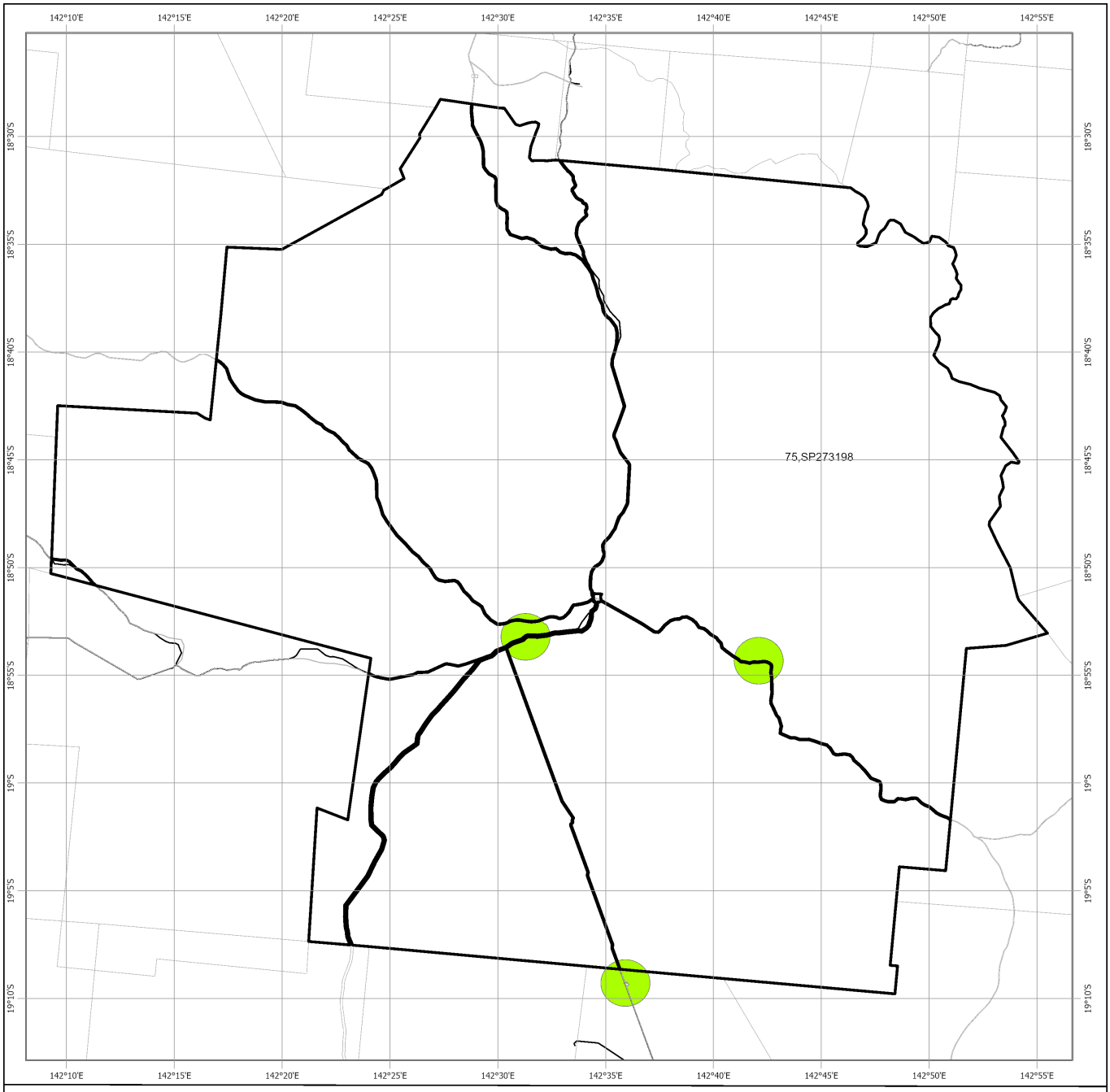
This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

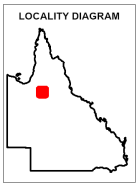
Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



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This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@detsi.qld.gov.au

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6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@detsi.qld.gov.au
Visit https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 75 Plan: SP273198

(no results)

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



Koala priority area, koala habitat area and identified koala broad-hectare area map

- Koala habitat area (core)
- Koala habitat area (locally refined)
- Koala priority area
- Identified koala broad-hectare area
- Cadastral Boundaries
- Towns
- Major rivers/creeks
- Highway
- Connector
- Street/Local Road
- Queensland
- Selected Lot and Plan

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

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LOCALITY DIAGRAM

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The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at: https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping/. The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

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

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8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	*Water Act 2000*	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	*Soil Conservation Act 1986*	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrrd.qld.gov.au
Fire Permits	*Fire and Emergency Services Act 1990*	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	*Nature Conservation Act 1992* *Planning Act 2016*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	*Nature Conservation Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959*	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.dpi.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 803 772 www.dcceew.gov.au
Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act 1993*	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	*Transport Infrastructure Act 1994*	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Your relevant local government office	Local Government Contact Directory

Appendix C. Flora species of conservation significance - desktop assessment records

Family	Scientific name	Common name	EPBC Act[1] status	NC Act[2] status	EPBC – PMST[3] report (50 km)	Atlas of Living Australia[4] (50 km)	WildNet[5] (50 km)
Fabaceae	*Acacia armitii*	-	-	NT	-	6	2
Myrtaceae	*Aggreflorum pallidum*	-	-	NT	-	0	2
Solanaceae	*Solanum carduiforme*	-	-	V	-	2	2

[1] Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi - Migratory.
[2] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern.
[3] Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024-2025a - EPBC Act Protected Matters Search Report, viewed 2024-2025
[4] Atlas of Living Australia (ALA) 2024-2025, Occurrence Records Search, Atlas of Living Australia, viewed 2024-2025
[5] Department of Environment, Tourism, Science and Innovation (DETSI) 2024-2025e, WildNet Wildlife Records, viewed 2024-2025

Appendix D. Fauna species of conservation significance - desktop assessment records

Family	Scientific name	Common name	EPBC Act[1] Status	NC Act[2] Status	EPBC – PMST[3] report (50 km)	Atlas of Living Australia[4] (50 km)	WildNet[5] (50 km)
Reptiles							
Varanidae	*Varanus mertensi*	Mertens' Water Monitor	E	E	x	-	-
Birds							
Scolopacidae	*Actitis hypoleucos*	Common Sandpiper	Mi	SL	x	-	1
Apodidae	*Apus pacificus*	Fork-tailed Swift	Mi	SL	x	-	-
Scolopacidae	*Calidris acuminata*	Sharp-tailed Sandpiper	V, Mi	V	x	2	-
Scolopacidae	*Calidris ferruginea*	Curlew Sandpiper	CE, Mi	CR	x	-	-
Scolopacidae	*Calidris melanotos*	Pectoral Sandpiper	Mi	SL	x	-	-
Scolopacidae	*Calidris ruficollis*	Red-necked Stint	Mi	SL	-	2	-
Charadriidae	*Charadrius veredus*	Oriental Plover	Mi	SL	x	-	-
Estrildidae	*Chloebia gouldiae*	Gouldian Finch	E	E	x	2	8
Cuculidae	*Cuculus optatus*	Oriental Cuckoo	Mi	SL	x	-	-
Accipitridae	*Erythrotriorchis radiatus*	Red Goshawk	E	E	x	-	-
Falconidae	*Falco hypoleucos*	Grey Falcon	V	V	x	-	-
Scolopacidae	*Gallinago hardwickii*	Latham's Snipe	V, Mi	V	x	-	-
Glareolidae	*Glareola maldivarum*	Oriental Pratincole	Mi	SL	x	-	-
Meliphagidae	*Grantiella picta*	Painted honeyeater	V	V	-	-	1
Hirundinidae	*Hirundo rustica*	Barn Swallow	Mi	SL	x	-	-

Family	Scientific name	Common name	EPBC Act[1] Status	NC Act[2] Status	EPBC – PMST[3] report (50 km)	Atlas of Living Australia[4] (50 km)	WildNet[5] (50 km)
Motacillidae	*Motacilla cinerea*	Grey Wagtail	Mi	SL	x	-	-
Motacillidae	*Motacilla tschutschensis*	Yellow Wagtail	Mi	SL	x	-	-
Pandionidae	*Pandion haliaetus*	Osprey	Mi	SL	x	-	-
Threskiornithidae	*Plegadis falcinellus*	Glossy Ibis	Mi	SL	-	6	2
Estrildidae	*Poephila cincta cincta*	Black-throated Finch (White rumped subspecies)	E	E	-	-	4
Rostratulidae	*Rostratula australis*	Australian Painted Snipe	E	E	x	-	-
Scolopacidae	*Tringa nebularia*	Common Greenshank	E	E	-	-	*
Scolopacidae	*Tringa stagnatilis*	Marsh Sandpiper	Mi	SL	-	2	1
Tytonidae	*Tyto novaehollandiae kimberli*	Masked Owl (northern)	V	V	x	-	-
Mammals							
Megadermatidae	*Macroderma gigas*	Ghost Bat	V	E	x	-	-
Pseudocheiridae	*Petauroides minor*	Northern Greater Glider	V	V	x	-	-
Emballonuridae	*Saccolaimus saccolaimus nudicluniatus*	Bare-rumped Sheath-tailed Bat	V	E	x	-	-
Tachyglossidae	*Tachyglossus aculeatus*	Short-beaked Echidna	-	SL	-	-	1

[1] Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi - Migratory.
[2] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern.
[3] Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024-2025a - EPBC Act Protected Matters Search Report, viewed 2024-2025
[4] Atlas of Living Australia (ALA) 2024-2025, Occurrence Records Search, Atlas of Living Australia, viewed 2024-2025
[5] Department of Environment, Tourism, Science and Innovation (DETSI) 2024-2025e, WildNet Wildlife Records, viewed 2024-2025

* WildNet previously identified records for the Common Greenshank (*Tringa nebularia*) within the 50 km buffer area, which were included in a previous MNES report for the Project (AARC 2025). Updates to public data have changed this species' record, which has been reflected in the current report.

Appendix E. Flora species of conservation significance - likelihood of occurrence assessment

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
Acacia armitii	-	NT	**Distribution** *Acacia armitii* is endemic to northern Australia and is known from disjunct regional occurrences in northern Queensland and Arnhem Land, Northern Territory. In Queensland, the species has been recorded in eight areas. These include Cape York (near Wolverton); Lakefield National Park; Normanton; Spring Creek between Croydon and Georgetown; Newcastle Range; Yappa River / Sandy Creek Crossing (south of Richmond); Dead Horse Creek (south of Pentland) and Blackwood National Park (170km SSE Charters Towers) (Queensland Herbarium 2011). In the Northern Territory, there are two records of the species occurring in the Upper Goodmadeer River area. Both populations consisted of only one plant (DETSI 2024-2025e). **Habitat** *A. armitii* occurs in riparian woodlands and open woodlands on sandy soil along ephemeral drainage lines with exposed hard pan layer on stream banks. Other species associated with *A. armitii* include *Eucalyptus camaldulensis*, *Acacia holosericea*, *A. julifera* subsp. *gilbertensis*, *Melaleuca fluviatilis*, *E. whitei* and *E. similis*, *Acacia* species, *Grevillea parallela* and *G. pteridifolia*. On Cape York, *A. armitii* is recorded as growing within cracks in granite rock pavement on the crest of a hill. In Lakefield National Park the species was observed growing on silty loams (DETSI 2024-2025e). **Ecology** Flowering usually occurs June to July and September to October. Fruit development may commence around August to October (DETSI 2024-2025e).	Potential – Potential habitat has been identified within the study area. Additionally, while the Project appears to be located to the West of the known distribution of the species (ALA 2024-2025), there are confirmed records within 15 km of the easternmost section of the study area, the access corridor.	Unlikely – Despite extensive flora surveys over two seasons, the species has not been identified within the study area. Without pods, the species could be confused with *Acacia torulosa* (DETSI 2024-2025e), which was found within the study area; however, pods were present at the time of the surveys. The Project is, therefore, unlikely to have a significant impact on the species.
*Aggreflorum pallidum** *previously known as	-	NT	**Distribution** *Aggreflorum pallidum* distribution has been described as mostly from Greenvale, an area between Rungulla National Park and Croydon, and from Purcopine Gorge (ALA 2024-2025).	Unlikely – The study area lies outside the species' known distribution and lacks suitable habitat.	Unlikely – Field assessments of the study area over two seasons did not identify the species and confirmed the absence of suitable habitat.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
Leptospermum pallidum			**Habitat** This species grows on rocky slopes and cliff edges (ALA 2024-2025). **Ecology** It has been recorded fruiting from May to October, and flowering from February to October (AVH 2024-2025).		The Project is, therefore, unlikely to have a significant impact on the species.
Solanum carduiforme	-	V	**Distribution** *Solanum carduiforme* occurs from Boodjamulla National Park in North-Western Queensland and surrounding area, as well as the Forsayth area. It also occurs in the Eastern Kimberley region of Western Australia. It has not been recorded in the Northern Territory (ALA 2024-2025). **Habitat** This species has been reported from a variety of habitats, as stated in the specimen's labels, including Eucalypt and Melaleuca woodland and riparian woodland on sandy plains and on sandstone plateaus (AVH 2024-2025). **Ecology** *S. carduiforme* is the only known native Solanum species to be dioecious (ALA 2024-2025). The species has been recorded as flowering and fruiting from January to May and in August (AVH 2024-2025).	Potential – The study area lies outside the species' known distribution. However, the study area contains Eucalypt and Melaleuca woodlands and riparian woodlands.	Unlikely – Despite extensive flora surveys over two seasons, the species has not been identified within the study area. Given, the species is easily identifiable in the field, its absence during field assessments indicates the species is unlikely to occur within the Project disturbance area . The Project is, therefore, unlikely to have a significant impact on the species.

[1] Status may be: CE - Critically Endangered; E - Endangered; V – Vulnerable; Mi – Migratory
[2] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern.
[3] Refer to Section 4.1.2 for the methodology used when conducting the likelihood of occurrence assessment.

Appendix F. Fauna species of conservation significance - likelihood of occurrence assessment

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
Reptiles					
Varanus mertensi Mertens' Water Monitor	E	E	**Distribution** Distribution across northern Australia, from Eastern Queensland, across the north of the Northern Territory, to north-east Western Australia. Its southern extent in Queensland is from Mt Isa to Cairns (DCCEEW 2023a). **Habitat** A highly aquatic lizard that rarely ventures more than 5-10 m from the edge of water. Often found in semi-permanent pools, including springs, swamps, and creeks. Recorded sheltering in hollows between rocks and in burrows that have been dug into the banks of waterways (DCCEEW 2023a). **Foraging** An active predator that forages primarily in the water and at the water-land interface. Varied and adaptable diet contributes to widespread distribution in the wet-dry tropics of Australia (DCCEEW 2023a). **Breeding** Lays eggs in a burrow in the dry season and hatching in the wet season (DCCEEW 2023a).	Unlikely – Potential habitat has not been identified within the study area, and there are no confirmed records within the project area or surrounds.	Unlikely – Despite extensive fauna surveys over two seasons, neither the Mertens' Water Monitor nor its habitat have been identified within the study area. The Project is, therefore, unlikely to have a significant impact on the species.
Birds					
Actitis hypoleucos Common Sandpiper	Mi	SL	**Distribution** The Common Sandpiper is widespread in small numbers. It is known to occur along all coastlines in Australia, and in many areas inland (DCCEEW 2024-2025b). In Queensland, this species has been recorded in South-eastern Gulf of Carpentaria and Cairns Foreshore (DCCEEW 2024-2025b). It migrates to Australia during the non-breeding season, migrating to Queensland from August (DCCEEW 2024-2025b).	Potential – Habitat for the species may occur within the study area, and there are records within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Common Sandpiper has not been identified within the study area. The Project site offers limited habitat value. Standing water is limited to ephemeral areas, swamps, and nearby

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Habitat The Common Sandpiper can occur in a broad range of coastal and inland wetlands with varying levels of salinity (DCCEEW 2024-2025b). It is mostly found around muddy margins or rocky shores, which may be narrow and/or steep (DCCEEW 2024-2025b). Rarely found on mudflats (DCCEEW 2024-2025b). **Foraging** Generally, this species forages on bare soft mud at the edges of wetlands in shallow water, often in areas where objects protrude from the substrate (rocks or pneumatophores) (DCCEEW 2024-2025b). Sometimes the Common Sandpiper will venture into grassy areas adjoining wetlands in search of food for extensive periods (molluscs, bivalves, crustaceans and a variety of insects) (DCCEEW 2024-2025b). **Breeding/Roosting** Roost sites are typically on rocks or in roots/ branches of vegetation, especially mangroves (DCCEEW 2024-2025b). **Dispersal** The southern migration passage is said to be mostly diurnal, whereas the northern passage mainly occurs by night (DCCEEW 2024-2025b).		farm dams, which were intensively targeted for bird surveys. Survey findings conclude, the Common Sandpiper is unlikely to occur within the study area. Additionally, the potential habitat available to migratory species in the study area is unlikely to provide important habitat for migratory species, including the Common Sandpiper (DoEE 2017). The Project is, therefore, unlikely to have a significant impact on the species.
Apus pacificus Fork-tailed Swift	Mi	SL	**Distribution** The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia (DCCEEW 2024-2025b). It is widespread throughout Queensland, with sightings common from February–March (DCCEEW 2024-2025b). **Habitat** This species does not have specific habitat requirements and is found across a range of habitats, from inland open plains to wooded and coastal areas, where it is exclusively aerial (DCCEEW 2024-2025b). **Foraging** The Fork-tailed Swift forages aerially, up to hundreds of meters above the ground (DCCEEW 2024-2025b). They often occur in areas of updraughts and	Potential – Habitat for the species may occur within the study area. While the closest record of the species is over 65 km NW of the study area, this highly mobile species has a broad distribution, and there is potential for the species to fly over the study area.	Known – The species was identified flying over the study area during the November 2024 and February 2025 field surveys. This species is discussed in more detail in Section 5.3.4. This species has already been assessed in the Referral for the Project. A decision made in June 2025 states that the proposed action is not a controlled action. Since this species does not meet the criteria for an MSES, it does require assessment under the NC Act. The species description has been included to

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			along the edges of low-pressure systems eating small bees, wasps, termites and moths (DCCEEW 2024-2025b). **Breeding/Roosting** It is thought that this species roosts aerially but are occasionally observed to land (DCCEEW 2024-2025b). **Dispersal** It is not known to have specific dispersal habitat requirements.		provide context on the environmental values of the study area.
Calidris acuminata Sharp-tailed Sandpiper	V, Mi	V	**Distribution** The Sharp-tailed Sandpiper is a non-breeding visitor to all states and territories of Australia (DCCEEW 2024-2025b). It is widespread throughout Queensland, arriving in large numbers in September (DCCEEW 2024-2025b). **Habitat** This species prefers muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. They also occur in saltworks and sewage farms. They use flooded paddocks, sedgelands and other ephemeral wetlands, but leave when they dry. They use intertidal mudflats in sheltered bays, inlets, estuaries or seashores, and also swamps and creeks lined with mangroves (DCCEEW 2024-2025b). They may be attracted to mats of algae and water weed either floating or washed up around terrestrial wetlands, and coastal areas with much beach cast seaweed (DCCEEW 2024-2025b). Sometimes they occur on rocky shores and rarely on exposed reefs (DCCEEW 2024-2025b). **Foraging** 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 (DCCEEW 2024-2025b). This species can also forage among inundated vegetation of saltmarsh, grass, or	Potential – Habitat for the species may occur within the study area, and there are past species records within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Sharp-tailed Sandpiper has not been identified within the study area. There are no permanent standing water bodies in the study area. Ephemeral creeks, swamps and nearby farm dams were intensely targeted for bird surveys across seasons. The Sharp-tailed Sandpiper is considered unlikely to occur within the study area. Furthermore, the study area is unlikely to provide important habitat for migratory species, including the Sharp-tailed Sandpiper (DoEE 2017). The Project is considered unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			sedge, eating seeds, worms, molluscs, crustaceans, and insects (DCCEEW 2024-2025b). **Breeding/Roosting** The species does not breed in Australia. Roosting occurs at edges of wetlands, on wet open mud or sand, or in short sparse vegetation, such as grass or saltmarsh (DCCEEW 2025a). Mangroves and on rocks in water are some other locations this species has been seen roosting (DCCEEW 2024-2025b). **Dispersal** Movements occur during the non-breeding period, moving to temporary or flooded wetlands and leaving them when they dry (DCCEEW 2024-2025b).		
Calidris ferruginea Curlew Sandpiper	CE, Mi	CR	**Distribution** Widespread in small numbers, this species is known to occur around coasts in Australia and in many areas inland during the non-breeding season (DCCEEW 2024-2025b). In Queensland, this species has been recorded in the Gulf of Carpentaria, with widespread records along the coast, south of Cairns (DCCEEW 2024-2025b). **Habitat** Inhabiting wetland environments, the Curlew Sandpiper mainly occurs on intertidal mudflats in sheltered coastal areas, (estuaries, bays, inlets, and lagoons), as well as around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms (DoE 2015a). Small numbers have been recorded living inland around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (DoE 2015a). **Foraging** Curlew Sandpipers forage on mudflats and nearby shallow water at the edge of shallow pools, wading through water 15-60 mm deep (DCCEEW 2024-2025b). At high tide, they forage among low sparse emergent vegetation, such as	Unlikely – The Project is not located near the coastal main distribution of the species. While there is potential marginal habitat for the species in the form of ephemeral small swamps and farm dams, the closest records of the species are from large permanent waterbodies located over 100 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Curlew Sandpiper has not been identified within the study area. While there are no waterholes present in the study area, ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Curlew Sandpiper is considered unlikely to occur within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			saltmarsh, and sometimes forage in flooded paddocks or inundated salt flats (DCCEEW 2024-2025b). **Breeding/Roosting** Roosting occurs on bare dry shingle, shell, or sand beaches, sandspits and islets in or around coastal or near-coastal lagoons and other wetlands (DCCEEW 2024-2025b). Occasionally roosting occurs in dunes during very high tides and sometimes in saltmarsh (DCCEEW 2024-2025b). Substantial numbers of Curlew Sandpipers remain in northern Australia throughout the nonbreeding season, arriving around September (DCCEEW 2024-2025b).		
Calidris melanotos Pectoral Sandpiper	Mi	SL	**Distribution** The Pectoral Sandpiper occurs around Cairns in Queensland (DCCEEW 2024-2025b). There are scattered records elsewhere, mainly from east of the Great Divide between Townsville and Yeppoon (DCCEEW 2024-2025b). A few inland records have also been recorded at Mount Isa, Longreach, and Oakley (DCCEEW 2024-2025b). **Habitat** This species prefers shallow wetlands with varying levels of salinity, in coastal or near coastal habitat (DCCEEW 2024-2025b). It is sometimes found further inland in the following habitat types, coastal lagoons, swamps, lakes, inundated grasslands, estuaries, bays, saltmarshes, river pools, creeks, floodplains, and artificial wetlands (DCCEEW 2024-2025b). Its preferred habitat is wetlands that have open fringing mudflats and low, emergent, or fringing vegetation, such as grass or samphire (DCCEEW 2024-2025b). It has also been recorded in swamp overgrown with lignum (DCCEEW 2024-2025b). **Foraging** Foraging occurs in shallow water or soft mud at the edge of wetlands where they consume algae, seeds, crustaceans, arachnids, and insects (DCCEEW 2024-2025b).	Unlikely – The Project is not located near the coastal main distribution of the species. While there is potential marginal habitat for the species in the form of ephemeral small swamps and farm dams, the closest records of the species are from large permanent waterbodies located over 100 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Pectoral Sandpiper has not been identified within the study area. There are no permanent standing water bodies in the study area. Ephemeral creeks, swamps and nearby farm dams were intensely targeted for bird surveys across seasons. The Pectoral Sandpiper is considered unlikely to occur within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Breeding/Roosting It is not known to have specific dispersal or roosting habitat requirements, and this species is found in Australia from September to June (DCCEEW 2024-2025b).		
Calidris ruficollis Red-necked Stint	Mi	SL	**Distribution** The Red-necked Stint is distributed along most of the Australian coastline (DCCEEW 2024-2025b). This species has been found inland in all states when conditions are suitable and is known from the coastlines of all states (DCCEEW 2024-2025b). **Habitat** This species is found in coastal areas, including in sheltered inlets, bays, lagoons and estuaries with intertidal mudflats, often near spits, islets and banks and, sometimes, on protected sandy or coralline shores (DCCEEW 2024-2025b). It can also occur along ephemeral or permanent shallow wetlands near the coast or inland, including lagoons, lakes, swamps, riverbanks, waterholes, bore drains, dams, soaks, and pools in salt flats. The Red-necked Stint has also been known to use flooded paddocks or damp grasslands; and have been recorded in areas with little or no perennial vegetation (DCCEEW 2024-2025b). **Foraging** The Red-necked Stint forages on bare wet mud on intertidal mudflats or sandflats, or in very shallow water (DCCEEW 2024-2025b). The species is also known to forage in non-tidal wetlands during high tides; including areas of flooded paddocks (DCCEEW 2024-2025b). This species is omnivorous. **Breeding/Roosting** This species is a non-breeding visitor to Australia, it is known to breed in Siberia and sporadically in north and west Alaska (DCCEEW 2024-2025b). The Red-necked Stint roosts on sheltered beaches, spits, banks or islets, of sand, mud, coral or shingle, sometimes in saltmarsh or other vegetation (DCCEEW 2024-2025b).	Potential – Potential habitat may occur within the study area. There are records of the species within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Red-necked Stint has not been identified within the study area. While there are no waterholes present in the study area ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Red-necked Stint is considered unlikely to occur within the study area. Furthermore, the study area is unlikely to provide important habitat for migratory species, including the Red-necked Stint (DoEE 2017). The Project is considered unlikely have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Dispersal The Red-necked Stint spends winter in Australasia, mostly in Australia for its non-breeding season (DCCEEW 2024-2025b). The species begins to arrive in Australia from August, with the majority arriving from early September (DCCEEW 2024-2025b). The Red-necked Stint leaves Australia from late February/ March through to April, with a few individuals remaining as late as May (DCCEEW 2024-2025b).		
Charadrius veredus Oriental Plover	Mi	SL	**Distribution** Within Queensland, the species is found in the north-western part of the state (the Gulf Country), both in coastal and inland areas (DCCEEW 2024-2025b). **Habitat** Within Queensland, the Oriental Plover spends several weeks in coastal habitats such as estuarine mudflats, sandbanks, beaches, reefs, and near-coastal grasslands. They then move further inland, inhabiting areas such as flat, open, semi-arid grasslands where grass is sparse and interspersed with bare ground. During the wet season they may move into lightly wooded grasslands (DCCEEW 2024-2025b). **Foraging** Little is known about the diet of the Oriental Plover, though it has been recorded eating a variety of insects, including beetles, grasshoppers and crickets. They forage among short grass or stony bare ground in a running, stopping and pecking action (DCCEEW 2024-2025b). **Breeding/Roosting** This species does not breed in Australia (DCCEEW 2024-2025b). **Dispersal** The species arrives in north-western Australia in early to mid-September. Within Australia, they may disperse in response to wet conditions and cold weather. They leave Australia between February and April (DCCEEW 2024-2025b).	Unlikely – Potential habitat does not occur within the study area, which is characterised by low woodland. Additionally, there are no records of this species within 100 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Oriental Plover has not been identified within the study area. Furthermore, the study area is unlikely to provide important habitat for migratory species, including the Oriental Plover (DoEE 2017). The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
Chloebia gouldiae Gouldian Finch	E	E	**Distribution** The Gouldian finch is found in northern Australia, ranging from the Cape York Peninsula through north-west Queensland, and the north of the Northern Territory to the Kimberley Region of Western Australia (TSSC 2016a). **Habitat** The species tends to inhabit open woodland dominated by Eucalyptus trees and a ground cover of Sorghum and other annual or perennial grasses. They also require a waterhole or spring within 2-3 km, and unburnt hollows for breeding (TSSC 2016a). **Foraging** The species can be found individually, travelling in pairs, or traveling in groups of anywhere from three to hundreds, or even in mixed flocks comprised of other finches (TSSC 2016a). They feed almost exclusively on grass seed and rely on a small number of grass species, feeding on freshly ripened seeds in the wet season, and on older dormant seeds during the dry season (TSSC 2016a). **Breeding/Roosting** They nest in tree hollows between April and July, laying roughly five eggs per clutch though they may raise several clutches each season (TSSC 2016a).	Potential – Potential habitat may occur within the study area. There are records of the species within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Gouldian Finch has not been identified within the study area. Further, the species' habitat requirements include waterholes or springs within 2-3 km, and whilst potential habitat for the species may occur elsewhere on Esmeralda station, no permanent waterholes or springs were present within the study area. Ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. On this basis, the Gouldian Finch is considered unlikely to occur within the study area. Additionally, the study area does not possess unique habitat value for the species, as all environmental features identified are also found in the surrounding region. The Project is, therefore, unlikely to have a significant impact on the species.
Cuculus optatus Oriental Cuckoo	Mi	SL	**Distribution** Distributed throughout the northern parts of Western Australia, Northern Territory and Queensland, as well as along the Queensland and New South Wales coastline (DoE 2015a). **Habitat** Nonbreeding habitat occurs within rainforest margins, monsoon forest, vine scrubs, riverine thickets, wetter, densely canopied eucalypt forests or open *Casuarina*, *Acacia* or *Eucalyptus* woodlands (DoE 2015a). **Foraging**	Unlikely – Potential habitat does not occur within study area, and closest record of the species is from over 200 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Oriental Cuckoo has not been identified within the study area. There are no unique aspects of the site that are likely to form important habitat for the Oriental Cuckoo. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Not much is known about the ecology of this species (DoE 2015a).		
Erythrotriorchis radiatus Red Goshawk	E	E	**Distribution** Endemic to Australia, the Red Goshawk is sparsely dispersed across coastal and sub-coastal Australia, from western Kimberley Division to northeastern New South Wales, and occasionally on continental islands (DCCEEW 2025a). Birds recorded from far outside the breeding range in central Australia and the Pilbara likely include both dispersive juveniles and seasonal migrants from further north (DCCEEW 2023b). **Habitat** Any breeding or foraging habitat in areas where the species is known or likely to occur (as defined by the distribution (DCCEEW 2023b) and any newly discovered breeding or foraging locations should be considered habitat critical to survival (DCCEEW 2023b). Foraging habitat: The species inhabits coastal and sub-coastal tall open forests and woodlands, tropical savannas traversed by wooded or forested rivers, and the edges of rainforests (DCCEEW 2023b). Breeding habitat: Areas with large, tall trees (>14m) within 2.5 km of a watercourse. Important breeding habitat includes riparian vegetation supporting tall stands or remnant paperbark trees (*Melaleuca* spp.) or tall dry woodlands in proximity to watercourses with Darwin stringybark (*Eucalyptus tetradonta*) dominated woodlands. These breeding habitats are often found in areas of topographic ruggedness such as plateaus or gorges where breeding can occur on elevated country (DCCEEW 2023b). **Ecology** This species ambushes its prey when hunting, feeding on medium to large birds (DCCEEW 2024-2025b). The species prefers areas that appear to contain permanent water. Nest trees have been noted to be significantly taller (>20m) than surrounding trees, which commonly occur in proximity to watercourses and wetlands (DCCEEW 2024-2025b).	Unlikely – the Project is not located near the coast or rainforest and lacks the habitat preferred by the species. Additionally, the closest record of this species is from around 65 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Red Goshawk has not been identified within the study area. Habitat types within the study area are not unique and are widespread in the broader region. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Movement patterns of the Red Goshawk are poorly known, they have been observed individually, in pairs, and in family groups (DCCEEW 2024-2025b).		
Falco hypoleucos Grey Falcon	V	V	**Distribution** This species is sparsely distributed throughout arid and semi-arid Australia where annual rainfall is <500 mm, except for wet years followed by drought where the Grey Falcon may become more widespread throughout its range (TSSC 2020). In Queensland this species appears to be absent in areas East of the Great Dividing Range (TSSC 2020). **Habitat** The Grey Falcon prefers lightly timbered and bare lowland plains in acacia shrublands crossed by tree lined watercourses (TSSC 2020). It is also known to occur in grassland, sand dune and open woodland habitats, and has been observed hunting in treeless areas (TSSC 2020). **Foraging** The Grey Falcon feeds almost exclusively on birds such as doves, pigeons, small parrots and finches while breeding (TSSC 2020). It has also been seen consuming small mammals and lizards (TSSC 2020). **Breeding/Roosting** Breeding occurs from June to November in the old nests of other birds particularly raptor or corvid nests (TSSC 2020). These nests are usually located in the tallest tree along watercourses in tree species such as River Red Gum (*Eucalyptus camaldulensis*) and Coolabah (*Eucalyptus coolabah*) (TSSC 2020).	Unlikely – The preferred habitat for the species does not occur within the study area, which is characterised by low woodlands. Additionally, there are no records of this species within 100 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Grey Falcon has not been identified within the study area. There are no unique aspects of the site that are likely to form important habitat for the species. The Project is, therefore, unlikely to have a significant impact on the Grey Falcon.
Gallinago hardwickii Latham's Snipe	V, Mi	V	**Distribution** The Latham's Snipe is a non-breeding visitor to south-eastern Australia, and a passage migrant through northern Australia (DCCEEW 2024-2025b). In Queensland, their range extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range (DCCEEW 2024-2025b). **Habitat**	Potential – Potential habitat may occur in the study area, and the Project is located within the distribution range of the species, with records from	Unlikely – Despite extensive fauna surveys over two seasons, the Latham's Snipe has not been identified within the study area. Swamps, creeklines, and nearby farm dams were specifically targeted for bird surveys. The Latham's Snipe is

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			This species prefers open freshwater permeant and ephemeral wetlands, typically with low dense vegetation (DCCEEW 2024-2025b). It can be found in a variety of vegetation communities including but not limited to tussock grasslands, coastal and alpine heathlands, tea-tree scrub, and open forests (DCCEEW 2024-2025b). **Foraging** The foraging habitat of the Latham's Snipe consists of areas of mud (exposed or beneath very shallow water) with low, dense vegetation present (DCCEEW 2024-2025b). **Breeding/Roosting** They roost near their foraging sites, in areas that provide some shelter (clumps of vegetation, in drainage ditches, among boulders, or in shallow water if cover is not available) (DCCEEW 2024-2025b). **Dispersal** Latham's Snipe is dispersive during its stay in Australia, arriving from July to November. The snipe is thought to disperse in response to rainfall and the availability of food (DCCEEW 2024-2025b).	around 80 km of the study area.	considered unlikely to occur within the study area. The Project is, therefore, unlikely to have a significant impact on the species.
Glareola maldivarum Oriental Pratincole	Mi	SL	**Distribution** Within Queensland, the species is found in the north-western part of the state (the Gulf Country), both in coastal and inland areas (DCCEEW 2024-2025b). **Habitat** Within Queensland, the Oriental Pratincole inhabits open plains, floodplains, or short grasslands with large patches of bare ground. They are found near wetlands, lakes, creeks, and artificial wetlands such as reservoirs, saltworks and sewage farms. In coastal areas they are found on beaches, mudflats, and islands (DCCEEW 2024-2025b). **Foraging**	Unlikely – Potential habitat does not occur within the study area, which is characterised by low woodlands. Additionally, the closest records of the species are from around 80 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Oriental Pratincole has not been identified within the study area. Although no permanent waterholes are present in the study area, ephemeral creeks, swamps, and nearby farm dams were specifically targeted for bird surveys. The study area is unlikely to provide important habitat for migratory species, including the Oriental Pratincole (DoEE 2017). The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			The species is insectivorous, feeding on dragonflies, cicadas, beetles, ants, flies, grasshoppers and wasps, usually foraging in flocks, searching between 0 m and 300 m off the ground (DCCEEW 2024-2025b). **Breeding/Roosting** This species does not breed in Australia (DCCEEW 2024-2025b). **Dispersal** The species arrives in north-western Australia in early to late October during their non-breeding season, usually coinciding with storm events that increase the number of insects. They typically leave in late March (DCCEEW 2024-2025b).		
Grantiella picta Painted honeyeater	V	V	**Distribution** The species is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory, with the highest concentration found in the Great Dividing Range, between Grampians, Victoria, and Roma (DoE 2015b). **Habitat** The Painted Honeyeater uses mistletoe trees as host trees, found within eucalypt forests/woodlands, riparian woodlands, acacia-dominated woodlands, paperbark forests and residential areas, preferring those areas with higher densities of mature trees. It is more commonly found in wider blocks of remnant woodland but will use narrow strips for breeding if sufficient mistletoe trees are present (DoE 2015b). **Foraging** The most specialised of Australia's honeyeaters, the species diet primarily consists of mistletoe fruits, however, is supplemented by nectar and arthropods (DoE 2015b). **Breeding/Roosting** The species occurs in singles or pairs, with breeding occurring between October and March when the mistletoe fruits are most available. The species appears to prefer mistletoe as a nest substrate and selects nest sites in habitats where mistletoe prevalence and parasitism rates are high. The species builds a nest	Potential – Habitat may occur within the study area, and there are records for the species within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over seasons, including targeted study species effort, the Painted Honeyeater has not been identified within the study area. Further, the specific habitat for the species (abundant mistletoe trees) was not recorded within the study area. The species is considered unlikely to occur within the study area and will not be significantly impacted by the Project.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			from plant fibres and spider webs between 3 and 20 m high in trees (DoE 2015b). **Dispersal** The species moves seasonally north-south with the fruiting of mistletoe. After breeding, many individuals move to semi-arid regions such as north-eastern South Australia. Western Queensland, and central Northern Territory (DoE 2015b). The species is considered to have a single population.		
Hirundapus caudacutus White-throated Needletail	V, Mi	V	**Distribution** The White-throated Needletail migrates to Australia during the non-breeding season around September/October (DCCEEW 2024-2025b; TSSC 2019). During this time, this species is widespread across eastern and south-eastern Australia (DCCEEW 2024-2025b; TSSC 2019). In eastern Australia, it has been recorded in all coastal regions of Queensland, extending inland to the western slopes of the Great Divide and occasionally onto adjacent inland plains (DCCEEW 2024-2025b). **Habitat** Primarily an aerial species, this species is known to occur across a variety of habitats, including wooded areas, open forests, and rainforests (DCCEEW 2024-2025b). Large tracts of native vegetation, particularly forest, is considered likely to be a key habitat requirement for this species (DoE 2015a). It has been observed flying over farmland, typically over partially cleared pasture or within remnant vegetation at the edge of paddocks (DCCEEW 2024-2025b). **Ecology** This species predominantly forages aerially at heights up to 'cloud level', along the edges of low-pressure systems (DCCEEW 2024-2025b). This species is also known to forage much closer to the ground (still aerial) in open habitats or recently disturbed areas feeding on a wide variety of insects (DCCEEW 2024-2025b). It prefers to roost in forest and woodlands, both among dense foliage in the canopy or in tree hollows, as well as on bark or rock faces, and maybe aerially on occasion (DCCEEW 2024-2025b; DoE 2015a).	The White-throated Needletail was not identified in the desktop searches.	Known – The species was identified aerially within the study area during the November 2024 field survey. This species is discussed in more detail in Section 6.1. The impact assessment for this species concluded that the Project will not result in a significant residual impact to the White-throated Needletail.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
Hirundo rustica Barn Swallow	Mi	SL	**Distribution** In Queensland, the species occurs along the north coast and down to Fraser Island. Its range continues along the top of Australia, down along the western side to the Pilbara (DCCEEW 2024-2025b). **Habitat** When in Australia, the species is found in open country in coastal lowlands, often near water, towns and cities, in addition to freshwater wetlands, paperbark woodland, mesophyll shrub thickets and tussock grassland (DCCEEW 2024-2025b) **Foraging** The species is primarily insectivorous, feeding on flying insects by skimming them from the water surface, or by simple aerial pursuit while flying love over the ground (DCCEEW 2024-2025b). **Breeding/Roosting** This species does not breed in Australia (DCCEEW 2024-2025b). **Dispersal** The species breeds in the northern hemisphere in temperate regions, travelling south to Australia to spend the boreal winter, staying from November to March (DCCEEW 2024-2025b).	Unlikely – Potential habitat occurs within the study area; however, the closest record of the species is from over 200 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Barn Swallow has not been identified within the study area. While there are no waterholes present in the study area, ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Project is, therefore, unlikely to have a significant impact on the species.
Motacilla cinerea Grey Wagtail	Mi	SL	**Distribution** The species occurs along much of the coast, ranging west from Adelaide, all the way around to Townsville, with a patch of non-occurrence north of Cairns in Queensland (DoE 2015a). **Habitat** Both in and out of Australia the species is highly associated with water. In Australia they are most commonly found in creeks, rivers, and waterfalls (DoE 2015a).	Unlikely – Potential habitat for the species in the study area is limited to the wet season and to farm dams located in the vicinity of the study area. However, the closest record of the species is from over	Unlikely – Despite extensive fauna surveys over two seasons, the Grey Wagtail has not been identified within the study area. While there are no permanent waterholes present in the study area ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Foraging They are known to forage within rocky tidal flats during migration, but will forage in their primary habitat otherwise, feeding on a variety of insects, molluscs, crustaceans, small fish and tadpoles, depending on what is available (DoE 2015a). **Breeding/Roosting** The species does not breed in Australia (DoE 2015a). **Dispersal** The species regularly travels from Russia to Australia, staying from late October to March (DoE 2015a).	370 km of the study area.	The Project is, therefore, unlikely to have a significant impact on the species.
*Motacilla tschutschensis** Yellow Wagtail *previously known as *Motacilla flava*	Mi	SL	**Distribution** This species may occur throughout Australia during the non-breeding season (DoE 2015a). **Habitat** The Yellow Wagtail prefers mostly well-watered open grasslands and the fringes of wetlands (DoE 2015a). **Foraging** The species roosts in mangroves and other dense vegetation (DoE 2015a).	Unlikely – Potential habitat does not occur within the study area, which is characterised by low woodlands, with some ephemeral wooded swamps and small farm dams near the study area. Additionally, the closest record of the species is from over 200 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Yellow Wagtail has not been identified within the study area. While there are no waterholes present in the study area ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Project is, therefore, unlikely to impact the species.
Pandion haliaetus Eastern Osprey	Mi	SL	**Distribution** The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in New South Wales; with a second isolated breeding population on the coast of South Australia (DCCEEW 2024-2025b). The total range (breeding plus non-breeding) around the northern coast is more	Unlikely – Habitat for the species has not been identified within the study area, and the closest record of the species is from over 150 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Eastern Osprey has not been identified within the study area. There are no permanent waterbodies present in the study. Standing water is limited to ephemeral creeks, swamps

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			widespread and is continuous around this region, except for Eighty Mile Beach (DCCEEW 2024-2025b). **Habitat** Predominantly occupies coastal and littoral habitats as well as terrestrial wetlands of tropical and temperate Australia and offshore islands. they visit a variety of wetland habitats including coastal cliffs, beaches, estuaries, inshore waters, reefs, bays, broad rivers, reservoirs, large lakes, and mangrove swamps (DCCEEW 2024-2025b). **Foraging** The Eastern Osprey require extensive areas of open fresh, brackish or saline water for foraging, which mostly occurs during the day (DCCEEW 2024-2025b). They mainly feed on fish, diving directly into the water to obtain their prey (DCCEEW 2024-2025b). Eastern Osprey's occupy large territories that are used for breeding and at least some foraging (DCCEEW 2024-2025b). They forage more widely, continuing to visit their breeding grounds in the non-breeding season (DCCEEW 2024-2025b). **Breeding/Roosting** This species does not have specific breeding habitat requirements and are known to nest on a variety of natural and artificial sites (trees, cliffs, rocky headland, jetties, lighthouses cranes for example) (DCCEEW 2024-2025b). **Dispersal** Adult Eastern Ospreys are mostly resident or sedentary around breeding territories. They forage more widely but continue to make at least intermittent visits to their breeding grounds in the non-breeding season (DCCEEW 2024-2025b). Some dispersal is evident including apparent movement along the Murray River (DCCEEW 2024-2025b) and extensions of range in north-western Western Australia and north-eastern Queensland in autumn; and an apparent extension of range inland in north-western Queensland in winter (DCCEEW 2024-2025b). Absence of the species from some offshore islands in the non-breeding season; and records of single birds in central Australia between May and December during years of average or above-average rainfall, when fish are abundant in inland waterways also occur. These movements may represent		and nearby farm dams. These areas were specifically targeted for bird survey across seasons. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			dispersal by young birds (DCCEEW 2024-2025b). Young birds may disperse more than 700 km from their natal territories, but many return to their natal areas to breed (DCCEEW 2024-2025b).		
Plegadis falcinellus Glossy Ibis	Mi	SL	**Distribution** Within Australia, the Glossy Ibis is generally located east of the Kimberley in Western Australia and Eyre Peninsula in South Australia (DCCEEW 2024-2025b). This species is known to breed in select locations, which include the Channel Country in Queensland (DCCEEW 2024-2025b). **Habitat** Fresh water marshes at the edges of lakes and rivers, lagoons, floodplains, wet meadows, swamps, reservoirs, sewage ponds, rice-fields and cultivated areas under irrigation are the preferred foraging and breeding habitats for this species. They are also occasionally found in coastal locations such as estuaries, deltas, saltmarshes, and coastal lagoons (DCCEEW 2024-2025b). It is known to occur in large densities in drying Top End grass/sedge swamps and Channel Country grass/forb meadows (DCCEEW 2024-2025b). **Foraging** The species feeds in very shallow water, probing the water/ mud in search of its preferred food source (aquatic invertebrates/insects) (DCCEEW 2024-2025b). Preferred foraging habitat mentioned above. **Breeding/Roosting** Australian breeding habitat types include wooded and shrubby swamps in the semi-arid and arid regions, including the Channel Country in Queensland (DCCEEW 2024-2025b). Glossy Ibis roost in trees or shrubs usually near water bodies (DCCEEW 2024-2025b). The breeding season is from mid spring to the end of summer; however, reproduction may extend to September to April if persistent food resources are available at breeding sites (DCCEEW 2024-2025b).	Potential – Habitat for the species may occur within the study area, and there are records for the species within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Glossy Ibis has not been identified within the study area. While there are no waterholes present in the study area ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Glossy Ibis is considered unlikely to occur within the study area. Additionally, the study area does not possess unique habitat value for the species, as all environmental features identified are also found in the surrounding region. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Dispersal Within Australia, the species moves in response to good rainfalls, expanding its range (DCCEEW 2024-2025b). It often moves north in autumn, then return south to the main breeding areas in spring and summer (DCCEEW 2024-2025b).		
Poephila cincta cincta Black-throated Finch (White rumped subspecies)	E	E	**Distribution** They appear in two general locations – in the Townsville region, and at scattered sites in central-eastern Queensland (DCCEEW 2024-2025b). Historically the species was found almost as far south as the NSW border, through eastern Queensland and north to the Burdekin and Lynd Rivers, however it is now extinct at most sites south of the Burdekin River, found only in small pockets of suitable habitat (DCCEEW 2024-2025b). **Habitat** Mainly grassy, open woodlands and forests dominated by Eucalyptus, Corymbia, and Melaleuca, sometimes tussock grasslands or freshwater wetlands (DCCEEW 2024-2025b). Their habitat is often near a watercourse, most typically in a riparian habitat. It is suspected that they require a mosaic of habitat in order to find seed in the wet season (DCCEEW 2024-2025b). **Foraging** They can be found in pairs, or in flocks ranging up to 160 members (DCCEEW 2024-2025b). They feed on the half-ripe seeds of grasses and herbaceous plants, with some seasonal variation in diet, and tend to drink from water sources in the early morning and late afternoon unless water is easily available throughout the day (DCCEEW 2024-2025b). **Breeding/Roosting** The species reaches sexual maturity in 6 months, breeding throughout the year if conditions are good, but typically during the wet season between February and May in the Townsville region, August to December in other areas (DCCEEW 2024-2025b). When they breed, they do so in colonies with individual nests dispersed from several in one tree to 50m away from each other, usually in non-remnant vegetation associated with solodic soils and alluvial plains.	Potential – Potential habitat may occur within the study area and, while the Project is located north of the known distribution of the Black-throated Finch (southern subspecies), there are records of the species within 50 km of the study area.	Unlikely – Although the desktop searches identified some records within 50 km of the study area (DETSI 2024-2025e), the Project is located within the known distribution of the *Poephila cincta atropygialis* (Black-throated Finch (Black-rumped subspecies)) and to the west of the known distribution of the Black-throated Finch (White-rumped subspecies) (ALA 2024-2025, DCCEEW 2024-2025b). Nevertheless, the species was targeted during the surveys, and despite extensive fauna surveys over two seasons, only records of the Black-throated Finch (Black-rumped subspecies) have been identified within the study area. The Black-throated Finch (White-rumped subspecies) is considered unlikely to occur within the study area. In addition, the study area does not possess unique habitat value for the species, as all environmental features identified are also found in the surrounding region. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Dispersal The movements of the Black-throated Finch (southern) are poorly known. The subspecies is described as resident around Townsville and Charters Towers (DCCEEW 2024-2025b) and is said to have been resident at Rockhampton and in northern NSW (DCCEEW 2024-2025b). The Black-throated Finch (southern) may undertake some movements in response to rainfall or drought (DCCEEW 2025a). These movements could be prompted by changes in the availability of food during drought or wet conditions (DCCEEW 2024-2025b). There may be some local movement away from nest sites once the breeding period is complete (DCCEEW 2024-2025b). However, Black-throated Finches (southern) are still encountered (at a reduced frequency) at their breeding sites during the non-breeding period. This suggests that birds remain around their nest sites during the non-breeding period, and forage more widely throughout the surrounding habitat (DCCEEW 2024-2025b). No quantitative information is available on territories or home ranges. However, it is possible that the home range of the Black-throated Finch (southern) could be subject to seasonal variation, with birds roaming more widely during the non-breeding period (DCCEEW 2024-2025b).		
Rostratula australis Australian Painted Snipe	E	E	**Distribution** Known to occur within wetlands within all states of Australia (DCCEEW 2024-2025b). This species is most common in eastern Australia, where it has been recorded throughout much of Queensland, New South Wales, Victoria, and south-eastern South Australia at scattered locations (DCCEEW 2024-2025b). **Habitat** The Australian Painted Snipe generally inhabits shallow freshwater (sometimes brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DCCEEW 2024-2025b). It has also been known to occupy inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains (DCCEEW 2024-2025b). These areas usually include emergent tussocks of grass, sedges, rushes or reeds, or samphire; often with scattered clumps of lignum *Muehlenbeckia*, Canegrass or Tea-tree (*Melaleuca* sp.) (DCCEEW 2024-	Potential – Potential habitat may occur within the study area. Although there are no confirmed records of this species within 100 km of the study area, given the wide distribution of this highly mobile species, there is potential for the species to fly over the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Australian Painted Snipe has not been identified within the study area. Ephemeral creeks, swamps and nearby farm dams were specifically targeted for bird surveys. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			2025b). Areas lined with trees, or that have some scattered fallen or washed-up timber are sometimes also used (DCCEEW 2024-2025b). **Foraging** This species generally remains in dense cover when feeding, although may forage over nearby mudflats and other open areas such as ploughed land or grassland (DCCEEW 2024-2025b). This species requires suitable wetland areas even in drought conditions (DCCEEW 2024-2025b). Most nest records are from or near small islands in freshwater wetlands, which contain a combination of very shallow water, exposed mud, dense low cover and sometimes some tall dense cover (DCCEEW 2024-2025b). This species is mainly crepuscular (active at dawn and dusk) and highly cryptic (DCCEEW 2024-2025b). **Breeding/Roosting** Breeding habitat requirements are specific: shallow wetlands with areas of bare wet mud and both upper and canopy cover (low and sometimes tall and dense) nearby (DCCEEW 2024-2025b). This species may breed in response to wetland conditions rather than during a season (DCCEEW 2024-2025b). **Dispersal** The Australian Painted Snipe is possibly dispersive or migratory (DCCEEW 2024-2025b). Dispersive movements have been attributed to local conditions: moving to flooded areas; moving from drying to permanent wetlands; moving away from areas affected by drought (DCCEEW 2024-2025b).		
Tringa stagnatilis Marsh Sandpiper	Mi	SL	**Distribution** The Marsh Sandpiper is found on coastal and inland wetlands throughout Australia and is widespread in coastal Queensland (DCCEEW 2024-2025b). This species is also recorded in all regions of New South Wales and is found in coastal Victoria (DCCEEW 2024-2025b). Scattered records of this species have been found across Western Australia, Northern Territory and South Australia (DCCEEW 2024-2025b). **Habitat** This species lives in permanent or ephemeral wetlands of varying salinity, including swamps, lagoons, billabongs, saltpans, saltmarshes, estuaries, pools	Potential – Potential habitat may occur within the study area, and there are records within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including targeted survey effort, the Marsh Sandpiper has not been identified within the study area. Nearby farm dams, ephemeral creeks, and swamps were specifically targeted for bird surveys during the field assessments. The Marsh Sandpiper is considered unlikely to occur within the study area.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			on inundated floodplains, and intertidal mudflats (DCCEEW 2024-2025b). The species is less often found at reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes (DCCEEW 2024-2025b). **Foraging** The Marsh Sandpiper usually forages in shallow water at the edge of wetlands. They probe wet mud of mudflats or feed among marshy vegetation. This species is carnivorous and has been recorded eating insects, molluscs, and crustaceans (DCCEEW 2024-2025b). **Breeding/Roosting** This species is a non-breeding visitor to Australia and is known to breed from eastern Europe to eastern Siberia (DCCEEW 2024-2025b). This species has been recorded potentially roosting on tidal mudflats, near low saltmarsh, and around inland swamps (DCCEEW 2024-2025b). **Dispersal** This species is known to arrive in Australia from September and disperse across Australia from September to December (DCCEEW 2024-2025b). The Marsh Sandpiper begins to migrate north in March and April, with temporary influxes of populations occurring at some sites along the eastern coast (DCCEEW 2024-2025b).		Furthermore, the potential habitat available to migratory species in the study area is unlikely to provide important habitat for migratory species, including the Marsh Sandpiper (DoEE 2017). The Project is, therefore, unlikely to have a significant impact on the species.
Tyto novaehollandiae kimberli Masked Owl (Northern Subspecies)	V	V	**Distribution** The distribution of this species is poorly known, but estimated extent of occurrence is 1 800 00 km^2, though is assumed to be declining (DCCEEW 2024-2025b). In Queensland, they have been recorded in the Normanton region, and on the Pascoe, Archer, Chester and Watson Rivers in the Cape York Peninsula, extending to the Atherton Tablelands and Einasleigh-Burdekin divide, possibly as far south as Mackay or Coomooboolaroo Station (DCCEEW 2024-2025b). **Habitat** They have been found to occur in riparian forest, open forest, Melaleuca swamps and the edges of mangroves (DCCEEW 2024-2025b). There have also been recordings along the margins of sugar cane field (DCCEEW 2024-2025b). They appear to live in low densities so require an expansive area for hunting	Unlikely – Potential habitat may occur within the study area; however, the closest record of the species is over 350 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the Masked Owl (Northern Subspecies) has not been identified within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			prey, with trees large enough to form appropriate hollows (DCCEEW 2024-2025b). Their core area is approximately 155 ha, while their home range during the non-breeding season can extend as far as 1178 ha (DCCEEW 2024-2025b). **Foraging** The masked owl is sedentary and territorial of its core area, moving out into its home area to hunt mammals or for finding a mate (DCCEEW 2024-2025b). The female will occupy the nest for up to 10 weeks prior to laying – expectedly between March and October – the female lays two to three eggs and incubates them in a large hollow (DCCEEW 2024-2025b). Both before and after hatching the male will hunt for the female and the chicks, then both will hunt after 3 weeks of brooding, the young being dependent for approximately 2 months (DCCEEW 2024-2025b). This being the case, the masked owl can usually be seen singly but can also be found in pairs or family groups (DCCEEW 2024-2025b).		
Mammals					
Macroderma gigas Ghost Bat	V	E	**Distribution** The Ghost Bat is endemic to Australia, occurring in Queensland, northern Pilbara and Kimberley in Western Australia, and the top end of the Northern Territory (TSSC 2016b, Hourigan 2011). In Queensland, this species is currently distributed in 4-5 highly disjunct populations along the coast and inland from the McIlwraith Range in Cape York to Rockhampton, with the biggest colony occurring at Mount Etna (Hourigan 2011). Habitat modelling studies suggest that the Ghost Bat is a geographically remnant species in southern, arid landscapes, present only because caves provide suitable roost microclimates (TSSC 2016b). **Habitat** This species occupies a variety of habitats ranging from arid Pilbara to tropical savanna woodlands and rainforests. During the daytime they roost in caves, rock crevices and old mines (TSSC 2016b). **Foraging** Foraging areas are approximately 60 ha in size (TSSC 2016b). Their diet consists of large insects, small mammals, reptiles, birds and bats, and prey availability is	Unlikely – Habitat for the species has not been identified in the study area. The closest record of the species is over 150 km from the study area.	Unlikely – Despite extensive fauna surveys across seasons, including echolocation detection, the Ghost Bat has not been identified within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			thought to influence foraging habitat for this species (Hourigan 2011). Ghost Bats usually require several caves to move between seasonally or as dictated by weather conditions (TSSC 2016b). It is known to forage up to 2 km from its daytime roost area and will use the same foraging area each night (TSSC 2016b, Hourigan 2011). **Breeding/Roosting** Roost sites consist of caves, rock crevices and disused mine entrances (TSSC 2016b). Permanently used roost sites are generally deep natural caves or disused mines with a relatively stable temperature of 23°−28°C, with a moderate to high relative humidity of 50−100% and the ceiling at least 2 m above the floor (TSSC 2016b, Hourigan 2011). Individuals aggregate in these maternity roosts during spring and summer (Hourigan 2011).		
Petauroides minor Northern Greater Glider	V	V	**Distribution** This species occurs in the wet-dry tropical region of north-eastern Australia, ranging from Townsville, north to the Windsor Tablelands. The distribution is not solid and is in fact very patchy with several isolated subpopulations (DCCEEW 2022). While the range has not changed significantly within the past few hundred years, population and area of occupancy has decreased dramatically due to land clearing, fragmentation effects, and symptoms of climate change (DCCEEW 2022). **Habitat** The greater glider (northern) predominantly resides within eucalypt forests and woodlands in north-eastern Australia, with a higher abundance within areas of higher elevated, wetter conditions in open woodlands and forests (DCCEEW 2022). These habitats contain more old trees with plenty of hollows for nesting. Even within these ideal habitats, variability of structural characteristics and foraging potential can result in only portions being available for use (DCCEEW 2022). **Foraging** The primary food sources of the species are foliage - preferentially young foliage - with buds and flowers also supplementing their diet. They feed from a restricted range of eucalypt species, preferring areas of high diversity to make	Unlikely – Potential habitat may be in the study are in the larger creeks, however, there are no records of this species within 100 km of the study area.	Unlikely – Despite extensive fauna surveys across seasons, including spotlights at all habitat types, the Northern Greater Glider has not been identified within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			the most of seasonal variation. Most of the species water requirements are met by leaves they consume (DCCEEW 2022). **Breeding/Roosting** During the day this nocturnal species rests in tree hollows, ideally large hollows (>10cm in diameter). Studies show that individuals of the species *Eucalyptus acmenoides*, *Corymbia citriodora*, and *E. tereticornis* are preferred denning trees. Individual gliders utilise multiple dens throughout their habitat, with the frequency of use and number of dens changing throughout the year and with availability (DCCEEW 2022). The fact that male home ranges overlap with other males and females indicates a polygamous mating system. Females give birth to a single young from March to June, which then reaches sexual maturity sometime in its second year. Individuals are estimated to live for 15 years. Their low rate of reproduction may put smaller populations at risk of extinction (DCCEEW 2022). **Dispersal** Home ranges for males are 2.5 ha on average, while ranges for females are almost half the size (1.3 ha), with some overlap forming an average density of 0.24/ha to 5.8/ha depending on habitat quality. High densities occur within the Einasleigh Uplands in areas of open forest with undulating plains and high density of preferred tree species (DCCEEW 2022).		
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheathtail Bat	V	E	**Distribution** Within Australia, the species is thought to likely live along the east coast of Queensland from Cape York to just south of Townsville, and along the northern coast of the Northern Territory, extending as far west as Broome in Western Australia, however actual observations have only been made in isolated pockets, and only two of those observations have been made in the last ten years (DCCEEW 2024-2025b). Internationally, the species has been known to occur in New Guinea, Solomon Islands, Indonesia, the Malay Peninsula, Philippines, Burma, Thailand, Sri Lanka, Bangladesh, and India (DCCEEW 2024-2025b).	Unlikely – The Project is located outside of the known distribution of the species. The closest record of the species is from over 350 km from the study area.	Unlikely – Despite extensive fauna surveys over two seasons, including echolocation detection, the Bare-rumped Sheathtail Bat has not been identified within the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			Habitat Records indicate that the species is found in lowland areas, typically in woodland, forest, and open environments (DCCEEW 2024-2025b). They have been found to roost in tree hollows in Poplar Gum, Darwin Woolybutt, and Darwin Stringybark, all trees which are susceptible to fire and termites (DCCEEW 2024-2025b). **Foraging** The species has a direct, fast flying style which they use to feed on aerial insects, foraging over the canopy along the edges of rainforests but potentially flying lower in more open environments such as forest clearings (DCCEEW 2024-2025b). **Breeding/Roosting** Very little breeding information exists outside of the fact they typically give birth to one pup (DCCEEW 2024-2025b).		
Tachyglossus aculeatus Short-beaked Echidna	-	SL	**Distribution** The Short-beaked Echidna is found in almost all Australian environments and is present is all Australian states (Van Dyck & Strahan 2008). This species is known from a variety of habitat types including open forests, grasslands and heavily vegetated woodlands. Distributions in arid regions is generally sparse. **Habitat** This species has no particular habitat requirements outside of the supply of ants and termites for its diet (Van Dyck & Strahan 2008). This species generally seeks shelter under thick bushes, in hollow logs, in debris and has been known to occasionally shelter in rabbit or wombat burrows (Van Dyck & Strahan 2008). **Ecology** Adults have no significant predators; however, juveniles are known to be predated upon by goannas (Van Dyck & Strahan 2008). The Short-beaked Echidna is a solitary species, with overlapping homes ranges and no fixed nesting sites (Van Dyck & Strahan 2008).	Potential – There is potential suitable habitat for the species within the study area. Additionally, the species has been recorded within 50 km of the study area.	Unlikely – Despite extensive fauna surveys over two seasons, the species was not identified within the study area. Evidence of habitat utilisation by the species (scats, burrows) has also not been recorded from the study area. The Project is, therefore, unlikely to have a significant impact on the species.

Species	EPBC Act[1] Status	NC Act[2] Status	Description	Desktop likelihood of occurrence in the study area[3]	Likelihood of occurrence and impact following field assessments[3]
			In arid regions the species is known to forage at night to avoid high temperatures (Van Dyck & Strahan 2008). In temperate regions the pattern of activities varies depending on temperatures, the species typically forages around dusk and dawn (Van Dyck & Strahan 2008).		

[1] Status may be: Status may be: CE - Critically Endangered; E - Endangered; V - Vulnerable; Mi - Migratory.
[2] Status may be: CR - Critically Endangered; E - Endangered; V - Vulnerable; NT - Near Threatened; LC - Least Concern; SL – Special Least Concern.
[3] Refer to Section 4.1.2 for the methodology used when conducting the likelihood of occurrence assessment.

Appendix G. Fauna survey guidelines and survey effort implemented for targeted species

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Actitis hypoleucos Common Sandpiper	Mi	SL	No species-specific guidelines	Guideline (DoEE 2017): • Surveys to be conducted when habitat conditions are suitable. • August to May. • Assessment of potential habitat.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Apus pacificus Fork-Tailed Swift	Mi	SL	No species-specific guidelines	Guideline (DoE 2015a): • Species should be counted by an experienced person from an elevated viewpoint during the Austral summer. • Prevailing weather conditions should be noted.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines. This species was recorded during the surveys
Calidris acuminata Sharp-tailed Sandpiper	V, Mi	V	No species-specific guidelines	Guideline (DoEE 2017): • Surveys to be conducted when habitat conditions are suitable. • August to May. • Assessment of potential habitat.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Calidris ruficollis Red-necked Stint	Mi	SL	No species-specific guidelines	Guideline (DoEE 2017): • Surveys to be conducted when habitat conditions are suitable. • August to May. • Assessment of potential habitat.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.
Chloebia gouldiae Gouldian Finch	E	E	Survey guidelines for EPBC Act threatened birds (DEWHA 2010a): • Area searches with a survey effort of 20 hours over five days. Based on areas smaller than 50 ha in size. • Targeted searches with a survey effort of 12 hours over four days targeting waterholes during dry seasons and flocks of black-faced woodswallows in early wet season.	There is no specific guideline for this species.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Gallinago hardwickii Latham's Snipe	V, Mi	V	SPRAT database (DCCEEW 2024-2025b): • Surveys undertaken between October–February during the day. • Area searches or line transects in suitable habitat.	Guideline (DoEE 2017): • Surveys to be conducted when habitat conditions are suitable. • September to March. • Assessment of potential habitat.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.
Grantiella picta Painted Honeyeater	V	V	There is no specific guideline for this species.	There is no specific guideline for this species.	Species-specific guidelines for this species include: • Area searches; minimum of 4 hours for 4 days (1 hour of surveying per day for minimum of 4 days). Survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. 5.5 person-hours of the bird surveys area in potential habitat. 4 person-hours was undertaken in the August survey over 4 consecutive days. Survey timing, methodology and effort were consistent with the Queensland guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Hirundapus caudacutus White-throated Needletail	V, Mi	V	No species-specific guidelines	Guideline (DoE 2015a): • Survey between October and April in northern and eastern Australia, and between December and March in south-eastern Australia. • Diurnal incidental detection of species.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines. This species was recorded during the surveys.
Plegadis falcinellus Glossy Ibis	Mi	SL	No species-specific guidelines	There is no specific guideline for this species.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Poephila cincta cincta Black-throated Finch (White rumped subspecies)	E	E	There is no specific guideline for this species.	There is no specific guideline for this species.	Species-specific guidelines for this species include: • Area searches; minimum of 4 hours for 4 days (1 hour of surveying per day for minimum of 4 days). Survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. 5.5 person-hours of the bird surveys area in potential habitat. 4 person-hours was undertaken in the August survey over 4 consecutive days. Survey timing, methodology and effort were consistent with the Queensland guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Rostratula australis Australian Painted Snipe	E	E	Survey guidelines for EPBC Act threatened birds (DEWHA 2010a): • Targeted stationary observations with a survey effort of ten hours over five days at dusk and dawn within suitable foraging locations. • Land-based searches or line transects for sites smaller than 50 ha. To occur when wetlands hold water but not flooded. With a total of ten hours over three days.	There is no specific guideline for this species.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.
Tringa stagnatilis Marsh Sandpiper	Mi	SL	No species-specific guidelines	Guideline (DoEE 2017): • Surveys to be conducted when habitat conditions are suitable. • August to May. • Assessment of potential habitat.	No species-specific guidelines, survey guidelines for birds (Eyre et al. 2022): • Gulf Plains Bioregion timing is early wet season, early dry season. • Three replicate generic survey sites established per assessment unit. • Diurnal bird survey consisting of six 5-10-minute area searches within a 100 m by 100 m plot area. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Several bird surveys at each major habitat type and at farm dams nearby the study area. • Diurnal searches: 20.5 person-hours. • Bird Surveys: 37.1 person-hours (13.6 person-hours of the bird surveys included dam watching at a range of different times including morning, midday, and dusk). • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.

Species	EPBC Act	NC Act	Commonwealth		Queensland survey guidelines	Survey Timing, Effort and Methodology
			Survey guidelines	EPBC Act referral guidelines		
Tachyglossus aculeatus Short-beaked Echidna	-	SL	Not listed	Not listed	No species-specific guidelines, survey guidelines for mammals (Eyre et al. 2022): • Three replicate generic survey sites established per assessment unit. • Diurnal active searches and passive nocturnal searches. • Incidental detection of species unintentionally.	• Surveys in the dry season in August 2024, early wet season in November 2024, and late wet season in February 2025. • Diurnal searches: 20.5 person-hours. • Spotlighting: 14 person-hours. Survey timing, methodology and effort were consistent with the Queensland guidelines and the relevant Commonwealth survey guidelines.

Appendix H. Vegetation transects data

Site: VT01	**Date:** 15/08/2024
RE: 2.3.26a	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628579, 7918976 **Elevation:** -	
General description: Riparian vegetation. RE boundaries limited to a narrow strip of riparian vegetation adjacent to creek bank.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Melaleuca fluviatilis (D), Eucalyptus camaldulensis (S)*	8-11	73
T2	*Melaleuca viridiflora (D), Melaleuca fluviatilis (S), Acacia torulosa (S)*	5	4
T3	-	-	-
S1	*Melaleuca viridiflora (C), Asteromyrtus symphyocarpa (C), Acacia torulosa (S)*	2	0
S2	-	-	-
G	*Eriachne mucronata (C), Eragrostis speciosa. (C), Fuirena incrassata (A), Blumea saxatilis (A)*	0.1	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	25	40	45	59	15	37
Bare ground	75	47	34	20	67	49
Rock	-	-	-	-	-	-
Native perennial grass cover	0	8	15	0	15	8
Total	100	100	100	100	100	100

Site: VT02	**Date:** 16/08/2024
RE: 2.3.22	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628544, 7918756 **Elevation:** -	
General description: *Melaleuca viridiflora* low woodland on flat sandplain, with *Acacia torulosa* and *Melaleuca citrolens*. Located adjacent to areas of disturbance (cleared access tracks in all directions	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	*Corymbia polycarpa(D)*	11	9
T1	*Acacia torulosa (D), Melaleuca viridiflora (S)*	7	20
T2	*Acacia torulosa (D), Melaleuca viridiflora (S), Melaleuca citrolens (S)*	4.5	16
T3	-	-	-
S1	*Acacia torulosa (D), Senna artemisioides (S)*	2	0
S2	-	-	-
G	*Aristida sp. (D), Setaria surgens (S), Bonamia media (S)*	0.15	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	40	35	50	42	45	42
Bare ground	44	20	43	35	35	35
Rock	-	-	-	-	-	-
Native perennial grass cover	10	40	0	0	0	10
Native forbs and other species (non-grass)	0	5	6	21	3	7
Total	100	100	100	100	100	100

Site: VT03	**Date:** 16/08/2024
RE: 2.3.29b	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628097, 7918426 **Elevation:** -	
General description: Within an alluvial plain / seasonal depression	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown silty sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Melaleuca viridiflora (D), Corymbia polycarpa (A)*	7	30
T2	*Melaleuca viridiflora (D), Asteromyrtus symphyocarpa (S)*	4	19
T3	-	-	-
S1	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	2	6
S2	-	-	-
G	*Poaceae sp. (C), Eriachne mucronata (C), Schizachyrium crinizonatum (S), Blumea saxatilis (A)*	0.15	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	16	25	15	35	28	24
Bare ground	5	2	1	25	5	8
Rock	-	-	-	-	-	-
Native perennial grass cover	74	73	84	40	67	68
Native forbs and other species (non-grass)	6	5	7	23	20	12
Total	100	100	100	100	100	100

Site: VT04	**Date:** 16/08/2024
RE: 2.5.17b	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628187, 7919107	
Elevation: -	
General description: *Melaleuca citrolens* low open woodland on flat sand plains	

Geology/Soils

Map unit:	Qha	**Geology type:**	Alluvium
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Melaleuca citrolens (D), Grevillea pteridifolia (S)*	6	18
T2	-	-	-
T3	-	-	-
S1	*Melaleuca citrolens (D*	2	4
S2	-	-	-
G	*Aristida sp. (D), Polycarpaea spirostylis (S)*	0.25	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	16	25	15	35	28	24
Bare ground	5	2	1	25	5	8
Rock	-	-	-	-	-	-
Native perennial grass cover	74	73	84	40	67	68
Native forbs and other species (non-grass)	0	0	0	0	0	0
Total	100	100	100	100	100	100

Site: VT05	**Date:** 18/08/2024
RE: 2.5.17b	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628561, 7918390 **Elevation:** -	
General description: Within an alluvial plain / seasonal depression	

Geology/Soils

Map unit:	Qha	**Geology type:**	Alluvium
Soil description:	Light brown silty-sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Blakella grandifolia (D)*	10	0
T1	*Melaleuca citrolens (D), Grevillea pteridifolia (S), Terminalia subacroptera (S)*	5	11
T2	*Melaleuca viridiflora (D), Grevillea pteridifolia (S), Melaleuca citrolens (S)*	3.5	3
T3	-	-	-
S1	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	2	0
S2	-	-	-
G	*Eragrostis speciosa (C), Centrolepis banksia (C), Polycarpaea spirostylis (S)*	0.2	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	5	10	60	5	3	17
Bare ground	50	35	10	30	47	34
Rock	-	-	-	-	-	-
Native perennial grass cover	30	45	30	45	40	38
Native forbs and other species (non-grass)	15	10	0	20	10	11
Total	100	100	100	100	100	100

Site: VT06	**Date:** 18/08/2024
RE: 2.3.29b	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628223, 7919003 **Elevation:** -	
General description: Sparse open woodland of scattered *Melaleuca citrolens* and *Eucalyptus microtheca*. Soil is gravel with sand and some clay/silt. Adjacent to creek line. Cleared access track to south.	

Geology/Soils

Map unit:	Qha	**Geology type:**	Alluvium
Soil description:	Light brown silty-sand, with gravel		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Melaleuca citrolens (D), Eucalyptus microtheca (S)*	5.5-7	13
T2	-	-	-
T3	-	-	-
S1	*Carissa lanceolata (D), Atalaya hemiglauca (S)*	1	1
S2	-	-	-
G	*Aristida sp. (D), Polycarpaea spirostylis (S)*	0.25	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	15	33	5	15	15	17
Bare ground	51	45	10	40	10	31
Rock	-	-	-	-	-	-
Native perennial grass cover	27	15	55	10	70	35
Native forbs and other species (non-grass)	7	7	30	35	5	17
Total	100	100	100	100	100	100

Site: VT07	**Date:** 18/11/2024
RE: 2.5.14a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 629506, 7918030 **Elevation:** -	
General description: *Melaleuca viridiflora* low woodland on flat sandplains	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	7	21
T2	*Melaleuca viridiflora (D), Grevillea pteridifolia (S), Acacia holosericea (A)*	4	11
T3	-	-	-
S1	*Melaleuca viridiflora (D), Acacia galioides (S)*	1.5	6
S2	-	-	-
G	*Schizachyrium crinizonatum (C), Eragrostis speciosa (C), Aristida ingrata (S)*	0.5	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	50	85	20	75	55	57
Bare ground	25	0	40	10	35	22
Rock	-	-	-	-	-	-
Native perennial grass cover	25	10	40	10	5	18
Native forbs and other species (non-grass)	0	0	0	0	2	0.4
Native shrubs (<1m in height)	0	5	0	5	3	2.6
Total	100	100	100	100	100	100

Site: VT08	**Date:** 19/11/2024
RE: 2.5.14a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 627955, 7917740 **Elevation:** -	
General description: *Melaleuca viridiflora* low woodland on flat sandplains.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	*Corymbia polycarpa (D)*	13	0
T1	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	6	11
T2	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	4	10
T3	-	-	-
S1	*Melaleuca viridiflora (C), Acacia torulosa (C)*	1.5	2
S2	-	-	-
G	*Schizachyrium crinizonatum (C), Setaria surgens (C), Cyperus holoschoenus (S), Chrysopogon fallax (S)*	0.4	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	30	75	70	65	60	60
Bare ground	30	0	10	2	5	9
Rock	-	-	-	-	-	-
Native perennial grass cover	35	25	20	30	30	28
Native forbs and other species (non-grass)	0	0	0	3	3	1
Native shrubs (<1m in height)	5	0	0	0	2	1
Total	100	100	100	100	100	100

Site: VT09	**Date:** 20/11/2024
RE: 2.5.17b	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 631253, 7916373 **Elevation:** -	
General description: *Melaleuca citrolens* low open woodland on flat sand plains.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Melaleuca citrolens (D), Grevillea striata (S), Melaleuca viridiflora (S)*	7	14
T2	*Melaleuca citrolens (D), Melaleuca viridiflora (S)*	3	1
T3	-	-	-
S1	*Melaleuca citrolens (D), Melaleuca viridiflora (S)*	1.5	2
S2	-	-	-
G	*Schizachyrium crinizonatum (C), Eragrostis speciosa (C), Chrysopogon fallax (S), Cyperus difformis (S)*	-	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	70	40	45	30	5	38
Bare ground	0	20	5	5	50	16
Rock	-	-	-	-	-	-
Native perennial grass cover	30	40	50	65	45	46
Native forbs and other species (non-grass)	0	0	0	0	0	0
Total	100	100	100	100	100	100

Site: VT10	**Date:** 20/11/2024
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628923, 7918811 **Elevation:** -	
General description: *Melaleuca viridiflora* low woodland on flat sandplains	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	*Corymbia polycarpa(D)*	12	0
T1	*Melaleuca viridiflora (D), Grevillea pteridifolia (S), Acacia torulosa (S)*	7	32
T2	*Melaleuca viridiflora (D), Grevillea pteridifolia (S)*	3.5	10
T3	-	-	-
S1	*Melaleuca viridiflora (D)*	1.5	0
S2	-	-	-
G	*Eragrostis speciosa (C), Chrysopogon fallax (C), Aristida ingrata (S)*	0.8	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	90	50	95	90	75	80
Bare ground	5	5	0	0	20	6
Rock	-	-	-	-	-	-
Native perennial grass cover	3	40	5	10	1	12
Native forbs and other species (non-grass)	2	5	0	0	4	2
Total	100	100	100	100	100	100

Site: VT11	**Date:** 21/11/2024
RE: 2.3.41	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 629601, 7918799 **Elevation:** -	
General description: Sparse open woodland of scattered *Melaleuca citrolens* and *Eucalyptus microtheca*. Ephemeral pools in shallow depressions, with gravel and occasional outcrop.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown silty-sand, with gravel		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Eucalyptus microtheca (D), Atalaya hemiglauca (S)*	5	8
T2	*Melaleuca citrolens (D), Atalaya hemiglauca (S)*	2	0
T3	-	-	-
S1	*Melaleuca citrolens (D), Atalaya hemiglauca (S)*	2	2
S2	-	-	-
G	*Schizachyrium crinizonatum (D), Heterachne gulliveri (S), Fimbristylis dichotoma (S)*	0.15	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	0	10	0	0	20	6
Bare ground	100	85	95	100	30	82
Rock	0	0	5	0	0	1
Native perennial grass cover	0	4	0	0	50	11
Native forbs and other species (non-grass)	0	1	0	0	0	0.2
Total	100	100	100	100	100	100

Site: VT12	**Date:** 21/11/2024
RE: 2.3.26a	**Bioregion:** GUP
Observers: Lucia Lopezand Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 629382, 7918991 **Elevation:** -	
General description: *Melaleuca viridiflora* low woodland on flat sandplain, with *Acacia torulosa* and *Melaleuca citrolens*. Located adjacent to areas of disturbance (cleared access tracks in all directions	

Geology/Soils

Map unit:	Qa-QLD	**Geology type:**	Alluvium
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Eucalyptus camaldulensis (D), Melaleuca fluviatilis (S)*	10-12	45
T2	*Melaleuca fluviatilis (D), Eucalyptus camaldulensis (S)*	8	11
T3	-	-	-
S1	*Melaleuca viridiflora (D)*	1.8	2
S2	-	-	-
G	*Schizachyrium crinizonatum (D), Cyperus holoschoenus (S), Aristida ingrata (S)*	0.8	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	75	20	65	60	45	53
Bare ground	5	79	30	5	20	28
Rock	-	-	-	-	-	-
Native perennial grass cover	0	1	4	30	5	8
Native forbs and other species (non-grass)	20	0	1	5	30	11
Total	100	100	100	100	100	100

Site: VT13	**Date:** 24/11/2024
RE: 2.3.26a	**Bioregion:** GUP
Observers: Nicholas Groenenberg	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	Nil
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 628245, 7918929 **Elevation:** -	
General description: Riparian vegetation. RE boundaries limited to a narrow strip of riparian vegetation adjacent to the creek bank	

Geology/Soils

Map unit:	Qha	**Geology type:**	Alluvium
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Eucalyptus camaldulensis (D), Melaleuca viridiflora (S), Acacia torulosa (S), Erythrophleum chlorostachys (S)*	8-10	31
T2	*Melaleuca fluviatilis (D), Eucalyptus camaldulensis (S)*	3	21
T3	-	-	-
S1	*Acacia torulosa (D), Asteromyrtus symphyocarpa (S)*	1.8	0
S2	-	-	-
G	*Eragrostis speciosa (C), Aristida ingrata (C)*	-	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	65	50	85	48	55	61
Bare ground	25	45	5	40	10	25
Rock	-	-	-	-	-	-
Native perennial grass cover	0	3	5	10	30	10
Native forbs and other species (non-grass)	10	2	5	2	5	5
Total	100	100	100	100	100	100

Site: VT14	**Date:** 25/11/2024
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 634185, 7913322 **Elevation:** -	
General description: Mixed low woodland on flat sand plains.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Melaleuca* sp. (likely *nervosa*) *(D), Corymbia polycarpa (S), Acacia torulosa (S)*	8	44
T2	*Acacia torulosa (D), Melaleuca* sp. (likely *nervosa*) *(S)*	2.5	1
T3	-	-	-
S1	*Melaleuca viridiflora (C), Acacia galioides (C), Melaleuca* sp. (likely *nervosa*) *(S)*	0.8	3
S2	-	-	-
G	*Eragrostis speciosa (D), Aristida ingrata (S)*	-	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	90	60	90	85	95	84
Bare ground	5	35	8	10	0	12
Rock	-	-	-	-	-	-
Native perennial grass cover	5	2	2	5	5	4
Native forbs and other species (non-grass)	0	3	0	0	0	1
Total	100	100	100	100	100	100

Site: VT15	**Date:** 25/11/2024
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 637974, 7912303 **Elevation:** -	
General description: Flat mixed woodlandcof *Acacia torulosa* and *Melaleuca* sp. (likely *nervosa*), with emergent *Corymbia setosa.*	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Corymbia setosa (D)*	9	4
T1	*Melaleuca* sp. (likely *nervosa*) *(D), Acacia torulosa (S), Corymbia setosa (S)*	6	46
T2	-	-	-
T3	-	-	-
S1	*Acacia torulosa(D), Melaleuca* sp. (likely *nervosa*) *(S)*	1.8	3
S2	-	-	-
G	*Schizachyrium crinizonatum (D), Chrysopogon fallax (S), Schizachyrium fragile (S)*	-	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	60	90	70	85	80	77
Bare ground	30	0	0	5	5	8
Rock	-	-	-	-	-	-
Native perennial grass cover	5	10	20	10	10	11
Native forbs and other species (non-grass)	0	0	0	0	0	0
Native shrubs (<1m in height)	5	0	10	0	5	4
Total	100	100	100	100	100	100

Site: VT16	**Date:** 25/11/2024
RE: 2.3.29b	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transcect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 639720, 79111764 **Elevation:** -	
General description: Mixed woodland on alluvial plains vegetation, between areas of landzone 5 and riparian vegetation.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown silty-sand, with gravel		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Melaleuca citrolens (D), Acacia torulosa (S), Melaleuca viridiflora (S)*	7-10	17
T2	*Melaleuca citrolens (D), Gardenia vilhelmii*	3	2
T3	-	-	-
S1	*Carissa lanceolata (C), Jacksonia odontocalda (C), Melaleuca* sp. (likely *nervosa*) *(S)*	1.8	1
S2	-	-	-
G	*Schizachyrium crinizonatum (D), Aristida ingrata (S)*	0.15	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	0	0	20	30	90	28
Bare ground	97	95	74	60	0	65
Rock	-	-	-	-	-	-
Native perennial grass cover	2	5	5	10	10	6
Native forbs and other species (non-grass)	1	0	0	0	0	0
Total	100	100	100	100	100	100

Site: VT17	**Date:** 26/11/2024
RE: 2.5.18a	**Bioregion:** GUP
Observers: Lucia Lopez and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 647865, 7909152 **Elevation:** -	
General description: *Acacia torulosa* and *Corymbia setosa* low woodland on flat sand plains	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	-	-	-
T1	*Acacia torulosa (D), Corymbia setosa (S), Melaleuca* sp. (likely *nervosa*) *(S), Erythrophleum chlorostachys (A)*	6-10	33
T2	-	-	-
T3	-	-	-
S1	*Acacia torulosa (D), Melaleuca* sp. (likely *nervosa*) *(S)*	2	2
S2	-	-	-
G	*Schizachyrium fragile (D), Aristida ingrata (S)*	-	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	80	10	80	70	95	67
Bare ground	17	90	5	18	4	27
Rock	-	-	-	-	-	-
Native perennial grass cover	2	0	15	10	0	5
Native forbs and other species (non-grass)	1	0	0	2	1	1
Total	100	100	100	100	100	100

Site: VT18	**Date:** 11/02/2025
RE: 2.3.55d	**Bioregion:** GUP
Observers: Ronnie Gardiner and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 627791, 7916963 **Elevation:** -	
General description: Potential wetland (mapped), no water observed but wetland indicators recorded.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Corymbia polycarpa(D)*	12	0
T1	*Melaleuca viridiflora (D)*	6	14
T2	*Asteromyrtus symphyocarpa (D), Grevillea striata (S), Excoecaria parvifolia (S)*	4	18
T3	-	-	-
S1	*Asteromyrtus symphyocarpa (D)*	2	0
S2	-	-	-
G	*Cyperus holoschoenus*	0.2	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	40	80	73	15	85	59
Bare ground	15	15	14	65	5	23
Rock	-	-	-	-	-	-
Native perennial grass cover	27	5	9	1	3	9
Native forbs and other species (non-grass)	15	0	3	19	7	9
Cryptogams	3	0	1	0	0	1
Total	100	100	100	100	100	100

Site: VT19	**Date:** 11/02/2025
RE: 2.3.55d	**Bioregion:** GUP
Observers: Ronnie Gardiner and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 630185, 7915764 **Elevation:** -	
General description: Potential wetland (mapped), no water observed but wetland indicators recorded.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Corymbia polycarpa(D)*	8-15	0
T1	*Melaleuca viridiflora (D)*	6-10	7
T2	*Asteromyrtus symphyocarpa (D), Acacia holosericea (S)*	4-5	38
T3	-	-	-
S1	*Asteromyrtus symphyocarpa (D), Acacia holosericea (S)*	2-5	2
S2	-	-	-
G	*Chrysopogon fallax (D)*	0.2-0.3	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	25	20	16	40	45	29
Bare ground	50	65	78	50	45	58
Rock	-	-	-	-	-	-
Native perennial grass cover	13	15	6	7	7	10
Native forbs and other species (non-grass)	10	0	0	3	3	3
Total	100	100	100	100	100	100

Site: VT20	**Date:** 13/02/2025
RE: 2.3.29b	**Bioregion:** GUP
Observers: Ronnie Gardiner and Jason Raguse	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 639649, 7911965 **Elevation:** -	
General description: Mixed woodland on alluvial plains vegetation, between areas of landzone 5 and riparian vegetation	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand and gravel		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Melaleuca citrolens (D), Erythrophleum chlorostachys (S), Corymbia polycarpa (A)*	6-8	14
T2	*Melaleuca citrolens (D), Grevillea pteridifolia (S)*	3	7
T3	-	-	-
S1	*Petalostigma banksia (D), Melaleuca viridiflora (S)*	2	26
S2	-	-	-
G	*Aristida sp. (D)*	0.2	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	20	75	30	3	7	27
Bare ground	69	15	55	91	50	56
Rock	-	-	-	-	-	-
Native perennial grass cover	0	2	15	1	3	4
Native forbs and other species (non-grass)	0	0	0	0	0	0
Native shrubs (<1m in height)	6	8	3	5	40	12
Total	100	100	100	100	100	100

Site: VT21	**Date:** 28/08/2025
RE: 2.3.55d	**Bioregion:** GUP
Observers: Lena Jorgensen and Lincoln Smith	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 631320, 7919621	
Elevation: -	
General description: Potential wetland (mapped), no water observed but wetland indicators recorded	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Corymbia polycarpa(D)*	16.5	0
T1	*Asteromyrtus symphyocarpa (D)*	14	14
T2	*Asteromyrtus symphyocarpa (D), Acacia holosericea (S)*	7	0
T3	-	-	-
S1	*Asteromyrtus symphyocarpa (D), Acacia holosericea (S)*	2.5	54
S2	-	-	-
G	*Chrysopogon fallax (D), Ectrosia agrostoides (S)*	0.2	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	75	83	91	91	76	83
Bare ground	20	10	5	5	20	12
Rock	-	-	-	-	-	-
Native perennial grass cover	5	6	3	2	1	3
Native forbs and other species (non-grass)	0	1	1	2	3	1
Total	100	100	100	100	100	100

Site: VT22	**Date:** 30/08/2025
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lena Jorgensen and Lincoln Smith	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 636428, 7912726 **Elevation:** -	
General description: Mixed woodland on alluvial plains vegetation, between areas of landzone 5 and riparian vegetation.	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand and gravel		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	-	-	-
T1	*Corymbia polycarpa (C), Blakella grandifolia (C), Terminalia platyptera (S)*	8.5	11
T2	*Melaleuca viridiflora (D), Melaleuca* sp. (likely *nervosa*) *(S), Acacia torulosa (S)*	6.2	17
T3	-	-	-
S1	*Dodonaea barklyana (D)*	2	38
S2	-	-	-
G	*Aristida ingrata (D), Schizachyrium fragile (S)*	0.2	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	48	63	15	56	81	53
Bare ground	38	20	80	15	5	32
Rock	-	-	-	-	-	-
Native perennial grass cover	9	17	5	14	12	11
Native forbs and other species (non-grass)	5	0	0	15	2	4
Total	100	100	100	100	100	100

Site: VT23	**Date:** 1/09/2025
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lena Jorgensen and Lincoln Smith	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 630049, 7916193 **Elevation:** -	
General description: *Acacia torulosa* and *Corymbia polycarpa* low woodland on flat sand plains	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		**Canopy height (m)**	**Canopy cover (%)**
E	*Corymbia polycarpa(D)*	11	0
T1	*Acacia torulosa (D), Melaleuca* sp. (likely *nervosa*) *(S), Melaleuca viridiflora (S)*	8.5	38
T2	*Melaleuca viridiflora (D), Melaleuca* sp. (likely *nervosa*) *(S), Corymbia polycarpa (S)*	4.8	7
T3	-	-	-
S1	*Acacia torulosa (D), Melaleuca viridiflora (S)*	1.5	3
S2	-	-	-
G	*Schizachyrium fragile (D), Aristida ingrata (S)*	-	-

Five 1 x 1 m plots

Ground cover	**1**	**2**	**3**	**4**	**5**	**Mean**
Organic litter	92	85	73	90	77	83
Bare ground	0	3	7	2	7	4
Rock	-	-	-	-	-	-
Native perennial grass cover	8	12	20	8	16	13
Native forbs and other species (non-grass)	0	0	0	0	0	0
Total	100	100	100	100	100	100

Site: VT24	**Date:** 1/09/2025
RE: 2.5.28a	**Bioregion:** GUP
Observers: Lena Jorgensen and Lincoln Smith	
Landscape photos: start, end: ✓	
Locality: Esmeralda property, located approximately 70 km south of Croydon in north-west Queensland.	
Site photos:	
Start:	**Finish:**
	
Transect coordinates: 0 m (start of transect) Datum: EPSG:7854 – GDA2020 629563, 7915763	
Elevation: -	
General description: Mixed woodland of *Acacia torulosa* and *Melaleuca* sp. (likely *nervosa*), with emergent *Corymbia setosa*	

Geology/Soils

Map unit:	Tpc	**Geology type:**	Poorly consolidated sediments
Soil description:	Light brown sand		

50 m x 10 m area: Species richness

Species richness by layer		Canopy height (m)	Canopy cover (%)
E	*Corymbia polycarpa(D)*	10	0
T1	*Melaleuca* sp. (likely *nervosa*) *(D), Acacia torulosa (S)*	9.8	21
T2	*Melaleuca* sp. (likely *nervosa*) *(D), Corymbia setosa (S), Erythrophleum chlorostachys (S)*	5	17
T3	-	-	-
S1	*Melaleuca* sp. (likely *nervosa*) *(D), Acacia torulosa (S), Erythrophleum chlorostachys (S)*	1.2	4
S2	-	-	-
G	*Schizachyrium fragile (S), Aristida ingrata (D)*	0.3	-

Five 1 x 1 m plots

Ground cover	1	2	3	4	5	Mean
Organic litter	88	74	75	36	63	67
Bare ground	5	2	10	60	30	21
Rock	-	-	-	-	-	-
Native perennial grass cover	5	20	12	0	7	9
Native forbs and other species (non-grass)	2	4	0	0	0	1
Total	100	100	100	100	100	100

Appendix I. Quaternary sites data

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q001	626485	7919240	Aug-24	DSCN9178,75-77	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens*	8	Low open woodland	-	Melaleuca citrolens with scattered Melaleuca viridiflora and emergent Corymbia polycarpa
Q002	628683	7918480	Aug-24	DSCN9180-83	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia spp.*	4	Low woodland	Alluvial plain in proximity to creek line	Melaleuca viridiflora woodland, with emergent Corymbia polycarpa and mixed Acacia spp. and Melaleuca spp. canopy and sub-canopy.
Q003	628745	7918467	Aug-24	DSCN9185-88	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	Alluvial plain in proximity to creek line	Melaleuca viridiflora dominant with scattered Acacia torulosa and emergent Corymbia polycarpa. Ecotone between 2.3.29a to west and 2.5.14a to east.
Q004	628784	7918390	Aug-24	DSCN9190-93	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	Land zone 5. Alluvial plain to south-west	Melaleuca viridiflora dominant with scattered Acacia torulosa and emergent Corymbia polycarpa. Ecotone between 2.3.29a to south-west and 2.5.14a to north-east.
Q005	628714	7918405	Aug-24	DSCN9195-97, 99	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Grevillea pteridifolia*	4	Low woodland	Alluvial plain in proximity to creek line	Melaleuca viridiflora woodland with scattered Grevillea pteridifolia
Q006	628653	7918396	Aug-24	DSCN9200-03	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora, Corymbia polycarpa*	8	Low open woodland	Alluvial plain in proximity to creek line	Alluvial plain / swamp area. Melaleuca citrolens surrounding boundary and scattered inside, with occasional Melaleuca viridiflora and emergent Corymbia polycarpa.
Q007	628565	7918406	Aug-24	DSCN9205-08	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia*	8	Low open woodland	Alluvial plain in proximity to creek line	Alluvial plain / swamp area. Melaleuca citrolens surrounding boundary and scattered inside, with Melaleuca viridiflora and Grevillea pteridifolia
Q008	628439	7918453	Aug-24	DSCN9209-12	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	4	Low woodland	Alluvial plain in proximity to creek line	Melaleuca viridiflora dominant woodland
Q009	628454	7918548	Aug-24	DSCN9213-16	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora*	8	Low woodland	Alluvial plain in proximity to creek line	Melaleuca viridiflora dominant woodland
Q010	628435	7918571	Aug-24	DSCN9218-21	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	6	Low woodland	-	Melaleuca viridiflora dominant woodland, emergent Corymbia polycarpa. Minimal clearing limited to track to north of point.
Q011	628567	7918636	Aug-24	DSCN9223-26	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	9	Low woodland	-	Melaleuca viridiflora dominant woodland, with sub-dominant Acacia torulosa and emergent Corymbia polycarpa
Q012	628757	7918654	Aug-24	DSCN9229-32	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	8	Low woodland	-	Melaleuca viridiflora dominant woodland, emergent Corymbia polycarpa
Q013	628773	7918512	Aug-24	DSCN9234-37	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	-	Melaleuca viridiflora dominant with scattered Acacia torulosa and emergent Corymbia polycarpa. Ecotone between 2.3.29a to north and 2.5.14a to east.
Q014	628177	7918480	Aug-24	DSCN9239-42	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia*	6	Low open woodland	-	Melaleuca citrolens woodland with Grevillea pteridifolia.
Q015	628041	7918426	Aug-24	DSCN9243-46	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia*	6	Low open woodland		Melaleuca citrolens woodland with Grevillea pteridifolia and Grevillea striata.
Q016	628014	7918501	Aug-24	DSCN9248-51	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.22	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	8	Low woodland	-	Melaleuca viridiflora dominant with emergent Corymbia polycarpa. 2.5.17b to south.

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q017	628236	7918409	Aug-24	DSCN9252-54, 56	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Melaleuca citrolens*	8	Low woodland	Alluvial plain	Melaleuca viridiflora dominant with Melaleuca citrolens and emergent Corymbia polycarpa
Q018	628308	7918410	Aug-24	DSCN9257-60	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	7	Low woodland	Alluvial plain	Melaleuca viridiflora dominant with Melaleuca citrolens
Q019	628266	7918498	Aug-24	DSCN6261-64	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	7	Low woodland	-	Melaleuca viridiflora dominant with Acacia torulosa and emergent Corymbia polycarpa. 2.3.29a to south.
Q020	628058	7918624	Aug-24	DSCN6265-68	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	6	Low woodland	-	Acacia torulosa and Melaleuca viridiflora woodland, with emergent Corymbia polycarpa. Minor tracks to west and north.
Q021	628088	7918745	Aug-24	DSCN9270-73	2.3.26b/2.3.50 a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	6	Low woodland	Adjacent to creekline (north)	Acacia torulosa and Melaleuca viridiflora woodland, with emergent Corymbia polycarpa. Creekline (2.3.26b) to north.
Q022	628074	7918775	Aug-24	DSCN9275-78	2.3.26b/2.3.50 a	2.3.26a	Remnant	Tree	*Eucalyptus camaldulensis, Melaleuca fluviatilis, Melaleuca sp. (likely nervosa)*	9	Woodland	Dry creek line	Dry creek line with Melaleuca sp. (likely nervosa), Melaleuca fluviatilis and Eucalyptus camaldulensis. Minimal ground cover.
Q023	628158	7918746	Aug-24	DSCN9279-82	2.3.26b/2.3.50 a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	6	Low woodland	-	Acacia torulosa and Melaleuca viridiflora woodland, with emergent Corymbia polycarpa. Minimal clearing associated with track to south and west.
Q024	628312	7918927	Aug-24	DSCN9283-86	2.3.26b/2.3.50 a	2.3.26a	Remnant	Tree	*Eucalyptus camaldulensis, Melaleuca fluviatilis*	9	Low woodland	Dry creek line	Dry creek line with Melaleuca fluviatilis and Eucalyptus camaldulensis
Q025	628347	7918876	Aug-24	DSCN9287-90	2.3.26b/2.3.50 a	2.3.26a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	6	Low woodland	Adjacent to creekline (north)	Melaleuca viridiflora woodland, with emergent Corymbia polycarpa and dead standing Acacia torulosa. Creekline (2.3.26b) to north.
Q026	628601	7918848	Aug-24	DSCN9291-94	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.26c	Remnant	Tree	*Eucalyptus camaldulensis, Melaleuca viridiflora, Asteromyrtus symphyocarpa*	7	Low woodland	Dry creek line	Minor dry creek line, with Eucalyptus camaldulensis, Melaleuca viridiflora and Asteromyrtus symphyocarpa.
Q027	628529	7918928	Aug-24	DSCN9295-98	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.22	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	Adjacent to creekline (south, north)	Small creek line to south with Acacia torulosa and emergent Corymbia polycarpa. Main creek to north with Melaleuca fluviatilis and Eucalyptus camaldulensis.
Q028	628500	7919069	Aug-24	DSCN9299-9302	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	8	Low open woodland	Adjacent to creekline (south)	Melaleuca citrolens woodland. Patch has more mature trees and in higher density than other area. Creekline (2.3.26b) to south
Q029	628689	7919074	Aug-24	DSCN6578-81	2.3.26b/2.3.50 a	2.3.22	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	9	Low woodland	-	Melaleuca viridiflora woodland, with Acacia torulosa and emergent Corymbia polycarpa
Q030	628583	7919101	Aug-24	DSCN6582-85	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia*	8	Low open woodland		Melaleuca citrolens woodland north-east to south-west, with 2.5.14a to the south-east
Q031	628390	7919142	Aug-24	DSCN6586-87	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia*	8	Low open woodland		Melaleuca citrolens woodland, with Grevillea pteridifolia

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q032	628285	7919022	Aug-24	DSCN6588-91	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.41	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens*	13	Low open woodland	Alluvial plain in proximity to creek line	Eucalyptus microtheca open woodland with Melaleuca citrolens. Areas of bare ground and gravel.
Q033	628070	7918869	Nov-24	DSCN9307-10	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.26a	Remnant	Tree	*Eucalyptus camaldulensis, Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	Dry creek line	Creek line, with tracks and clearing to south-east. Creek bends to main channel along track. Eucalyptus camaldulensis, Melaleuca viridiflora and Acacia torulosa in the mixed canopy, with emergent Corymbia polycarpa.
Q034	628032	7919003	Nov-24	-	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Grevillea pteridifolia*	6	Low woodland	-	Melaleuca viridiflora woodland with Grevillea pteridifolia and emergent Corymbia polycarpa
Q035	627841	7919051	Nov-24	DSCN9303-06	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	8	Low woodland	-	Acacia torulosa and Melaleuca viridiflora woodland with emergent Corymbia polycarpa. Clearing to south-west.
Q036	627921	7919157	Nov-24	DSCN9311-14	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea striata*	9	Low woodland		Melaleuca citrolens woodland, with Melaleuca viridiflora and Corymbia polycarpa to the west.
Q037	627864	7918846	Nov-24	DSCN9315-18	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	6.5	Low woodland	-	Melaleuca viridflora woodland with emergent Corymbia polycarpa. South of point vegetation thins to creekline.
Q038	628547	7918475	Nov-24	DSCN9319-22	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	4.5	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, alluvial plains
Q039	628674	7918530	Nov-24	DSCN9323-26	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa*	7	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, with Acacia torulosa, on alluvial plain
Q040	628884	7918910	Nov-24	DSCN9327-30	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.22	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca viridiflora*	6.5	Low woodland	-	Acacia torulosa woodland with emergent Corymbia polycarpa
Q041	628996	7918926	Nov-24	-	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca citrolens*	5.5	Low open woodland	Adjacent to creekline (north)	Melaleuca citrolens woodland. Creek to the north.
Q042	629027	7918784	Nov-24	DSCN9331-34	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	6	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, on alluvial plains
Q043	628837	7919038	Nov-24	DSCN9335-38	2.3.26b/2.3.50 a	2.3.22	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca viridiflora*	6	Low woodland	Adjacent to creekline (north)	Acacia torulosa and Melaleuca viridiflora woodland with emergent Corymbia polycarpa along northern creek line
Q044	628835	7918214	Nov-24	DSCN9339-42	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	6.5	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, with Melaleuca citrolens, on alluvial plains
Q045	628659	7918177	Nov-24	-	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	6.5	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, with Melaleuca citrolens, on alluvial plains
Q046	628433	7918212	Nov-24	DSCN9343-46	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	10	Low woodland	Alluvial plain	Melaleuca viridiflora with Melaleuca citrolens close to creek. Only Melaleuca viridiflora away from creek. On alluvial plains
Q047	627940	7918549	Nov-24	9_Photo 1-9_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.3.22	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa, Corymbia polycarpa*	6.5	Low woodland	-	Melaleuca viridiflora and Acacia torulosa woodland with emergent Corymbia polycarpa

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Q048	627873	7918421	Nov-24	10_Photo 1-10_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia*	8	Low open woodland	Adjacent to creekline (north)	Melaleuca citrolens woodland. Creekline to north
Q049	627723	7918353	Nov-24	11_Photo 1-11_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia*	5	Low woodland	Alluvial plain/adjacent to creekline (north)	Melaleuca viridiflora woodland on alluvial soil. Some sedges present in groundcover. Ecotone with Melaleuca citrolens woodland
Q050	627780	7918165	Nov-24	12_Photo 1-12_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia, Acacia spp.*	5	Low woodland	-	Melaleuca viridiflora woodland with mixed canopy of Acacia spp. and Grevillea pteridifolia
Q051	627856	7918051	Nov-24	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	7	Low open woodland		Melaleuca citrolens dominant woodland. Melaleuca viridiflora occasional
Q052	627689	7917889	Nov-24	13_Photo 1-13_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia gonoclada*	5	Low woodland	-	Melaleuca viridiflora dominant low woodland. Occasional Acacia gonoclada. Ground cover with abundant litter, Acacia galioides and native grasses.
Q053	629666	7918647	Nov-24	26_Photo 1-26_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca citrolens*	4	Low open woodland	Alluvial plain in proximity to creek line	Very sparse Melaleuca citrolens. Carissa lanceolata dominant in a very sparse shrub layer. Ground cover very sparse or none.
Q054	629658	7918224	Nov-24	30_Photo 1-30_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low open woodland	-	Mature and more sparse Melaleuca viridiflora woodland. Grevillea pteridifolia and Erythrophleum chlorostachys occasional, up to 4m.
Q055	629682	7918005	Nov-24	31_Photo 1-31_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low open woodland	-	Mature Melaleuca viridiflora woodland. Grevillea pteridifolia and Erythrophleum chlorostachys occasional, up to 4m.
Q056	629338	7917878	Nov-24	32_Photo 1-32_Photo 3	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia*	4	Low woodland	-	Less mature Melaleuca viridiflora woodland, dense.
Q057	629251	7918194	Nov-24	34_Photo 1-34_Photo 3	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low woodland	-	Melaleuca viridiflora woodland. Grevillea pteridifolia and Erythrophleum chlorostachys occasional.
Q058	629122	7918441	Nov-24	35_Photo 1-35_Photo 3	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low woodland	-	Melaleuca viridiflora woodland. Grevillea pteridifolia and Erythrophleum chlorostachys occasional.
Q059	629309	7918677	Nov-24	36_Photo 1-36_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low woodland	Alluvial plain	Melaleuca viridiflora woodland. Grevillea pteridifolia and Erythrophleum chlorostachys occasional.
Q060	646390	7909859	Nov-24	37_Photo 1-37_Photo 4	2.5.28a	2.5.18a	Remnant	Tree	*Melaleuca sp., Acacia torulosa, Erythrophleum chlorostachys*	6	Low woodland		Acacia torulosa woodland. Occasional Melaleuca sp., Erythrophleum chlorostachys in the shrub layer up to 2m. Abundant litter on ground of Acacia leaves.
Q061	628130	7918295	Nov-24	55_Photo 1-55_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa*	9	Low woodland	Alluvial plain	Melaleuca viridiflora woodland

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Q062	628093	7918117	Nov-24	57_Photo 1-57_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Corymbia polycarpa*	8	Low open woodland		Melaleuca citrolens woodland. Emergent Corymbia polycarpa. Abundant litter. Patch extends to the east. Soil is sandy than other areas of Melaleuca citrolens (which are harder)
Q063	627760	7917298	Nov-24	65_Photo 1-65_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.55d	Remnant	Tree	*Melaleuca viridiflora, Grevillea striata, Acacia gonoclada, Asteromyrtus symphyocarpa*	7	Low woodland	Seasonal depression	Melaleuca viridiflora woodland with Grevillea striata, Acacia gonoclada, Asteromyrtus symphyocarpa
Q064	628239	7917732	Nov-24	66_Photo 1-66_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia*	9	Low woodland	-	Melaleuca viridiflora woodland. Very occasional other trees, such as Grevillea pteridifolia. Abundant leaf litter, sparse grass in patches
Q065	628381	7917876	Nov-24	67_Photo 1-67_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	6	Low open woodland		Melaleuca citrolens woodland on harder elevated soil. Shrub cover 10%, more abundant than other areas, dominated by Dodonaea physocarpa and with Acacia galioides in lower shrub layer. Grass dominated by Eragrostis speciosa
Q066	629849	7917609	Nov-24	68_Photo 1-68_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	7	Low open woodland		Melaleuca citrolens woodland
Q067	629930	7917521	Nov-24	69_Photo 1-69_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia*	4	Low woodland	-	Melaleuca viridiflora woodland with occasional Grevillea pteridifolia. Whipstick Melaleuca viridiflora.
Q068	630319	7917198	Nov-24	70_Photo 1-70_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	5	Low woodland	-	Patch of Melaleuca viridiflora woodland but sparser and more mature trees, with associated Melaleuca citrolens.
Q069	630879	7916776	Nov-24	73_Photo 1-73_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Acacia torulosa*	9	Low woodland	-	Mixed woodland of Melaleuca viridiflora, with Corymbia polycarpa emergent, and Acacia torulosa occasionally dominant in patches. Occasional Erythrophleum chlorostachys and Dodonaea barklyana. Groundlayer with abundant litter.
Q070	631187	7916485	Nov-24	74_Photo 1-74_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Acacia gonoclada*	7	Low woodland	-	Mixed woodland of Melaleuca viridiflora, with Acacia gonoclada and emergent Corymbia polycarpa. Melaleuca citrolens woodland on sandy soils adjoins this patch.
Q071	631606	7916131	Nov-24	79_Photo 1-79_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	6	Low open woodland		Mixed woodland with Melaleuca citrolens dominant and occasional Melaleuca viridiflora. Carissa lanceolata in Shrub layer.
Q072	632057	7915787	Nov-24	83_Photo 1-83_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	4	Low woodland	-	Melaleuca viridiflora woodland, whipstick and mature individuals. Abundant litter cover.
Q073	632572	7915309	Nov-24	87_Photo 1-87_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	5	Low woodland	-	Melaleuca viridiflora woodland on sandier soils, with Acacia gonoclada associated. Also occasional recruiting Corymbia polycarpa and Melaleuca citrolens.
Q074	633059	7914992	Nov-24	89_Photo 1-89_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	Outside footprint	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	5	Low woodland		Melaleuca citrolens and Melaleuca viridiflora woodland, with Acacia holosericea, and Dodonaea sp.

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Q075	632314	7915801	Nov-24	90_Photo 1-90_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Corymbia polycarpa, Erythrophleum chlorostachys*	6	Low woodland		Mixed woodland with Melaleuca sp. (likely nervosa) dominant (whipstick) and scattered Corymbia polycarpa and Erythrophleum chlorostachys. Occasional Acacia holosericea, Acacia torulosa and Melaleuca viridiflora
Q076	629977	7917439	Nov-24	91_Photo 1	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Acacia torulosa*	6	Low woodland	-	Melaleuca viridiflora with emergent Corymbia polycarpa and abundant Acacia torulosa.
Q077	628538	7918299	Nov-24	95_Photo 1-95_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia, Corymbia polycarpa*	6	Low woodland	Alluvial plain	Melaleuca viridifolia woodland with Melaleuca citrolens and Grevillea pteridifolia. Emergent Corymbia polycarpa. Shrub layer Acacia galioides
Q078	629444	7918884	Nov-24	99_Photo 1-99_Photo 2	2.3.26b/2.3.50a	2.3.41	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia, Corymbia polycarpa*	6	Low woodland	Alluvial plain in proximity to creek line	Eucalyptus microtheca open woodland with Melaleuca citrolens. Areas of bare ground and gravel.
Q079	629280	7918888	Nov-24	100_Photo 1-100_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Corymbia polycarpa*	4	Low woodland	-	Melaleuca viridiflora woodland with emergent Corymbia polycarpa, occasional Grevillea pteridifolia
Q080	629545	7919059	Nov-24	105_Photo 1-105_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Corymbia polycarpa, Acacia torulosa*	4	Low woodland	-	Melaleuca viridiflora woodland, with abundant Acacia torulosa, emergent Corymbia polycarpa, and occasional Grevillea pteridifolia. Patches of Acacia torulosa to creek.
Q081	629714	7918960	Nov-24	106_Photo 1-106_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa*	5	Low woodland	-	Acacia torulosa patch with occasional Melaleuca viridiflora from adjacent community, abundant debris.
Q082	628409	7918340	Nov-24	107_Photo 1-107_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens, Grevillea striata*	-	Low open woodland	Creek line, and alluvial plain in proximity to creek line	Eucalyptus microtheca along creek line, very sparse, surrounded by Melaleuca citrolens woodland with Grevillea striata (within RE 2.3.29b)
Q083	628690	7917798	Nov-24	109_Photo 1-109_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens, Melaleuca viridiflora*	-	Low open woodland	Creek line, and alluvial plain in proximity to creek line	Eucalyptus microtheca along creek line, very sparse, surrounded by Melaleuca viridiflora woodland to the east and Melaleuca citrolens woodland to the west (within RE 2.3.29b).
Q084	628810	7917549	Nov-24	111_Photo 1-111_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens, Pandanus sp.*	-	Low open woodland	Creek line, and alluvial plain in proximity to creek line	Eucalyptus microtheca along creek line with Pandanus sp, very sparse, surrounded by Melaleuca citrolens woodland (very narrow strip within RE 2.3.29b).
Q085	628522	7917565	Nov-24	112_Photo 1-112_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Grevillea striata*	6	Low open woodland		Melaleuca citrolens with Melaleuca viridiflora and Grevillea striata. Acacia galioides in shrub layer. Patch of Melaleuce viridiflora woodland to the west.
Q086	627266	7917537	Nov-24	114_Photo 1-114_Photo 3	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa*	4	Low woodland	-	Melaleuca viridiflora (whipstick and mature individuals) with associated Acacia torulosa. Litter 90% of groundcover.
Q087	628164	7917881	Nov-24	116_Photo 1-116_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia spp., Corymbia polycarpa*	4	Low woodland	-	Melaleuca viridiflora woodland, occasional Corymbia polycarpa emergent and Acacia spp. in the canopy and sub-canopy
Q088	649707	7908957	Nov-24	-	2.5.28a	Outside footprint	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	4	Low open woodland		Melaleuca citrolens with Melaleuca viridiflora woodland. Occasional recruiting Corymbia polycarpa. Change to Melaleuca viridiflora towards road.

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Q089	634110	7913361	Nov-24	133_Photo 1-133_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Corymbia polycarpa, Melaleuca viridiflora, Acacia torulosa*	5	Low woodland		Melaleuca sp. (likely nervosa) (whipstick) with associated Acacia torulosa (dominant in patches, especially towards fence). Occasional Melaleuca viridiflora and Corymbia polycarpa. Abundant litter.
Q090	634218	7913493	Nov-24	134_Photo 1-134_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Corymbia polycarpa, Acacia torulosa*	-	Low woodland		Acacia torulosa dominant, occasional Melaleuca sp. (likely nervosa) and Corymbia polycarpa. Abundant leaf litter.
Q091	634270	7913341	Nov-24	136_Photo 1-136_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Acacia torulosa, Melaleuca viridiflora*	6	Low woodland		Acacia torulosa dominant with associated Melaleuca viridiflora. Acacia gonoclada associated and Acacia holosericea present.
Q092	634785	7913190	Nov-24	141_Photo 1-141_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Acacia torulosa, Melaleuca sp. (likely nervosa)*	6	Low woodland	Sands	Acacia torulosa dominant with Melaleuca sp. (likely nervosa), whipstick and mature individuals. Very sandy ground. Mostly litter cover.
Q093	635084	7913108	Nov-24	142_Photo 1-142_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Acacia torulosa, Melaleuca viridiflora, Corymbia polycarpa*	4	Low woodland	-	Melaleuca viridiflora woodland with associated Acacia torulosa. Occasional Corymbia polycarpa
Q094	635402	7913004	Nov-24	145_Photo 1-145_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Acacia spp.*	8	Low open woodland		Melaleuca citrolens woodland with occasional Melaleuca viridiflora. Acacia spp. abundant. Surrounded by patch of Melaleuca viridiflora woodland
Q095	635793	7912899	Nov-24	146_Photo 1-146_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Corymbia polycarpa, Acacia spp.*	-	Low woodland	-	Melaleuca viridiflora woodland to the north, with Melaleuca citrolens woodland to the south. Occasional Corymbia polycarpa. Abundant Acacia torulosa and Acacia gonoclada.
Q096	635948	7912856	Nov-24	149_Photo 1-149_Photo 2	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca sp. (likely nervosa), Acacia torulosa*	5	Low woodland	-	Melaleuca viridiflora dominant with Acacia torulosa and Melaleuca sp. (likely nervosa). Ecotone into Acacia torulosa with Melaleuca sp. (likely nervosa) woodland.
Q097	636295	7912785	Nov-24	152_Photo 1-152_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Grevillea pteridifolia, Erythrophleum chlorostachys*	7	Low woodland	-	Melaleuca viridiflora woodland. Sparse, along both sides of depression. Occasional Corymbia polycarpa. Grevillea pteridifolia associated and Erythrophleum chlorostachys present
Q098	636371	7912782	Nov-24	154_Photo 1-154_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa), Grevillea pteridifolia*	6	Low woodland	Alluvial plain associated with creekline	Mixed woodland of Melaleuca spp. (dominant Melaleuca viridiflora), with Grevillea pteridifolia associated. Acacia gonoclada and Acacia torulosa associated. Corymbia polycarpa present in canopy. Mixed shrub layer of Jacksonia odontoclada, Dodonaea sp., Carissa lanceolata, Psydrax saligna, and recruiting Terminalia sp.
Q099	636547	7912678	Nov-24	156_Photo 1-156_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa)*	-	Low woodland	-	Mixed woodland of Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa) (dominant Melaleuca viridiflora), with Grevillea pteridifolia associated. Acacia gonoclada and Acacia torulosa associated. Corymbia polycarpa present in canopy. Mixed shrub layer of Jacksonia odontoclada, Dodonaea sp., Carissa lanceolata, Psydrax saligna, and recruiting Terminalia sp.

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q100	636626	7912664	Nov-24	157_Photo 1-157_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa*	-	Low woodland	Broad sand plain	Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, on sandier soil
Q101	636817	7912622	Nov-24	160_Photo 1-160_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa)*	-	Low woodland		Mixed woodland of Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa) (dominant Melaleuca viridiflora), with Grevillea pteridifolia associated. Acacia gonoclada and Acacia torulosa associated. Corymbia polycarpa present in canopy. Mixed shrub layer of Jacksonia odontoclada, Dodonaea sp., Carissa lanceolata, Psydrax saligna, and recruiting Terminalia sp.
Q102	636886	7912572	Nov-24	161_Photo 1-161_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa*	-	Low woodland	Broad sand plain	Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, on sandier soil
Q103	637800	7912324	Nov-24	167_Photo 1-167_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa*	-	Low woodland	Broad sand plain	Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, on sandier soil
Q104	637365	7912422	Nov-24	165_Photo 1-165_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia sp.*	7	Low woodland		Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, Corymbia sp. occasional, abundant litter
Q105	638191	7912212	Nov-24	168_Photo 1-168_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia setosa*	7	Low woodland		Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, Corymbia setosa occasional
Q106	638473	7912117	Nov-24	172_Photo 1-172_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa*	-	Low woodland		Edge of Melaleuca sp. (likely nervosa) and Acacia torulosa woodland
Q107	638575	7912133	Nov-24	175_Photo 1-175_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia setosa*	8	Low woodland		Acacia torulosa and Melaleuca sp. (likely nervosa) woodland, with some Corymbia setosa
Q108	638664	7912099	Nov-24	177_Photo 1-177_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens woodland
Q109	638994	7911953	Nov-24	179_Photo 1-179_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora, Corymbia sp.*	-	Low woodland		Mixed woodland, with dominant Melaleuca citrolens, occasional Melaleuca viridiflora and Corymbia sp.
Q110	639274	7911897	Nov-24	182_Photo 1-182_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa)*	-	Low woodland		Melaleuca sp. (likely nervosa) dominant woodland
Q111	627702	7918516	Nov-24	186_Photo 1-186_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea pteridifolia, Grevillea striata*	5	Low open woodland		Melaleuca citrolens woodland with Grevillea pteridifolia and emergent Grevillea striata
Q112	629962	7917156	Nov-24	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland	-	Melaleuca viridiflora woodland
Q113	630328	7916798	Nov-24	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Grevillea pteridifolia, Melaleuca citrolens*	-	Low open woodland	-	Melaleuca viridiflora mature, sparse woodland. with Grevillea pteridifolia and Melaleuca citrolens

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Q114	630487	7916663	Nov-24	-	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens woodland
Q115	630737	7916437	Nov-24	-	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens woodland
Q116	631211	7916051	Nov-24	190_Photo 1	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low open woodland	-	Melaleuca viridiflora woodland
Q117	631471	7915706	Nov-24	194_Photo 1-194_Photo 2	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	4	Low woodland	-	Dense Melaleuca viridiflora woodland
Q118	631602	7915690	Nov-24	196_Photo 1-196_Photo 5	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia sp.*	8	Low woodland	-	Melaleuca sp. (likely nervosa) and Acacia torulosa woodland, Corymbia sp. occasional, with sub-canopy of Melaleuca sp. (likely nervosa) and Melaleuca viridiflora
Q119	631981	7915323	Nov-24	200_Photo 1-200_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	Outside footprint	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	-	Low woodland	-	Melaleuca viridiflora woodland, with sub-dominant Melaleuca citrolens
Q120	632444	7914887	Nov-24	202_Photo 1-202_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	Outside footprint	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	-	Low woodland	-	Melaleuca viridiflora woodland, with sub-dominant Melaleuca citrolens
Q121	632614	7914793	Nov-24	203_Photo 1-203_Photo 5	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	Outside footprint	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens woodland
Q122	632712	7914523	Nov-24	205_Photo 1-205_Photo 4	2.5.28a	Outside footprint	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia sp.*	-	Low woodland		Melaleuca sp. (likely nervosa) woodland with Acacia torulosa and occasional Corymbia sp. Dense low tree layer of Melaleuca sp. (likely nervosa) and Melaleuca viridiflora
Q123	633308	7914070	Nov-24	213_Photo 1	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low woodland		Edge of Melaleuca citrolens woodland, subcanopy of Gardenia sp., Acacia gonoclada and Grevillea striata occasional. Dense shrub layer with Carissa lanceolata and Dodonaea sp. Ground dominated by Eragrostis speciosa
Q124	633508	7913991	Nov-24	214_Photo 1-214_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Melaleuca viridiflora*	7	Low woodland		Melaleuca sp. (likely nervosa) woodland with Acacia torulosa and Melaleuca viridiflora. Erythrophleum chlorostachys and Dodonaea sp. present.
Q125	633543	7913804	Nov-24	217_Photo 1-217_Photo 4	2.5.28a	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	8	Low woodland		Melaleuca viridiflora woodland mature. No shrub layer. Ground cover sparse, mostly litter, but 25% grass dominated by Eragrostis speciosa.
Q126	633878	7913559	Nov-24	220_Photo 1-220_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens woodland, edge of Melaleuca viridiflora woodland
Q127	639773	7911779	Nov-24	259_Photo 1-259_Photo 4	2.3.26b/2.3.50 a	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland	Alluvial plain	Melaleuca citrolens woodland, on banks
Q128	640328	7911599	Nov-24	260_Photo 1-260_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	Outside footprint	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	-	Low open woodland		Melaleuca citrolens woodland, with co-dominant Melaleuca viridiflora
Q129	640707	7911516	Nov-24	261_Photo 1-261_Photo 4	2.5.14a/2.5.17 b/2.3.29b/2.3. 51	2.5.14a	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	5	Low open woodland		Ecotone between Melaleuca citrolens low woodland to the north and Melaleuca viridiflora low woodland to the south.

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Q130	640923	7911468	Nov-24	263_Photo 1-263_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	6	Low open woodland		Melaleuca citrolens woodland, sparse understory, with shrubs of Carissa lanceolata and Dodonaea sp.
Q131	647667	7907980	Nov-24	264_Photo 1-264_Photo 11	2.5.28a	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Terminalia platyptera, Petalostigma banksii, Melaleuca viridiflora*	5	Low open woodland		Melaleuca citrolens sparse woodland with mixed canopy species including Terminalia platyptera, Petalostigma banksii, and Melaleuca viridiflora
Q132	647707	7908277	Nov-24	266_Photo 1-266_Photo 4	2.5.28a	2.5.14a	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	5	Low woodland		Melaleuca viridiflora woodland with Petalostigma banksii and occasional Melaleuca citrolens. Abundant leaf litter
Q133	647739	7908519	Nov-24	268_Photo 1-268_Photo 6	2.5.14a/2.3.29b	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Asteromyrtus symphyocarpa*	-	Low open woodland		Melaleuca viridiflora with minimal canopy. Asteromyrtus symphyocarpa and Petalostigma banksii present, forming small clusters.
Q134	647792	7908932	Nov-24	272_Photo 1-272_Photo 4	2.5.28a	2.5.18a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia setosa, Erythrophleum chlorostachys*	7	Low woodland		Melaleuca sp. (likely nervosa) with Acacia torulosa and Corymbia setosa. Erythrophleum chlorostachys occasional.
Q135	647898	7909480	Nov-24	280_Photo 1-280_Photo 4	2.5.14a/2.3.29b	2.5.17b	Remnant	Tree	*Melaleuca sp. (likely nervosa), Melaleuca viridiflora, Melaleuca citrolens, Blakella grandifolia, Corymbia setosa, Erythrophleum chlorostachys*	6	Low woodland		Blakella grandifolia emergent with sparse Erythrophleum chlorostachys, Melaleuca viridiflora, Melaleuca citrolens, Melaleuca sp. (likely nervosa). Sparse sub-canopy of whipstick canopy tree species. Carissa lanceolata dominant on sparse shrub layer.
Q136	647691	7909562	Nov-24	282_Photo 1-282_Photo 4	2.5.14a/2.3.29b	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora woodland
Q137	647140	7909720	Nov-24	288_Photo 1-288_Photo 4	2.5.28a	2.5.17b	Remnant	Tree	*Acacia torulosa, Melaleuca sp. (likely nervosa), Corymbia setosa, Erythrophleum chlorostachys, Petalostigma banksii*	5	Low woodland		Acacia torulosa woodland with Melaleuca sp. (likely nervosa), Corymbia setosa, Erythrophleum chlorostachys and Petalostigma banksii as emergent. Groundcover mostly leaf litter, with Schizachyrium fragile. Dieback of large trees, potentially Corymbia setosa
Q138	646512	7909846	Nov-24	290_Photo 1-290_Photo 4	2.5.14a/2.3.29b	2.5.14a	Remnant	Tree	*Blakella grandifolia, Erythrophleum chlorostachys, Acacia holosericea*	-	Low woodland		Blakella grandifolia, Erythrophleum chlorostachys, Acacia holosericea. Shrub of Acacia torulosa, and low shrub layer with recruiting Melaleuca sp. (likely nervosa)
Q139	646239	7909965	Nov-24	291_Photo 1-291_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Blakella grandifolia, Erythrophleum chlorostachys, Acacia holosericea*	-	Low woodland		Blakella grandifolia, Erythrophleum chlorostachys, Acacia holosericea. Shrub of Acacia torulosa, and low shrub layer with recruiting Melaleuca sp. (likely nervosa)
Q140	645910	7910038	Nov-24	293_Photo 1-293_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.18a	Remnant	Tree	*Corymbia setosa, Melaleuca sp. (likely nervosa), Acacia torulosa*	-	Low woodland		Acacia torulosa woodland with associated Melaleuca sp. (likely nervosa) and occasional Corymbia setosa. Shrub layer recruiting Melaleuca sp. (likely nervosa) and Acacia torulosa. Area to west has increased Melaleuca sp. (likely nervosa)

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Q141	645570	7910130	Nov-24	295_Photo 1-295_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Melaleuca viridiflora, Acacia torulosa, Erythrophleum chlorostachys*	-	Low woodland		Melaleuca sp. (likely nervosa) with Melaleuca viridiflora. Acacia torulosa associated and Erythrophleum chlorostachys emergent. Shrub layer recruiting canopy species and Acacia chippendale
Q142	641146	7911392	Nov-24	297_Photo 1-297_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.18a	Remnant	Tree	*Melaleuca viridiflora, Acacia torulosa, Acacia gonoclada Erythrophleum chlorostachys*	6	Low woodland		Melaleuca viridiflora with Acacia torulosa, Acacia gonoclada and Erythrophleum chlorostachys.
Q143	641703	7911239	Nov-24	298_Photo 1-298_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	-	Low woodland		Melaleuca citrolens woodland with Melaleuca viridiflora. Carissa lanceolata on shrub layer
Q144	641956	7911140	Nov-24	299_Photo 1-299_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.18a	Remnant	Tree	*Melaleuca viridiflora, Petalostigma banksii*	-	Low woodland		Melaleuca viridiflora with Acacia spp. in the sub-canopy and Petalostigma banksii in the canopy
Q145	642699	7910938	Nov-24	304_Photo 1-304_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca sp. (likely nervosa), Erythrophleum chlorostachys, Corymbia polycarpa*	4	Low woodland		Melaleuca sp. (likely nervosa) with Melaleuca viridiflora, and emergent Erythrophleum chlorostachys and Corymbia polycarpa.
Q146	643285	7910777	Nov-24	308_Photo 1-308_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora woodland with occasional Corymbia polycarpa
Q147	643877	7910650	Nov-24	310_Photo 1-310_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia setosa, Erythrophleum chlorostachys*	-	Low woodland		Melaleuca sp. (likely nervosa) woodland. Patches of Acacia torulosa dominant. Corymbia setosa and Erythrophleum chlorostachys present but not abundant.
Q148	644287	7910483	Nov-24	313_Photo 1-313_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Melaleuca viridiflora, Erythrophleum chlorostachys*	-	Low woodland		Melaleuca sp. (likely nervosa) woodland, with Melaleuca viridiflora in patches. Erythrophleum chlorostachys present but not abundant.
Q149	644763	7910350	Nov-24	314_Photo 1-314_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Blakella grandifolia, Erythrophleum chlorostachys*	7	Low woodland		Melaleuca sp. (likely nervosa) woodland, sparse, with Erythrophleum chlorostachys. Blakella grandifolia emergent.
Q150	628049	7916970	Feb-25	Q1_Photo 1-Q1_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Blakella grandifolia*	6	Low woodland		Melaleuca viridiflora woodland with emergent Coymbia polycarpa and Blakella grandifolia
Q151	628253	7916514	Feb-25	Q4_Photo 1-Q4_Photo 5	2.5.28a	2.5.28a	Remnant	Tree	*Acacia torulosa, Corymbia polycarpa, Erythrophleum chlorostachys, Grevillea pteridifolia*	7	Low woodland		Acacia torulosa woodland with emergent Corymbia polycarpa. Erythrophleum chlorostachys and Grevillea pteridifolia present in canopy. Shrub comprised of Alphitonia pomaderroides and Petalostigma banksii. Photo of soil included (Photo 5)

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Q152	628022	7917222	Feb-25	Q5_Photo 1-Q5_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Acacia torulosa, Corymbia polycarpa*	8	Low woodland		Corymbia polycarpa and Acacia torulosa woodland, with Melaleuca viridiflora in the sub-canopy. Shrub layer of Dodonaea sp.
Q153	628917	7917205	Feb-25	Q9_Photo 1-Q9_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca viridiflora*	8	Low open woodland	Creek line, and alluvial plain in proximity to creek line	Eucalyptus microtheca woodland, with Melaleuca viridiflora. Acacia platycarpa in the shrub layer (within RE 2.3.29b patch)
Q154	625440	7919415	Feb-25	Q11_Photo 1-Q11_Photo 5	2.3.26b/2.3.50a	2.3.42b	Remnant	Tree	*Eucalyptus microtheca*	8	Low woodland		Eucalyptus microtheca woodland with subcanopy of Melaleuca citrolens, Eucalyptus microtheca and Atalaya hemiglauca. Shrub layer dominated by Carissa lanceolata
Q155	625190	7918475	Feb-25	Q17_Photo 1-Q17_Photo 5	2.3.29b/2.3.42b/2.3.26b/2.5.28a	2.3.22	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	8	Low woodland		Corymbia polycarpa woodland with Melaleuca viridiflora in the sub-canopy and Petalostigma banksii in the shrub layer
Q156	627871	7916838	Feb-25	Q2_Photo 1-Q2_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	5.5	Low woodland		Dense Melaleuca virdiflora woodland with Corymbia polycarpa
Q157	627915	7916521	Feb-25	Q3_Photo 1-Q3_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	7	Low woodland		Dense Melaleuca virdiflora woodland with Corymbia polycarpa
Q158	629936	7915942	Feb-25	Q6_Photo 1-Q6_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca sp. (likely nervosa), Terminalia sp., Erythrophleum chlorostachys*	7	Low woodland		Mixed woodland of Melaleuca sp. (likely nervosa), Terminalia sp. and Erythrophleum chlorostachys
Q159	629934	7915596	Feb-25	Q7_Photo 1-Q7_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Acacia torulosa, Corymbia polycarpa*	11	Woodland		Acacia torulosa woodland with Corymbia polycarpa and Melaleuca sp. (likely nervosa)
Q160	628919	7917178	Feb-25	Q8_Photo 1-Q8_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa*	6	Low woodland	Alluvial plain	Melaleuca viridiflora woodland, with emergent Corymbia polycarpa
Q161	631576	7919504	Feb-25	Q10_Photo 1-Q10_Photo 5	2.3.51	2.3.55d	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Grevillea striata*	8	Low woodland	Seasonal depression	Mapped wetland. Water present. Melaleuca viridiflora woodland with Corymbia polycarpa and Grevillea striata
Q162	625405	7919406	Feb-25	Q12_Photo 1-Q12_Photo 4	2.3.26b/2.3.50a	2.3.26a	Remnant	Tree	*Eucalyptus camaldulensis*	13	Woodland	Dry creek line	Eucalyptus camaldulenis dominated along main creek line heading south/north. With Melaleuca viridiflora in the sub-canopy
Q163	625352	7919871	Feb-25	Q13_Photo 1-Q13_Photo 5	2.5.28a	2.3.55d	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa*	5	Low woodland	Seasonal depression	Melaleuca viridiflora woodland with emergent Corymbia polycarpa
Q164	627292	7919512	Feb-25	Q14_Photo 1-Q14_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	8	Low open woodland		Melaleuca citrolens woodland
Q165	629591	7919681	Feb-25	Q16_Photo 1-Q16_Photo 5	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Acacia torulosa, Melaleuca viridiflora, Corymbia polycarpa*	8	Low woodland		Acacia torulosa, Melaleuca viridiflora woodland with emergent Corymbia polycarpa
Q166	625451	7918457	Feb-25	-	2.3.29b/2.3.42b/2.3.26b/2.5.28a	2.3.22	Remnant	Tree	*Eucalyptus camaldulensis, Melaleuca fluviatilis*	12	Woodland	Creek line, and alluvial plain in proximity to creek line	Eucalyptus camaldulensis, with Melaleuca fluviatilis (within RE 2.3.29b patch)
Q167	625809	7918223	Feb-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Acacia torulosa, Corymbia polycarpa*	5	Low woodland		Acacia torulosa woodland with emergent Corymbia polycarpa
Q168	640038	7912253	Feb-25	-	2.5.28a	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa*	4	Low woodland		Melaleuca viridiflora woodland with emergent Corymbia polycarpa

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Q169	629417	7915627	Feb-25	-	2.5.28a	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa), Corymbia polycarpa*	5	Low woodland		Melaleuca sp. (likely nervosa) woodland with Corymbia polycarpa. Sub-canopy of Acacia torulosa and Erythrophleum chlorostachys
Q170	639631	7912132	Feb-25	-	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Melaleuca citrolens, Corymbia polycarpa*	6	Low open woodland		Melaleuca citrolens woodland with emergent Corymbia polycarpa
Q171	641703	7911099	Feb-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	Outside footprint	Remnant	Tree	*Melaleuca citrolens, Terminalia sp., Melaleuca viridiflora*	6	Low woodland		Melaleuca citrolens, with Terminalia sp., Melaleuca viridiflora. Emergent Terminalia sp. Shrub layer of Carissa lanceolata and Petalostigma banksii
Q172	627976	7918747	Aug-25	QD001_Photo 1 - QD001_Photo 4	2.3.26b/2.3.50a	2.3.26a	Remnant	Tree	*Melaleuca fluviatilis, Eucalyptus camaldulensis*	11	Woodland	Dry creek line	E. camaldulensis woodland fringing creek bed, with Melaleuca fluviatilis. Mixed low tree and shrub layer. Creek bed dry. Disturbance: Low clearing within creek bed, but cleared drill track outside to south east.
Q173	627936	7918771	Aug-25	QD002_Photo 1 - QD002_Photo 4	2.3.26b/2.3.50a	2.3.22	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa*	13	Woodland		Melaleuca viridiflora low woodland, with Corymbia polycarpa and mixed low tree and shrub species. Groundcover dominated by Schizachyrium fragile.
Q174	624026	7919818	Aug-25	QD003_Photo 1 - QD003_Photo 4	2.3.26b/2.3.50a	Outside footprint	Remnant	Tree	*Eucalyptus microtheca*	14	Open woodland		On older alluvial plain, not recent alluvial activity. Open woodland of Eucalyptus microtheca, with Melaleuca viridflora and Terminalia platyptera associated with the sub-canopy. Low shrub layer of Carissa lanceolata. Ground layer degraded by cattle to east. Ground cover comprised predominantly of litter and bare ground, with sparse grass cover of Aristida ingrata.
Q175	630402	7918384	Aug-25	QD004_Photo 1 - QD004_Photo 4	2.3.26b/2.3.50a	2.3.26a	Remnant	Tree	*Eucalyptus camaldulensis*	10	Open woodland	Dry creek line	E. camaldulensis woodland fringing dry creek bed, with sub-canopy dominated by Melaleuca fluviatilis with Acacia spp., Asteromyrtus symphyocarpa, and Pandanus sp associated. Ground cover comprised predominantly of bare ground and some litter, with sparse grass cover of Eriachne mucronata.
Q176	640617	7912359	Aug-25	QD005_Photo 1 - QD005_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora*	11	Low woodland		Melaleuca viridiflora low woodland, with Corymbia polycarpa and mixed low tree and shrub layers of Melaleuca spp. and Acacia spp. Moderate grass cover, dominated by Aristida ingrata.
Q177	639814	7911857	Aug-25	QD006_Photo 1 - QD006_Photo 4	2.3.26b/2.3.50a	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Grevillea striata*	7	Low open woodland		Melaleuca citrolens low open woodland, with sub-canopy of mixed Melaleuca spp. and Grevillea spp. Sparse low shrub layer of Dodonaea physocarpa and Carissa lanceolata. Moderate-high grass cover dominated by Eriachne mucronata.
Q178	639626	7911815	Aug-25	QD007_Photo 1 - QD007_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Acacia torulosa, Erythrophleum chlorostachys*	7	Low woodland		Mixed woodland, dominated by Acacia torulosa and Erythrophleum chlorostachys, with associated Melaleuca viridiflora in the sub-canopy. Low shrub layer dominated by recruiting Acacia torulosa, with associated Petalostigma banksii and Jacksonia odontoclada. Sparse grass cover dominated by Schizachyrium fragile. Thin patch of vegetation surrounded by 2.3.42a to east (associated with drainage line) and 2.5.28a to west.

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Q179	639631	7911901	Aug-25	QD008_Photo 1 - QD008_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Erythrophleum chlorostachys, Melaleuca citrolens, Melaleuca viridiflora*	6	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Melaleuca viridiflora with emergent Corymbia polycarpa and Erythrophleum chlorostachys. Moderately dense shrub layer dominated by recruiting canopy species and Terminalia platyptera. Low shrub layer dominated by Dodonaea physocarpa and Jacksonia odontoclada, with Carissa lanceolata, Grevillea pteridifolia, Petalostigma banksii and Gardenia vilhelmii. Mixed tussock grass cover dominated by Aristida ingrata. Thin patch of vegetation surrounded by 2.3.42a to east (associated with drainage line) and 2.5.28a to west.
Q180	639628	7912205	Aug-25	Q009_Photo 1 - Q009_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Melaleuca citrolens, Acacia torulosa, Erythropheum chlorostachys, Acacia platycarpa*	8	Low woodland		Mixed woodland, dominated by Melaleuca viridiflora, with Melaleuca citrolens, Acacia torulosa, Acacia platycarpa and Erythrophleum chlorostachys in the canopy and emergent Corymbia polycarpa. Sub-canopy dominated by Terminalia platyptera. Moderately dense shrub layer dominated by Dodonaea physocarpa and Jacksonia odontoclada, with Carissa lanceolata, Grevillea pteridifolia, Petalostigma banksii and Gardenia vilhelmii. Mixed tussock grass cover dominated by Aristida ingrata. Thin patch of vegetation to east and south-east, surrounded by 2.3.42a to east/north-east (associated with drainage line) and 2.5.28a to west.
Q181	639496	7912299	Aug-25	QD010_Photo 1 - QD010_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Terminalia platyptera, Melaleuca citrolens, Erythrophleum chlorostachys, Melaleuca viridiflora*	5	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Terminalia platyptera, with Erythrophleum chlorostachys and Melaleuca viridiflora. Terminalia platyptera also occurs as an emergent. Moderately dense mixed shrub layer of Dodonaea physocarpa, Grevillea pteridifolia, Carissa lanceolata and Gardenia vilhelmii. Mixed tussock grass cover dominated by Schizachyrium fragile. Thin patch of vegetation surrounded by 2.3.42a to west (associated with drainage line) and 2.5.17b to north/north-east.
Q182	632668	7915046	Aug-25	QD011_Photo 1 - QD011_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	11	Low open woodland		Melaleuca citrolens low open woodland, with associated Melaleuca viridiflora and a sub-canopy dominated by Acacia torulosa. Mixed shrub layer of Petalostigma banksii, Dodonaea physocarpa and recruiting canopy species. Sparse, patchy grass cover dominated by Chrysopogon fallax and other mixed tussock grasses. Minor clearing associated with track.
Q183	632210	7916133	Aug-25	QD012_Photo 1 - QD012_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Corymbia polycarpa, Acacia gonoclada*	8	Low woodland		Melaleuca viridiflora low woodland, with sub-dominant Melaleuca citrolens and associated Corymbia polycarpa and Acacia gonoclada in the canopy and sub-canopy. Low shrub layer dominated by Dodonaea physocarpa and Carissa lanceolata. Sparse mixed grass cover, dominated by Eragrostis speciosa. Minor clearing only associated with track.

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Q184	632008	7916565	Aug-25	QD013_Photo 1_1 - QD013_Photo 4_1	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	11	Low open woodland		Melaleuca citrolens low open woodland, with associated Melaleuca viridiflora and a low tree layer dominated by Acacia torulosa. Mixed shrub layer of Dodonaea physocarpa, Grevillea spp., Acacia spp., and recruiting canopy species. Sparse, patchy grass cover dominated by Chrysopogon fallax and other mixed tussock grasses. Minor clearing associated with track.
Q185	631447	7916899	Aug-25	QD013_Photo 1 - QD013_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Corymbia polycarpa, Acacia gonoclada*	8	Low woodland		Melaleuca viridiflora low woodland, with sub-dominant Melaleuca citrolens and associated Corymbia polycarpa and Acacia gonoclada in the canopy and sub-canopy. Low shrub layer dominated by Dodonaea physocarpa and Carissa lanceolata. Sparse mixed grass cover, dominated by Eragrostis speciosa. Minor clearing only associated with track.
Q186	627407	7918119	Aug-25	QD014_Photo 1 - QD014_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Corymbia polycarpa, Acacia torulosa*	-	Low woodland		Melaleuca viridiflora low woodland, with Corymbia polycarpa and Acacia torulosa associated in the canopy and Erythrophleum chlorostachys in the sub-canopy. Sparse low tree and shrub layer of recruiting canopy species. Grass cover dominated by Chrysopogon fallax. Minor clearing only associated with track.
Q187	627729	7916994	Aug-25	QD015_Photo 1 - QD015_Photo 4, 68_Photo 1	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.55d	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Grevillea striata*	8	Low woodland	Seasonal depression	Seasonal swamp (dry). Water line from wet season visible on standing trees (image: 68_Photo 1). Melaleuca viridiflora woodland in a shallow, closed depression, with emergent Corymbia polycarpa and sub-canopy dominated by Asteromyrtus symphocarpa. Grass dominated by Heteropogon contortus, with other mixed tussock grasses present. Ground cover shows evidence of disturbance by pigs (diggings).
Q188	627348	7916860	Aug-25	QD016_Photo 1 - QD016_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens*	-	Low woodland		Melaleuca viridiflora low woodland, with sub-dominant Melaleuca citrolens in the canopy and sub-canopy. Sparse low tree and shrub layer of recruiting canopy species. Grass cover dominated by Chrysopogon fallax. This patch extends from a patch to the north, with 2.5.17b to east and south.
Q189	627011	7916793	Aug-25	QD016_Photo 1_1 - QD016_Photo 4_1	2.5.28a	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca viridiflora, Acacia platycarpa*	12	Woodland		Acacia torulosa and Corymbia polycarpa woodland, with Melaleuca viridiflora, Erythrophleum chlorostachys and Acacia spp. associated with the canopy and sub-canopy. Low tree and shrub layer dominated by recruiting canopy species and Dodonaea barklyana. Patchy grass cover dominated by Eragrostis speciosa, dominated by leaf litter. Some evidence of pig damage.
Q190	626757	7917252	Aug-25	QD018_Photo 1 - QD018_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Grevillea striata, Melaleuca citrolens, Melaleuca viridiflora*	9	Low open woodland		Melaleuca citrolens low open woodland, with associated Melaleuca viridiflora and emergent Grevillea striata. Mixed low tree and shrub layer of recruiting canopy species and Carissa lanceolata. Dense grass cover dominated by Chrysopogon fallax. Minor clearing associated with track. This area has a more open canopy and sub-canopy and denser grass cover than other points of 2.5.17b.

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Q191	626979	7917528	Aug-25	QD018_Photo 1_1 - QD018_Photo 4_1	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca sp. (likely nervosa),*	8	Low woodland		Acacia torulosa and Melaleuca sp. (likely nervosa) woodland, with emergent Corymbia polycarpa. Grevillea pteridifolia, Acacia spp., and Melaleuca spp. associated with the sub-canopy. Shrub layer dominated by recruiting canopy species, Dodonaea physocarpa and Thryptomene oligandra. Sparse grass cover, ground cover dominated by litter and patches of bare ground.
Q192	627018	7917605	Aug-25	QD020_Photo 1 - QD020_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Melaleuca sp. (likely nervosa), Melaleuca viridiflora, Acacia torulosa, Alphitonia pomaderroides*	6.5	Low woodland		Melaleuca sp. (likely nervosa) woodland, with Melaleuca viridiflora, Acacia torulosa and Alphitonia pomaderroides in the canopy and emergent Corymbia polycarpa. Sparse shrub layer with occasional recruiting canopy species. Sparse grass cover of Aristida ingrata, ground cover dominated by litter and patches of bare ground.
Q193	630235	7916647	Aug-25	QD021_Photo 1 - QD021_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Blakella grandifolia, Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia, Erythrophleum chlorostachys*	8.5	Low open woodland		Melaleuca citrolens and Melaleuca viridiflora low open woodland, with associated Grevillea pteridifolia and Erythrophleum chlorostachys, and emergent Blakella grandifolia. Sparse low tree and shrub layer of recruiting canopy species. Dense grass cover dominated by Chrysopogon fallax.
Q194	630088	7916597	Aug-25	QD022_Photo 1 - QD022_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Corymbia polycarpa*	9	Low woodland		Confined to immediate vicinity of watercourse. Travels in a west east direction, can see on aerial. With prev point RE to north. Rubber vine present
Q195	629687	7916617	Aug-25	QD023_Photo 1 - QD023_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens, Melaleuca sp. (likely nervosa)*	-	Low open woodland		Melaleuca citrolens low open woodland, with sub-dominant Melaleuca sp. (likely nervosa). Low tree layer dominated recruiting canopy species and Grevillea pteridifolia. Sparse low tree and shrub layer of recruiting canopy species. Dense grass cover dominated by Chrysopogon fallax.
Q196	630266	7916310	Aug-25	QD024_Photo 1 - QD024_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Blakella grandifolia, Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia, Acacia gonoclada*	9	Low open woodland		Melaleuca citrolens and Melaleuca viridiflora low open woodland, with associated Grevillea pteridifolia and Acacia gonoclada, and emergent Blakella grandifolia and Corymbia polycarpa. Sparse low tree and shrub layer of recruiting canopy species. Dense grass cover dominated by Eragrostis speciosa.
Q197	629355	7915821	Aug-25	QD025_Photo 1 - QD025_Photo 4	2.5.28a	2.3.55d	Remnant	Tree	*Corymbia polycarpa, Melaleuca viridiflora, Asteromyrtus symphocarpa*	8.5	Low woodland	Seasonal depression	Seasonal swamp (dry). Water line from wet season visible on standing trees. Melaleuca viridiflora and Asteromyrtus symphocarpa woodland in a shallow, closed depression, with emergent Corymbia polycarpa. Surrounded by 2.5.14a to north. Grass dominated by Schizachyrium fragile, with other mixed tussock grasses present. Ground cover shows evidence of disturbance by pigs (diggings).

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Q198	628767	7915975	Aug-25	QD026_Photo 1 - QD026_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca sp. (likely nervosa), Acacia platycarpa, Erythrophleum chlorostachys, Alphitonia pomaderroides*	-	Low woodland		Acacia torulosa and Melaleuca sp. (likely nervosa) woodland, with associated Acacia platycarpa, Erythrophleum chlorostachys and Alphitonia pomaderroides in the canopy and emergent Corymbia polycarpa. Less dense canopy than other surrounding areas. Sparse shrub layer of occasional recruiting canopy species and Dodonaea physocarpa. Sparse grass cover, ground cover dominated by litter and patches of bare ground.
Q199	629078	7916526	Aug-25	QD027_Photo 1 - QD027_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Grevillea striata, Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia, Dolichandrone alternifolia*	8	Low open woodland		Melaleuca citrolens and Melaleuca viridiflora low open woodland, with associated Grevillea pteridifolia and Dolichandrone alternifolia, and emergent Grevillea striata. Sparse low tree and shrub layer of recruiting canopy species. Dense grass cover dominated by Eragrostis speciosa.
Q200	627520	7918762	Aug-25	14_Photo 1 - 14_Photo 4	2.3.26b/2.3.50a	2.3.26a	Remnant	Tree	*Melaleuca fluviatilis, Eucalyptus camaldulensis*	-	Woodland	Dry creek line	Eucalyptus camaldulensis woodland fringing creek bedm with Melaleuca fluviatilis. Occasional Grevillea pteridifolia, Acacia platycarpa, and Cochlospermum gregorii in the sub-canopy. Creek bed dry. Minor evidence of disturbance from feral pigs on bank (scat and diggings)
Q201	639690	7911816	Aug-25	39_Photo 1 - 39_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens, Terminalia platyptera*	-	Open woodland		Open woodland of Eucalyptus microtheca, with Melaleuca citrolens and Terminalia platyptera associated with the sub-canopy. Sparse mixed low shrub layer. Ground layer shows evidence of cattle. Sparse grass cover of Aristida ingrata. Ecotone between 2.3.29b to west and thin strip of 2.3.42a to east
Q202	639661	7911800	Aug-25	40_Photo 1 - 40_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Erythrophleum chlorostachys, Melaleuca citrolens, Melaleuca viridiflora*	-	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Melaleuca viridiflora with emergent Corymbia polycarpa and Erythrophleum chlorostachys. Moderately dense shrub layer dominated by recruiting canopy species and Terminalia platyptera. Low shrub layer dominated by Dodonaea physocarpa and Jacksonia odontoclada, with Carissa lanceolata, Grevillea pteridifolia, Petalostigma banksii and Gardenia vilhelmii. Mixed tussock grass cover dominated by Aristida ingrata. Thin patch of vegetation continuing to east, with 2.5.28a to west.
Q203	639634	7911866	Aug-25	41_Photo 1 - 41_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora*	-	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Melaleuca viridiflora with emergent Corymbia polycarpa. Moderately dense low tree and shrub layer dominated by recruiting canopy species, Erythrophleum chlorostachys and Terminalia platyptera. Low shrub layer dominated by Dodonaea physocarpa and Carissa lanceolata. Mixed tussock grass cover dominated by Aristida ingrata. Thin patch of vegetation continuing to east, with 2.5.28a to west.

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q204	639650	7911914	Aug-25	42_Photo 1 - 42_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens*	-	Low open woodland		Open woodland of Eucalyptus microtheca, with Melaleuca citrolens associated with the sub-canopy. Sparse mixed low shrub layer. Sparse grass cover of Aristida ingrata. Edge of 2.3.29b to west and thin strip of 2.3.42a to east, with 2.3.29b again on east after 2.3.42a patch (approx 5m wide). Creek line travels in north south direction.
Q205	639616	7911960	Aug-25	43_Photo 1 - 43_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Eucalyptus microtheca, Melaleuca citrolens*	-	Low open woodland		Open woodland of Eucalyptus microtheca, with Melaleuca citrolens associated with the sub-canopy. Sparse mixed low shrub layer. Sparse grass cover of Aristida ingrata. 2.3.42a continues to east and 2.3.29b to west
Q206	639582	7912043	Aug-25	44_Photo 1 - 44_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Melaleuca citrolens, Melaleuca viridiflora*	-	Low open woodland		Eucalyptus microtheca absent. Small degraded patch approx. 25m wide (vehicle track, cattle track), with occasional Melaleuca citrolens, Melaleuca viridiflora and mixed low shrubs. Grass cover dominated by Aristida ingrata. Surrounded by Eucalyptus microtheca open woodland along creekline (2.3.42a) and mixed woodland (2.3.29b) to west and east of creekline.
Q207	639534	7912073	Aug-25	45_Photo 1 - 45_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora*	-	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Melaleuca viridiflora with emergent Corymbia polycarpa. Low tree and shrub layer dominated by recruiting canopy species, Erythrophleum chlorostachys, Petalostigma banksii and Terminalia platyptera. Low shrub layer dominated by Dodonaea physocarpa. Mixed tussock grass cover dominated by Aristida ingrata. Thin patch of vegetation continuing to west, with thin strip of 2.3.42a to east and south. Patch joins to 2.5.28a to west, and 2.3.29b in north south direction.
Q208	639480	7912207	Aug-25	46_Photo 1 - 46_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia*	-	Low open woodland		Open woodland of Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora and Grevillea pteridifolia. Moderate grass cover of Aristida ingrata. 2.3.29b to east and northeast.
Q209	639546	7912175	Aug-25	47_Photo 1 - 47_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora, Terminalia platyptera*	-	Low open woodland		Open woodland of Corymbia polycarpa, Melaleuca citrolens, Melaleuca viridiflora and Terminalia platyptera. Moderate grass cover of Aristida ingrata. Continues along creekline to south-west and south-east. 2.3.29b to east and west of creekline.
Q210	639538	7912263	Aug-25	49_Photo 1 - 49_Photo 4	2.3.26b/2.3.50a	2.3.29b	Remnant	Tree	*Corymbia polycarpa, Melaleuca citrolens, Terminalia platyptera*	-	Low woodland		Mixed woodland, dominated by Melaleuca citrolens and Terminalia platyptera with emergent Corymbia polycarpa. Sub-canopy dominated by recruiting canopy species, Petalostigma banksii and Grevillea pteridifolia. Low shrub layer dominated by Dodonaea physocarpa. Sparse tussock grass cover dominated by Aristida ingrata. Patch of vegetation adjoins 2.5.17b to north and 2.5.14a to east.

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q211	639336	7912235	Aug-25	51_Photo 1 - 51_Photo 4	2.3.26b/2.3.50a	2.5.28a	Remnant	Tree	*Acacia torulosa, Melaleuca viridiflora, Melaleuca citrolens, Petalostigma banksii*	-	Low woodland		Mixed woodland, dominated by Acacia torulosa, Melaleuca viridiflora, Melaleuca citrolens and Petalostigma banksii. Low shrub layer dominated by recruiting Acacia torulosa, with associated Petalostigma banksii and Jacksonia odontoclada. Sparse grass cover dominated by Schizachyrium fragile.
Q212	632387	7915781	Aug-25	-	2.5.28a	2.5.28a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora low woodland.
Q213	632104	7916373	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora low woodland.
Q214	631878	7916800	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora low woodland, with sub-dominant Melaleuca citrolens and associated Corymbia polycarpa. Low shrub layer dominated by Dodonaea physocarpa and Carissa lanceolata. Sparse mixed grass cover, dominated by Eragrostis speciosa.
Q215	631620	7916921	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Melaleuca citrolens, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora low woodland, with sub-dominant Melaleuca citrolens and associated Corymbia polycarpa. Low shrub layer dominated by Dodonaea physocarpa and Carissa lanceolata. Sparse mixed grass cover, dominated by Eragrostis speciosa.
Q216	631220	7916895	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora low woodland.
Q217	627592	7916945	Aug-25	71_Photo 1 - 71_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora low woodland. Sparse grass cover, ground cover dominated by leaf litter.
Q218	627450	7916892	Aug-25	72_Photo 1 - 72_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens low open woodland, with associated Melaleuca viridiflora in the sub-canopy. Sparse low tree and shrub layer of recruiting canopy species and Grevillea striata. Dense grass cover dominated by Chrysopogon fallax.
Q219	627227	7916821	Aug-25	74_Photo 1 - 74_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens low open woodland. Moderate grass cover dominated by Chrysopogon fallax.
Q220	626661	7917088	Aug-25	80_Photo 1 - 80_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Corymbia polycarpa, Acacia torulosa, Melaleuca viridiflora*	-	Low woodland		Acacia torulosa woodland, with Melaleuca viridiflora associated with the canopy and sub-canopy and emergent Corymbia polycarpa. Low tree and shrub layer dominated by recruiting canopy species, Dodonaea physocarpa and Carissa lanceolata. Patchy grass cover, dominated by leaf litter.
Q221	627009	7917574	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca sp. (likely nervosa)*	-	Low woodland		Melaleuca sp. (likely nervosa) woodland
Q222	627131	7917765	Aug-25	83_Photo 1 - 83_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Melaleuca viridiflora low woodland. Sparse grass cover, ground cover dominated by leaf litter and bare ground. Patch about 150m wide in northeast to southwest direction.
Q223	627153	7917800	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens low open woodland

Site ID	Easting	Northing	Date	Photos	Mapped RE (V13.1)	Approved RE Map	Remnant Condition Status	Dominant Growth Form	Canopy Tree Species	Canopy height (m)	Structural Formation	Landscape Context	Compiled Notes
Q224	629517	7916923	Aug-25	91_Photo 1 - 91_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora*	-	Low woodland		Dense Melaleuca viridiflora low woodland, with associated Grevillea pteridifolia and Acacia gonoclada. Sparse grass cover, dominated by litter cover.
Q225	629952	7916000	Aug-25	98_Photo 1 - 98_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca citrolens*	-	Low open woodland		Melaleuca citrolens low open woodland, with associated Melaleuca viridiflora and occasional Acacia platycarpa in the subcanopy. Absent shrub layer. Ground cover dominated by Chrysopogon fallax, with patches of dense leaf litter.
Q226	629869	7915910	Aug-25	99_Photo 1 - 99_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca sp. (likely nervosa), Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia, Acacia gonoclada, Petalostigma banksii, Grevillea striata, Terminalia platyptera*	-	Low woodland		Mixed woodland of Melaleuca sp. (likely nervosa), Melaleuca citrolens, Melaleuca viridiflora, Grevillea pteridifolia, Acacia gonoclada, Petalostigma banskii, Grevillea striata and Terminalia platyptera. Grass cover dominated by Chryosopogon fallax and Aristida ingrata.
Q227	629844	7915869	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.17b	Remnant	Tree	*Melaleuca viridiflora, Acacia gonoclada, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora low woodland, with associated Acacia gonoclada and emergent Corymbia polycarpa.
Q228	629750	7915760	Aug-25	101_Photo 1 - 101_Photo 4	2.5.28a	2.5.28a	Remnant	Tree	*Acacia torulosa, Melaleuca viridiflora, Melaleuca sp. (likely nervosa), Corymbia polycarpa*	-	Low woodland		Acacia torulosa woodland, with Melaleuca viridiflora and Melaleuca sp. (likely nervosa) associated with the canopy and sub-canopy and emergent Corymbia polycarpa. Mixed low tree and shrub layer. Patchy grass cover dominated by Aristida ingrata
Q229	628872	7916319	Aug-25	105_Photo 1 - 105_Photo 4	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.28a	Remnant	Tree	*Melaleuca viridiflora, Acacia gonoclada, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora low woodland, with associated Acacia torulosa and emergent Corymbia polycarpa.
Q230	628975	7916443	Aug-25	-	2.5.14a/2.5.17b/2.3.29b/2.3.51	2.5.14a	Remnant	Tree	*Melaleuca viridiflora, Acacia gonoclada, Corymbia polycarpa*	-	Low woodland		Melaleuca viridiflora low woodland, with associated Acacia torulosa and emergent Corymbia polycarpa.

Appendix J. Fauna survey site descriptions



Site Name	Trap 1
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 628554, 7918291
Habitat type	Paperbark woodlands
Associated RE	2.3.29b
Habitat Description	*Melaleuca viridiflora* low woodland on alluvial plains
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Melaleuca viridiflora, Melaleuca citrolens, Grevillea pteridifolia, Corymbia polycarpa*



Site Name	Trap 2
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 627700, 7918497
Habitat type	Paperbark woodlands
Associated RE	2.5.17b
Habitat Description	*Melaleuca citrolens* low open woodland
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Melaleuca citrolens, Grevillea pteridifolia, Grevillea striata*



Site Name	Trap 3
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 628281, 7918935
Habitat type	Eucalypt woodland along creeks
Associated RE	2.3.26a
Habitat Description	*Eucalyptus camaldulensis* woodland with *Melaleuca* spp. and *Acacia* spp.
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Eucalyptus camaldulensis polycarpa, Acacia torulosa, Melaleuca viridiflora*



Site Name	Trap 4
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 628259, 7919083
Habitat type	Paperbark woodland
Associated RE	2.5.17b
Habitat Description	*Melaleuca viridiflora* and *Melaleuca citrolens* woodland, on alluvial plains
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Melaleuca viridiflora*



Site Name	Trap 5
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 639673, 7911752
Habitat type	Paperbark woodlands
Associated RE	2.5.17b
Habitat Description	Mixed woodland, dominated by *Melaleuca citrolens* and *Melaleuca viridiflora* with emergent *Corymbia polycarpa* and *Erythrophleum chlorostachys*
Disturbance Present	Access track, cattle grazing.
Dominant Vegetation Species	Dominant Trees: *Corymbia polycarpa, Erythrophleum chlorostachys, Melaleuca citrolens, Melaleuca viridiflora*



Site Name	Trap 6
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 646771, 7909804
Habitat type	*Corymbia* woodland on sand plains
Associated RE	2.5.18a
Habitat Description	*Corymbia setosa* woodland with *Acacia torulosa*
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Corymbia setosa, Acacia torulosa*



Site Name	Trap 7
Associated Project Site	Esmeralda Graphite Project
Site Location (Zone, Easting, Northing)	54, 629587, 7918822
Habitat type	Annual tussock grassland
Associated RE	2.3.41
Habitat Description	Grassland with emergent *Eucalyptus microtheca* and *Melaleuca citrolens*
Disturbance Present	NA
Dominant Vegetation Species	Dominant Trees: *Eucalyptus microtheca, Melaleuca citrolens*

Appendix K. Flora species list

Family	Scientific name	Common name	EPBC Act status	NC Act status	2024 August						2024 November											2025 February			2025 August			
					VT01	VT02	VT03	VT04	VT05	VT06	VT07	VT08	VT09	VT10	VT11	VT12	VT13	VT14	VT15	VT16	VT17	VT18	VT19	VT20	VT21	VT22	VT23	VT24
Acanthaceae	*Nelsonia campestris*	-	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Amaranthaceae	*Gomphrena flaccida*	Bunched Gomphrena	NL	LC	0	0	x	0	x	0	0	x	x	0	0	x	x	0	0	0	0	0	0	0	0	x	0	0
Apocynaceae	*Carissa lanceolata*	Currant Bush	NL	LC	0	0	0	x	0	x	0	0	0	0	x	0	0	x	x	x	0	0	0	x	0	x	0	0
Apocynaceae	*Cryptostegia grandiflora*	Rubber Vine	WoNS	Restricted Matter	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0
Asteraceae	*Asteraceae sp.*	-	NL	NL	0	0	0	0	0	0	0	x	0	x	0	x	x	x	0	x	0	0	0	0	0	0	0	0
Asteraceae	*Blumea saxatilis*	-	NL	LC	x	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0
Asteraceae	*Centipeda minima*	Spreading Sneezeweed	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Asteraceae	*Centipeda nidiformis*	-	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Bignoniaceae	*Dolichandrone alternifolia*	-	NL	LC	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Boraginaceae	*Heliotropium cunninghamii*	-	NL	LC	0	0	0	x	0	0	0	x	x	0	x	0	0	0	0	0	0	0	0	0	x	0	0	0
Byblidaceae	*Byblis liniflora*	-	NL	SL	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Byttneriaceae	*Waltheria indica*	Waltheria	NL	LC	x	x	x	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	x	0	0	0	0
Caryophyllaceae	*Polycarpaea spirostylis*	Copper Bush	NL	LC	0	0	0	x	x	x	0	0	0	0	x	0	0	0	0	x	0	0	0	0	0	0	0	0
Centrolepidaceae	*Centrolepis banksii*	-	NL	LC	0	0	0	0	x	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Combretaceae	*Terminalia platyptera*	Yellow Wood	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	0
Combretaceae	*Terminalia subacroptera*	-	NL	LC	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Convolvulaceae	*Bonamia media*	Common Bonamia	NL	LC	0	x	0	0	0	0	0	0	0	x	0	0	0	0	0	0	x	0	0	0	0	0	0	0
Convolvulaceae	*Convolvulaceae sp.*	-	NL	NL	0	0	0	0	0	0	0	x	x	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0
Convolvulaceae	*Cuscuta sp.*	Dodder vine	NL	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x
Convolvulaceae	*Evolvulus alsinoides*	Tropical Speedwell	NL	LC	0	x	0	0	0	0	0	0	0	x	0	0	0	x	x	x	x	x	0	0	0	0	0	0
Cyperaceae	*Cyperus difformis*	Rice Sedge	NL	LC	0	0	0	0	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyperaceae	*Cyperus holoschoenus*	Rush-like Sedge	NL	LC	x	0	0	0	0	0	x	x	x	0	0	x	x	0	0	x	0	x	0	0	0	0	0	0
Cyperaceae	*Fimbristylis dichotoma*	Common Fringe-rush	NL	LC	0	0	0	0	0	x	0	0	0	0	x	0	0	0	0	0	0	0	0	0	x	0	0	0
Cyperaceae	*Fuirena incrassata*	-	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cyperaceae	*Rhynchospora heterochaeta*	-	NL	LC	0	0	x	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Euphorbiaceae	*Excoecaria parvifolia*	Gutta-percha	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	0
Fabaceae	*Acacia galioides*	Whorled-leaved Wattle	NL	LC	0	0	0	0	x	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabaceae	*Acacia gonoclada*	-	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Fabaceae	*Acacia holosericea*	Silver-leaved Wattle	NL	LC	0	0	x	0	0	0	x	x	0	0	0	x	x	x	0	0	0	0	x	0	x	x	0	0
Fabaceae	*Acacia leptocarpa*	North Coast Wattle	NL	LC	x	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabaceae	*Acacia platycarpa*	Ghost Wattle	NL	LC	0	x	x	0	x	0	x	0	0	0	0	0	x	x	0	x	0	0	0	0	0	0	0	x
Fabaceae	*Acacia sp.*	-	NL	NL	0	0	x	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Fabaceae	*Acacia torulosa*	Torulosa Wattle	NL	LC	x	x	x	0	0	0	0	0	0	x	0	x	x	x	x	x	x	0	0	0	0	x	x	x
Fabaceae	*Erythrophleum chlorostachys*	Cooktown Ironwood	NL	LC	x	x	0	0	x	0	0	0	0	0	0	0	x	x	x	x	x	0	0	x	0	x	x	x
Fabaceae	*Glycine tomentella*	Woolly Glycine	NL	LC	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabaceae	*Heliodendron basalticum*	-	NL	LC	0	0	0	0	x	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabaceae	*Jacksonia odontoclada*	Jacksonia	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Fabaceae	*Leguminosae sp.*	-	NL	NL	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fabaceae	*Senna artemisioides*	Silver Cassia	NL	LC	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0

Family	Scientific name	Common name	EPBC Act status	NC Act status	2024 August						2024 November											2025 February			2025 August			
					VT01	VT02	VT03	VT04	VT05	VT06	VT07	VT08	VT09	VT10	VT11	VT12	VT13	VT14	VT15	VT16	VT17	VT18	VT19	VT20	VT21	VT22	VT23	VT24
Fabaceae	*Vachellia bidwillii*	Corkwood Wattle	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Hypericaceae	*Hypericum gramineum*	Small St John's Wort	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loranthaceae	*Amyema herbertiana*	-	NL	LC	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Loranthaceae	*Loranthaceae sp.*	-	NL	NL	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malvaceae	*Abelmoschus sp.*	-	NL	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0
Malvaceae	*Hibiscus burtonii*	-	NL	LC	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Malvaceae	*Malvastrum sp.*	-	NL	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x
Marsileaceae	*Marsilea sp.*	-	NL	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Myrtaceae	*Asteromyrtus symphyocarpa*	Liniment Tree	NL	LC	x	0	x	0	0	0	0	0	0	0	0	0	x	0	0	0	0	x	x	0	x	0	0	0
Myrtaceae	*Blakella grandifolia*	Cabbage Gum	NL	LC	0	0	0	0	x	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	x	0	0
Myrtaceae	*Corymbia polycarpa*	Long-fruited Bloodwood	NL	LC	x	x	x	0	x	0	0	x	x	x	0	0	x	x	0	x	0	x	x	x	x	x	x	x
Myrtaceae	*Corymbia setosa*	Rough-leaved Bloodwood	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x
Myrtaceae	*Eucalyptus camaldulensis*	River Red Gum	NL	LC	x	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0
Myrtaceae	*Eucalyptus microtheca*	Coolibah	NL	LC	0	0	0	0	0	x	0	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0
Myrtaceae	*Melaleuca citrolens*	Gulbarn	NL	LC	0	x	x	x	x	x	x	0	x	x	x	0	0	0	0	x	0	0	0	x	0	x	x	0
Myrtaceae	*Melaleuca fluviatilis*	Weeping Tea-tree	NL	LC	x	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0
Myrtaceae	*Melaleuca stenostachya*	Fibre-barked Tea Tree	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x
Myrtaceae	*Melaleuca viridiflora*	Broad-leaved Paperbark	NL	LC	x	x	x	0	x	x	x	x	x	x	x	x	x	x	0	x	0	x	x	x	0	x	x	x
Myrtaceae	*Thryptomene oligandra*	-	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pandanaceae	*Pandanus sp.*	-	NL	NL	x	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0
Picrodendraceae	*Petalostigma banksii*	Smooth-leaved Quinine	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	x	0	x	0	0
Poaceae	*Aristida holathera*	Erect Kerosene Grass	NL	LC	0	x	x	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	x
Poaceae	*Aristida ingrata*	-	NL	LC	0	0	0	0	0	0	x	0	0	x	x	x	x	x	x	x	x	0	0	0	0	x	x	x
Poaceae	*Aristida sp.*	-	NL	NL	0	x	0	x	x	x	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	0	0
Poaceae	*Chloris pumilio*	-	NL	LC	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poaceae	*Chrysopogon fallax*	Golden Beard Grass	NL	LC	0	0	0	0	0	0	x	x	x	0	0	0	0	x	x	x	0	0	x	x	x	x	x	x
Poaceae	*Digitaria sp.*	Summer Grass	NL	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Poaceae	*Ectrosia agrostoides*	-	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Poaceae	*Ectrosia leporina*	Hare's Foot Grass	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Poaceae	*Elytrophorus spicatus*	Spike Grass	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0
Poaceae	*Eragrostis schultzi*	Schultz's Lovegrass	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0
Poaceae	*Eragrostis speciosa*	Handsome Lovegrass	NL	LC	x	0	0	0	x	0	x	x	x	x	0	0	x	x	x	x	0	0	0	0	x	x	x	0
Poaceae	*Eriachne mucronata*	Mountain Wanderrie Grass	NL	LC	x	0	x	x	x	0	0	0	0	0	0	0	x	0	0	0	0	0	0	0	0	0	x	0
Poaceae	*Panicum mindanaense*	-	NL	LC	0	x	0	x	0	0	0	0	x	0	0	x	0	0	0	0	0	0	0	0	0	0	x	x
Poaceae	*Panicum sp.*	-	NL	NL	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Poaceae	*Poaceae sp.*	-	NL	NL	0	0	x	0	0	x	0	0	0	0	0	0	x	0	0	0	0	0	0	0	0	x	0	0
Poaceae	*Schizachyrium crinizonatum*	-	NL	LC	0	0	x	0	0	0	x	x	x	0	x	x	0	x	x	x	0	0	0	0	0	0	0	0
Poaceae	*Schizachyrium fragile*	Firegrass	NL	LC	0	0	x	0	0	0	0	0	0	0	0	x	0	0	x	x	x	0	0	0	0	x	x	x

Family	Scientific name	Common name	EPBC Act status	NC Act status	2024 August						2024 November											2025 February			2025 August			
					VT01	VT02	VT03	VT04	VT05	VT06	VT07	VT08	VT09	VT10	VT11	VT12	VT13	VT14	VT15	VT16	VT17	VT18	VT19	VT20	VT21	VT22	VT23	VT24
Poaceae	*Setaria surgens*	Annual Pigeon Grass	NL	LC	0	x	x	0	0	0	0	0	x	x	0	0	0	x	x	0	0	0	0	0	0	0	x	x
Proteaceae	*Grevillea pteridifolia*	Golden Parrot Tree	NL	LC	x	x	x	x	x	0	x	x	x	x	0	0	x	0	0	0	0	0	0	x	0	x	0	0
Proteaceae	*Grevillea striata*	Beefwood	NL	LC	0	0	x	x	0	0	0	0	x	0	x	0	0	0	0	x	0	x	0	0	0	x	0	0
Rhamnaceae	*Alphitonia pomaderroides*	Soap Bush	NL	LC	x	0	0	0	0	0	0	0	0	0	0	0	x	x	0	0	0	0	0	0	0	0	0	0
Rubiaceae	*Gardenia vilhelmii*	-	NL	LC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	x	0
Rubiaceae	*Paranotis mitrasacmoides*	-	NL	LC	0	0	x	0	0	0	x	0	0	x	x	x	x	x	x	x	0	0	0	0	x	0	0	0
Sapindaceae	*Atalaya hemiglauca*	Whitewood	NL	LC	0	0	0	x	0	x	0	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0
Sapindaceae	*Dodonaea barklyana*	-	NL	LC	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0
Sapindaceae	*Dodonaea physocarpa*	-	NL	LC	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	x	0	0	0	0	0	x	0	0
Scrophulariaceae	*Eremophila longifolia*	Berrigan	NL	LC	0	0	0	x	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	x	0	0

Appendix L. Fauna species list

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Amphibians																					**765**
Cyclorana novaehollandiae	New Holland Frog	LC	NL	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	2
Litoria pallida	Pallid Rocketfrog	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	3
Litoria rubella	Desert Tree Frog	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	2	4
Notaden melanoscaphus	Brown Shovelfoot	LC	NL	0	0	0	0	0	0	27	55	70	37	0	0	0	0	0	1	0	190
Platyplectrum ornatum	Ornate Burrowing Frog	LC	NL	0	0	0	0	0	0	24	27	432	56	0	0	0	0	0	1	1	541
Rhinella marina	Cane Toad	I	NL	4	0	2	0	0	0	0	0	1	0	1	0	2	2	0	0	0	12
Uperoleia littlejohni	Littlejohn's Toadlet	LC	NL	0	0	0	0	0	0	0	0	13	0	0	0	0	0	0	0	0	13
Birds																					**2761**
Acanthagenys rufogularis	Spiny-cheeked Honeyeater	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Struthidea cinerea	Apostlebird	LC	NL	0	0	0	0	0	0	0	0	10	0	0	0	0	0	258	6	15	289
Ardeotis australis	Australasian Bustard	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Anhinga novaehollandiae	Australasian Darter	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	4
Tachybaptus novaehollandiae	Australasian Grebe	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	0	0	10
Gymnorhina tibicen	Australian Magpie	LC	NL	0	0	0	1	0	0	0	0	0	0	0	0	0	0	2	0	2	5
Aegotheles cristatus	Australian Owlet-nightjar	LC	NL	0	0	0	0	0	0	2	0	0	1	0	0	0	0	0	1	2	6
Pelecanus conspicillatus	Australian Pelican	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Corvus coronoides	Australian Raven	LC	NL	5	4	6	1	0	0	2	0	0	0	2	2	0	1	1	0	4	28
Chenonetta jubata	Australian Wood Duck	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	32	0	0	32
Cissomela pectoralis	Banded Honeyeater	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	24	25
Tyto alba	Barn Owl	LC	NL	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	1

Scientific name	Common name	Status		Site																	
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	Total
Milvus migrans	Black Kite	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	3
Melithreptus gularis	Black-chinned Honeyeater	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	1	7	12
Coracina novaehollandiae	Black-faced Cuckoo-shrike	LC	NL	0	3	0	3	1	0	0	1	0	0	0	0	0	0	2	0	5	15
Artamus cinereus	Black-faced Woodswallow	LC	NL	0	0	0	0	0	0	12	0	0	0	0	0	0	0	11	0	8	31
Elseyornis melanops	Black-fronted Dotterel	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	2	0	11	0	0	13
Ephippiorhynchus asiaticus	Black-necked Stork	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Poephila cincta atropygialis	Black-throated Finch (Black-Rumped Subspecies)	LC	NL	0	0	2	0	0	0	0	0	0	16	0	0	18	0	216	5	10	267
Himantopus himantopus	Black-winged Stilt	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Dacelo leachii	Blue-winged Kookaburra	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	1	1	4
Antigone rubicunda	Brolga	LC	NL	2	0	0	0	0	0	2	0	0	0	0	0	0	0	5	2	4	15
Falco berigora	Brown Falcon	LC	NL	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	12

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Accipiter fasciatus	Brown Goshawk	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Lichmera indistincta	Brown Honeyeater	LC	NL	0	0	5	0	0	0	0	0	0	0	0	0	0	0	1	0	2	8
Coturnix ypsilophora	Brown Quail	LC	NL	0	0	0	12	0	0	0	0	0	0	0	0	0	0	0	0	0	12
Burhinus grallarius	Bush Stone-curlew	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	2
Scythrops novaehollandiae	Channel-billed Cuckoo	LC	NL	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	2
Trichoglossus haematodus	Coconut Lorikeet	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
Phaps chalcoptera	Common Bronzewing	LC	NL	4	3	1	0	0	0	3	0	1	0	0	0	0	0	70	0	6	88
Ocyphaps lophotes	Crested Pigeon	LC	NL	0	0	2	0	0	0	0	1	1	0	0	0	0	0	17	0	8	29
Geopelia cuneata	Diamond Dove	LC	NL	0	2	1	0	1	0	5	0	0	0	0	0	9	0	13	2	9	42
Eurystomus orientalis	Dollarbird	LC	NL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1	0	0	2
Taeniopygia bichenovii	Double-barred Finch	LC	NL	0	1	16	1	0	0	0	8	14	15	0	0	2	0	272	0	50	379

Scientific name	Common name	Status		Site																	
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	Total
Artamus cyanopterus	Dusky Woodswallow	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Ardea alba modesta	Eastern Great Egret	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Eudynamys orientalis	Eastern Koel	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Dromaius novaehollandiae	Emu	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Apus pacificus	Fork-tailed Swift	SL	Mi	0	0	0	0	0	0	12	0	100	0	0	0	0	0	0	0	6	118
Eolophus roseicapilla	Galah	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	79	0	8	87
Ptilonorhynchus nuchalis	Great Bowerbird	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Colluricincla harmonica	Grey Shrike-thrush	LC	NL	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	2	5
Anas gracilis	Grey Teal	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	71	0	0	71
Pomatostomus temporalis	Grey-Crowned Babbler	LC	NL	0	0	0	0	0	0	6	0	0	0	0	0	0	0	14	10	24	54
Melanodryas cucullata	Hooded robin	LC	NL	0	2	0	0	0	0	0	1	1	2	0	0	0	0	0	0	1	7

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Chalcites basalis	Horsfield's Bronze Cuckoo	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	2	0	1	4
Microeca fascinans	Jacky Winter	LC	NL	0	1	6	0	0	0	1	0	0	2	0	0	0	0	0	0	7	17
Phalacrocorax sulcirostris	Little Black Cormorant	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
Turnix velox	Little Buttonquail	LC	NL	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	1	0	3
Philemon citreogularis	Little Friarbird	LC	NL	0	1	1	2	2	0	1	0	0	1	0	0	0	0	5	0	30	43
Microcarbo melanoleucos	Little Pied Cormorant	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1
Artamus minor	Little Woodswallow	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4
Grallina cyanoleuca	Magpie-Lark	LC	NL	2	2	3	3	0	0	3	2	3	2	0	0	2	0	23	0	18	63
Vanellus miles	Masked Lapwing	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	20	0	0	20
Artamus personatus	Masked Woodswallow	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	3
Nycticorax caledonicus	Nankeen Night-heron	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Oriolus sagittatus	Olive-backed Oriole	LC	NL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	2
Platycercus adscitus	Pale-headed Rosella	LC	NL	0	0	0	0	0	0	0	0	2	0	0	0	0	0	5	0	0	7
Cacomantis pallidus	Pallid Cuckoo	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Geopelia placida	Peaceful Dove	LC	NL	5	3	2	2	0	0	14	6	22	8	0	0	2	0	128	0	49	241
Cracticus nigrogularis	Pied Butcherbird	LC	NL	2	2	0	2	0	0	2	2	1	0	0	0	0	0	4	0	12	27
Himantopus leucocephalus	Pied Stilt	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0	0	6
Dendrocygna eytoni	Plumed Whistling-duck	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Malurus assimilis	Purple-backed Fairy-wren	LC	NL	7	0	0	0	0	0	0	0	0	6	0	0	4	0	3	0	0	20
Merops ornatus	Rainbow Bee-eater	LC	NL	1	3	4	1	0	0	6	0	2	3	0	0	1	0	24	0	15	60
Trichoglossus moluccanus	Rainbow Lorikeet	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	10	10

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Calyptorhynchus banksii	Red-tailed Black-cockatoo	LC	NL	0	0	0	0	0	0	6	4	0	3	0	0	0	0	25	2	10	50
Aprosmictus erythropterus	Red-winged Parrot	LC	NL	0	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	11	14
Myiagra inquieta	Restless Flycatcher	LC	NL	0	1	0	2	0	0	1	0	2	0	0	0	0	0	12	0	8	26
Platalea regia	Royal Spoonbill	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	0	3
Cincloramphus mathewsi	Rufous Songlark	LC	NL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	5	6
Pachycephala rufiventris	Rufous Whistler	LC	NL	3	4	2	1	2	0	5	4	1	4	0	0	0	0	2	0	16	44
Conopophila rufogularis	Rufous-throated Honeyeater	LC	NL	0	0	0	0	0	0	0	0	2	0	0	0	2	0	4	0	15	23
Todiramphus sanctus	Sacred Kingfisher	LC	NL	0	0	1	0	0	0	1	1	2	2	0	0	0	0	2	1	6	16
Gavicalis virescens	Singing Honeyeater	LC	NL	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	3	5
Ninox boobook	Southern Boobook	LC	NL	1	0	0	0	0	0	2	0	1	1	0	0	0	0	0	0	0	5

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Eurostopodus argus	Spotted Nightjar	LC	NL	1	1	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	4
Lophoictinia isura	Square-tailed Kite	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Geophaps scripta peninsulae	Squatter Pigeon (northern)	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	2
Pardalotus striatus	Striated Pardalote	LC	NL	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2
Coturnix pectoralis	Stubble Quail	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2	4
Cacatua galerita	Sulphur-crested Cockatoo	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	2	4	10
Podargus strigoides	Tawny Frogmouth	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Corvus orru	Torresian Crow	LC	NL	1	0	0	0	0	0	1	2	4	0	1	0	0	2	11	0	5	27
Psitteuteles versicolor	Varied Lorikeet	LC	NL	0	0	0	0	0	0	0	4	0	0	0	0	0	0	1	0	48	53
Daphoenositta chrysoptera	Varied Sittella	LC	NL	0	0	0	0	0	0	0	0	10	0	0	0	0	0	6	5	6	27

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Aquila audax	Wedge-tailed Eagle	LC	NL	1	0	0	0	0	0	1	0	0	0	0	0	1	0	0	1	0	4
Gerygone fusca	Western Gerygone	LC	NL	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0	10	12
Haliastur sphenurus	Whistling Kite	LC	NL	0	3	1	0	0	0	0	0	0	0	0	0	0	0	4	0	3	11
Artamus leucorynchus	White-breasted Woodswallow	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	8	0	0	8
Artamus superciliosus	White-browed Woodswallow	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2
Egretta novaehollandiae	White-faced Heron	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2
Ptilotula penicillata	White-plumed Honeyeater	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Gerygone olivacea	White-throated Gerygone	LC	NL	1	7	6	0	0	0	0	0	0	0	0	0	0	0	1	0	4	19
Melithreptus albogularis	White-throated Honeyeater	LC	NL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	6	7

Scientific name	Common name	Status		Site																Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Hirundapus caudacutus	White-throated Needletail	V	V	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	3
Lalage tricolor	White-winged Triller	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	2	10	13
Rhipidura leucophrys	Wille Wagtail	LC	NL	3	6	1	2	1	0	4	0	2	2	0	0	0	0	10	0	15	46
Ptilotula flavescens	Yellow-tinted Honeyeater	LC	NL	6	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	11	20
Taeniopygia guttata	Zebra Finch	LC	NL	0	0	0	0	0	0	0	0	0	5	0	0	0	0	41	0	0	46
Mammals																					**16**
Bos taurus	Cow	I	NL	0	0	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	5
Canis lupus dingo	Dingo	I	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	0	3
Chaerephon jobensis	Northern Freetail Bat	LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0
Chaerephon jobensis / Saccolaimus flaviventris		LC	NL	0	0	0	0	0	0	A	A	A	A	A	A	A	0	0	0	0	0
Chalinolobus gouldii	Gould's Wattled Bat	LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Chalinolobus gouldii / Ozimops sp.		LC	NL	0	A	A	0	0	0	0	A	A	A	A	A	A	0	0	0	0	0
Chalinolobus nigrogriseus	Hoary Wattled Bat	LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0
Chalinolobus nigrogriseus / Scotorepens sp.		LC	NL	0	0	0	0	0	0	0	A	A	A	A	A	A	0	0	0	0	0
Felis catus	Feral Cat	I	NL	0	1	0	0	0	0	1	0	0	0	1	1	0	0	0	2	0	6
Hydromys chrysogaster	Rakali	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Lagorchestes conspicillatus	Spectacled Hare Wallaby	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Mormopterus lumsdenae	Beccari's Freetail Bat	LC	NL	0	0	U	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Notamacropus agilis	Agile Wallaby	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Nyctophilus sp.		LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0
Ozimops halli	Cape York Free-tailed Bat	LC	NL	0	0	0	0	0	0	0	U	U	U	U	U	0	0	0	0	0	0
Ozimops halli / O. ridei		LC	NL	0	0	0	0	0	0	0	0	A	A	0	0	A	0	0	0	0	0

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Pipistrellus adamsi	Forest pipistrelle	LC	NL	0	0	0	0	0	0	0	0	U	U	0	0	U	0	0	0	0	0
Saccolaimus flaviventris	Yellow-bellied Sheath-tailed Bat	LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0
Scotorepens balstoni	Inland Broad-nosed Bat	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	U	0	0	0	0	0
Scotorepens balstoni / S. greyii		LC	NL	0	0	0	0	0	0	0	0	0	A	A	A	0	0	0	0	0	0
Scotorepens balstoni / S. greyii / C. nigrogriseus		LC	NL	0	0	A	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Scotorepens greyii	Little Broad-nosed Bat	LC	NL	0	U	U	0	0	0	U	U	U	U	U	U	U	0	0	0	0	0
Scotorepens greyii / S. sanborni		LC	NL	0	0	0	0	0	0	A	A	A	A	A	A	A	0	0	0	0	0
Sus scrofa	Feral Pig	I	NL	0	1	1	0	0	0	1	1	1	0	0	0	0	1	0	1	0	7
Reptiles																					**177**
Carlia munda	Shaded-litter Rainbow-skink	LC	NL	2	1	0	0	0	0	2	0	4	1	0	0	0	0	0	0	1	11

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Carlia sp.		LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	2
Cryptoblepharus metallicus	Metallic Snake-eyed Skink	LC	NL	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	2
Cryptoblepharus sp.		LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	4
Ctenotus brevipes	Short-footed Ctenotus	LC	NL	0	4	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	6
Ctenotus spaldingi	Spalding's ctenotus	LC	NL	0	0	0	2	0	0	0	3	0	1	0	0	1	0	0	1	2	10
Ctenotus spaldingi	Straight-browed Ctenotus	LC	NL	0	0	0	2	0	0	0	3	0	1	0	0	1	0	0	1	2	10
Ctenotus spaldingi	Straight-browed spaldingi	LC	NL	0	0	0	2	0	0	0	3	0	1	0	0	1	0	0	1	2	10
Delma tincta	Excitable Delma	LC	NL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Diplodactylus sp.		LC	NL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
Diporiphora australis	Tommy Roundhead	LC	NL	1	0	1	0	0	0	1	3	2	0	0	0	0	0	0	2	7	17
Gehyra dubia	Dubious Dtella	LC	NL	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	4	6

Scientific name	Common name	Status		Site																	Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Heteronotia binoei	Bynoe's gecko	LC	NL	0	0	3	0	0	0	1	0	2	0	0	0	0	0	0	0	1	7
Lerista zonulata	Girdled slider	LC	NL	0	0	2	0	0	0	1	0	1	3	0	0	0	0	0	0	0	7
Lialis burtonis	Burton's legless lizard	LC	NL	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Lophognathus horneri	Horner's Dragon	LC	NL	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0	0	0	3
Menetia greyii	Common-dwarf Skink	LC	NL	1	0	0	1	0	0	2	0	0	0	0	0	0	0	0	0	3	7
Notoscincus ornatus	Ornate Soil-crevice Skink	LC	NL	3	0	15	0	0	0	0	0	9	11	0	0	0	0	0	0	6	44
Pogona barbata	Eastern Bearded Dragon	LC	NL	0	0	0	1	0	0	0	0	1	0	0	0	0	0	0	3	1	6
Proablepharus tenuis	Northern Soil-crevice Skink	LC	NL	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	2	3
Pygopus schraderi	Eastern Hooded Scaly-foot	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1
Strophurus krisalys	Kristin's Spiny-tailed Gecko	LC	NL	0	3	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	4

Scientific name	Common name	Status		Site																Total
		NC Act[1]	EPBC Act[2]	Trap 1A	Trap 2A	Trap 3A	Trap 4A	Site 5A	Site 6A	Trap 1B	Trap 2B	Trap 3B	Trap 4B	Site 5B	Site 6B	Site 7B	Site 8B	Waterbirds	Incidental	Supp.	
Varanus panoptes	Yellow-spotted Monitor	LC	NL	1	1	0	0	0	0	0	2	1	3	2	0	0	0	0	0	1	11
Varanus tristis	Black-tailed Monitor	LC	NL	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	2
Pygmaeascincus timlowi	Dwarf Litter-skink	LC	NL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1
Crustacean																					**5**
Austrothelphusa sp.	Freshwater Crab	LC	NL	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1	3	5

[1] NC Act Conservation status: CE - Critically Endangered, E – Endangered, V – Vulnerable, NT - Near Threatened, LC - Least Concern, SLC - Special Least Concern, NL – Not Listed.
[2] EPBC Act Conservation status: CE - Critically Endangered, E - Endangered, V - Vulnerable, Mi - Migratory, Ma – Marine, NL – Not Listed.
I – Introduced
A - Ambiguous identification, U - Unambiguous identification

Appendix M. Landscape Fragmentation and Connectivity Tool Output

Department of Environment and Science (DES)
Landscape Fragmentation and Connectivity (LFC) Tool version 1.7 LOGFILE
Process started at 17-04-2026 11:36:17 AM
Python version: 3.9.18 [MSC v.1931 64 bit (AMD64)]
Arcpy version: 3.2
Username: Judith

INPUT PARAMETERS
Output Workspace: Q:\Graphinex\Esmeralda Project\01 EIS Technical Studies\02 Terrestrial Ecology\LFA - Connectivity Assessment
Threshold lookup table: tbl_Regional_frag_Local_Thresh
Remnant cover layer: Graphinex\20260417_ESMG_RE_ApprovedREwithGovSurroundingArea_100kmRadius
Cover layer metadata title:None
Remnant cover layer edited: True
Regional buffer extent: 20 kilometres
Local buffer will be: 5 kilometres
Impact layer: Graphinex\Revised Disturbance LImit 29-01-2026
layer projection: GDA2020_MGA_Zone_54
Raster cell resolution for analysis: 10 metres
Edge Width: 50 metres
(The distance from non-remnant landscapes through to the core ecosystem - the edge of remnant ecosystems)
Default projection: \\10.0.0.5\Corporate\2. BUSINESS RESOURCES\6.COMPUTER SOFTWARE\ArcGIS Pro\DP_ENVOFF_LFC_TOOL\lfc_v2p01_arcpro\GDA 2020 Queensland AlbersOFFSET.prj

11:36:17 Checking out the spatial analyst tool - required for LFC

11:36:17 _____BEGINNING LANDSCAPE FRAGMENTATION AND CONNECTIVITY ANALYSIS_____

11:36:17 This tool will categorise the landscape into:
{0: 'non-rem', 1: 'patch', 2: 'edge', 3: 'perforated', 4: 'core (< 100 hectares)', 5: 'core (100-500 hectares)', 6: 'core (> 500 hectares)', 7: 'water'}

11:36:19 Q:\Graphinex\Esmeralda Project\01 EIS Technical Studies\02 Terrestrial Ecology\LFA - Connectivity Assessment\lyr_file does not exist, creating it now.
11:36:19 Copying across impact site feature(s) and calculating area in hectares (AreaHA)
11:36:29 Making a local copy of the impact site
11:37:08 Preparing remnant cover layer for analysis
11:37:26 Created regional scale buffer of 20 kilometres
11:37:38 Created local scale buffer of 5 kilometres
11:38:03 Clipped the remnant cover to the regional buffer extent
11:38:18 Unioned the pre impact remnant layer with the impact site
11:38:35 Attributed the impact area as cleared
11:38:35 Area of RVM Cat B clearing is 2415.84 hectares
11:38:35 SQL selection used is RVM_CAT = 'B' and Landcover = 0 on shapefile Q:\Graphinex\Esmeralda Project\01 EIS Technical Studies\02 Terrestrial Ecology\LFA - Connectivity Assessment\LFC_result.gdb\clip_remcover_post

11:38:35 Categorised the cover attributes in clip_remcover_pre ready for raster conversion
11:39:09 Converted clip_remcover_pre to raster

11:39:12 Categorised the cover attributes in clip_remcover_post ready for raster conversion

11:39:47 Converted clip_remcover_post to raster

11:39:47 Run Landscape fragmentation analysis on the pre impact regional landscape

REGULATED VEGETATION TYPES BEING EXTRACTED FROM LAND COVER

IDENTIFYING OF CORE, PATCH, EDGE AND PERFORATIONS

COMBINING FRAGMENTATION CLASSES

CLASSIFYING CORE FOREST PATCHES BY AREA

COMPOSING FINAL FRAGMENTATION MAP

FINISHED: COMPOSING FINAL FRAGMENTATION MAP

(FRAGMENTATION CALCULATION TIME WAS 20.6 MINUTES)

12:01:19 Run Landscape fragmentation analysis on the post impact regional landscape

REGULATED VEGETATION TYPES BEING EXTRACTED FROM LAND COVER

IDENTIFYING OF CORE, PATCH, EDGE AND PERFORATIONS

COMBINING FRAGMENTATION CLASSES

CLASSIFYING CORE FOREST PATCHES BY AREA

COMPOSING FINAL FRAGMENTATION MAP

FINISHED: COMPOSING FINAL FRAGMENTATION MAP

(FRAGMENTATION CALCULATION TIME WAS 24.2 MINUTES)

12:26:36 Extracting a local subset of lfc_regional_pre_impact

12:27:05 Extracting a local subset of lfc_regional_post_impact

12:27:32 Collating pre and post impact statistics and trigger assessment

12:27:32 Summarising area statistics for: lfc_local_pre_impact
12:27:32 Summarising area statistics for: lfc_local_post_impact
12:27:33 Summarising area statistics for: lfc_regional_pre_impact
12:27:35 Summarising patch count for lfc_local_pre_impact
12:28:02 Summarising patch count for lfc_local_post_impact

Analysing impact on Connectivity Areas

SIGNIFICANCE TEST ONE

The regional total area is 234336.68
The regional extent of core remnant is 233982.55

The regional extent of core remnant is 99.85 percent
This level of regional fragmentation sets a local impact threshold of: 50.0 percent

The table below lists the local impact thresholds for categories of regional core remnant extent:

REGIONAL CORE CATEGORY	LOCAL IMPACT THRESHOLD
< 10	2.0
10 - 30	5.0
30 - 50	10.0
50 - 70	20.0
70 - 90	30.0
>90	50.0

Area of core at the local scale (pre impact): 37710.56
Area of core at the local scale (post impact): 35011.47
Percent change of core at the local scale (post impact): 7.16 percent

SIGNIFICANCE TEST TWO

The number of core remnant areas occurring on the site: 1
The number of core remnant areas remaining on the site post impact: 1
(Only core polygons greater than or equal to 1 hectare are included)

RESULT

12:29:33 This analysis has determined any impact on connectivity areas is NOT significant
(A significant reduction in core remnant at the local scale is False OR a change from core to non-core remnant at the site scale is False)

The significance table has been written to: ..\main_output\lfc_significance_assessment.csv
The local scale summary table has been written to: ..\main_output\lfc_local_scale_summary.csv
The site scale summary table has been written to: ..\main_output\lfc_site_scale_summary.csv
GIS layer files copied into folder \lyr_file within the project folder.
View layers in ArcPro using..\Q:\Graphinex\Esmeralda Project\01 EIS Technical Studies\02 Terrestrial Ecology\LFA - Connectivity Assessment\lyr_file\Connectivity Area Impact Assessment.lyrx

Please scrutinise the output tables and spatial layers to confirm the desktop modelling of connectivity area impact

This analysis used an edited version of the Regulated Vegetation layer.

12:30:13 _____COMPLETED LANDSCAPE FRAGMENTATION AND CONNECTIVITY ANALYSIS_____