Vintage Energy: Vali Field (PL 1125) Ecological Assessment Report

June 2026



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Citation

Smith, G. B. 2026. Vintage Energy Vali Field (PL 1125) Ecological Assessment, Report to ERIAS, GBS Consulting, Adelaide.

Executive Summary

Vintage Energy is seeking to begin gas production from its Vali gas field within the Cooper Basin, in the Shire of Bulloo in Queensland. Vintage Energy and their joint venture (JV) partners are seeking to partially convert the existing Authority to Prospect (ATP) 2021(environmental authority BRPG005)) into a Petroleum Lease (PL) 1125 (Vali Gas Field) in the Cooper Basin for conventional gas production.

ERIAS, on behalf of Vintage Energy, has prepared an Environmental Authority (EA) application for the Vali Field and submitted this to the Queensland Department of Environment, Science and Innovation (DESI). This EA application is the first step in procuring a Petroleum Lease for the Vali field (PL 1125) which has an area of 4542.41 ha. DESI has provided feedback on the EA application with several key issues relating to the ecological assessment to be resolved prior to a re-submission of the application including ecological. GBS Consulting was engaged to undertake a desktop assessment followed by a field survey of PL 1125 of groundwater dependant ecosystems, surface water values and protected flora and fauna followed by a significant residual impact (SRI) assessment for PEM listed within Schedule 2 of the Environmental Offsets Regulation 2014 to contribute to a re-submission of the EA application.

The Vali gas field infrastructure that has already been constructed includes the Vali-1, Vali-2 and Vali- 3 wells and associated flowlines and infrastructure which is the disturbance footprint assessed within this report. It is proposed to construct two more wells, Vali 4 and Vali 5 and associated infrastructure. The area of the disturbance footprint for all elements of the project including infrastructure constructed and that which is proposed is 41.99 hectares.

PL 1125 consists of 100 % remnant vegetation (DESI 2024c) and contains six regional ecosystems (RE) which are mapped within the Queensland Globe website and were ground-truthed during the field survey. The are as follows:

- 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes;
- 5.6.4 *Atalaya hemiglauca* +/- *Acacia aneura* +/- *Acacia* spp. +/- *Corymbia terminalis* low open woodland on reticulate sand dunes;
- 5.6.5 Variable sparse to open-herbland or *Triodia basedowii* hummock grassland on dune flanks, crests and sandy interdunes;
- 5.6.8 *Zygochloa paradoxa* and/or *Crotalaria eremaea* +/- *Triodia basedowii* open tussock grassland and herbland on mobile crests and slopes of sand dunes;
- 5.9.3 *Astrebla* spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments; and
- 5.9.4 *Aristida contorta* sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover.

Desktop survey results relevant to the presence of wetlands and groundwater

dependant ecosystems within PL 1125 included the following; eight Lacustrine wetlands, no palustrine wetlands, no named waterways but some minor drainage lines, potential for riverine wetlands of low significance in 3,399.59 ha (74.84%) and very high in 1,142.83 ha (25.16%), non-riverine wetlands of medium significance in 652.71 ha (14.37%) and no springs present within PL 1125. The areas designated as very high significance for riverine wetlands is based on the potential presence of '*Permanent water holes' that 'never go dry over 100+ year timeframes and are critically important as refugia for aquatic species in arid landscapes* (DESI 2024a). No permanent waterholes or substantial drainage lines which would support them were observed during the field survey and none are identified for PL 1125 in any of the desktop sources reviewed. One vegetation community (RE 5.3.22) was identified as a groundwater dependant ecosystem within a wetland and this is identified as a regulated vegetation community.

The EPBC protected matters searches (PMS) did not identify any threatened ecological communities (TECs) listed under the EPBC Act 1999 as potentially present within the desktop survey 50 km buffer zone or within a 100 km buffer zone (DCCEEW 2024); Appendix 1 and Appendix 2). The PMS results for PL 1125 with a 50 km buffer identified three listed flora species and 13 EPBC listed fauna species (11 bird and two mammals) which are considered threatened (DCCEEW 2024a). Of these two bird species are listed as Critically Endangered (CR); three bird species and one plant species are listed as Endangered (E), and the remaining 11 species are listed as Vulnerable (V) (Appendix 1). An additional five species of birds listed as Migratory under the EPBC Act were also identified in the results (Appendix 1). When the buffer radius from PL 1125 was extended from 50 km to 100 km an additional six species, two birds, two mammals and two plants were included in the results (Appendix 2).

A total of 131 flora species were recorded within PL 1125 during the field survey. The only introduced species recorded was *Citrullus amarus* (Paddy Melon) which was recorded at a number of locations, primarily in dunes. No flora species listed under the EPBC Act or state legislation were recorded during the survey. A total of 38 species of birds were recorded during the field survey none of which are listed species. A number are boom and bust species, such as Budgerigar, Flock Bronzewing, and Little Buttonquail were common during the survey which reflects the good environmental conditions at the time.

The Significant Residual Impact Assessment identified the following residual impacts:

- The disturbance footprint results in a residual impact to 8.69 ha of RE 5.3.22 which lies within mapped wetlands but is not endangered or of concern. This is identified as a significant residual impact to RE 5.3.22 under Section 2.1 of the Significant Residual Impact Guideline due to Criteria 1 and Criteria 2 of being exceeded.
- A residual loss of 21.78 hectares of potential habitat (8.69 ha of RE 5.3.22 and 13.09 ha of RE 5.9.3 / 5.9.4) for the EPBC Critically Endangered Plains-wanderer is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the

SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.

- A residual loss of 8.69 ha of habitat (RE 5.3.22) for EPBC Endangered species Curlew Sandpiper, Common Greenshank and Australian Painted Snipe is identified. The likelihood of occurrence of these species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.
- A residual loss of 20.21 hectares of potential habitat (8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) and 1.41 ha of RE 5.6.4) for the EPBC Endangered Major Mitchell's Cockatoo (eastern) is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of potential habitat (RE 5.3.22) for EPBC Vulnerable species Sharp-tailed Sandpiper and Latham's Snipe is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 21.78 hectares of potential habitat (8.69 ha of RE 5.3.22 and 13.09 ha of RE 5.9.3 / 5.9.4) for the EPBC Vulnerable Blue-winged Parrot is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 11.41 ha of potential habitat (RE 5.6.4) for the EPBC: Vulnerable Southern Whiteface that could result in a localised impact to the species. The likelihood of an impact to Southern Whiteface is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the impact was not significant as the impact is unlikely to:
    - lead to a long-term decrease in the size of a local population,
    - reduce the extent of occurrence of the species; or

- fragment an existing population.

Using the DCCEEW risk assessment framework for threatened species within national recovery plans the risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.

- A residual loss of 20.21 hectares of potential habitat (8.80 ha of RE 5.6.5 / RE 5.6.8 combined and 11.41 ha of RE 5.6.4) for the EPBC Vulnerable Dusky Hopping-mouse. The likelihood of an impact to Dusky Hopping-mouse is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals are adversely affected but no effect at population level'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the impact was not significant as the impact is unlikely to:
  - lead to a long-term decrease in the size of a local population,
  - reduce the extent of occurrence of the species; or
  - fragment an existing population.

  Using the DCCEEW risk assessment framework for threatened species within national recovery plans the risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.
- A residual loss of 11.41 ha of potential habitat (RE 5.6.4) for the EPBC Vulnerable Painted Honeyeater is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of potential habitat (RE 5.3.2) for the NPA Vulnerable Yellow Chat is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 20.1 ha of potential habitat (8.69 ha of RE 5.3.22 and 11.41 ha of RE 5.6.4) for the EPBC Vulnerable *Sclerolaena walkeri* is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of habitat (RE 5.3.22) for four EPBC Migratory species; Common Sandpiper, Pectoral Sandpiper, Marsh Sandpiper and Red-necked Stint. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the

loss of habitat was not a significant impact.

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1. Introduction

1.1. Background

Vintage Energy Limited (Vintage Energy), and its joint venture (JV) partners Metgasco Limited (Metgasco) and Bridgeport (Cooper Basin), are the joint licence holders of Authority to Prospect (ATP) 2021 within the Cooper Basin, in the Shire of Bulloo in Queensland, in which the Vali gas field is located. Currently Environmental Authority BRPG005 authorises Non-Scheduled Petroleum Activity - Authority to Prospect (ATP) on ATP2021 (located on Lot plan 450SP274333). Vintage Energy and their joint venture (JV) partners are seeking to partially convert the existing Authority to Prospect (ATP) 2021 into a Petroleum Lease (PL) 1125 (Vali Gas Field) in the Cooper Basin for conventional gas production. PL 1125 is 4542.41 ha and currently includes the Vali-1, Vali-2 and Vali- 3 wells and associated flowlines (authorised under ATP 2021 and Vali pipeline and Vali processing facility, permitted under Pipeline Licence (PPL) 2070 (environmental authority P-EA-100271494) (Table 1). All this infrastructure has already been constructed. Two additional wells, Vali 4 and Vali 5 are proposed to be constructed along with tracks and other associated infrastructure (Table 1).

Table 1. Infrastructure elements for the Vali Field project, status of the disturbance and disturbance areas for each.

Infrastructure Element	Disturbance status	Area (ha)
Vali-3 pad	Existing	5.63
Vali-1 pad	Existing	7.16
Vali-2 pad	Existing	2.68
Flowline (Vali-1 pad to Odin border)	Existing	10.04
Access track (at Vali-2)	Existing	0.29
Pipeline corridor from Vali-2 to Vali-1	Existing	2.58
Pipeline corridor from Vali-3 to Vali-1	Existing	0.72
Vali-2 borrow pit	Existing	1.22
Access track (from existing road to Vali-2 pad)	Existing	1.98
Vali-2 access track	Existing	0.23
Vali-3 access track	Existing	0.49
Kudnari bore	Existing	0.60
Vali-4 pad	Proposed	3.11
Vali-5 pad	Proposed	3.11
Vali-4 access track from Vali-1	Proposed	1.79
Vali-5 access track	Proposed	0.36
Total		**41.99**

In order to procure a Petroleum Lease for the Vali field (PL 1125) ERIAS, on behalf of Vintage Energy, prepared an Environmental Authority (EA) application for the Vali Field and submitted this to the Queensland Department of Environment, Science and Innovation (DESI). Several key issues in the application were identified by the DESI in

their feedback to the EA application including issues relating to ecological description on PL 1125 and impact assessment. The identified issues are as follows:

- Section 125(1)(l)(A) of the EP Act requires the application material to provide a description of the environmental values likely to be affected by each relevant activity;
- The application provides general information about waterways present within the Cooper Creek Basin, however, does not provide site-specific information on the watercourses within PL 1125, nor their associated surface water environmental values and water quality objectives as per section 9 of the EP Act and the Environmental Protection (Water and Wetland Biodiversity) Policy 2019.
- The application states that there are no groundwater dependant ecosystems (GDE) present within ATP2021. However, Queensland Globe mapping indicates PL 1125 to have 81-100% Derived GDE - moderate confidence. It is not clear in the application material whether there was any ground-truthing undertaken to confirm there are no GDE values on the tenure.
- The application does not seem to identify a number of environmental values for protected flora and fauna species. The application states, "No federal or state listed flora and fauna species were recorded on site during the ecological field surveys, and an assessment of potential impacts to Environment Protection and Biodiversity Conservation Act 1999 (EPBC)-listed species determined no referral under the EPBC Act is required for the Project." Protected wildlife habitat may not be mapped directly over the project area and requires ground-truthing to determine its presence. However, neither the referenced ecological field survey report nor assessment of EPBC species was provided.

These and other issues are required by DESI to be addressed prior to a re-submission of the application. The tasks required to address the identified issues include a desktop assessment to be completed prior to a site survey being conducted.

1.2. Objectives of this study

This report addresses the requirements identified in the PL 1125 EA application feedback from DESI. The specific objectives of the desktop assessment are to:

- Complete a desktop investigation on the presence or absence of Groundwater dependent ecosystems (GDEs) within PL 1125 and provide a clear explanation of the methodology utilised.
- Complete a comprehensive desktop assessment for the tenure area with a buffer distance from the tenure set to 100 km which includes the Atlas of Living Australia, the Birdlife Atlas, Wildnet, Species Profile and Threats (SPRAT) databases and associated Recovery Plans.
- The Vegetation management regional ecosystem map data under the

Vegetation Management Act 1999.

- The Queensland Wetland Data mapping.
- Watercourse and drainage features mapping in QGlobe.
- The DESI threatened species search tool.
- An EPBC Act Protected Matters Searches for PL 1125with a 50 km buffer and a 100 km buffer.
- Provide results of the desktop study, including a discussion on the likely presence or absence of each protected matter/species identified in the search.
- Undertake ground truthing to confirm the desktop investigation results for vegetation communities and GDEs in PL 1125.
- Documentation of any temporary or permanent waterbodies or watercourses found within the PL 1125 tenure.
- Undertake infield searches for listed species identified in the desktop study.

1.3. Location and Site Description

The Vali field is located within the Cooper-Eromanga Basin in southwest Queensland approximately 1,100 km west of Brisbane, Queensland and approximately 80 km east of the Moomba gas processing facility operated by Santos in South Australia. The nearest population centre is the Innamincka township, approximately 35 km west of the Vali Field in South Australia, which has a population of 44 (ABS, 2020). The closest Queensland town is Thargomindah, which has a population of 270 people (ABS, 2020) and is located approximately 250 km east of the site.

The Vali Field sits within PL 1125 (Figure 1) located within the Channel Country biogeographic region on Crown Land under a rolling term Pastoral Holding lease (Lot plan 450SP274333) on native pastures currently operated for cattle grazing by the Nappamerry (or Nappa Merrie) and Orientos cattle stations. Access to the site is from the Moomba Road and off-road dirt tracks. The Cooper-Eromanga Basin is Australia's largest onshore oil and gas exploration and production area. As such, the existing commercial interest in the land to date is largely related to oil and gas operations, with numerous explorations and producing wells and facilities existing in the area. Recreation and tourism in the area is predominantly focussed on the natural and cultural values of the Innamincka area across the border in South Australia, including the Burke and Wills Dig Tree, the Malkumba- Coongie Lakes National Park, the Cooper Creek and the Innamincka Regional Reserve.

The survey area has limited topographical relief and is dominated by undulating plains dissected by low sand dunes and shallow ephemeral wetlands. The area has been used for pastoral activities for more than 100 years.

1.4. Climate and Rainfall

The Moomba Airport weather station is approximately 80 km west and is the closest to the survey area as Innamincka does not have a weather station. It has weather records for the previous 28 years. Moomba has an annual mean rainfall of 173.9 mm with the highest mean monthly rainfall occurring in February. Rainfall is however highly erratic and strongly influenced by heavy episodic rainfall events storm and extensive periods of little to no rainfall. Moomba experiences a mean maximum temperature of 38.9 °C in January, with overnight mean minimum temperatures of 24.9 °C. July is the coolest month with a mean maximum and minimum temperatures with 19.8 °C and 6.4 °C respectively.

1.5. Bioregions

PL 1125 is located in the Channel Country IBRA Bioregion and Simpson - Strzelecki Dunefields and Sturt Stony Desert subregions. The Channel Country Bioregion is characterised by vast braided, flood and alluvial plains surrounded by gravel or gibber plains, dunefields and low ranges. The Simpson - Strzelecki Dunefields Bioregion is characterised by dunes with variable interdune corridors and plains; clay pans and ephemeral drainage lines. Sturt Stony Desert subregions is characterised by stoney gibber plains

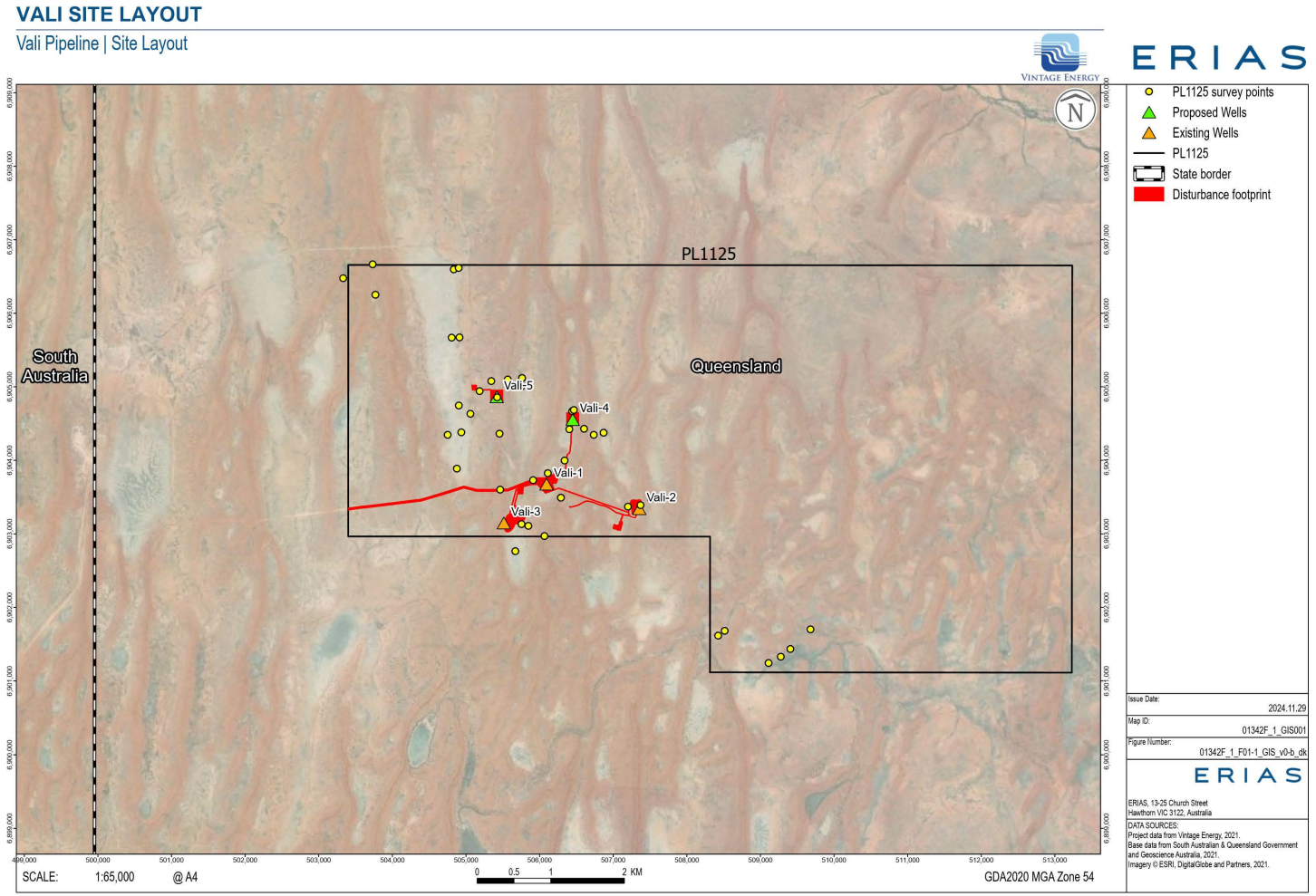


Figure 1 – Location of the survey area

2. Methodology

2.1. Desktop Assessment

The desktop assessment was conducted using the following sources:

- Queensland Government, Department of Environment, Science and Innovation, Environmental Reports accessed online PL 1125 (17 June 2024) for PL 1125 at https://www.qld.gov.au/environment/management/environmental/environmental-reports-online:
  - Matters of State Environmental Significance Report (Appendix 1);
  - Biodiversity and Conservation Values, Biodiversity Planning Assessments and Aquatic Conservation Assessments Report (Appendix 2);
  - Regional Ecosystems Report (Appendix 3);
  - WildNet Species Records Report (Appendix 4);
  - WildNet Conservation Significant Species Report (Appendix 5).
- Environmental Protection and Biodiversity Act (EPBC) Protected Matters Search Tool (PMST) for potentially occurring EPBC listed species and Threatened Ecological Communities (TECs) occurring within the survey area and a 50 km (Appendix 6) and a 100 km buffer (Appendix 7).
- QGlobe web-based Tool.
- Atlas of Living Australia (ALA) Area Records Report for PL 1125 (Appendix 8).
- Atlas of Living Australia (ALA) Area records for the survey area with a 50 km buffer and a 100 km buffer which include Birdlife Australia records, Queensland WildNet records and records from many other sources (provided under separate cover).

2.1.1. Biodiversity Planning Assessment

The Queensland Department of Environment, Science and Innovation (DESI) uses Biodiversity Planning Assessments (BPAs) to attribute biodiversity significance on a bioregional scale (DESI 2024a). A BPA involves the integration of ecological criteria using the Biodiversity Assessment and Mapping Methodology (BAMM) and is developed using: 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 (DESI 2024a).

The BAMM methodology identifying areas with various levels of biodiversity significance such as 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 which are important for the maintenance of biodiversity or ecological processes. 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.

2.1.2. Surface Water Value

Conservation values for wetlands are determined in Queensland using DESI's *Aquatic Biodiversity Assessment and Mapping Method* (AquaBAMM). 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 (DESI 2024a).

The AquaBAMM, assesses eight criteria to derive an overall conservation value of a wetland. The criteria have a variable number of indicators and measures and may be primarily diagnostic (quantitative) or primarily expert opinion (qualitative) in nature (similar to the Biodiversity Assessment and Mapping Methodology). These are, are:1

- Criteria 1: Naturalness (aquatic),
- Criteria 2: Naturalness (catchment),
- Criteria 3: Diversity and richness,
- Criteria 4: Threatened species and ecosystems,
- Criteria 5: Priority species and ecosystems,
- Criteria 6: Special features,
- Criteria 7: Connectivity and
- Criteria 8: Representativeness.

The criteria are described in Appendix 2.

Results of this assessment can be accessed by generating a *Biodiversity and Conservation Values: Biodiversity Planning Assessments and Aquatic Conservation*

Assessments report via the Online Environmental Reports web page (https://www.qld.gov.au/environment/management/environmental/environmental-reports-online).

Wetlands are categorised as either Riverine Wetlands (including fringing riverine wetlands) or Non-riverine Wetlands. Riverine wetlands are defined as 'all wetlands and deepwater habitats within an open non-vegetated channel' which are 'naturally or artificially created, periodically or continuously contain moving water, or connecting two bodies of standing water' (DESI 2024a). Non-riverine Wetlands include both lacustrine and palustrine wetlands. Lacustrine wetlands are lakes which are typically larger than 8 hectares situated in a topographic depression or damned river channel and lack vegetation cover. Palustrine wetlands are generally non-tidal swamps and marshes which are dominated by vegetation (greater than 30 % cover) or if lacking vegetation they are smaller than 8 hectares.

When applied to riverine wetlands AquaBAMM uses a discrete spatial unit termed a subsection. 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. In an Aquatic Conservation Assessment (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 (DESI 2024a).

2.1.3. Vegetation assessment

The desktop assessment was conducted by generating and reviewing the reports listed in 2.1 above and producing vegetation maps in QGlobe.

In Queensland, vegetation has been mapped across the state by the Queensland Herbarium using broad vegetation groups (BVGs) and regional ecosystems (vegetation communities) which communicate higher-level ecological groupings (DESI 2024c). Broad vegetation groups are the first aggregation in the hierarchical classification and are determined on the basis of vegetation structure (cover, height and growth form) of the ecologically dominant layer. BVGs are ordered broadly to reflect the vegetation structure along a mesic gradient from wet closed forests (rainforests) of the coast and northeast to the arid spinifex hummock grasslands of the south west of Queensland but may also consider other factors such as water salinity and landscape situation (Neldner et al 2023).

Regional ecosystems (RE) are vegetation communities in a bioregion that are consistently associated with particular combinations of geology, landform and soil (DESI 2024c). Hierarchically, regional ecosystems sit within broad vegetation groups. Regional ecosystem descriptions are contained in the Regional Ecosystem Description Database (REDD) at (https://www.qld.gov.au/environment/management/environmental/environmental-reports-online) and have been mapped by the Queensland Herbarium. The classification system uses floristic, structural functional, biogeographic and landscape attributes to determine broad vegetation groups (DESI 2024c). Descriptions are

compiled from a broad range of information sources including vegetation, land system and geology survey and mapping and detailed vegetation site data.

Vegetation communities present within PL 1125 were identified from the Regional Ecosystems; Biodiversity Status report via the DESI Online Environmental Reports web page. These included vegetation associations associated with wetlands as well as non-wetland communities.

2.1.4. Groundwater dependant ecosystems

The Groundwater Dependant Ecosystems: EIS information guideline (DESI 2024e) identified three types of GDEs as follows:

- Aquifer and cave ecosystems;
- Ecosystems dependent on the surface expression of groundwater; and
- Ecosystems dependent on the subsurface presence of groundwater.

Aquifer and cave ecosystems include subterranean wetlands such as karst aquifer systems, fractured rock, or saturated sedimentary rock that may host stygofauna, troglofauna or other biota (Table 2).

Ecosystems dependent on the surface expression of groundwater include typical wetland systems such as wetlands, lakes, seeps, springs, mound springs, river baseflow, coastal areas and estuaries and marine ecosystems where pressure brings groundwater above the surface of rocks, soils or sediments (Table 2). Palustrine, lacustrine and riverine water bodies are included in this category.

Ecosystems dependent on the subsurface presence of groundwater where groundwater is not visible on the surface but the water table is permanently or episodically within the root zone of plants (Table 2). These include some regional ecosystems and riverine wetland systems.

Table 2. Types and subtypes of GDEs

Type	**Subtype**
Aquifer and cave ecosystems	Wetland system (subterranean wetland–aquifer)
	Wetland system (subterranean wetland–cave)
Ecosystems dependent on the surface expression of groundwater	Wetland system (lacustrine)
	Wetland system (palustrine)
	Wetland system (riverine waterbody)
	Wetland system (estuarine)
	Wetland system (near-shore marine)
Ecosystems dependent on the subsurface presence of groundwater	Regional ecosystem
	Wetland system (riverine regional ecosystem)

A desktop assessment to obtain information about potential GDEs in the impact area was undertaken using the following sources:

- Aquatic conservation assessments (ACA) and AquaBAMM
- Biodiversity planning assessments
- National groundwater dependent ecosystems atlas
- Queensland groundwater dependent ecosystem mapping
- Queensland springs database
- Regional ecosystem mapping
- WetlandMaps.

GDEs identified within the PL 1125 were designated as one of the subtypes listed in Table 2 above and the regional ecosystem was identified as described in the regional ecosystem description database (DESI 2024). The GDE's attributes and environmental values were described as far as possible from information available in sources used. The habitat value of each GDE for wildlife and threatened or listed wildlife was identified. GDEs are also assessed to determine whether they are matters of state environmental significance and/or matters of national environmental significance.

2.1.5. Protected flora and fauna species

The desktop assessment of listed species used relevant data obtained from the sources listed in 2.1 above.

The collated desktop information was used to conduct an assessment of the 'likelihood of occurrence' within PL 1125 for protected flora, fauna and ecological communities. The criteria used to define 'likelihood of occurrence' are outlined in Table 3. Some ecological notes are provided for species listed as Highly Likely/Known or Likely to occur.

An assessment of the likelihood of occurrence within PL 1125 of flora and fauna species listed as threatened under the *EPBC Act 1999* and the *Queensland NC Act 1992*, migratory fauna species and Threatened Ecological Communities (TECs).

Table 3. Criteria Used to Define Likelihood of Occurrence in PL 1125.

Likelihood of Occurrence	Criteria
Highly Likely/Known	Recorded in the last 10 years, the preferred habitat is present and falls within the known range of the species distribution and/or the species was recorded as part of field surveys.
Likely	Recorded within the desktop study area (with a 50km buffer) within the last 20 years, the area falls within the known distribution of the species and the area provides habitat or feeding resources for the species.
Possible	Records that are 20 – 50 years old for the desktop study area (with a 100 km buffer), the area falls inside the known distribution of the species, but the area provides limited habitat or feeding resources for the species.
Unlikely	Either no records or records that are older than 50 years within the study area (with a 100 km buffer); the area provides no or very limited preferred habitat or feeding resources.

2.2. Field Survey

The field survey was composed of the following elements:

- Undertake infield searches for listed species and protected matters including assessment of potential habitats for relevant listed species (as determined by the desktop assessment).
- Documentation of any temporary or permanent waterbodies or watercourses found within the PL 1125 tenure, and
- Ground truth vegetation communities mapped for PL 1125.

The ecological assessment consists of:

- Targeted searches for species listed under the EPBC Act 1999 and NC Act 1992 identified as Highly Likely or Likely to occur in PL 1125 by the desktop assessment.
- Documentation of habitats for target listed species where present.
- Vegetation rapid assessment surveys.
- Structured bird surveys.
- Opportunistic recording all fauna species observed.

These methods are described further below.

2.2.1. Flora

Flora was surveyed using a rapid assessment approach which:

- identified dominant species,
- compiled a list of plants within an approximate area of 30 x 30 m,
- searched for the presence of listed species, and
- determined the regional ecosystem at the survey location.

Plant species were identified in the field wherever possible. Where plants could not be identified, detailed photographs were taken for identification at a later stage where necessary. Location details were recorded and GPS points logged at each site. Opportunistic fauna observations were also recorded.

2.2.2. Fauna surveys and opportunistic observations

Fauna surveys were undertaken adjacent to Vali field infrastructure and throughout accessible areas of PL 1125 to cover the range of regional ecosystems present (Figure 1). This included ecologically significant areas observed such as areas identified in the desktop survey as potentially having high fauna diversity (for example RE 5.6.4, DESI 2024b) as well as surface water bodies and ecotones where two regional ecosystems meet. Surveys consisted of observational surveys that systematically searched the target area for fauna. The time the survey commenced was recorded and each species was recorded as either heard or with the number seen. Opportunistic observations were also recorded with the species, number and location (eastings and northings) noted.

2.2.3. Target searches for listed species

The desktop assessment identified a range of listed species including EPBC Act 1999 and NC Act 1992 threatened and migratory fauna and flora as highly likely/Known or Likely to occur in the PL 1125. Targeted searches for these species were conducted in PL 1125 within appropriate habitats identified in the desktop assessment. Observations of target species were recorded including the number observed and location. Preferred habitats for these species were also recorded when observed.

2.3. Significant residual impact (SRI) assessment

Feedback provided by DESI on the EA Application included the following requirement: *'Using the Queensland Environmental Offsets Policy Significant Residual Impact Guideline, undertake a significant residual impact (SRI) assessment for Prescribed Environmental Matters (PEMs) listed within Schedule 2 of the Environmental Offsets Regulation 2014, including, but not limited to:*

- *Matters of State Environmental Significance (MSES) Protected Wildlife habitat for species identified as 'confirmed, likely or possible'.*
- *'Connectivity Area' MSES trigger, by providing the results from the*

Environmental Offset Landscape Connectivity Assessment Tool.

- *MSES - Regulated vegetation within the defined distance of the defining banks of a watercourse. Information should address how this area was calculated in relation to defined distance of a watercourse.*
- *MSES - Regulated vegetation within the defined distance of the defining banks of a drainage line (drainage line mapped under the Water Act 2000).'*

A significant residual impact is described as: *'an adverse impact, whether direct or indirect, of a prescribed activity on all or part of a prescribed environmental matter that:*

a) remains, or will or is likely to remain, (whether temporarily or permanently) despite on-site avoidance and mitigation measures for the prescribed activity; and

b) is, or will or is likely to be, significant.' (DEHP 2014).

A significant residual impact (SRI) assessment was conducted in accordance with the Queensland Environmental Offsets Policy: Significant Residual Impact Guideline (2014) with consideration of Prescribed Environmental Matters (PEMs) identified above as well as other Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) identified in the Environmental Offsets Regulation as considered in the SRI process. The SRI Guideline provides guidance and criteria for assessment of the following:

- Regulated vegetation,
- Connectivity areas,
- Wetlands and Watercourses,
- Protected wildlife habitat for endangered and vulnerable wildlife (including essential habitat),
- Koala habitat in South East Queensland, and
- Protected areas.

The Prescribed Environmental Matters (PEMs) are provided in the identified in the *Streamlined model conditions for petroleum activities* under Biodiversity Condition 10, Table 2. Thes largely overlap with the categories contained within the SRI Guidelines but with some additions.

The project disturbance footprint used for the SRI assessment is cumulative and includes areas already disturbed and areas proposed to be disturbed. The total cumulative disturbance footprint is provided as a whole and is also broken down into the Regional Ecosystems present within the disturbance area.

Matters of National Environmental Significance include the following as defined by relevant sections of the EPBC Act 1999:

- a declared World Heritage property;
- a National Heritage place;
- a declared Ramsar wetland;

- a threatened species;
- a threatened ecological community;
- a migratory species;
- a Commonwealth marine area;
- the Great Barrier Reef Marine Park;
- a water resource.

In Queensland matters of state environmental significance as defined in Schedule 2 of the Environmental Offsets Regulation 2014 (DES 2024) include:

- 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.

The SRI guideline provides a test and or criteria for determining a significant impact for each of the MSES categories listed above with MNES categories incorporated into the assessment in relevant sections (DEHP 2014).

3. Desktop Survey Results

3.1. Regional Ecosystems (RE) - Vegetations communities

PL 1125 consists of 100 % remnant vegetation (Figure 2, DESI 2024c). Six Regional Ecosystems (RE) (vegetation communities) have been mapped for PL 1125 (QGlobe 2024) as follows:

- RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes; 945.22 ha (20.81 % of PL 1125). This RE is contained within Broad Vegetation Group 34a. Lacustrine wetlands. Lakes, ephemeral to permanent. Includes fringing woodlands and sedgelands.
- RE 5.6.4 *Atalaya hemiglauca* +/- *Acacia aneura* +/- *Acacia* spp. +/- *Corymbia terminalis* low open woodland on reticulate sand dunes; 66.91 ha (1.47 % of PL 1125). This RE is contained within Broad Vegetation Group 23a Woodlands to low woodlands dominated by *Acacia aneura* on red earth plains or sandplains (soft mulga).
- RE 5.6.5 Variable sparse to open-herbland or *Triodia basedowii* hummock grassland on dune flanks, crests and sandy interdunes; 2,011.35 ha (44.28 % of PL 1125). This RE is contained within Broad Vegetation Group 33a Hummock grasslands dominated by *Triodia basedowii* (hard spinifex) or *Zygochloa paradoxa* (sandhill canegrass) associations on dunefields or sandplains.
- RE 5.6.8 *Zygochloa paradoxa* and/or *Crotalaria eremaea* +/- *Triodia basedowii* open tussock grassland and herbland on mobile crests and slopes of sand dunes; 140.19 ha (3.09 % of PL 1125). This RE is contained within Broad Vegetation Group 33a Hummock grasslands dominated by *Triodia basedowii* (hard spinifex) or *Zygochloa paradoxa* (sandhill canegrass) associations on dunefields or sandplains.
- RE 5.9.3 *Astrebla* spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments; 818.97 ha (18.03 % of PL 1125). This RE is contained within Broad Vegetation Group 30b Tussock grasslands dominated by *Astrebla* spp. (mitchell grass) or *Dichanthium* spp. (bluegrass) often with *Iseilema* spp. on undulating downs or clay plains.
- RE 5.9.4 *Aristida contorta* sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover. 559.78 ha (12.32 % of PL 1125). This RE is contained within Broad Vegetation Group 31b Short grass / forb associations on stony downs.

Mapping of the broad vegetation groups (BVGs) is provided in Figure 2 as the regional ecosystems are intermixed at a scale that makes mapping difficult. The regional ecosystems are described in more detail in Appendix 9.

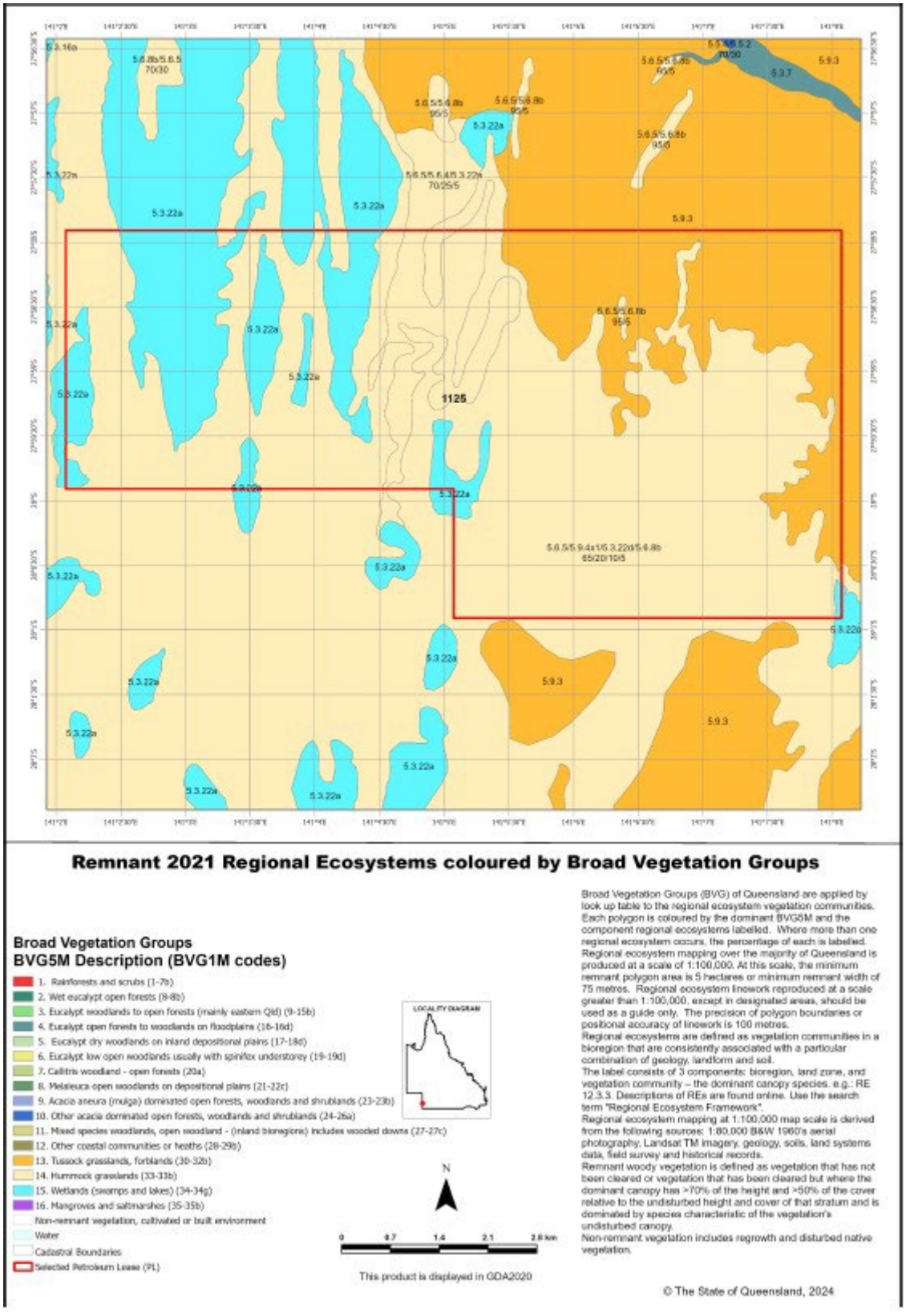


Figure 2. Broad Vegetation Groups mapped within PL 1125 (DESI 2024c).

3.2. Wetlands and Groundwater Dependant Ecosystems

The PL 1125 area of interest is covered within the Biodiversity Planning Assessments (BPAs) for the Channel Country (v1.1) and by the Aquatic Conservation Assessment (riverine and non-riverine) for Lake Eyre and Bulloo Basins (v1.1).

The Biodiversity and Conservation Values: Biodiversity Planning Assessments and Aquatic Conservation Assessment (BCV) Report for PL 1125 (Appendix 2, DESI 2024b) identifies the following results relevant to the presence of wetlands and groundwater dependant ecosystems:

- Eight Lacustrine wetlands (Non-riverine wetland types intersecting the area of interest) present identified within PL 1125.
- No palustrine wetlands are mapped for PL 1125.
- No named waterways intersecting with PL 1125.
- Aquatic conservation significance (riverine wetlands) (Figure 3):
    - Low: 3,399.59 ha (74.84% of PL 1125)
    - Very High: 1,142.83 ha (25.16% of PL 1125)
- Aquatic conservation significance (non-riverine) (Figure 4):
    - Medium: 652.71 ha (14.37% of PL 1125).
- No springs identified within the Queensland Springs Database are present within PL 1125.

Mapping layers within Queensland Globe identify groundwater dependant ecosystems described as non-perennial interdunal lacustrine wetlands and some minor unnamed non-perennial drainage lines present in the southern and north-eastern sections of PL 1125 (Figure 5, DESI 2024a).

The largest of the lacustrine wetlands, to the north of the pipeline and west of the proposed Vali 5 well along with the wetland adjacent to Vali 3 and south-eastern section of PL 1125 are identified as being of state biodiversity significance (Figure 6). This is due to potential presence of a wide range of invertebrates and algae and its potential habitat for waterbirds including migratory waders (expert decision number chc_I_16, DESI 2024a). Other areas of PL 1125 are identified as being of regional or local significance. The eight lacustrine wetlands identified in the BCV report (Figure 4) are identified on the map of referable wetlands MSES regulated vegetation (defined watercourse). No wetlands of high ecological significance are identified within PL 1125 and the biodiversity status of all areas within PL 1125 is 'No concern at present' (DESI 2024a, DESI 2024b).

One wetland of National significance, Cooper Creek Swamps - Nappa Merrie (Wetland Identification: QLD026) is located approximately 37 kms northeast of PL 1125.

The are no groundwater dependant ecosystems (GDEs) identified within PL1125 by the Groundwater Dependant Ecosystems Atlas with the closest approximately 2 km

north of the north-east corner of PL1125 (Figure 5). The only GDE identified by the desktop survey within PL 1125 (DESI 2024b) are ephemeral wetlands categorised as Broad Vegetation group *34a Lacustrine wetlands. Lakes, ephemeral to permanent, fresh to brackish; water bodies with ground water connectivity including fringing woodlands and sedgelands*. Within this broad vegetation group one vegetation community was identified within desktop survey results as a wetland: *RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes*.

This community was mapped for a number of interdunal areas where surface water is present following rainfall events (Figure 5) which was confirmed during the field survey (see section 5.1). It is identified as providing wetland habitat for flora and fauna. It has a biodiversity status of no concern at present although it has a low representation within the conservation estate (DESI 2024c).

Vegetation community 5.3.22 is split into a number of sub communities of which only one is present within PL 1125; 5.3.22a, which is within BVG 34a, and is associated with lacustrine wetlands. This is described as follows (Neldner et al. 2023):

- 5.3.22a: Bare areas, water or scattered ephemeral vegetation of variable floristic and structural composition. Locally *Eleocharis pallens* and/or *Eragrostis setifolia* may predominate. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as *Chenopodium auricomum, Duma florulenta and Tecticornia* spp. may be present. Occurs on lakes and larger clay pans (area generally greater than 8 ha) in interdunes or on sandplains or less frequently on clay plains. Soils very deep, grey cracking clays. Lacustrine. (BVG1M: 34a).

The Queensland Springs Database did not identify any springs in PL 1125, ATP2021 or Nappamerry Station and hence none are depicted in Figure 5 which included the Queensland springs dataset.

3.2.1. Riverine Wetlands

In Queensland riverine wetlands are defined as all wetlands and deepwater habitats within a channel which is naturally or artificially created, periodically or continuously containing moving water, or connecting two bodies of standing water (DESI 2024b). The Biodiversity Assessment and Mapping Methodology (BAMM) methodology for mapping of 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. An Aquatic Conservation Assessment (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.

The BCV report for PL 1125 (DESI 2024b) identifies that 1,142.83 hectares (25.16 %) have a riverine aquatic significance of 'very high' and 3,399.59 hectares (74.84%) have a low significance (Figure 3).

The BCV report for PL 1125 (DESI 2024b) identifies that 1,142.83 hectares (25.16 %) have a riverine aquatic significance of 'very high' and 3,399.59 hectares (74.84%) have a low significance (Figure 3). The aquatic conservation significance is identified as being based on expert panel decision cp_r_fa_07 identifying potential special features of 'Permanent water holes' that 'never go dry over 100+ year timeframes and are critically important as refugia for aquatic species in arid landscapes (DESI 2024b). These areas identified as of very high aquatic significance are primarily in the north and west of PL 1125 and do not align with mapped drainage lines in the south-east of PL 1125 (Figure 3). The south-west corner of PL1125 including the western section of the Flowline is depicted as having a very high riverine catchment significance (Figure 3). The field survey found that there are no riverine channels, defined drainage lines, springs or permanent surface water present in this area or any other areas surveyed of PL 1125. All drainage lines surveyed are shallow and sandy. The only wetlands in this area are non-riverine ephemeral wetlands containing RL 5.3.22.

Given that the BAMM is based on discrete spatial unit (subsections) it appears that areas mapped as 'very high' riverine significance are based on catchment areas for sub-sections of the Cooper Creek and its tributaries rather than on riverine wetland features contained within PL 1125.

3.2.2. Non-riverine wetlands

The Biodiversity Planning Assessments and Aquatic Conservation Assessment Report (BCV report) for PL 1125 (DESI 2024a) identified 652.71 hectares (14.37 %) of PL 1125 as being of medium conservation significance for non-riverine wetlands (Figure 4). The aquatic conservation significance is identified as being based on expert panel decision cp_nr_ec_02 identifying potential special features of ''Temporary claypan wetlands'. The description associated with this decision is: *'temporary claypan wetlands not fed by rivers have different biota adapted to different desiccation cycles e.g. fairy shrimp. For the majority of their time they are dry and are susceptible to cattle damage and woody debris removal. The REs associated with this decision are: 4.3.12b, d; 5.3.13b; 5.3.15a, b; 5.3.16a;* 5.3.22a; 5.3.8b; 6.3.11; 6.3.11b.

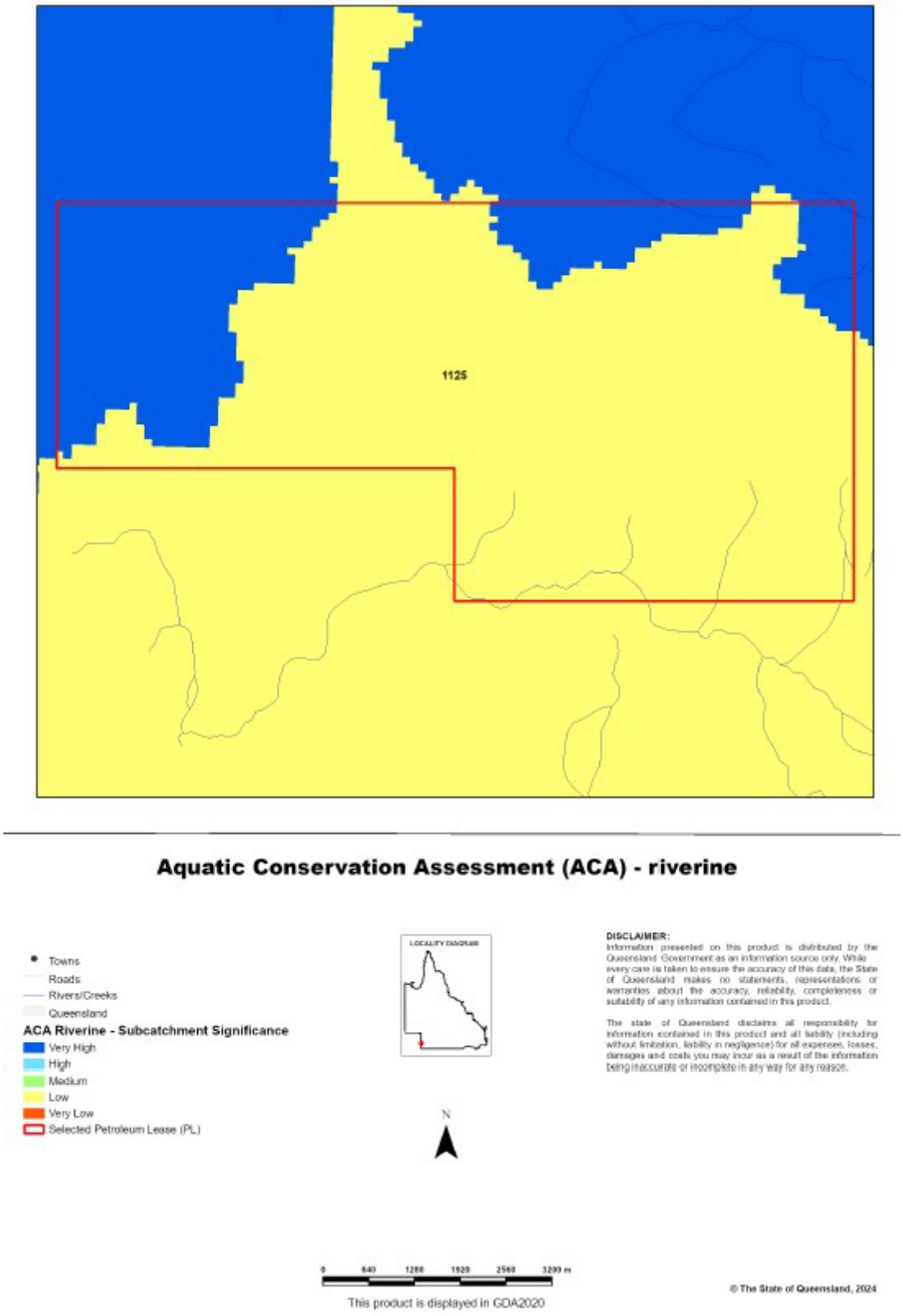


Figure 3. Aquatic Conservation Assessment for riverine wetlands within PL 1125 (DESI 2024b)

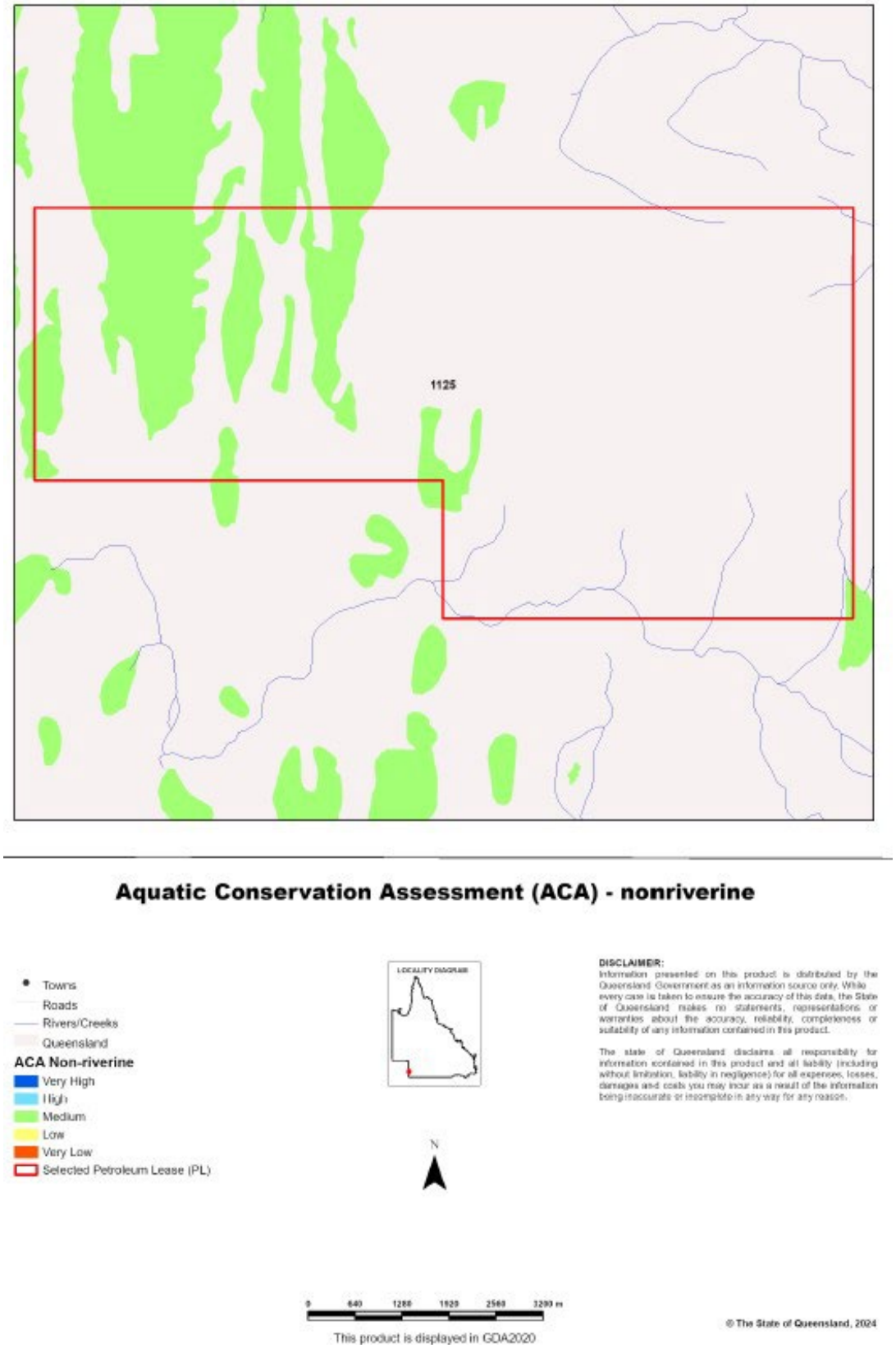


Figure 4. Aquatic Conservation Assessment for non-riverine wetlands within PL 1125 (DESI 2024b)

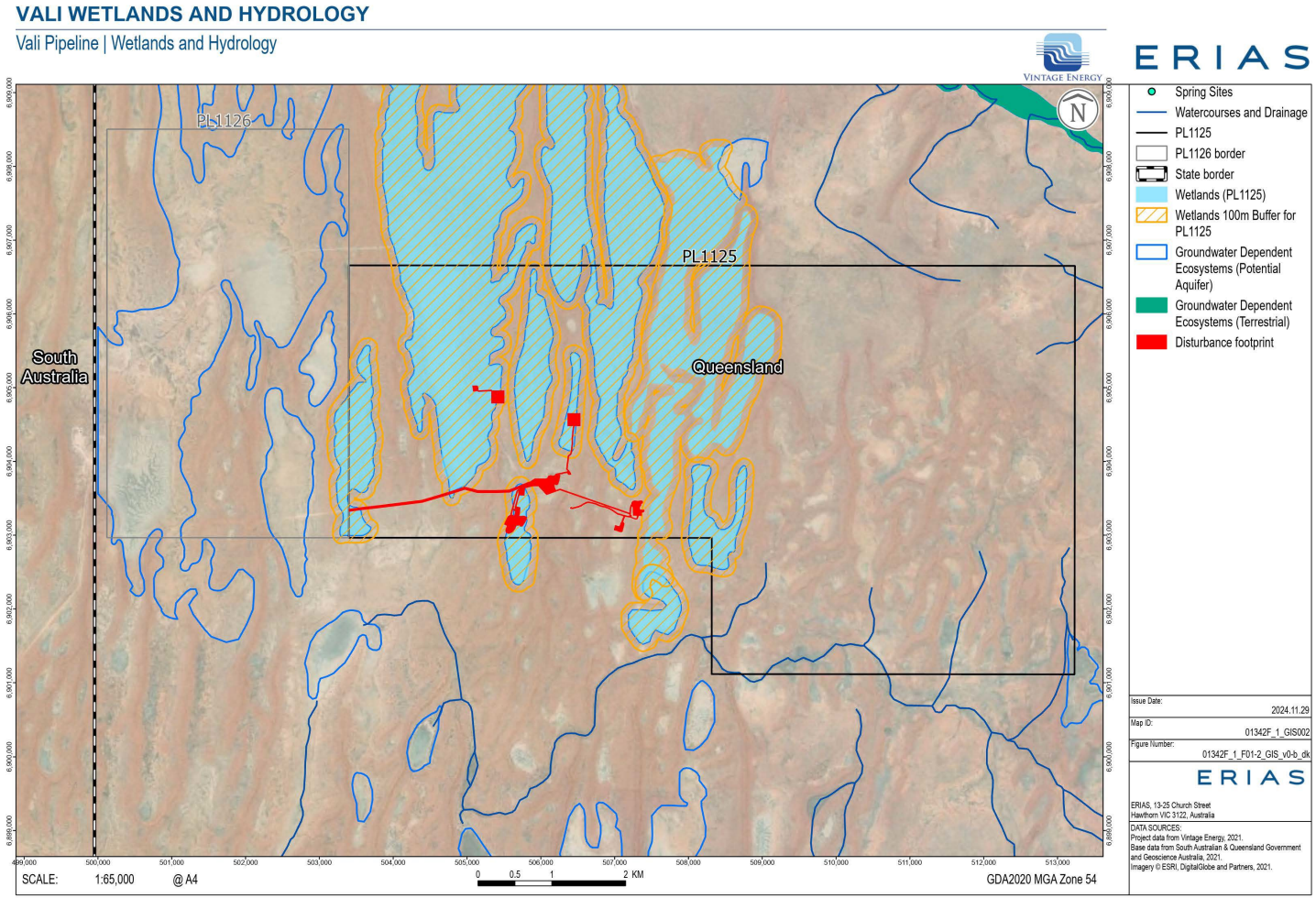


Figure 5. Wetlands and hydrology of PL 1125

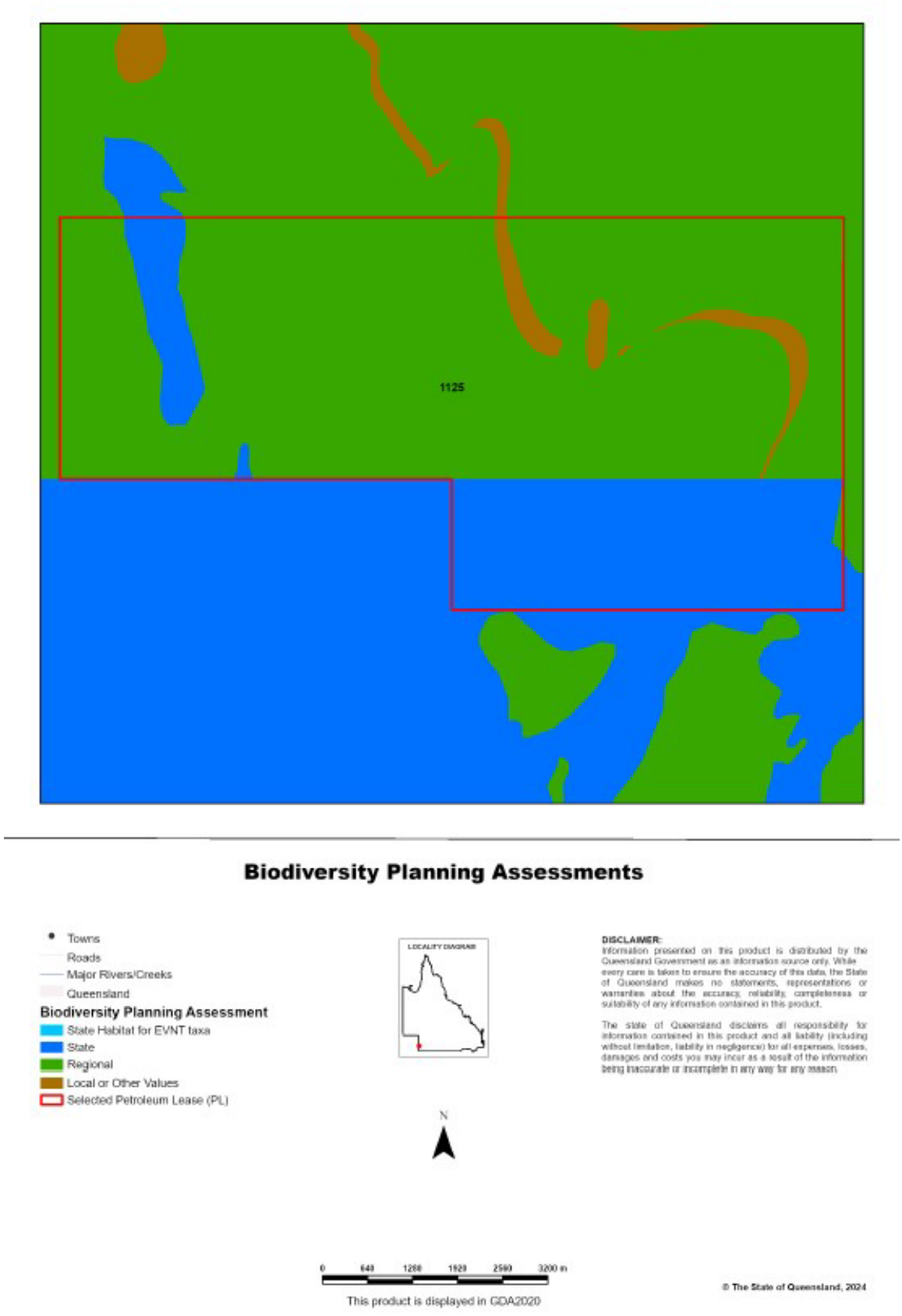


Figure 6. Biodiversity Planning Assessment significance areas for PL1125 (DESI 2024b)

3.3. Biodiversity Value

The Biodiversity and Conservation Values: Biodiversity Planning Assessments and Aquatic Conservation Assessment Report (BCV report) for PL 1125 identifies that the biodiversity status the whole of PL 1125 is 'No concern at present' (DESI 2024a) and that the area is not within any protected areas including:

- National Parks,
- Regional Parks,
- Nature Refuges,
- Conservation Park Zones,
- Preservation Zones,
- Legally Secured Offset Areas (offset register areas or vegetation offsets through a Property Map of Assessable Vegetation); or
- any other state conservation area (DESI 2024a).

The BCV Report identified the biodiversity significance of PL 1125 as follows (DESI 2024a):

- Local or Other Values: 132.33 ha (2.91% of PL 1125);
- Regional: 3,344.93 ha (73.64% of PL 1125);
- State: 1,065.16 ha (23.45% of PL 1125);

A biodiversity status of 'No concern at present' was given for the entire area of PL 1125. Identified biodiversity values for regional ecosystems present in PL 1125 include the following (DESI 2024c):

- 5.3.22: Provides wetland habitat for flora and fauna.
- 5.6.4: High fauna diversity.
- 5.6.5: High reptile diversity. Potential habitat for threatened fauna species including Mulgara *Dasycerus cristicauda*.
- 5.6.8: Habitat for the endemic Eyrean Grasswren *Amytornis goyderi* and threatened fauna species including the Dusky Hopping mouse *Notomys fuscus*, Mulgara *Dasycercus cristicauda* and plant and flora species.
- 5.9.4: Habitat for threatened fauna species including Kowari *Dasyuroides byrnie*.

The biodiversity values identified above are values attributed to the regional ecosystems on a statewide basis and do not necessarily reflect existing values for these habitats within PL 1125. This will be discussed further in the residual impact section below.

3.4. Matters of State Significance

The Matters of State Environmental Significance Report for PL 1125 identified two categories of MSES values were identified as being present within PL 1125:

- Regulated Vegetation - intersecting a watercourse: 10.2 km; and
- Regulated Vegetation - within 100m of a Vegetation Management Wetland: 1041.48 ha.

The MSES report also found that none of the following MSES values are present within PL 1125 (Table 2 in DESI 2024b):

- Protected Areas;
- State Marine Parks endangered or of concern regional ecosystems;
- Fish habitat areas (A and B);
- Strategic environmental area (SEA);
- High Ecological Significance wetlands on the Map of Queensland;
- High Ecological Value (HEV) wetlands;
- High Ecological Value (HEV) waterways;
- Threatened (endangered and vulnerable) wildlife;
- Special least concern animals;
- Wetland Environmental Values;
- Koala habitat;
- Sea turtle nesting areas;
- Regulated Vegetation - Endangered/Of concern in Category B (remnant);
- Regulated Vegetation - Endangered/Of concern in Category C (regrowth);
- Regulated Vegetation - Category R (GBR riverine regrowth);
- Regulated Vegetation - Essential habitat;
- Legally Secured Offset Areas - offset register areas;
- Legally Secured Offset Areas vegetation offsets through a Property Map of Assessable Vegetation).

In addition, the MSES report found that there were no records of protected fauna or special least concern animal species and that shorebird habitat from critically endangered, endangered, vulnerable or least concern species has not been mapped for PL 1125 (DESI 2024b).

3.5. Threatened Ecological Communities

The EPBC protected matters searches did not identify any threatened ecological communities (TECs) listed under the EPBC Act 1999 as potentially present within the desktop survey 50 km buffer zone or within a 100 km buffer zone (DCCEEW 2024); Appendix 1 and Appendix 2).

3.6. EPBC Threatened species

Six fauna species (five birds and one mammal) are identified in the EPBC PMST results as 'Known' to occur in the 50 km radius area and all have records from within 50 km of the project area (ALA 2024, DCCEEW 2024a):

- Grey Falcon *Falco hypoleucos*, EPBC Vulnerable, 14 records within 50 km, 35 records within 100 km;
- Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable, 10 records within 50 km, 19 records within 100 km;
- Sharp-tailed Sandpiper *Calidris acuminata*, EPBC Vulnerable, 2 records within 50 km, 13 records within 100 km;
- Southern Whiteface *Aphelocephala leucopsis*, EPBC Vulnerable, 45 records within 50 km, 115 records within 100 km;
- Painted Honeyeater *Grantiella picta,* EPBC Vulnerable, 1 record within 50 km, 5 records within 100 km; and
- Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable, 14 records within 50 km, 77 records within 100 km.

A further three fauna bird species are identified in the EPBC PMST results as 'Known' to occur in the 100 km radius area (DCCEEW 2024b) but not the 50 km radius area. There are desktop records for only two of these species:

- Curlew Sandpiper *Calidris ferruginea*, EPBC Critically Endangered, 1 record within 50 km, 3 records within 100 km;
- Bulloo Grey Grasswren *Amytornis barbatus barbatus*, EPBC Endangered, no records within 50 km, 10 records within 100 km; and
- Latham's Snipe *Gallinago hardwickii,* EPBC Vulnerable, no records within 100 km.

An additional two bird species and three plant species were identified in the EPBC PMST results as 'Likely' to occur in the 50 km or 100km radius areas (DCCEEW 2024a, DCCEEW 2024b) however there are desktop records within 100 km for only one species:

- Common Greenshank *Tringa nebularia* EPBC Endangered, no records within 50 km, 5 records within 100 km;
- Night Parrot *Pezoporus occidentalis*, EPBC Endangered, no records within 100

km;

- *Frankenia plicata* EPBC Endangered, no records within 100 km;
- *Sclerolaena walkeri* EPBC Vulnerable, no records within 100 km; and
- *Xerothamnella parvifolia*, EPBC Vulnerable, no records within 100 km.

Eight species were identified in the results as 'May' occur in either the 50 km or 100km radius areas (DCCEEW 2024a, DCCEEW 2024b):

- Australian Painted Snipe *Rostratula australis* EPBC Endangered, 1 record within 50 km, 1 record within 100 km;
- Major Mitchell's Cockatoo *Lophochroa leadbeateri* EPBC Endangered, no records within 50 km, 7 records within 100 km;
- Plains Wanderer *Pedionomus torquatus*, EPBC Critically Endangered, no records within 100 km;
- Greater Bilby *Macrotis lagotis* EPBC Vulnerable, no records within 100 km;
- Kowari *Dasyuroides bynei* EPBC Vulnerable, no records within 100 kms;
- Plains Mouse *Pseudomys australis*, EPBC Vulnerable, 1 record within 50 km, 2 records within 100 km;
- Flame Spider-flower *Grevillea kennedyana* EPBC Vulnerable, no records within 100 kms; and
- Slender Swainson-pea *Swainsona murrayana* EPBC Vulnerable, no records within 100 kms.

3.6.1. EPBC Migratory Species records

The desktop searches identified eight additional migratory or marine bird species potentially or recorded as occurring within 50 or 100 km of the project:

- Common Sandpiper *Actitis hypoleucos,* 3 records within 50 km, 7 records within 100 km;
- Pectoral Sandpiper *Calidris melanotos,* 1 record within 50 km, 1 record within 100 km;
- Marsh Sandpiper *Tringa stagnatilis,* 4 records within 100 km;
- Red-necked Stint *Calidris ruficollis,* 2 records within 100 km;
- Oriental Plover *Charadrius veredus,* 1 record within 100 km;
- Fork-tailed Swift *Apus pacificus,* 2 records within 50 km, 4 records within 100 km;
- Grey Wagtail *Motacilla cinerea*; and
- Yellow Wagtail *Motacilla flava*.

There are records within the Atlas of Living Australia database for the first six of these

species listed above in either the 50 km or 100 km radiuses. Yellow Wagtail is considered as Known to occur within the 50 km PMS results although there are no desktop records for this species within 100 km of the project area. Another species Grey Wagtail is returned as 'May' occur in the 50 km PMS results and there are no ALA records for this species.

3.7. State (NC Act 1992) Listed Species

In addition to EPBC listed species there are desktop records within 100 km for one fauna species:

- Yellow Chat *Epthianura crocea crocea* NC Act Vulnerable;1 record from within 50 km and 4 records from within 100 km.

4. Field Survey Results

The survey area was in good condition following successive rainfall events over the previous 12 months including one in July 2024. Much vegetation growth was evident and many plant species were in flower. Bird abundances were high, and many species showed evidence of breeding.

4.1. Flora

A total of 131 flora species were recorded within PL 1125 during the field survey (Appendix 10). The only introduced species recorded was *Citrullus amarus* (Paddy Melon) which was recorded at a number of locations, primarily in dunes. No flora species listed under the EPBC Act or state legislation were recorded during the survey. A full species list is presented in Appendix 10.

Regional ecosystems (REs) recorded during the field survey were consistent with vegetation mapping in QGlobe. The field survey confirmed that the six Regional Ecosystem Description Database (REDD) vegetation communities mapped for PL 1125 were present:

- 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes;
- 5.6.4 *Atalaya hemiglauca* +/- *Acacia aneura* +/- *Acacia* spp. +/- *Corymbia terminalis* low open woodland on reticulate sand dunes;
- 5.6.5 Variable sparse to open-herbland or *Triodia basedowii* hummock grassland on dune flanks, crests and sandy interdunes;
- 5.6.8 *Zygochloa paradoxa* and/or *Crotalaria eremaea* +/- *Triodia basedowii* open tussock grassland and herbland on mobile crests and slopes of sand dunes;
- 5.9.3 *Astrebla* spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments; and
- 5.9.4 *Aristida contorta* sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover.

Regional ecosystems have been mapped for areas of PL 1125 where infrastructure has been and is planned to be located as shown in Figure 7.

RE 5.3.22 was present in interdunal areas identified in vegetation mapping as ephemeral lacustrine wetlands including at the Vali 3 well pad area, adjacent to the Vali 2 well pad area and some areas of the pipeline. A total of 59 species were recorded in RE 5.3.22 during the survey which mostly consisted of herbs and grasses without a shrublayer however in some locations a shrublayer consisting of *Chenopodium auricomum* was present. *Duma florulenta* was also present to a lesser degree and in a few locations dominated the shrublayer. Most ephemeral wetlands had some areas which contained such a shrublayer and it is likely that these are the areas which hold water for the longest period of time. In some locations, such as the wetland just south of Vali 3, small stands of *Eucalyptus coolabah* (Coolibah) were

present at the edge of this community. Coolibah is not identified as part of RE 5.3.22 and is identified as being associated with regional ecosystem RE 5.3.16 which is not mapped for PL 1125. RE 5.3.16 is defined by the presence of *Eragrostis australasica* which was not recorded within the survey area but otherwise has some floristic similarities with RE 5.3.22. Areas with Coolibah are consequently included within 5.3.22.

RE 5.6.4 was widespread on dune flanks and benches as well as open plains where neither ephemeral wetlands nor dunes were present. It was recorded in the southern section of PL 1125 along, and adjacent to, the mapped drainage line. It was also present in elevated interdunal sandy flats in the northern section of PL 1125. It appeared to be much more widespread than indicated in the Regional Ecosystems report which stated that PL 1125 contains 66.91 (1.47 %) of this regional ecosystem. This was the most species diverse community surveyed with 76 species recorded. It was mostly dominated by *Atalaya hemiglauca* often with *Hakea leucoptera* as a major component. *Acacia aneura* was dominant to a much lesser extent either with or without other *Acacia* species. *Corymbia terminalis* was present on flat sandy plans as a scattered tree with or without other canopy trees. Grasses and herbs were prevalent throughout this community with the ground layer dominated by a mixture of these, or by grasses in some areas and herbs and larger shrubs in other areas.

RE 5.6.5 and RE 5.6.8 were prevalent and intermixed on dunes with RE 5.6.8 probably more widespread of the two communities. These two communities often merged with no clear line of delineation. The species diversity of these communities was lumped due to the difficulties in delineating them and 29 species were recorded. RE 5.6.8 were dominated by *Crotalaria eremea* and *Crotalaria cunninghamii* as well as a range of other shrubs such as *Acacia ligulata, Lechenaultia divaricata, Scaevola depauperata* and *Cullen pallidum*. *Zygochloa paradoxa* was a minor component of this community within PL 1125. Triodia was present in both communities but 5.6.5 was dominated by this species with less prevalence of shrubs.

RE 5.9.3 and RE 5.9.4 were present throughout PL 1125 apart from on dunes and 36 species were recorded in the former and 13 species recorded in the later community. The low species diversity for RE 5.9.4 reflects few sites where it was clearly the vegetation community. It was surveyed on a clay pan at Vali1 just to the east of the ponds and was dominated by *Astrebla pectinata*, *Sclerolaena* spp., various daisy species and a range of grasses. The delineation of these communities from RE 5.6.4 and at time from RE 5.3.22 was not always clear with communities merging into one another in some areas.

4.1.1. Propose Vali 4 and Vali 5 infrastructure

Vegetation at the proposed Vali 4 well pad is located within an ephemeral wetland between two dunes. It was confirmed as being primarily within RE *5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes* which was dominated by a diversity of native herbs (19 recorded species) and native grasses (nine recorded species) of with no introduced species recorded.

Patches of *Chenopodium auricomum* (Golden Goosefoot) were present. A proportion of Vali 4 extends onto a dune flank with RE 5.6.4 *Atalaya hemiglauca* low open woodland over chenopod shrubland. This is consistent with Queensland Government vegetation mapping as contained in the Queensland Globe (DESI 2024b).

The proposed Vali 5 infrastructure was confirmed as being located within three regional ecosystems RE 5.3.22, RE 5.9.3 and RE 5.6.4. The existing pond and water bore is located within RE 5.3.22 at the edge of the wetland area and is dominated by herbs and grasses with no larger shrubs present. The planned track to the well pad is within RE 5.9.3 *Astrebla* spp., *Aristida* spp. and *Enneapogon* spp. open tussock grassland with diverse forbs. Some sparse larger shrubs (*Senna* spp. and *Maireana* spp.) were also present. The Vali 5 well pad is located within RE 5.6.4 which has a an overstorey of *Atalya hemiglauca* with a shrublayer of *Senna* spp., *Acacia tetragonophylla* and *Maireana astrotricha* as well as diverse grasses and forbs in the ground layer.

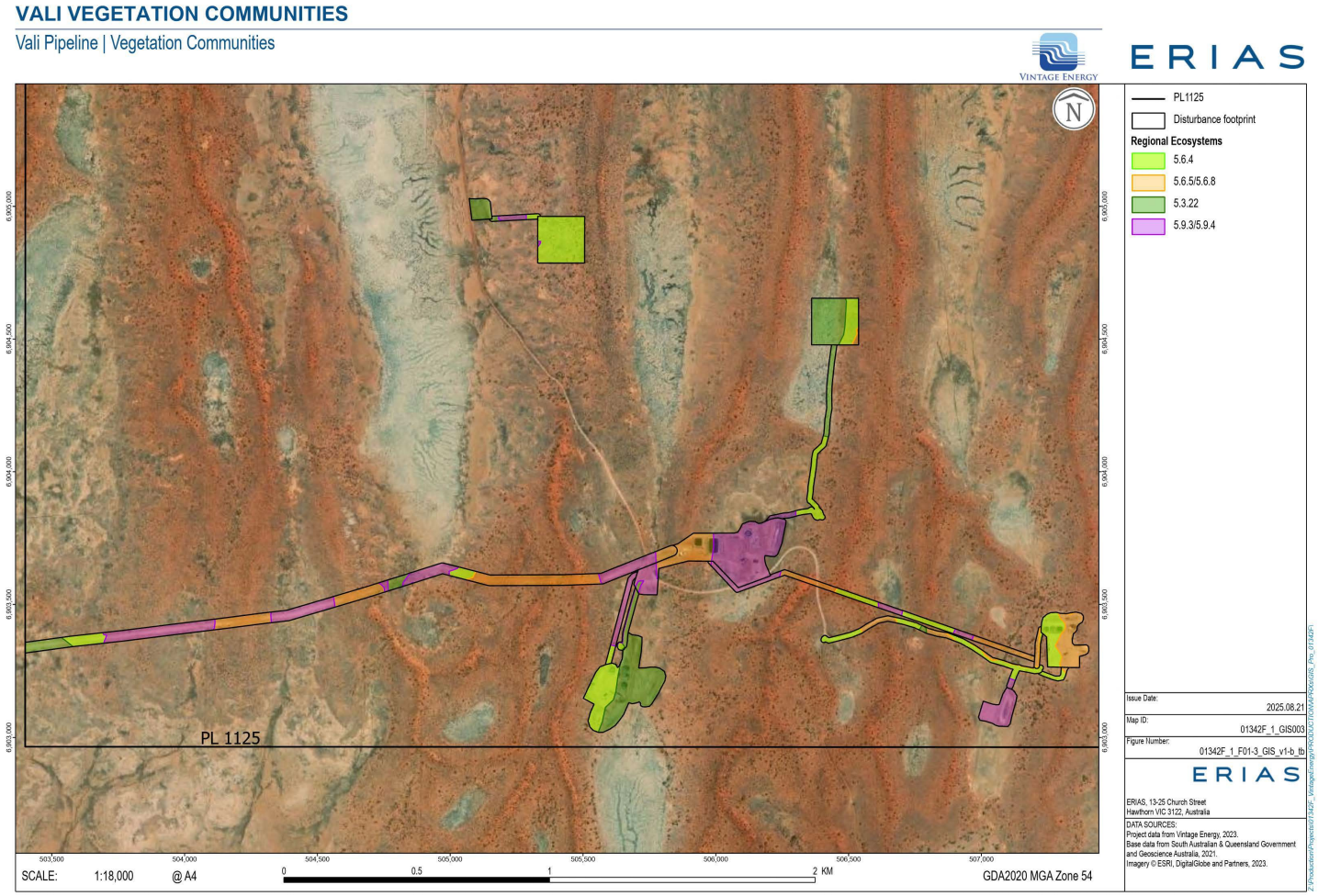


Figure 7. The Vali Field disturbance area showing vegetation associations previously mapped within PL 1125.

4.2. Fauna

A total of 38 species of birds were recorded during the field survey within PL 1125 (Table 4). Common species included Budgerigar, Brown Songlark, Australian Pratincole, Crimson Chat, White-winged Wren, Little Buttonquail, Masked Woodswallow, Zebra Finch and Flock Bronzewing. These species are typical of arid areas of Australia. A number are boom and bust species, such as Budgerigar, Flock Bronzewing, and Little Buttonquail were common during the survey which reflects the good environmental conditions at the time. One Little Buttonquail nest with 4 eggs was discovered adjacent to Vali 4 and Flock Bronzewing was observed performing display flights on a number of occasions. Many young birds were observed and several other species were also suspected to be breeding during the survey.

The sites with the highest recorded diversity were the drainage line in the south-west corner of PL 1125, Vali 1 and the ephemeral wetland site identified as RE 5.3.22 which had 18, 16 and 15 recorded species respectively (Table 4). This is likely to be influenced by survey effort as well as habitat diversity as these sites were all surveyed twice compared to once for most other sites.

No listed species were recorded during the field survey.

Table 4. Fauna species recorded at survey sites in PL 1125.

Location	PL 1125	Vali 1	Vali 2	Vali 3	Vali 4	Vali 5	PL 1125 Drainage Line SW Corner	PL 1125 RE 5.3.22	PL 1125 North Dune RE 5.6.4
		141.062	141.073	141.056	141.066	141.053	141.094	141.05	141.038
		-27.992	-27.995	-27.997	-27.983	-27.981	-28.013	-27.986	-27.965
Species diversity	**38**	**16**	**9**	**11**	**11**	**10**	**18**	**15**	**13**
Australian Magpie	1			1					
Australian Pipit	1						1	1	
Australian Pratincole	1	1		1		1		1	
Australian Raven	1		1		1	1	1	1	1
Banded Lapwing	1	1	1						1
Black-faced Woodswallow	1		1		1	1	1		1
Black Falcon	1							1	
Black Kite	1						1		
Brown Falcon	1	1						1	1
Bluebonnet	1			1			1		
Brown Songlark	1				1			1	1
Budgerigar	1	1	1	1	1	1	1		1
Cockatiel	1	1		1	1				
Crested Pigeon	1						1		
Crimson Chat	1	1	1		1	1	1		1
Diamond Dove	1	1	1						
Fairy Martin	1	1		1					
Flock Bronzewing	1	1			1			1	
Galah	1			1			1		
Gull-billed Tern	1	1						1	

Location	PL 1125	Vali 1	Vali 2	Vali 3	Vali 4	Vali 5	PL 1125 Drainage Line SW Corner	PL 1125 RE 5.3.22	PL 1125 North Dune RE 5.6.4
Horsfield's Bushlark	1							1	
Horsfield's Bronze-cuckoo	1	1							
Little Buttonquail	1			1	1	1	1	1	1
Masked Woodswallow	1		1		1		1	1	
Nankeen Kestrel	1					1	1		
Orange Chat	1							1	
Pied Honeyeater	1	1	1		1	1			1
Red-backed Kingfisher	1	1							
Rufous Songlark	1	1					1		1
Singing Honeyeater	1						1		
Spotted Harrier	1						1	1	
Straw-necked Ibis	1							1	
White-fronted Honeyeater	1								1
White-winged Triller	1						1		
White-winged Wren	1	1	1	1					1
Willie Wagtail	1						1		
Yellow-throated Miner	1			1					
Zebra Finch	1	1		1	1	1	1	1	1

5. Significant residual impact (SRI) assessment

5.1. Listed Species Likelihood of Occurrence and Potential for Residual Impact

An assessment of potential impacts to listed species from vegetation clearance within the disturbance footprint (Figure 7). The Vali Field disturbance area showing vegetation associations previously mapped within PL 1125.) identified above is presented here. This impact assessment considers the following:

- Results of the EPBC Protected Matters Search (PMS);
- Matters of State Environmental Significance, Biodiversity and Conservation Value, Regional Ecosystem and WildNet reports for PL 1125;
- Desktop records obtained for Atlas of Living Australia, Birdlife Australia, WildNet;
- Field observations;
- Extent and location of the disturbance footprint; and
- Documented ecology of listed species.

The impact assessment covers the species which were identified in is sections 3.7 and 3.8 above and the results of the listed species impact assessment are provided in Table 5. For each species a likelihood of occurrence within PL 1125 and a potential for a residual impact occurring from development of the project footprint is provided.

Table 5. EPBC Act and NC Act Listed species that potentially occur within the desktop search areas of PL 1125 with a 50km buffer and a 100 km buffer. The number and year of last record from the Atlas of Living Australia data set is given for each species.

Species	NC Act	EPBC Act	Number of records	Year of last record	EPBC PMST Likelihood	Preferred habitats and distribution	Impact assessment for activities within PL 1125.
EPBC Act Threatened Species							
Birds							
Amytornis barbatus barbatus *Bulloo Grey Grasswren, Grey Grasswren (Bulloo)*	NT	EN	50km: 0 100km: 10	2012	50km: Likely 100km: Known	Occurs in southwestern Qld, north-east SA and north-western NSW. Within Queensland it is found in the drainage basin of the Bulloo River and the Cooper Creek system as well the Diamantina and Eyre Creek systems near Birdsville. This species typically occurs in Lignum *Duma florulenta* shrubland on periodically inundated swampy floodplains, waterholes and channels (Black and Gower 2017). It has also been recorded in surrounding samphire *Tecticornia* sp shrublands and Swamp Canegrass *Eragrostis australasica* and/or clumps of *Atriplex nummularia*. Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely. There are no records within 50 kms and Lignum *Duma florulenta* is limited to small patches within the survey area with no connectivity to known populations of this species. This species is sedentary and only undertakes local movements (Higgins et al. 2001). **Potential for residual impact:** Unlikely.

Aphelocephala leucopsis Southern Whiteface	V	VU	50km: 45 100km: 115	2017	50km: Known 100km: Known	Its range is across most of mainland Australia south of the tropics in a wide variety of open woodlands and shrublands where there is an understorey of grasses and, or shrubs. It occurs in habitats dominated by Acacia or eucalypts on ranges, foothills and plains (Higgins & Peter 2002, cited in DCCEEW 2023b). Prefers habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat. Living and dead trees with hollows and crevices are used for roosting and nesting (DCCEEW 2023b). Not recorded during the field survey although a related species Banded Whiteface was observed.	**Likelihood of Occurrence:** Possible **Potential for residual impact:** Possible. **Area of potential impact:** 11.0 hectares (RE 5.6.4)

Calidris acuminata Sharp-tailed Sandpiper	-	VU, MW	50km: 2 100km: 13	2017	50km: Known 100km: Known	This species is a non-breeding migratory shorebird that occurs in coastal and inland areas of Australia. It prefers non-tidal fresh or brackish wetlands with exposed mud. It will also use damp grassland and shrubland areas as well as artificial wetland habitats such as dams and sumps. It also uses tidal flats in coastal areas to a lesser extent (Geering et al. 2008, Simpson and Day 2019, Mehkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence**: Possible following large rainfall events **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 hectares (RE 5.3.22)
Calidris ferruginea Curlew Sandpiper	CR	CE, MW	50km: 1 100km: 3	2018	50km: May 100km: Known	A non-breeding migrant wader with a widespread distribution across Australia, in spring and summer (Geering et al. 2008, ALA 2024). This species has suffered a dramatic decline in abundance over the last 20 years due to loss of migrating habitat. Juveniles may remain in Aus for first Austral Winter (2 years old) (Menkhorst et al. 2017). Prefers coastal or inland mudflats but will also visit artificial dams and inland water habitats, freshwater and brackish wetlands (Simpson & Day 2010, Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence**: Possible following large rainfall events **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 hectares (RE 5.3.22)

Falco hypoleucos Grey Falcon	V	VU	50km: 14 100km: 35	2020	50km: Known 100km: Known	The species has a widespread, but sparse distribution across Australia (ALA 2024). Preferred habitat includes treed watercourses and open plains in arid inland areas. When not actively hunting roosts in shady trees or communications towers (Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Possible There are records of this within 50 kms and it is possible that this species may occur in PL1125 however its preferred habitat of wooded watercourses is not present within the disturbance footprint. **Potential for residual impact:** Unlikely. Preferred habitat of wooded watercourses is not present within the area of disturbance and is very limited within PL 1125. **Area of potential impact:** 0 hectares

Gallinago hardwickii Latham's Snipe	-	VU, M	50km: 0 100km: 0	-	50km: May 100km: Known	The species has a widespread distribution throughout eastern Australia (ALA 2024). This species breeds in Japan and migrates to eastern and southern Australia. South-west Queensland is not considered part of its normal range. Prefers tussock grass and low dense sedges surrounding freshwater wetland, including marshes and flooded grassland. In dense cover by day, forage dawn dusk or at night. (Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely. The project is not within its normal range and there are no records within 100km. **Potential for residual impact:** Unlikely.

Grantiella picta Painted Honeyeater	V	VU	50km: 1 100km: 5	2020	50km: Known 100km: Known	This species is sparsely distributed in semi-arid and arid areas of eastern Australia including western Queensland. It is most common west of the Great Dividing Range but is considered irregular to the channel country of south-west Queensland. The Queensland population is augmented in winter by migrants from southern areas (Blakers et al. 1984; Storr 1984; Garnett 1992b; Higgins et al. 2001). The painted honeyeater lives in dry, open forests and woodlands (box, ironbark, yellow gum, melaleuca, casuarina, callitris, acacia). The species usually occurs in areas with flowering and fruiting mistletoe and flowering eucalypts. (Eddy 1961; Stewart 1988; Pizzey & Knight 1997; Higgins et al. 2001; Oliver et al. 2003). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely The modelled habitat map for this species does not show any habitat. or records for the project area (Appendix 11). **Potential for residual impact:** Unlikely. This species primarily relies on trees containing mistletoe. The project infrastructure is primarily located in grassland and shrubland with minimal loss of trees.

Lophochroa leadbeateri leadbeateri Major Mitchell's Cockatoo (eastern)	EN	EN	50km: 0 100km: 7	1988	50km: No likelihood returned 100km: May	The eastern subspecies of Major Mitchell's Cockatoo occurs in the Murray-Darling, Eyre and Bulloo River basins, from Isisford and Roma in the north, through western New South Wales to north-west Victoria and west to eastern South Australia (Higgins 1999). There are no records from within 50 km of the survey area and the records from within 100 km are from the Bulloo drainage basin. This species inhabits a wide range of plant communities, mostly in arid and semi-arid woodlands, always within easy reach of surface water. Habitat critical to the survival of the Eastern Major Mitchell's cockatoo consist of arid and semi-arid woodlands dominated by mulga (*Acacia aneura*), mallee and box eucalypts, slender cypress pine (*Callitris gracilis*) or belah (*Casuarina pauper/cristata*). Large mature trees with suitable hollows are critical for breeding and corridors of suitable habitat are important for dispersal across the landscape (DCCEEW 2023b). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely The modelled habitat map for this species does not show any habitat or records for the project area (Appendix 11). There are no records within 50 km. **Potential for residual impact:** Unlikely.

Neophema chrysostoma Blue-winged Parrot	V	VU	50km: 10 100km: 19	2021	50km: Known 100km: Known	Blue-winged parrots breed on mainland Australia south of the Great Dividing Range in southern Victoria, and sometimes in the far southeast of South Australia, and the northwestern, central and eastern parts of Tasmania. During the non-breeding period, from autumn to early spring, birds are migratory and recorded from northern Victoria, eastern South Australia, southwestern Queensland and western New South Wales (Higgins 1999 cited in DCCEEW 2023d). The project area occurs within the species occasional range. This species occurs in a range of habitats from coastal, subcoastal and inland areas, through to semi-arid zones. It favours grasslands and grassy woodlands and are often found near wetlands both near the coast and in semi-arid zones (Higgins 1999). The species can also be seen in altered environments such as airfields, golf-courses and paddocks. Not recorded during the field survey however this species is primarily present in winter months.	**Likelihood of Occurrence:** Likely **Potential for residual impact:** Possible. **Area of potential impact:** 21.6 ha in total consisting of 8.6 ha of RE 5.3.22 and 13.0 ha of RE 5.93 / RE 5.94 combined.

Pedionomus torquatus Plains-wanderer	CR	CE	50km: 0 100km: 0	-	50km: May 100km: May	This species occurs in very localised scattered in Qld, NSW, Vic and SA areas in eastern however there are no records within 100 km of the survey area. Plains Wanderer occurs in sparsely vegetated tree-less plains dominated by sparse native grasses and chenopods (Marchant and Higgins 1993, Bellchambers and Baker-Gabb 2006). Typical habitat contains approximately 50% bare ground, with most vegetation less than 5 cm in height and some widely spaced plants up to 30 cm high (Garnett et al., 2011). It does not occur in cultivated areas (Garnett et al., 2011). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely There are no records within 100 km and PL 1125 is not modelled as habitat for the species (Appendix 11). **Potential for residual impact:** Unlikely.
Pezoporus occidentalis	E	CE	50km: 0	-	50km: Likely	Night Parrot was though extinct for more than 50 years until a population was rediscovered in south-west Queensland in the Diamantina basin.	**Likelihood of Occurrence:** Unlikely The modelled habitat map for this species does not show any habitat or records for the project area or for the Bulloo Shire region (Appendix 11). There are no records within 100 km. Open plains in the project area primarily consist of grasses such as *Astrebla, Aristida* and *Enneapogon* which are not preferred habitats for Night Parrot.

Night Parrot			100km: 0		100km: Likely	It lives in spinifex (*Triodia*) grasslands or shrubby samphire and chenopod associations in arid and semi-arid regions of Australia (Higgins 1999). It is primarily active a night and is known to roost in dense clumps of spinifex during the day. Not recorded during the field survey.	**Potential for residual impact:** Unlikely.
Rostratula australis Australian Painted Snipe	E	EN	50km: 1 100km: 1	Unknown	50km: May 100km: May	Australian Painted Snipe has a widespread distribution across eastern and northern Australia (ALA 2024). It occurs in freshwater wetland habitats with dense reeds and rushes/ well vegetated margins (Simpson and Day 2019, Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Possible The modelled habitat map shows very limited habitat for the project area but records to the south-east and north-west (Appendix 11). Habitat within PL 1125 is considered sub-optimal. **Potential for residual impact:** Possible **Area of potential impact:** 8.6 ha (RE 5.3.22)

Tringa nebularia Common Greenshank	-	EN, MW	50km: 0 100km: 5	2008	50km: No likelihood returned 100km: Likely	Common Greenshank is a migratory shorebird that has a widespread distribution throughout Australia, in summer (Geering et al. 2008, ALA 2024). It occurs in intertidal mudflats, fresh and saltwater wetlands along the coast or inland (Geering et al. 2008). Also occupies artificial habitats. Not recorded during the field survey.	**Likelihood of Occurrence:** Possible There are no records within 50 km and this species but may potentially be present following large rainfall events. **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 ha (RE 5.3.22)

Mammals							
Dasyuroides bynei Kowari (Crest-tailed Mulgara)	E	EN	50km: 0 100km: 0	-	50km: No likelihood returned 100km: May	The Crest-tailed Mulgara occurs in scattered populations in sparsely vegetated stony deserts of the Lake Eyre drainage basin (Menkhorst and Knight 2017). It inhabits crests and slopes of sand ridges, or around salt lakes in inland Australia. During the day it shelters in burrows which are located at the base of sandhill canegrass (*Zygochloa paradoxa*) clumps or Nitre bush (*Nitraria billardieri*) growing around the edges of salt lakes (ALA 2024). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 100 km with the nearest records from north-west NSW. **Potential for residual impact:** Unlikely.
Macrotis lagotis	E	VU	50km: 0	-	50km: No likelihood returned	Bilbies were once widespread across semi-arid and arid Australia but are now reduced to scattered populations in arid parts of Western Australia, northern Territory and south-west Queensland. They are primarily found in *Acacia* shrubland and spinifex grassland but also in clay and stony downs in the channel country of SW Queensland (Menkhorst and Knight 2001).	**Likelihood of Occurrence**: Unlikely The modelled habitat map does not show any habitat or records for the project area (Appendix 11). There are no records within 100 kms with records from south-west Queensland occurring north of Birdsville in the Diamantina River Catchment.

Greater Bilby			100km: 0		100km: May	Bilbies are active at night and shelter during the day in long deep burrows that they dig. Bilbies are solitary animals and can breed all year round if conditions are favourable. Not recorded during the field survey.	**Potential for residual impact:** Unlikely.
Notomys fuscus Dusky Hopping-mouse	E	VU	50km: 14 100km: 77	2012	50km: Known 100km: Known	Dusky Hopping-mouse is a boom and bust species and consequently it is uncommon and difficult to locate in most years but abundant in years when populations are booming (Van Dyck and Strahan 2008). It primarily lives in sandy habitats such as sand dunes which are limited and isolated in the survey area; however, in good conditions when populations are booming it can be found temporarily in a range of other habitats (Van Dyck and Strahan 2008). Not recorded during the field survey.	**Likelihood of Occurrence:** Likely The habitat model for this species shows habitat and records within the PL 1125 area (Appendix 11). **Potential for residual impact:** Possible. **Area of potential impact:** 8.7 ha (RE 5.6.5 / RE 5.6.8 combined) and 11.0 hectares (RE 5.6.4)

Pseudomys australis Plains Mouse	V	VU	50km: 1 100km: 2	1957	50km: May 100km: May	The Plains Rat was once widely distributed across central Australia however it now primarily occurs in central-northern and north-east South-Australia. There are scattered records in south-west Queensland and a re-established population in north-west NSW. It is a boom and bust species and can disperse widely following good rainfall. Historically, the plains rat was widely distributed across a broad range of habitats including river flats, grasslands, sand ridges and lowland shrubs. The current assumed distribution of the plains rat is limited to the gibber (stone-covered) plains characterised by cracking clay, productive depressions and minor drainage lines which support low open scrublands and ephemeral grass or herb lands. Similarly, during times of high rainfall, populations may move into surrounding habitat types. Habitat degradation due to grazing, introduced predators and drought have contributed to its decline. Not recorded during the field survey.	**Likelihood of Occurrence:** Possible The project area is not within the normal range for this species however there is one record within 50 km. It is possible that this species may occur in PL1125 however its preferred habitat of gibber plains is not present within the disturbance footprint. **Potential for residual impact:** Unlikely. Its preferred habitat of gibber plains is not present within PL 1125 disturbance area. **Area of potential impact:** 0 ha

Flora							
Frankenia plicata	-	EN	50km: 0 100km: 0	-	50km: Likely 100km: Likely	Frankenia plicata occurs in South Australia, from north of Port Augusta along the Stuart Highway to the Northern Territory border and from Port Augusta north-east to Maree (Barker et al., 2005; State Herbarium of South Australia, 2024). It is likely that the species has been under reported due to difficulty of identification of Frankenia spp. (Kutsche & Lay, 2003). Frankenia plicata grows in a range of habitats, including on small hillside channels, which take the first run-off after rain been found predominantly from swales of loamy sands to clay (Neagle, 2002). This species is found in a wide range of vegetation communities that have good drainage (Neagle, 2002). This species occurs within the South Australian Arid Lands Natural Resource Management Region. Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 100 km. **Potential for residual impact:** Unlikely.

Grevillea kennedyana Flame Spider-flower		VU	50km: 0 100km: 0	-	50km: No likelihood returned 100km: May	*Grevillea kennedyana* has a restricted distribution in the northwest corner of New South Wales and the southwest corner of Queensland (ALA 2024). As of 2000, the plant was found in six geographic locations. Ninety per cent of the populations are found in the Sturt National Park and are highly fragmented with a natural range of less than 100 km (ALA 2024). *Grevillea kennedyana* mostly grows in arid areas in clusters on rocky jump-ups and colluvial slopes of rocky mesas with weathered silcrete rocks and loamy soils but can sometimes be found in dry and rocky watercourses. It grows on slopes between 10˚ and 75˚ (ALA2024). The most dense populations of this species are found on the lower slopes that have high water retention. It is often found with species such as spiny fan-flower (*Scaevola spinescens*), whitewood (*Atalaya hemiglauca*), *Acacia* and *Eremophila* species, and occasionally black oak (*Casuarina pauper*) often with a low ground cover of chenopods (ALA 2024). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 100 km. The habitat model map for this species does not show any habitat or records for the project area (Appendix 11). **Potential for residual impact:** Unlikely.

Sclerolaena walkeri		VU	50km: 0 100km: 0	-	50km: Not Returned 100km: Likely	Sclerolaena walkeri is known from central Queensland, including the Diamantina River–Mackunda Creek Channels, the Paroo River area and in the Norley Range area near the Bulloo River north of Thargomindah (DCCEEW). It occurs on saline river flats (Wilson, 1984), channels and flats with Soda Bush (*Neobassia proceriflora*) and on floodplains in Queensland Bluebush (*Chenopodium auricomum*) and Yapunyah (*Eucalyptus ochrophloia*). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 100 km. **Potential for residual impact:** Unlikely.
Swainsona murrayana Slender Swainson-pea	V	VU	50km: 0 100km: 0	-	50km: May 100km: May	Slender Darling-pea is found on the western slopes and plains of New South Wales, in Northern and western Victoria and southern Queensland with an outlier in South Australia. It is uncommon and grows on heavy clay and clay loam soils in *Atriplex vesicaria* shrublands and grasslands and is also found in seasonally wet areas and near lakes. Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 100 km. **Potential for residual impact:** Unlikely.

Xerothamnella parvifolia	-	VU	50km: 0 100km: 0	-	50km: May 100km: Likely	The species is found in the Channel Country IBRA bioregion, in south-western Queensland, Mount Poole in north-western New South Wales and in South Australia (ALA 2024). It grows in low chenopod shrubland and low open woodland, in thin sandy clay soils, along the ridgetops and slopes of sandstone ranges (ALA 2024). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There is no suitable habitat and no records within 100 km habitat. **Potential for residual impact:** Unlikely.
EPBC Act Migratory Bird Species							
Actitis hypoleucos Common Sandpiper	-	M	50km: 3 100km: 7	1999	50km: Known 100km: Known	Common Sandpiper is a migratory shorebird that has a widespread distribution across Australia. It is typically present between late July and March (Simpson and Day 2019). It occurs in a variety of habitats including a wide range of coastal and inland wetlands mostly around muddy margins or rocky shores and rarely on intertidal mudflats. The species also occurs on steep sided sewage ponds, dams, and other artificial wetland habitats. It is tolerant of a wide variety of salinities. Not recorded during the field survey.	**Likelihood of Occurrence**: Possible at ponds and sumps containing water and in ephemeral wetlands following large rainfall events. **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 ha (RE 5.3.22)

Apus pacificus Fork-tailed Swift	-	M	50km: 2 100km: 4	2007	50km: Likely 100km: Likely	Fork-tailed Swift has a widespread distribution across Australia. It is migratory and only occurs in Australia from October to March (ALA 2024). This species is highly mobile, almost entirely aerial, and rarely recorded on the ground. It feeds on aerial invertebrates which are caught while flying. Not recorded during the field survey.	**Likelihood of Occurrence:** Possible While it is possible that this species may occur over PL1125 including the disturbance footprint this species has no interaction with terrestrial habitats while in Australia as it feeds exclusively on airborne invertebrates. No impact to this species is therefore considered to be plausible from this project. **Potential for residual impact:** Unlikely. This species has no interaction with terrestrial habitats in Australia**.** **Area of potential impact:** 0 ha

Calidris melanotos Pectoral Sandpiper	-	M	50km: 1 100km: 1	1998	50km: May 100km: Known	Pectoral Sandpiper is widespread across southeast Australia (ALA 2024) but is only sporadically recorded in arid areas. (Geering et al. 2008; Menkhorst et al. 2017). It occurs in freshwater or brackish wetlands, grassy or lightly vegetated swamps (Geering et al. 2008). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records within 50 km however this species could potentially be present following large rainfall events. **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 ha (RE 5.3.22)
Calidris ruficollis Red-necked Stint	-	M	50km: 0 100km: 2	2019	50km: No likelihood returned 100km: No likelihood returned	Red-necked Stint is widespread and common across southeast Australia (ALA 2024) but less commonly recorded in arid areas (Geering et al. 2008; Menkhorst et al. 2017). It occurs in freshwater or brackish wetlands, grassy or lightly vegetated swamps (Geering et al. 2008; Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence**: Possible There are no records within 50 km however this species could potentially be present following large rainfall events. **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 ha (RE 5.3.22)

Charadrius veredus Oriental Plover	-	M	50km: 0 100km: 1	1992	50km: No likelihood returned 100km: No likelihood returned	This species is a migratory wader which primarily occurs in Northern and Central Australia from the Kimberly's WA to the Gulf country and Central Queensland (Menkhorst et al. 2017). It was not included in the EPBC Protected Maters search results for 50km or 100 km buffer zones. There is one ALA record from 1992 within 100 km buffer zone but none within 50 km. It prefers open grasslands and thinly vegetated plains including recently burnt areas and heavily grazed paddocks (Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely This species was not included in either the 50 km or 100 km PMST search results. There is one record from 30+ years ago within 50 – 100 km from PL 1125. **Potential for residual impact:** Unlikely. .
Motacilla cinerea Grey Wagtail	-	M	50km: 0 100km: 0	-	50km: May 100km: May	This migratory species is a scarce but regular visitor to Australia with most records from the Kimberly, WA, Top End, NT and Wet Tropics, Qld (Menkhorst et al. 2017). There are no records from within 100 km for the survey area. It is usually found close to water including beaches and rock pools. It favours lowland watercourses, warterfalls and fast-flowing streams and rivers (Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely There are no records from within 100 km. **Potential for residual impact:** Unlikely.

Motacilla flava Yellow Wagtail	-	M	50km: 0 100km: 0	-	50km: Known 100km: Known	This migratory wagtail occurs in Australia between late September and April mostly in northern Australia from the Kimberly region, WA, to the Top End, NT and Wet Tropics, Qld (Menkhorst et al. 2017). It is identified as 'Known' to ocurr in the EPBC PMST desktop results however no records were returned from within 100 km for the survey area. Occurs in a variety of damp or wet habitats including marshes and bogs. Forages in damp grassland or on bare ground at the edge of rivers, lakes and other wetlands (Menkhorst et al. 2017). Not recorded during the field survey.	**Likelihood of Occurrence:** Unlikely There are no records from within 100 km. **Potential for residual impact:** Unlikely.

Tringa stagnatilis Marsh Sandpiper		MW	50km: 0 100km: 4	2001	50km: No likelihood returned 100km: No likelihood returned	This is a migratory shorebird which is widespread across Australia. It was not included in the EPBC PMST desktop results however there are four records in the BirdLife data within 100 km. It mainly occurs in fresh and brackish inland wetlands but also occurs along the coast on intertidal mudflats (Geering et al. 2008, Menkhorst et al. 2017). Also occupies artificial habitats. Not recorded during the field survey.	**Likelihood of Occurrence:** Possible There are no records within 50 km however this species could potentially be present following large rainfall events. **Potential for residual impact:** Possible. **Area of potential impact:** 8.6 ha (RE 5.3.22)

NC Act (Qld) Listed Species							
Flora							
Acacia peuce Waddy	V	-	50km: 0 100km: 0	-	50km: N/A 100km: N/A	*Acacia peuce* is restricted to two sites near Boulia and Birdsville in Queensland and a third site Mac Clark (*Acacia peuce*) Conservation Reserve in the Northern Territory (ALA 2024). The total population is approximately 76,000 individuals spread over a total area of 74,000 square kilometres but with a total area of occupancy of only 400 km2. The tree is found in open arid plains that usually receive less than 150 millimetres (5.9 in) of rain per annum. They grow on shallow sand aprons overlaying gibber or clay slopes and plains and between longitudinal dunes or on alluvial flats between ephemeral watercourses. The soils can be saline or contain high levels of gypsum (ALA 2024). Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely. This is a large characteristic species known from just three sites. **Potential for residual impact:** Unlikely.
Eremophila stenophylla -	V	-	50km: 0 100km: 0	-	50km: N/A 100km: N/A	This *Eremophila* occurs from central Queensland south to near Yowah and Thylungra, This species usually occurs in *Acacia* woodland on skeletal soil in rocky places or along watercourses. Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely There are no records from within 100 km. **Potential for residual impact:** Unlikely.

Birds							
Epthianura crocea crocea Yellow Chat (gulf)	V	-	50km: 1 100km: 4	2012	50km: N/A 100km: N/A	Yellow chat occurs from north-west WA across the NT to south-west and coastal Qld. In south-west Qld it is sparsely scattered to the north and east of Birdsville mostly in the Diamantina River and central Coppers creek drainage basins (Higgins et al. 2001). It occurs in low vegetation surrounding wetlands, occasionally grassland and other areas of low vegetation such as saltbush. Often found around the interface of grasslands and saltmarsh. Not recorded during the field survey.	**Likelihood of Occurrence**: Unlikely, There is no suitable habitat of permanent wetlands with adjacent saltmarsh area within PL 1125. **Potential for residual impact:** Unlikely.

5.2. Listed Species Summary

The outcomes of the listed species impact assessment resulted in 11 species which are EPBC listed and considered as having a potential residual impact from the development due to a 'likely' or 'possible' likelihood of occurrence within PL 1125 (Table 5). These species include threatened and or migratory species as follows:

- Australian Painted Snipe *Rostratula australis,* EPBC Endangered
- Curlew Sandpiper *Calidris ferruginea*, EPBC Critically Endangered and Migratory;
- Common Greenshank *Tringa nebularia* EPBC Endangered and Migratory;
- Sharp-tailed Sandpiper *Calidris acuminata,* EPBC Vulnerable and Migratory;
- Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable and Migratory (within Australia);
- Southern Whiteface *Aphelocephala leucopsis*, EPBC Vulnerable;
- Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable;
- Common Sandpiper *Actitis hypoleucos*, EPBC Migratory;
- Pectoral Sandpiper *Calidris melanotos*, EPBC Migratory;
- Marsh Sandpiper *Tringa stagnatilis*, EPBC Migratory; and
- Red-necked Stint *Calidris ruficollis*, EPBC Migratory.

A Significant Residual Impact Assessment is caried out on these species below. Through engagement with DETSI, the Department also required a Significant Residual Impact Assessment for 11 additional species which use Regional Ecosystems identified within PL1125 but were considered as Unlikely to occur in the Project Area. These species are:

- Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered;
- Plains -wanderer *Pedionomus torquatus*, EPBC Critically endangered;
- *Sclerolaena walkeri,* EPBC vulnerable;
- Latham's snipe *Gallinago hardwickii*, EPBC vulnerable and Migatory;
- Painted Honeyeater *Grantiella picta*, EPBC vulnerable;
- Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri*, EPBC endangered;
- Kowari (Crest-tailed Mulgara) *Dasyuroides bynei*, EPBC endangered;
- Greater Bilby *Macrotis lagotis*, EPBC vulnerable;
- Flame Spiderflower *Grevillea kennedyana*, EPBC vulnerable;
- *Xerothamnella parvifolia,* EPBC vulnerable;
- Yellow Chat (gulf) *Epthianura crocea crocea*, NC Act Vulnerable.

5.3. Disturbance Footprint

The total footprint for the Vali application is 41.99 hectares which represents 0.92% of PL1125. The disturbance footprint areas for each regional ecosystem are provided in Table 6. Regional ecosystem 5.6.5 and 5.6.8 are lumped due to difficulties in delineating these and therefore mapping these at the scale required. Regional ecosystems 5.9.3 and 5.9.4 are lumped due to similar difficulties. Regional ecosystem 5.3.22 is a groundwater dependant ecosystem and hence is a MSES regulated vegetation (defined watercourse) and is within the disturbance footprint at five locations, Vali 3, Vali 4, Vali 5 and two locations along the pipeline corridor (Figure 7). None of the other regional ecosystems are designated as regulated vegetation.

Table 6. Disturbance footprint areas for each Regional Ecosystems (REs).

Regional Ecosystem ID	**Regional Ecosystem (RE) Description**	**Disturbance Area ha (% of RE in PL1125)**	**RE Area in PL1125 ha (%)**
5.3.22	Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes.	8.69 (0.92%)	945.22 (20.81%)
5.6.4	*Atalaya hemiglauca* +/- *Acacia aneura* +/- *Acacia* spp. +/- *Corymbia terminalis* low open woodland on reticulate sand dunes.	11.41 (17.05%)	66.91 (1.47%)
5.6.5 or 5.6.8	Variable sparse to open-herbland or *Triodia basedowii* hummock grassland on dune flanks, crests and sandy interdunes; or *Zygochloa paradoxa* and/or *Crotalaria eremaea* +/- *Triodia basedowii* open tussock grassland and herbland on mobile crests and slopes of sand dunes.	8.80 (0.41%)	2151.54 (47.37%
5.9.3 or 5.9.4	*Astrebla* spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments; or *Aristida contorta* sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover.	13.09 (0.95%)	1378.75 (30.35%)
Total		**41.99 (0.92%)**	**4542.42**

5.4. Significant Residual Impact (SRI) Guideline Criteria Assessment

The Queensland Significant Residual Impact (SRI) Guideline (DEHP 2014) was used to determine whether or not the Vali Field project will, or is likely to have a significant residual impact on a matter of state environmental significance (MSES). Assessment frameworks for the activities to which this guideline applies have an 'avoid, mitigate, offset' obligation that requires in the first instance, avoiding impacts on prescribed environmental matters and if avoidance cannot be achieved, demonstrating that impacts have been carefully managed and minimised (mitigated). If there is still an impact on the MSES after all reasonable avoidance and on-site mitigation measures for the prescribed activity have been or will be undertaken, this guideline should be used to determine the 'significance' of the impact. If after avoidance and mitigation, there is still an impact on prescribed environmental matters, an offset may be required where the impact is, or is likely, to be significant (DEHP 2014).

The SRI Guideline does not use a likelihood and consequence framework to assess risk and instead uses 'significant residual impact criteria' to describe what level of impact is significant for each of the prescribed environmental matters. does not define the term significant.

The SRI guideline covers the following prescribed environmental matters:

- Regulated vegetation
- Connectivity areas
- Wetlands and watercourses
- Protected wildlife habitat
- Koala habitat in SE Queensland
- Protected areas
- Fish habitat areas and highly protected zones of marine parks
- Waterways providing for fish passage
- Marine plants
- Legally secured offset areas.

The desktop review and ground truthing during the field survey determined that there are none of the following prescribed environmental matters within PL1125 these are consequently not assessed any further:

- Koala habitat in SE Queensland
- Protected areas
- Fish habitat areas and highly protected zones of marine parks
- Waterways providing for fish passage
- Marine plants
- Legally secured offset areas.

The remaining prescribed environmental matters are assessed below using the SRI guideline.

Where appropriate a risk-based approach is also used to assess and describe risk based on categories used for threatened species national recovery plans. These are as follows:

Categories for likelihood are defined as follows (DCCEEW 2022):

- Almost certain – expected to occur every year,
- Likely – expected to occur at least once every five years,
- Possible – might occur at some time,
- Unlikely – such events are known to have occurred on a worldwide basis but only a few times,
- Rare or Unknown – may occur only in exceptional circumstances; OR it is currently unknown how often the incident will occur.

Categories for consequences are defined as follows (DCCEEW 2022):

- Not significant – no long-term effect on individuals or populations,
- Minor – individuals are adversely affected but no effect at population level,
- Moderate – population recovery stalls or reduces,
- Major – population decreases,
- Catastrophic – population extinction.

The risk matrix used by DCCEEW for their National Recovery Plans uses a qualitative assessment drawing on peer reviewed literature and expert opinion. Levels of risk are identified in Table 7 and the associated priority for action are defined as follows (DCCEEW 2022):

- Very High – immediate mitigation action required,
- High – mitigation action and an adaptive management plan required, the precautionary principle should be applied,
- Moderate – obtain additional information and develop mitigation action if required,
- Low – monitor the threat occurrence and reassess threat level if likelihood or consequences change.

Table 7 Risk matrix used by DCCEEW for their National Recovery Plans (DCCEEW 2022)

Likelihood of occurrence	Consequences				
	Not significant	**Minor**	**Moderate**	**Major**	**Catastrophic**
Almost certain	Low	Moderate	Very High	Very High	Very High
Likely	Low	Moderate	High	Very High	Very High
Possible	Low	Moderate	High	Very High	Very High
Unlikely	Low	Low	Moderate	High	Very High
Rare or Unknown	Low	Low	Moderate	High	Very High

5.4.1. Regulated Vegetation

Regulated vegetation includes vegetation that:

- is an endangered or of concern regional ecosystem, as defined under the Vegetation Management Act 1999; or
- intersects with an area shown on the vegetation management wetlands map, as defined under the Vegetation Management Act 1999, (ie. the component of a regional ecosystem that lies within a mapped wetland); or
- is located within the defined distance from the defining banks of a watercourse identified on the vegetation management watercourse map, as defined under the Vegetation Management Act 1999.

No endangered or of concern regional ecosystem, as defined under the Vegetation Management Act 1999 are present in PL 1125. Areas shown on the vegetation management wetlands map are present within PL1125 and the disturbance footprint intersects with some of these areas which are identified as RE 5.3.22 *Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes*. RE 5.3.22 is not endangered or of concern and no areas constitute a defined watercourse however as they are included within mapped wetlands (Category 8f) an assessment of the three criteria of section 2.1 of the SRI guideline is required.

Criteria 1: The flowline is consistent with 'linear infrastructure'. The flowline corridor is 40 meters in width which exceeds the 20 m wide threshold for a sparse (structural category) regional ecosystem (RE 5.3.22) that lies within a mapped wetland. Criteria 1 is therefore exceeded.

Criteria 2: Clearance of 5.3.22 is within 50 m of the defining bank (the high-water point of flooding) of a vegetation management wetland community that lies within a mapped wetland. All clearance of RE 5.3.22 within 50 m of the defining bank is also considered within Criteria 1.

Criteria 3: This is not applicable as there is no defined watercourse.

In accordance with the first note of the SRI guideline section 2.1 the project footprint therefore results in a significant residual impact on the regional ecosystem that lies within the mapped wetland (RE 5.3.22) as Criteria 1 and Criteria 2 are exceeded.

The disturbance footprint results in a total clearance area of 8.69 ha of RE 5.3.22. This disturbance area represents 0.92 % of RE 5.3.22 within PL 1125.

5.4.2. Connectivity areas

The DETSI Landscape Fragmentation and Connectivity (LFC) tool was used to assess whether significant impacts to connectivity would occur from the existing and proposed disturbance within PL1125. It consists of two analysis tools the *Connectivity Impact Assessment (CIA) Tool* and the *Standalone Landscape Fragmentation Analysis Tool*. The LFC tool determines the significance of a proposed impact on connectivity areas by testing:

1. Whether the change in the core ecosystem extent at the local scale (post impacts) is greater than a threshold determined by the level of fragmentation at the regional scale; or

2. If any core area (greater than or equal to one hectare) is lost or reduced to patch fragments (core to non-core).

The LFC Tool User Guide was used to interpret the results and determine whether constitutes a significant residual impact to the connectivity prescribed environmental matter. If either of the test results are *True,* then the project impact is considered to cause a significant residual impact on connectivity areas.

The results of the *LFC Assessment Tool* analysis are presented in Table 8 to Table 10. The core area is identified as greater than 500 ha and is 100 % covered by remnant vegetation.

For Test 1 the local change threshold for an impact is 50% (Table 10 LOCAL_CHANGE_THRESHOLD) and the change to the core area from the impact is 0.9601% (Table 10 PROP_ CORE_ CHANGE) which is well below the threshold for an impact.

For Test 2 the number of pre-clearance core areas is identified as 1 and the number of each post clearance core areas is also identified as 1 and therefore does not change and the core areas is not reduced to a patch fragment (Table 9).

Table 10 contains the Significance Assessment results which identify a FALSE results for both tests which confirms that the project does not result in a significant impact to connectivity.

The disturbance areas consist of linear disturbance such as the flowline and access tracks and blocks of disturbance such as wellpads, ponds and associated infrastructure. The flowline corridor is approximately 40 m wide which includes the buried pipeline and an access track. Bare ground makes up a small proportion of the flowline following rehabilitation and did not appear to be different from adjacent areas (Figure 8 and Figure 9). The width of the corridor that was disturbed for construction of the flowline appeared during ground-truthing conducted on 8

September 2024 to be much less than the 40 meters designated as the corridor, typically less than 20 meters in width (Figure 8). Regeneration of native vegetation was evident along the flowline following good rainfall in 2023 and 2024 (Figure 8 and Figure 9) and contains vegetation cover that is not substantially different from adjacent areas. It is considered that the flowline has a very low impact on connectivity of flora and fauna including listed species.



Figure 8 The flowline west of Vali 1 on 8 September 2024 within RE5.6.8 on a dune crest, following rehabilitation and good rainfall.



Figure 9 The flowline west of Vali 1 on 8 September 2024 following rehabilitation and good rainfall.

Other linear disturbance such as access tracks are approximately 3 to 5 meters wide and consist of bare ground. Wildlife often use these tracks for easy access and resting as observed during the field survey. The tracks are consistent with pastoral tracks which are prevalent throughout the area and are not considered to pose any greater barrier to connectivity for wildlife than any other tracks in the region. It is considered that the access tracks have a very low impact on connectivity for wildlife including listed species.

Remaining areas of disturbance consist of well fields, lined catchment ponds and associated infrastructure for the five Vali wells. They are roughly square to rectangular and located in separate areas (Figure 7). Disturbance areas for the five well pads and associated infrastructure range from 2.68 hectares for Vali-2 to 7.16 ha for Vali-1. Valia 1, Vali-2 and Vali-3 have already been built but Vali-4 and Vali-5 are yet to be constructed. They are all located in interdunal plains or swales with larger areas of habitat adjacent to them than is being disturbed. In all cases corridors of habitat is available surrounding the disturbance areas for movement of wildlife at a local scale. At a larger scale the disturbance represents a very small extent of existing habitats, less than 1% of PL1125.

It is therefore considered that the disturbance area for the Vali Field has a very low impact on connectivity for wildlife in general at the local scale and at the regional scale.

All of the listed species identified as potentially occurring within PL1125 and the project footprint are birds apart for one mammal, Dusky Hopping-mouse. Nine of the ten species of birds (the eight waders plus Blue-winged Parrot) are highly mobile, being either migratory or nomadic and regularly or periodically move long distances to take advantage of seasonal or environmental conditions. Disturbance on the scale of the Vali wellfield project would present no barrier to these birds which can move on the scale of tens to hundreds of kilometres within a day.

The remaining species of bird, Southern Whiteface, is considered to be sedentary with local movements undertaken by young and unpaired birds (Higgins & Peter 2002). This species is known to move outside of their normal home range during times of drought, and they have been recorded in foraging parties in winter (Higgins & Peter 2002) which typically consist of mixed species roaming over larger areas than their normal home range. The scale of disturbance from the Vali Field is not considered to be a significant barrier to the species given the dimensions of the disturbance areas are measured in hundreds of meters and suitable habitat remains in adjacent areas to the disturbance footprint.

Dusky Hopping-mouse lives in sandy dunes and RE 5.6.5 and RE 5.6.8 provide potential habitat for Dusky Hopping-mouse within PL 1125. These habitats are typically found in a linear arrangement along dune crests which may be narrow corridors or broader where dunes are lower and wider. The areas of dunes which are affected are along the flowline and access tracks as the wellfield infrastructure is located away from dunes. The disturbance to dune habitats from construction of the flowline has largely been rehabilitated and appears similar in cover to adjacent areas, as discussed above. Access tracks through dunes result in a bare ground at scale of about 3 m to 5 m which is consistent with pastoral tracks in the area and some areas of bare ground that naturally occur within the dunes. Such distances do not present a barrier to Dusky Hopping-mouse. Foraging distances for the species can reach up to 400 m per night, with individuals extending their foraging range to 1.5 km over three nights (ALA 2025).

It is considered that the disturbance area for the Vali Field has a very low impact on connectivity for listed species at the local scale and at the regional scale.

Table 8. Site scale results from the from the Connectivity Impact Assessment Tool analysis.

COREID	VALUE	LABEL	AREA_HA
1	0	non-rem	42.0
1	1	patch	1.93
1	2	edge	74.93
1	3	perforated	None
1	4	core (< 100 hectares)	None
1	5	core (100-500 hectares)	None
1	6	core (> 500 hectares)	12265.1
1	7	water	None

Table 9 Local scale summery from the Connectivity Impact Assessment Tool analysis.

VALUE	LABEL	PRE_ GRID_ AREA	PRE_ GRID_ COUNT	PRE_ PATCH_ COUNT	POST_ GRID_ AREA	POST_ GRID_ COUNT	POST_ PATCH_ COUNT	DIFF_ GRID_ AREA	DIFF_ GRID_ COUNT	DIFF _PATCH_ COUNT	PROP_ GRID_ AREA	PROP_ GRID_ COUNT	PROP_ PATCH_ COUNT
0	non-rem	0	0	0	42.04	4204	2	42.04	4204	2	NA	NA	NA
1	patch	0	0	0	1.93	193	0	1.93	193	0	NA	NA	NA
2	edge	0	0	0	74.93	7493	2	74.93	7493	2	NA	NA	NA
6	core (> 500 hectares)	12384	1238400	1	12265.1	1226510	1	-118.9	-11890	0	0.990399	0.990399	1

Table 10. Significance Assessment results from the Connectivity Impact Assessment Tool analysis.

TOTAL_ CORE_ REGIONAL	PROP_ CORE_ REGIONAL	LOCAL_ CHANGE_ THRESHOLD	TOTAL_ CORE_ LOCAL	PROP_ CORE_ LOCAL	POST_ PROP_ CORE_ LOCAL	PROP_ CORE_ CHANGE	SIGNIF_ LOCAL_ CORE_ CHANGE	SITE_ CORE_ NON CORE	SIGNIFICANT_ IMPACT
95491.66	99.9886	50	12384	100	99.0399	0.9601	FALSE	FALSE	FALSE

5.4.3. Wetlands and Watercourses

PL 1125 does not contain any of the following wetlands:

- wetland in a wetland protection area as shown on the Map of referrable wetlands under schedule 12, part 2 of the Environmental Protection Regulation 2008;
- wetlands of high ecological significance as shown on the Map of referrable wetlands under schedule 12, part 2 of the Environmental Protection Regulation 2008; and
- wetland or watercourse in a high ecological value waters as identified under the Environmental Protection (Water) Policy 2009, schedule 2.

The SRI assessment finds that the project does not have a significant residual impact on prescribed wetlands or watercourses.

5.4.4. Protected Wildlife Habitat: Environmentally Sensitive Area – Essential Habitat

Mapping layers within Queensland Globe do not identify any Category A or Category B environmentally sensitive areas (ESAs) within PL1125. If an area contains both protected wildlife habitat and is mapped as a category A, B or C RVM area then it is defined as a Category C ESA under the Vegetation Management Act 1999. Category C ESAs must be identified by ground truthing of potential habitat for protected wildlife including endangered and vulnerable wildlife species. The whole of PL1125 is identified as category B C RVM mapped area in the Queensland Globe vegetation layer consequently the whole of PL1125.

All areas of PL1125 and the disturbance area are considered Category C Environmentally Sensitive Area – Essential Habitat for endangered and vulnerable wildlife as all of PL1125 is mapped as a Category B RVM area and all regional ecosystems within PL1125 may provide potential habitat for both endangered and vulnerable species as identified for each Regional Ecosystem as follows:

- RE 5.3.22 provides potential habitat for the following species:
    - Curlew Sandpiper *Calidris ferruginea*, EPBC Critically Endangered and Migratory;
    - Plains -wanderer *Pedionomus torquatus*, EPBC Critically endangered;
    - Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered;
    - Australian Painted Snipe *Rostratula australis,* EPBC Endangered
    - Common Greenshank *Tringa nebularia* EPBC Endangered and Migratory;
    - Sharp-tailed Sandpiper *Calidris acuminata,* EPBC Vulnerable and Migratory;
    - Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable and

Migratory (within Australia);
    - Flame Spiderflower *Grevillea kennedyana*, EPBC vulnerable;
    - *Sclerolaena walkeri*, EPBC vulnerable;
    - *Xerothamnella parvifolia*, EPBC vulnerable;
    - Common Sandpiper *Actitis hypoleucos*, EPBC Migratory;
    - Pectoral Sandpiper *Calidris melanotos*, EPBC Migratory;
    - Marsh Sandpiper *Tringa stagnatilis*, EPBC Migratory; and
    - Red-necked Stint *Calidris ruficollis*, EPBC Migratory.
    - Yellow Chat (gulf) *Epthianura crocea crocea*, NC Act Vulnerable.
- RE 5.6.4 provides potential habitat for:
    - Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered;
    - Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri*, EPBC endangered;
    - Southern Whiteface *Aphelocephala leucopsis*, EPBC Vulnerable;
    - Painted Honeyeater *Grantiella picta*, EPBC vulnerable;
    - Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable;
    - Greater Bilby *Macrotis lagotis*, EPBC vulnerable;
    - Flame Spiderflower *Grevillea kennedyana*, EPBC vulnerable;
- RE 5.6.5 and RE 5.6.8 provides potential habitat for:
    - Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered;
    - Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri*, EPBC endangered;
    - Kowari (Crest-tailed Mulgara) *Dasyuroides bynei*, EPBC endangered
    - Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable;
    - Greater Bilby *Macrotis lagotis*, EPBC vulnerable;
- RE 5.9.3 and RE 5.9.4 provides potential habitat for:
    - Plains -wanderer *Pedionomus torquatus*, EPBC Critically endangered;
    - Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered;
    - Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable and Migratory (within Australia);
    - Latham's snipe *Gallinago hardwickii*, EPBC vulnerable and Migratory;
    - *Sclerolaena walkeri,* EPBC vulnerable*;*
    - Yellow Chat (gulf) *Epthianura crocea crocea*, NC Act Vulnerable.

This disturbance area results in habitat loss for these species as follows:

- 8.69 ha of 5.3.22 which is equivalent to 0.92% of this community as mapped within PL 1125;

- 11.41 ha of RE 5.6.4 which is equivalent to 17.05% of this community as mapped for PL 1125;
- 8.8 ha of RE 5.6.5/RE 5.6.8 which is equivalent to 0.41% of this community as mapped for PL 1125;
- 13.09 ha of RE 5.93/RE 5.94 (combined) which is equivalent to 0.95% of this community as mapped for PL 1125.

A Significant Residual Impact Assessment is carried out on these species below.

As all areas of PL1125 and the disturbance footprint are categorised as Category C Environmentally Sensitive Area – Essential Habitat and therefore do not lie within a primary or secondary protection zones. The areas of the disturbance footprint that are categorised as Category C Environmentally Sensitive Area (ESA) – Essential Habitat and will therefore require authorisation for disturbance are presented according to the infrastructure category in Table 11.

Table 11 Category C Environmentally Sensitive Area (ESA) – Essential Habitat that will require Authorised disturbance to Environmental Authorisation to disturb

Tenure	**Description of Infrastructure**	**Max Disturbance footprint (ha)**	**ESA Protection Zone**	**Coordinates**
Constructed				
PL1125	Vali 1 Well and associated ponds and infrastructure	7.16	Category C ESA	-27.99192 141.06211
PL1125	Vali 2 Well and associated ponds and infrastructure	3.90	Category C ESA	-27.99477 141.07417
PL1125	Vali 3 Well and associated ponds and infrastructure	5.63	Category C ESA	-27.99665 141.05751
PL1125	Flowline and pipelines	13.34	Category C ESA	-27.99242 141.05741 -27.99499 141.03456
PL1125	Access Tracks	3.00	Category C ESA	-27.99438 141.06936

				-27.99412 141.05735
PL1125	Kudnari Bore	0.60	Category C ESA	-27.98032 141.05211
Proposed				
PL1125	Vali 4 Well and associated ponds and infrastructure	3.11	Category C ESA	-27.98331 141.06514
PL1125	Vali 5 Well and associated ponds and infrastructure	3.11	Category C ESA	-27.98102 141.05546
PL1125	Access Tracks	2.14	Category C ESA	-27.98785 141.06488

5.5. Impact assessment of proposed and existing activities on Environmentally Sensitive Areas (ESAs) – Essential Habitat

The outcomes of the listed species impact assessment identified seven EPBC Endangered and Vulnerable species with a 'likely' or 'possible' likelihood of occurrence within PL 1125 (Table 5). Through engagement with DETSI, the Department also required a Significant Residual Impact Assessment for 11 additional species which use Regional Ecosystems identified within PL1125 but were considered as Unlikely to occur in the Project Area in Table 5. All of these species are further assessed below to determine if the potential impact is likely to be significant. This is based on the impact criteria provided in section 5.1 of the Significant Residual Impact (SRI) guideline for endangered and vulnerable wildlife habitat (including essential habitat) (DEHP 2014). The guideline states that 'An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:

- lead to a long-term decrease in the size of a local population; or
- reduce the extent of occurrence of the species; or
- fragment an existing population; or
- result in genetically distinct populations forming as a result of habitat isolation; or
- result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat; or

- introduce disease that may cause the population to decline, or
- interfere with the recovery of the species; or
- cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species.

5.5.1. Potential Impacts and Mitigation Measures

In accordance with section 125 of the Environmental Protection Act 1994 (EP Act), an application for an environmental authority (EA) must include an assessment of the likely impact of each environmentally relevant activity on environmental values including Environmentally Sensitive Areas (ESAs) – Essential Habitat. This includes a requirement to provide details of:

- any emissions or releases likely to be generated by the activities;
- descriptions of the risk and likely magnitude of the impacts;
- details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and
- details of how the impacted land will be rehabilitated after the activities cease.

Details are provided of these requirements in the Vali Gas Field Project Supporting Documentation for Site-Specific Application and are not repeated here. The relevant sections of the application are:

- Section 3.2 for a description of the emissions from the project;
- Section 3.3 including Table 6 for a description of the risk and likely magnitude of impacts on the environmental;
- Section 3.4 for details of the management practices proposed to be implemented to prevent or minimise adverse impacts; and
- Section 3.5 for details of how the impacted land will be rehabilitated after the activities cease.

This section uses information presented in Sections 3.2 to 3.5 of the application supporting documentation to undertake a significant residual impact assessment using the impact criteria provided in section 5.1 of the Significant Residual Impact (SRI) guideline (DEHP 2014).

The impact assessment for the project (Table 3.6 – Natural Environmental Impacts and Risk Assessment of the Supporting Documentation for Site-Specific Application Vali Gas Field Project) identified the following hazards and associated potential impacts to fauna and fauna habitats:

- Air Emissions (dust),
- Fire or explosion,
- Groundwater contamination,

- Hazardous materials – storage, handling, spills/leaks,
- Light emissions (during construction only),
- Long-term site instability,
- Loss of well integrity,
- Noise and vibration emissions,
- Surface water contamination,
- Vehicle movements,
- Waste – storage, handling and disposal,
- Introduction of invasive flora and fauna,
- Land clearing.

The impacts assessment provided pre-mitigation risk ratings, and residual risk ratings for each identified risk with pre-mitigation risks ranging from very low to medium and residual risk ratings from very low to low. The highest risk ratings were for the following risks which all had a pre-mitigation rating of *medium* and residual risk of *low*:

- Groundwater contamination,
- Hazardous materials – storage, handling, spills/leaks,
- Long-term site instability,
- Loss of well integrity,
- Waste – storage, handling and disposal, and
- Land clearing.

Mitigation and management measures that have been or will be implemented and are relevant to these potential impacts are given below.

Vegetation clearance:

- Undertake project activities to avoid watercourses.
- Locate access tracks to avoid surface water features such as wetland areas and to maintain pre-existing water flows.
- Mark the areas to be cleared before clearing.
- Clearing should be supervised to ensure no 'out of bounds' clearing takes place.
- Clearing should be conducted directionally in a manner that allows fauna species the best opportunity to relocate to native habitat.
- Placing topsoil in uncompacted stockpiles to minimise loss of seed viability and soil biota.
- Use existing tracks, roads and/or seismic lines for access, where practicable, to prevent unnecessary dust emissions and habitat removal.

Vehicle collision with wildlife:

- Restrict traffic to established roads and tracks only.
- Maintain a 40-km/h speed limit on all access tracks, to reduce the risk of animal strike.

Introduction of weeds:

- Inspect and certify earth moving equipment as weed-free prior to accessing the project site.
- Vehicles and mobile equipment will be parked only in designated parking areas. Vegetated areas will not be used for parking.
- Monitor Project site for new or increased weed issues and manage accordingly.
- Undertake induction and training sessions for all site personnel prior to working on site.

Waste causing impacts to fauna or habitat:

- Mange waste in accordance with the waste and resource management hierarchy and the waste and resource management principles.
- Undertake an initial hazard assessment of waste streams and storages.
- Segregate waste streams to maximise reuse and recycling.
- No disposal or use of regulated waste.
- Restrict the availability of domestic waste by covering bins to prevent access by scavenging species.
- Manage sewage effluent and/or grey water in accordance with conditions of environmental authority
- Monitor sumps for overflow during periods of high rainfall Low hazard water storage ponds operated and maintained in accordance with accepted engineering standards appropriate for the purpose for which the pond is intended to be used.
- Design pond floor and sides with material that will contain the wetting front and any entrained contaminants within the bounds of the containment system during operation and decommissioning and rehabilitation.
- Monitor for early signs of loss of structural or hydraulic integrity as specified in the initial hazard assessment.
- When no longer required, low hazard water storage ponds to be decommissioned to no longer accept inflow from petroleum activities.

Surface water contamination - Spillage from loss of well integrity and hazardous materials:

- Perform all activities in accordance with applicable industry and regulatory standards.

- Assess well bore integrity prior to commencing drilling and rectify any issues immediately.
- Develop an Emergency Response Plan, which includes procedures for response to well issues (e.g. blow out).
- Undertake induction and training sessions for all site personnel, to ensure an understanding of emergency response procedures.
- Store all dangerous goods and hazardous substances in accordance with manufacturers recommendations and workplace health and safety requirements.
- Volume of chemicals stored onsite will not exceed those listed under Schedule 2 (Part 2 Section 8) of the Environmental Protection Regulation 2008.
- Safety Data Sheets (SDS) to be available for all chemicals stored onsite.
- Minimise fuel transfer where possible, and use drip trays at all times.
- Store residual drilling material in sumps.
- Drilling fluids will not be oil-based or synthetic oil-based.
- Store spill response kits at all locations where hazardous materials are handled or stored.
- Undertake induction and training sessions for all site personnel, to ensure an understanding of SDS application and spill prevention/response.

Long-term site instability - Surface water contamination

- Implement sediment and erosion control measures to prevent soil loss and deposition beyond Project sites
- Rehabilitate the site promptly following decommissioning, include the following:
    - remove hardstand areas,
    - reshape disturbed areas to a stable landform,
    - re-profile contours to be re consistent with the surrounding landform,
    - re-establish surface draining lines,
    - reinstate topsoil.
- Monitor performance of rehabilitation activities until final acceptance criteria are met.
- Develop a rehabilitation report and submit to the administering authority.

Fire or Explosion:

- Maintain and appropriately sign all fire-fighting equipment
- Fire access tracks will be maintained to ensure ease of access to site
- Store all dangerous goods and hazardous substances in accordance with manufacturers recommendations and workplace health and safety

requirements

- Design, construct and operate all equipment and infrastructure to reduce the potential for ignition
- Restrict smoking to areas clear of any vegetation and prohibit disposal of cigarette butts to land
- Monitor fire conditions, weather conditions, current fires in the area and high fire risk days
- Develop an Emergency Response Plan, which includes procedures for response to fire
- Undertake induction and training sessions for all site personnel, to ensure an understanding of fire prevention and response procedures.

5.5.2. Environmentally Sensitive Areas (ESAs) – Essential Habitat for Endangered Species

The listed species likelihood and residual impact assessment (Table 5) identified three EPBC Endangered species Curlew Sandpiper, Common Greenshank and Australian Painted Snipe as having records within 50 km of PL1125 and therefore as possibly occurring within the project footprint. All three of these species are waders which depend on wetlands and suitable habitat for these species has been identified within PL 1125 as RE 5.3.22. The disturbance area includes 8.80 hectares of RE 5.3.22 (Figure 10) which is identified as Category C Environmentally Sensitive Areas for Endangered Wildlife.

The most critical habitat waders and water birds including the three species identified above are designated as RAMSAR wetlands which are internationally recognised and Migratory Shorebird Habitat locations which are wetlands of national importance. Wetland habitat is considered to be internationally important if it regularly supports:

- 1 percent of the individuals in a population of one species or subspecies of waterbird; or,
- a total abundance of at least 20,000 waterbirds.

Nationally important habitat for migratory shorebirds if it regularly supports:

- 0.1 percent of the flyway population of a single species of migratory shorebird; or,
- 2,000 migratory shorebirds; or,
- 15 migratory shorebird species.

There are none of these wetlands within or near PL1125 with the nearest being the ephemeral Lake Yamma Yamma which is located approximately 170 kilometres to the north of PL1125.

DETSI identified an additional four critically endangered or endangered species for further SRI assessment which have potential habitat within PL1125 but have not been recorded within 100 km of the project area. These species are Night Parrot, Plains-

wanderer, Major Mitchel's Cockatoo, and Kowari. These species may potentially use some or all of the Regional Ecosystem habitats present within PL 1125 as identified in the SR assessment for each species.

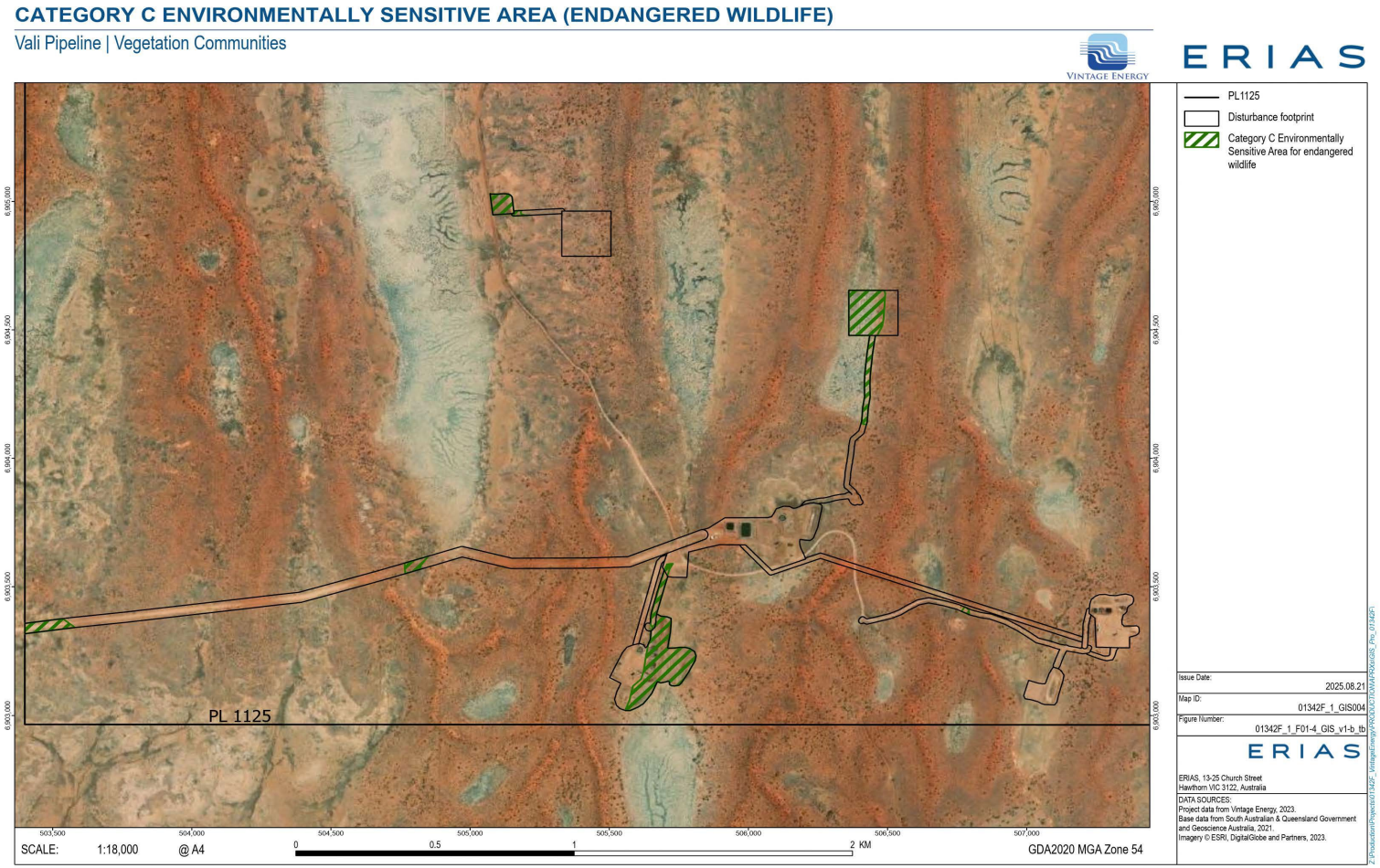


Figure 10 Areas of RE 5.3.22 within the disturbance footprint which are identified as Category C Environmentally Sensitive Areas for Endangered Wildlife.

Curlew Sandpiper *Calidris ferruginea*, EPBC Act: Critically Endangered and Migratory, NC Act: Critically Endangered

No. of Records within 50 km: 1 **No. of Records within 100 km:** 3

Not recorded during the survey.

Distribution

Curlew sandpipers breed across Arctic Siberia and migrate through south-east Asia to Australia and other countries in the southern hemisphere. Birds also move from their breeding grounds across Siberia to India, continuing down. They may also move overland to east Asia and via the coast of China to Australia (BirdLife International 2021).

Curlew sandpipers are most common in the far south-east and north-west of Australia. They are found in many Australian coastal sites and may also be seen inland in suitable wetland habitats (DCCEEW 2023a). In Queensland there are scattered records in the Gulf of Carpentaria. The species is widespread along the coast south of Cairns. Inland, the species is sparsely scattered, but there have been regular sightings around Mount Isa. (DCCEEW 2023a).

Population and declines

There are currently an estimated 40,100 (range 8,100–125,300) mature individuals in the wild with a continuing declining trend (Clemens et al. 2021). The extent of occurrence (EOO) is estimated at 10,900,000 km^2 (range 10,400,000–11,400,000 km^2) and area of occupancy (AOO) at 8,000 km^2 (8,000–12,000 km^2). Despite the loss and degradation of wetland habitats, Clemens et al. (2021) considers both the EOO and AOO to be stable (DCCEEW 2023a).

The most recent analysis by Rogers et al. (2023) estimated the mean change between 1993 and 2021 was -6.4% annually for an estimated total decline of -84.5% (95%CI: -90.9, -74.4). This is equivalent to a decline of -53% (95%CI: -72.3, -18.7) over three generations (DCCEEW 2023a).

Declines are thought to be due to the increasing frequency and length of droughts, particularly in south-eastern Australia, changes to coastal staging locations, particularly along the coast of the Yellow Sea where there is rapid development for aquaculture and industry; invasion by cordgrass (*Spartina alterniflora*); pollution from domestic, industrial and aquaculture discharges, oil and pesticides; and hunting and incidental drowning in fishing nets and traps (Clemens et al. 2021). Available habitat is also shrinking through a combination of restricted inflow of sediments from increasingly dammed rivers and sea level rise (DCCEEW 2023a).

Habitat and Ecology

Curlew sandpiper often feed in mixed flocks with other species of shorebirds, pecking at invertebrates on the surface of the mud or making shallow probes below its surface (BirdLife Australia 2021). They generally forage within mudflats and nearby shallow water. In non-tidal wetlands, they usually wade, mostly in water 15–30 mm,

but up to 60 mm deep. In intertidal areas, they forage at the edge of shallow pools and drains, and along sandy shores, often following the receding tide to forage near the water edge (DCCEEW 2023a). They also feed on part of the mudflats that have been exposed for a longer period, foraging in small groups (DCCEEW 2023a). Occasionally they forage on wet mats of algae or waterweed, or on banks of beachcast seagrass or seaweed. At high tide, the species tends to forage among low sparse emergent vegetation such as saltmarsh, and sometimes within flooded paddocks or inundated saltflats (Higgins & Davies 1996).

Roosting mainly occurs around intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes, and lagoons near the coast. Roosting has been recorded on occasion near ponds in saltworks and sewage farms. Less often, individuals are recorded inland around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand (DCCEEW 2023a).

Regional Ecosystem RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes provides potentially suitable habitat Curlew Sandpiper within PL 1125.

Critical Habitat

The National Directory of Important Migratory Shorebird Habitat identifies all known feeding and roosting sites of Curlew Sandpiper in Australia (Weller et al. 2020). These areas are identified as internationally or nationally important in accordance with the EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species.

An Internationally Important site is determined for Curlew Sandpiper if it regularly supports more than 1 percent of the species' total population (1 percent flyway of the population = 900 individuals, Weller et al. 2020).

A Nationally Important site is determined for Curlew Sandpiper if it regularly supports more than 0.1 percent of the bird's Flyway population (0.1 percent of the flyway population = 90 individuals, Weller et al. 2020).

Area of Disturbance

Potential habitat for Curlew Sandpiper within the disturbance footprint consists of 8.69 hectares of RE 5.3.22 which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The conservation advice for Curlew Sandpiper identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by residential and commercial development
    - Sea level rise
    - Climate change in Arctic breeding areas*

    - Downstream effects of large dams
- Moderate threats Very High Risk:
    - Habitat loss caused by industrial aquaculture*
    - Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass*
    - Hunting*
    - Increased frequency and length of droughts
- Moderate threats, High Risk:
    - Disturbance at feeding and roosting sites
- Minor threats, moderate risk:
    - Chronic and acute pollution

* = threat occurs mostly outside Australia

SRI Assessment

Decrease in Population Size: Curlew Sandpiper does not breed in Australia and hence the project area does not constitute breeding or nesting area. The project area is not within the typical Australian range of the species in Queensland with only sparsely scattered records from the region and is not on the migration route for this species or provide typical roosting areas. There is one record from within 50 km and three records from within 100 km which represent transient birds. It is possible that the species may occur in the local region on an a very occasional basis however it is considered that there is no local population within PL1125 or the surrounding area. The Vali Field project is therefore assessed not to have a significant impact that will lead to a long-term decrease in the size of a local population of Curlew Sandpiper.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Curlew Sandpiper which is highly migratory and is capable of flying hundreds of kilometres per day. No local population exists with only sparse scattered records of highly mobile birds. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented are described. Construction of the flowline, Vali 1, 2 and 3 well pads

and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Curlew Sandpiper.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste streams are of an industrial nature, and these are managed in dedicated sumps or storages and disposed of appropriately using industry standard methods. The project is not considered to result in the potential for introduction of diseases to Curlew Sandpiper or other wildlife species.

Interference with recovery: The conservation advice for Curlew Sandpiper identifies two primary conservation objectives:

- Minimise further loss of habitat critical to the survival of Curlew Sandpiper throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).
- Prevent further declines in Curlew Sandpiper populations by working with relevant Range States to address threats in the East Asian-Australasian Flyway.

The second objective is not relevant as it applies to areas outside of Australia. The first objective relates to identification, preservation and management of critical habitats for Curlew Sandpiper. There are only sparse and scattered recording of the species within 100 km of the project. The project area, including RE5.3.22, and surrounding regions do not provide critical habitats for this species. The nearest identified Migratory Shorebird Habitat location is 170 km to the North. The project does not impact any recovery efforts for Curlew Sandpiper.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Curlew Sandpipers seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Curlew Sandpiper from the project is considered to be 'Unlikely' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Finding

There is one record of Curlew Sandpiper from within 50 km and three records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be Low with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Common Greenshank *Tringa nebularia* EPBC Act: Endangered and Migratory, NC Act: Not Listed

No. of Records within 50 km: 0 **No. of Records within 100 km:** 5

Not recorded during the survey.

Distribution

Common Greenshank is a migratory shorebird that has a widespread distribution throughout Australia, in summer (Geering et al. 2008, ALA 2024). The common greenshank is widespread in coastal regions, occurs in all types of wetlands, and has one of the widest distribution of any shorebird in Australia (Higgins & Davies 1996). In Queensland, the species is widespread in the Gulf country and eastern Gulf of Carpentaria. Inland, there have been a few records south of a line from near Dalby to Mt Guide, and sparsely scattered records elsewhere (Higgins & Davies 1996). Inland, the species is known mostly in the west and in the Murray River Valley (Higgins & Davies 1996).

The species arrives in Australia from August, passing mainly through West Australia (Lane 1987), and also passing through the Torres Strait with individuals found as far south as south-east Tasmania (Higgins & Davies 1996). The Common Greenshank starts moving southwards in Western Australia from November onwards (Lane 1987), with numbers increasing slowly at most inland and coastal sites during August and September. The largest increases at some scattered sites are reported in October and November (Alcorn 1988). The Common Greenshank overwinters at a few selected sites, which reach the expected wintering numbers in late April and early May (Alcorn 1988). The proportion of the population that overwinters in Australia varies between years (Thomas 1970). During non-breeding season, most birds do not seem to move long distances within Australia, although dispersive movements may occur (Higgins & Davies 1996).

Population and declines

There are currently estimated to be 23,700 (range 16,300–33,400) mature individuals in the wild with a continuing declining trend (Clemens et al. 2021).

The main factor that makes the species eligible for listing is based on recent changes in the estimated rate of population decline. Several studies have recorded declines of common greenshank with the following change over three generations of between -22 percent (Clemens et al. 2016), and -50 percent (Clemens et al. 2019). These declines are thought to be due to changes to coastal stopover locations, particularly along the coast of the Yellow Sea where there is rapid development for aquaculture and industry; invasion by cordgrass (*Spartina alterniflora*); pollution from domestic, industrial and aquaculture discharges, oil and pesticides; hunting; and incidental drowning in fishing nets and traps. The species' habitat area is also shrinking due to a combination of restricted inflow of sediments from increasingly dammed rivers and sea level rise (Murray et al. 2014; Melville et al. 2016).

Habitat and Ecology

The Common Greenshank occurs in intertidal marine mudflats, fresh and saltwater wetlands along the coast or inland (Geering et al. 2008) and also uses artificial habitats such as ponds and dams. The species has been recorded within swamps, open muddy or rocky shores of lakes and large rivers, sewage farms, saltworks, inundated rice-fields (del Hoyo et al. 1996), ponds, reservoirs (Snow and Perrins 1998), flooded grasslands, saltmarshes, sandy or muddy coastal flats, mangroves, estuaries, lagoons, pools on tidal reefs, or in areas of exposed coral (del Hoyo et al. 1996, Menkhorst et al 2017, BirdLife International 2025b). It forages at the in soft mud on mudflats, in shallow water at the edge of wetlands and in channels.

Regional Ecosystem RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes provides potentially suitable habitat Common Greenshank within PL 1125.

Critical Habitat

The National Directory of Important Migratory Shorebird Habitat identifies all known feeding and roosting sites of Common Greenshank in Australia (Weller et al. 2020). These areas are identified as internationally or nationally important in accordance with the EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species.

An Internationally Important site is determined for Common Greenshank if it regularly supports more than 1,100 individuals which represents 1 percent of the species' total East Asian–Australasian Flyway population (Weller et al. 2020).

A Nationally Important site is determined for Common Greenshank if it regularly supports more than 110 individuals which represents 0.1 percent of the bird's East Asian–Australasian Flyway population (Weller et al. 2020).

Area of Disturbance

Potential habitat for Common Greenshank within the disturbance footprint consists of 8.69 hectares of RE 5.3.22 which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The conservation advice for Common Greenshank identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by residential and commercial development
    - Habitat loss caused by industrial aquaculture*
    - Sea level rise
- Moderate threats Very High Risk:
    - Downstream effects of large dams
    - Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass*
    - Hunting*
    - Increased frequency and length of droughts
- Moderate threats, High Risk:
    - Disturbance at feeding and roosting sites
- Minor threats, moderate risk:
    - Chronic and acute pollution
    - Fishing bycatch

* = threat occurs mostly outside Australia

SRI Assessment

Decrease in Population Size: Common Greenshank does not breed in Australia and hence the project area does not constitute breeding or nesting area. The project area is not within the typical Australian range of the species in Queensland with only sparsely scattered records from the region and is not on the migration route for this species or provide typical roosting areas. There are no records from within 50 km but five records from within 100 km which represent transient birds. It is possible that the species may occur in the local region on an a very occasional basis however it is considered that there is no local population within PL1125 or the surrounding area. The Vali Field project is therefore assessed not to have a significant impact that will lead to a long-term decrease in the size of a local population of Common Greenshank.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Common Greenshank which is highly migratory and is capable of flying hundreds of kilometres per day. No local population exists with only sparse scattered records of highly

mobile birds. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds are recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Common Greenshank.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Common Greenshank or other wildlife species.

Interference with recovery: The conservation advice for Common Greenshank identifies two primary conservation objectives:

- Minimise further loss of habitat critical to the survival of Common Greenshank throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).
- Prevent further declines in Common Greenshank populations by working with relevant Range States to address threats in the East Asian-Australasian Flyway.

The second objective is not relevant as it applies to areas outside of Australia. The first objective relates to identification, preservation and management of critical habitats for Common Greenshank. There are only sparse and scattered recording of the species within 100 km of the project. The project area, including RE5.3.22, and surrounding regions do not provide critical habitats for this species. The nearest identified Migratory Shorebird Habitat location is 170 km to the North. The project does not impact any recovery efforts for Common Greenshank.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Common Greenshank seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and

disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Common Greenshank from the project is considered to be 'Unlikely' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Finding

There are no records of Common Greenshank from within 50 km but five records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Australian Painted Snipe *Rostratula australis*, EPBC Act: Endangered, NC Act: Endangered

No. of Records within 50 km: 1 **No. of Records within 100 km:** 1

Not recorded during the survey.

Distribution

The Australian Painted Snipe is endemic to Australia. The species has a historical distribution through most of continent including some desert regions, but the Murray–Darling Basin, particularly the Riverina region of Victoria and New South Wales, appears to have been a stronghold for the species (DCCEEW 2022). The recovery plan for Australian Painted-snipe shows that south-west Queensland is mapped as 'species may occur' rather than 'species known or likely to occur' (DCCEEW 2022).

This species has mainly been recorded breeding in the Murray–Darling region but has also been recorded in coastal central Queensland (Black et al. 2010), south-east Queensland, eastern NSW, the Channel Country, south-east South Australia and the Mt Lofty Ranges—with a few records from Australia's savannah bioregions. It has not been recorded breeding in south-west Queensland (DCCEEW 2022).

Australian Painted Snipe is a nomadic wetland species which could possibly be present during favourable conditions when ephemeral wetlands (RE 5.3.22) temporarily contain water.

Population and declines

In 2020, the population was estimated to be 340 (range 270–410) mature individuals following declines in the last five years (2015–2020), although with very low certainty given the biology of the species (Rogers et al. 2021). Population estimates for the Australian Painted Snipe are considered to be unreliable due to the cryptic nature of the bird. Previous population estimates 1,500, 5,000 (Garnett and Crowley 2000) and <2,500 (Garnett et al. 2011).

Habitat and Ecology: The Australian painted snipe occurs in shallow freshwater (occasionally brackish) wetlands, both ephemeral and permanent, such as lakes, swamps, claypans, inundated or waterlogged grassland/saltmarsh, dams, rice crops, sewage farms and bore drains, generally with a good cover of grasses, rushes and reeds, low scrub, *Muehlenbeckia* spp. (lignum), open timber or samphire (Marchant and Higgins, 2003).

The species is strongly affected by seasonal conditions. It nests only in temporary wetlands and appears to depend on the Murray-Darling Basin for breeding.

Regional Ecosystem RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes provides potentially suitable habitat Australian Painted Snipe within PL 1125.

Identified Threats

The Australian Painted Snipe is affected by habitat destruction such as clearing of riparian vegetation for agriculture; drainage, salinisation and pollution of wetlands and waterbodies; and alteration of flooding regimes due to the regulation of inland waterways. This species is also threatened by grazing and the associated trampling of wetland vegetation/nests, nutrient enrichment and disturbance to substrate by livestock in certain regions, particularly where grazing is concentrated around wetlands during dry seasons (DCCEEW 2022). Australian Painted Snipe may also be preyed upon by introduced feral animals such as cats and foxes (Birdlife Australia 2025b). Reduced rainfall and runoff in the Murray-Darling Basin associated with climate change (CSIRO 2008, 2011) may threaten the Australian painted snipe in the future. Additional potential threats include coastal port and infrastructure development. The replacement of native wetland vegetation by invasive weeds such as Parkinsonia (Parkinsonia aculeata) is a potential threat to this species (DCCEEW 2022).

Critical Habitat

As a guide, habitat critical to the survival of the Australian Painted Snipe can be considered to include:

- Any natural wetland habitat where the species is known or likely to occur (especially with suitable breeding habitat) within the indicative distribution map.
- Any location outside the above area that may be periodically occupied by Australian (DCCEEW 2022).

Area of Disturbance

Potential habitat for Australian Painted Snipe within the disturbance footprint consists of 8.69 hectares of RE 5.3.22 which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

SRI Assessment

Decrease in Population Size: There is only one record within 50 km and one record from within 100km of the project area. It is possible that the species may temporarily occur in the local region on an occasional basis. Australian Painted Snipe and is not known to breed in south-west Queensland. As such the project area is unlikely to constitute breeding or nesting area and it is unlikely that a population of this species occurs in the project area or adjacent areas. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Australian Painted Snipe.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available as potential habitat, hence the extent of occurrence would not be reduced.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Australian Painted Snipe which is capable of flying hundreds of kilometres per day during nomadic movements. No local population exists with only sparse scattered records of within the broader region. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented are described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Australian Painted Snipe. The primary species known to impact habitat for Australian Painted Snipe is Parkinsonia (Parkinsonia aculeata) which was not recorded during the site visit.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles.

Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste streams are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Australian Painted Snipe or other wildlife species.

Interference with recovery: The conservation advice for Australian Painted Snipe identifies the following primary conservation strategies:

- Manage and protect known Australian Painted Snipe habitat at the landscape scale.
- Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions.
- Reduce, or eliminate threats at breeding and non-breeding habitats
- Undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian Painted Snipe.
- Engage community stakeholders to improve awareness of the conservation of Australian Painted Snipe.
- Coordinate, review and report on recovery process.

The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Habitat that is potentially suitable remains throughout PL1125 and adjacent areas that would be available should individuals arrive at the site when the wetlands contain water. Cattle are excluded from operational areas of PL1125 which may provide a potential benefit to the species should it occur as it reduces grazing pressure from cattle which is recognised as a primary threat to the species. There are no recovery actions for Australian Painted Snipe being implemented within or adjacent to the Vali Field project. The project is not considered to have an impact on any recovery efforts for Australian Painted Snipe.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Australian Painted Snipe seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting if suitable habitats exist in the area and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Australian Painted Snipe from the project is considered to be 'Unlikely' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is

considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Finding

There is only one record of Australian Painted Snipe within 50 km and one record from within 100km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Plains -wanderer *Pedionomus torquatus*, EPBC Critically endangered NC Act: Critically endangered

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Plains-wanderers are distributed across north-central Victoria, southern New South Wales (NSW) around the Riverina region, eastern South Australia and west-central Queensland (DoE 2015). This species occurs in very localised scattered in Qld, NSW, Vic and SA areas in eastern Australia. The distribution of the plains-wanderer was formerly more widespread; there are historical records from central, south-western and south-eastern Queensland; eastern, central and western New South Wales, mainly in the south; central and western Victoria; and south-eastern and inland South Australia (DoE 2016).

The extent of occurrence for the species is estimated to be 930 000 km^2 (Garnett et al., 2011). The extent of occurrence is likely to be stable at present (Garnett et al., 2011), but it has declined markedly since European settlement. Garnett et al. (2011) estimated the area of occupancy to be 330 km^2, with a continuing declining trend.

Population and declines

Monitoring and annual surveys conducted across the Victorian stronghold (Patho Plains) between 2010 and 2014 indicated a decline in numbers of approximately 95% during this period (Baker-Gabb, 2014, DoE, 2015). Monitoring across the NSW Riverina during the same period detected a decline in numbers of 84%, this decline was preceded by significant fluctuations in numbers across the region from 2001 onwards, with an overall decline of 93% across the region over the period from 2001 to 2014 (Wilson et al., 2014, DoE, 2015). I

The severe reduction in numbers occurred in under three-generation lengths

(generation length = 7.3 years), with the documented decline in this assessment occurred over less than a 14-year period. The reduction has not ceased, the cause has does not appear to have ceased and is not well understood (DoE, 2015). Therefore, the species has been demonstrated to have met the relevant elements to make it eligible for listing as Critically Endangered (DoE 2015).

Habitat and Ecology

Plains Wanderer occurs in sparsely vegetated tree-less plains dominated by sparse native grasses and chenopods (Marchant and Higgins 1993, Bellchambers and Baker-Gabb 2006).

In Victoria, NSW and Queensland Plains-wanderers inhabit sparse grasslands with c.50% bare ground, with most vegetation less than 5 cm in height and some widely spaced plants up to 30 cm high (Garnett et al., 2011). The species may occasionally use lower-quality habitat including cereal stubble but cannot persist in an agricultural landscape (Garnett et al., 2011). In eastern South Australia the species uses low open to sparse chenopod shrublands dominated by *Sclerolaena* species with some low grasses.

Surveys indicate that Plains-wanderers appear to avoid being in close proximity to living or dead trees, with no records of any birds within 300 m of trees of 10 m or greater in height across their strongholds in New South Wales and Victoria (Baker-Gabb, 2014, DoE 2016a). Plains-wanderer avoidance of trees and tall shrubs appears to be a defence strategy to limit the potential for attack by predatory birds that often perch in these trees. The distance plains-wanderers maintain from trees appears to depend on the height of the tree (Baker-Gabb, 2014).

Plains-wanderers are mainly sedentary, particularly when habitat is suitable, however they may sporadically move greater distances in response to changes in environment and habitat availability (Marchant and Higgins, 1993, Garnett et al., 2011). Given its fractured distribution it can be inferred that the species distribution is severely fragmented.

This species is primarily active around dawn and dusk but also diurnally (Marchant and Higgins, 1993). It feeds by gleaning fallen seeds and arthropods, occasionally reaching for ripe seeds from inflorescences. Will also peck at compacted soil with bill to expose arthropods. Seeds and arthropods are consumed throughout year, though proportions differ seasonally with the highest proportion of grass seeds in summer; saltbush seeds in winter and arthropods in spring (Baker-Gabb 1988). It rarely takes water provided in captivity but will gather rain or heavy dew from leaves (Marchant and Higgins, 1993).

Plains-wanderers are capable of breeding in their first year and they breed in solitary pairs (Baker-Gabb et al., 1990). The nest is placed amongst native grasses and herbs and consists of a hollow or 'scrape' that is scratched into the ground and lined with grass (Marchant and Higgins, 1993).

Critical Habitat

Critical habitat is known from four locations as follows:

- Victoria: Northern Plains in north-central Victoria, which surrounds Terrick Terrick National Park, Bael Bael Nature Conservation Reserve and Trust for Nature's Wanderers Plain, bounded by the Murray Valley Highway to the north, the Northern Highway to the east, Birchip in the west, and the wooded foothills to the south. Also Western Grassland Reserve immediately west of Melbourne
- NSW: Riverina region of south-western NSW, in the area bounded by the Cobb Highway between Deniliquin and Willandra National Park to the west, Narrandera and Urana to the east, and Billabong Creek to the south. Known, scattered records from and to the south of Deniliquin.
- South Australia: North of the Barrier Highway (and west of Broken Hill) on Kalabity, Boolcoomatta, Bundera and Mulyungarie Stations. Also the Willochra Plain north-east of Quorn, and in some adjacent areas of the southern Flinders Ranges, and also irregularly occurs in the arid regions of northern South Australia.
- Queensland: Channel country in the far west of the state, with records concentrated in the northern reaches of Astrebla Downs National Park, the southern reaches of Diamantina Lakes National Park, and on Sandringham Station, and with scattered records of the species in native grasslands extending east and south-west from this region.

Area of Disturbance

Potential habitats for Plains -wanderer within the project footprint consists of RE 5.3.22 and RE 5.9.3/5.9.4. Habitats within RE 5.6.4 and RE 5.6.8 and RE 5.6.5 are not suitable habitat for this species as it avoids areas in close proximity to trees and tall shrubs (Baker-Gabb, 2014, DoE 2016). The area of RE 5.3.22 within the disturbance footprint is 8.69 hectares which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). The area of RE 5.9.3 and RE 5.9.4 combined which is within the disturbance footprint is 13.09 ha (0.95%). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The conservation advice for Plains -wanderer identifies the following threats (DoE 2016a):

- Habitat loss: Conversion of land for the cultivation of crops is a primary threat as well as indirect result of the legacy of habitat fragmentation that has resulted from past land conversion. The application of fertilisers, or the sowing of introduced species of pasture plants, causes the density of grasslands to increase, and can also encourage the growth of environmental weeds, which render habitats unsuitable for use by the plains-wanderer.

- Inappropriate grazing: Grazing can be an important component of plains-wanderer management however both overgrazing and insufficient grazing have the potential to negatively impact upon the species. Plains-wanderers have been shown to co-exist with light to moderate grazing.
- Small population: Plains-wanderers may be exposed to increased extinction risk due to their current historically low population size. Small populations are at increased risk of extinction as chance events may have significant impacts on the population. Such events could include random variations in the breeding rate or sex ratios, random fluctuations in environmental conditions or the availability of food and other resources, reduced genetic diversity and the potential for inbreeding depression.
- Predation by feral species: Predation by foxes is considered a major threat to the species in New South Wales, although it is unclear as to the relative importance of this threat. Feral cats are also likely to kill plains-wanderers, although cats, unlike foxes, are not regularly recorded in open grassland habitats where plains-wanderers occur. As plains-wanderer nests are located on the ground their eggs may also be vulnerable to predation. Native birds of prey, such as the spotted harrier and black falcon are also potential predators of the plains-wanderer (DoE 2016a).
- Pesticide use: Broad-spectrum pesticides used for locusts such as fenitrothion and fipronil may lead to direct or indirect mortality of Plains -wanderer
- Planting and natural recruitment of trees in or near native grasslands. Plains-wanderers appear to avoid being in close proximity to living or dead trees, with no records of any birds within 300 m of trees of 10 m or greater in height across their strongholds. Planting trees near native grasslands will therefore lead to a decrease in habitat quality.
- Inappropriate burning regimes: This includes high-intensity large-scale fires and lack of burning leading to overgrown habitat.

SRI Assessment

Decrease in Population Size: There are no records from within 50 km and no records from within 100 km. The project area is not located in close proximity to an area of identified critical habitat with the closest being more than 100 km to the northwest in the Diamantina and Astrebla Downs National Parks. It is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area. While the project area is not well surveyed and is not publicly accessible many other areas within 100 km of the project area are accessible. The lack of Plains-wanderer records on a regional basis is therefore considered likely to reflect a lack of an existing population of the species. The project area is not within the area mapped as Likely to occur or May occur as shown in the modelled distribution map (Figure 2) contained within the Plains-wanderer recovery plan, (DoE 2016). The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local

population of Plains-wanderer.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available should the species be present hence the extent of occurrence would not be reduced. The project area is not within the known extent of occurrence for Plains Wanderer (DoE 2016) and is not therefore considered to reduce its extent of occurrence.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and does not present a barrier to Plains-wanderer. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would not present a barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Plains-wanderer.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste streams are of an industrial nature, and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Plains-wanderer or other wildlife species.

Interference with recovery: The Recovery Plan for Plains-wanderer (DoE 2016a) identifies five key conservation strategies:

- Develop and implement a robust, targeted conservation breeding strategy for the plains-wanderer.
- Facilitate management of grazing regimes, and improve knowledge of appropriate burning regimes, to maintain suitable habitat
- Enhance protection, improve the quality and increase the extent of habitat suitable for the plains-wanderer
- Identify key factors contributing to significant recent declines in numbers and develop mitigation measures to address these threats
- Improve understanding of the distribution and population trends of the plains-

wanderer.

Given the lack of records within 100 km, the distance to known critical habitat and the small scale of the project it is considered that the project does not impact any of the conservation strategies for Plains-wanderer.

Disruption to ecologically significant locations:

The project area is not within the species known or modelled distribution (DoE 2016). The project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Plains-wanderer from the project is considered to be 'Unlikely' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Plains-wanderer from within 50 km and no records from within 100 km of the project area. The disturbance to potential habitat is 8.69 hectares RE 5.3.22, and 13.09 hectares of RE 5.93/ 5.94. Suitable habitat remains throughout PL1125 and adjacent areas. It is likely to occur only very infrequently, if at all in the project area given the species very low population and that habitats available in PL1125 are not preferred habitats (DoE 2016). The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is therefore also considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Night parrot *Pezoporus occidentalis*, EPBC Critically Endangered; NC Act Endangered

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

The current distribution of the night parrot is not known (DoE 2016b). Night Parrot was though extinct for more than 50 years until a population was rediscovered in south-west Queensland in the Diamantina basin. Historic records and observations are scanty and anecdotal with few substantiated records since 1935. There are accepted historical records from remote arid and semi-arid inland regions of Western Australia, Northern Territory, South Australia and Queensland (Higgins, 1999). It is possible that the night parrot may continue to occur throughout much of this range

(DoE 2016b). Despite numerous unverified sightings, several dedicated searches and public campaigns there have been only two areas (western Queensland and the Pilbara in Western Australia) where reliable records indicate that populations may persist (DoE 2016b). Sometime prior to 2013, a population was located in southwestern Queensland (Koch 2013). An unknown number (suspected to be small) of individuals were detected every month during a survey between August 2013 and January 2016 (DoE 2016b). This population is thought to be part of a larger regional-scale extant population (DoE 2016b). The location of this area has not been identified in order to protect the species.

The modelled habitat map for this species does not show any habitat or records for the project area or for the Bulloo Shire region (Appendix 11).

Population and declines

The night Parrot is listed as Critically Endangered under the EPBC Act. This species has a population size believed to be less than 250 mature individuals with no more than 50 individuals in each subpopulation, and records suggest a continuing decline. For these reasons the species is assessed as Critically Endangered.

The Night Parrot has an estimated population of 200 (range 40 – 500) mature individuals in the wild with a continuing declining trend (IUCN 2026). The extent of occurrence (EOO) is estimated at 1,100,000 km^2. The area of occupancy (AOO) is unknown (IUCN 2026).

Habitat and Ecology

Most habitat records are of *Triodia* (Spinifex) grasslands and/or chenopod shrublands (Garnett et. al., 2011) in the arid and semi-arid zones (DoE 2016b). Higgins (1999) also list *Astrebla* spp. (Mitchell grass), shrubby samphire and chenopod associations, scattered trees and shrubs, treeless areas and bare gibber as associated with sightings of the species. It is primarily active a night and is known to roost in clumps of dense vegetation, primarily old and large Spinifex clumps, but sometimes other vegetation types during the day (Higgins 1999).

The habitat of the southwestern Queensland population is naturally fragmented, and is unlikely to promote fire behaviour that results in most habitat in this area being burned by one fire event (DoE 2016b).

It is reported that the species may be nomadic, have very large home ranges, be sedentary under suitable conditions, be absent during dry seasons with little seed, be present when seed is plentiful, and move between samphire and spinifex according to seed availability (Higgins 1999). These reports are however derived from anecdotal observations and records with little evidence to support them and are therefore inconclusive (DoE 2016b). Systematic acoustic monitoring has shown that night parrots in southwestern Queensland regularly roosted in the same location despite exceptionally dry conditions when no Triodia (Spinifex) seed was available, corroborating the report that birds may remain sedentary under suitable conditions in some parts of the range (DoE 2016). It is suspected that some birds may move or fly significant distances at times (DoE 2016).

Critical Habitat

There are two areas where reliable records indicate that populations may persist one in western Queensland and one in the Pilbara in Western Australia (DoE 2016b). These areas are critical habitat for the species however the actual location of these is not public.

Area of Disturbance

Potential habitat for Night Parrot includes RE 5.3.22, RE 5.6.4, RE 5.6.5, RE5.9.3 and RE5.9.4. The area of these habitats within the disturbance footprint are as follows:

- 8.69 ha of 5.3.22 which is equivalent to 0.92% of this community as mapped within PL 1125;
- 11.41 ha of RE 5.6.4 which is equivalent to 17.05% of this community as mapped for PL 1125;
- 8.8 ha of RE 5.6.5/RE 5.6.8 which is equivalent to 0.41% of this community as mapped for PL 1125;
- 13.09 ha of RE 5.93/RE 5.94 (combined) which is equivalent to 0.95% of this community as mapped for PL 1125.

Identified Threats

Threats to Night Parrot have not been determined but are suspected to be due to:

- Predation by feral cats and foxes: There are historical reports of cat – night parrot interactions. The decline of night parrots at Alice Springs and Innamincka coincided with the arrival of cats (referenced in Garnett et al 2011) Scatter of night parrot feathers possibly from feral cat attack has been recorded, however no cat DNA was detected (DoE 2016b). Predation by feral cats and foxes is known to have caused declines and extinctions in small-medium sized mammals, and the ground-dwelling night parrot could be similarly affected.
- Degradation of habitat by livestock and feral herbivores: No direct evidence, but seems plausible with a degrading effect by hard-hoofed animals around watering points, perhaps resulting in the more or less permanent loss of palatable herbage within a reasonable flying distance for the night parrot (DoE 2016b).
- Changes to fire regimes: Numerous references indicate that the species appears to rely on roosting/nesting in dense clumps of vegetation that are long-unburnt (DoE 2016b). Aerial imagery indicates that the southwestern Queensland population is in habitat that has not been burnt for at least 63 years. Buffel grass (*Cenchrus ciliaris*) has replaced native grasslands throughout the arid zone, and increases in fuel load are correlated with buffel grass invasion. This leads to more intense fires that spread further.
- Infection with psittacine beak and feather disease, Avian pox, and other diseases: All Australian parrots are susceptible to, and equally likely to be infected by psittacine beak and feather disease (PBFD) (DoE 2016b).

Department of the Environment (2015) reports a low level of concern with (PBFD) provided sufficient control measures are imposed. Department of Environment and Heritage (2006) established hygiene and reporting protocols to assist in reducing the risk of the spread of bird diseases including PBFD.

- Illegal collection of birds or eggs: There is no direct evidence of this, but general knowledge of wildlife trafficking indicates that species which are both unobtainable in the legal market place and not held in captive collections are very high value items.
- Collision with fences: A night parrot is likely to have died from colliding with a fence in Diamantina National Park in 2006 (DoE 2016b). They tend to fly low over the ground, thus increasing the risk of collision compared with other birds (DoE 2016b).

SRI Assessment

Decrease in Population Size: The project area is not located in close proximity to an area of identified critical habitat with the closest being more than 100 km from the known population in western Queensland (location not available). It is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Plains-wanderer.

Reduction in Extent of Occurrence: All habitats within PL1125 are theoretically suitable for Night Parrot due to the presence of *Triodia* in dune habitats and the widespread presence of chenopods and native grasses in other habitats. The total area within the disturbance footprint is 41.99 hectares. Suitable habitat remains widespread throughout the PL1125 and the wider region. The project area is not within the known extent of occurrence for Night Parrot (DoE 2016b) and is not therefore considered to reduce its extent of occurrence.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Night Parrot which is nomadic and capable of flying many kilometres per day. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive

weeds arising from the project to Night Parrot. Buffel Grass is the most important potential weed which is primarily spread by pastoral activities.

Introduction of disease: The primary disease risk to Night Parrot is psittacine beak and feather disease. Native parrots will not be handled in the project area. The risk of this disease is not increased by the project. As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to pest fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Night Parrot or other wildlife species.

Interference with recovery: The conservation advice for Night Parrot identifies the following conservation objectives:

- Invasive species: Implementation of targeted cat control in areas of existing Night Parrot populations, and other areas according to priority.
- Fire: Manage access to land leased or managed for night parrot conservation to minimise fire ignition. Brief visitors on strategies and protocols to prevent fire ignition.
- Disease: Develop and implement quarantine protocols for persons who may come into contact with night parrots
- Illegal collection and habitat loss disturbance and modifications: Implement strategies to detect and prevent unauthorised access to land leased or managed for night parrot conservation. Avoid or minimise the use of fences in areas likely to be traversed by the night parrot.
- Impacts of domestic species: Exclude cattle grazing of the habitat used by the population in Queensland on land leased or managed for night parrot conservation, ensuring that risks to parrots are avoided or minimised.

The project area does not provide critical habitat for Night Parrot as there is no population in the area. Fire prevention activities are implemented across the project. There are no conservation activities for eastern in the PL1125 area or adjacent areas and recovery objectives or activities are not impacted by project activities.

Disruption to ecologically significant locations:

Given the very low population estimates for Night Parrot and the distance from a known population it is unlikely to occur within PL1125. Consequently, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Plains-wanderer from the project is considered

to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Night Parrot from within 50 km and no records from within 100 km of the project area. The area of the potential habitat for Night Parrot within the disturbance footprint is 41.99 hectares. Given the very low population estimates for Night Parrot and the distance from a known population it the likelihood of Night Parrot occurring within PL1125 is 'Rare'. The project area does not provide critical habitat and is not ecologically significant for the species. The same habitat types are widespread throughout the region and suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be 'Low' and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is also considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri*, EPBC Endangered; NC Act Endangered

No. of Records within 50 km: 0 **No. of Records within 100 km**: 7

Not recorded during the survey.

Distribution

The eastern subspecies of Major Mitchell's Cockatoo occurs in the Murray-Darling, Eyre and Bulloo River basins, from Isisford and Roma in the north, through western New South Wales to north-west Victoria and west to eastern South Australia (Higgins 1999). There are no records from within 50 km of the survey area and there are seven records from within 100 km from the Bulloo drainage basin.

The modelled habitat for eastern Major Mitchell's cockatoo does not include the project area within habitat Known or Likely to occur or habitat where it May occur (DCCEEW 2023b).

Population and declines

The main factors that make the species proposed for listing in the Endangered category is the severe reduction in population numbers (DCCEEW 2023b). The population of the eastern Major Mitchell's cockatoos was estimated (with low reliability) to be 15,000 mature individuals in 2011, based on the Area of Occupancy and a density of 1 pair per 30 km^2 (Garnett et al. 2011). There are no more recent estimates. This estimate in comparison to the estimated 50,000 mature individuals in 2000 (Garnett & Crowley 2000), represents a decrease of 67% in mature individuals

within one generation, though the reliability of estimation of population size has always been low (Garnett & Crowley 2000; Garnett et al. 2011; Hurley & Garnett 2021).

The longevity and generation period (the three-generation period is 66 years; DCCEEW 2023b) means that population decline estimates will need to encompass losses in the 1950s and 60s when there was no monitoring. Most land-use intensification occurred in western New South Wales in the late 19th century (Lunney 2001) and north-west Victoria from 1920 to 1940 (Fahey 2017), but legacy effects would have resulted in ongoing losses.

Based on the average reporting rates from a range of surveys in the subspecies' 10 core bioregions between 1977 and 2019, an average of 54% decline over three generations is estimated (DCCEEW 2023b). It is therefore considered that the subspecies has undergone a severe reduction in numbers over three generations. A decline in area of occupancy and quality of habitat is also evident from the ongoing loss and degradation of breeding habitat. Therefore, the subspecies has met the relevant element of Criterion 1 to make it eligible for listing as Endangered.

Habitat and Ecology

This species inhabits a wide range of plant communities, mostly in arid and semi-arid woodlands, always within easy reach of surface water. Habitat critical to the survival of the Eastern Major Mitchell's cockatoo consist of arid and semi-arid woodlands dominated by mulga (*Acacia aneura*), mallee and box eucalypts, slender cypress pine (*Callitris gracilis*) or belah (*Casuarina pauper/cristata*). Large mature trees with suitable hollows are critical for breeding and corridors of suitable habitat are important for dispersal across the landscape (DCCEEW 2023b).

Critical Habitat

Eastern Major Mitchell's Cockatoos inhabit a wide range of plant communities, mostly in arid and semi-arid woodlands, always within easy reach of surface water (DCCEEW 2023b). Habitat critical to the survival of the eastern Major Mitchell's cockatoo consist of:

- Arid and semi-arid woodlands dominated by mulga (*Acacia aneura*), mallee and box eucalypts, slender cypress pine (*Callitris gracilis*) or belah (*Casuarina cristata*).
- Known habitat containing suitable attributes, including potential habitat for the subspecies (see Map 1), especially where there are large mature trees with suitable hollows; and
- Surrounding matrix of these areas for the role of providing movement corridors for dispersal across the landscape.

Area of Disturbance

Potential habitat within the project area for Eastern Major Mitchell's Cockatoo consists of RE 5.6.4. The area of RE 5.6.4 within the disturbance footprint is 11.41 hectares which is 17.05 % of RE 5.6.4 that is mapped within PL 1125.

Identified Threats

The conservation advice for Eastern Major Mitchell's Cockatoo identifies the following threats:

- Major Threats, Very High Risk:
    - Clearing of native vegetation and loss of hollow-bearing trees
    - Fire regimes that cause biodiversity declines
    - Competition for nest hollows
    - Increased likelihood of extreme events (e.g., wildfire, heatwave and drought)
- Moderate Threats High Risk:
    - Grazing
    - Psittacine Beak and Feather Disease (PBFD)
- Minor threats, moderate risk:
    - Vehicle strike
    - Bird and egg collection.

SRI Assessment

Decrease in Population Size: There are no records from within 50 km and seven records from within 100 km. It is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Eastern Major Mitchell's Cockatoo.

Reduction in Extent of Occurrence: The area of habitat for Eastern Major Mitchell's Cockatoo (RE 5.6.4) within the disturbance footprint is 11.41 ha which constitutes 17.05 % of the mapped area of RE 5.6.4 within PL 1125. It was clear during the site visit that this RE is much more widespread throughout PL1125 than mapped especially along dune flanks and drainage lines, hence the area disturbed is likely to be less than 17.05% RE 5.6.4 within Pl 1125. The species has not been recorded within PL 1125 and the area is not mapped as habitat 'Known or Likely to occur' or habitat where it 'May occur' (DCCEEW 2023b). It is possible that the species could rarely occur in PL 1125 including the project area and potential habitat is present within adjacent areas to the disturbance footprint and throughout PL 1125. The project is considered to have a minimal impact which is not significant at a local or regional scale.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Eastern Major Mitchell's Cockatoo which is capable of moving many kilometres per day. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Eastern Major Mitchell's Cockatoo.

Introduction of disease: The primary disease risk to Eastern Major Mitchell's Cockatoo is psittacine beak and feather disease. Native parrots will not be handled in the project area. As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Eastern Major Mitchell's Cockatoo or other wildlife species.

Interference with recovery: The conservation advice for Eastern Major Mitchell's Cockatoo identifies the following conservation objectives:

- Habitat loss and degradation:
    - Protect, restore and enhance the quality of known suitable habitat and increase the extent of habitat for the subspecies across its range (both current and future) to maintain viability and connectivity in response to threats, including climate change.
    - Protect large old trees and smaller trees that contain large hollows, including those affected by fires. Ensure the recruitment of large old trees by retaining medium-sized trees, facilitating regeneration, and undertaking replanting.
    - Maintain vegetation in proximity to water points, including the presence of smaller trees immediately adjacent to the water's edge, to provide cover and resting place for drinking birds.
    - Manage total grazing pressure in rangelands, and in other areas that have been recently burnt, and protected areas by fencing off areas targeted for tree recruitment or controlling stock, rabbits, feral goats and kangaroos.
    - Develop a tree replacement strategy in agricultural and rangeland landscapes that considers past and continuing total grazing pressures.
- Inappropriate fire regimes: Provide fire and land managers with specific advice to support decision making in wildfire prevention, preparation, response and

recovery. Develop a landscape-scale fire management strategy which minimises the risk of extensive wildfire, whilst considering the ecological needs of the subspecies.

- Competition for nest hollows: Trial the use of artificial hollows, identify sites where hollows are limiting and develop and implement strategies to increase hollow availability and protect regenerating *Callitris* pines from browsing.
- Stakeholder engagement/community engagement: Educate and raise awareness amongst stakeholders and landholders about the ecological and habitat requirements of the eastern Major Mitchell's cockatoo.
- Survey and monitoring priorities: Monitor population trends availability of nesting hollows at key sites throughout the distribution.
- Information and research priorities: Improve understanding of population demographics across range, patterns of dispersal and connectivity among subpopulations, in order to design management to retain and support landscape connectivity.

The project area does not provide critical habitat for the species as it is not within the accepted distribution of the species. Fire prevention activities are implemented across the project. There are no conservation activities for eastern Major Mitchell's cockatoo in the PL1125 area or adjacent areas, and recovery objectives are not impacted by project activities.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Eastern Major Mitchell's Cockatoo seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact from the project to eastern Major Mitchell's Cockatoo is considered to be 'Unlikely' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Eastern Major Mitchell's Cockatoo from within 50 km and seven records from within 100 km of the project area. RE 5.6.4 is identified as potential habitat within the project area for Eastern Major Mitchell's Cockatoo consists of. The area of RE 5.6.4 within the disturbance footprint is 11.41 hectares which is 17.05 % of RE 5.6.4 that is mapped within PL 1125. The project area is however not within the modelled distribution of the species (DCCEEW 2023b). It is likely to occur only very infrequently, if at all in the project area. The project area does not therefore

provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Kowari (Crest-tailed Mulgara) *Dasyuroides bynei*, EPBC Endangered; NC Act: Endangered

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

The Crest-tailed Mulgara occurs in scattered populations in sparsely vegetated stony deserts of the Lake Eyre drainage basin (Menkhorst and Knight 2017).

The current distribution of the Kowari covers the arid zone in the south-western corner of Queensland and north-eastern corner of South Australia (DCCEEW 2023e). The distribution has become restricted to the Channel Country Bioregion since the 1970s (DCCEEW 2023e). The species currently occupies only 20% of its former geographic range (DCCEEW 2023e).

In Queensland, the Kowari can be found between the Simpson Desert and Diamantina River, south of Boulia (Maxwell et al. 1996). Most of the Kowari records in Queensland are from protected reserves, i.e., Diamantina and Astrebla Downs National Parks, with some isolated records from the Birdsville region (DCCEEW 2023e). Individuals have also been recorded from Coorabulka pastoral station, located ~30 km west of Astrebla Downs National Park (DCCEEW 2023e). In South Australia, the Kowari is known to occur on Crown land and pastoral leases on Mulka, Cowarie, Pandie Pandie, Innamincka, Cordillo Downs and Clifton Hills Station within the Sturt Stony Desert (DCCEEW 2023e). The Clifton Hills cattle station is considered one of the Kowari's last refuges (DCCEEW 2023e).

Much of the current information on Kowari records is more than 10 years old. The Extent of Occurrence (EOO), which measures the spatial spread of the areas currently occupied by the species, is estimated at between 70,300 km^2 and 99,252 km^2, while the Area of Occupancy (AOO), representing the area currently occupied by the species, is estimated at between 324 km^2 and 808 km^2. The area of known and likely habitat combined is estimated to be 18,487 km^2.

The project area is not within the modelled distribution of the Kowari, either within 'habitat known or likely to occur' or 'habitat may occur' (DCCEEW 2023e Map 1).

Population and declines

The current population size is estimated as 1200–5000 individuals. Population size fluctuates with rainfall conditions and rainfall-associated ecosystem changes, including the abundance of co-occurring native small mammals such as the long-haired rat (*Rattus villosissimus*) (Dickman et al. 2021). The population of the Kowari is generally low and has probably always been patchy during extended dry periods

(DCCEEW 2023e).

In Queensland, significant declines have been observed at Diamantina and Astrebla Downs National Parks in the past decade (2012 to 2022). Monitoring at Diamantina and Astrebla Downs National Parks showed an extremely low detectability, and it is apparent that the population had declined. At Diamantina National Park, assuming that the number of sightings was not confounded by the survey methods, it is likely that a 100% population decline had occurred. At Diamantina, no individual has been detected since 2012 although there were two unconfirmed sightings in 2015 and 2020 (DCCEEW 2023e). Similarly, at Astrebla Downs National Park, an ~90% population decline occurred between 2012 and 2018. There was an increase in individual sightings at Astrebla Downs from 2019 (DCCEEW 2023e), although further monitoring is needed to confirm if this will lead to a long-term population recovery. The substantial decline observed within Diamantina and Astrebla Downs National Parks appears to be primarily driven by a feral cat plague in 2012-13 (DCCEEW 2023e). Since Astrebla Downs and Diamantina National Parks represent the major proportion of records in Queensland, it is likely that decline rates observed in these protected reserves are representative of the Queensland distribution.

In South Australia, the Kowari is also declining. A broadscale occupancy monitoring program covering areas on pastoral leases in the Sturt Stony Desert from 1989 to 2007 detected localised extinctions at several Kowari sites between Mulka station in the south and Cordillo Downs Stations in the north that are known to have supported the Kowari since 1989 (Canty & Brandle 2008). Further localised extinctions have been observed from Mulka and Pandie Pandie Stations in the 2000s (DCCEEW 2023e). Modelled population estimates across two sites on Clifton Hills cattle station, showed declines of approximately 85% (95%CI: 77%–100% decline) between 2000 and 2015. Based on Population Viability Analysis (PVA), it was predicted that the combined population of the two sites has a 20% (95%CI: 17–60%) chance of extinction within the next 20 years irrespective of climatic conditions. In these pastoral sites, reduction in burrowing opportunities caused by livestock grazing and trampling and prevalence of introduced predators in open gibber habitats are suggested to contribute the most to the species' decline.

Habitat and Ecology

In much of its remaining range, the Kowari lives in burrows dug into sand mounds that occur infrequently across stony gibber plains (DCCEEW 2023e). Gibber plains are desert surfaces covered by interlocking pebble fragments tightly embedded in silty clay soils that can seal out moisture and rainfall. Kowaris have a strong preference for gibber plains with patches of softer soils, such as sand dunes, river channels and ephemeral swamps (DCCEEW 2023e). The gibber plains that support burrowing sites are often characterised by more than 80% cover of small (<5 cm) stones (DCCEEW 2023e). The burrows are also often associated with sparse chenopods, dwarf shrubs and ephemeral herbs, and the xerophytic Mitchell grasses (*Astrebla* spp.) (DCCEEW 2023e). Habitat modelling indicates that plant species richness and the number of habitat patches are good predictors of Kowari presence during drought (DCCEEW 2023e).

In other parts of their range not adjacent to stony gibber plains, such as Astrebla Downs and Diamantina National Parks, Kowaris occupy other type of habitats. Within these reserves, Kowaris are known as long-term occupants of ashy downs and claypan habitat with a low (20% or less) proportion of stone cover and with Mitchell grass as dominant vegetation (DCCEEW 2023e). It is also recorded as inhabiting crests and slopes of sand ridges, or around salt lakes in inland Australia (ALA 2024). During the day it shelters in burrows which are located at the base of sandhill canegrass (*Zygochloa paradoxa*) clumps or Nitre bush (*Nitraria billardieri*) growing around the edges of salt lakes (ALA 2024).

Critical Habitat

Habitat critical to the survival of the Kowari can be broadly defined as: the current area of occupancy of the taxon, possible other areas used, and potential habitat into which the Kowari could disperse or be translocated (DCCEEW 2023e).

Kowari distribution in South Australia is restricted mostly to gibber habitats, although sparsely vegetated sand dunes may also be used if these occur within the broader gibber landscape (DCCEEW 2023e). The Kowari is now found primarily in gibber plains interspersed with patches of softer soils such as near sand dunes, river channels, ephemeral swamps and sand mounds (DCCEEW 2023e). Deeper sand lenses also seem to provide suitable conditions for burrow construction (DCCEEW 2023e). Gibber plains supporting burrowing sites are often characterised by sparse scrub and may occur between braided river channels (DCCEEW 2023e). At Astrebla Downs National Park, Diamantina National Park and along the Diamantina River in Queensland, Kowari habitats also consist of ashy downs and cracking claypan plains, often with low ephemeral vegetation (DCCEEW 2023e).

Habitat meeting any of the characteristic of the suitable and preferred habitat for Kowari above is considered habitat critical to the survival of the Kowari irrespective of the abundance or density of the species or the perceived quality of the site. Gibber plain areas in north-east South Australia and ashy downs and cracking claypan areas in south-west Queensland with similar attributes adjoining known sites which provide potential habitat for population expansion may also represent habitat critical to the survival of the species. So too do areas that formerly contained Kowaris and may support them again in the future. Areas that could be used for dispersal between preferred habitat patches are critical for maintaining population connectivity and should also be considered habitat critical to survival.

Area of Disturbance

Potential habitat within the project area for Kowari consists of 8.8 ha RE 5.6.5 and RE 5.6.8 combined and 11.41 ha RE 5.6.4. The areas of RE 5.6.5 and RE 5.6.8 which have been impacted are primarily along the flowline and access tracks. Disturbance along the flowline has largely been rehabilitated with substantial vegetation regrowth as observed during the field work (Figure 8). Rehabilitated vegetation communities are likely to provide habitat for the species as they contain the same flora species as adjacent areas.

Identified Threats

The conservation advice for Sharp-tailed Sandpiper identifies the following threats:

- Major Threats, High Risk:
    - Habitat degradation and resource depletion due to livestock
    - Impacts of climate change – changes to precipitation patterns and projected warming
    - Habitat degradation and resource depletion due to introduced herbivores (such as rabbits and goats)
    - Predation by European red fox (*Vulpes vulpes*)
- Moderate threats Very High Risk:
    - Predation by wild dogs (*Canis familiaris, C. lupus* dingo and hybrids) (Astrebla Downs NP, Diamantina NP, Coorabulka block)
    - Predation by feral cats (Felis catus)
- Minor threats, moderate risk:
    - Loss of habitat due to removal for use in road construction.

SRI Assessment

Decrease in Population Size: The project area is not within the modelled distribution for Kowari DCCEEW 2023e, Map 1). There are no records from within 50 km and no records from within 100 km. It is unlikely that the species would occur in the local area given that three is no adjacent population and the distance to a known population is at least 100 km. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Kowari.

Reduction in Extent of Occurrence: Potential habitat within the project area for Kowari consists of 8.8 ha RE 5.6.5 and RE 5.6.8 combined and 11.41 ha RE 5.6.4. There is no local population within or adjacent to the project area and the project area is not within the known extent of occurrence for Kowari (DCCEEW 2023e). The project does not therefore result in a reduction in the extent of occurrence.

Fragmentation of existing population: There is no existing population within or adjacent to the project area and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: There is no existing population within or adjacent to the project area and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting

in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Kowari.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Kowari or other wildlife species.

Interference with recovery: The conservation advice for Kowari identifies the following conservation and management priorities:

- Predation by feral cats and European red foxes: Develop and implement management plans for the control and eradication of introduced predators (feral cats, European red foxes) for reserves where no such plans exist. Ensure that the use of insecticide and baiting is not detrimental to the Kowari. Ensure that watering points that may attract predators (feral cats and foxes) are not constructed within 10 km of preferred Kowari burrowing and foraging sites.
- Predation by dingoes, wild dogs and the hybrids: The impact of dingoes and wild dog hybrids should be evaluated, and interventions should be implemented if needed (i.e., where their presence has a net detriment to Kowaris).
- Habitat loss and disturbance by introduced herbivores: Ensure that the construction of watering points for livestock is only in areas identified not suitable for burrowing sites and apply buffers based on the radius of grazing and trampling impact (approximately 8 – 10 km from water points). Reduce the impacts of livestock at the regional scale and more intensively at known Kowari sites. Control rabbits and goats at known Kowari sites.
- Climate change: Maintain and protect areas identified as climate change refuges; establish corridors to allow movement to modelled suitable habitat under climate change projections.
- Ex situ recovery actions: Develop a strategy for translocations to establish insurance populations.
- Survey and monitoring priorities: Prioritise in surveying (revisiting) all previous known locations for targeted survey with trapping and cameras to determine occupancy across their former range. Carry out targeted field surveys in areas identified by modelling as potential Kowari focal sites.
- Information and research priorities: Improve knowledge of the species' key habitat, food and shelter resource requirements and identify the extent to which these resources may be affected by rainfall, predators, cattle and other herbivores, as well as by local and regional environmental change.

The project does not impact any of the identified recovery efforts for Kowari.

Disruption to ecologically significant locations:

There is no existing population within or adjacent to the project area and the project is not within the modelled distribution for Kowari DCCEEW 2023e, Map 1). It is very unlikely that Kowari would use the project area. The project area does not therefore provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Kowari from the project is considered to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Kowari from within 50 km and no records from within 100 km of the project area. The project area is not within the modelled distribution for Kowari and it is unlikely to occur in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

5.5.3. Environmentally Sensitive Areas (ESAs) – Essential Habitat for Vulnerable Species

The listed species likelihood and residual impact assessment (Table 5) identified four EPBC Vulnerable species one migratory wader Sharp-tailed Sandpiper, Blue-winged Parrot, Southern Whiteface and one mammal Dusky Hopping-mouse as having records within 50 km of PL1125 and therefore as possibly occurring within the project footprint. DETSI identified an additional five EPBC vulnerable species for further SRI assessment which have potential habitat within PL1125 but have not been recorded within 100 km of the project area. These species are Latham's Snipe, Painted Honeyeater, Flame Spiderflower, *Sclerolaena walkeri*, and *Xerothamnella parvifolia*.

All habitats within PL 1125 are used by one or more of these species hence the whole of the disturbance area is identified as Category C Environmentally Sensitive Areas for Vulnerable Wildlife (Figure 11).

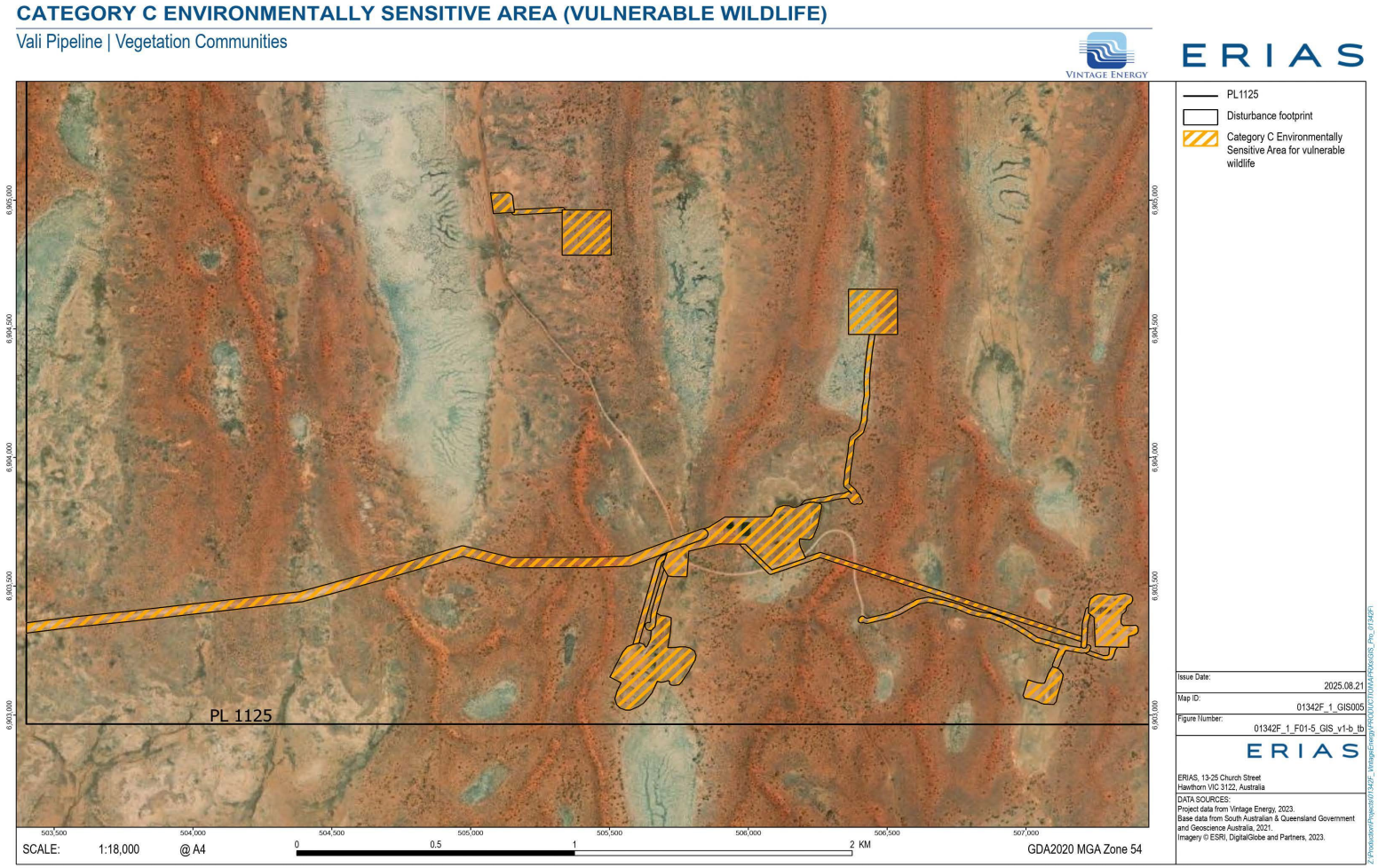


Figure 11 Areas within the disturbance footprint which are identified as Category C Environmentally Sensitive Areas for Vulnerable Wildlife.

Sharp-tailed Sandpiper *Calidris acuminata* EPBC Act: Vulnerable and Migratory, NC Act: Not Listed

No. of Records within 50 km: 2 **No. of Records within 100 km**: 13

Not recorded during the survey.

Distribution

The sharp-tailed sandpiper breeds in northern Siberia from the Lena River delta, east to the Chaun Gulf and the Kolyma River delta. The species is a passage migrant through eastern Mongolia, China, Korea, Japan, Micronesia, the Philippines, and southeast Asia. It also occurs less frequently as a passage migrant in the Malay Peninsula, Borneo, and Melanesia (Higgins & Davies 1996, DCCEEW 2024).

Small numbers arrive in north-west Australia during mid-August, with larger numbers arriving in early September. Small numbers pass through the Torres Strait, arriving on the coast of the Gulf of Carpentaria during September and December, and on the coast of north-east Queensland from late August. After arriving in Australia, most birds move slowly south across the continent to southeast Australia (Higgins & Davies 1996, DCCEEW 2024).

During the non-breeding season, approximately 91 percent of the East Asian - Australasian population occurs in Australia and New Zealand (Bamford et al. 2008). Sharp-tailed sandpipers occur within all states of Australia. They are found mostly in the south-east and are widespread in both inland and coastal locations. The species also occurs in both freshwater and saline habitats (Higgins & Davies 1996). In Queensland, the species is widespread along the coast and is sparsely scattered inland, particularly in central and south-western regions (Higgins & Davies 1996).

Population and declines

There are currently an estimated 71,000 (range 8,100–125,300) mature individuals in the wild with a continuing declining trend (Clemens et al. 2021). The extent of occurrence (EOO) is estimated at 10,900,000 km2 (range 10,400,000–11,400,000 km2) and area of occupancy (AOO) at 13,000 km^2 (13,000–20,000 km^2). Despite the loss and degradation of wetland habitats, Clemens et al. (2021) considers both the EOO and AOO to be stable (DCCEEW 2024).

The main factor that makes the species eligible for listing is based on recent changes in the estimated rate of population decline. Several studies have recorded declines of Sharp-tailed Sandpiper with the following change over three generations: −60 percent (Clemens et al. 2016), −24 percent (Clemens 2017), −47 percent (Clemens et al. 2019), and −52 percent (Clemens et al. 2019).

The most recent analysis by Rogers et al. (2023) estimated the mean change in population was +0.1% annually (1993-2021) for an estimated total increase of +19.8% (95%CI: -51.8, 235.2) over three generations. The mean annual change in the last 10 years (2012-2021) was +1.9% (95%CI: -9.1, 16.7), suggesting the decline may have stabilised (Rogers et al. 2023). These data are clearly markedly at odds with previous studies. This may indicate that the decline of this species has slowed and may even have reversed in the past decade. However, given the substantial reduction in

population size estimated by four earlier studies, a listing of Vulnerable is appropriate until population stabilisation can be confirmed over coming years (DCCEEW 2024).

Declines are thought to be due to the increasing frequency and length of droughts, particularly in south-eastern Australia, changes to coastal staging locations, particularly along the coast of the Yellow Sea where there is rapid development for aquaculture and industry; invasion by cordgrass (*Spartina alterniflora*); pollution from domestic, industrial and aquaculture discharges, oil and pesticides; and hunting and incidental drowning in fishing nets and traps (Clemens et al. 2021). Available habitat is also shrinking through a combination of restricted inflow of sediments from increasingly dammed rivers (Murray et al. 2014; Melville et al. 2016) and sea level rise and construction of sea walls at many sites (DCCEEW 2024).

Habitat and Ecology

The species utilises fresh and hypersaline environments, feeding along the edge of water on mudflats, coastal and inland wetlands, and sewage ponds. After rainfall events, the species may also feed on areas of agricultural pasture (Higgins and Davies 1996; Weller et al. 2020). Sharp-tailed sandpipers are omnivorous. Their diet comprises mostly of seeds, worms, molluscs, crustaceans, and insects, which they prey on by pecking and jabbing their beak into muddy substrate (Higgins and Davies 1996).

The species forages and roosts on rocky and sandy beaches, freshwater habitats, and inland saltwater habitats (Higgins & Davies 1996).

Regional Ecosystem RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes provides potentially suitable habitat Sharp-tailed Sandpiper within PL 1125.

Critical Habitat

The National Directory of Important Migratory Shorebird Habitat identifies all known feeding and roosting sites of Sharp-tailed Sandpiper in Australia (Weller et al. 2020). These areas are identified as internationally or nationally important in accordance with the EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species.

An Internationally Important site is determined for Sharp-tailed Sandpiper if it regularly supports more than 1 percent of the species' total population (1 percent flyway of the population = 850 individuals, Weller et al. 2020).

A Nationally Important site is determined for Sharp-tailed Sandpiper if it regularly supports more than 0.1 percent of the bird's Flyway population (0.1 percent of the flyway population = 85 individuals, Weller et al. 2020).

Area of Disturbance

Potential habitat for Sharp-tailed Sandpiper within the disturbance footprint consists of 8.69 hectares of RE 5.3.22 which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The conservation advice for Sharp-tailed Sandpiper identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by residential and commercial development
    - Sea level rise
    - Downstream effects of large dams
- Moderate threats Very High Risk:
    - Habitat loss caused by industrial aquaculture*
    - Habitat loss caused by clearing for large-scale agriculture
    - Invasion of mudflats and coastal saltmarshes by mangroves and cordgrass*
    - Hunting*
    - Increased frequency and length of droughts
- Minor threats, moderate risk:
    - Chronic and acute pollution
    - Fishing bycatch*

* = threat occurs mostly outside Australia

SRI Assessment

Decrease in Population Size: Sharp-tailed Sandpiper does not breed in Australia and hence the project area does not constitute breeding or nesting area. There are two records from within 50 km and 13 records from within 100 km. It is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Sharp-tailed Sandpiper.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Sharp-tailed Sandpiper which is highly migratory and is capable of flying hundreds of kilometres per day. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Sharp-tailed Sandpiper.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Sharp-tailed Sandpiper or other wildlife species.

Interference with recovery: The conservation advice for Sharp-tailed Sandpiper identifies two primary conservation objectives:

- Minimise further loss of habitat critical to the survival of Sharp-tailed Sandpiper throughout Australia (including habitat predicted to become habitat critical in the future because of climate change).
- Prevent further declines in Sharp-tailed Sandpiper populations by working with relevant Range States to address threats in the East Asian-Australasian Flyway.

The second objective is not relevant as it applies to areas outside of Australia. The first objective relates to identification, preservation and management of critical habitats for Sharp-tailed Sandpiper. There are only sparse and scattered recording of the species within 100 km of the project. The project area, including RE5.3.22, and surrounding regions do not provide critical habitats for this species. The nearest identified Migratory Shorebird Habitat location is 170 km to the North. The project does not impact any recovery efforts for Sharp-tailed Sandpiper.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Sharp-tailed Sandpiper seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Sharp-tailed Sandpiper is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low'

with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are two records of Sharp-tailed Sandpiper from within 50 km and 13 records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Blue-winged Parrot *Neophema chrysostoma*, EPBC Act: Vulnerable, NC Act: Vulnerable

No. of Records within 50 km: 10 **No. of Records within 100 km:** 19

No records within PL1125 and not recorded during the survey.

Distribution

Blue-winged Parrot is endemic to Australia. They breed on mainland Australia south of the Great Dividing Range in southern Victoria from Port Albert in Gippsland west to Nelson, and sometimes in the far south-east of South Australia, and the north-western, central and eastern parts of Tasmania (Higgins 1999). It is a partial migrant, with some birds crossing Bass Strait to mainland Australia in winter and some birds migrating to arid and semi-arid arid areas of southeastern Australia including south-western Queensland during the non-breeding period, from autumn to early spring (Higgins 1999). South-west Queensland is shown as 'species or species known or likely to occur' in the Blue-winged Parrot conservation advice (DCCEEW 2023c).

Population and declines

The main factors that make the species eligible for listing in the Vulnerable category are that the population appears to have declined by 30–50% in three generations (11 years) (Holdsworth et al. 2021). There are currently an estimated 10,000 (range 7,500–15,000) mature blue-winged parrots in the wild with a declining trend (Holdsworth et al. 2021). The extent of occurrence (EOO) for the species is estimated to be 170,000 km^2 (range 155,000–190,000 km2, stable trend), however the area of occupancy (AOO) is contracting and is estimated to be 11,000 km2 (range 9,000–19,000 km2) (Holdsworth et al. 2021). Significant declines in reporting rates in the core range in Tasmania and Victoria are considered indicative of a population wide decline. This is likely due to changes in habitat quality (Holdsworth et al. 2021).

Habitat and Ecology

Blue-winged parrots inhabit a range of grasslands, shrublands and grassy woodlands often found near wetlands where they forage near or on the ground for seeds of a wide range of native and introduced grasses, herbs and shrubs (DCCEEW 2023c, Higgins 1999).

Blue-winged Parrots occur in eucalypt forests and woodland in spring and summer where they breed in tree hollows, laying 4–6 eggs. In Victoria, they breed mainly in heathy forests and woodlands and in wetter forests soon after fire or logging (Emison et al. 1987). In Tasmania, in autumn many birds congregate on saltmarshes and agricultural land before migration, on the mainland mobile flocks feed in saltmarsh and rough pasture in coastal Victoria. Other birds move >100 km inland to feed in semi-arid chenopod shrubland and sparse grassland. They feed on or near the ground on the seeds of a wide range of native and introduced grasses, herbs and shrubs (Higgins 1999).

They may potentially use RE 5.3.22, RE 5.9.3 and RE 5.9.4 habitats which contain a variety of grasses and forbs.

Critical Habitat

The Blue-winged Parrot recovery plan identifies the following as habitat critical to the survival of the species:

- Foraging and staging habitats found from coastal, sub-coastal and inland areas, right through to semi-arid zones including: grasslands, grassy woodlands and semi-arid chenopod shrubland with native and introduced grasses, herbs and shrubs.
- Wetlands both near the coast and in semi-arid zones used for foraging and staging.
- Eucalypt forests and woodlands within the breeding range in Tasmania, coastal south-eastern South Australia and southern Victoria.
- Live and dead trees and stumps with suitable hollows within the breeding range.

Area of Disturbance

Potential habitat for Blue-winged Parrot within the disturbance footprint consists of RE 5.3.22, 5.9.3 and 5.9.4. The area of RE 5.3.22 within the disturbance footprint is approximately 8.69 ha (0.92 % of 5.3.22 within PL1125). The area of RE 5.9.3 and RE 5.9.4 combined which is within the disturbance footprint is 13.09 ha (0.95% of RE 5.9.3 / RE 5.9.4 within PL 1125). The majority of areas disturbed along the flowline have revegetated following rehabilitation and now provide similar habitats to the original vegetation communities.

Identified Threats

There is no obvious single explanation for the population decline of Blue-winged Parrot. The conservation advice for Blue-winged Parrot does however identify the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by land clearing
    - Inappropriate fire regimes
    - Habitat degradation caused by domestic livestock grazing
    - Increased likelihood of extreme events (i.e., wildfire, heatwave and drought)
- Moderate threats moderate risk:
    - Sea level rise
- Minor threats, moderate risk:
    - Predation by introduced sugar gliders
    - Predation by cats and foxes
    - Competition for tree hollows
    - Invasive weeds
    - Psittacine Beak and Feather Disease (PBFD).

SRI Assessment

Decrease in Population Size: Blue-winged does not breed in south-west Queensland and hence the project area does not constitute a breeding or nesting area. There are 10 records from within 50 km and 19 records from within 100 km. It is possible that Blue-winged Parrot may occur within PL1125 or the surrounding area temporarily on an infrequent or regular basis between autumn and early spring. The species was not recorded during the survey however the survey was conducted in September, and it is possible that they may have already left the region if they were present. They may potentially use RE 5.3.22, RE 5.9.3 and RE 5.9.4 habitats which contain a variety of grasses and forbs. The area of RE 5.3.22 within the disturbance footprint is 8.69 ha (0.92 %). The area of RE 5.9.3 and RE 5.9.4 combined which is within the disturbance footprint is 13.09 ha (0.95%). The remaining habitat following disturbance will be 936.55 ha of RE 5.3.22 and 1365.66 ha of RE 5.9.3 / RE 5.9.4 combined for a total of 2302 ha of potential habitat for Blue-winged Parrot. The majority of areas disturbed along the flowline have revegetated following rehabilitation and now provide habitat that is likely to be suitable for Blue-winged Parrot. Considering the proportion of habitat that would be disturbed by the Vali Field project it is not considered to have a significant impact that will lead to a long-term decrease in the size of a local population of Blue-winged Parrot.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22 and RE 5.9.3 / RE 5.9.4 from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced. As above the area of RE 5.3.22 within the disturbance footprint is approximately 8.69 (0.92 %). The area of RE 5.9.3 and RE 5.9.4 combined which is within the disturbance footprint is 13.09 ha (0.95%). The small scale of the impact is very localised and compared to the extensive

amount of habitat available to this species is considered unlikely to have an impact on any local population or the extent of occurrence of this species in PL1125.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Blue-winged Parrot which is a migratory species and is capable of flying tens or hundreds of kilometres within a day. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Blue-winged Parrot.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Blue-winged Parrot or other wildlife species.

Interference with recovery: The conservation advice for Blue-winged Parrot includes the following conservation objectives:

- Cease all land clearing of habitat critical for the survival of Blue-winged Parrot.
- Establish new habitat patches in areas where native vegetation cover is lacking.
- Promote ecological management of woodland remnants on private and public land.
- Protect and enhance feeding and breeding habitat, including preparation of management plans for key habitat across the winter range.
- Develop a site-based fire management strategies with local authorities which considers the ecological needs of the species.
- Restore degraded grasslands and grassy woodlands habitat to support the recovery of blue-winged parrot.

- Prevent intensive grazing in high value grasslands and grassy woodland habitats.
- Modify grazing management practices that will maintain or improve habitat values and still allow some grazing to occur at strategic times of the year.
- Stakeholder engagement/community engagement
- Determine population trends across its range.

Less than 1 % of the available habitat for Blue-winged Parrot within PL1125 is within the disturbance footprint. Large areas of habitat that is potentially suitable remains throughout PL1125 and adjacent areas that would be available should individuals arrive at the site. Cattle are excluded from operational areas of PL1125 which may provide a potential benefit to the species should it occur as it reduces grazing pressure from cattle which is recognised as a primary threat to the species. There are no on-ground recovery actions for Blue-winged Parrot being implemented within or adjacent to the Vali Field project which would be or have been disturbed by the project. The project is not considered to have an impact on any recovery efforts for Blue-winged Parrot.

Disruption to ecologically significant locations:

It is unclear whether the project area provides ecologically significant locations for Blue-winged Parrot including for breeding, feeding, nesting, migration or resting sites. Should Blue-winged Parrot seek to use habitats within PL 1125 it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact from the project to Blue-winged Parrot is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are 10 records of Blue-winged Parrot from within 50 km and 19 records from within 100 km of the project area but has not been recorded from within PL 1125 or adjacent areas. It is not a core area for the species and south-west Queensland is at the edge of its range however it is possible that it may occur within PL1125 or the surrounding area on a temporary and infrequent basis. The disturbance to potential habitat, RE 5.3.22 and RE 5.9.3 / 5.9.4 from the project is 21.78 hectares which represents less than 1 % of the available habitat within PL1125. An estimated 2302 ha of suitable habitat remains throughout PL1125 and any Blue-winged Parrot individuals that arrive in the area would still be able to find suitable habitat. The project would lead to a residual loss of potential habitat from the project at a localised scale. The area to be cleared is however unlikely to be critical to the survival

of Blue-winged Parrot at the local or regional scale. Considering the extent of remaining habitat the risk of an impact from disturbance of the project is considered to be low with no long-term effect on individuals or populations. The residual impact of the Vali Field project is not considered to be ecologically significant. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Southern Whiteface *Aphelocephala leucopsis* EPBC Act: Vulnerable, NC Act: Vulnerable

No. of Records within 50 km: 45 **No. of Records within 100 km:** 115

No records within PL1125 and not recorded during the survey.

Distribution

Southern Whiteface occur across most of mainland Australia south of the tropics, from the north-eastern edge of the Western Australian wheatbelt, east to the Great Dividing Range (Schodde & Mason 1999). There is a broad hybrid zone between the two subspecies extending north from the western edge of the Nullarbor Plain. The northern boundary extends to about Carnarvon in the west, to the southern Northern Territory in central Australia, but is slightly further south in Queensland where the species is largely confined to the south-west of the Mitchell Grass Downs and along the southern state border (Schodde & Mason 1999). South-west Queensland is shown as 'species or species habitat may occur' in the Southern Whiteface conservation advice (DCCEEW 2023d) however there are a number of records on the Atlas of Living Australia for the species in south-west Queensland (ALA 2025).

Population and declines

There are currently estimated to be 477,000 (range 236,000–954,000) mature individuals in the wild (DCCEEW 2023d). This estimate includes 67,000 (range 36,000–134,000) *A. l. castaneiventris* individuals and 410,000 (range 200,000–820,000) *A. l. leucopsis* individuals (DCCEEW 2023d).

The main factors that make the species eligible for listing in the Vulnerable category is that the population has declined substantially by an estimated 30 to 50% every ten years (one generation 2.9 years) since 1999, with no indication that the declines are slowing (Ehmke et al. 2021). Evidence for loss is now strong and is based largely on reporting rate data (Ehmke et al. 2021).

The extent of occurrence (EOO) for the species is estimated to be 4,910,000 km2 (Australian Government 2021) with a stable trend (Ehmke et al. 2021), however the area of occupancy (AOO) is contracting and is estimated to be 70,000 km^2 (range 34,400–140,000 km^2) (Ehmke et al. 2021). Habitat loss and fragmentation is likely the cause of the species decline, especially in the parts of the species' range where there has been complete removal of habitat for intensive agriculture (Ehmke et al. 2021).

Habitat and Ecology

Southern Whiteface lives in a wide range of open woodlands and shrublands where there is an understorey of grasses or shrubs, or both (DCCEEW 2023d). These areas are usually in habitats dominated by acacias or eucalypts on ranges, foothills and lowlands, and plains (Higgins & Peter 2002). Southern Whiteface forages almost exclusively on the ground for insects, spiders, and seeds favouring habitat with low tree densities and an herbaceous understorey litter cover. It is sedentary or resident with local movements undertaken by young and unpaired birds (Higgins & Peter 2002).

The only habitat for this species within PL 1125 is RE 5.6.4 which has trees with an open understorey of shrubs, grasses and herbs. Atalaya woodlands were surveyed at a number of locations on PL 1125 on the flanks of dunes and on sandy plains, especially in the southern section and northern sections of PL 1125. There appeared to be more extensive areas of habitat in within PL1125 than mapped given that it is present on the flanks of many or most dunes and along drainage lines surveyed in the south-western section of PL 1125. It was noted that there was little leaf litter

Critical Habitat

Habitat critical to the survival of the Southern Whiteface includes areas of:

- relatively undisturbed open woodlands and shrublands with an understorey of grasses or shrubs, or both;
- habitat with low tree densities and an herbaceous understory litter cover which provides essential foraging habitat;
- living and dead trees with hollows and crevices which are essential for roosting and nesting.

Area of Disturbance

The project results in the loss of some habitat for Southern Whiteface as the disturbance footprint includes 11.41 ha of RE 5.6.4. This represents 17.05 % of the mapped available habitat for Southern Whiteface within PL1125. It was however evident during the site survey and is evident in the aerial imagery within Queensland Globe that the mapping of RE 5.6.4 is not accurate for PL 1125 and there is suitable habitat for Southern Whiteface scattered throughout PL1125 especially along dune flanks and drainage lines. The available habitat for Southern Whiteface is therefore substantially higher than mapped and the area disturbed is likely to be less than 17.05% of this vegetation community within Pl 1125.

Identified Threats

The conservation advice for Southern Whiteface (DCCEEW 2023d) identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by clearing agriculture
- Moderate threats very high risk:

  - Habitat degradation caused by domestic livestock grazing
  - Increased likelihood of extreme events (i.e., wildfire, heatwave and drought)
- Minor threats, moderate risk:
  - Inappropriate fire regimes.

SRI Assessment

Decrease in Population Size: There are 45 records of Southern Whiteface from within 50 km and 115 records from within 100 km. The species was not recorded during the survey despite it being one of the target species and environmental conditions being good at the time of survey. Atalaya woodlands were surveyed at a number of locations on PL1125 and adjacent PL1126, on the flanks of dunes, on sandy plains, especially in the southern section and northern sections of PL1125. There appeared to be more extensive areas of habitat in the area of mapped drainage lines adjacent the south-western section of PL1125. It is possible that Southern Whiteface may occur within PL1125 or the surrounding area. Given that this species is generally sedentary or resident it is likely that it is in low abundance if it is present. Clearance of 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present.

Reduction in Extent of Occurrence: The area of habitat for Southern Whiteface (RE 5.6.4) within the disturbance footprint is 11.41 ha which constitutes 17.05 % of the mapped area of RE 5.6.4 within PL 1125. It was clear during the site visit that this RE is much more widespread throughout PL1125 than mapped especially along dune flanks and drainage lines, hence the area disturbed is likely to be less than 17.05% RE 5.6.4 within Pl 1125. The species has not been recorded within PL 1125 however it is possible that the project could reduce the area of extent at a local scale if the species is present. It is not considered to have a significant impact at a population or regional scale as suitable habitat remains adjacent to the impact areas and some extensive areas of habitat were observed within and outside of PL1125.

Fragmentation of existing population: The distribution of RE 5.6.4 within PL 1125 is mostly on dune flanks and is consequently linear and fragmented. The disturbance from the project is on the scale of hundreds of meters which is consistent with or smaller than the natural gaps between patches of RE 5.6.4. Suitable habitat adjacent to the disturbance area is retained in adjacent areas. The gaps between habitat patches created by the disturbance footprint are unlikely to present a barrier to Southern Whiteface. Young and unpaired birds are known to undertake local movements (Higgins and Peter 2002). If a local population of the species exists it would be likely that the birds would cross such gaps regularly. Disturbance on the scale of the Vali wellfield project is not considered to present a risk to this species of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: The project is not considered to present a risk of increasing habitat isolation and therefore would be unlikely to interrupt gene flow or result in genetic isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. The impact of harmful weeds is not identified as a threat to Southern Whiteface and the project is not considered to present a risk to the species from harmful invasive weeds.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Southern Whiteface or other wildlife species.

Interference with recovery: The conservation advice for Southern Whiteface includes the following conservation and management priorities:

- Cease all land clearing of habitat critical for the survival of Southern Whiteface.
- Secure occupied habitat patches in areas where the birds have a patchy distribution from further degradation and loss.
- Promote ecological management of woodland remnants on private and public land.
- Promote the uptake of agriculture and biodiversity stewardship programs to retain southern whiteface habitat.
- Prevent intensive grazing in high value habitats.
- Modify grazing management practices that will maintain or improve habitat values and still allow some grazing to occur at strategic times of the year.
- Stakeholder engagement/community engagement
- Determine population trends across its range.

The area to be cleared is unlikely to be critical to the survival of Southern Whiteface at the local or regional scale and is considered unlikely to lead to the loss of a population. It is possible that individuals may be affected however it is considered that sufficient habitat remains adjacent to the disturbance area and throughout PL 1125 to sustain a population should it be present. Cattle are excluded from operational areas of PL1125 which may provide a potential benefit to the species should it occur as it reduces grazing pressure from cattle which is recognised as a threat to the species. There are no on-ground recovery actions for Southern Whiteface being implemented within or adjacent to the Vali Field project which would be or have been disturbed by the project. The project is not considered to

have an impact on any recovery efforts for Southern Whiteface.

Disruption to ecologically significant locations:

It is unclear whether the project area provides ecologically significant locations for Southern Whiteface including for breeding, feeding, nesting, migration or resting sites. Should Southern Whiteface be present within PL 1125 it is likely that they would be able to find suitable locations for feeding, nesting and resting. Given the scale of the project, the potential disruption to the species is considered to be minor.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Southern Whiteface is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. Consequently, the Risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.

Finding

There are 45 records of Southern Whiteface from within 50 km and 115 records from within 100 km. The species was not recorded during the survey despite it being one of the target species and environmental conditions being good at the time of survey, however it is possible that it may occur within PL1125 or the surrounding area. Given that this species is generally sedentary or resident it is likely that it is either in low abundance or not present. Clearance of 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present. The area to be cleared is unlikely to be critical to the survival of Southern Whiteface at the local or regional scale and is considered unlikely to lead to the loss of a population. It is possible that individuals may be affected however it is considered that sufficient habitat remains adjacent to the disturbance area and throughout PL 1125 to sustain a population should it be present. A residual loss of habitat from the project for Southern Whiteface could result in a localised impact to the species however the impact is not considered to be significant. The risk to this species from the project is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.

Dusky Hopping-mouse *Notomys fuscus* EPBC Act: Vulnerable, NC Act: Endangered

No. of Records within 50 km: 14 **No. of Records within 100 km:** 77

All records within 50 and 100 km of the survey area are within South Australia and New South Wales with no records within south-west Queensland (ALA 2025).

Not recorded during the survey.

Distribution

The Dusky Hopping-mouse has large fluctuations in abundance and distribution depending on environmental conditions (ALA 20205). It occurs in north-eastern South Australia, in the southern Strzelecki and the Cobblers Deserts (DEC 2008), north-western NSW and southwestern Queensland. It is possible the species distribution may extend as far south as Mutawintji, in central-western NSW (Moseby et al., 1999). None of the records from within 100 km are from within south-west Queensland however it is not clear whether this is due to a lack of survey effort or differences in habitats present. The Dusky Hopping-mouse formerly occurred far more widely across arid and semi-arid Australia (DEC 2008).

Population and declines

No population data for this species is contained in reference materials reviewed. This is likely to be due to its boom and bust nature resulting in large natural fluctuations in its population.

Habitat and Ecology

This species inhabits a variety of soft sandy habitats, preferring sand dunes, hills and ridges with Sandhill Canegrass (*Zygochloa paradoxa*), Sandhill Wattle (*Acacia ligulata*), Nitrebush (*Nitraria billardiera*), Sticky Hopbush (Dodonea viscosa) and other annual and perennial shrubs (Watts, 1995; DEC, 2005; EPA, 2006; Ehmann & Watson, undated, ALA 2025).Dusky Hopping-mouse is a boom and bust species and consequently it is uncommon and difficult to locate in most years but abundant in years when populations are booming. It primarily lives in sandy habitats such as dunes; however, in good conditions when populations are booming it can be found temporarily in a range of other habitats (Van Dyck and Strahan 2008).

Dunes with RE 5.6.4, RE 5.6.5 and RE 5.6.8 provide potential habitat for Dusky Hopping-mouse within PL 1125. The area of RE 5.6.5 and RE 5.6.8 which is within the disturbance footprint is 8.8 ha (combined) which is 0.41% of the area mapped within PL 1125 (2151 ha) and the area of RE 5.6.4 within the disturbance footprint is 11.41 ha which is 17.05% of the area mapped within PL 1125 (2151 ha).

With the good rainfalls since 2008, it has been found hundreds of kilometres and in different habitats from where it was recorded in drought conditions. The burrow system it constructs is inhabited by about five individuals and there are vertical escape holes to the surface. The Dusky Hopping-mouse does not need to drink free water; it gets its moisture from a diet of seeds, leaves and flowers, and occasional insects. This species can breed at any time of the year and has an average of three young in each litter.

The Dusky Hopping mouse is a social species, living in colonies of up to five individuals (ALA 2025). They live in burrows consisting of vertical shafts with a series of entrances leading to a network of horizontal tunnels and chambers extending up to 2m deep. This species prefers to forage at night in sheltered microhabitats, rather than open areas, to avoid the risk of predation. It is an opportunistic, omnivorous feeder, however it is considered to be primarily a granivore (ALA 2025). Green plant material, insects, and fruits are also eaten and it does not need to drink water.

Threats

The conservation advice for Dusky Hopping-mouse (DCCEEW 2008) identifies the following threats:

- predation by feral cats (*Felis catus*) and foxes (*Vulpes vulpes*);
- grazing pressure from stock; and
- competition for food and habitat from the introduced house mice (*Mus musculus*) and rabbits (*Oryctolagus cuniculus*).

Area of Disturbance

Potential habitat within the project area for Dusky Hopping-mouse consists of 8.8 ha RE 5.6.5 and RE 5.6.8 combined and 11.41 ha of RE 5.6.4. The areas of RE 5.6.5 and RE 5.6.8 which have been impacted are primarily along the flowline and access tracks. Disturbance along the flowline has largely been rehabilitated with substantial vegetation regrowth as observed during the field work (Figure 8). Rehabilitated vegetation communities are likely to provide habitat for the species as they contain the same flora species as adjacent areas.

SRI Assessment:

Decrease in Population Size: The presence of a local population of Dusky Hopping-mouse has not been confirmed within PL1125 although it is known to occur regionally. The habitat model map for this species shows potential habitat in the project area at a large scale (Appendix 11) but PL 1125 is not identified as important habitat for this species in the MSES report. There are 14 records from within 50 km and 77 records from within 100 km but none of these are from within south-west Queensland. It was not recorded during the field survey and no tracks of this species were observed in sand dunes however this species is nocturnal and difficult to detect. Given that this species is a boom and bust species and is highly nomadic it is possible that it will occur within PL 1125 at times. The area of RE 5.6.5 and RE 5.6.8 combined which is within the disturbance footprint is 8.8 ha (0.41% of this habitat within PL1125) and the area of RE 5.6.4 in the disturbance footprint is 11.41 ha (17.05% of this habitat within PL 1125). Clearance of these areas could possibly have a temporary impact on the size of a local population should it exist however approximately 2142 ha of habitat would remain in PL1125. The majority of areas disturbed along the flowline have revegetated following rehabilitation and now provide habitat that is likely to be suitable for Dusky Hopping-mouse. The impact is likely to be temporary and minor considering the boom and bust nature of the species, the remaining available habitat and the limited extent of the impact.

Reduction in Extent of Occurrence: The disturbance from the project to potential habitat (RE 5.6.5 / RE 5.6.8 and RE 5.6.4) represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced. The impact of the project to Dusky Hopping-mouse habitat is very localised and if a population of Dusky Hopping-mouse is present within PL1125 it is very likely to persist despite the disturbance. It is possible that the project may have an impact on individuals however it is considered unlikely that the project would have an impact on a local population

or the extent of occurrence of this species in PL1125.

Fragmentation of existing population: Dusky Hopping-mouse lives in sandy dunes and RE 5.6.5 and RE 5.6.8 provide potential habitat for Dusky Hopping-mouse within PL 1125. These habitats are typically found in a linear arrangement along dune crests which may be narrow corridors or broader where dunes are lower and wider. The areas of dunes which are affected along the buried flowline and other pipelines and access tracks. Most of the wellfield infrastructure is located away from dunes. The flowline and pipelines are buried and do not present a barrier to movement as this species is known to move up to 400 m per night in search of food and is able to cross unsuitable habitats (ALA 2025). The disturbance to dune habitats from construction of the flowline has largely been rehabilitated and appears similar in cover to adjacent areas, as discussed above. Access tracks through dunes result in a bare ground at a scale of about 3 m to 5 m which is consistent with existing pastoral tracks in the area and some areas of bare ground that naturally occur within the dunes. Such distances do not present a barrier to Dusky Hopping-mouse and suitable habitat adjacent to the disturbance area is retained. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the connectivity of habitat retained is consistent with the area as a whole. The assessment concludes that the project does not present a risk of fragmentation of an existing population of Dusky Hopping-mouse.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Dusky Hopping-mouse.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste streams are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Dusky Hopping-mouse or other wildlife species.

Interference with recovery: The conservation advice for Dusky Hopping-mouse includes the following threat abatement actions:

- Habitat Loss, Disturbance and Modification

  - Identify sites of high conservation priority.
  - Manage threats to areas of native vegetation containing populations of the Dusky Hopping-mouse.
  - Monitor known populations to identify key threats.
  - Monitor the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
  - Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences.
- Trampling, Browsing or Grazing
  - Develop and implement a stock management plan to reduce stock intensity in, or exclude grazing from some areas to allow regeneration of vegetation providing habitat for nest sites and food sources.
  - Prevent grazing pressure at known sites on leased crown land through exclusion fencing or other barriers.
- Animal Predation and Competition
  - Implement appropriate management recommendations outlined in the threat abatement plans for the control and eradication of feral cats, foxes and rabbits in the local region.
  - Develop and implement a management plan for the control and eradication of house mice in the local region.
- Conservation Information
  - Raise awareness of the Dusky Hopping-mouse within the local community.
- Enable recovery of Additional Sites and/or Populations
  - Investigate options for linking, enhancing or establishing additional populations.

Habitat that is potentially suitable remains throughout PL1125 and adjacent areas that would be available should Dusky Hopping-mouse be present. The area to be cleared is unlikely to be critical to the survival of the species at the local or regional scale and is considered unlikely to lead to the loss of a population. It is possible that individuals may be affected however it is considered that sufficient habitat remains adjacent to the disturbance area and throughout PL 1125 to sustain a population should it be present. Cattle are excluded from operational areas of PL1125 which may provide a potential benefit to the species should it occur as it reduces grazing pressure from cattle which is recognised as a primary threat to the species. There are no on-ground recovery actions for Dusky Hopping-mouse being implemented within or adjacent to the Vali Field project which would be or have been disturbed by the project. The project is not considered to have an impact on any recovery efforts for Dusky Hopping-mouse.

Disruption to ecologically significant locations:

It is unclear whether the PL1125 provides ecologically significant locations for Dusky Hopping-mouse including for breeding, feeding, nesting, migration or resting sites. The extent of potential habitat for the species within PL1125 is more than 2100 ha. Should Dusky Hopping-mouse be present within PL 1125 it is likely that they would be able to find suitable locations for feeding, nesting and resting. Given the scale of the project, the potential disruption to the species is considered to be minor.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Dusky Hopping-mouse is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. Consequently, the Risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.

Finding:

There are 14 records of Dusky Hopping-mouse from within 50 km and 77 records from within 100 km of the project area and the project area is modelled as habitat for this species. It is possible that this species may use dune habitats (RE 5.6.5 / 5.6.8) and woodland (RE 5.6.4) within the project area. It is likely to occur on a temporary and infrequent basis during boom times, but it is possible that PL1125 contains refugial populations that persist in times of drought. The area of RE 5.6.5 and RE 5.6.8 combined which is within the disturbance footprint is 8.8 ha (0.41% of this habitat within PL1125) and the area of RE 5.6.4 in the disturbance footprint is 11.41 ha (17.05% of this habitat within PL 1125). Disturbance from construction of the flowline and other pipelines is temporary with rehabilitation resulting in habitat being restored as observed during the field survey. Areas of suitable habitat cleared for tracks and other infrastructure represent a loss of potential habitat but are unlikely to act as a barrier to the movement of Dusky Hopping-mouse. The disturbance from the project to potential habitat represents less than 1 % of the available habitat within PL1125 and an estimated 2218 ha of suitable habitat remains throughout PL1125. A residual loss of potential habitat from the project for Dusky Hopping-mouse could result in a localised impact to some Dusky Hopping-mouse individuals. Considering the small scale of the project and extent of remaining habitat the risk of an impact from the project is not considered to be significant with no long-term effect on a population. The risk to this species from the project is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.

Latham's snipe *Gallinago hardwickii*, EPBC vulnerable and Migratory; NC Act not listed

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Latham's snipes breed in Hokkaido and highland areas of Honshu in Japan, and in Sakhalin and the nearby Kuril Islands of far eastern Russia (Higgins & Davies 1996). During migration, the species passes through New Guinea (Higgins & Davies 1996). It is thought that the entire world's population of Latham's Snipe migrate to Australia, where it is most common in the southeast of the continent (Driessen et al. 2025).

Latham's snipe is a non-breeding visitor to south-eastern Australia and is a passage migrant through northern Australia (Higgins & Davies 1996, ALA 2024, DCCEEW 2024c). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia, including the Adelaide plains, Mount Lofty Ranges, and the Eyre Peninsula (DCCEEW 2024c). The range extends inland over the eastern tablelands in south-eastern Queensland, and occasionally from Rockhampton in the north, and west of the Great Dividing Range in New South Wales (DCCEEW 2024c). Most birds spend the non-breeding period at sites located south of the Richmond River in New South Wales (Frith et al. 1977).

The species is occasionally recorded at sites located to the west of the core range (e.g., in north-western and south-western Queensland, north-western New South Wales, mid-northern South Australia, the Northern Territory and Western Australia) (DCCEEW 2024c).

Population and declines

There are currently an estimated to be less than 35,000 mature individuals in the wild with a continuing declining trend (DCCEEW 2024c, Van Swindern et al. 2025). The extent of occurrence (EOO) is estimated at 3,430,000 km^2 (range 3,350,000–3,500,000 km_2) and area of occupancy (AOO) at 13,000 km^2 (13,000–20,000 km^2). Despite the loss and degradation of wetland habitats,

The main factor that makes the species eligible for listing is based on recent changes in the estimated rate of population decline. Several studies have recorded declines of Latham's Snipe with a decline of more than 30% over three generations (Hansen et al. 2021).

Declines are thought to be due to the increasing frequency and length of drought and fire, particularly in south-eastern Australia. The loss of wetlands across eastern Australia is also thought to be contributing to this decline. In Russia, the species may be subject to hunting pressure, but the scale is not known. Historically, Latham's snipe was hunted in Australia in large numbers between the 1900s to 1980s (estimated 10,000 birds per year). Hunting ceased after the Japan-Australia Migratory Bird Agreement entered into force. (DCCEEW 2024c).

Habitat and Ecology

Prefers tussock grass and low dense sedges surrounding freshwater wetland, including marshes and flooded grassland. In dense cover by day, forage dawn dusk or at night. (Menkhorst et al. 2017). The species feeds in soft mudflats or shallow water typically at night, early morning, or evening (BirdLife Australia 2021).

The species is omnivorous and feeds on seeds and other plant material (mainly from

species in families such as *Cyperaceae, Poaceae, Juncaceae, Polygonaceae, Ranunculaceae* and *Fabaceae*), and on invertebrates including insects (mainly flies and beetles), earthworms, spiders, and occasionally molluscs, isopods, and centipedes (Higgins & Davies 1996, DCCEEW 2024c). The species feeds by thrusting its long bill into mud with an up and down 'sewing machine' action (Higgins & Davies 1996).

Latham's snipe can roost singly and in aggregations. They shelter during the day in small wetlands including urban water bodies, saltmarshes, as well as creek edges, where there is adequate shallow flooded or inundated substrate (Higgins & Davies 1996, DCCEEW 2024c). They also use crops and pasture. They mostly are found among dense cover comprising sedges, grasses, lignum, reeds, and rushes. The bird tends to disperse after dusk to forage over larger areas (Higgins & Davies 1996, DCCEEW 2024c).

Critical Habitat

The National Directory of Important Migratory Shorebird Habitat identifies all important feeding and roosting sites of Latham's Snipe in Australia (Driessen et al. 2025). These areas are identified as internationally or nationally important in accordance with the EPBC Act Policy Statement 3.21 - Industry guidelines for avoiding, assessing, and mitigating impacts on EPBC Act listed migratory shorebird species.

An Internationally Important site is determined for Latham's Snipe if it regularly supports more than 1 percent of the species' total population (1 percent flyway of the population = 350 individuals, Driessen et al. 2025).

Given the importance of the Australian continent for the species' global population and in recognition of the species' tendency to congregate in densely vegetated freshwater wetlands, making it hard to count, a special national importance threshold of 18 birds is used here instead of the typical threshold (0.1 percent of the bird's Flyway population) as stipulated in the EPBC Act Policy Statement 3.21 (Commonwealth of Australia, 2017, Driessen et al. 2025).

No Nationally or internationally important wetlands for Latham's Snipe are located in western Queensland including within the region where PL1125 is located.

Area of Disturbance

Potential habitats for Latham's Snipe within the project footprint consists of RE 5.3.22 and RE 5.9.3/5.9.4. RE 5.6.8 and RE 5.6.5 are not suitable habitats for this species as these are sandy dune habitats not associated with wetlands. The area of RE 5.3.22 within the disturbance footprint is 8.69 hectares which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). The area of RE 5.9.3 and RE 5.9.4 combined which is within the disturbance footprint is 13.09 ha (0.95%). Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The conservation advice for Latham's Snipe identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss caused by residential and commercial development
    - Increased frequency and length of droughts
- Moderate threats Very High Risk:
    - Increased frequency or severity of drought
    - Hunting*
    - Increase in frequency, scale, or severity of fire
    - Habitat loss caused by high-intensity grazing
- Minor threats, moderate risk:
    - Broad-leaved tea-tree invasion of grassland
    - Cat and fox predation

* = threat occurs mostly outside Australia

SRI Assessment

Decrease in Population Size: Latham's Snipe does not breed in Australia and hence the project area does not constitute breeding or nesting area. There are no records from within 50 km or 100 km of PL1125. It is possible that the species may occur in the local area on a very occasional basis and the area is not considered part of its normal range (DCCEEW 2024c). It is unlikely that there is a local population within PL1125 or the surrounding area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Latham's Snipe.

Reduction in Extent of Occurrence: The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout the PL1125 which is available hence the extent of occurrence would not be reduced. The project area is not within the known extent of occurrence for Latham's Snipe (DCCEEW 2024c) and is not therefore considered to reduce its extent of occurrence.

Fragmentation of existing population: The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Latham's Snipe which is highly migratory and is capable of flying hundreds of kilometres per day. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few

weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Latham's Snipe.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Latham's Snipe or other wildlife species.

Interference with recovery: The conservation advice for Latham's Snipe identifies three primary conservation and management priorities:

- Habitat loss caused by residential and commercial development.
- Habitat degradation caused by high-intensity grazing
- Climate change and severe weather impacts.

The second and third objective are not relevant to the project. The first objective relates to identification, preservation and management of critical habitats for Latham's Snipe. There are no records of the species within 100 km of the project. There is no critical habitat for the species identified in south-western Queensland (Driessen et al 2025) and the project area, and surrounding regions, therefor do not provide critical habitats for this species. The project does not impact any recovery efforts for Latham's Snipe.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Latham's Snipe seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Latham's Snipe is considered to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Latham's Snipe from within 50 km or from within 100 km of the project area. The disturbance to potential habitat is 8.69 hectares RE 5.3.22, and

13.09 hectares of RE 5.93/ 5.94. It may possibly occur on an infrequent basis, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is therefore also considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Painted Honeyeater *Grantiella picta*, EPBC Vulnerable; NC Act: Vulnerable

No. of Records within 50 km: 1 **No. of Records within 100 km**: 5

Not recorded during the survey.

Distribution

This species is sparsely distributed in semi-arid and arid areas of eastern Australia including western Queensland. The greatest concentrations and almost all records of breeding come from south of 26°S, on inland slopes of the Great Dividing Range between the Grampians, Victoria and Roma, Queensland (Higgins et al., 2001). The species exhibits seasonal north-south movements governed principally by the fruiting of mistletoe, with which its breeding season is closely matched (DoE 2015). Many birds move after breeding from southern areas to semi-arid regions such as north-eastern South Australia, central and western Queensland, and central Northern Territory (Higgins et al. 2001, DoE 2015). It is most common west of the Great Dividing Range but is considered irregular to the channel country of south-west Queensland (Higgins et al., 2001).

The project area is at the edge of the modelled distribution for the species and is adjacent o an area identified as 'species may occur, DAWE 2021, Figure 1).

Population and declines

Garnett et al. (2011) estimate the total number of individuals at <10 000, based on an extrapolation of counts undertaken in areas of NSW and Victoria. The population is suspected to have declined by 20-29% over the last three generations (17 years), based on monitoring, a reduced area of occupancy and deteriorating habitat quality (Garnett et al., 2011). Threats to the species' already fragmented habitat are ongoing, with habitat continuing to be cleared for agriculture and degraded by over-grazing (DoE 2015). This suggests that the population is likely to continue to decline at a substantial rate. Its geographic distribution is precarious for its survival as 100% of mature individuals exist in one subpopulation (Garnett et al., 2011).

The extent of occurrence is estimated to be 2 800 000 km2 and the area of occupancy estimated to be 1000 km2 (Garnett et al., 2011).

The population decline is suspected to be 20-29% over the last three generations based on monitoring, a reduced area of occupancy and deteriorating habitat quality (Garnett et al., 2011).

Painted Honeyeater was therefore listed as Vulnerable under the EPBC Act based on the estimated total number of mature individuals; the decline in extent of occurrence and the decline in the area of occupancy (DoE 2015).

Habitat and Ecology

The Painted Honeyeater inhabits mistletoes in eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, callitris, and trees on farmland or gardens (Pizzey & Knight 1997; Higgins et al., 2001; Garnett et al. 2011, DoE 2015). It is the most specialised of Australia's honeyeaters (DoE 2015) with a diet that mainly consists of mistletoe fruits, but also includes nectar (from flowering mistletoe, eucalypts and possibly banksias) and arthropods, especially in the non-breeding season (Pizzey & Knight 1997; Higgins et al., 2001; Garnett et al. 2011). Arthropods are an important dietary item provided to nestlings (Barea, 2008a) and for adults during the breeding season (Barea and Herrera, 2009). The species prefers woodlands which contain a higher number of mature trees, as these host more mistletoes. It is more common in wider blocks of remnant woodland than in narrower strips (Garnett et al., 2011), although it breeds in quite narrow roadside strips if ample mistletoe fruit is available (DoE 2015, DAWE 2021).

The species often occurs singly or in pairs, and less often in small flocks. Breeding occurs from October to March when mistletoe fruits are most available. The species builds a flimsy cup nest made of plant-fibre, spiders' webs and rootlets in the outer foliage of trees anywhere from 3 m to 20 m above the ground. The species appears to prefer mistletoe as a nest substrate and selects nest sites in habitats where mistletoe prevalence and parasitism rates are high (Barea, 2008b). Generation time is estimated at 5.8 years, with a maximum longevity in the wild estimated at 10.1 years (Garnett et al., 2011).

Painted Honeyeaters occur across a large area and are known to be highly mobile. However, knowledge of their movement is still not fully understood. It has been suggested that seasonal movements are linked to plant productivity, food supply and drought impacts (Higgins 1999).

Critical Habitat

Critical habitat for the Painted Honeyeater is identified in the recovery plan as the following:

- Breeding habitat: Known or likely breeding habitat in Boree/Weeping Myall (Acacia pendula), Brigalow (A. harpophylla) woodlands, box-gum woodlands and box-ironbark forests on the inland slopes of the Great Dividing Range in New South Wales, Victoria and southern Queensland.
- Foraging habitat: All preferred foraging species within known and likely foraging habitat particularly mistletoes of the genus Amyema growing on forest and woodland eucalypts and acacias.
- Habitat for the long-term maintenance of the species: All Key Biodiversity Areas with Painted Honeyeater as a Trigger species and suitable habitat in future climate niches as information becomes available..

Area of Disturbance

Potential habitat within the project area for Painted Honeyeater consists of RE5.6.4. The area of RE 5.6.4 within the disturbance footprint is 11.41 hectares which is 17.05% of RE 5.6.4 that is mapped within PL 1125.

Identified Threats

The conservation advice for Painted Honeyeater identifies the following threats:

- Major Threats, Very High Risk:
    - Habitat loss: Ongoing clearing of woodland and forest containing the key acacia and eucalypt species preferred by Painted Honeyeaters is a major threat. For example, 83 percent of box-ironbark habitat has been cleared in Victoria, and 70 percent has been cleared in New South Wales. White Box-Yellow Gum-Blakely's Red Gum woodland, another important habitat in New South Wales, has been reduced to less than 4 percent of its pre-European extent on the south-western slopes and southern tablelands of New South Wales (DAWE 2021).
    - Climate variability and change: Australia's changing climate threatens the Painted Honeyeater's habitat through both increased risk of drought, fire and altered flowering or fruiting phenology, potentially leading to further habitat loss and degradation.
- Moderate threats High Risk:
    - Habitat degradation: Remaining Painted Honeyeater habitat faces ongoing degradation, particularly on agricultural land in central and north-east Victoria and on the western slopes of New South Wales. Loss of mature trees occurs through senescence, eucalypt dieback, harvesting for fence posts or firewood, or drought-induced stress (DAWE 2021).
    - Competition: Painted Honeyeaters compete for food resources with larger and/or more aggressive honeyeaters such as the Noisy Miner, Yellow-throated Miner, Noisy Friarbird and the Red Wattlebird. While the impacts from greater levels of competition with these other aggressive honeyeaters is unclear, anecdotal evidence of their impact on other woodland birds suggests it is likely to negatively affect Painted Honeyeater breeding success and survival.
    - Other threats: Other potential threats to Painted Honeyeater include predation by invasive species (e.g. Black Rats Rattus rattus); deliberate destruction of mistletoe in production forests; exacerbation of tree decline through pasture improvement activities; collision with road vehicles; and nest predation by over-abundant Pied Currawongs, Pied and Grey Butcherbirds, and crows and ravens (DAWE 2021).

SRI Assessment

Decrease in Population Size: The project area is at the edge of the modelled distribution for the species and is adjacent of an area identified as 'species may occur, DAWE 2021, Figure 1). There is one record from within 50 km and five records from

within 100 km of the project area. None of the woodland types identified as habitat occur within the project area with all woodland dominated by Northern Bloodwood *Corymbia terminalis*, Coolabah *Eucalyptus coolabah* or Whitewood *Atalaya hemiglauca* with a minor presence of Mulga *Acacia aneura*. Pale-leaf Mistletoe Amyema maidenii was recorded in RE 5.6.4. Given that this species is highly mobile it is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area given that the woodland is not considered primary habitat for the species (DAWE 2021). The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Painted Honeyeater.

Reduction in Extent of Occurrence: The area of habitat for Painted Honeyeater (RE 5.6.4) within the disturbance footprint is 11.41 ha which constitutes 17.05 % of the mapped area of RE 5.6.4 within PL 1125. It was clear during the site visit that this RE is much more widespread throughout PL1125 than mapped especially along dune flanks and drainage lines, hence the area disturbed is likely to be less than 17.05% RE 5.6.4 within Pl 1125. The species has been recorded within 50 km of PL 1125 and the area is at the edge the area mapped as habitat where it 'May occur' (DAWE 2021). It is possible that the species could occur in PL 1125 including the project area and potential habitat is present within adjacent areas to the disturbance footprint and throughout PL 1125. Mistletoe (Pale-leaf Mistletoe *Amyema maidenii*) was recorded in RE 5.6.4 however it is unclear to what extent trees within the disturbance footprint contain mistletoe. It is possible that the project could reduce the area of extent at a local scale if trees cleared for the project contain mistletoe and the species is present. It is not considered to have a significant impact at a population or regional scale as suitable habitat remains adjacent to the impact areas and some extensive areas of habitat were observed within and outside of PL1125.

Fragmentation of existing population: Painted Honeyeater is a highly mobile species capable of moving many kilometres in a day. The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to Painted Honeyeater. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Painted Honeyeater.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Painted Honeyeater or other wildlife species.

Interference with recovery: The conservation advice for Painted Honeyeater identifies the following conservation objectives:

- Protect, manage and restore Painted Honeyeater breeding and foraging habitats at the local, regional and landscape scales.
- Monitor, reduce and manage threats and sources of mortality.
- Develop and apply techniques to measure changes in population trajectory in order to measure the success of recovery actions.
- Improve understanding of habitat use at a landscape scale in order to better target protection and restoration measures.
- Engage local communities and stakeholders in Painted Honeyeater conservation.
- Coordinate, review and report on recovery progress.

The disturbance footprint for the project includes some areas of RE 5.6.4 which contains trees. The project area is not within the breeding range of Painted Honeyeater and it is unclear if Painted Honeyeater would use these areas as the woodlands present in RE 5.6.4 are not identified as primary habitat for the species. I is therefore considered that any impacts from the project would be minimal and would be unlikely to impact the first of the conservation objectives. The remaining recovery objectives would not be impacted by the project.

Disruption to ecologically significant locations:

As above, the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species would only occur very infrequently, if at all in the project area. Should Painted Honeyeater seek to use habitats within PL 1125 it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Painted Honeyeater is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There is one record of Painted Honeyeater from within 50 km and five records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area provides potential marginal habitat but not critical habitat and is not ecologically significant for the species. The area of habitat for Painted Honeyeater (RE 5.6.4) within the disturbance footprint is 11.41 ha which constitutes 17.05 % of the mapped area of RE 5.6.4 within PL 1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Greater Bilby Macrotis lagotis, EPBC Vulnerable; NC Act: Endangered

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Before European settlement the greater bilby occurred over 70 percent of the Australian mainland (DoE 2016c). Since the late 1800s, greater bilbies have disappeared from at least 80 percent of their former range (DoE 2016c). The range of the Bilby has declined northwards and the decline is continuing. Wild populations are restricted predominantly to the following locations (DoE 2016c):

- Northern Territory: The Tanami Desert
- Western Australia: The Gibson Desert, Little Sandy Desert, Great Sandy Desert and parts of the Pilbara and Southern Kimberley (DoE 2016c))
- Queensland: One isolated population in South-west Queensland, approximately in the area between Boulia and Birdsville

The majority of remnant, naturally occurring populations of the greater bilby occur on Aboriginal lands (DoE 2016c). Bilbies have been successfully introduced to Thistle Island (39 km^2), South Australia in 1998, and successfully reintroduced to a number of fenced conservation areas in South Australia and New South Wales.

Population and declines

The population size is estimated to be fewer than 10 000 mature individuals, and it is undergoing continual decline (DoE 2016c). *Macrotis lagotis* (greater bilby) is listed as Vulnerable under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act). The main factors that are the cause of the species being eligible for listing in the Vulnerable category are that it is patchily distributed and has a small area of occupancy (reduced to 20 percent of its former range (DoE 2016c).

Habitat and Ecology

Historically, bilbies occurred in a wide range of climatic zones, soil, vegetation types, and landforms across much of Australia (DCCEEW 2023f). Vegetation types used by bilbies included eucalypt open forest and woodland in south-western WA; the South Western Slopes bioregion and the Southern Tablelands of NSW; around Adelaide, SA; tall shrublands and open woodlands in semi-arid regions; and hummock grasslands across arid Australia (DCCEEW 2023f). The habitats used by the remaining wild bilbies vary between both sites and regions in which bilbies persist. They now occupy a range of habitats including: open tussock grassland on uplands and hills; mulga (*Acacia aneura*) woodland/shrubland growing on ridges and rises; and hummock grassland on plains and in alluvial areas (DCCEEW 2023f). Bilby distribution is limited by the availability of soils suitable for burrowing, such as sandy areas, where burrow excavation is easier (DCCEEW 2023f).

Greater Bilby habitat in Queensland is open clayey and stony plains that often have less than 10% ground cover, with the dominant vegetation being chenopods and grasses (DCCEW 2023f). Bilbies were also found using dune fields in western Queensland in 2018, a land type that was previously only historically occupied by bilbies in Queensland (DCCEEW 2023f). Habitats in the central desert area include saltlake margins, areas with laterite, areas of rock features, and sandplains dominated by spinifex, acacia shrubs or mulga (DCCEEW 2023f). In the Tanami Desert, bilby occurrence is strongly associated with substrate type (less abundant on dune and sand substrates than on laterite/rock features or drainage/calcrete substrates), and the positively associated with mean annual rainfall and dingo presence (*Canus lupis dingo*) (DCCEEW 2023f). In the northern part of its range, bilbies persist in areas of habitat that have higher levels of plant cover and therefore food production. Habitat types in these areas comprise closed coastal tussock grasslands and *Acacia bivenosa* shrublands, *Acacia* dominated woodland, shrubland and thickets on pindan sandplain, comprising species such as *A. eriopoda, A. monticola, A. stellatice*ps and *A. tumida* (DCCEEW 2023f). In the north of WA, suitable habitat for the bilby includes: woodlands (<10 m) with *Eucalyptus* and *Acacia* spp., Pindan woodlands with hummock and tussock grass, on coarse sand to light medium clay; low shrub cover of Acacia spp. over hummock and tussock grasses, on sandy soils, loams and red earth; spinifex grasslands with low shrub cover of Acacia and Melaleuca spp. on sandy and sandy loam soils (DCCEEW 2023f).

Bilbies are highly mobile and can have large foraging ranges, although their home range in many areas is still unknown. In Queensland, a study over a period of 4–6 weeks on unfenced populations of bilbies found the mean burrow range was 1.53 km^2 for males and 0.3 km^2 for females, and the mean home range was 5.11 km^2 for males and 2.03 km^2 for females (DCCEEW 2023f). Data from tracked wild animals in the Tanami showed that an adult female occasionally moved up to 1.5 km between burrows on consecutive days while an adult male used burrows that were 2.6 km apart (DCCEEW 2023f). At Watarrka National Park (NT) adult males were regularly recorded moving 2–3 km, and up to 5 km between burrows on consecutive days (DCCEEW 2023f).

Bilbies are active at night and shelter during the day in long deep burrows that they

dig. Bilbies are solitary animals and can breed all year round if conditions are favourable.

Critical Habitat

Habitat critical to the survival of the Greater Bilby can be considered to include:

- Any area where the species is known or likely to occur as shown on the distribution map on the greater bilby SPRAT profile. Figure 2 is indicative of these areas at the time of publication, but should not be relied upon.
- Any location outside the known or likely distribution where bilbies are found to occur.
- Any area, between the areas noted above, that may be periodically occupied by bilbies.
- Any area which bilbies may naturally colonise or may feasibly be reintroduced.

The project area is not within the modelled distribution for Greater Bilby (DCCEEW 2023f, Figure 2).

Area of Disturbance

Potential habitat within the project area for Greater Bilby consists of 8.8 ha RE 5.6.5 and RE 5.6.8 combined and 11.41 ha RE 5.6.4. The areas of RE 5.6.5 and RE 5.6.8 which have been impacted are primarily along the flowline and access tracks. Disturbance along the flowline has largely been rehabilitated with substantial vegetation regrowth as observed during the field work (Figure 8). Rehabilitated vegetation communities are likely to provide habitat for the species as they contain the same flora species as adjacent areas.

Identified Threats

The conservation advice for Greater Bilby identifies the following threats:

- Predation by foxes (Vulpes vulpes) and cats (Felis catus)
- Habitat loss and fragmentation from land clearing and infrastructure development
- Introduced herbivores & water points: Rabbits (Oryctolagus cuniculus) support higher densities of cats and foxes. Pastoralism leads to increases in water points, which can also cause elevated densities of introduced predators.
- Too frequent fire regimes: Extensive and intense fires remove vegetation and food resources from large areas, potentially causing increased predation pressure including by introduced predators.

SRI Assessment

Decrease in Population Size: The project area is not within the modelled distribution for Greater Bilby DCCEEW 2023f, Figure 2). There are no records from within 50 km and no records from within 100 km. While the modelled distribution is indicative the nearest area where 'habiat may occur' is at least 50 km to the north and the nearest area of 'habitat known to occur' is at least 200 km to the north-west. It is unlikely that

the species would occur in the local area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Greater Bilby.

Reduction in Extent of Occurrence: Potential habitat within the project area for Greater Bilby consists of 8.8 ha RE 5.6.5 and RE 5.6.8 combined and 11.41 ha RE 5.6.4. There is no local population within or adjacent to the project area and the project area is not within the known extent of occurrence for Greater Bilby (DCCEEW 2023f). The project does not therefore result in a reduction in the extent of occurrence.

Fragmentation of existing population: There is no existing population within or adjacent to the project area and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: There is no existing population within or adjacent to the project area and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Greater Bilby.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Greater Bilby or other wildlife species.

Interference with recovery: The conservation advice for Greater Bilby identifies two primary conservation objectives:

- Maintain the current distribution of bilbies, and seek to expand this distribution.
- Implement landscape-scale control of introduced predators at key bilby sites.
- Maintain the existing insurance populations on feral predator-free islands and fenced areas, and potentially increase the number of these insurance populations.
- Develop and implement a national monitoring program for bilbies.

The project does not impact any of the identified recovery efforts for Greater Bilby.

Disruption to ecologically significant locations:

There is no existing population within or adjacent to the project area and the project is not within the modelled distribution for Greater Bilby DCCEEW 2023f, Figure 2). It is very unlikely that Greater Bilby would use the project area. The project area does not therefore provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Greater Bilby is considered to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of Greater Bilby from within 50 km and no records from within 100 km of the project area. The project area is not within the modelled distribution for Greater Bilby and it is unlikely to occur in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Sclerolaena walkeri, EPBC: Vulnerable; NC Act: Not Listed

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Sclerolaena walkeri is known from central Queensland, including the Diamantina River–Mackunda Creek Channels, the Paroo River area and in the Norley Range area near the Bulloo River north of Thargomindah (DEWHA 2008a). Sclerolaena walkeri is reserved in Currawinya National Park. This species occurs within the Desert Channels and Southwest Queensland Natural Resource Management Regions (DEWHA 2008a).

PL1125 may contain habitat modelled within the distribution for *Sclerolaena walkeri* however it is unclear if the project area also contains habitat (Appendix 11).

Population and declines

No population estimates are given for the species (DEWHA 2008a).

Sclerolaena walkeri is listed as vulnerable under the EPBC Act as, prior to the commencement of the EPBC Act, it was listed as vulnerable under Schedule 1 of the Endangered Species Protection Act 1992. The species is also listed as vulnerable

under the Nature Conservation Act 1992 (Queensland).

Habitat and Ecology

It occurs on saline river flats (Wilson, 1984), channels and flats with Soda Bush *Neobassia proceriflora* and on floodplains in Queensland Bluebush *Chenopodium auricomum* and Yapunyah *Eucalyptus ochrophloia*.

Critical Habitat

Critical habitat is not defined in the approved conservation advice for Sclerolaena walkeri but would be assumed to be all habitat within its known area of distribution.

Area of Disturbance

Potential habitat for *Sclerolaena walkeri* within the disturbance footprint consists of RE 5.3.22, RE 5.9.3 and RE 5.9.4. The area of RE 5.3.22 within the disturbance footprint is 8.69 hectares which is 0.92 % of RE 5.3.22 that is mapped within PL 1125 (945.22 ha). Potential habitat also includes 13.09 ha of RE 5.93/RE 5.94 (combined) which is equivalent to 0.95% of this community as mapped for PL 1125. Areas of RE 5.3.22 that were disturbed along the flowline and pipeline corridors have revegetated following rehabilitation and now provide similar habitats to the original vegetation.

Identified Threats

The main identified threats to S. walkeri are grazing pressure and feral rabbits Oryctolagus cuniculus (DEWHA 2008a).

SRI Assessment

Decrease in Population Size: *Sclerolaena walkeri* was not recorded during the field survey and there are no records from within 50 km and no records from within 100 km. PL1125 may contain habitat modelled within the distribution for *Sclerolaena walkeri* however it is unclear if the project area also contains modelled habitat (Appendix 11). The species was not recorded within the disturbance footprint and the project area does not contain saline flats or Yapunyah *Eucalyptus ochrophloia* but does contain patches of Queensland Bluebush *Chenopodium auricomum* in floodplain areas. It is considered that a population is unlikely to persist in this project footprint area but it is possible that the species may occur in adjacent areas within PL1125 which were not surveyed as intensively. Clearance of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present.

Reduction in Extent of Occurrence: *Sclerolaena walkeri* has not been recorded within PL 1125 and there are no records within 100 km however habitat modelling by DETSI shows patches of potential habitat throughout the region where PL1125 is located (Appendix 11). It is possible that the project could reduce the area of extent at a local scale if the species is present. It is not considered to have a significant impact at a population or regional scale as suitable habitat remains adjacent to the impact areas and some extensive areas of habitat were observed within and outside of PL1125.

Fragmentation of existing population: An existing population is unlikely in the disturbance footprint. The disturbance from the project is on very small scale within

the surrounding landscape and does not present a barrier to dispersment of Sclerolaena walkeri should it persist. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to *Sclerolaena walkeri*.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to *Sclerolaena walkeri*.

Interference with recovery: The conservation advice for Sclerolaena walkeri includes the following conservation objectives:

- Design and implement a monitoring program to assess key populations, population size, distribution, ecological requirements and the relative impacts of threatening processes.
- Minimise adverse impacts from land use at known sites.
- Investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate inclusion in reserve tenure if possible.
- Develop and implement a stock management plan for roadside verges and travelling stock routes.
- Manage total grazing pressure at important sites through exclusion fencing or other barriers.
- Implement the threat abatement strategies and priority actions for the control of rabbits in the local region.
- Undertake appropriate seed collection and storage.
- Investigate options for linking, enhancing or establishing additional populations

No key populations of *Sclerolaena walkeri* are known within 100 km of the project. The project does not impact any recovery efforts for the species.

Disruption to ecologically significant locations:

As above, no population of the species is known within 100 km of PL 1125 and as such the project area does not provide ecologically significant locations for the species.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to *Sclerolaena walkeri* is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of *Sclerolaena walkeri* from within 50 km and no records from within 100 km of the project area. It is unlikely to occur within the project footprint but may possibly occur in adjacent areas of PL1125. The project area does not provide critical habitat and is not ecologically significant for the species. Clearance of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present. Similar habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Flame Spiderflower *Grevillea kennedyana*, EPBC Vulnerable; NC Act: not listed

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Grevillea kennedyana has a restricted distribution in the northwest corner of New South Wales and the southwest corner of Queensland (DoE 2016d, ALA 2024). As of 2000, the plant was found in six geographic locations. Ninety per cent of the populations are found in the Sturt National Park, NSW and are highly fragmented with a natural range of less than 100 km (ALA 2024).

Population and declines

Populations vary in size from very few to hundreds of plants. In 1997, the total population was estimated to be more than 13 000 plants (DoE 2016d). Most individuals occur in Sturt National Park in northwestern NSW. It is also known for two

sites at the southern end of the Grey Range on Naryilco Station in south-west Queensland adjacent to Sturt National Park (NSW NPWS 2000).

Grevillea kennedyana flame spider-flower is listed as Vulnerable under the EPBC Act. The species is eligible for listing as prior to the commencement of the EPBC Act as it was listed as Vulnerable under Schedule 1 of the Endangered Species Protection Act 1992 (DoE 2016d).

The main factors that are the cause of the species being eligible for listing in the Vulnerable category are its geographic distribution is precarious for its survival due to its limited extent of occurrence, area of occupancy and number of locations.

Habitat and Ecology

Grevillea kennedyana mostly grows in arid areas in clusters on rocky jump-ups and colluvial slopes of rocky mesas with weathered silcrete rocks and loamy soils but can sometimes be found in dry and rocky watercourses (DoE 2016d). It grows on slopes between 10˚ and 75˚ (ALA2024). The largest populations of this species are found on the lower slopes that have high water retention. It is often found with species such as Spiny Fan-flower *Scaevola spinescens*, Whitewood *Atalaya hemiglauca*) *Acacia* and *Eremophila* species, and occasionally black oak (*Casuarina pauper*) often with a low ground cover of chenopods (DoE 2016d, ALA 2024).

Critical Habitat

Critical habitats for *Grevillea kennedyana* are not identified in the recovery plan but would consist of suitable habitat within the four locations where it is found in Sturt National Park, NSW and the two locations on Naryilco Sation in south-western Queensland.

Area of Disturbance

RE 5.6.4 contains Whitewood *Atalaya hemiglauca* Spiny Fan-flower *Scaevola spinescens* with which *Grevillea kennedyana* is often associated with. Rocky jump-ups and colluvial slopes of rocky mesas with weathered silcrete rocks and loamy soils which are the primary landform with which *Grevillea kennedyana* is associated, is not present within or adjacent to the project area but there are small areas of dry and rocky watercourses adjacent to the project area. The area of RE 5.6.4 within the project footprint is 11.41 ha. RE 5.3.22 is not a suitable habitat for *Grevillea kennedyana*.

Identified Threats

The conservation advice for *Grevillea kennedyana* identifies the following threats:

- Grazing/browsing by domestic stock
- Grazing/browsing by rabbits and goats
- Fire frequency.

SRI Assessment

Decrease in Population Size: *Grevillea kennedyana* was not recorded during the field survey and there are no records from within 50 km and no records from within 100

km. PL1125 is at least 100 km from the only known populations of the species in Sturt National Park, NSW and Naryilco Sation near the NSW border in south-western Queensland. It is considered that a population is very unlikely to occur in the project footprint or in the PL 1125 area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of *Grevillea kennedyana*.

Reduction in Extent of Occurrence: *Grevillea kennedyana* has not been recorded within PL 1125 and there are no records within 100 km. There is no local population within or adjacent to the project area and the project area is not within the known extent of occurrence for the species (DoE 2016d, ALA 2024). The project does not therefore result in a reduction in the extent of occurrence.

Fragmentation of existing population: There is no existing population within or adjacent to the project area and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: There is no existing population within or adjacent to the project area and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Grevillea kennedyana.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Grevillea kennedyana or other wildlife species.

Interference with recovery: The conservation advice for *Grevillea kennedyana* identifies the following conservation objectives:

- Manage the impacts of grazing by livestock,
- Manage the impacts of grazing by introduced feral animals including rabbits and goats.
- Manage fire frequency to avoid intervals of less than 20 years, as may reduce population sizes by interrupting plant life-cycle processes.

The project does not impact any recovery efforts for *Grevillea kennedyana*.

Disruption to ecologically significant locations:

There is no existing population of *Grevillea kennedyana* within or adjacent to the project area which therefore does not provide ecologically significant locations for the species.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to *Grevillea kennedyana* is considered to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of *Grevillea kennedyana* from within 50 km and no records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

Xerothamnella parvifolia, EPBC vulnerable; NC Act: Not Listed

No. of Records within 50 km: 0 **No. of Records within 100 km**: 0

Not recorded during the survey.

Distribution

Xerothamnella parvifolia is known from Queensland, NSW and South Australia. In Queensland it occurs in the Bulloo catchment area, in the Grey and Gowan Ranges and the Dynevor Downs area (DEWHA 2008b). In NSW it is known from Mt Poole, where there are 142 plants in 10 stands in an area of about 2 hectares (DEWHA 2008b). In South Australia it occurs in the Moro Gorge, in the Flinders Ranges. Davies' collection in the State Herbarium of South Australia, recorded 65 plants in the population sampled in 1993, but the full extent of the population is not clear. This species occurs within the South West of Queensland, Western NSW and Rangelands of South Australia Natural (DEWHA 2008b).

Population and declines

Locally common but limited distribution in NSW sub-populations. At Mt Poole, the populations total 87 plants on five ridges observed in 10 stands over an area of approximately 2 hectares (OEH 2022). Some Queensland populations are recorded as being larger and more extensive with one population in the Cudmore Valley contains more than 200 000 mature individuals (OEH 2022). The conservation advice

for this species does not contain population estimates (DEWHA 2008b).

Xerothamnella parvifolia is listed as vulnerable under the EPBC Act as, prior to the commencement of the EPBC Act, it was listed as vulnerable under Schedule 1 of the Endangered Species Protection Act 1992. The species is also listed as vulnerable under the Nature Conservation (Wildlife) Regulation 2006 (Queensland), and as endangered under the Threatened Species Conservation Act 1995 (NSW) and the National Parks and Wildlife Act 1972 (South Australia).

Habitat and Ecology

It grows in low chenopod shrubland and low open woodland, in thin sandy clay soils, along the ridgetops and slopes of sandstone ranges (ALA 2024).

The species is often associated with skeletal clay soils in minimally vegetated areas associated with mesas. It has been recorded within mulga woodland as well as *Acacia cambagei* woodland with a *Senna* understory in Queensland and NSW. A more precise characterisation of the vegetation type in which the Queensland populations are found is needed to establish whether there is a specific association that supports this relict species. It is present in the Grey and Gowan Ranges to the north and west of Adavale in "rugged residual sandstone tablelands and hills" (DEWHA 2008b). In South Australia, the SA Herbarium records indicate that the species is associated with the slopes above gullies in vegetation which contains *Eucalyptus gillii* and *Casuarina pauper* over *Senna, Dodonaea* and *Ptilotus* species (DEWHA 2008b).

At Mt Poole in NSW part of the population is recorded from a grazing area on one side of the summit of the mountain with low chenopod shrubland (*Atriplex* and *Sclerolaena* spp.) and scattered *Casuarina pauper*. Associated species in NSW include *Sclerolaena lanicuspis, Sclerolaena parallelicuspis, Atriplex holocarpa, Atriplex vesicaria, Acacia cambagei, Senna artemisioides subsp. oligophylla, Ptilotus obovatus and Atalaya hemiglauca* (OEH 2022).

Critical Habitat

Critical habitats for *Xerothamnella parvifolia* are not identified in the recovery plan but would consist of suitable habitat within the existing locations where it is found in Queensland, New South Wales and South Australia.

Area of Disturbance

RE 5.6.4 contains Whitewood *Atalaya hemiglauca* with a minor content of Mulga *Acacia aneura* which *Xerothamnella parvifolia* is as associated with at some sites (DEWHA 2008b, OEH 2022). The area of RE 5.6.4 within the project footprint is 11.41 ha.

The species has also been recorded in low chenopod shrublands on one side of the summit of the mountain. RE 5.3.22 contains chenopod shrublands but in a different landscape setting, being in drainage lines and ephemeral wetlands hence this vegetation community does not appear to be suitable for the species. The area of RE 5.3.22 within the disturbance footprint is 8.69 hectares.

Identified Threats

The conservation advice for *Xerothamnella parvifolia* identifies the following threats:

- grazing by feral animals, including goats *Capra hircus*, rabbits *Oryctolagus cuniculus*, and pigs, *Sus scrofa*,
- grazing by native animals, such as Euro *Macropus robustus*,
- mineral exploration,
- visitor damage, in the Mt Poole area in NSW,
- weeds and feral animals are likely to be problematic for the Queensland and South Australian populations.

SRI Assessment

Decrease in Population Size: *Xerothamnella parvifolia* was not recorded during the field survey and there are no records from within 50 km and no records from within 100 km. PL1125 is at least 100 km from known populations in south-western Queensland (DEWHA 2008b, ALA 2024). It is considered that a population is very unlikely to occur in the project footprint or in the PL 1125 area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of *Xerothamnella parvifolia*.

Reduction in Extent of Occurrence: There is no local population within or adjacent to the project area and the project area is not within the known extent of occurrence for the species (DEWHA 2008b, ALA 2024). The project does not therefore result in a reduction in the extent of occurrence.

Fragmentation of existing population: There is no existing population within or adjacent to the project area and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: There is no existing population within or adjacent to the project area and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to *Xerothamnella parvifolia*.

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in

the potential for introduction of diseases to *Xerothamnella parvifolia* or other wildlife species.

Interference with recovery: The conservation advice for *Xerothamnella parvifolia* includes the following conservation objectives:

- Identify populations of high conservation priority and manage threats to areas of vegetation that contain populations/occurrences/remnants.
- Develop and implement a management plan for the control of any weeds in the local area.
- Develop and implement a stock management plan for roadside verges and travelling stock routes.
- Implement Threat Abatement Plans for the control and eradication of feral animals, such as feral pigs, goats and rabbits.
- Investigate options for linking, enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.
- Undertake appropriate seed collection and storage.
- Undertake seed germination and/or vegetative propagation trials to determine successful establishment of the species.

The project does not impact any recovery efforts for *Xerothamnella parvifolia*.

Disruption to ecologically significant locations:

There is no existing population *Xerothamnella parvifolia* within or adjacent to the project area and it does not provide an ecologically significant location for the species.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to *Xerothamnella parvifolia* is considered to be 'Rare' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There are no records of *Xerothamnella parvifolia* from within 50 km and no records from within 100 km of the project area. It is unlikely to occur in the project area given primary habitats for the species are not present. The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat

level if likelihood or consequences change'.

Yellow Chat (inland) *Epthianura crocea crocea*, EPBC Act: Not listed, NC Act Vulnerable

No. of Records within 50 km: 1 **No. of Records within 100 km**: 4

Not recorded during the survey.

Distribution

Yellow chat occurs from north-west WA across the NT to south-west and coastal Qld. In south-west Qld it is sparsely scattered to the north and east of Birdsville mostly in the Diamantina River and central Coppers creek drainage basins (Higgins et al. 2001).

Population and declines

No population estimates or trends are available for the Inland subspecies of Yellow Chat.

This subspecies is listed as Vulnerable in Queensland and Endangered in South Australia but is not listed under he EPBC act or in the Northern Territory or in Western Australia.

Habitat and Ecology

Yellow Chat mainly inhabit low vegetation around ephemeral wetlands, especially floodplains, swamps and bore drains, and sometimes also vegetated dams, saltlakes, claypans, lagoons, sewage ponds or reservoirs, and sometimes amongst sparse reeds (Higgins et al. 2001). Often found around the interface of grasslands and saltmarsh and sometimes in dry areas away from wetlands, dominated by chenopods, such as bluebush *Maireana*, saltbush *Atriplex* and *Sclerolaena* (Higgins et al. 2001).

Occasionally also occur in grasslands dominated by Mitchell Grass *Astrebla* with patches of chenopods, or sometimes lignum, sedges or scattered acacias, such as Gidgee or Georgina Gidgee *Acacia georginae* (Higgins et al. 2001). Very occasionally recorded in open Coolibah woodlands with scattered bluebush (Higgins et al. 2001).

In arid and semi-arid areas it is primarily associated with inland artesian bore drains and adjacent wetlands.

In Queensland it is recorded in all seasons at some sites such as Coorabulka and Davenport Downs Stns, sw. Qld, where numerous bores have created much suitable habitat and birds possibly move locally between bore drains (Higgins et al. 2001). Elsewhere, thought to be nomadic, irregularly visiting areas, e.g. vagrant at Mt Isa and near Hughenden (Higgins et al. 2001). Able to colonize widely separated areas, e.g. in sw. Qld, implies that it is capable of undertaking long and dispersive movements (Higgins et al. 2001).

Critical Habitat

There is no recovery plan for this subspecies and critical habitat is not identified. In arid and semi-arid areas, critical habitat is likely to be wetlands associated with bore drains noting that many of these are artificial and created for grazing purposes.

Area of Disturbance

Potential habitat for Yellow Chat (inland) includes RE 5.3.22, RE5.9.3 and RE5.9.4. The area of these habitats within the disturbance footprint are as follows:

- 8.69 ha of 5.3.22 which is equivalent to 0.92% of this community as mapped within PL 1125;
- 13.09 ha of RE 5.93/RE 5.94 (combined) which is equivalent to 0.95% of this community as mapped for PL 1125.

RE 5.6.4 is not considered appropriate habitat for this species as it is not associated with wetlands and does not contain primary habitat features.

Identified Threats

There is no conservation advice for Yellow Chat however the following threats:

- Grazing: Inland populations rely heavily on bore drains and seasonal, inland wetlands, meaning their numbers fluctuate significantly with wet and dry seasons. It may be threatened by cattle grazing and habitat degradation caused by feral animals in some areas. Higher stocking rates encouraged by artificial watering points may cause increased damage to preferred habitat (Higgins et al. 2001).
- Adversely affected by infestation by weeds, especially Parkinsonia (Higgins et al. 2001).

SRI Assessment

Decrease in Population Size: . There is one record of Yellow Chat (Inland) from within 50 km and four records from within 100 km. It is possible that the species may occur in the local area on an infrequent basis however it is considered unlikely that there is a local population within PL1125 or the surrounding area. No artificial drain bores with associated wetlands are present within or adjacent to the project area. The Vali Field project is considered not to have a significant impact that will lead to a long-term decrease in the size of a local population of Yellow Chat (Inland).

Reduction in Extent of Occurrence: All habitat within PL 1125 is sub-optimal for Yellow Chat with no permanent or semi-permanent wetlands present. The disturbance to potential habitat, RE 5.3.22, from the project represents less than 1 % of the available habitat within PL1125. Similar habitat remains throughout PL1125 and adjacent areas to the project area hence the extent of occurrence would not be reduced.

Fragmentation of existing population: There is no existing population of Yellow Chat (Inland) in the area. The disturbance from the project is on the scale of hundreds of meters and therefore does not present a barrier to which is capable of long distance movements. Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of fragmentation of an existing population.

Gene flow interruption due to habitat isolation: Disturbance on the scale of the Vali wellfield project would present no barrier to this species and the project does not present a risk of gene flow interruption due to habitat isolation.

Introduction of harmful invasive species: The potential impact of invasive weeds was identified in the project impact assessment and weed management practices to be implemented were described. Construction of the flowline, Vali 1, 2 and 3 well pads and associated infrastructure has occurred and has not led to weed outbreaks. Few weeds were recorded during the field survey with Paddy Melon being the most widespread in dune habitats which is a common species throughout arid regions of Australia. Project activities include weed management practices and are not resulting in the introduction of harmful invasive species. There is no impact of harmful invasive weeds arising from the project to Yellow Chat (Inland).

Introduction of disease: As identified in the impact assessment, waste is managed in accordance with the waste and resource management hierarchy and principles. Waste bins are covered to prevent access to fauna. Sewage effluent and/or grey water is managed in accordance with conditions of environmental authority. Other waste stream are of an industrial nature and these are managed in dedicated sumps or storages and disposed of appropriately. The project is not considered to result in the potential for introduction of diseases to Yellow Chat (Inland) or other wildlife species.

Interference with recovery: There is no conservation advice or recovery plan for Yellow Chat (Inland) and no conservation objectives are identified. The project does not have an impact on the preferred habitat for this species and would not impact any recovery efforts for Yellow Chat (Inland) which would likely target existing and potential sites of preferred habitat for the species.

Disruption to ecologically significant locations:

There is no existing population of Yellow Chat (Inland) in the area and the project area does not provide ecologically significant locations including for breeding, feeding, nesting, migration or resting sites as the species only occurs very infrequently, if at all in the project area. Should Yellow Chat (Inland) seek to use habitats within PL 1125 during times when wetlands contain water it is likely that they would be able to find suitable locations for feeding and resting and disruption from the project would be either minimal or negligible.

Risk Assessment

Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Yellow Chat (Inland) is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.

Finding

There is one record of Yellow Chat (Inland) from within 50 km and four records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in

the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat from the project includes 8.69 hectares of RE 5.3.22, and 13.09 ha of RE 5.93/RE 5.94 (combined). Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of '*monitor the threat occurrence and reassess threat level if likelihood or consequences change*'.

5.5.4. Summary of Significant Residual Impact Assessments

A summary of the Significant Residual Impact assessments for the 18 species assessed is provided in Table 12.

Table 12 Summary of the Significant Residual Impact assessments for the 18 species assessed.

Species	50km	100km	Likelihood	Consequence of an impact	Risk	Associated priority for action	Outcome
CE and Endangered							
Curlew Sandpiper *Calidris ferruginea*, EPBC Act: Critically Endangered and Migratory	1	3	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Common Greenshank *Tringa nebularia* EPBC Act: Endangered	0	5	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Australian Painted Snipe *Rostratula australis*, EPBC Act: Endangered,	1	1	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Night parrot *Pezoporus occidentalis* EPBC Critically Endangered; NCA Critically Endangered	0	0	Rare	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	No residual loss of habitat as this species is not expected to occur in the project area.
Plains-wanderer *Pedionomus torquatus* EPBC Critically endangered; NCA critically endangered	0	0	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22 A residual loss of 13.09 ha of RE 5.9.3 / RE 5.9.4 (combined)

Species	50km	100km	Likeli hood	Consequence of an impact	Risk	Associated priority for action	Outcome
Major Mitchell's Cockatoo (eastern) *Lophochroa leadbeateri leadbeateri* EPBC endangered; NCA endangered	0	7	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) A residual loss of 11.41 ha of RE 5.6.4
Kowari *Dasyuroides Bynei* EPBC endangered, NCA endangered	0	0	Rare	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	No residual loss of habitat as this species is not expected to occur in the project area.
Vulnerable							
Sharp-tailed Sandpiper *Calidris acuminata* EPBC Act: Vulnerable and Migratory	2	13	Possible	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Blue-winged Parrot *Neophema chrysostoma*, EPBC Act: Vulnerable	10	19	Possible	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22 A residual loss of 13.09 ha of RE 5.9.3 / RE 5.9.4 (combined)
Southern Whiteface *Aphelocephala leucopsis* EPBC Act: Vulnerable,	45	115	Possible	Minor – individuals may be adversely affected but no effect at population level	Moderate	Obtain additional information and develop mitigation action if required	A residual loss of 11.41 ha of RE 5.6.4

Species	50km	100km	Likeli hood	Consequence of an impact	Risk	Associated priority for action	Outcome
Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable; NCA Endangered	14	77	Possible	Minor – individuals may be adversely affected but no effect at population level	Moderate	Obtain additional information and develop mitigation action if required	A residual loss of 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) A residual loss of 11.41 ha of RE 5.6.4
Latham's snipe *Gallinago hardwickii* EPBC vulnerable & migratory; NCS vulnerable	0	0	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Painted Honeyeater *Grantiella picta* EPBC vulnerable; NCA vulnerable	1	5	Possible	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 11.41 ha of RE 5.6.4
Greater Bilby *Macrotis Lagotis* EPBC vulnerable; NCA endangered	0	0	Rare	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	No residual loss of habitat as this species is not expected to occur in the project area.
Yellow Chat (inland / gulf): *Epthianura crocea crocea* EPBC Vulnerable, NCA vulnerable	1	4	Possible	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 ha of 5.3.22
Sclerolaena walkeri EPBC vulnerable, NCA common	0	0	Unlikely	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	A residual loss of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4

Species	50km	100km	Likeli hood	Consequence of an impact	Risk	Associated priority for action	Outcome
Flame Spiderflower *Grevillea Kennedyana* EPBC vulnerable; NCA vulnerable	0	0	Rare	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	No residual loss of habitat as this species is not expected to occur in the project area.
Xerothamnella parvifolia MNES vulnerable NCA common	0	0	Rare	Not significant – no long-term effect on individuals or populations	Low	Monitor the threat occurrence and reassess threat level if likelihood or consequences change	No residual loss of habitat as this species is not expected to occur in the project area.

5.6. Prescribed Environmental Matters and Matters of State Environmental Significance (MSES) Impact Assessment

An assessment of potential impacts was conducted against all Prescribed environmental matter (PEMs) identified in the Biodiversity 10 condition of the *Guideline Environmental Protection Act 1994, Streamlined model conditions for petroleum activities*. These are the same Matters of Environmental Significance identified in the MSES report generated for PL 1125 (DESI 2024a). Each matter is assessed to determine if a potential impact may occur along with the associated disturbance area (ha) and location. The Significant Residual Impact Guideline (DEHP 2014) has been used as a guide where appropriate. This assessment is provided in Table 12.

Table 13: Significant residual impacts to prescribed environmental matters (as per Streamlined model conditions for petroleum activities - Biodiversity 10 condition).

Prescribed environmental matter	Assessment	Maximum extent of impact	SRI Assessment finding
Regulated Vegetation			
Endangered regional ecosystem	No endangered regional ecosystems are present in PL 1125, see Appendix 12 Figure 1- PL 1125 – MSES – Regulated Vegetation (from MSES Report for PL 1125 – Table 2, Map 4 (Appendix 1)).	0 ha	No residual impact
Of concern regional ecosystem (not within an urban area)	No 'of concern' regional ecosystems (including categories B and C) are present in PL 1125, see Appendix 12 Figure 1- PL 1125 – MSES – Regulated Vegetation (from MSES Report for PL 1125 – Table 2, (Appendix 1)).	0 ha	No residual impact
Regional ecosystems (not within an urban area) that intersect a wetland on the vegetation management wetlands map: • RE 5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes Broad Vegetation Groups: • 34a Lacustrine wetlands. Lakes, ephemeral to permanent. Includes fringing woodlands and sedgelands. This impact is assessed in	**Summary of Assessment in Section 5.4.1:** RE 5.3.22 is not endangered or of concern and no areas constitute a defined watercourse however areas of RE 5.3.22 within PL1125 lie within mapped wetlands (Category 8f) and therefore an assessment of the three criteria of section 2.1 of the SRI guideline is required. In accordance with the first note of the SRI guideline section 2.1 Criteria 1 and Criteria 2 are exceeded and a significant residual impact occurs from the project disturbance on the regional ecosystem that lies within the mapped wetland (RE 5.3.22).	8.69 ha of RE 5.3.22	The disturbance footprint results in a residual impact to 8.69 ha of RE 5.3.22. This is identified as a significant residual impact to RE 5.3.22 due to Criteria 1 and Criteria 2 being exceeded.

accordance with Section 2 of the SRI guideline.	The disturbance footprint results in a total clearance area of 8.69 ha of RE 5.3.22. This disturbance area represents 0.92 % of RE 5.3.22 within PL 1125.		
Essential habitat (not in an urban area) for endangered wildlife as follows: • Curlew Sandpiper *Calidris ferruginea*, EPBC Critically Endangered; • Common Greenshank *Tringa nebularia* EPBC Endangered and Migratory; • Australian Painted Snipe *Rostratula australis*, EPBC Endangered. • Plains-wanderer *Pedionomus torquatus* EPBC Critically endangered; NCA critically endangered • Major Mitchell's Cockatoo (eastern): EPBC endangered; NCA endangered	**Summary of Assessment in Section 5.5.2:** Queensland Globe mapping does not identify any Category A or Category B Environmentally Sensitive Area (ESA) – Essential Habitat within PL1125, see Appendix 12 Figure 2- PL 1125 – MSES – Species Threatened (Endangered or Vulnerable) wildlife and species least concern animals (from MSES Report for PL 1125 – Table 2, Map 3a (Appendix 1)). Areas of PL1125 and the disturbance area that contain RE 5.3.22 are considered Category C Environmentally Sensitive Area for endangered wildlife as all of PL1125 is mapped as Category B RVM area and all regional ecosystems within PL1125 provide potential habitat for endangered species as follows: • RE 5.3.22 for Curlew Sandpiper, Common Greenshank and Australian Painted Snipe; • RE 5.6.4 for Major Mitchell's Cockatoo; • RE 5.6.5 and RE 5.6.8 for Major Mitchell's Cockatoo; and • RE 5.9.3 and RE 5.9.4 for Plains-wanderer. **Finding: Curlew Sandpiper** There is one record of Curlew Sandpiper from within 50 km and three records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not	8.69 ha of RE 5.3.22 13.09 ha of RE 5.9.3 / RE 5.9.4 (combined) 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) 11.41 ha of RE 5.6.4	A residual loss of 8.69 ha of habitat (RE 5.3.22) for Curlew Sandpiper, Common Greenshank, Australian Painted Snipe and Plains-wanderer. A residual loss of 13.09 ha of RE 5.9.3 / RE 5.9.4 (combined) for Plains-wanderer A residual loss of 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) for Major Mitchell's Cockatoo A residual loss of 11.41 ha of RE 5.6.4 for Major Mitchell's Cockatoo The residual loss of habitat is assessed to be not significant

	ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. **Finding: Common Greenshank** There are no records of Common Greenshank from within 50 km but five records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. **Finding: Australian Painted Snipe** There is only one record of Australian Painted Snipe within 50 km and one record from within 100km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and		with no long-term effect on individuals or populations for: Curlew Sandpiper, Common Greenshank Australian Painted Snipe, Plains-wanderer and Major Mitchell's Cockatoo.

	adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations. Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to these three species is considered to be 'Rare or Unknown' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk to these species is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'. **Finding: Plains-wanderer** There are no records of Plains-wanderer from within 50 km and no records from within 100 km of the project area. The disturbance to potential habitat is 8.69 hectares RE 5.3.22, and 13.09 hectares of RE 5.93/ 5.94. Suitable habitat remains throughout PL1125 and adjacent areas. It is likely to occur only very infrequently, if at all in the project area given the species very low population and that habitats available in PL1125 are not preferred habitats (DoE 2016). The project area does not provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is therefore also considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.		

	Finding: Major Mitchel's Cockatoo (eastern) There are no records of Eastern Major Mitchell's Cockatoo from within 50 km and seven records from within 100 km of the project area. RE 5.6.4 is identified as potential habitat within the project area for Eastern Major Mitchell's Cockatoo consists of. The area of RE 5.6.4 within the disturbance footprint is 11.41 hectares which is 17.05 % of RE 5.6.4 that is mapped within PL 1125. The project area is however not within the modelled distribution of the species (DCCEEW 2023b). It is likely to occur only very infrequently, if at all in the project area. The project area does not therefore provide critical habitat and is not ecologically significant for the species. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.		
Essential habitat (not in an urban area) for the following vulnerable wildlife: • Sharp-tailed Sandpiper *Calidris acuminata*; EPBC Vulnerable and Migratory; • Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable; • Southern Whiteface *Aphelocephala leucopsis*, EPBC	**Summary of Assessment in Section 5.5.3:** Queensland Globe mapping does not identify any Category A or Category B Environmentally Sensitive Area (ESA) – Essential Habitat within PL1125, see Appendix 12 Figure 2- PL 1125 – MSES – Species Threatened (Endangered or Vulnerable) wildlife and species least concern animals (from MSES Report for PL 1125 – Table 2, Map 3a (Appendix 1)). All areas of PL1125 and the disturbance area are considered Category C Environmentally Sensitive Area for vulnerable wildlife as all of PL1125 is mapped as Category B RVM area	8.69 ha of RE 5.3.22 11.41 ha of RE 5.6.4 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined)	A residual loss of 8.69 ha of habitat (RE 5.3.22) for Sharp-tailed Sandpiper is identified. The risk of the impact to Sharp-tailed Sandpiper is considered to be low and the potential impact is considered to be not significant with no long-term

Vulnerable; • Latham's Snipe *Gallinago hardwickii* EPBC Vulnerable and migartory; • Painted Honeyeater *Grantiella picta* EPBC Vulnerable; • Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable; • Yellow Chat *Epthianura crocea crocea* NCA Vulnerable	and all regional ecosystems within PL1125 provide potential habitat for vulnerable species as follows: • RE 5.3.22 for Sharp-tailed Sandpiper, Latham's Snipe, Blue-winged Parrot and Yellow Chat; • RE 5.6.4 for Southern Whiteface, Painted Honeyeater and Dusky Hopping-mouse; • RE 5.6.5 and RE 5.6.8 for Dusky Hopping-mouse; and • RE 5.9.3 and RE 5.9.4 for Blue-winged Parrot. This disturbance area results in habitat loss for these species as follows: • 8.69 ha of 5.3.22 which is equivalent to 0.92% of this community as mapped within PL 1125; • 11.41 ha of RE 5.6.4 which is equivalent to 17.05% of this community as mapped for PL 1125; • 8.8 ha of RE 5.6.5/RE 5.6.8 which is equivalent to 0.41% of this community as mapped for PL 1125; • 13.09 ha of RE 5.93/RE 5.94 (combined) which is equivalent to 0.95% of this community as mapped for PL 1125. **Finding: Sharp-tailed Sandpiper** There are two records of Sharp-tailed Sandpiper from within 50 km and 13 records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. The disturbance to potential habitat, RE 5.3.22, from the project is 8.69 hectares	13.09 ha of RE 5.93 / RE 5.94 (combined)	effect on individuals or populations. The risk of an impact to Blue-winged Parrot from the residual loss of potential habitat is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. A residual loss of habitat for Southern Whiteface that could result in a localised impact to the species. The likelihood of an impact to Southern Whiteface is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'.

	which represents less than 1 % of the available habitat within PL1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Sharp-tailed Sandpiper is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'. **Finding: Blue-winged Parrot** There are 10 records of Blue-winged Parrot from within 50 km and 19 records from within 100 km of the project area but has not been recorded from within PL 1125 or adjacent areas. It is not a core area for the species and south-west Queensland is at the edge of its range however it is possible that it may occur within PL1125 or the surrounding area on a temporary and infrequent basis. The disturbance to potential habitat, RE 5.3.22 and RE 5.9.3 / 5.9.4 from the project is 21.78 hectares which represents less than 1 % of the available habitat within PL1125. An estimated 2302 ha of suitable habitat remains throughout PL1125 and any Blue-winged Parrot individuals that arrive in the area would still be able to find suitable habitat. The project would lead to a residual loss of potential habitat from the project at a localised scale. The area to be cleared is however unlikely to be critical to the survival of Blue-winged Parrot at the local or regional scale. Considering the		The likelihood of an impact to Dusky Hopping-mouse is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. The likelihood of an impact to Latham's Snipe is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. The likelihood of an impact to Painted Honeyeater is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely

	extent of remaining habitat the risk of an impact from disturbance of the project is considered to be low with no long-term effect on individuals or populations. The residual impact of the Vali Field project is not considered to be ecologically significant. Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Blue-winged Parrot is considered to be 'Possible' and the consequence is considered to be 'Not significant – no long-term effect on individuals or populations'. Consequently, the Risk is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'. **Finding: Southern Whiteface** There are 45 records of Southern Whiteface from within 50 km and 115 records from within 100 km. The species was not recorded during the survey despite it being one of the target species and environmental conditions being good at the time of survey, however it is possible that it may occur within PL1125 or the surrounding area. Given that this species is generally sedentary or resident it is likely that it is either in low abundance or not present. Clearance of 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present. The area to be cleared is unlikely to be critical to the survival of Southern Whiteface at the local or regional scale and is considered unlikely to lead to the loss of a population. It is possible that individuals may be affected however it is considered that sufficient habitat remains adjacent to the disturbance area and throughout PL 1125 to sustain a population should it be present. A residual loss of		affected but no effect at population level'. The likelihood of an impact to Yellow Chat (Inland/Gulf) is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'.

	habitat from the project for Southern Whiteface could result in a localised impact to the species however the impact is not considered to be significant. Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Southern Whiteface is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. Consequently, the Risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'. **Finding: Dusky Hopping-mouse** There are 14 records of Dusky Hopping-mouse from within 50 km and 77 records from within 100 km of the project area and the project area is modelled as habitat for this species. It is possible that this species may use dune habitats (RE 5.6.5 / 5.6.8) and woodland (RE 5.6.4) within the project area. It is likely to occur on a temporary and infrequent basis during boom times but it is possible that PL1125 contains refugial populations that persist in times of drought. The disturbance to potential habitat from the project is 8.80 ha of RE 5.6.55/ RE 5.6.8 and 11.41 ha of 5.6.4 which represents 0.91 % of the available habitat within PL1125. Disturbance from construction of the flowline and other pipelines is temporary with rehabilitation resulting in habitat being restored as observed during the field survey. Areas of suitable habitat cleared for tracks and other infrastructure represent a loss of potential habitat but are unlikely to act as a barrier to the movement of Dusky Hopping-mouse. An estimated 2142 ha of suitable habitat remains throughout PL1125. A residual loss of potential habitat from the project for Dusky Hopping-mouse		

	could result in a localised impact to some Dusky Hopping-mouse individuals. Considering the small scale of the project and extent of remaining habitat the risk of an impact from the project is not considered to be significant with no long-term effect on a population. Using the DCCEEW risk assessment for threatened species within national recovery plans, the likelihood of an impact to Dusky Hopping-mouse is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. Consequently, the Risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'. **Finding: Latham's Snipe** There are no records of Latham's Snipe from within 50 km or from within 100 km of the project area. The disturbance to potential habitat is 8.69 hectares RE 5.3.22, and 13.09 hectares of RE 5.93/ 5.94. It may possibly occur on an infrequent basis, if at all in the project area. The project area does not provide critical habitat and is not ecologically significant for the species. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is therefore also considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'. **Finding: Painted Honeyeater**		

	There is one record of Painted Honeyeater from within 50 km and five records from within 100 km of the project area. It is likely to occur only very infrequently, if at all in the project area. The project area provides potential marginal habitat but not critical habitat and is not ecologically significant for the species. The area of habitat for Painted Honeyeater (RE 5.6.4) within the disturbance footprint is 11.41 ha which constitutes 17.05 % of the mapped area of RE 5.6.4 within PL 1125. Suitable habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.		
Connectivity areas			
Connectivity area that is a regional ecosystem (not in urban area) Impacts to connectivity were assessed using the DETSI Landscape Fragmentation and Connectivity (LFC) tool and the associated LFC Tool User Guide. A development impact on connectivity areas is determined to be significant if either of the following tests are true: 1. The change in the core remnant ecosystem extent at the local scale (post impact) is greater than a	**Summary of Assessment in Section 5.4.2** PL 1125 is not within a Terrestrial or Riparian Bioregional Corridor see Appendix 12, Figure 3. The LFC Connectivity Impact Assessment (CIA) Tool and the Standalone Landscape Fragmentation Analysis Tool were run using the project disturbance footprint. The LFC Tool User Guide was used to interpret the results and determine whether the disturbance constitutes a significant residual impact to the connectivity prescribed environmental matter. If either of the test results are True, then the project impact is considered to cause a significant residual impact on connectivity areas.	0 ha	No residual impact

threshold determined by the level of fragmentation at the regional scale; or 2. Any core area that is greater than or equal to 1 hectare is lost or reduced to patch fragments (core to non-core).	The results of the LFC Assessment Tool analysis results found that the core area is identified as greater than 500 ha and is 100 % covered by remnant vegetation. For Test 1 the local change threshold for an impact is 50% and the change to the core area from the impact is 0.9601% which is well below the threshold for an impact. For Test 2 the number of pre-clearance core areas is identified as 1 and the number of each post clearance core areas is also identified as 1 and therefore does not change and the core areas is not reduced to a patch fragment. The Significance Assessment results identify a FALSE result for both tests which confirms that the project does not result in a significant impact to connectivity.		
Wetlands and watercourses			
A wetland in a wetland protection area shown on the Map of referable wetlands (HES wetlands in GBR)	No wetland protection areas shown on the Map of referable wetlands (HES wetlands in GBR) are present in PL 1125, see Appendix 12 Figure 4 - PL 1125 – MSES – Wetlands and waterways (from MSES Report for PL 1125 – Table 2, Map 2 (Appendix 1)).	0 ha, none identified within PL 1125	No residual impact
A wetland of high ecological significance shown on the Map of referable wetlands	No wetlands of high ecological significance shown on the Map of referable wetlands are present in PL 1125, see Appendix 12 Figure 4 - PL 1125 – MSES – Wetlands and waterways (from MSES Report for PL 1125 – Table 2, Map 2 (Appendix 1)).	0 ha	No residual impact
Designated precincts in strategic environmental areas			
Designated precinct in a strategic environmental area	No Designated precinct in a strategic environmental area are present in PL 1125, see MSES Report for PL 1125 – Table 2 (Appendix 1).	0 ha	No residual impact
Protected wildlife habitat			
An area shown as a high-risk area on the flora survey trigger map that	There are no high-risk areas on the flora survey trigger map that contain plants that are endangered or vulnerable wildlife	0 ha	No residual impact

contains plants that are endangered or vulnerable wildlife	that are present in PL 1125, see Appendix 12 Figure 4 and Figure 5.		
An area not shown as a high-risk area on the flora survey trigger map that contains plants that are endangered or vulnerable as follows: • *Sclerolaena walkeri* EPBC Vulnerable	No plants that are endangered or vulnerable wildlife have been recorded within PL 1125, see Appendix 11 WildNet Records: Conservation Significant Species List. All areas of PL1125 and the disturbance area are not shown as a high-risk area on the flora survey trigger map. PL1125 contains potential habitat for one EPBC Vulnerable flora species *Sclerolaena walkeri* as follows: • A residual loss of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4 **Finding** There are no records of *Sclerolaena walkeri* from within 50 km and no records from within 100 km of the project area. It is unlikely to occur within the project footprint but may possibly occur in adjacent areas of PL1125. The project area does not provide critical habitat and is not ecologically significant for the species. Clearance of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4 could possibly have an impact on the size of a local population in the immediate area of the disturbance if the species is present. Similar habitat remains throughout PL1125 and adjacent areas. The risk of an impact from disturbance of the project is considered to be low and the potential impact is considered to be not significant with no long-term effect on individuals or populations. The risk to this species from the project is considered to be 'Low' with an associated priority for action of 'monitor the threat occurrence and reassess threat level if likelihood or consequences change'.	8.69 ha of RE 5.3.22 11.41 ha of 5.6.4	A residual loss of 8.69 hectares of RE 5.3.22 and 11.41 hectares of 5.6.4 The likelihood of an impact to *Sclerolaena walkeri* is considered to be 'Unlikely' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'.

A non-juvenile koala habitat tree located in an area shown as a bushland habitat, high value rehabilitation habitat or medium value rehabilitation habitat in the 'Map of Assessable Development Area Koala Habitat Values'	No Koala habitat trees have been recorded within PL 1125, see Appendix 12 Figure 6- PL 1125 – MSES – Species Koala habitat area (SEQ) (from MSES Report for PL 1125 – Table 2, Map 3b (Appendix 1)).	0 ha	No residual impact
Habitat for an animal that is endangered wildlife as follows: • Curlew Sandpiper *Calidris ferruginea*, EPBC Critically Endangered and migratory; • Common Greenshank *Tringa nebularia* EPBC Endangered and Migratory; • Australian Painted Snipe *Rostratula australis*, EPBC Endangered. • Plains-wanderer *Pedionomus torquatus* EPBC Critically endangered; NCA critically endangered • Major Mitchell's Cockatoo (eastern): EPBC endangered; NCA endangered	No habitat for endangered wildlife is identified within desktop reports as occurring in PL 1125, see Appendix 12 Figure 2- PL 1125 – MSES – Species Threatened (Endangered or Vulnerable) wildlife and species least concern animals (from MSES Report for PL 1125 – Table 2, Map 3a (Appendix 1)). The desktop review identified records for Curlew Sandpiper, Common Greenshank and Australian Painted Snipe within 50 km and suitable habitat for these species has been identified within PL 1125 as RE 5.3.22. No records were identified within 50 km for Plains-wanderer or Major Mitchell's Cockatoo but potential habitat for these species has been identified although the presence of these species within the project area is considered 'Unlikely'. Potential habitat for endangered species is as follows: • RE 5.3.22 for Curlew Sandpiper, Common Greenshank and Australian Painted Snipe; • RE 5.6.4 for Major Mitchell's Cockatoo; • RE 5.6.5 and RE 5.6.8 for Major Mitchell's Cockatoo; and • RE 5.9.3 and RE 5.9.4 for Plains-wanderer. See Assessment under Essential Habitat for further details.	8.69 ha of RE 5.3.22	A residual loss of 8.69 ha of habitat for these species is identified. See Assessment under Essential Habitat.

This impact is assessed in accordance with Section 5 of the SRI guideline.			
Habitat for an animal that is vulnerable wildlife: • Sharp-tailed Sandpiper *Calidris acuminata*; EPBC Vulnerable and Migratory; • Blue-winged Parrot *Neophema chrysostoma,* EPBC Vulnerable; • Southern Whiteface *Aphelocephala leucopsis*, EPBC Vulnerable; • Latham's Snipe *Gallinago hardwickii* EPBC Vulnerable and migartory; • Painted Honeyeater *Grantiella picta* EPBC Vulnerable; • Dusky Hopping-mouse *Notomys fuscus*, EPBC Vulnerable; • Yellow Chat *Epthianura crocea crocea* NCA Vulnerable This impact is assessed in accordance with Section 5 of the SRI guideline.	No habitat for vulnerable wildlife is identified within desktop reports as occurring in PL 1125, see Appendix 12 Figure 2- PL 1125 – MSES – Species Threatened (Endangered or Vulnerable) wildlife and species least concern animals (from MSES Report for PL 1125 – Table 2, Map 3a (Appendix 1)). The desktop review identified records for Sharp-tailed Sandpiper, Blue-winged Parrot, Southern Whiteface, Painted Honeyeater and Dusky Hopping-mouse within 50 km and potential habitat for these species has been identified within PL 1125. No records within 50km have been identified for Latham's Snipe or Yellow Chat but potential habitat for these species has been identified although the presence of these species within the project area is considered 'Unlikely' or 'Possible'. Potential habitats for vulnerable species are: • RE 5.3.22 for Sharp-tailed Sandpiper and Blue-winged Parrot; • RE 5.6.4 for Southern Whiteface and Dusky Hopping-mouse; • RE 5.6.5 and RE 5.6.8 for Dusky Hopping-mouse; and • RE 5.9.3 and RE 5.9.4 for Blue-winged Parrot. See Assessment under Essential Habitat for further details.	8.69 ha of RE 5.3.22 11.41 ha of RE 5.6.4 8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) 13.09 ha of RE 5.9.3 / RE 5.9.4 (combined)	A residual loss of habitat for Sharp-tailed Sandpiper, Blue-winged Parrot, Southern Whiteface, Latham's Snipe, Painted Honeyeater, and Dusky Hopping-mouse and Yellow Chat. See Assessment under Essential Habitat.
Habitat for an animal that is special least concern wildlife.	No habitat for a special wildlife of least concern is identified within desktop reports as occurring in PL 1125, see Appendix	8.69 ha of RE 5.3.22	A residual loss of 8.69 ha of habitat for

No wildlife have been identified as species least concern however EPBC listed migratory species which are not threatened are included here. • Common Sandpiper *Actitis hypoleucos*, EPBC Migratory; • Pectoral Sandpiper *Calidris melanotos*, EPBC Migratory; • Marsh Sandpiper *Tringa stagnatilis*, EPBC Migratory; • Red-necked Stint *Calidris ruficollis*, EPBC Migratory. This impact is assessed in accordance with Section 5 of the SRI guideline.	12 Figure 2- PL 1125 – MSES – Species Threatened (Endangered or Vulnerable) wildlife and species least concern animals (from MSES Report for PL 1125 – Table 2, Map 3a (Appendix 1)). No such species were identified within the field survey. The desktop review identified records for Common Sandpiper, Pectoral Sandpiper, Marsh Sandpiper and Red-necked Stint within 50 km and suitable habitat has been identified within PL 1125 as RE 5.3.22. This disturbance area results in a loss of 8.69 ha which is equivalent to 0.92% of RE 5.3.22 within PL 1125. An assessment of the impact against criteria contained within the SRI guideline to determine a significant impact on endangered wildlife found that the impact was not significant. This finding is appropriate for these species also.		these species is identified. This is not assessed to be a significant impact.
Protected areas			
National park	PL 1125 is not located in a National Park, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1))	0 ha	No residual impact
Regional park	PL 1125 is not located in a Regional Park, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1))	0 ha	No residual impact
Nature refuge	PL 1125 is not located in a Nature Refuge, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Highly protected zones of State marine parks			
Conservation park zone	PL 1125 is not located in a Conservation park zone, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation	0 ha	No residual impact

	Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).		
Marine national park zone	PL 1125 is not located in a Marine national park zone, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Preservation zone	PL 1125 is not located in a Preservation zone, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Other zones	PL 1125 is not located in any other protected zone, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Fish habitat areas			
A declared fish habitat area	PL 1125 is not located in a declared fish habitat area, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Waterway providing for fish passage			
Fish passage (not in an urban area)	PL 1125 does not contain any waterways providing for fish passage, see Appendix 12 Figure 7 PL 1125 – MSES – State Conservation Areas (from MSES Report for PL 1125 – Table 2, Map 1 (Appendix 1)).	0 ha	No residual impact
Marine plants			
Marine plant (not in an urban area)	PL 11255 is not coastal or marine and therefore does not contain any marine plants.	0 ha	No residual impact
Legally secured offset area			

secured offset area	PL 1125 does not contain any secured offset areas see Appendix 12 Figure 8 - PL 1125 – MSES – Offset Areas (from MSES Report for PL 1125 – Table 2, Map 5 (Appendix 1))	0 ha	No residual impact

5.7. Residual Impacts

The Significant Residual Impact Assessment identified the following residual impacts:

- The disturbance footprint results in a residual impact to 8.69 ha of RE 5.3.22 which lies within mapped wetlands but is not endangered or of concern. This is identified as a significant residual impact to RE 5.3.22 under Section 2.1 of the Significant Residual Impact Guideline due to Criteria 1 and Criteria 2 of being exceeded.
- A residual loss of 21.78 hectares of potential habitat (8.69 ha of RE 5.3.22 and 13.09 ha of RE 5.9.3 / 5.9.4) for the EPBC Critically Endangered Plains-wanderer is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of habitat (RE 5.3.22) for EPBC Endangered species Curlew Sandpiper, Common Greenshank and Australian Painted Snipe is identified. The likelihood of occurrence of these species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.
- A residual loss of 20.21 hectares of potential habitat (8.80 ha of RE 5.6.5 / RE 5.6.8 (combined) and 1.41 ha of RE 5.6.4) for the EPBC Endangered Major Mitchell's Cockatoo (eastern) is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the risk of an impact from project disturbance is considered to be low and the potential impact is not considered to be significant with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of potential habitat (RE 5.3.22) for EPBC Vulnerable species Sharp-tailed Sandpiper and Latham's Snipe is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 21.78 hectares of potential habitat (8.69 ha of RE 5.3.22 and 13.09 ha of RE 5.9.3 / 5.9.4) for the EPBC Vulnerable Blue-winged Parrot is identified. The likelihood of occurrence of this species in the project area is

considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.

- A residual loss of 11.41 ha of potential habitat (RE 5.6.4) for the EPBC: Vulnerable Southern Whiteface that could result in a localised impact to the species. The likelihood of an impact to Southern Whiteface is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals may be adversely affected but no effect at population level'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the impact was not significant as the impact is unlikely to:
    - lead to a long-term decrease in the size of a local population,
    - reduce the extent of occurrence of the species; or
    - fragment an existing population.

  Using the DCCEEW risk assessment framework for threatened species within national recovery plans the risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.
- A residual loss of 20.21 hectares of potential habitat (8.80 ha of RE 5.6.5 / RE 5.6.8 combined and 11.41 ha of RE 5.6.4) for the EPBC Vulnerable Dusky Hopping-mouse. The likelihood of an impact to Dusky Hopping-mouse is considered to be 'Possible' and the consequence is considered to be 'Minor – individuals are adversely affected but no effect at population level'. An assessment of the residual impact against the significant impact criteria for endangered wildlife (Section 5.1 of the SRI guideline) found that the impact was not significant as the impact is unlikely to:
    - lead to a long-term decrease in the size of a local population,
    - reduce the extent of occurrence of the species; or
    - fragment an existing population.

  Using the DCCEEW risk assessment framework for threatened species within national recovery plans the risk is considered to be 'Moderate' with an associated priority for action of 'obtain additional information and develop mitigation action if required'.
- A residual loss of 11.41 ha of potential habitat (RE 5.6.4) for the EPBC Vulnerable Painted Honeyeater is identified. The likelihood of occurrence of this species in the project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of potential habitat (RE 5.3.2) for the NPA Vulnerable Yellow Chat is identified. The likelihood of occurrence of this species in the

project area is considered 'Possible'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.

- A residual loss of 20.1 ha of potential habitat (8.69 ha of RE 5.3.22 and 11.41 ha of RE 5.6.4) for the EPBC Vulnerable *Sclerolaena walkeri* is identified. The likelihood of occurrence of this species in the project area is considered 'Unlikely'. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact with no long-term effect on individuals or populations.
- A residual loss of 8.69 ha of habitat (RE 5.3.22) for four EPBC Migratory species; Common Sandpiper, Pectoral Sandpiper, Marsh Sandpiper and Red-necked Stint. An assessment of the residual impact against the significant impact criteria for vulnerable wildlife (Section 5.1 of the SRI guideline) found that the loss of habitat was not a significant impact.

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Appendix 1: Matters of State Environmental Significance Report for PL1125

Queensland Government

Department of Environment, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

PL: 1125

Environmental Reports - General Information

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

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

Figures in tables may be affected by rounding.

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

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

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

Disclaimer

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



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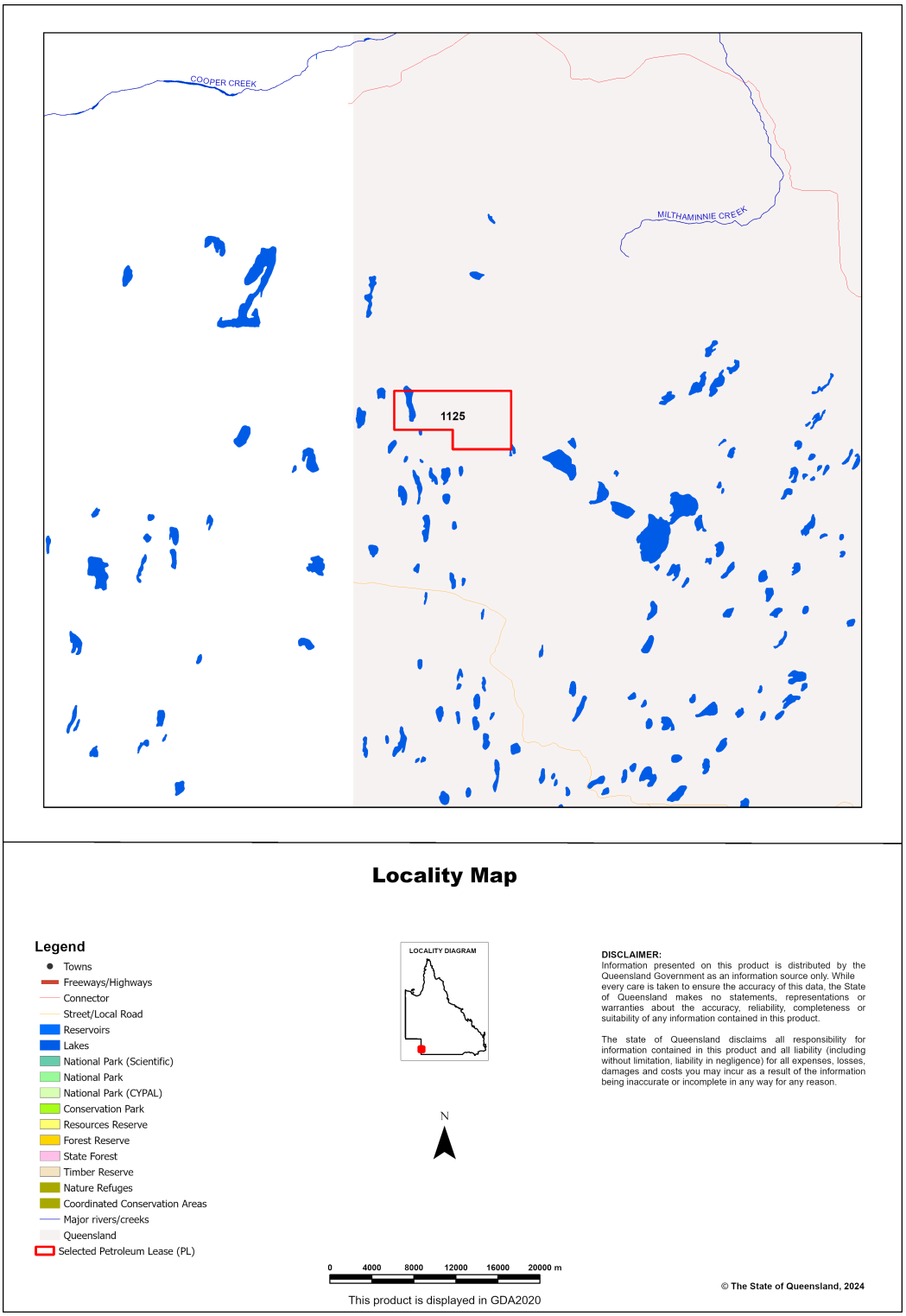
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Assessment Area Details

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: PL: 1125, with area 4542.41 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Bulloo Shire	Cooper Creek	Channel Country	Strzelecki Desert
		Channel Country	Sturt Stony Desert



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	0.0%
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	10.2 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	1041.48 ha	22.9%
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	V	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	7141
B	7142

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

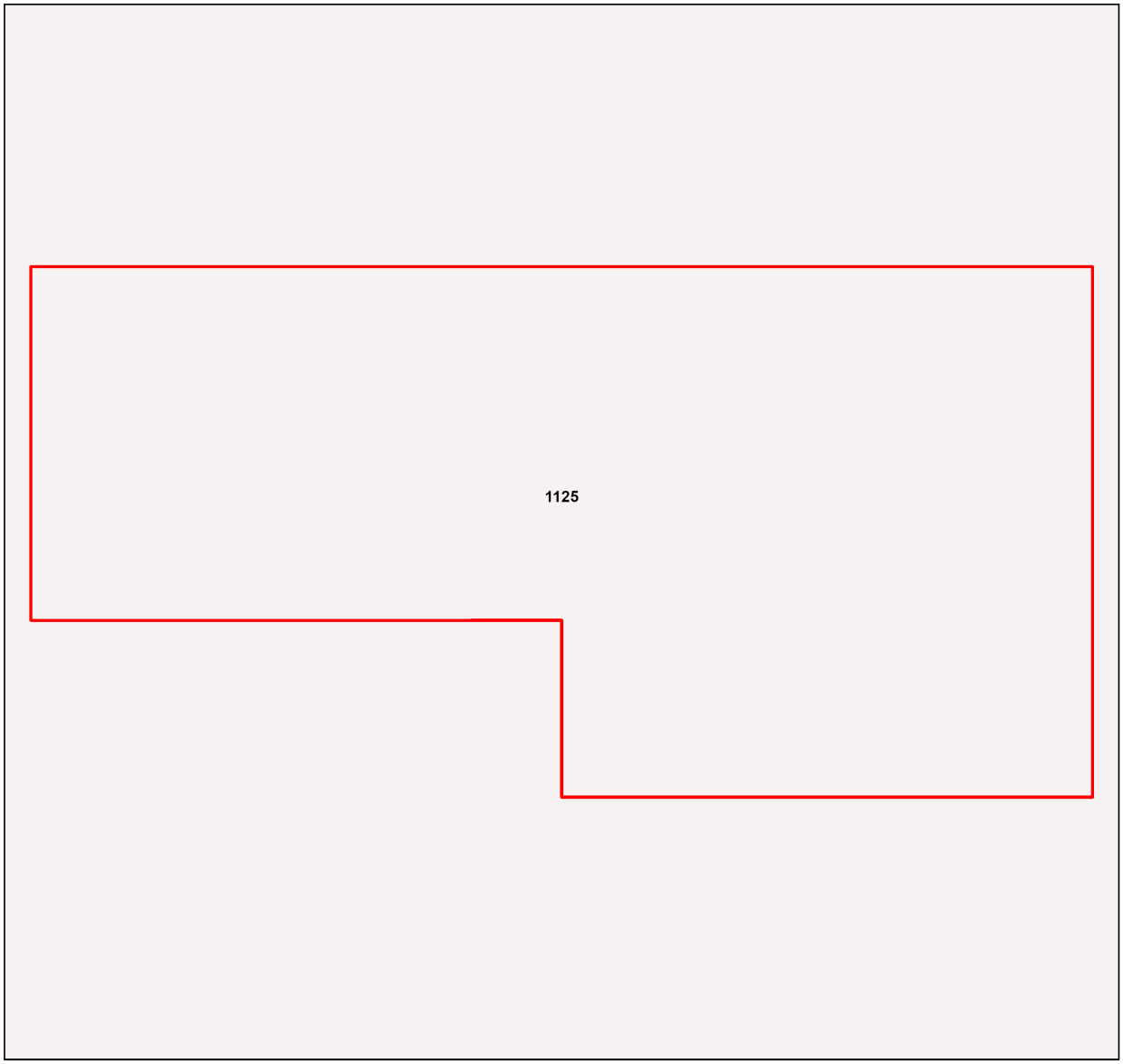
(No results)

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

(No results)

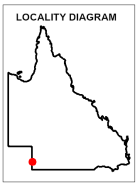
Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

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 Petroleum Lease (PL)



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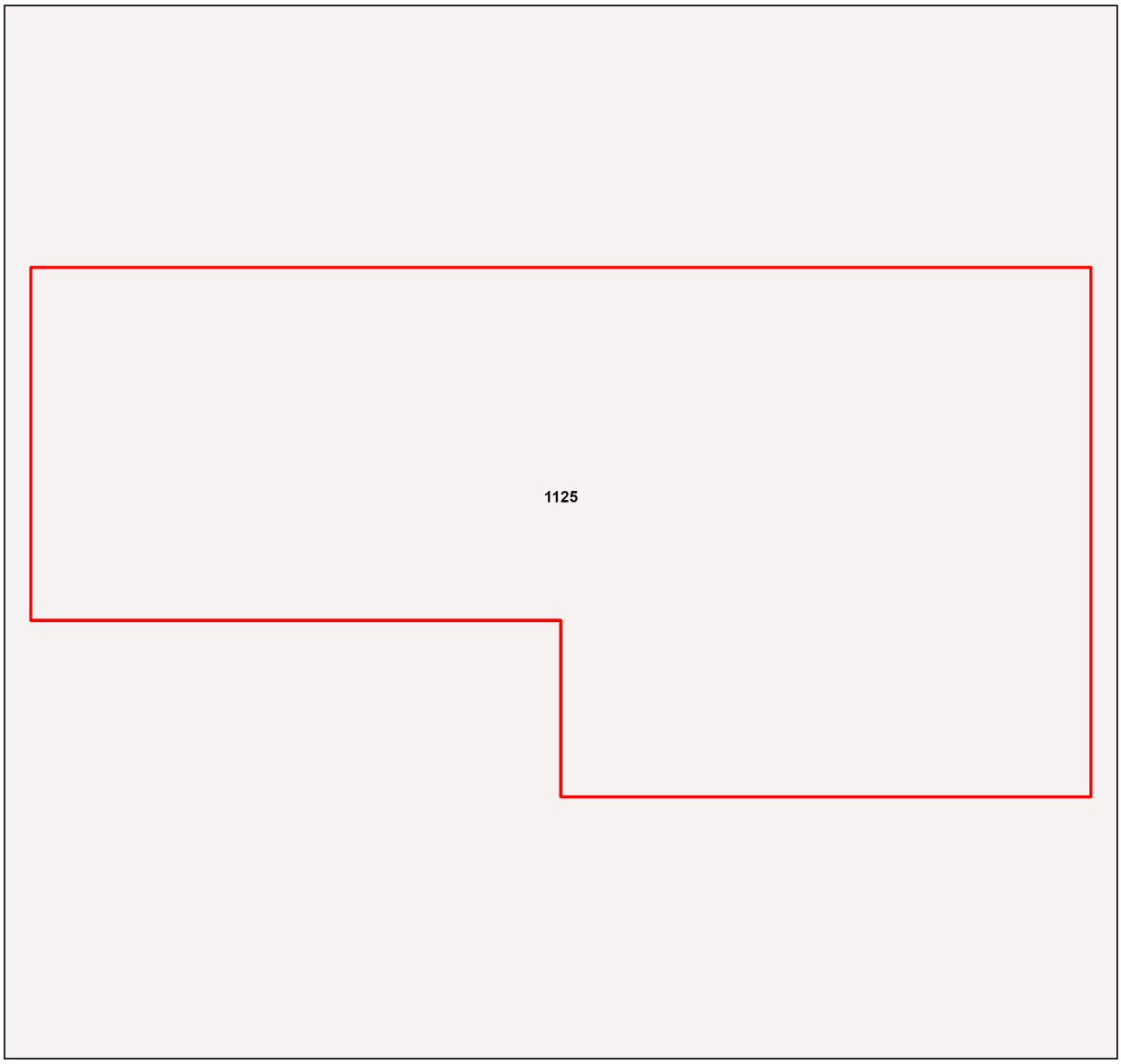




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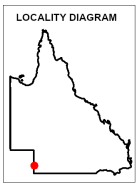
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Map 2 - MSES - Wetlands and Waterways



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 Petroleum Lease (PL)



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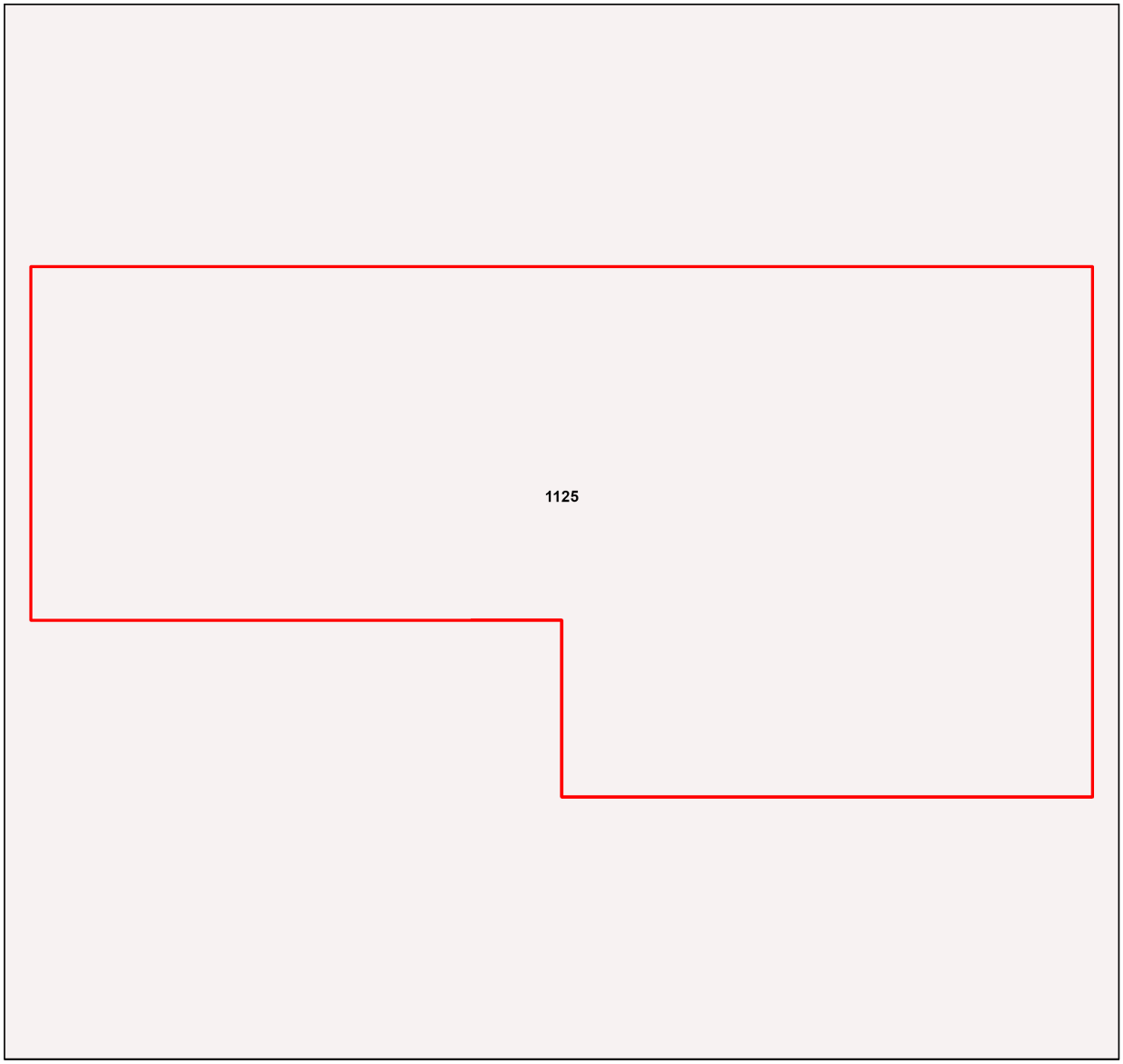
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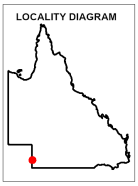
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Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



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 Petroleum Lease (PL)



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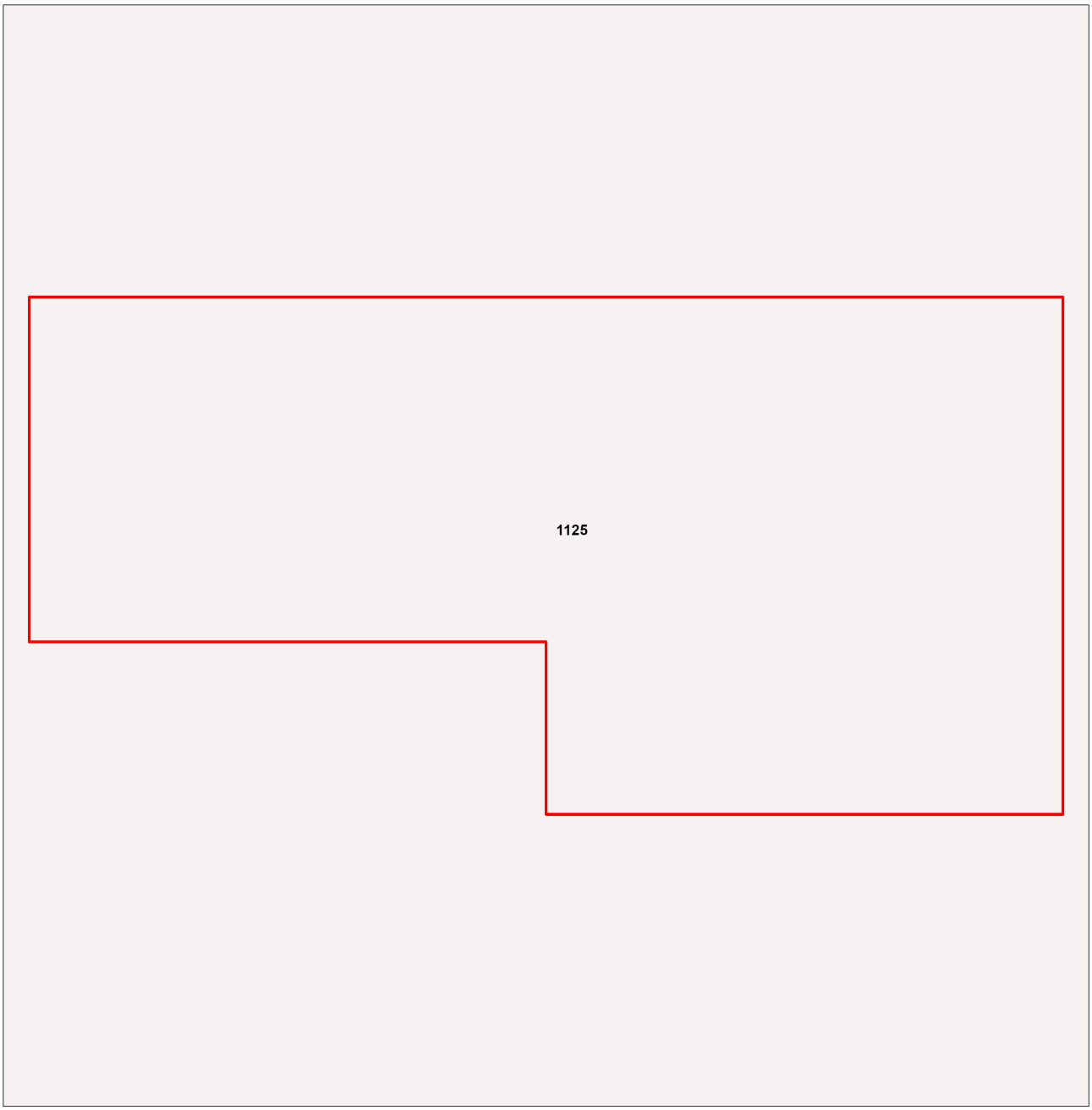
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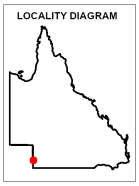
Map 3b - MSES - Species - Koala habitat area (SEQ)



MSES - Species
Koala habitat area (SEQ)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Koala habitat area (core)
- Koala habitat area (locally refined)
- Selected Petroleum Lease (PL)

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

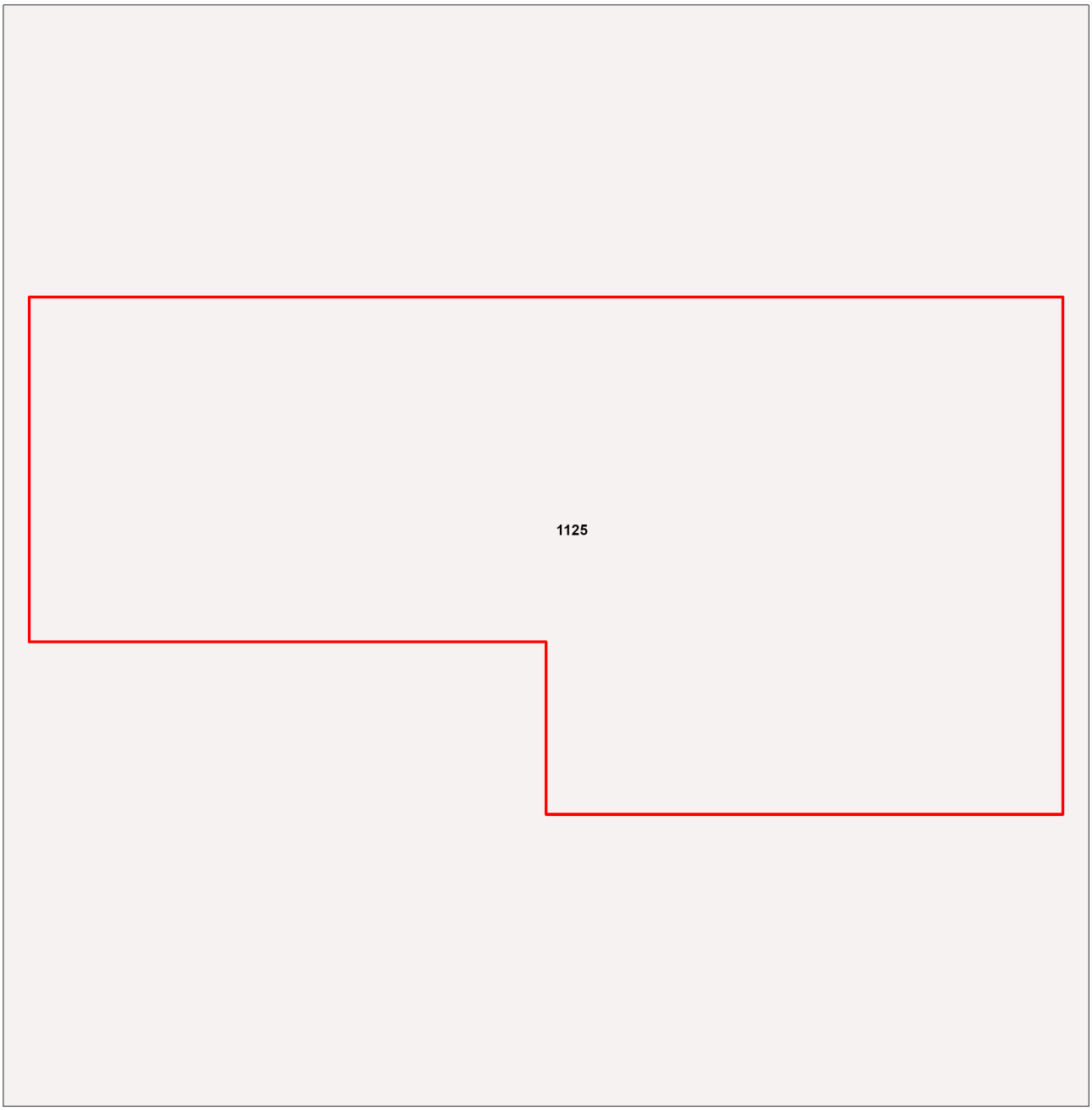
The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

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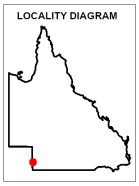
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



MSES - Wildlife habitat (sea turtle nesting areas)

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (sea turtle nesting areas)
- Selected Petroleum Lease (PL)

LOCALITY DIAGRAM



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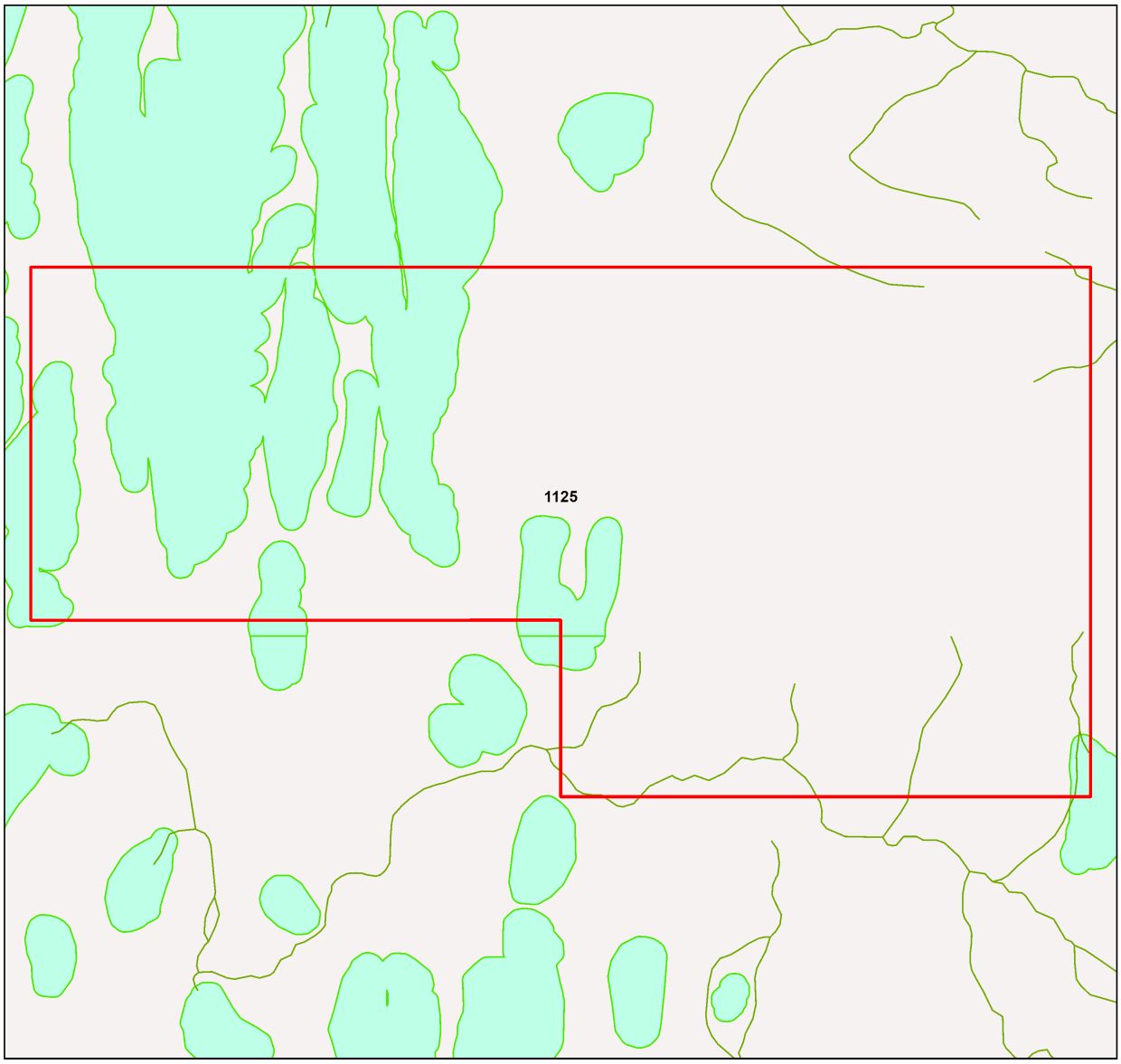
MSES mapping of sea turtle nesting areas identifies beaches where the recorded number of turtle nests are over 1% of the turtle species or genetic stock. The linework is also deliberately extended along nearby rocky coastlines and headlands to recognise that significant numbers of nesting adults and 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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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 Petroleum Lease (PL)



N

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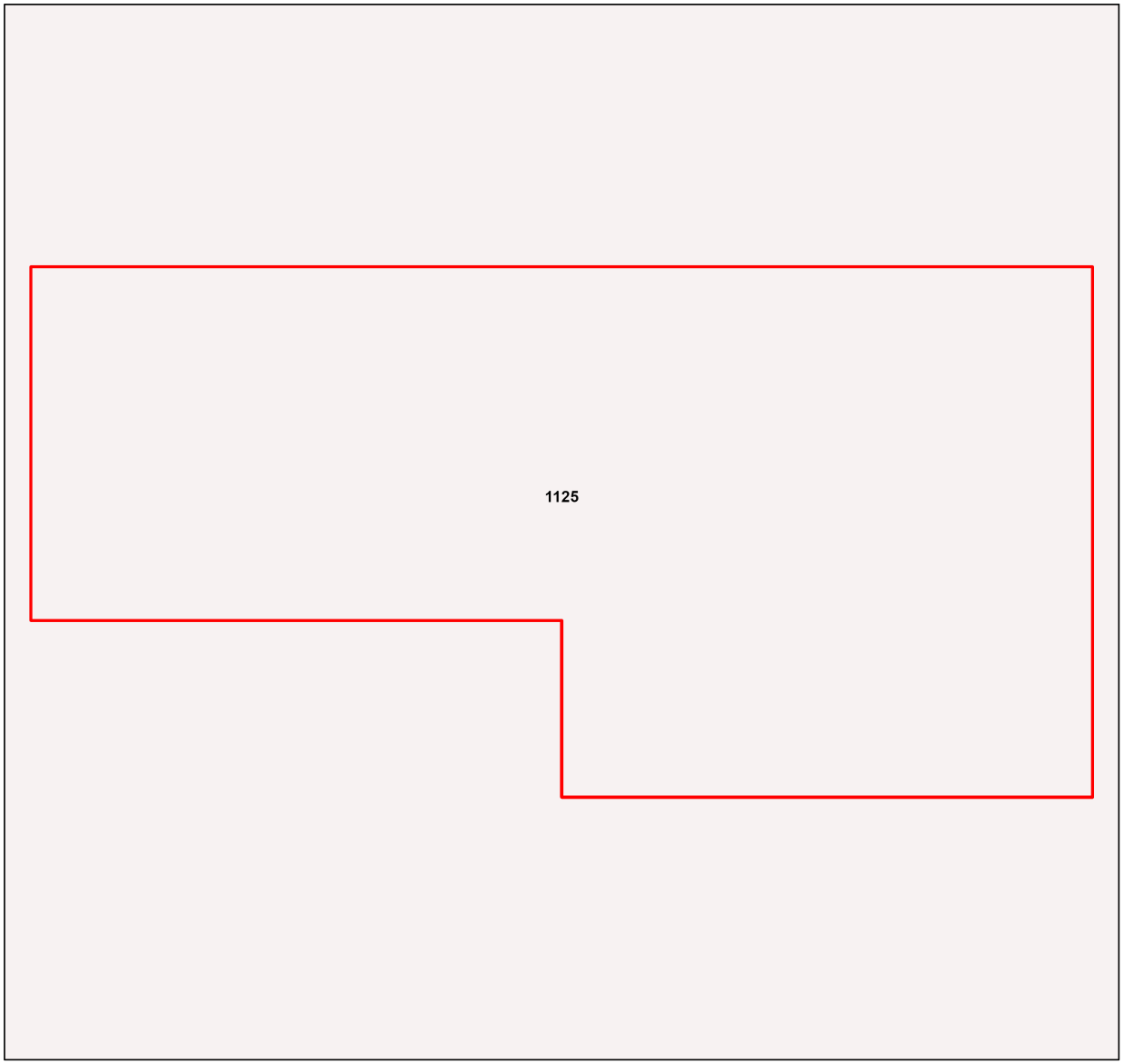
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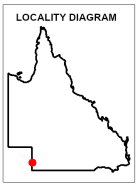
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Map 5 - MSES - Offset Areas



MSES - Offsets

- Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Legally secured offset area (offset register)
- Legally secured offset area (vegetation offsets)
- Selected Petroleum Lease (PL)



N

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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 DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

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

Appendix 2: Biodiversity and Conservation Values: Biodiversity Planning Assessments and Aquatic Conservation Assessments Report for PL1125.

Queensland Government

Department of Environment, Science and Innovation

Environmental Reports

Biodiversity and Conservation Values

Biodiversity Planning Assessments and Aquatic Conservation Assessments

For the selected area of interest

PL: 1125

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@des.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: PL: 1125, with area 4542.41 ha

Local Government(s)
Bulloo Shire
Bioregion(s)
Channel Country
Channel Country
Subregion(s)
Strzelecki Desert
Sturt Stony Desert
Catchment(s)
Cooper Creek

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)
Channel Country v1.1	Lake Eyre and Bulloo Basins v1.1	Lake Eyre and Bulloo Basins 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	0.00	0.00
No concern at present	4,542.41	100.00

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 Environment,Science and Innovation's *Biodiversity Assessment and Mapping Methodology* (BAMM).

Table 4: Summary table, biodiversity significance

Biodiversity Status	Area (Ha)	% of AOI
Local or Other Values	132.33	2.91
Regional	3,344.93	73.64
State	1,065.16	23.45

Table 5: Non-riverine wetlands intersecting the AOI

Non-riverine wetland types intersecting the area of interest	#
Number of Lacustrine wetlands	8

Total number of non-riverine wetlands	8

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 Environment, 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
Low	3,399.59	74.84
Very High	1,142.83	25.16

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

Aquatic conservation significance (non-riverine wetlands)	Area (Ha)	% of AOI
Medium	652.71	14.37

Biodiversity Planning Assessments

Introduction

The Department of Environment, Science and Innovation (DESI) 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 DESI. 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	1,065.16	23.45
Regional	3,344.93	73.64
Local or Other Values	132.33	2.91

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
Local or Other Values	Refer to diagnostic data for additional information	2,885.83	63.53
Regional	Remnant contains an RE that is one of the largest of its type in the subregion (D2)	761.17	16.76
State	Remnant contains an RE that is one of the largest of its type in the bioregion (D1) & Remnant has Ecosystem diversity in the top quartile (F)	895.41	19.71

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	895.41	19.71	3,647.00	80.29
B1: Ecosystem Value (Bioregion)	0.00	0.00	0.00	0.00	1,792.69	39.47	2,749.73	60.53
B2: Ecosystem Value (Subregion)	0.00	0.00	0.00	0.00	1,031.52	22.71	3,510.89	77.29
C: Tract Size	0.00	0.00	4,542.41	100.00	0.00	0.00	0.00	0.00
D1: Relative RE Size (Bioregion)	895.41	19.71	0.00	0.00	0.00	0.00	3,647.00	80.29

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)	1,656.58	36.47	0.00	0.00	0.00	0.00	2,885.83	63.53
F: Ecosystem Diversity	899.97	19.81	3,642.44	80.19	0.00	0.00	0.00	0.00
G: Context and Connection	4,542.41	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

Biodiversity significance	Description	Area (Ha)	% of AOI
	No information	1,053.56	23.19
Regional	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	3,319.11	73.07
State	Remnant contains Special Biodiversity Values (view Expert Panel data for further information) (I)	169.74	3.74

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	169.74	3.74	0.00	0.00	0.00	0.00	0.00	0.00
Ib: Wildlife Refugia	169.74	3.74	0.00	0.00	0.00	0.00	0.00	0.00
Ic: Disjunct Populations	0.00	0.00	169.74	3.74	0.00	0.00	0.00	0.00
Id: Limits of Geographic Ranges	3,484.29	76.71	4.56	0.10	0.00	0.00	0.00	0.00
Ie: High Species Richness	169.74	3.74	3,319.11	73.07	0.00	0.00	0.00	0.00
If: Relictual Populations	0.00	0.00	169.74	3.74	0.00	0.00	0.00	0.00
Ig: Variation in Species Composition	3,488.85	76.81	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	169.74	3.74	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

Biodiversity Significance	Area (Ha)	% of AOI
	4,542.41	100.00

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
chc_l_06	Southern Simpson Desert	Regional	Id (geographic range limit): VERY HIGH Ie (high species diversity): HIGH Ig (RE's show distinct variation in species composition): VERY HIGH

Decision Number	Description	Panel Recommended Significance	Criteria Values
chc_l_16	Ephemeral wetlands	State	la (centre of endemism): VERY HIGH lb (wildlife refugia): VERY HIGH lc (disjunct populations): HIGH ld (geographic range limit): HIGH le (high species diversity): VERY HIGH lf (relictual populations): HIGH lg (RE's show distinct variation in species composition): VERY HIGH lj (breeding or roosting sites): VERY HIGH

Expert panel decision descriptions:

Decision Number	Description
chc_l_06	Habitat for EVR taxa including: woma and the dusky hopping-mouse. Supports high species richness, especially reptiles and birds with moderate richness of arid zone endemics and threatened taxa. Likely habitat for kowaris. Known periodic habitat for night parrots. There is a different mix of geologies and a different rainfall pattern- negligible rainfall. The area is regarded as being more Strezleckie (IBRA) rather than Simpson. Unique river systems typified by a lack of connectivity. Likely to contain more values but as yet the area is poorly surveyed and hence remains largely unknown.
chc_l_16	Habitat for a wider range of invertebrates and algae than permanent and semi-permanent waterholes, including species such as fairy shrimp and shield shrimp which do not occur in more permanent waterholes where fish predation is higher. Support waterbird populations estimated systematically to be in the millions of individuals and breeding colonies or dispersed waterbird breeding numbering tens of thousands of pairs (for multiple species) (Reid and Jaensch in Costelloe et al 2004); among the most important recruitment areas for waterbirds in Australia (Jaensch 2009); include the most important sites in Australia for a suite of waterbird species in terms of numbers (supporting >1% of total population size). Many of the wetlands, at several scales, can be demonstrated to meet criteria for international importance. Includes areas outside of floodplains that may fill from local runoff. Includes salt pan systems which have their own unique suit of species. These wetlands go dry every year or nearly every year. They will go dry by end of the year in average seasons but last during good seasons or after very large floods and when clusters of good flood seasons occur.

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
Low	3,399.59	74.84
Very High	1,142.83	25.16

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	3,399.59	74.84	0.00	0.00	1,142.83	25.16	0.00	0.00
2. Naturalness catchment	3,399.59	74.84	0.00	0.00	0.00	0.00	1,142.83	25.16
3. Diversity and richness	0.00	0.00	1,142.83	25.16	0.00	0.00	3,399.59	74.84
4. Threatened species and ecosystems	0.00	0.00	1,142.83	25.16	3,399.59	74.84	0.00	0.00
5. Priority species and ecosystems	1,142.83	25.16	0.00	0.00	0.00	0.00	0.00	0.00
6. Special features	1,142.83	25.16	0.00	0.00	0.00	0.00	0.00	0.00
7. Connectivity	1,142.83	25.16	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)
cp_r_fa_07	Permanent waterholes — long term	Cooper	6.3.1	4

4 is the highest rating/value

Expert panel decision descriptions:

Decision Number	Description
cp_r_fa_07	Ecological processes in the LEBB work over vast timeframes of centuries or 1000’s of years. The permanent waterholes (100% permanent >100 years) that never go dry over these longer timeframes are critically important to aquatic species persistence in these arid landscapes. They have a major influence on the genetic diversity and gene flow between river catchments. These waterholes act as refugia (Hamilton et al. 2005), e.g. metapopulation and genetics of the Cooper Creek turtle requires long time frames of persistence to sustain populations and species. However, the panel cautioned that care is required for broad application of this decision as some wetlands have been modified through water extraction (Bunn et al. 2006).

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	652.71	14.37

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	290.56	6.40	0.00	0.00	362.16	7.97	0.00	0.00
2. Naturalness catchment	290.56	6.40	362.16	7.97	0.00	0.00	0.00	0.00
3. Diversity and richness	0.00	0.00	362.16	7.97	0.00	0.00	290.56	6.40
4. Threatened species and ecosystems	0.00	0.00	0.00	0.00	652.71	14.37	0.00	0.00
5. Priority species and ecosystems	0.00	0.00	652.71	14.37	0.00	0.00	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	302.11	6.65	0.00	0.00	195.95	4.31	154.65	3.40

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)
cp_nr_ec_02	Temporary claypan wetlands	Cooper	5.2.1	3

4 is the highest rating/value

Expert panel decision descriptions:

Decision Number	Description
cp_nr_ec_02	A number of temporary claypan wetlands not fed by rivers have different biota adapted to different desiccation cycles e.g. fairy shrimp. For the majority of their time they are dry and are susceptible to cattle damage and woody debris removal. The REs associated with this decision are: 4.3.12b, d; 5.3.13b; 5.3.15a, b; 5.3.16a; 5.3.22a; 5.3.8b; 6.3.11; 6.3.11b.

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 DESI 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.

**JAMBA - Japan-Australia Migratory Bird Agreement; CAMBA - China-Australia Migratory Bird Agreement; ROKAMBA - Republic of Korea-Australia Migratory Bird Agreement; CMS - Convention on the Conservation of Migratory Species.*

***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)

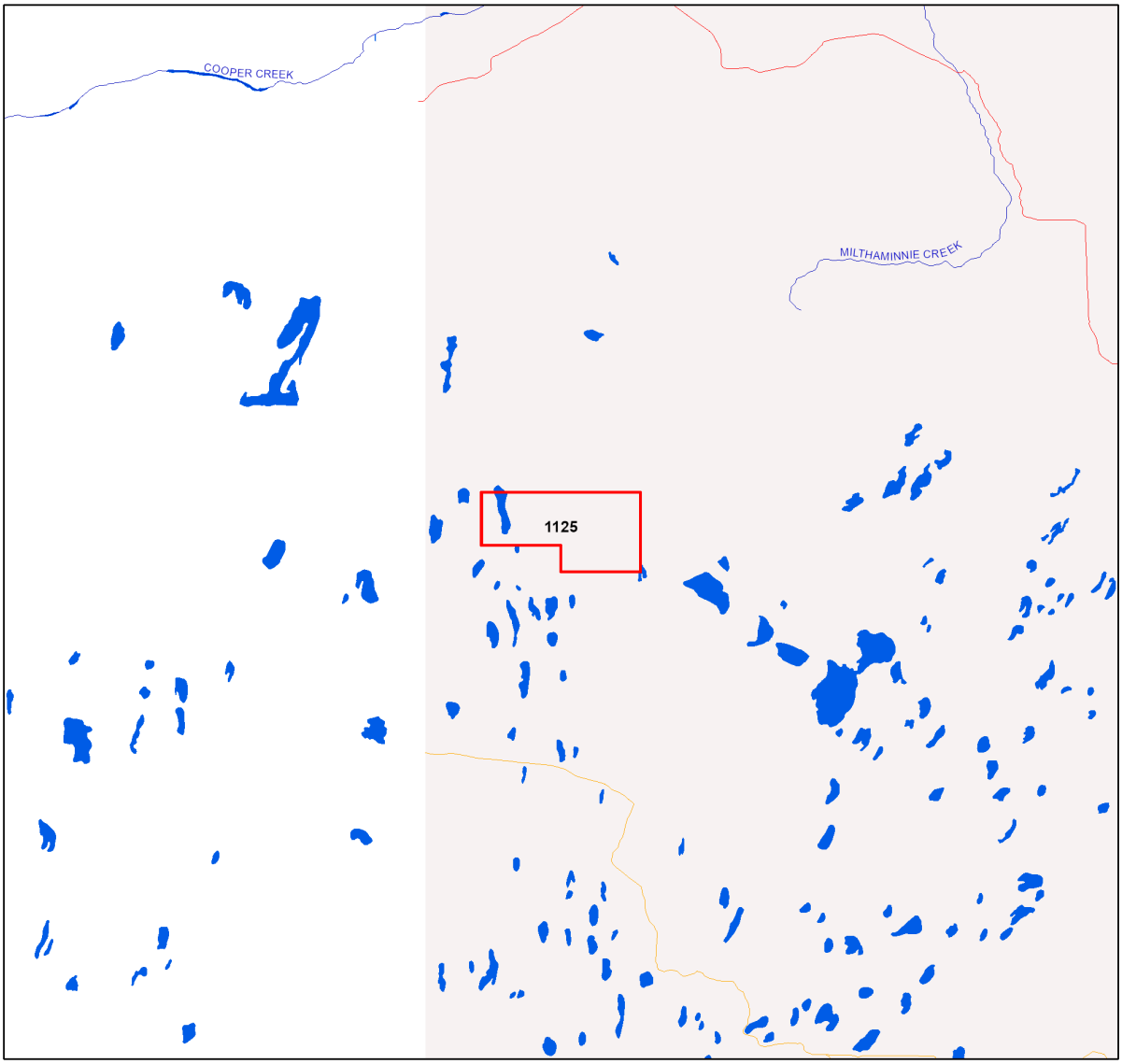
Table 25: Priority species recorded on, or within 4 km of the AOI - non-riverine

(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

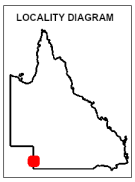
Map 1 - Locality Map



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Reservoirs
- Lakes
- National Park (Scientific)
- National Park
- National Park (CYPAL)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Petroleum Lease (PL)



N

0 4000 8000 12000 16000 20000 m

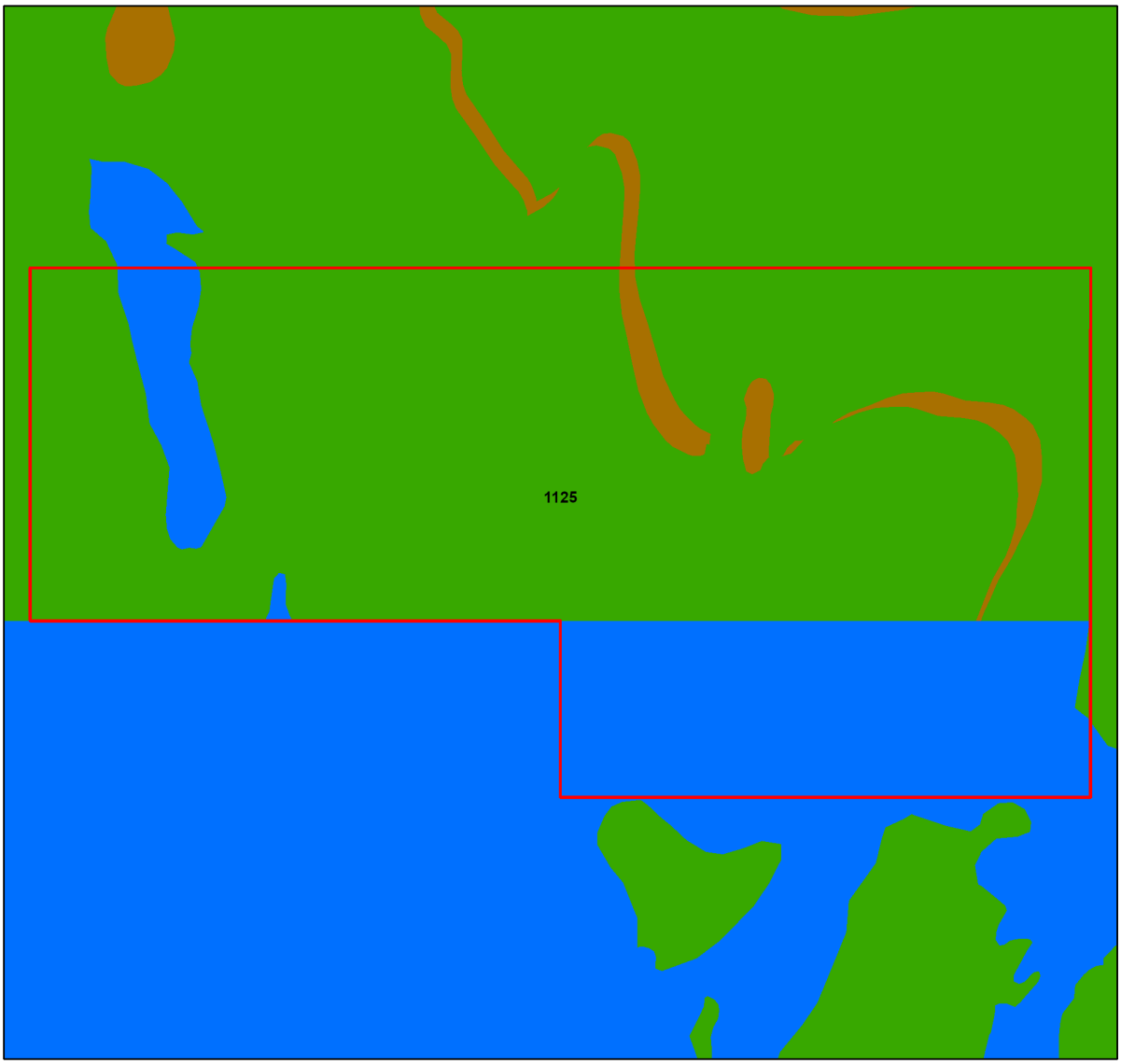
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Map 2 - Biodiversity Planning Assessment (BPA)

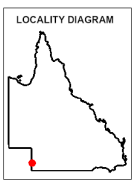


Biodiversity Planning Assessments

- Towns
- Roads
- Major Rivers/Creeks
- Queensland

Biodiversity Planning Assessment

- State Habitat for EVNT taxa
- State
- Regional
- Local or Other Values
- Selected Petroleum Lease (PL)



N

0 640 1280 1920 2560 3200 m

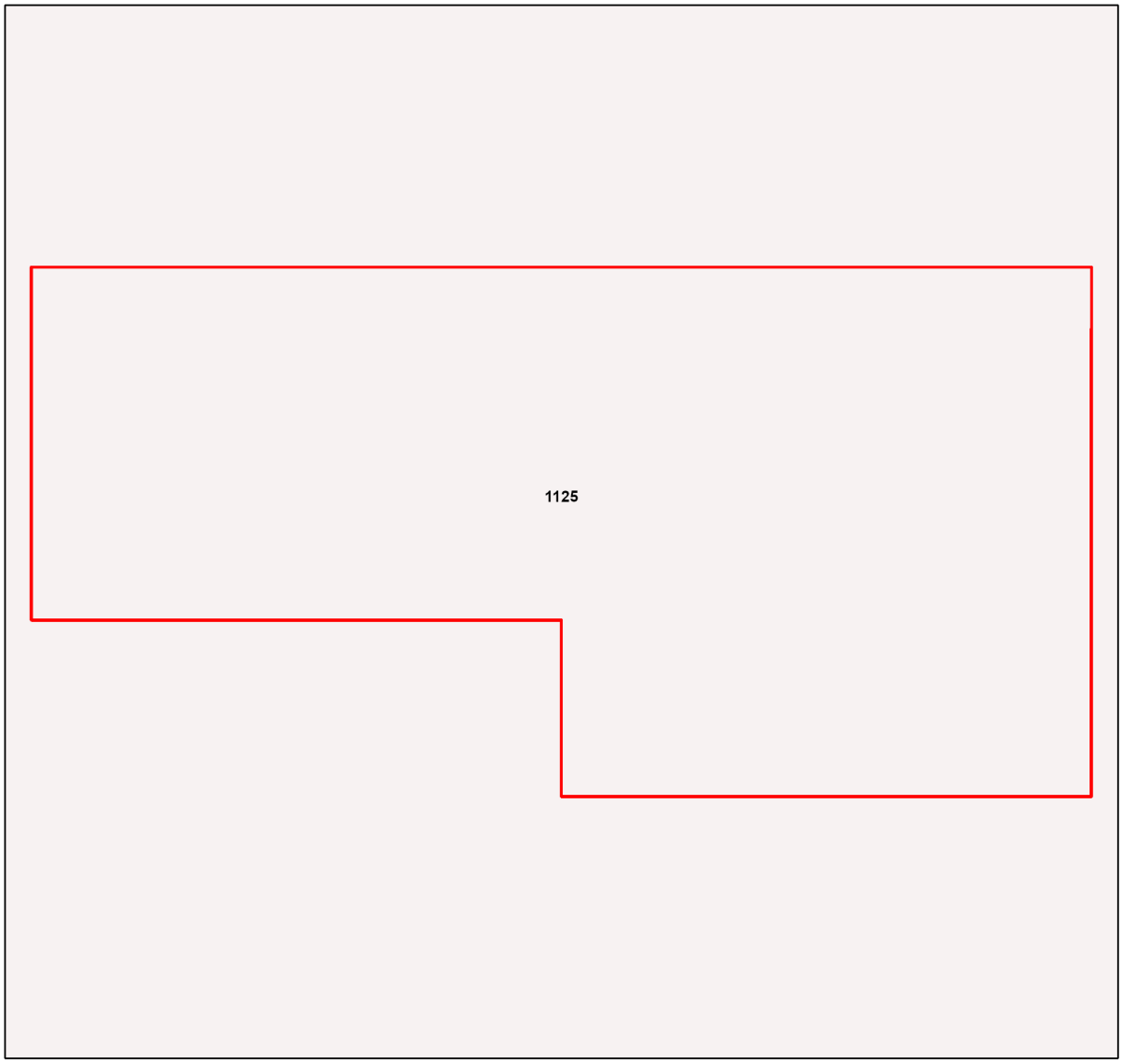
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Map 3 - Corridors



Corridors

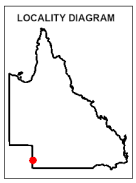
- Towns
- Roads
- Queensland
- Major Rivers/Creeks

Corridors
- State
- Regional

Corridor Triggered Vegetation
- State
- Regional
- Local

Core Area Vegetation
- Brigalow Belt Only
- Selected Petroleum Lease (PL)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

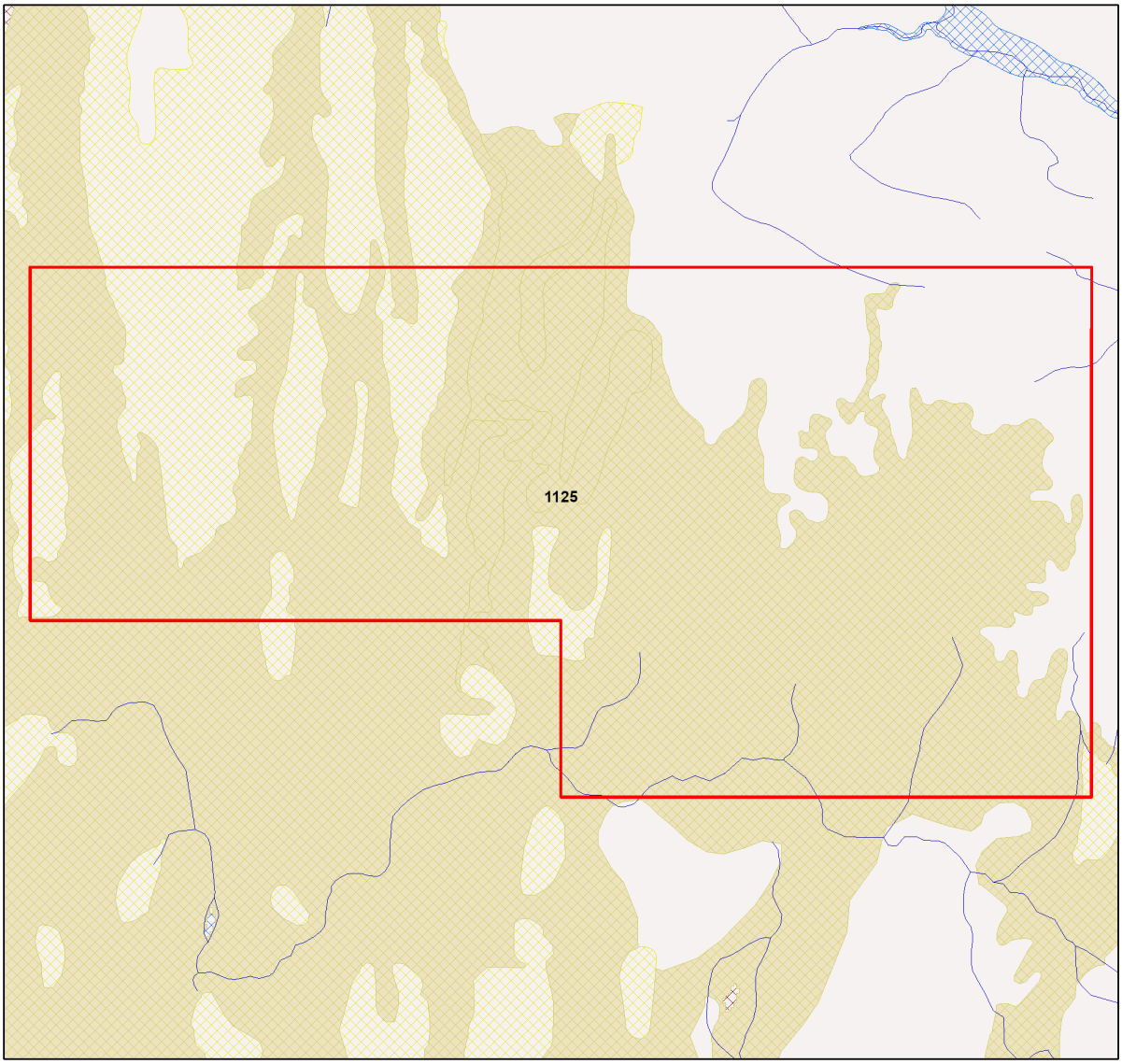
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Map 4 - Wetlands and waterways



Wetlands and Waterways

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

Wetland Type

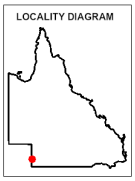
Hydrologically natural Wetlands
- Lacustrine Wetlands (hydrologically natural)
- Palustrine Wetlands (hydrologically natural)
- Riverine Wetlands (hydrologically natural)
- Intertidal Wetlands (hydrologically natural)
- Subtidal Wetlands (hydrologically natural)
- Intertidal/Subtidal Wetlands (hydrologically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

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

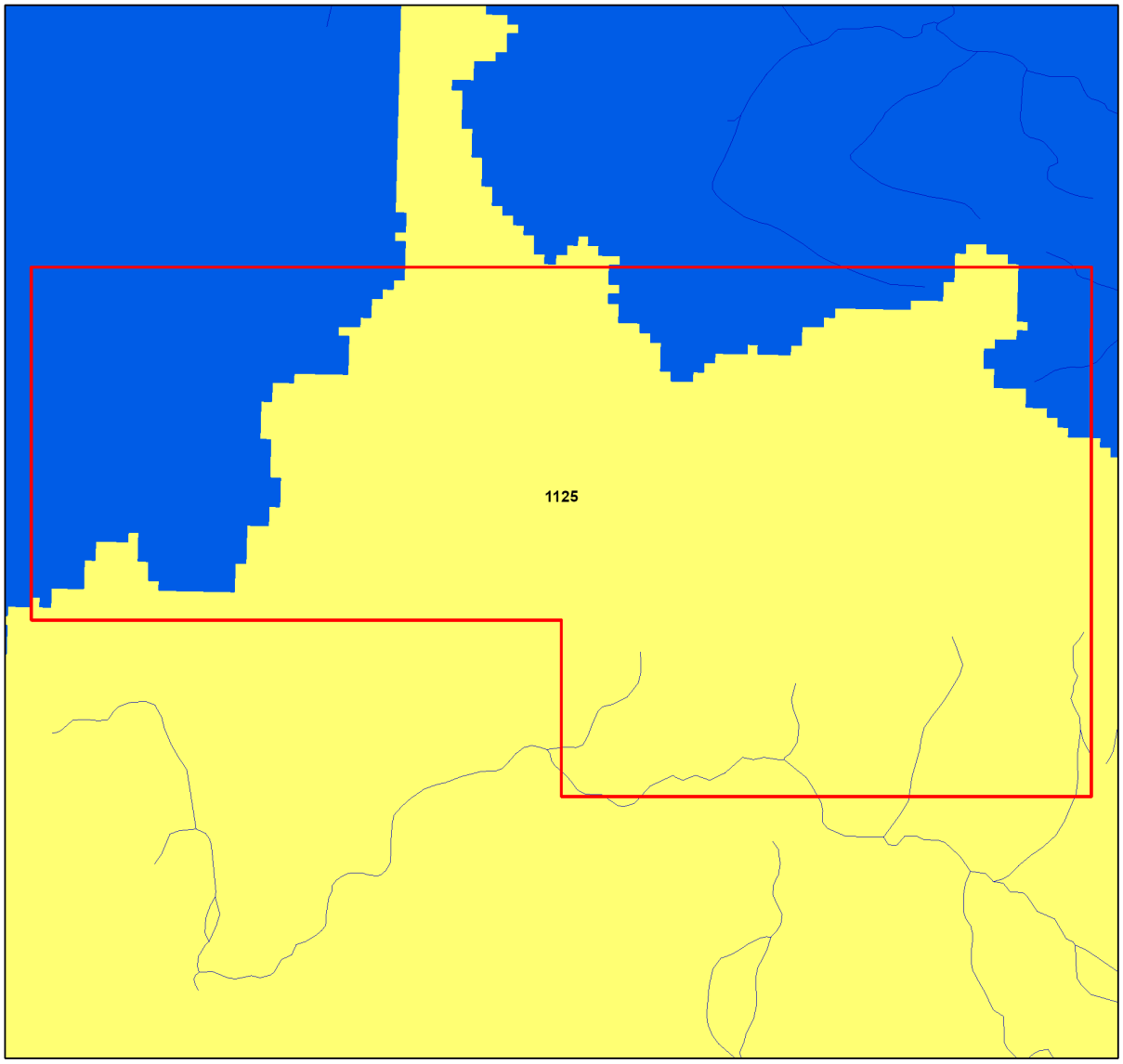
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Map 5 - Aquatic Conservation Assessment (ACA) - riverine



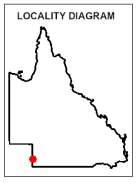
Aquatic Conservation Assessment (ACA) - riverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Riverine - Subcatchment Significance

- Very High
- High
- Medium
- Low
- Very Low
- Selected Petroleum Lease (PL)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

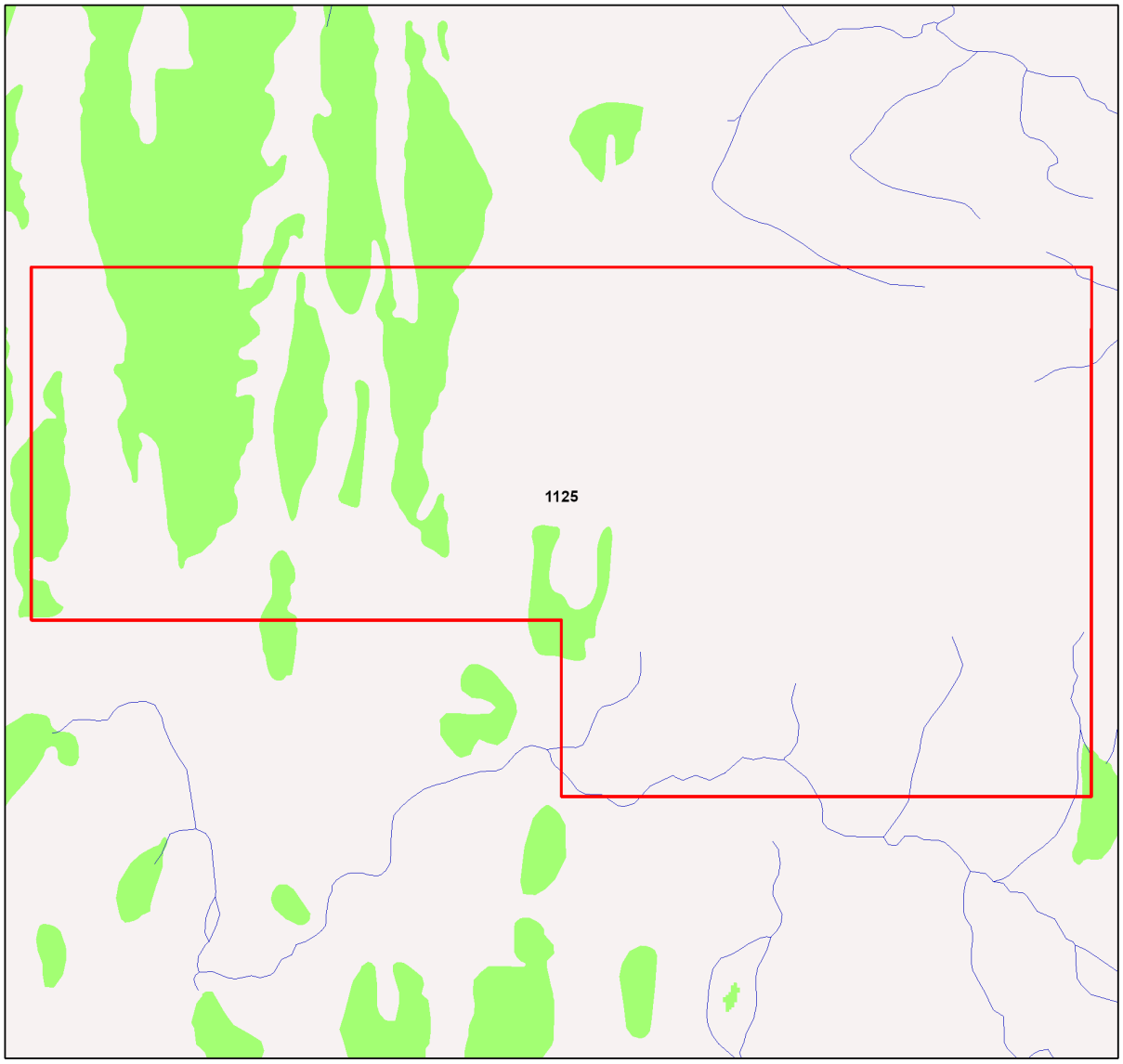
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Map 6 - Aquatic Conservation Assessment (ACA) - non-riverine



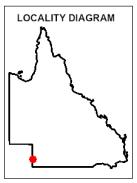
Aquatic Conservation Assessment (ACA) - nonriverine

- Towns
- Roads
- Rivers/Creeks
- Queensland

ACA Non-riverine

- Very High
- High
- Medium
- Low
- Very Low
- Selected Petroleum Lease (PL)

LOCALITY DIAGRAM



N

0 640 1280 1920 2560 3200 m

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Clayton, P.D., Fielder, D.F., Howell, S. and Hill, C.J. (2006) *Aquatic biodiversity assessment and mapping method (AquaBAMM): a conservation values assessment tool for wetlands with trial application in the Burnett River catchment.* Published by the Environmental Protection Agency, Brisbane. ISBN 1-90928-07-3. Available at

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
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
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 v2.3 Northwest Highlands v1.1 Southeast Queensland v4.1 Wet Tropics v1.1
Statewide BPA Corridors*	Statewide corridors v1.6
Threatened Species	An internal DESI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
BPA Priority Species	An internal DESI database compiled from Wildnet, Herbrecs, Corveg, the QLD Museum, as well as other incidental sources.
ACA Priority Species	An internal DESI 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
DESI	- Department of Environment, 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

Appendix 3: Regional Ecosystems Report for PL 1125

Queensland Government

Department of Environment, Science and Innovation

Environmental Reports

Regional Ecosystems

Biodiversity Status

For the selected area of interest
PL: 1125

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 Resources website https://www.resources.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:
PL: 1125, with area 4542.41 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Bulloo Shire	Cooper Creek	Channel Country	Strzelecki Desert
		Channel Country	Sturt Stony Desert

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	0.00	0.00
No concern at present	4,542.41	100.00
Total remnant vegetation	4,542.41	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 Resources website https://www.resources.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
5.3.22a	Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes	No concern at present	665.33	14.65
5.3.22d	Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes	No concern at present	279.89	6.16
5.6.4	Atalaya hemiglauca +/- Acacia aneura +/- Acacia spp. +/- Corymbia terminalis low open woodland on reticulate sand dunes	No concern at present	66.91	1.47
5.6.5	Variable sparse to open-herbland or Triodia basedowii hummock grassland on dune flanks, crests and sandy interdunes	No concern at present	2,011.35	44.28
5.6.8b	Zygochloa paradoxa and/or Crotalaria eremaea +/- Triodia basedowii open tussock grassland and herbland on mobile crests and slopes of sand dunes	No concern at present	140.19	3.09
5.9.3	Astrebla spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments	No concern at present	818.97	18.03
5.9.4x1	Aristida contorta sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover	No concern at present	559.78	12.32

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
5.3.22a	Pre-clearing 594000 ha; Remnant 2021 594000 ha	34a	Lacustrine	Low

Regional Ecosystem	Remnant Extent	BVG (1 Million)	Wetland	Representation in protected estate
5.3.22d	Pre-clearing 594000 ha; Remnant 2021 594000 ha	34b	Palustrine	Low
5.6.4	Pre-clearing 1087000 ha; Remnant 2021 1087000 ha	23a	Not a Wetland	Low
5.6.5	Pre-clearing 2464000 ha; Remnant 2021 2464000 ha	33a	Not a Wetland	High
5.6.8b	Pre-clearing 379000 ha; Remnant 2021 378000 ha	33a	Not a Wetland	High
5.9.3	Pre-clearing 3389000 ha; Remnant 2021 3383000 ha	30b	Not a Wetland	Low
5.9.4x1	Pre-clearing 940000 ha; Remnant 2021 939000 ha	31b	Not a Wetland	Low

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
5.3.22a	5.3.22: Provides wetland habitat for flora and fauna. 5.3.22a: Provides wetland habitat for flora and fauna. 5.3.22b: Provides wetland habitat for flora and fauna. 5.3.22d: Provides wetland habitat for flora and fauna.
5.3.22d	5.3.22: Provides wetland habitat for flora and fauna. 5.3.22a: Provides wetland habitat for flora and fauna. 5.3.22b: Provides wetland habitat for flora and fauna. 5.3.22d: Provides wetland habitat for flora and fauna.
5.6.4	5.6.4: High fauna diversity.
5.6.5	5.6.5: High reptile diversity. Potential habitat for threatened fauna species including mulgara Dasycerus cristicauda. 5.6.5a: High reptile diversity. Potential habitat for threatened fauna species including mulgara Dasycerus cristicauda.
5.6.8b	5.6.8: Habitat for the endemic eyrean grass wren Amytornis goyderi and threatened fauna species including the dusky hopping mouse Notomys fuscus, mulgara Dasycercus cristicauda and plant species including Acacia peuce. 5.6.8a: Habitat for the endemic eyrean grass wren Amytornis goyderi and threatened fauna species including the dusky hopping mouse Notomys fuscus, mulgara Dasycercus cristicauda and flora species. 5.6.8b: Habitat for the endemic eyrean grass wren Amytornis goyderi and threatened fauna species including the dusky hopping mouse Notomys fuscus, mulgara Dasycercus cristicauda and flora species.
5.9.3	None

Regional Ecosystem	Special Values
5.9.4x1	5.9.4: Habitat for threatened fauna species including kowari Dasyuroides byrnei. 5.9.4x2: Habitat for threatened fauna species including kowari Dasyuroides byrnei.

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
23a	Woodlands to low woodlands dominated by Acacia aneura on red earth plains or sandplains (soft mulga).	66.91	1.47
30b	Tussock grasslands dominated by Astrebla spp. (mitchell grass) or Dichanthium spp. (bluegrass) often with Iseilema spp. on undulating downs or clay plains.	818.97	18.03
31b	Short grass / forb associations on stony downs.	559.78	12.32
33a	Hummock grasslands dominated by Triodia basedowii (hard spinifex) or Zygochloa paradoxa (sandhill canegrass) associations on dunefields or sandplains.	2,151.54	47.37
34a	Lacustrine wetlands. Lakes, ephemeral to permanent. Includes fringing woodlands and sedgelands.	665.33	14.65
34b	Palustrine wetlands. Generally intermittent swamps/claypans (non floodplains) in inland areas dominated by chenopods e.g. Chenopodium auricomum (Queensland blue bush) or Tecticornia spp. (samphire) or herbs.	279.89	6.16

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/

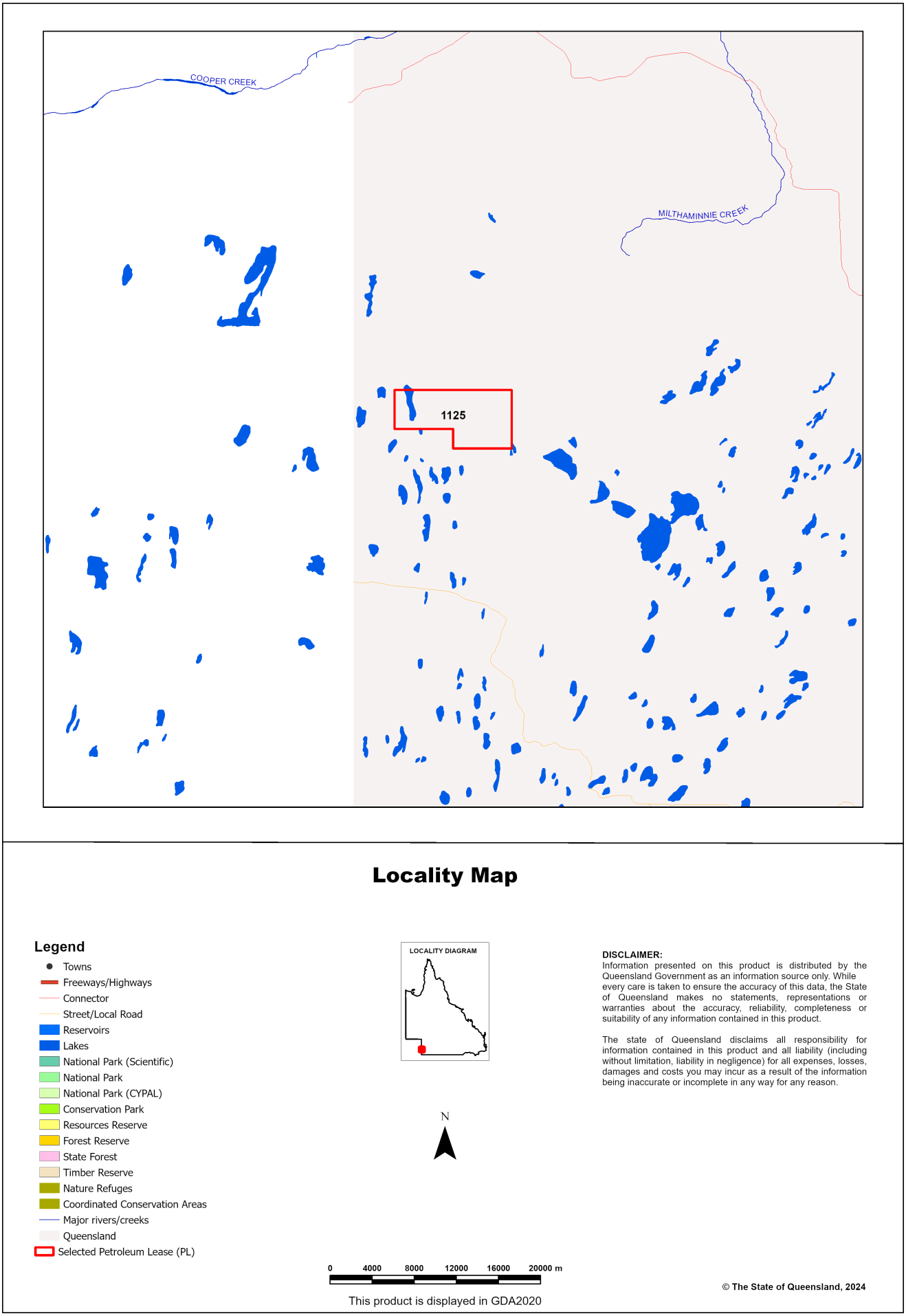
Benchmarks are based on a combination of quantitative and qualitative information and should be used as a guide only. Benchmarks are specific to one regional ecosystem vegetation community, however, the natural variability in structure and floristic composition under a range of climatic and natural disturbance 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

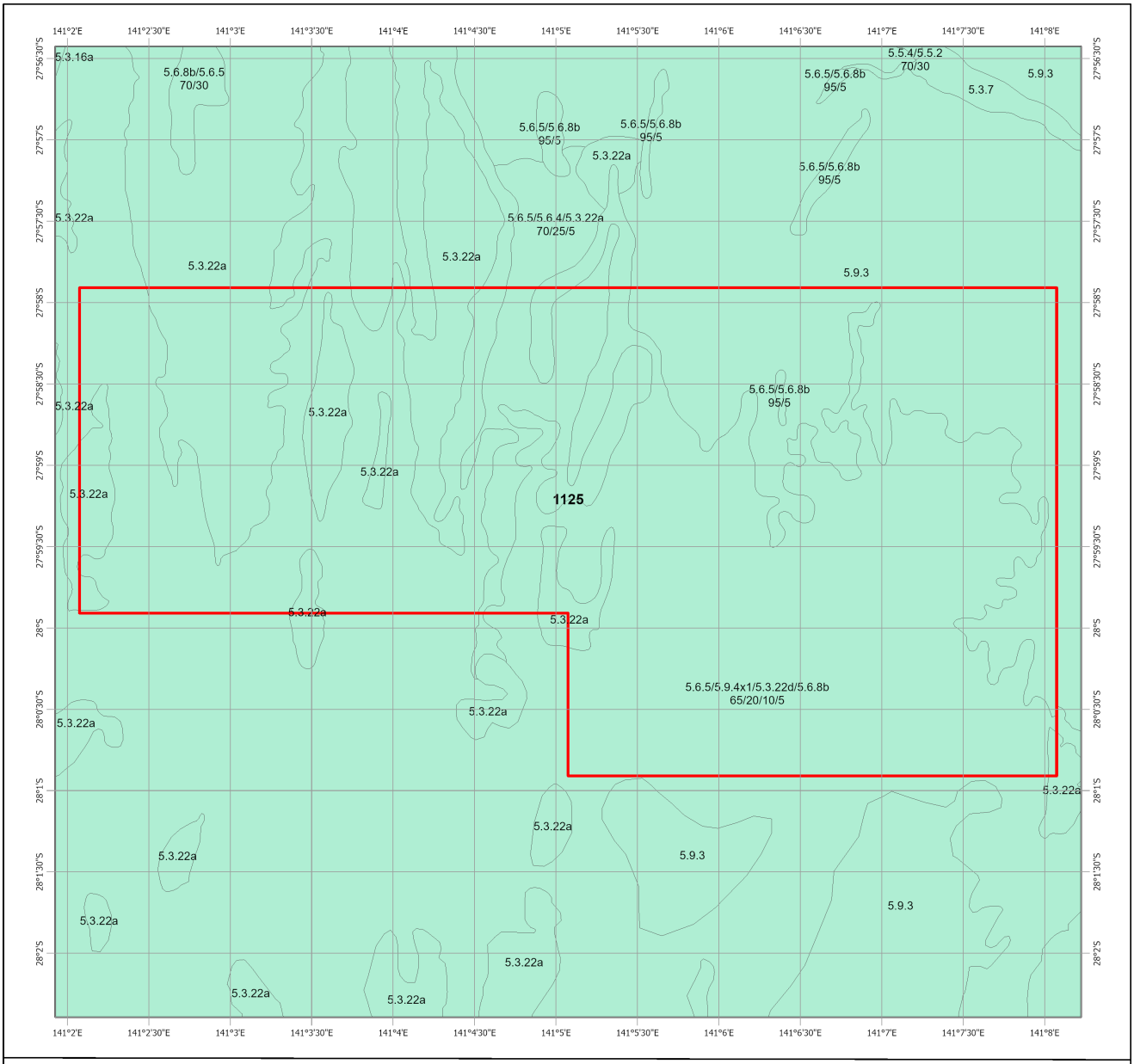
Regional ecosystems mapped as within the AOI	Technical Descriptions	Biocondition Benchmarks
5.3.22a	Not currently available	Not currently available
5.3.22d	Not currently available	Not currently available
5.6.4	Not currently available	Not currently available
5.6.5	Not currently available	Not currently available
5.6.8b	Not currently available	Not currently available
5.9.3	Not currently available	Not currently available
5.9.4x1	Not currently available	Not currently available

Maps

Map 1 - Location



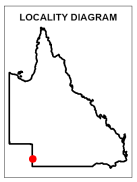
Map 2 - Remnant 2021 regional ecosystems

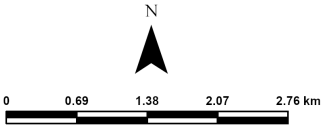


Remnant 2021 Regional Ecosystems

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 Petroleum Lease (PL)



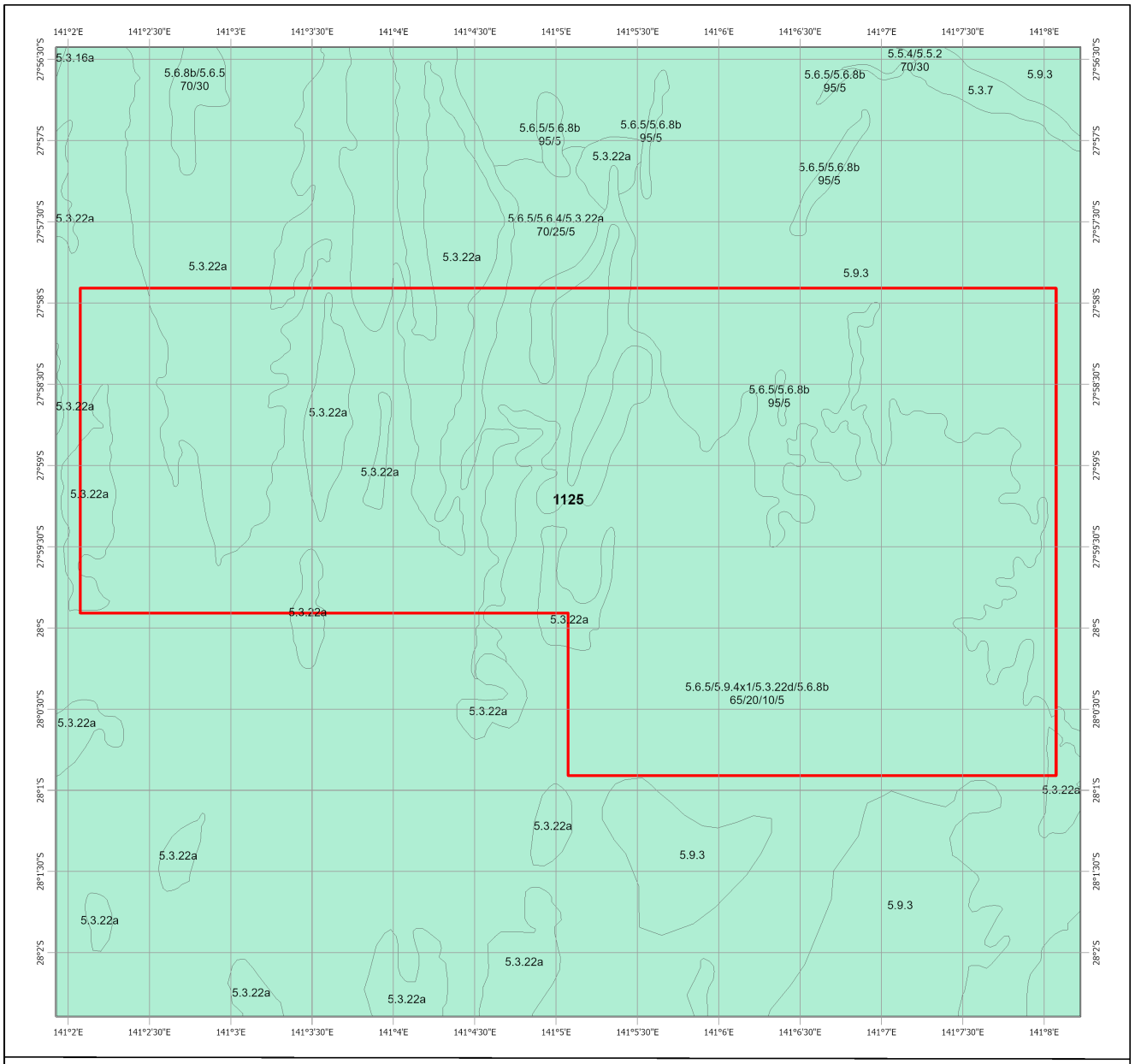


This product is projected into GDA2020

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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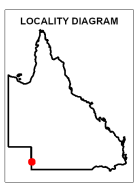
Map 3 - Pre-clearing regional ecosystems



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 Petroleum Lease (PL)



N

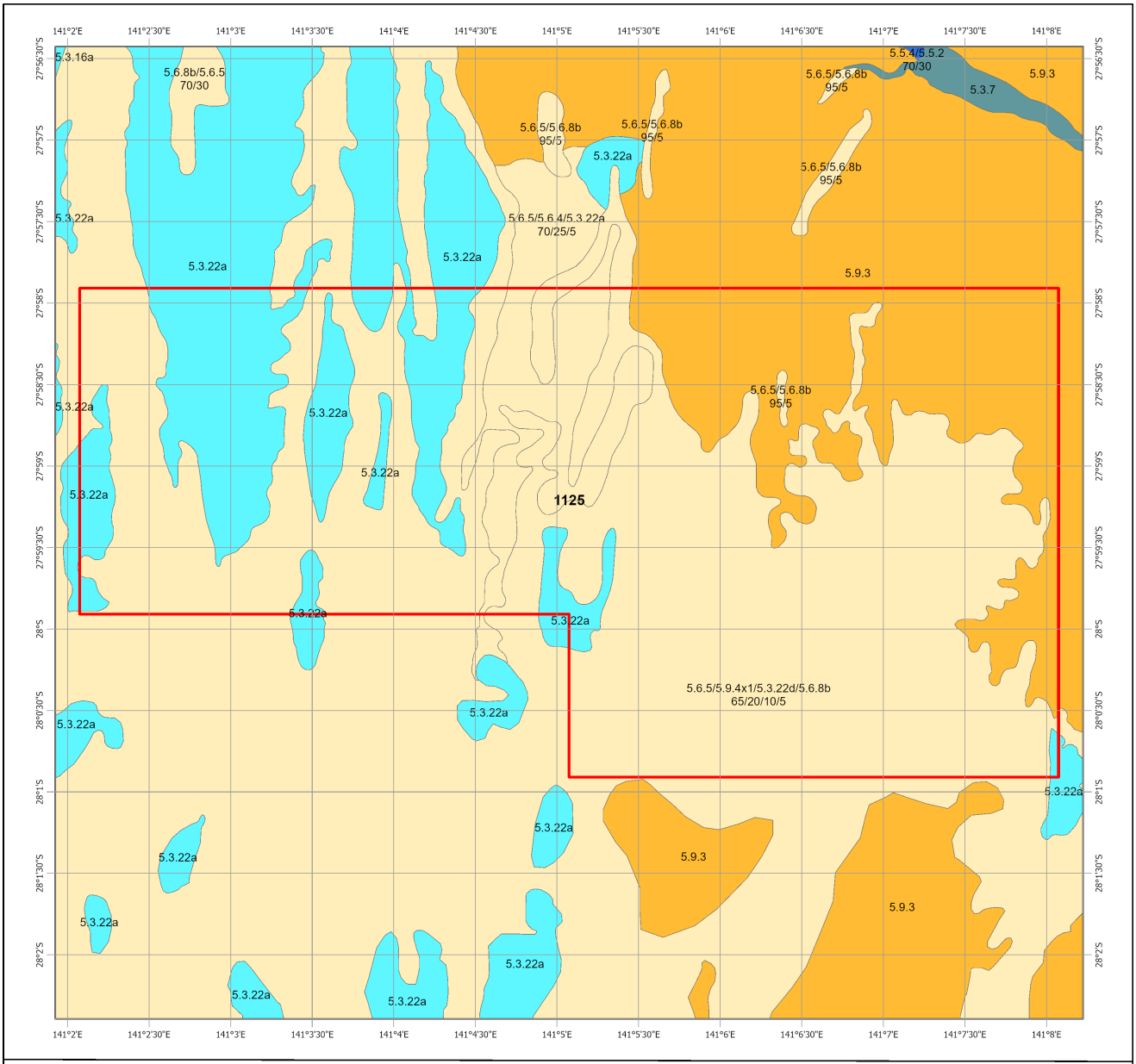
0 0.7 1.4 2.1 2.8 km

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.
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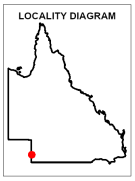
Map 4 - Remnant 2021 regional ecosystems by BVG (5M)



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 Petroleum Lease (PL)



N

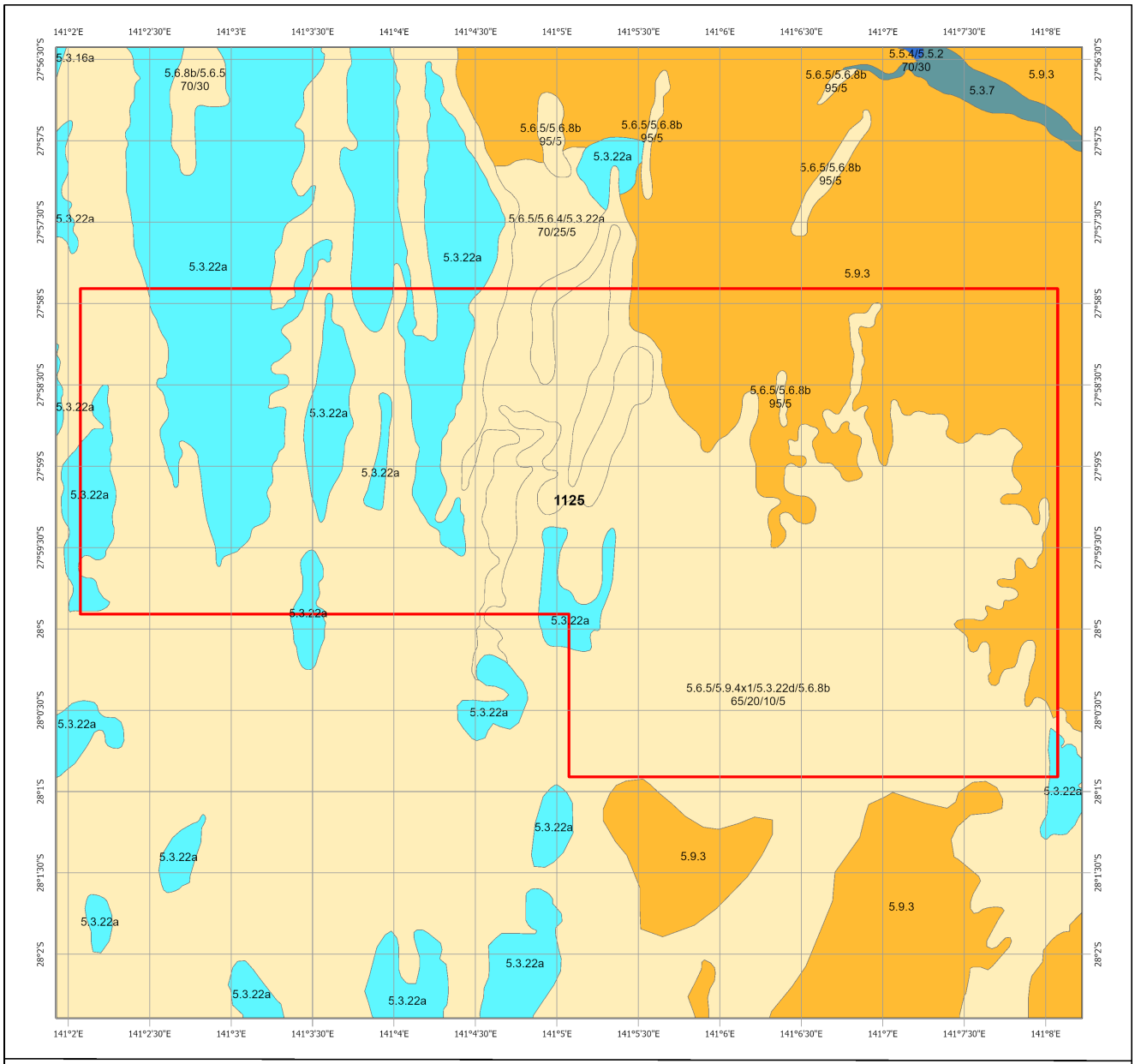
0 0.7 1.4 2.1 2.8 km

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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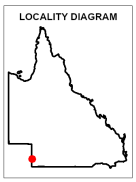
Map 5 - Pre-clearing regional ecosystems by BVG (5M)

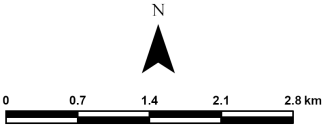


Pre-clearing Regional Ecosystems coloured by Broad Vegetation Groups

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)
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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 Petroleum Lease (PL)



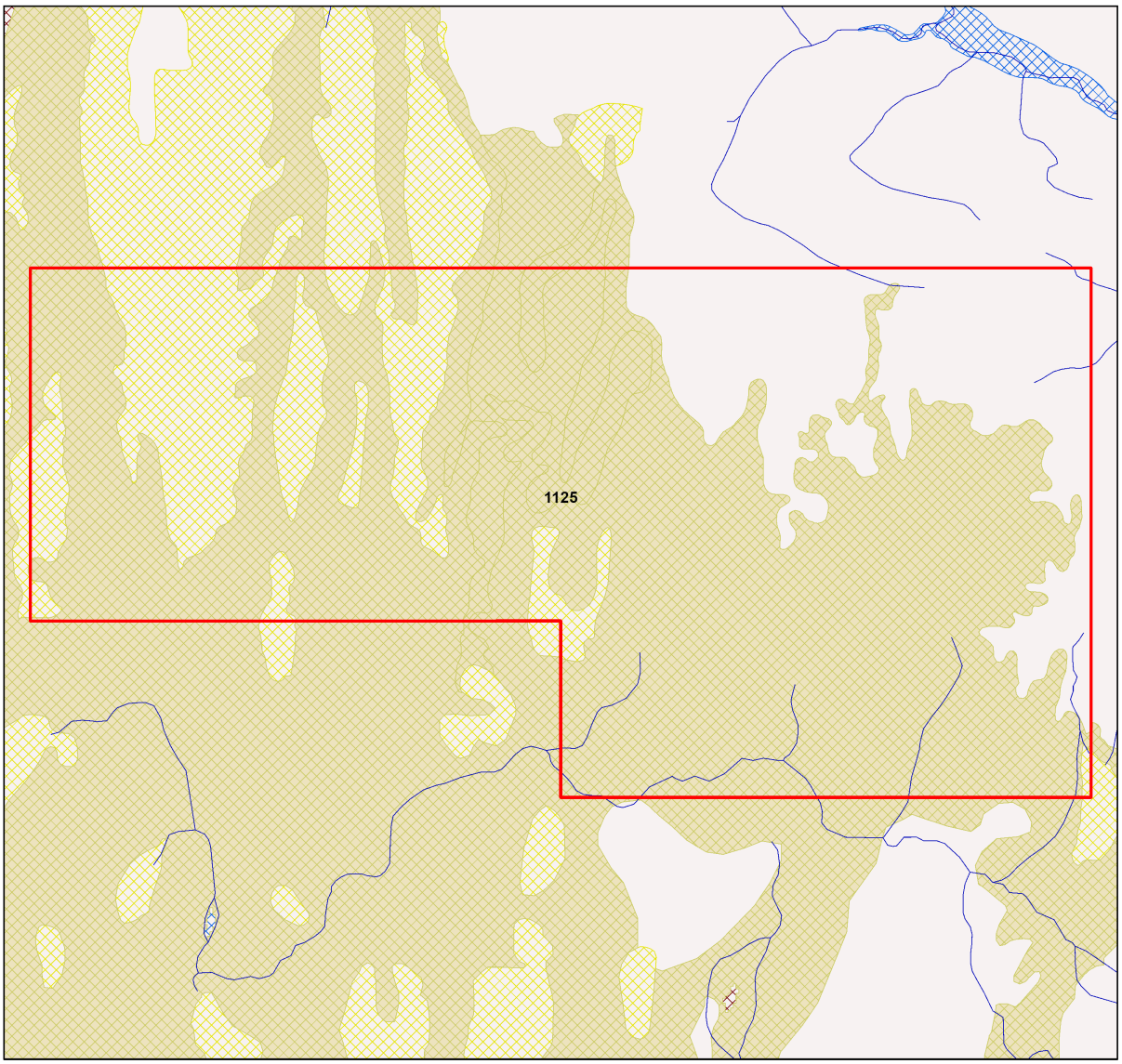


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Broad Vegetation Groups (BVG) of Queensland are applied by look up table to the regional ecosystem vegetation communities. Each polygon is coloured by the dominant BVG5M and the component regional ecosystems labelled. Where more than one regional ecosystem occurs, the percentage of each is labelled.
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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

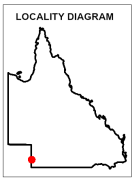
Wetland Type

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 Petroleum Lease (PL)



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 Environment, 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*

Appendix 4: WildNet Species List Report for PL 1125

WildNet Records
Species List

For the selected area of interest 4542.41 PL: 1125
Current as at 17/06/2024 WildNetSpeciesList

Summary Information
The following table provides an overview of the area of interest: PL: 1125

Table 1. Area of interest details

Size (ha)	
4,542.41	
Local Government(s)	
Bulloo Shire	
Catchment(s)	
Cooper Creek	
Bioregion(s)	**Subregion(s)**
Channel Country	Strzelecki Desert
Channel Country	Sturt Stony Desert

Protected Area(s)
No estates or reserves are located within the area of interest.

World Heritage Area(s)
No World Heritage Areas are located within the area of interest.

Ramsar Area(s)
No Ramsar Areas are located within the area of interest.

Introduction
This WildNet report is derived from a spatial layer that is generated from the WildNet database, managed by the Department of Enviornment, Science and Innovation. The layer, which is generated weekly, contains a subset of WildNet wildlife records that are not classed as erroneous or duplicate, that have a location precision equal to or less than 10000 metres and do not have a count of zero. It does not include aspatial data such as some baseline species lists created for some protected areas.

The WildNet dataset is constantly being enhanced and the taxonomic and status information revised. If a species is not listed in this report, it does not mean it doesn't occur there and listed species may also no longer inhabit the area. It is recommended that you also access other internal and external data sources for species information in your area of interest.

The Species List Application may provide additional information on species occurence within your area of interest.

Species data

Contextual location information is presented in Map 1.

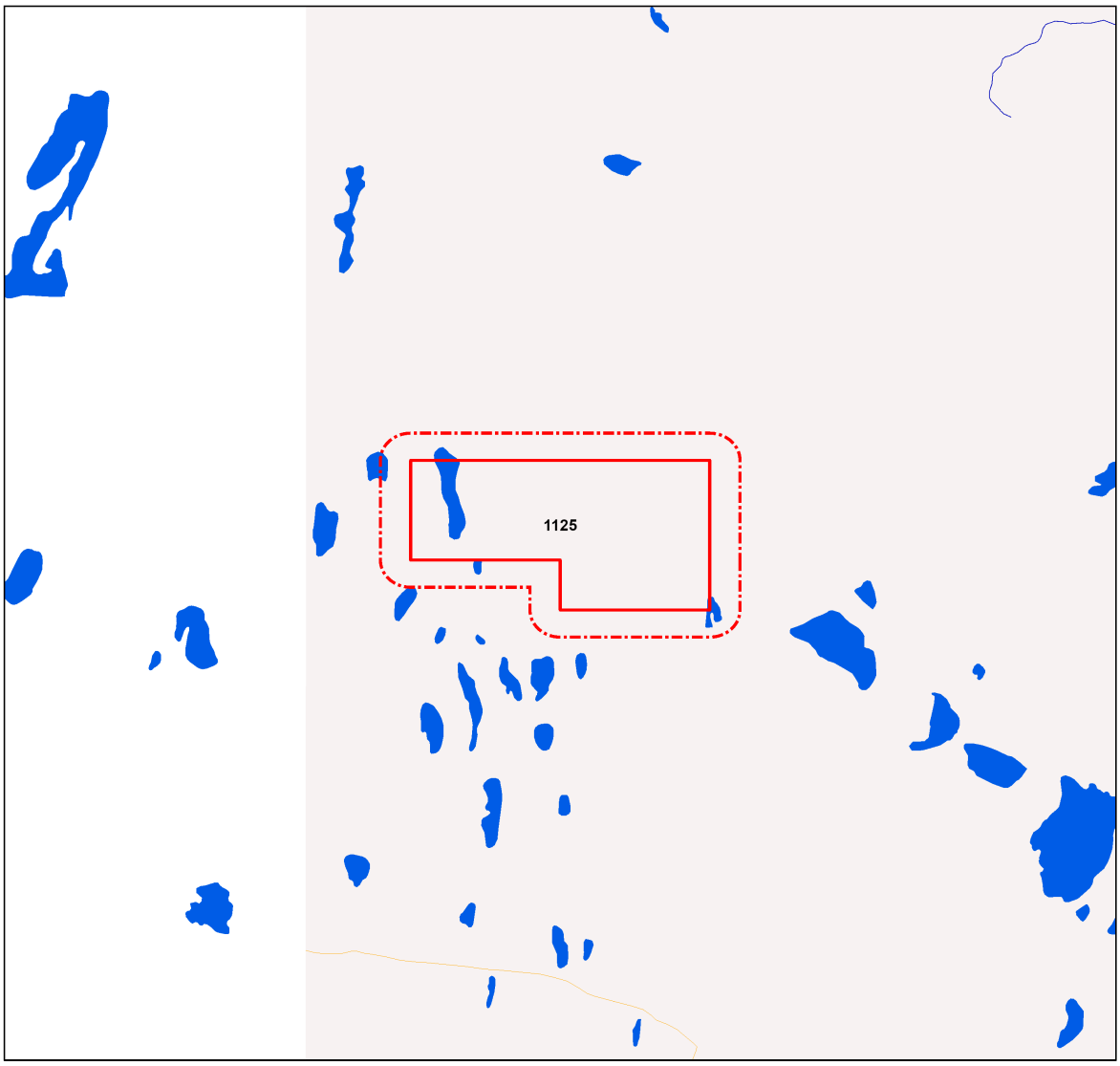
Table 2 lists the animals recorded within the area of interest and its one kilometre buffer.

Table 3 lists the plants recorded within the area of interest and its one kilometre buffer.

Table 4 lists the fungi recorded within the area of interest and its one kilometre buffer.

Table 5 lists the other species recorded within the area of interest and its one kilometre buffer.

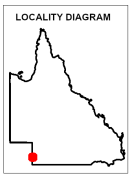
Map 1. Locality Map



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Reservoirs
- Lakes
- National Park (Scientific)
- National Park
- National Park (CYPAL)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Petroleum Lease (PL)
- 1 kilometre buffer



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Table 2. Animals recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Table 3. Plants recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Table 4. Fungi recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Table 5. Other species recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Species table headings and codes
Taxon Id: Unique identifier of the taxon from the WildNet database.
NCA: Queensland conservation status of the taxon under the *Nature Conservation Act 1992* (Least Concern (C), Critically Endangered (CR), Endangered (E), Extinct (EX), Near Threatened (NT), Extinct in the Wild (PE), Special Least Concern (SL), and Vulnerable (V)).
EPBC: Australian conservation status of the taxon under the *Environment Protection and Biodiversity Conservation Act 1999* (Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Vulnerable (V), and Extinct in the Wild (XW)).
Specimens: The number of specimen-backed records of the taxon.
Records: The total number of records of the taxon.
Last record: Date of most recent record of the taxon.

Links and Support

Other sites that deliver species information from the WildNet database include:

- Species profile search - access species information approved for publication including species names, statuses, notes, images, distribution maps and records
- Species lists - generate species lists for Queensland protected areas, forestry areas, local governments and areas defined using coordinates
- Biomaps - view biodiversity information, including WildNet records approved for publication, and generate reports
- Queensland Globe - view spatial information, including WildNet records approved for publication
- Qld wildlife data API - access WildNet species information approved for publication such as notes, images and records etc.
- Wetland*Maps* - view species records, survey locations etc. approved for publication
- Wetland*Summary* - view wildlife statistics, species lists for a range of area types, and access WildNet species profiles
- WildNet wildlife records - published - Queensland - spatial layer of WildNet records approved for publication generated weekly
- Generalised distribution and densities of Queensland wildlife - Queensland species distributions and densities generalised to a 10 km grid resolution
- Conservation status of Queensland wildlife - access current lists of priority species for Queensland including nomenclature and status information
- Queensland Confidential Species - the list of species flagged as confidential in the WildNet database.

Please direct queries about this report to the WildNet Team WildNet@des.qld.gov.au.

Other useful sites for accessing Queensland biodiversity data include:

- Useful wildlife resources
- Queensland Government Data
- Atlas of Living Australia (ALA)
- Online Zoological Collections of Australian Museums (OZCAM)
- Australia's Virtual Herbarium (AVH)
- Protected Matters Search Tool

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Appendix 5: WildNet Records: Conservation Significant Species List Report for PL 1125

WildNet Records
Conservation Significant Species List

For the selected area of interest PL: 1125
Current as at 17/06/2024 WildNetCSSpeciesList

Summary Information

The following table provides an overview of the area of interest: PL: 1125

Table 1. Area of interest details

Size (ha)	
4,542.41	
Local Government(s)	
Bulloo Shire	
Catchment(s)	
Cooper Creek	
Bioregion(s)	**Subregion(s)**
Channel Country	Strzelecki Desert
Channel Country	Sturt Stony Desert

Protected Area(s)

No estates or reserves are located within the area of interest.

World Heritage Area(s)

No World Heritage Areas are located within the area of interest.

Ramsar Area(s)

No Ramsar Areas are located within the area of interest.

Introduction

This WildNet report is derived from a spatial layer that is generated from the WildNet database, managed by the Department of Enviornment, Science and Innovation. The layer, which is generated weekly, contains a subset of WildNet wildlife records that are not classed as erroneous or duplicate, that have a location precision equal to or less than 10000 metres and do not have a count of zero. It does not include aspatial data such as some baseline species lists created for some protected areas.

The WildNet dataset is constantly being enhanced and the taxonomic and status information revised. If a conservation significant species is not listed in this report, it does not mean it doesn't occur there and listed species may also no longer inhabit the area. It is recommended that you also access other internal and external data sources for species information in your area of interest.

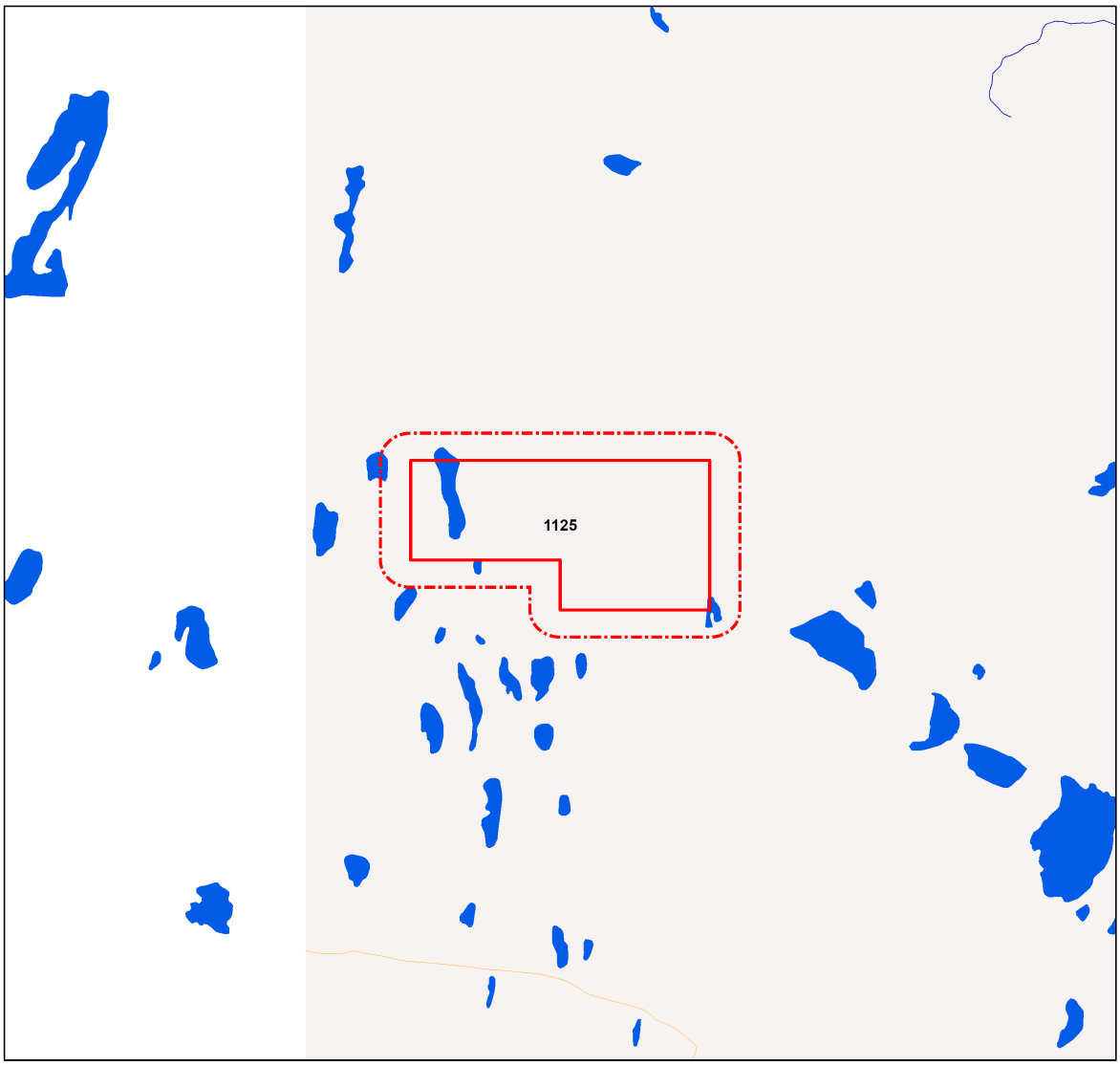
The Species List Application may provide additional information on species occurence within your area of interest.

Conservation significant species are species listed:

- as threatened or near threatened under the Nature Conservation Act 1992;
- as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* or
- migratory species protected under the following international agreements:
    - Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention)
    - China-Australia Migratory Bird Agreement
    - Japan-Australia Migratory Bird Agreement
    - Republic of Korea-Australia Migratory Bird Agreement

Table 2 lists the species recorded within the area of interest and its one kilometre buffer.

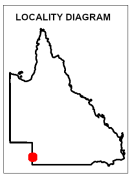
Map 1. Locality Map



Locality Map

Legend

- Towns
- Freeways/Highways
- Connector
- Street/Local Road
- Reservoirs
- Lakes
- National Park (Scientific)
- National Park
- National Park (CYPAL)
- Conservation Park
- Resources Reserve
- Forest Reserve
- State Forest
- Timber Reserve
- Nature Refuges
- Coordinated Conservation Areas
- Major rivers/creeks
- Queensland
- Selected Petroleum Lease (PL)
- 1 kilometre buffer



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Table 2. Conservation significant species recorded within the area of interest and its one kilometre buffer

(No Records)

Taxon Id: Unique identifier of the taxon from the WildNet database.
NCA: Queensland conservation status of the taxon under the *Nature Conservation Act 1992* (Least Concern (C), Critically Endangered (CR), Endangered (E), Extinct (EX), Near Threatened (NT), Extinct in the Wild (PE), Special Least Concern (SL), and Vulnerable (V)).
EPBC: Australian conservation status of the taxon under the *Environment Protection and Biodiversity Conservation Act 1999* (Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Vulnerable (V), and Extinct in the Wild (XW)).
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Last record: Date of most recent record of the taxon.

Links and Support

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- WildNet wildlife records - published - Queensland - spatial layer of WildNet records approved for publication generated weekly
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- Atlas of Living Australia (ALA)
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- Australia's Virtual Herbarium (AVH)
- Protected Matters Search Tool

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Appendix 6: EPBC Act (1999) Protected Matters Search for PL 1125 with a 50 km buffer zone

EPBC Act Protected Matters Report

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

Report created: 17-Jun-2024

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:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	16
Listed Migratory Species:	8

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:	13
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:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	3
EPBC Act Referrals:	4
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	1

Details

Matters of National Environmental Significance

National Heritage Places			[Resource Information]
Name	State	Legal Status	Buffer Status
Historic			
The Burke, Wills, King and Yandruwandha National Heritage Place	QLD	Listed place	In buffer area only

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Coongie lakes	Within Ramsar site	In feature area

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			
Amytornis barbatus barbatus			
Bulloo Grey Grasswren, Grey Grasswren (Bulloo) [67065]	Endangered	Species or species habitat likely to occur within area	In buffer area only
Aphelocephala leucopsis			
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Falco hypoleucos			
Grey Falcon [929]	Vulnerable	Species or species habitat known to 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Grantiella picta			
Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area	In feature area
Neophema chrysostoma			
Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pedionomus torquatus			
Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area	In feature area
Pezoporus occidentalis			
Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area	In feature area
Rostratula australis			
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
MAMMAL			
Notomys fuscus			
Dusky Hopping-mouse, Wilkiniti [125]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pseudomys australis			
Plains Rat, Palyoora, Plains Mouse [108]	Vulnerable	Species or species habitat may occur within area	In feature area
PLANT			
Frankenia plicata			
[4225]	Endangered	Species or species habitat likely to occur within area	In feature area
Swainsona murrayana			
Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Xerothamnella parvifolia			
[3141]	Vulnerable	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			

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			
[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 known to occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris 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
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat may occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Apus pacificus](#) Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
[Bubulcus ibis as Ardea ibis](#) Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
[Chalcites osculans as Chrysococcyx osculans](#) Black-eared Cuckoo [83425]		Species or species habitat likely to 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
[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 known to occur within area overfly marine area	In feature area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Innamincka	Regional Reserve	SA	In buffer area only

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Coongie Lakes	SA	In buffer area only
Cooper Creek Swamps - Nappa Merrie	QLD	In buffer area only
Strzelecki Creek Wetland System	SA	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
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
QSN3 Project, expand 935km gas pipeline and supporting infrastructure	2009/5072	Not Controlled Action	Completed	In buffer area only
Thoar 3D seismic survey at Cooper Creek-Wilson River floodplain	2003/1178	Not Controlled Action	Completed	In buffer area only
Not controlled action (particular manner)				
QSN Underground Gas Pipeline	2008/4043	Not Controlled Action (Particular Manner)	Post-Approval	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action (particular manner)				

Bioregional Assessments [Resource Information]

SubRegion	BioRegion	Website	Buffer Status
Cooper	Lake Eyre Basin	BA website	In feature area

Geological and Bioregional Assessments [Resource Information]

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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- 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.

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

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

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

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Appendix 7: EPBC Act (1999) Protected Matters Search for PL 1125 with a 100 km buffer zone

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: 22-Jul-2024

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:	1
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	22
Listed Migratory Species:	9

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:	14
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:	4
EPBC Act Referrals:	8
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	1

Details

Matters of National Environmental Significance

National Heritage Places		[Resource Information]
Name	State	Legal Status
Historic		
The Burke, Wills, King and Yandruwandha National Heritage Place	QLD	Listed place

Wetlands of International Importance (Ramsar Wetlands)	[Resource Information]
Ramsar Site Name	Proximity
Coongie lakes	Within Ramsar site

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
BIRD		
Amytornis barbatus barbatus		
Bulloo Grey Grasswren, Grey Grasswren (Bulloo) [67065]	Endangered	Species or species habitat known to occur within area
Aphelocephala leucopsis		
Southern Whiteface [529]	Vulnerable	Species or species habitat known to occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Falco hypoleucos		
Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Grantiella picta		
Painted Honeyeater [470]	Vulnerable	Species or species habitat known to occur within area
Lophochroa leadbeateri leadbeateri		
Major Mitchell's Cockatoo (eastern), Eastern Major Mitchell's Cockatoo, Pink Cockatoo (eastern) [82926]	Endangered	Species or species habitat may occur within area
Neophema chrysostoma		
Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area
Pedionomus torquatus		
Plains-wanderer [906]	Critically Endangered	Species or species habitat may occur within area
Pezoporus occidentalis		
Night Parrot [59350]	Endangered	Species or species habitat likely to occur within area
Rostratula australis		
Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area
MAMMAL		
Dasyuroides byrnei		
Kowari, brushy-tailed marsupial rat, Byrne's crest-tailed marsupial rat [329]	Endangered	Species or species habitat may occur within area
Macrotis lagotis		
Greater Bilby [282]	Vulnerable	Species or species habitat may occur within area
Notomys fuscus		
Dusky Hopping-mouse, Wilkiniti [125]	Vulnerable	Species or species habitat known to occur within area
Pseudomys australis		
Plains Rat, Palyoora, Plains Mouse [108]	Vulnerable	Species or species habitat may occur within area
PLANT		

Scientific Name	Threatened Category	Presence Text
Frankenia plicata [4225]	Endangered	Species or species habitat likely to occur within area
Grevillea kennedyana Flame Spider-flower [6974]	Vulnerable	Species or species habitat may occur within area
Sclerolaena walkeri [16152]	Vulnerable	Species or species habitat likely to occur within area
Swainsona murrayana Slender Darling-pea, Slender Swainson, Murray Swainson-pea [6765]	Vulnerable	Species or species habitat may occur within area
Xerothamnella parvifolia [3141]	Vulnerable	Species or species habitat likely to occur within area

Listed Migratory Species [Resource Information]

Scientific Name	Threatened Category	Presence Text
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area

Scientific Name	Threatened Category	Presence Text
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos		
Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Gallinago hardwickii		
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Listed Marine Species		[Resource Information]
Scientific Name	Threatened Category	Presence Text
Bird		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area
Bubulcus ibis as Ardea ibis		
Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area
Calidris acuminata		
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area overfly marine area

Scientific Name	Threatened Category	Presence Text
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area overfly marine area
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area
Motacilla flava Yellow Wagtail [644]		Species or species habitat known to occur within area overfly marine area
Neophema chrysostoma Blue-winged Parrot [726]	Vulnerable	Species or species habitat known to occur within area overfly marine area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area

Extra Information

State and Territory Reserves		[Resource Information]
Protected Area Name	Reserve Type	State
Innamincka	Regional Reserve	SA
Malkumba-Coongie Lakes	National Park	SA
Strzelecki	Regional Reserve	SA

Nationally Important Wetlands	[Resource Information]
Wetland Name	State
Coongie Lakes	SA
Cooper Creek Swamps - Nappa Merrie	QLD
Cooper Creek - Wilson River Junction	QLD
Strzelecki Creek Wetland System	SA

EPBC Act Referrals			[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status
Controlled action			
Ballera Lateral Gas Pipeline	2006/2563	Controlled Action	Completed
Expansion of the Olympic Dam copper, uranium, gold and silver mine, processing plant and associated	2005/2270	Controlled Action	Post-Approval
Not controlled action			
Gas Pipeline from Psyche to Winninia	2002/797	Not Controlled Action	Completed
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed
QSN3 Project, expand 935km gas pipeline and supporting infrastructure	2009/5072	Not Controlled Action	Completed

Title of referral	Reference	Referral Outcome	Assessment Status
Not controlled action			
Thoar 3D seismic survey at Cooper Creek-Wilson River floodplain	2003/1178	Not Controlled Action	Completed
Not controlled action (particular manner)			
QSN Underground Gas Pipeline	2008/4043	Not Controlled Action (Particular Manner)	Post-Approval
Texas Tickalara Holdings Petroleum Production Project	2021/9088	Not Controlled Action (Particular Manner)	Post-Approval

Bioregional Assessments [Resource Information]

SubRegion	BioRegion	Website
Cooper	Lake Eyre Basin	BA website

Geological and Bioregional Assessments [Resource Information]

Name	State	Website
Cooper GBA region	QLD, SA, NSW	GBA website

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

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Appendix 8: Atlas of Living Australia area report for PL 1125

AREA REPORT

ATLAS OF LIVING AUSTRALIA
sharing biodiversity knowledge

www.ala.org.au

Area: 45.6 sq km	Species: 1	Occurrences: 1
Endemic species: 0	All threatened species: 0	Migratory species: 0
All invasive species: 0	Iconic species: 0	JournalMap Articles: 0
Animals: 0	Plants: 1	Birds: 0

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PL1125.zip

Area: 45.6 sq km

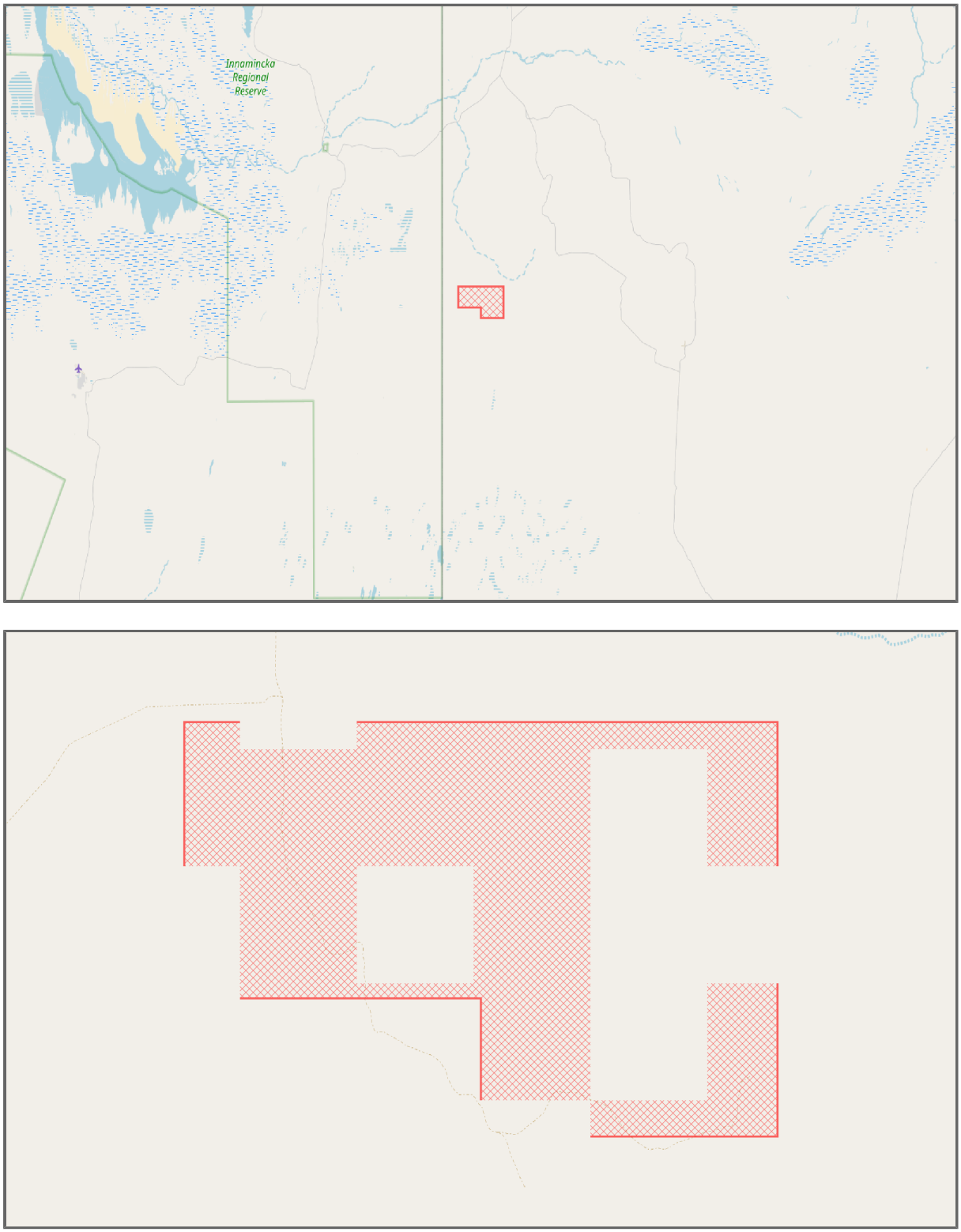


Figure 1 : Map of PL1125.zip

National Dynamic Land Cover

The Dynamic Land Cover Dataset is the first nationally consistent and thematically comprehensive land cover reference for Australia. It provides a base-line for reporting on change and trends in vegetation cover and extent. Information about land cover dynamics is essential to understanding and addressing a range of national challenges such as drought, salinity, water availability and ecosystem health. The data is a synopsis of land cover information for every 250m by 250m area of the country from April 2000 to April 2008. The classification scheme used to describe land cover categories in the Dataset conforms to the 2007 International Standards Organisation (ISO) land cover standard (19144-2). The Dataset shows Australian land covers clustered into 34 ISO classes. These reflect the structural character of vegetation, ranging from cultivated and managed land covers (crops and pastures) to natural land covers such as closed forest and open grasslands. [Ref1]

Australia's Dynamic Land Cover: http://www.ga.gov.au/earth-observation/landcover.html

National Dynamic Land Cover layer: Classification: Vegetation; Type: Contextual (polygonal); Metadata contact organisation: Geoscience Australia (GA). https://spatial.ala.org.au/ws/layers/view/more/dlcmv1

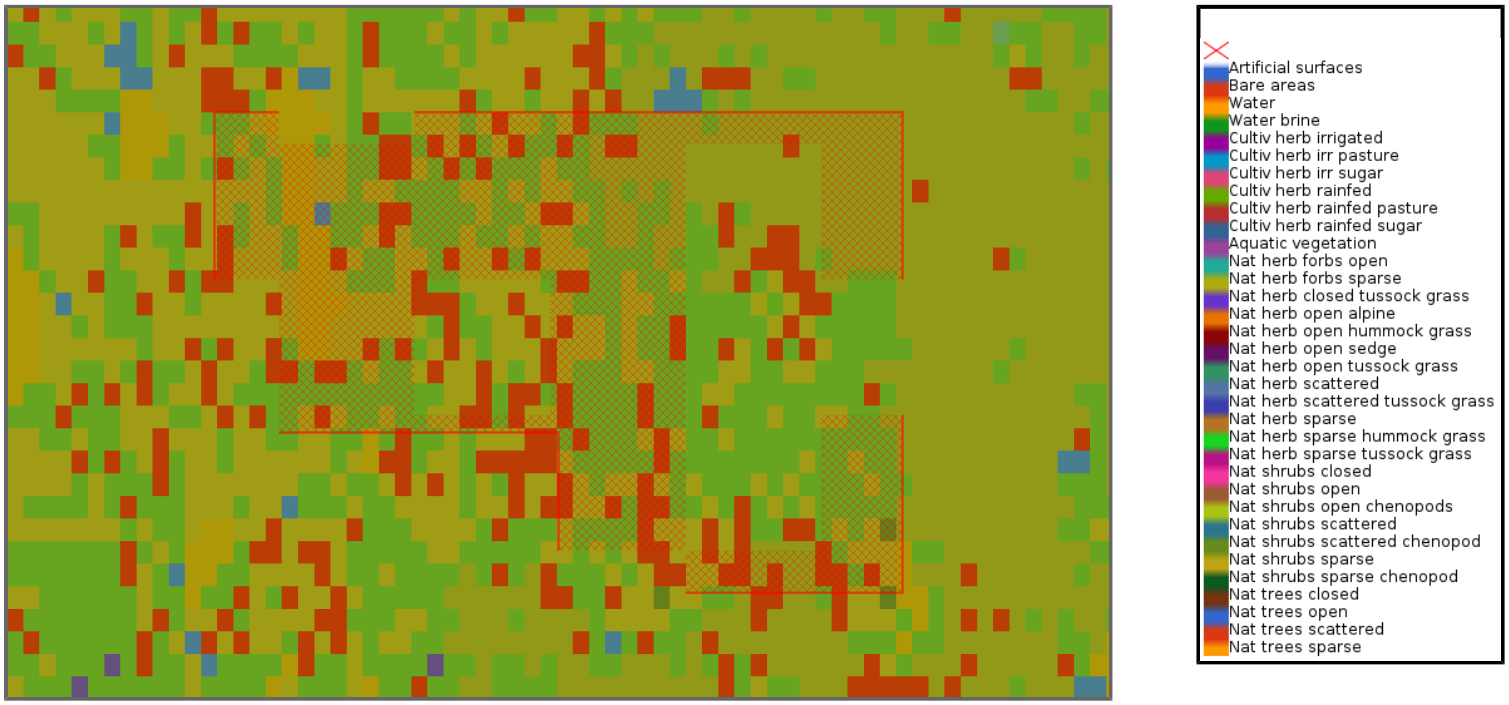


Figure 2 : Map of National Dynamic Land Cover

Table 1: National Dynamic Land Cover

Class/Region	Area (sq km)	% of total area
Primarily Vegetated Natural & Semi-Natural Terrestrial Vegetation Woody Shrubs Sparse Chenopods	0.07	0.14
Primarily Vegetated Natural & Semi-Natural Terrestrial Vegetation Herbaceous Graminoids Sparse Hummock Grasses	19.83	39.46
Primarily Non-Vegetated Waterbodies Water Brine	1.71	3.40
Primarily Vegetated Natural & Semi-Natural Terrestrial Vegetation Woody Shrubs Sparse	20.79	41.36
Primarily Vegetated Natural & Semi-Natural Terrestrial Vegetation Herbaceous Graminoids Open Hummock Grasses	7.79	15.51
Primarily Vegetated Natural & Semi-Natural Terrestrial Vegetation Herbaceous Graminoids Scattered	0.07	0.14

Global Context Ecoregions

Terrestrial Ecoregions of the World (TEOW)

Terrestrial Ecoregions of the World (TEOW) is a biogeographic regionalisation of the Earth's terrestrial biodiversity. Our biogeographic units are ecoregions, which are defined as relatively large units of land or water containing a distinct assemblage of natural communities sharing a large majority of species, dynamics, and environmental conditions. There are 867 terrestrial ecoregions, classified into 14 different biomes such as forests, grasslands, or deserts. Ecoregions represent the original distribution of distinct assemblages of species and communities. [Ref2]

TEOW: https://worldwildlife.org/biome-categories/terrestrial-ecoregions

Terrestrial Ecoregional Boundaries layer: Classification: Biodiversity - Region; Type: Contextual (polygonal); Metadata contact organisation: The Nature Conservancy (TNC). https://spatial.ala.org.au/ws/layers/view/more/1053

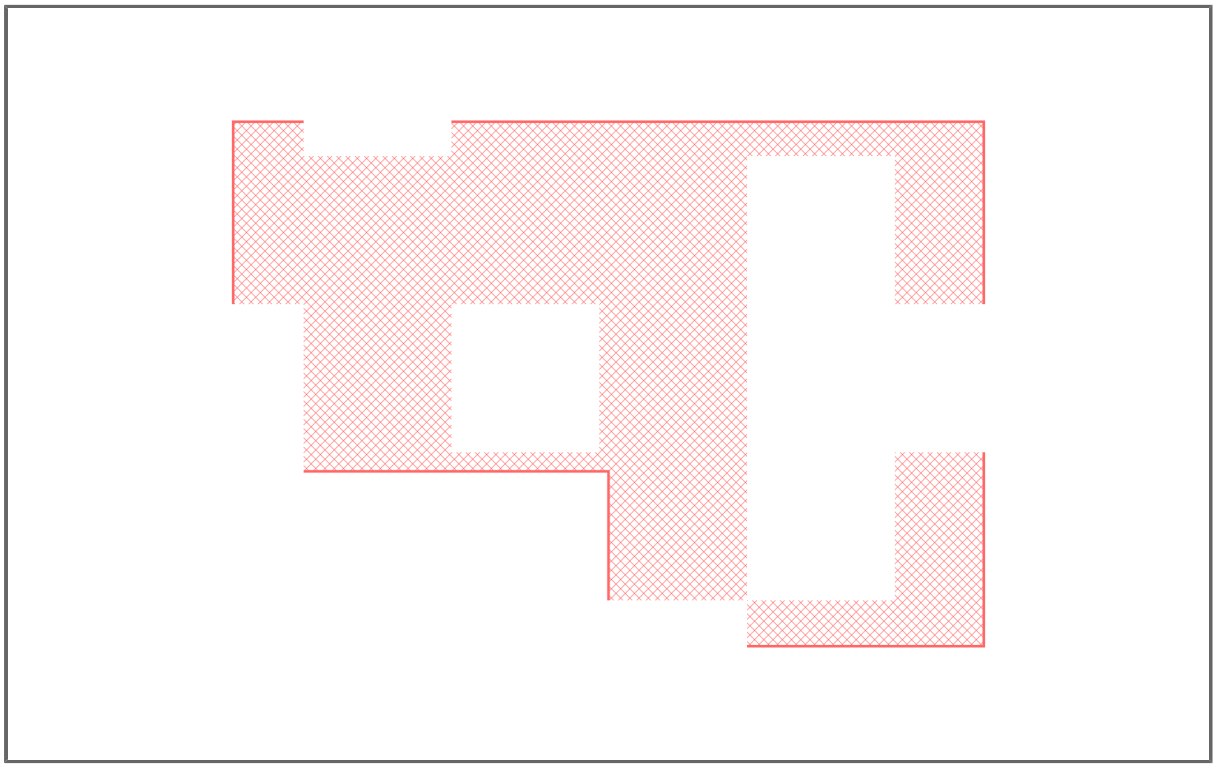


Figure 3 : Map of Global Context Ecoregions

Freshwater Ecoregions of the World (FEOW)

Freshwater Ecoregions of the World (FEOW) is a collaborative project providing the first global biogeographic regionalization of the Earth's freshwater biodiversity, and synthesizing biodiversity and threat data for the resulting ecoregions. We define a freshwater ecoregion as a large area encompassing one or more freshwater systems that contains a distinct assemblage of natural freshwater communities and species. The freshwater species, dynamics, and environmental conditions within a given ecoregion are more similar to each other than to those of surrounding ecoregions and together form a conservation unit. [Ref5]

FEOW: https://worldwildlife.org/biome-categories/freshwater-ecoregions

Freshwater Ecoregions of the World layer: Classification: Biodiversity - Region; Type: Contextual (polygonal); Metadata contact organisation: TNC. https://spatial.ala.org.au/ws/layers/view/more/1052

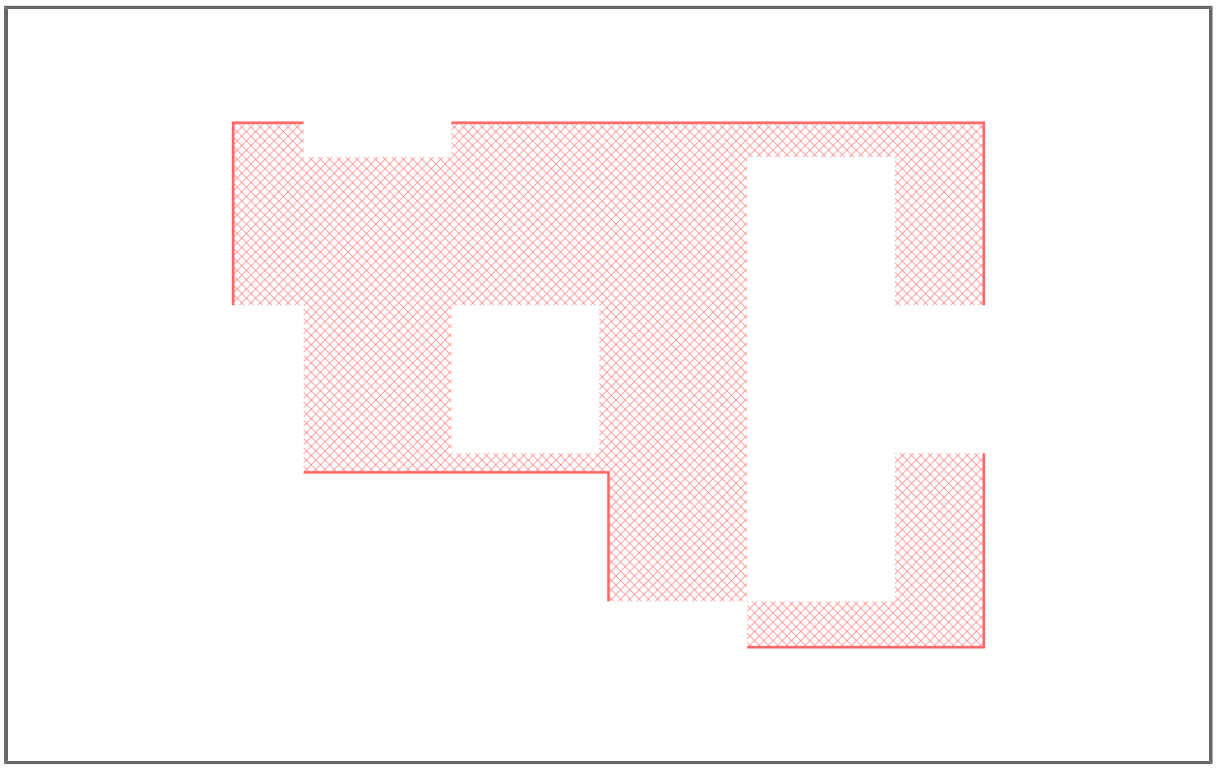


Figure 4 : Map of Freshwater Ecoregions of the World (FEOW)

Occurrences

Occurrences: **1**

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of occurrences (spatially valid only): **1**

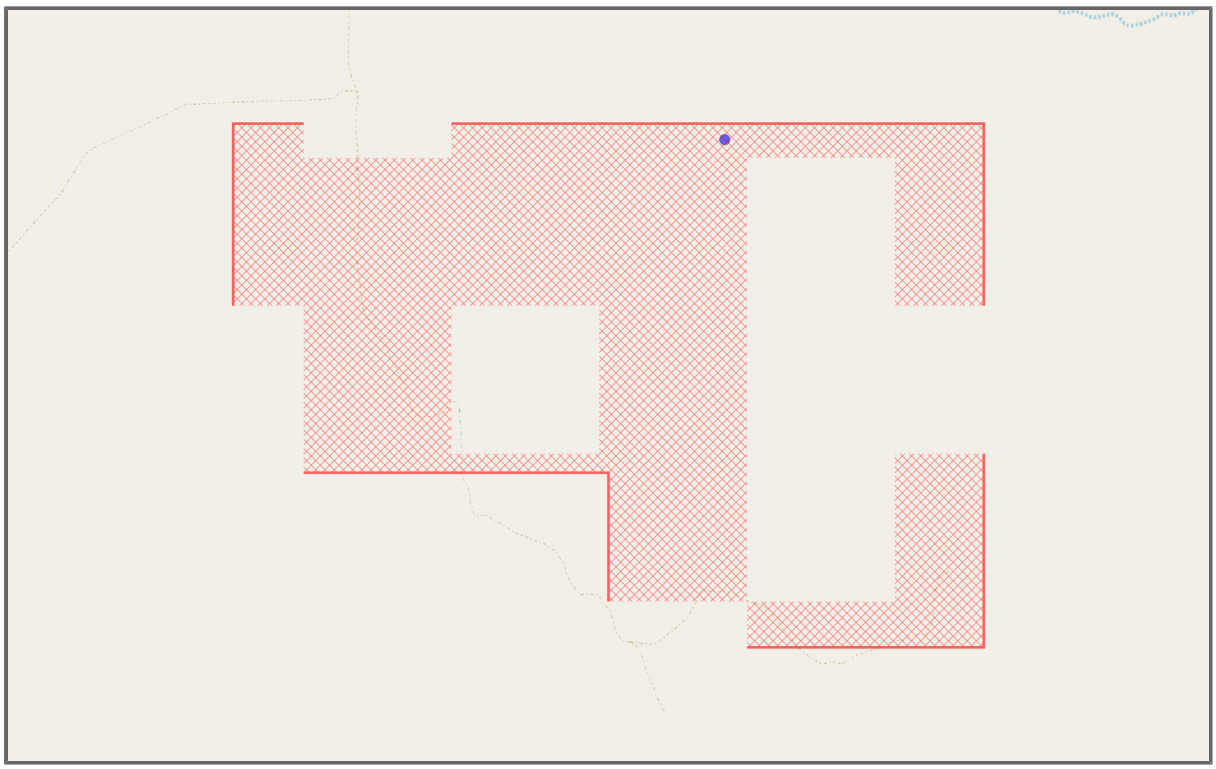


Figure 5 : Map of Occurrences

Species

Species: **1**

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of species (spatially valid only): **1**

Table 4: Species

Family	*Scientific Name*	Common Name	No. Occurrences
Scrophulariaceae	Eremophila macgillivrayi	Dog-bush	1

Endemic Species

Endemic Species: **0**

Spatially valid records are considered those that do not have any type of flag questioning their location, for example a terrestrial species being recorded in the ocean. [Ref6]

Number of endemic species (spatially valid only): **0**

Table 5: Endemic Species

Family	*Scientific Name*	Common Name	No. Occurrences

All threatened species

Number of threatened species: **0**

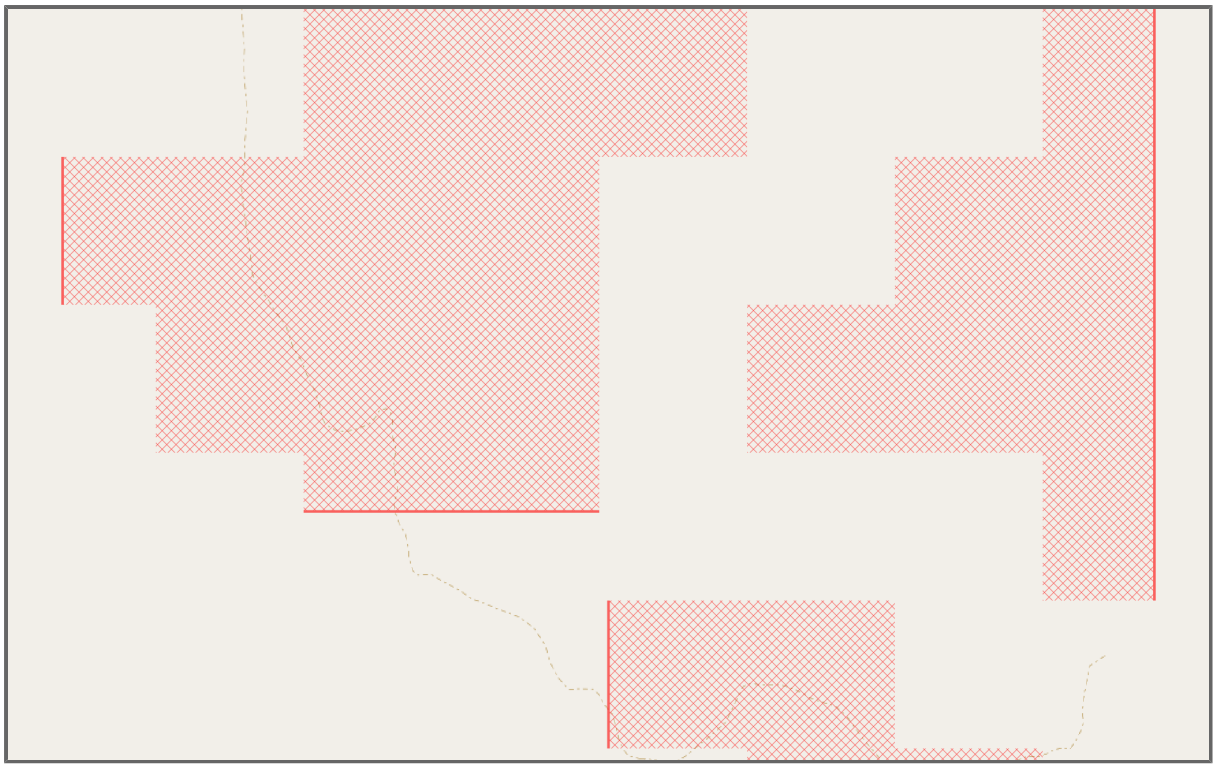


Figure 6 : Map of All threatened species

Table 6: All threatened species (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

All invasive species

Number of invasive species: **0**

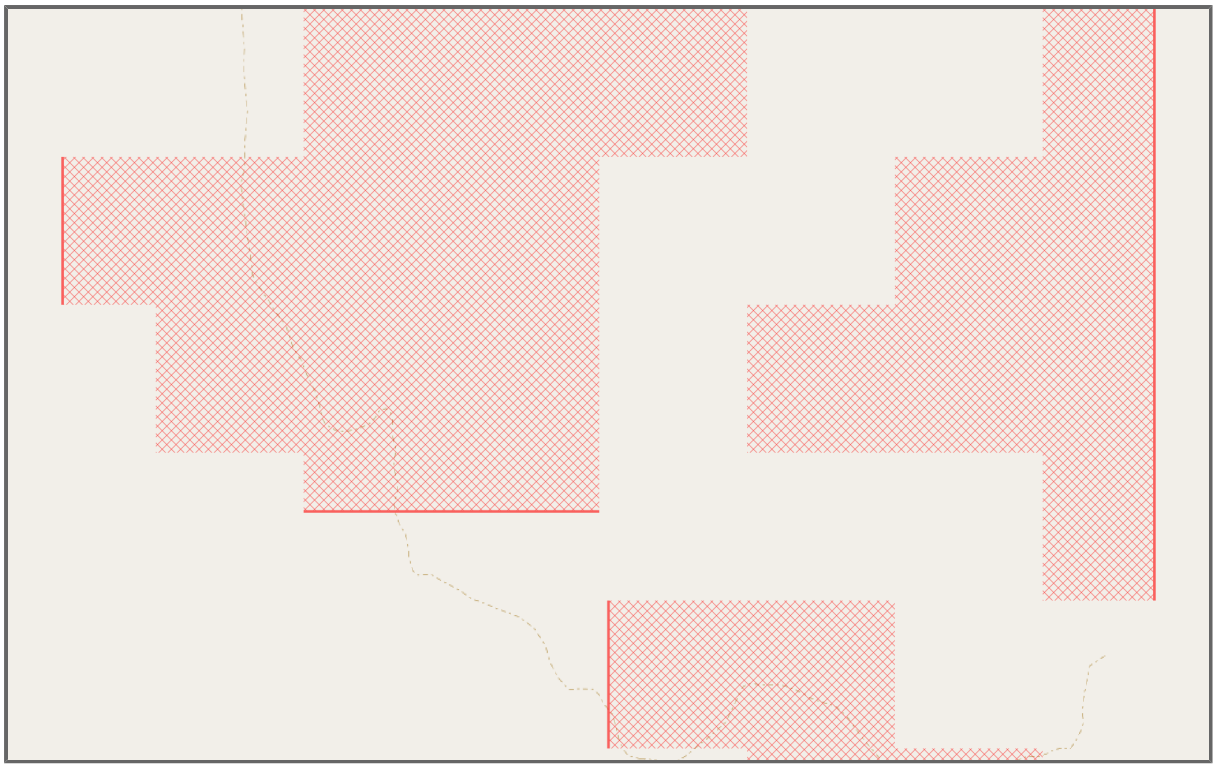


Figure 7 : Map of All invasive species

Table 7: All invasive species (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Iconic species

Number of iconic species: **0**

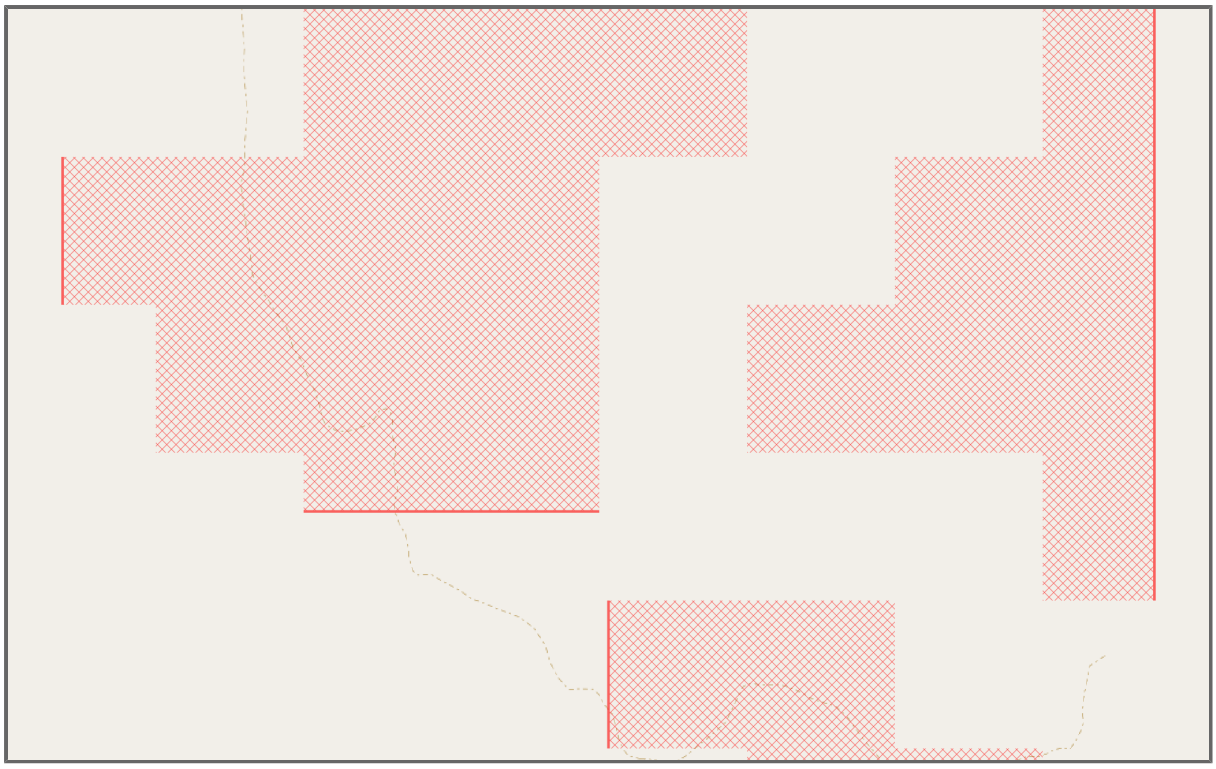


Figure 8 : Map of Iconic species

Table 8: Iconic species (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Migratory species

Number of migratory species: **0**

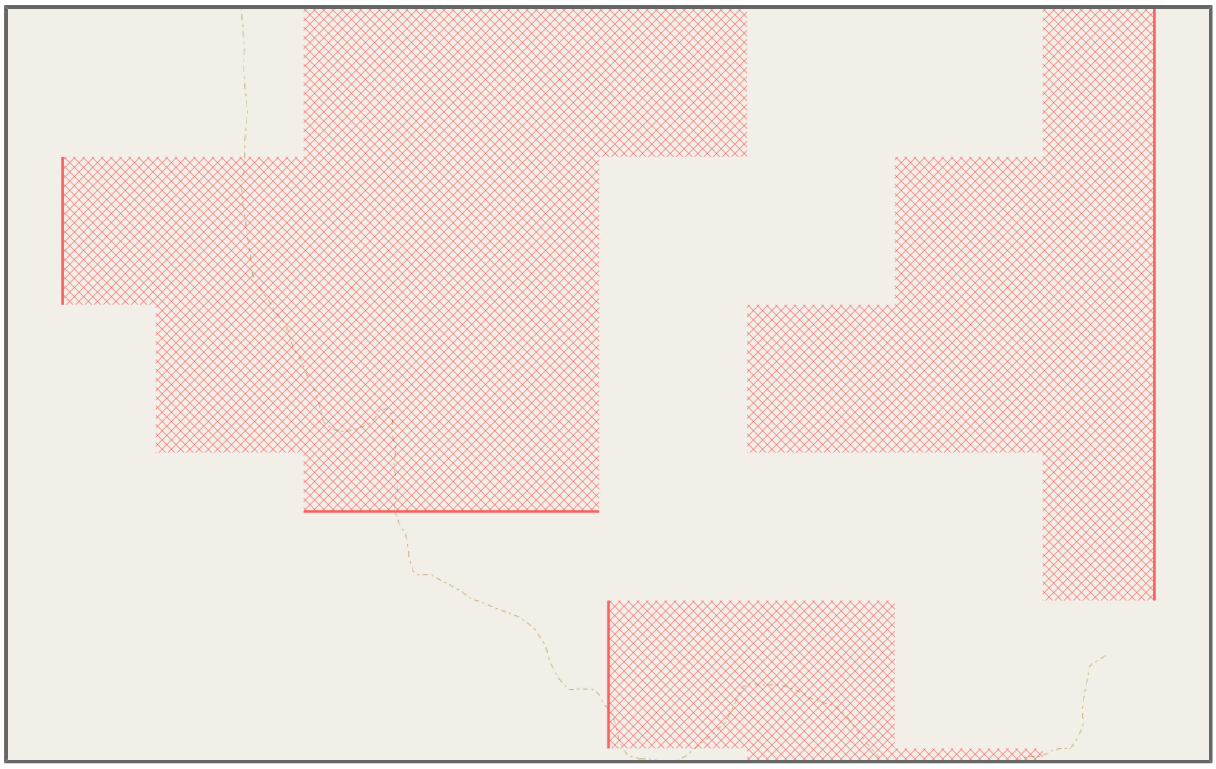


Figure 9 : Map of Migratory species

Table 9: Migratory species (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Amphibians

Number of Amphibians **0**

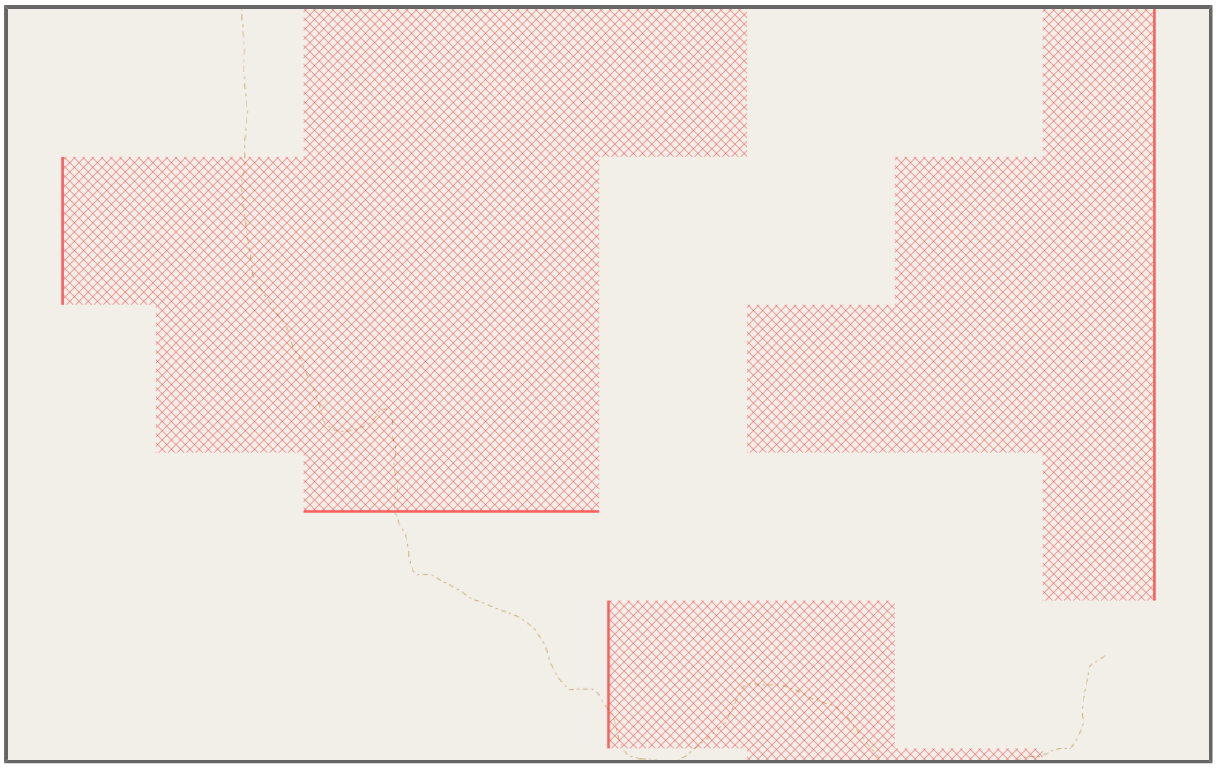


Figure 10 : Map of Lifeform - Amphibians

Table 10: Lifeform - Amphibians (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Angiosperms

Number of Angiosperms **0**

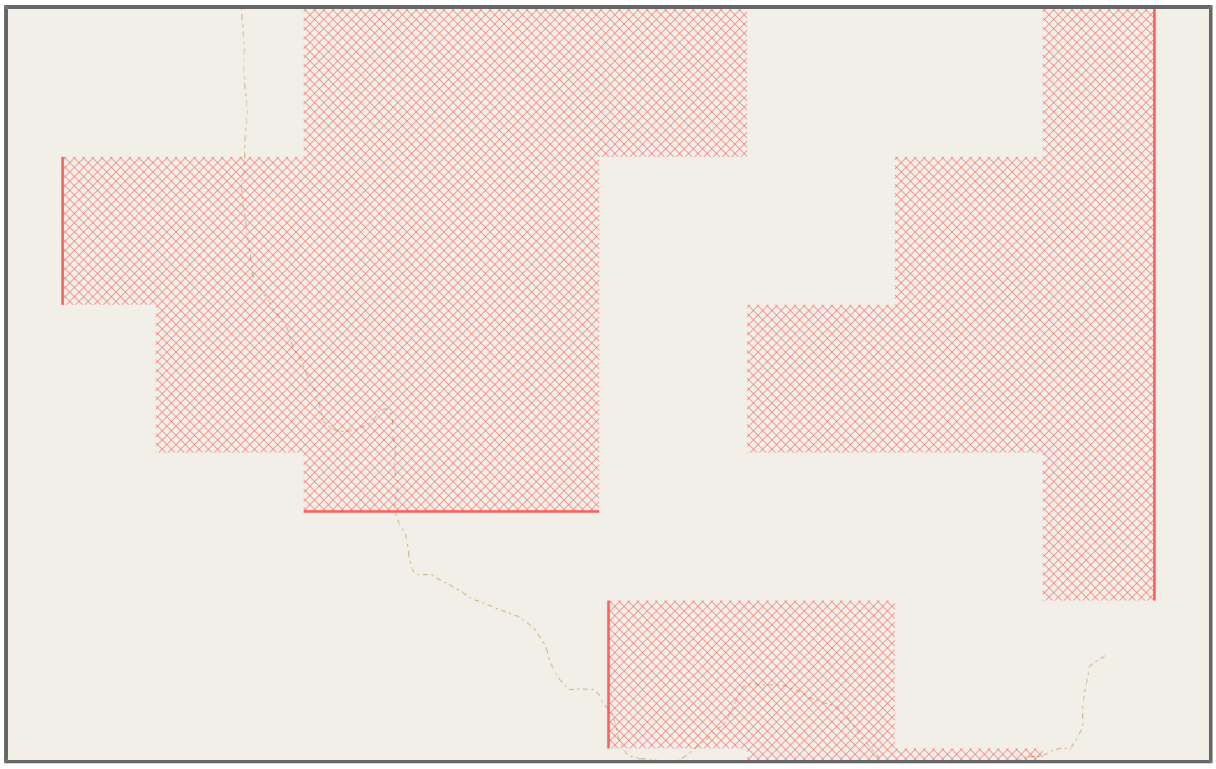


Figure 11 : Map of Lifeform - Angiosperms

Table 11: Lifeform - Angiosperms (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Animals

Number of Animals **0**

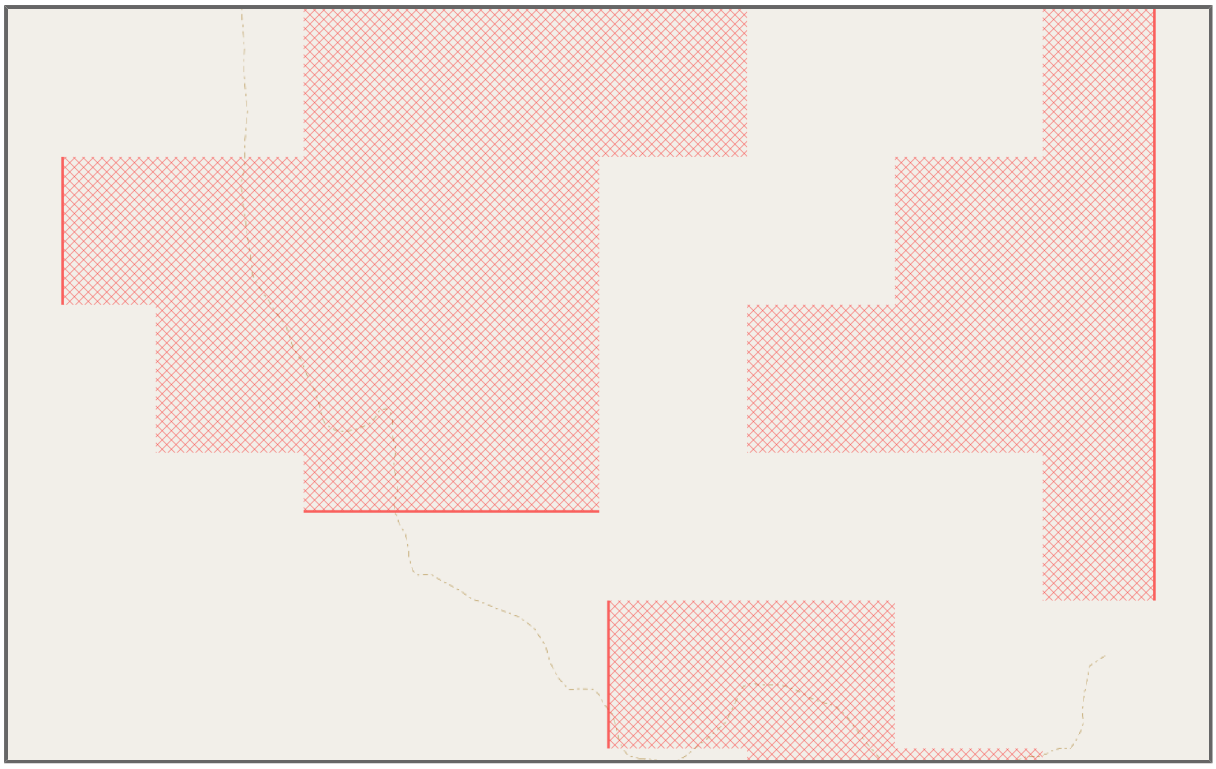


Figure 12 : Map of Lifeform - Animals

Table 12: Lifeform - Animals (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Birds

Number of Birds **0**

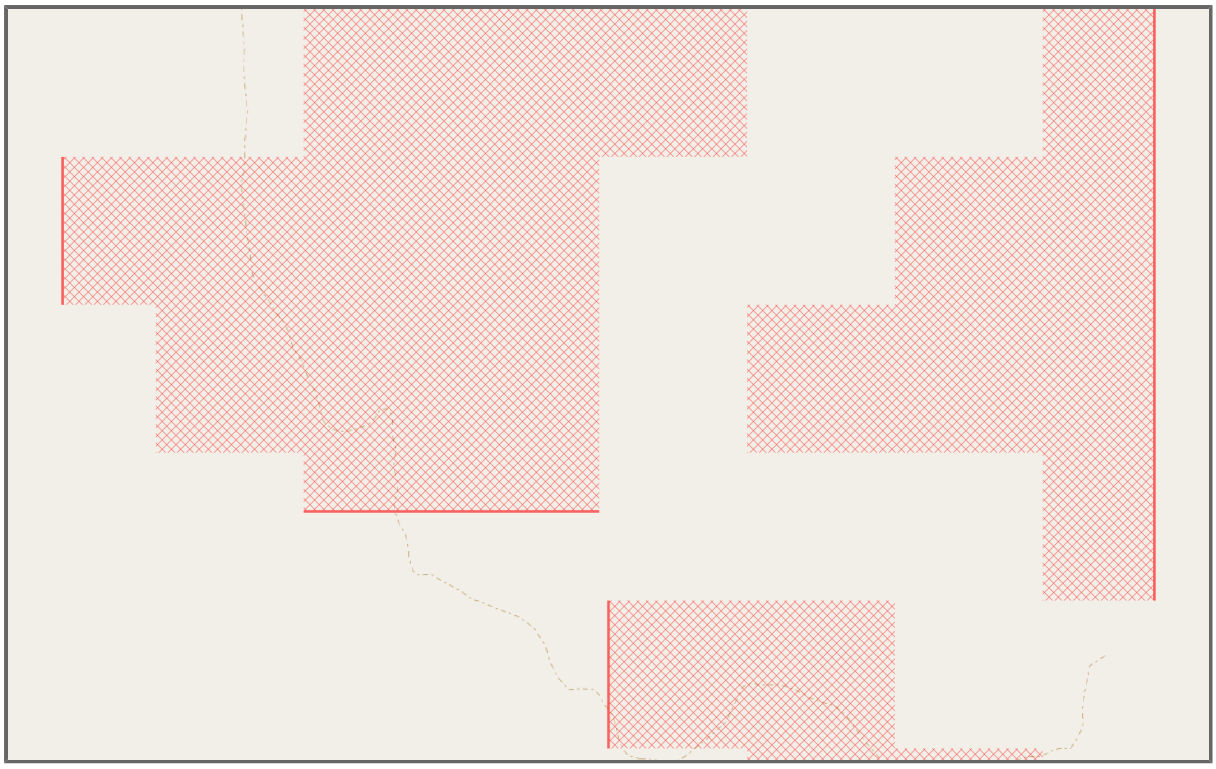


Figure 13 : Map of Lifeform - Birds

Table 13: Lifeform - Birds (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Dicots

Number of Dicots **1**

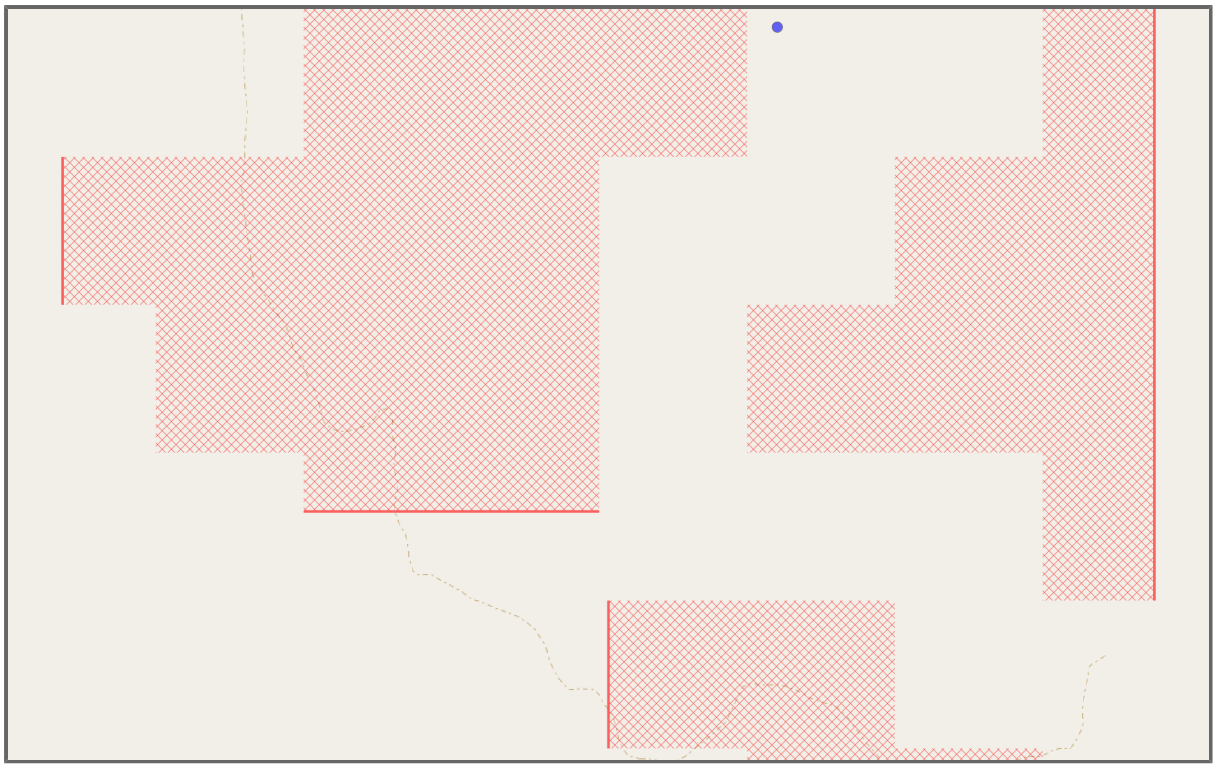


Figure 14 : Map of Lifeform - Dicots

Table 14: Lifeform - Dicots (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences
Scrophulariaceae	Eremophila macgillivrayi	Dog-bush	1

Lifeform - FernsAndAllies

Number of FernsAndAllies **0**

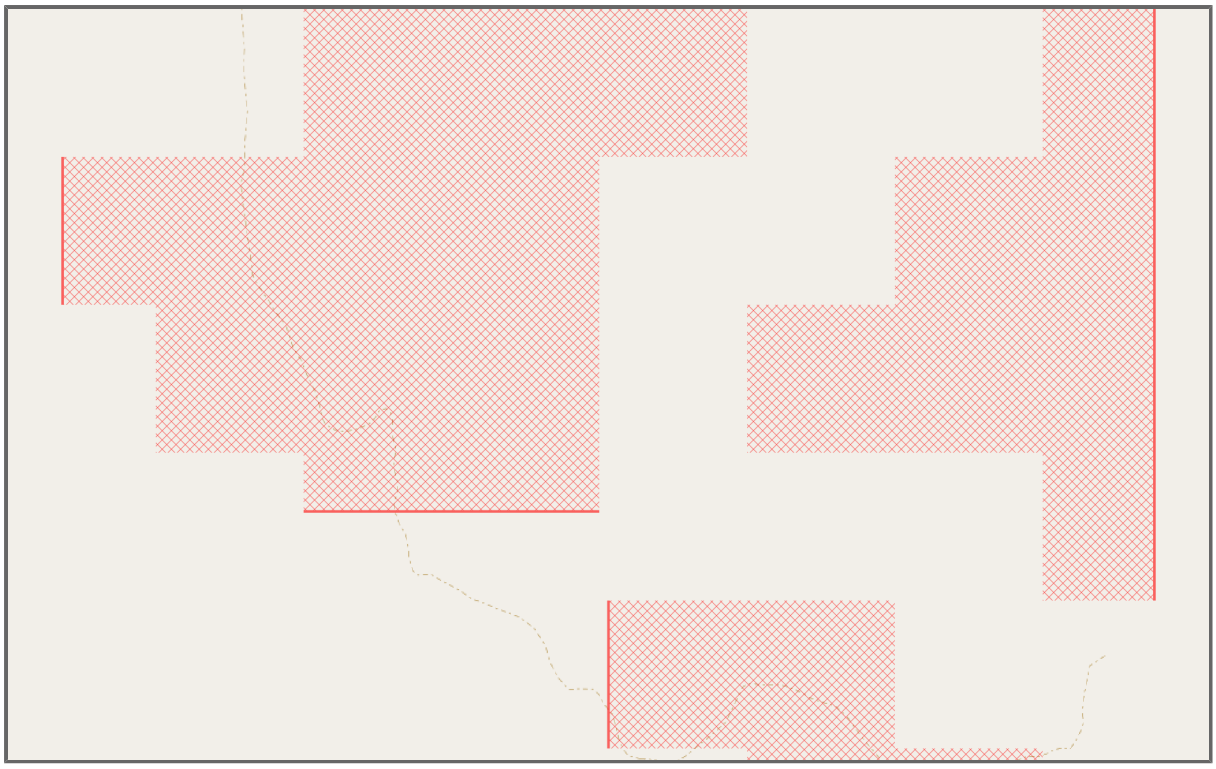


Figure 15 : Map of Lifeform - FernsAndAllies

Table 15: Lifeform - FernsAndAllies (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Fishes

Number of Fishes **0**

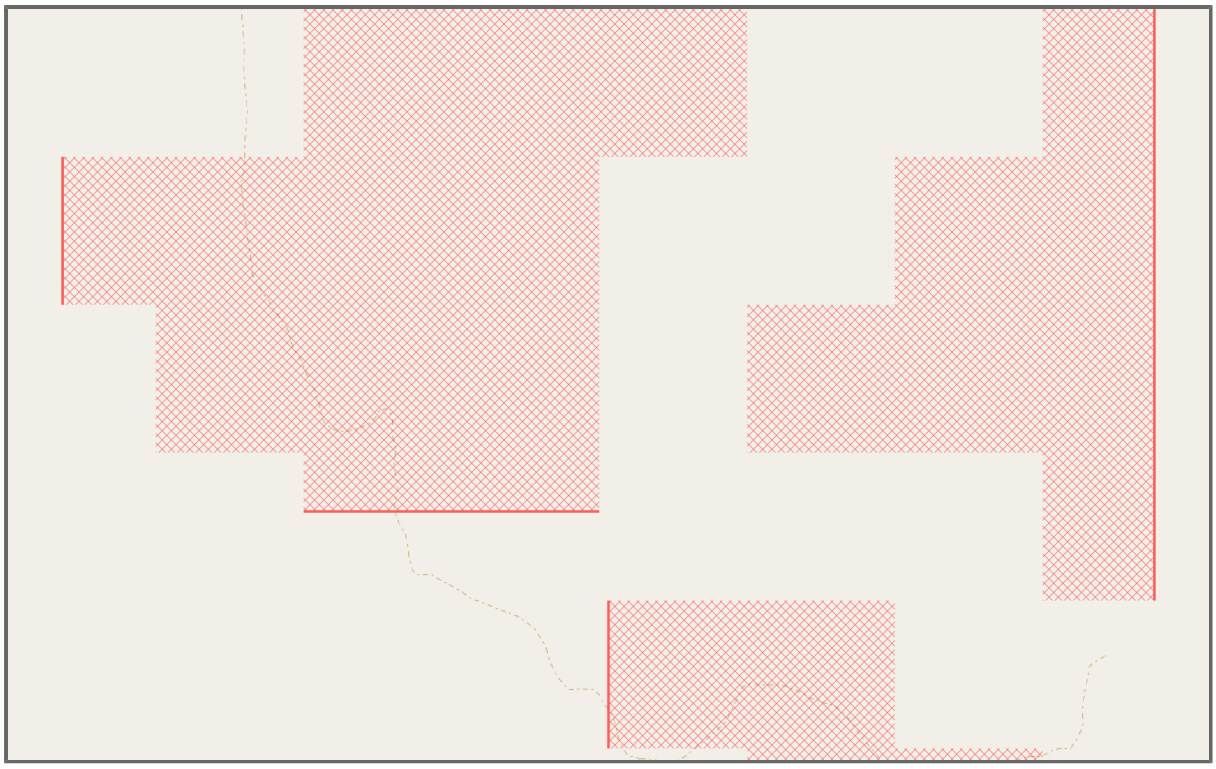


Figure 16 : Map of Lifeform - Fishes

Table 16: Lifeform - Fishes (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Gymnosperms

Number of Gymnosperms **0**

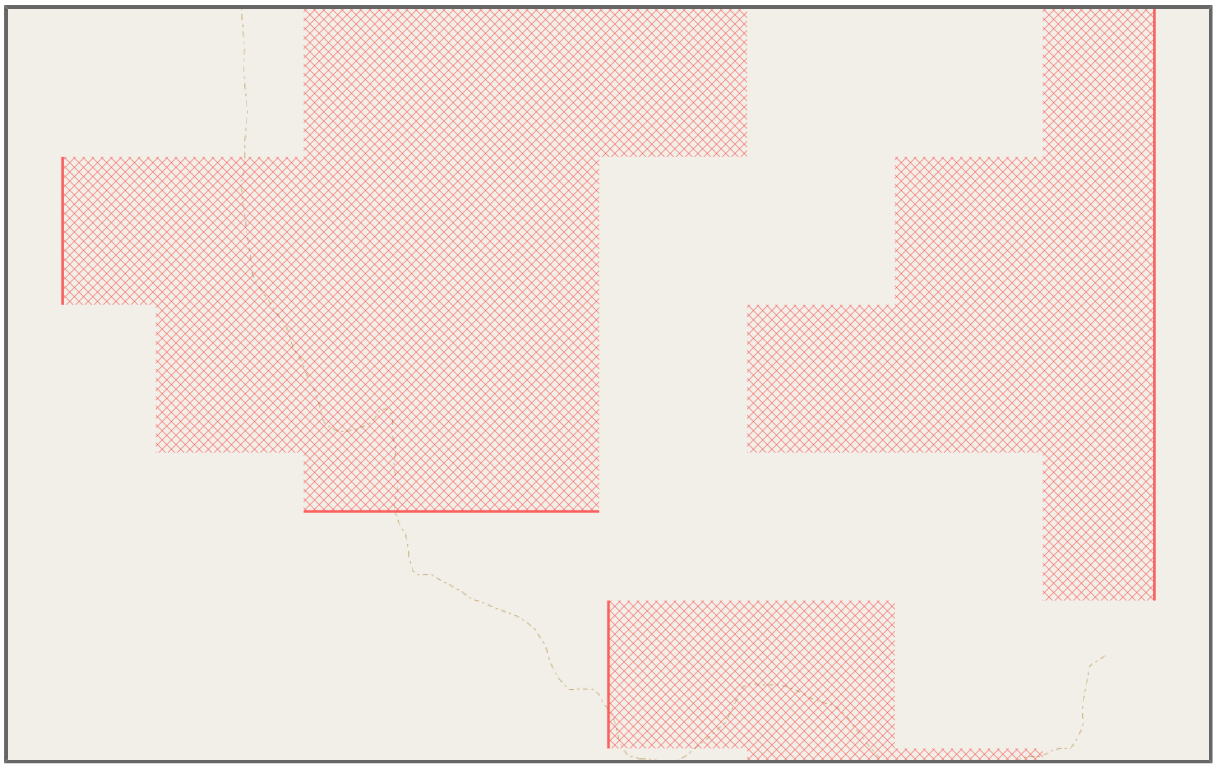


Figure 17 : Map of Lifeform - Gymnosperms

Table 17: Lifeform - Gymnosperms (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Mammals

Number of Mammals **0**

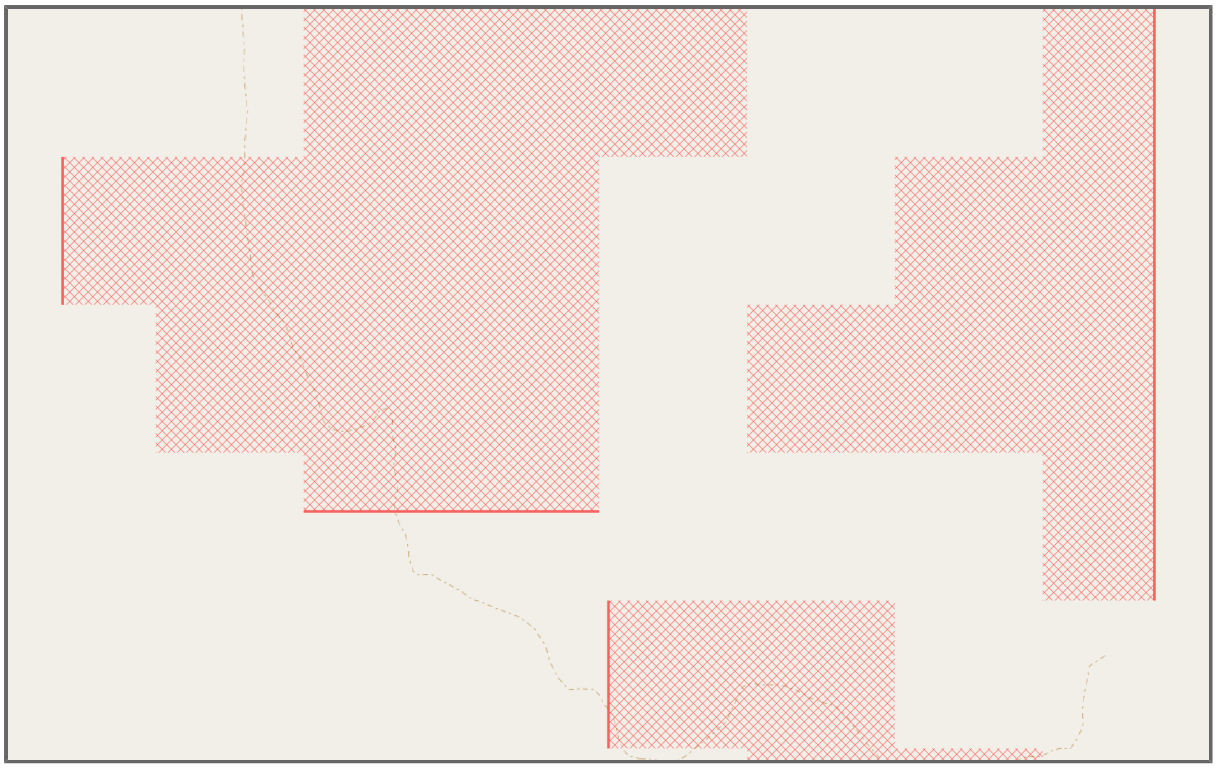


Figure 18 : Map of Lifeform - Mammals

Table 18: Lifeform - Mammals (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Monocots

Number of Monocots **0**

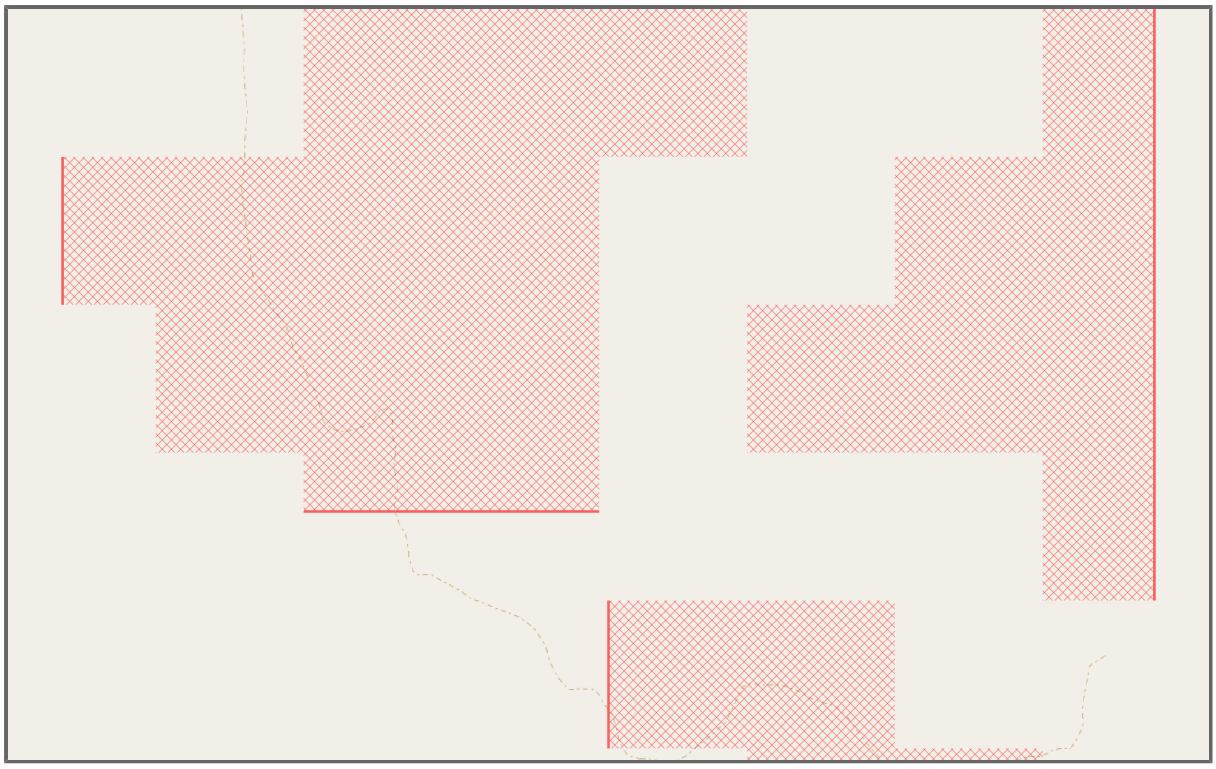


Figure 19 : Map of Lifeform - Monocots

Table 19: Lifeform - Monocots (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Lifeform - Plants

Number of Plants **1**

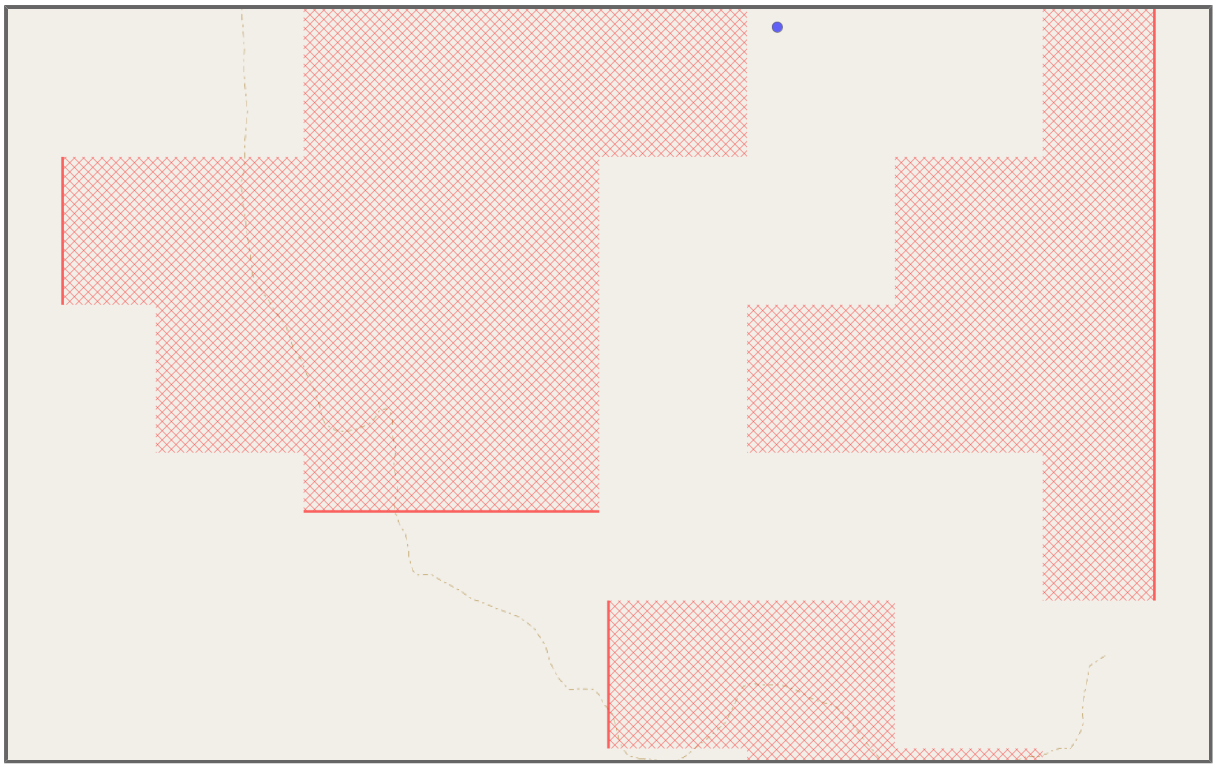


Figure 20 : Map of Lifeform - Plants

Table 20: Lifeform - Plants (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences
Scrophulariaceae	Eremophila macgillivrayi	Dog-bush	1

Lifeform - Reptiles

Number of Reptiles **0**

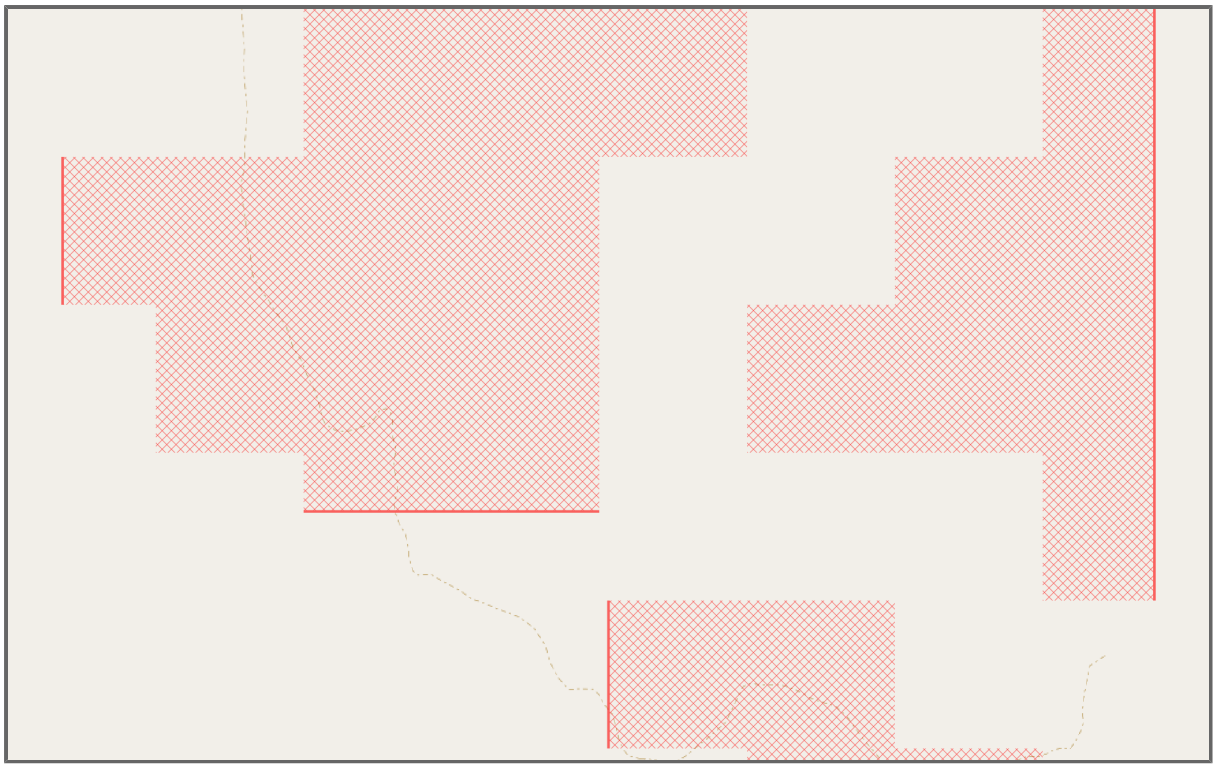


Figure 21 : Map of Lifeform - Reptiles

Table 21: Lifeform - Reptiles (Link to full list)

Family	*Scientific Name*	Common Name	No. Occurrences

Expert Distributions

Number of expert distributions: **179**

Table 22: Expert Distributions

Family	*Scientific Name*	Common Name	Min Depth	Max Depth	Area Name	Area sq km
MELIPHAGIDAE	Certhionyx niger	Black Honeyeater			Expert distribution Certhionyx niger	5462673.98
CORVIDAE	Corvus bennetti	Little Crow			Expert distribution Corvus bennetti	5705338.98
CLIMACTERIDAE	Climacteris (Climacteris) picumnus	Brown Treecreeper			Expert distribution Climacteris picumnus	2277553.59
CAMPEPHAGIDAE	Coracina (Pteropodocys) maxima	Ground Cuckoo-shrike			Expert distribution Coracina maxima	6417009.57
PHASIANIDAE	Coturnix (Coturnix) pectoralis	Stubble Quail			Expert distribution Coturnix pectoralis	6348551.61
ARTAMIDAE	Cracticus torquatus	Grey Butcherbird			Expert distribution Cracticus torquatus	6428212.34
THRESKIORNITHIDAE	Platalea (Platibis) flavipes	Yellow-billed Spoonbill			Expert distribution Platalea flavipes	4717240.77
CAMPEPHAGIDAE	Coracina (Coracina) novaehollandiae	Black-faced Cuckoo-shrike			Expert distribution Coracina novaehollandiae	8275248.68
CORVIDAE	Corvus coronoides	Australian Raven			Expert distribution Corvus coronoides	4821723.12
ARTAMIDAE	Cracticus nigrogularis	Pied Butcherbird			Expert distribution Cracticus nigrogularis	6375272.64
CUCULIDAE	Cuculus pallidus	Palid Cuckoo			Expert distribution Cuculus pallidus	7788647.90
NECTARINIIDAE	Dicaeum (Dicaeum) hirundinaceum	Mistletoebird			Expert distribution Dicaeum hirundinaceum	6504923.75
PELECANIDAE	Pelecanus conspicillatus	Australian Pelican			Expert distribution Pelecanus conspicillatus	6627953.98
ARTAMIDAE	Artamus (Campbellornis) superciliosus	White-browed Woodswallow			Expert distribution Artamus superciliosus	7195470.64
LARIDAE	Chlidonias (Pelodes) hybrida	Whiskered Tern			Expert distribution Chlidonias hybrida	31766691.37
RALLIDAE	Fulica atra	Eurasian Coot			Expert distribution Fulica atra	40213555.69
SCOLOPACIDAE	Tringa (Rhyacophilus) stagnatilis	Marsh Sandpiper			Expert distribution Tringa stagnatilis	32002835.93
	Mesophoyx intermedia				Expert distribution Mesophoyx intermedia	28849005.88
	Phalacrocorax melanoleucos				Expert distribution Phalacrocorax melanoleucos	5881748.39
ARDEIDAE	Ardea (Ardea) pacifica	White-necked Heron			Expert distribution Ardea pacifica	7532467.66
CACATUIDAE	Cacatua (Licmetis) sanguinea	Little Corella			Expert distribution Cacatua sanguinea	5339700.99
ARDEIDAE	Nycticorax caledonicus	Nankeen Night-heron			Expert distribution Nycticorax caledonicus	7827831.87
Apodidae	Apus pacificus	Fork-tailed Swift			Expert distribution (likely) Apus pacificus	6850159.42
HIRUNDINIDAE	Cheramoeca leucosterna	White-backed Swallow			Expert distribution Cheramoeca leucosterna	5235941.71
RECURVIROSTRIDAE	Cladorhynchus leucocephalus	Banded Stilt			Expert distribution Cladorhynchus leucocephalus	1295039.34
ANATIDAE	Anas (Nettion) gracilis	Grey Teal			Expert distribution Anas gracilis	8854807.76
PHASIANIDAE	Coturnix (Synoicus) ypsilophora	Brown Quail			Expert distribution Coturnix ypsilophora	5867626.03
ALCEDINIDAE	Todiramphus (Todiramphus) sanctus	Sacred Kingfisher			Expert distribution Todiramphus sanctus	8251815.38
ANATIDAE	Anas (Anas) superciliosa	Pacific Black Duck			Expert distribution Anas superciliosa	8885221.53
RALLIDAE	Porzana (Porzana) tabuensis	Spotless Crake			Expert distribution Porzana tabuensis	2328613.11
MELIPHAGIDAE	Epthianura (Aurepthianura) crocea	Yellow Chat			Expert distribution Epthianura crocea	2190499.15
COLUMBIDAE	Phaps (Histriophaps) histrionica	Flock Bronzewing			Expert distribution Phaps histrionica	3752096.19
POMATOSTOMIDAE	Pomatostomus (Morganornis) superciliosus	White-browed Babbler			Expert distribution Pomatostomus superciliosus	4638332.32
ANATIDAE	Stictonetta naevosa	Freckled Duck			Expert distribution Stictonetta naevosa	2088858.97
ANATIDAE	Anas (Spatula) rhynchotis	Australasian Shoveler			Expert distribution Anas rhynchotis	4469444.80
MEGALURIDAE	Cincloramphus (Cincloramphus) cruralis	Brown Songlark			Expert distribution Cincloramphus cruralis	6413759.53
	Cincloramphus (Maclennania)				Expert distribution Cincloramphus	

MEGALURIDAE	mathewsi	Rufous Songlark	mathewsi	6703622.88
MALURIDAE	Malurus (Leggeornis) lamberti	Variegated Fairy-wren	Expert distribution Malurus lamberti	5949897.59
Rostratulidae	Rostratula benghalensis (sensu lato)	Painted Snipe	Expert distribution (maybe) Rostratula benghalensis (sensu lato)	4290580.99
PSITTACIDAE	Melopsittacus undulatus	Budgerigar	Expert distribution Melopsittacus undulatus	5915295.57
Thylacomyidae	Macrotis lagotis	Greater Bilby	Expert distribution (maybe) Macrotis lagotis	634419.35
CLIMACTERIDAE	Climacteris (Climacterobates) affinis	White-browed Treecreeper	Expert distribution Climacteris affinis	2639678.68
ANATIDAE	Biziura lobata	Musk Duck	Expert distribution Biziura lobata	2745184.89
ANATIDAE	Oxyura australis	Blue-billed Duck	Expert distribution Oxyura australis	2220865.40
PSITTACIDAE	Psephotus (Psephotus) haematonotus	Red-rumped Parrot	Expert distribution Psephotus haematonotus	1494396.43
ARDEIDAE	Ardea alba	Great White Egret	Expert distribution Casmerodius albus	75783095.10
SCOLOPACIDAE	Calidris (Erolia) acuminata	Sharp-tailed Sandpiper	Expert distribution Calidris acuminata	12325741.41
ARDEIDAE	Egretta garzetta	Little Egret	Expert distribution Egretta garzetta	40036024.12
LARIDAE	Gelochelidon nilotica	Gull-billed Tern	Expert distribution Sterna nilotica	17427456.75
LARIDAE	Hydroprogne caspia	Caspian Tern	Expert distribution Sterna caspia	13971242.26
PHALACROCORACIDAE	Phalacrocorax (Phalacrocorax) carbo	Great Cormorant	Expert distribution Phalacrocorax carbo	29810439.37
THRESKIORNITHIDAE	Plegadis falcinellus	Glossy Ibis	Expert distribution Plegadis falcinellus	28613832.12
RALLIDAE	Porphyrio (Porphyrio) porphyrio	Purple Swamphen	Expert distribution Porphyrio porphyrio	18612466.94
SCOLOPACIDAE	Steganopus tricolor	Wilson's Phalarope	Expert distribution Steganopus tricolor	43981867.07
TYTONIDAE	Tyto alba	Barn Owl	Expert distribution Tyto alba	63421904.27
ACCIPITRIDAE	Circus assimilis	Spotted Harrier	Expert distribution Circus assimilis	7850851.09
PACHYCEPHALIDAE	Colluricincla (Colluricincla) harmonica	Grey Shrike-thrush	Expert distribution Colluricincla harmonica	6948277.29
THRESKIORNITHIDAE	Platalea (Platalea) regia	Royal Spoonbill	Expert distribution Platalea regia	6253990.16
PODARGIDAE	Podargus strigoides	Tawny Frogmouth	Expert distribution Podargus strigoides	7706572.49
ACCIPITRIDAE	Elanus scriptus	Letter-winged Kite	Expert distribution Elanus scriptus	4311293.02
CACATUIDAE	Eolophus roseicapillus roseicapillus	Galah	Expert distribution Cacatua roseicapilla	7705836.89
MELIPHAGIDAE	Epthianura (Aurepthianura) aurifrons	Orange Chat	Expert distribution Epthianura aurifrons	5633073.89
MELIPHAGIDAE	Epthianura (Parepthianura) tricolor	Crimson Chat	Expert distribution Epthianura tricolor	5508389.08
FALCONIDAE	Falco (Hierofalco) subniger	Black Falcon	Expert distribution Falco subniger	5935857.83
COLUMBIDAE	Phaps (Phaps) chalcoptera	Common Bronzewing	Expert distribution Phaps chalcoptera	5913133.12
Ardeidae	Ardea ibis	Cattle Egret	Expert distribution (maybe) Ardea ibis	6474803.97
ANATIDAE	Anas (Nettion) castanea	Chestnut Teal	Expert distribution Anas castanea	3142293.12
ANATIDAE	Dendrocygna (Leptotarsis) eytoni	Plumed Whistling-duck	Expert distribution Dendrocygna eytoni	4799859.70
MELIPHAGIDAE	Phylidonyris albifrons	White-fronted Honeyeater	Expert distribution Phylidonyris albifrons	4042343.39
CHARADRIIDAE	Charadrius (Eupoda) australis	Inland Dotterel	Expert distribution Charadrius australis	2566074.29
PSITTACIDAE	Psephotus (Psephotus) varius	Mulga Parrot	Expert distribution Psephotus varius	3341400.38
ACANTHIZIDAE	Acanthiza (Geobasileus) uropygialis	Chestnut-rumped Thornbill	Expert distribution Acanthiza uropygialis	4806634.16
MELIPHAGIDAE	Certhionyx (Certhionyx) variegatus	Pied Honeyeater	Expert distribution Certhionyx variegatus	5142828.18
CHARADRIIDAE	Charadrius (Charadrius) ruficapillus	Red-capped Plover	Expert distribution Charadrius ruficapillus	4830132.20
STRIGIDAE	Ninox (Hieracoglaux) connivens	Barking Owl	Expert distribution Ninox connivens	2486340.95
PSOPHODIDAE	Cinclosoma (Samuela) cinnamomeum	Cinnamon Quail-thrush	Expert distribution Cinclosoma cinnamomeum	833783.67
CUCULIDAE	Chrysococcyx osculans	Black-eared Cuckoo	Expert distribution Chrysococcyx osculans	7071593.02
			Expert distribution Malacorhynchus	

ANATIDAE	Malacorhynchus membranaceus	Pink-eared Duck	membranaceus	7027203.52
ACANTHIZIDAE	Acanthiza (Acanthiza) apicalis	Inland Thornbill	Expert distribution Acanthiza apicalis	4140081.56
MELIPHAGIDAE	Acanthagenys rufogularis	Spiny-cheeked Honeyeater	Expert distribution Acanthagenys rufogularis	6000053.87
THRESKIORNITHIDAE	Threskiornis spinicollis	Straw-necked Ibis	Expert distribution Threskiornis spinicollis	6591872.02
ACROCEPHALIDAE	Acrocephalus (Acrocephalus) australis	Australian Reed-warbler	Expert distribution Acrocephalus australis	3900510.52
ANHINGIDAE	Anhinga novaehollandiae	Australasian Darter	Expert distribution Anhinga novaehollandiae	7220532.85
PSITTACIDAE	Barnardius zonarius	Australian Ringneck	Expert distribution Barnardius zonarius	5326116.85
ACANTHIZIDAE	Calamanthus (Calamanthus) campestris	Rufous Fieldwren	Expert distribution Calamanthus campestris	1884126.72
CACATUIDAE	Nymphicus hollandicus	Cockatiel	Expert distribution Nymphicus hollandicus	6490031.09
ANATIDAE	Aythya (Nyroca) australis	Hardhead	Expert distribution Aythya australis	8179872.96
ANATIDAE	Tadorna (Casarca) tadornoides	Australian Shelduck	Expert distribution Tadorna tadornoides	3310144.12
APODIDAE	Apus (Apus) pacificus	Fork-tailed Swift	Expert distribution Apus pacificus	25317218.87
ARTAMIDAE	Cracticus tibicen	Australian Magpie	Expert distribution Gymnorhina tibicen	6938575.86
CHARADRIIDAE	Elseyornis melanops	Black-fronted Dotterel	Expert distribution Elseyornis melanops	7384843.66
CAPRIMULGIDAE	Eurostopodus (Eurostopodus) argus	Spotted Nightjar	Expert distribution Eurostopodus argus	7043900.66
PHALACROCORACIDAE	Phalacrocorax (Phalacrocorax) varius	Pied Cormorant	Expert distribution Phalacrocorax varius	4427211.02
GLAREOLIDAE	Stiltia isabella	Australian Pratincole	Expert distribution Stiltia isabella	5241998.56
PODICIPEDIDAE	Tachybaptus novaehollandiae	Australasian Grebe	Expert distribution Tachybaptus novaehollandiae	8158001.38
Meropidae	Merops ornatus	Rainbow Bee-eater	Expert distribution (maybe) Merops ornatus	7784899.62
MELIPHAGIDAE	Lichenostomus (Gavicalis) virescens	Singing Honeyeater	Expert distribution Lichenostomus virescens	7337047.11
MELIPHAGIDAE	Lichenostomus (Ptilotula) penicillatus	White-plumed Honeyeater	Expert distribution Lichenostomus penicillatus	4941855.61
MELIPHAGIDAE	Lichenostomus (Ptilotula) plumulus	Grey-fronted Honeyeater	Expert distribution Lichenostomus plumulus	5391385.45
FALCONIDAE	Falco (Ieracidea) berigora	Brown Falcon	Expert distribution Falco berigora	8309376.46
FALCONIDAE	Falco (Tinnunculus) cenchroides	Nankeen Kestrel	Expert distribution Falco cenchroides	8092779.67
RECURVIROSTRIDAE	Himantopus himantopus leucocephalus	Banded Stilt	Expert distribution Himantopus leucocephalus	8909101.48
CAMPEPHAGIDAE	Lalage tricolor	Australian White-winged Triller	Expert distribution Lalage tricolor	7665912.79
PETROICIDAE	Microeca (Microeca) fascinans	Jacky Winter	Expert distribution Microeca fascinans	5323897.16
ALAUDIDAE	Mirafra (Mirafra) javanica	Horsfield's Bushlark	Expert distribution Mirafra javanica	6688389.55
MELIPHAGIDAE	Manorina (Myzantha) flavigula	Yellow-throated Miner	Expert distribution Manorina flavigula	6844527.43
PETROICIDAE	Melanodryas (Melanodryas) cucullata	Hooded Robin	Expert distribution Melanodryas cucullata	6386250.78
ACCIPITRIDAE	Circus approximans	Swamp Harrier	Expert distribution Circus approximans	5155720.31
MOTACILLIDAE	Anthus (Anthus) novaeseelandiae	Australasian Pipit	Expert distribution Anthus novaeseelandiae	6504213.91
STRIGIDAE	Ninox (Ninox) novaeseelandiae	Southern Boobook	Expert distribution Ninox novaeseelandiae	8080194.91
PETROICIDAE	Petroica (Petroica) goodenovii	Red-capped Robin	Expert distribution Petroica goodenovii	6577525.66
RALLIDAE	Tribonyx ventralis	Black-tailed Native-hen	Expert distribution Gallinula ventralis	4636120.02
CHARADRIIDAE	Vanellus (Lobipluvia) miles	Masked Lapwing	Expert distribution Vanellus miles	5298978.32
CHARADRIIDAE	Vanellus (Lobivanellus) tricolor	Banded Lapwing	Expert distribution Vanellus tricolor	5665395.23
FALCONIDAE	Falco (Falco) longipennis	Australian Hobby	Expert distribution Falco longipennis	8298592.48
RALLIDAE	Gallinula (Gallinula) tenebrosa	Dusky Moorhen	Expert distribution Gallinula tenebrosa	3818628.75
ACCIPITRIDAE	Haliastur sphenurus	Whistling Kite	Expert distribution Haliastur sphenurus	5610016.45
ACCIPITRIDAE	Hieraaetus (Hieraaetus) morphnoides	Little Eagle	Expert distribution Hieraaetus morphnoides	7295760.24

RHIPIDURIDAE	Rhipidura (Sauloprocta) leucophrys	Willie Wagtail	Expert distribution Rhipidura leucophrys	8437314.02
THRESKIORNITHIDAE	Threskiornis molucca	Australian White Ibis	Expert distribution Threskiornis molucca	5606446.57
TYTONIDAE	Tyto (Megastrix) novaehollandiae	Masked Owl	Expert distribution Tyto novaehollandiae	5149773.71
PSITTACIDAE	Pezoporus occidentalis	Night Parrot	Expert distribution Pezoporus occidentalis	2693415.16
PSOPHODIDAE	Psophodes (Sphenostoma) cristatus	Chirruping Wedgebill	Expert distribution Psophodes cristatus	1159210.85
Pedionomidae	Pedionomus torquatus	Plains-wanderer	Expert distribution (maybe) Pedionomus torquatus	1062025.31
MALURIDAE	Malurus (Musciparus) leucopterus	White-winged Fairy-wren	Expert distribution Malurus leucopterus	5635255.97
AEGOTHELIDAE	Aegotheles (Aegotheles) cristatus	Australian Owlet-nightjar	Expert distribution Aegotheles cristatus	7734887.23
ACANTHIZIDAE	Aphelocephala leucopsis	Southern Whiteface	Expert distribution Aphelocephala leucopsis	3771465.98
Frankeniaceae	Frankenia plicata		Expert distribution (maybe) Frankenia plicata	419550.50
Muridae	Notomys fuscus	Dusky Hopping-mouse, Wilkiniti	Expert distribution (maybe) Notomys fuscus	132041.73
ACCIPITRIDAE	Elanus axillaris	Black-shouldered Kite	Expert distribution Elanus axillaris	7680926.93
ACCIPITRIDAE	Hamirostra melanosternon	Black-breasted Buzzard	Expert distribution Hamirostra melanosternon	5322195.01
COLUMBIDAE	Geopelia cuneata	Diamond Dove	Expert distribution Geopelia cuneata	5729437.59
COLUMBIDAE	Geopelia striata placida	Peaceful Dove	Expert distribution Geopelia placida	5604983.01
ESTRILDIDAE	Taeniopygia guttata	Zebra Finch	Expert distribution Taeniopygia guttata	6384312.10
PODICIPEDIDAE	Podiceps cristatus	Great Crested Grebe	Expert distribution Podiceps cristatus	30644062.36
SCOLOPACIDAE	Actitis hypoleucos	Common Sandpiper	Expert distribution Actitis hypoleucos	61323916.68
ACCIPITRIDAE	Milvus migrans	Black Kite	Expert distribution Milvus migrans	64724141.77
ACCIPITRIDAE	Accipiter (Leucospiza) fasciatus	Brown Goshawk	Expert distribution Accipiter fasciatus	8215601.74
ACCIPITRIDAE	Aquila (Uroaetus) audax	Wedge-tailed Eagle	Expert distribution Aquila audax	7711600.67
Ardeidae	Ardea alba	Great Egret, White Egret	Expert distribution (likely) Ardea alba	7998335.02
OTIDIDAE	Ardeotis australis	Australian Bustard	Expert distribution Ardeotis australis	6747155.01
ARTAMIDAE	Artamus (Angroyan) cinereus	Black-faced Woodswallow	Expert distribution Artamus cinereus	7455889.31
ARTAMIDAE	Artamus (Angroyan) minor	Little Woodswallow	Expert distribution Artamus minor	6541794.28
ARTAMIDAE	Artamus (Campbellornis) personatus	Masked Woodswallow	Expert distribution Artamus personatus	7602300.12
ARTAMIDAE	Artamus (Artamus) leucorynchus	White-breasted Woodswallow	Expert distribution Artamus leucorynchus	7668178.65
ANATIDAE	Chenonetta jubata	Australian Wood Duck	Expert distribution Chenonetta jubata	6020637.70
GRUIDAE	Grus (Mathewsia) rubicunda	Brolga	Expert distribution Grus rubicunda	3576758.72
FALCONIDAE	Falco (Hierofalco) hypoleucos	Grey Falcon	Expert distribution Falco hypoleucos	5390602.21
MELIPHAGIDAE	Ashbyia lovensis	Gibberbird	Expert distribution Ashbyia lovensis	858589.65
ACANTHIZIDAE	Aphelocephala nigricincta	Banded Whiteface	Expert distribution Aphelocephala nigricincta	1626240.03
ARTAMIDAE	Artamus (Angroyan) cyanopterus	Dusky Woodswallow	Expert distribution Artamus cyanopterus	3910611.37
MONARCHIDAE	Grallina cyanoleuca	Magpie-lark	Expert distribution Grallina cyanoleuca	6774362.21
CASUARIIDAE	Dromaius novaehollandiae	Emu	Expert distribution Dromaius novaehollandiae	6759542.46
RECURVIROSTRIDAE	Recurvirostra novaehollandiae	Red-necked Avocet	Expert distribution Recurvirostra novaehollandiae	3550921.74
CUCULIDAE	Chrysococcyx basalis	Horsfield's Bronze Cuckoo	Expert distribution Chrysococcyx basalis	7963191.79
CHARADRIIDAE	Erythrogonys cinctus	Red-kneed Dotterel	Expert distribution Erythrogonys cinctus	5131877.29
HIRUNDINIDAE	Hirundo ariel	Fairy Martin	Expert distribution Hirundo ariel	5393670.79

ACCIPITRIDAE	Lophoictinia isura	Square-tailed Kite	Expert distribution Lophoictinia isura	5787193.90
MEGALURIDAE	Megalurus gramineus	Little Grassbird	Expert distribution Megalurus gramineus	3287342.46
HIRUNDINIDAE	Hirundo (Hirundo) neoxena	Welcome Swallow	Expert distribution Hirundo neoxena	6051281.36
COLUMBIDAE	Ocyphaps lophotes	Crested Pigeon	Expert distribution Ocyphaps lophotes	7413153.51
PACHYCEPHALIDAE	Oreoica gutturalis	Crested Bellbird	Expert distribution Oreoica gutturalis	4977501.18
PACHYCEPHALIDAE	Pachycephala (Alisternornis) rufiventris	Rufous Whistler	Expert distribution Pachycephala rufiventris	7241012.34
PARDALOTIDAE	Pardalotus (Pardalotinus) rubricatus	Red-browed Pardalote	Expert distribution Pardalotus rubricatus	5215172.69
PARDALOTIDAE	Pardalotus (Pardalotinus) striatus	Striated Pardalote	Expert distribution Pardalotus striatus	6172513.14
PODICIPEDIDAE	Poliocephalus poliocephalus	Hoary-headed Grebe	Expert distribution Poliocephalus poliocephalus	7076105.52
RALLIDAE	Porzana (Porzana) fluminea	Australian Spotted Crake	Expert distribution Porzana fluminea	1982268.46
RHIPIDURIDAE	Rhipidura (Rhipidura) fuliginosa	New Zealand Fantail	Expert distribution Rhipidura fuliginosa	5840029.33
Rostratulidae	Rostratula australis	Australian Painted Snipe	Expert distribution (maybe) Rostratula australis	4290580.99
CORCORACIDAE	Struthidea cinerea	Apostlebird	Expert distribution Struthidea cinerea	2511273.32
ALCEDINIDAE	Todiramphus (Cyanalcyon) pyrrhopygius	Red-backed Kingfisher	Expert distribution Todiramphus pyrrhopygius	7466637.09
TURNICIDAE	Turnix (Alphaturnia) velox	Little Button-quail	Expert distribution Turnix velox	7007734.60
HIRUNDINIDAE	Petrochelidon (Hylochelidon) nigricans nigricans	Australian Tree Martin	Expert distribution Hirundo nigricans	8367826.45
ANATIDAE	Cygnus (Chenopis) atratus	Black Swan	Expert distribution Cygnus atratus	7281302.88
ARDEIDAE	Egretta novaehollandiae	White-faced Heron	Expert distribution Egretta novaehollandiae	7554193.63
PSITTACIDAE	Neophema (Neonanodes) chrysostoma	Blue-winged Parrot	Expert distribution Neophema chrysostoma	1396422.54
PSITTACIDAE	Northiella haematogaster	Blue Bonnet	Expert distribution Northiella haematogaster	1741101.14
POMATOSTOMIDAE	Pomatostomus (Morganornis) ruficeps	Chestnut-crowned Babbler	Expert distribution Pomatostomus ruficeps	1078317.05
POMATOSTOMIDAE	Pomatostomus (Pomatostomus) halli	Hall's Babbler	Expert distribution Pomatostomus halli	489446.68

Checklist Areas

Number of checklist areas: **0**

Table 23: Checklist Areas

Family	*Scientific Name*	Common Name	Area Name	Area sq km

JournalMap Articles

Number of JournalMap articles: **0**

Table 24: JournalMap Articles

Author/s	Year	Title	Publication	DOI	URL

Further Links

Geoscience Australia: http://www.ga.gov.au/
Global Biodiversity Information Facility: https://www.gbif.org/
Threatened Species & Ecological Communities: https://www.environment.gov.au/topics/threatened-species-ecological-communities
WWF Ecoregions: https://worldwildlife.org/biomes
Environmental Resources Information Network (ERIN): https://www.environment.gov.au/topics/science-and-research/databases-and-maps/erin
Australian National Fish Expert Distributions: https://collections.ala.org.au/public/show/dr803
Lists of Australian endemic species: http://Intreasures.com/australia.html

Federal

Department of the Environment: https://www.environment.gov.au/

State/Territory

Australian Capital Territory

Environment and Sustainable Development Directorate: https://www.environment.act.gov.au/

New South Wales

Office of Environment and Heritage: http://www.environment.nsw.gov.au/

Northern Territory

Department of Land Resource Management: 'https://www.lrm.nt.gov.au/

Queensland

Department of Environment and Heritage Protection: https://www.ehp.qld.gov.au/

South Australia

Department of Environment, Water and Natural Resources: 'https://www.environment.sa.gov.au/Home

Tasmania

Department of Primary Industries, Parks, Water and Environment: http://www.dpiw.tas.gov.au/

Western Australia

Department of Parks and Wildlife: https://www.dpaw.wa.gov.au/

Victoria

Department of Environment and Primary Industries: http://www.depi.vic.gov.au/

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Appendix 9: Regional Ecosystem Descriptions

5.3.22 Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes

Regional ecosystem	5.3.22
Vegetation Management Act class	Least concern
Short description	Sparse herbland, open water or bare areas on flood plain lakes and interdune clay pans and lakes
Structure \category	Other
Structure code	Sparse Herbland
Description	Open water, bare areas or sparse herbland of variable floristic and structural composition. Locally Eleocharis pallens and/or Eragrostis setifolia may predominate. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as Chenopodium auricomum, Duma florulenta and Tecticornia spp. may be present. Bare areas, water or scattered ephemeral vegetation of variable floristic and structural composition. Locally Eleocharis pallens and/or Eragrostis setifolia may predominate. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as Chenopodium auricomum, Duma florulenta and Tecticornia spp. may be present. Occurs on or fringing lakes and clay pans on flood plains, within interdunes or on sandplains minor occurrences on clay plains. Soils very deep, grey cracking clays. Lacustrine. (BVG1M: 34a). Vegetation communities in this regional ecosystem include: 5.3.22a: Bare areas, water or scattered ephemeral vegetation of variable floristic and structural composition. Locally Eleocharis pallens and/or Eragrostis setifolia may predominate. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as Chenopodium auricomum, Duma florulenta and Tecticornia spp. may be present. Occurs on lakes and larger clay pans (area generally greater than 8 ha) in interdunes or on sandplains or less frequently on clay plains. Soils very deep, grey cracking clays. Lacustrine. (BVG1M: 34a). 5.3.22b: Bare areas, open water or scattered ephemeral vegetation of variable floristic and structural composition. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as Chenopodium auricomum, Duma florulenta and Tecticornia spp. may be present. Occurs on or fringing lakes on flood plains. Soils very deep, grey cracking clays. Lacustrine.

(BVG1M: 34a).
5.3.22c: [RE not in use][2]: This vegetation community is now mapped as 5.3.22a, 5.3.22b. Scattered ephemeral vegetation of variable floristic and structural composition. Bare areas, water, sedges or grasses may predominate. Occurs on lakes usually fed by drainage lines. Lacustrine. (BVG1M: 34a).
5.3.22d: Bare areas, water or scattered ephemeral vegetation of variable floristic and structural composition. Locally Eleocharis pallens and/or Eragrostis setifolia may predominate. An ephemeral herbland will often dominate bare areas exposed by receding water. Very occasional low shrubs such as Chenopodium auricomum, Duma florulenta and Tecticornia spp. may be present. Occurs on smaller clay pans (area generally less than 8 ha) in interdunes or on sandplains or less frequently on clay plains. Soils very deep, grey cracking clays. Palustrine. (BVG1M: 34b).

5.6.4 Atalaya hemiglauca +/- Acacia aneura +/- Acacia spp. +/- Corymbia terminalis low open woodland on reticulate sand dunes

Regional ecosystem	5.6.4
Vegetation Management Act class	Least concern
Short description	Atalaya hemiglauca +/- Acacia aneura +/- Acacia spp. +/- Corymbia terminalis low open woodland on reticulate sand dunes
Structure category	Sparse
Structure code	Tall Shrubland
Description	Various trees and tall shrubs occur forming a distinct but discontinuous canopy. Acacia aneura usually predominates, but in places Atalaya hemiglauca, Hakea leucoptera and Ventilago viminalis may be co-dominant. Usually there is no well defined, low shrub layer, but in places, dense stands of Dodonaea viscosa subsp. angustissima and Eremophila sturtii may occur. The ground layer is seasonally variable and composed of grasses and forbs. The composition and structural formation of this association varies considerably. Occurs on low dunes with sloping flanks (less than 3%). The dunes are frequently reticulate and usually overlie recent clay alluvia. Often concentrated in areas fringing large lakes or flood plains. Soils are reddish-brown, coarse sands, or deep red, earthy to siliceous sands. Ferruginous hardpans are often present. Not a Wetland. (BVG1M: 23a).

Vegetation communities in this regional ecosystem include:
5.6.4a: [RE not in use][2]: This vegetation community is now mapped as 5.6.4. Atalaya hemiglauca +/- Acacia aneura +/- Acacia spp. +/- Corymbia terminalis tall open shrubland on sand dunes. Occurs on low dunes with sloping flanks (less than 3%). The dunes are frequently reticulate and usually overlie recent clay alluvia. Often concentrated in areas fringing large lakes or floodplains. Soils are reddish-brown, coarse sands, or deep red, earthy to siliceous sands. Ferruginous hardpans are often present. Not a Wetland. (BVG1M: 23a).

5.6.5 Variable sparse to open-herbland or Triodia basedowii hummock grassland on dune flanks, crests and sandy interdunes

Regional ecosystem	5.6.5
Vegetation Management Act class	Least concern
Short description	Variable sparse to open-herbland or Triodia basedowii hummock grassland on dune flanks, crests and sandy interdunes
Structure category	Woody grassland
Structure code	Hummock Grassland
Description	Triodia basedowii hummock grassland predominates but where absent Aristida holathera +/- Eragrostis eriopoda may predominate forming a sparse to open tussock grassland, and/or forbs may predominate forming a sparse to open forbland. Isolated trees and tall shrubs are usually present. Usually low shrubs occur and may form a well defined layer in some situations. Fire frequency can affect density of woody species and Triodia basedowii. Occurs on low sloping flanks, non-mobile crests and sandy interdune areas of Quaternary sand dunes. Soils deep to very deep, red, yellow and white earthy sands, occasionally red siliceous sands. Not a Wetland. (BVG1M: 33a).

Triodia basedowii hummock grassland predominates but where absent Aristida holathera +/- Eragrostis eriopoda may predominate forming a sparse to open tussock grassland, and/or forbs may predominate forming a sparse to open forbland. Isolated trees and tall shrubs are usually present. Usually low shrubs occur and may form a well defined layer in some situations. Fire frequency can affect density of woody species and Triodia basedowii. Occurs on low sloping flanks, non-mobile crests and sandy interdune areas of

Quaternary sand dunes. Soils deep to very deep, red, yellow and white earthy sands, occasionally red siliceous sands. Not a Wetland. (BVG1M: 33a).
5.6.5b: [RE not in use][2]: This vegetation community has moved to 5.6.2x1. Acacia ramulosa low open woodland. A lower shrub layer is well defined in places with Acacia ligulata common, but in other situations consists only of scattered shrubs. Ground cover is variable and composed of grasses and forbs +/- Triodia basedowii. Fire frequency can affect density of woody species and Triodia basedowii. Occurs on low dunes and sandplains of low relief associated with dunefields. Soils moderately deep red texture contrast soils with sandy loams overlying the sandy clays. Not a Wetland. (BVG1M: 33a).

5.6.8 Zygochloa paradoxa and/or Crotalaria eremaea +/- Triodia basedowii open tussock grassland and herbland on mobile crests and slopes of sand dunes

Regional ecosystem	5.6.8
Vegetation Management Act class	Least concern
Short description	Zygochloa paradoxa and/or Crotalaria eremaea +/- Triodia basedowii open tussock grassland and herbland on mobile crests and slopes of sand dunes
Structure category	Woody grassland
Structure code	Open Tussock Grassland
Description	Zygochloa paradoxa open tussock grassland and/or Crotalaria eremaea sparse herbland usually both with Triodia basedowii. Sparsely scattered low shrubs may be present. The ground between the tussocks/ hummocks and shrubs is usually bare, excepting when ephemeral herbs become seasonally abundant. Occurs on mobile crests and loose sandy slopes of Quaternary sand dunes. Soils very deep, white, yellow and red siliceous sands. Not a Wetland. (BVG1M: 33a). Vegetation communities in this regional ecosystem include: 5.6.8a: Zygochloa paradoxa predominates forming an open tussock grassland. Scattered hummocks of Triodia basedowii may be frequent. Sparsely scattered low shrubs and tall forbs are usually present with Crotalaria cunninghamii, Crotalaria eremaea. Acacia ligulata, Lechenaultia divaricata and Calotis erinacea being the most frequent. The ground between the hummocks and shrubs is variable

in cover and floristics depending on seasonal conditions with Aristida holathera var. holathera, Euphorbia wheeleri and Cullen pallidum common. Occurs on mobile crests and slopes of Quaternary sand dunes. Soils very deep, white, yellow and red siliceous sands. Not a Wetland. (BVG1M: 33a).
5.6.8b: Crotalaria eremaea sparse to open herbland commonly with Eragrostis eriopoda. Cover and floristic composition dependent on seasonal conditions large areas may be devoid of vegetation, includes Tribulus terrestris, Aristida holathera, Eriachne aristidea, Eragrostis basedowii, Glinus lotoides, Blennodia pterosperma, Nicotiana velutina. Occasional scattered trees or shrubs such as Atalaya hemiglauca Grevillea stenobotrya, Acacia ligulata, Acacia murrayana, Acacia tetragonophylla or Clerodendrum floribundum may occur. Occurs on mobile crests and slopes of Quaternary sand dunes. Soils very deep, white, yellow and red siliceous sands. Not a Wetland. (BVG1M: 33a).

5.9.3 Astrebla spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments

Regional ecosystem	5.9.3
Vegetation Management Act class	Least concern
Short description	Astrebla spp. +/- short grasses +/- forbs open tussock grassland to herbland on Cretaceous sediments
Structure category	Grassland
Structure code	Open Tussock Grassland
Description	Astrebla spp. +/- short grasses +/- forbs open tussock grassland to herbland. Astrebla pectinata typically predominates but locally Astrebla lappacea may dominate, a Sclerolaena spp. sparse-forbland may at times predominate, other tussock grasses may be present occupying the spaces between the tussocks of Astrebla spp. Dactyloctenium radulans, Brachyachne convergens and Iseilema spp. may predominate in some areas. Forbs such as Atriplex spp., Sclerolaena spp., Trianthema triquetra, *Portulaca oleracea and Salsola australis occur and in less favourable seasons tend to predominate forming a sparse ground cover (<10%). Isolated shrubs including Senna artemisioides subsp. oligophylla, Senna phyllodinea and Acacia victoriae may be conspicuous, but trees are absent. Occurs on flat to gently undulating plains with slopes usually less than 3%

(sometimes up to 5%). Soils stony, deep to moderately deep, red and brown cracking clays, or rarely desert loams. Occurs on mantled pediments and fresh Cretaceous sediments. Not a Wetland. (BVG1M: 30b).

Vegetation communities in this regional ecosystem include:
5.9.3a: Astrebla lappacea and/or Sclerolaena spp. open tussock grassland/herbland. Either Astrebla lappacea open tussock grassland or an open to sparse-forbland of Sclerolaena bicornis and/or Sclerolaena calcarata and/or Sclerolaena lanicuspis and/or Sclerolaena spp. may be dominant depending on seasonal conditions. Dactyloctenium radulans, Brachyachne convergens and Iseilema spp. may predominate in some areas. Other forbs such as Atriplex spp., Trianthema triquetra, *Portulaca oleracea and Salsola australis are common. Occurs on flat to gently undulating plains with shallow to moderately deep alkaline self mulching cracking clay soils, fresh Cretaceous sediments. Not a Wetland. (BVG1M: 30b).
5.9.3b: Variable herbland on fresh Cretaceous sediments. Dominant species varies considerably depending on seasonal conditions and may include variable combinations of; Astrebla spp., Aristida latifolia, Dactyloctenium radulans, Iseilema vaginiflorum, Atriplex spp., Sclerolaena spp. A large number of forb species may occur, many of them ephemeral and seasonally abundant. In less favourable seasons ground cover can be very sparse with Dactyloctenium radulans and Iseilema vaginiflorum dominating, especially in areas with significant grazing. Occurs on flat to gently undulating plains (< 1%) of fresh Cretaceous sediments. Shallow to moderately deep brown cracking clay soils with self-mulching surface. Not a Wetland. (BVG1M: 30b).
5.9.3c: [RE not in use][2]: This vegetation community is now mapped as 5.3.9x1. Acacia cyperophylla var. cyperophylla low woodland with Acacia cambagei sometimes co-dominant. Scattered Atalaya hemiglauca may be present while in some areas Senna artemisioides subsp. Oligophylla and Eremophila freelingii for a prominent low shrub layer. The ground layer is generally sparse and comprising a variety of grass and forb species such as Eriachne mucronata, Salsola australis or Zygophyllum ammophilum. Occurs on drainage lines within stony plains. Soils are generally deep gravelly massive to weakly structured sandy loams to sandy clay loams. Not a Wetland. (BVG1M: 24a).
5.9.3x1: [RE not in use][2]: This vegetation community is now mapped as 5.9.3b. Astrebla squarrosa usually predominates with Astrebla pectinata being codominant, and together form a tussock grassland. Iseilema vaginiflorum and Aristida latifolia are frequent and abundant in heavily grazed areas. Shrubs are very sparse and infrequent. A number of forbs occur and may become abundant after winter rain. Occurs on flat clay plains of Winton plateau. Associated soils are moderately deep grey cracking clays, strongly self-mulching surface. Not a Wetland. (BVG1M: 30b).
5.9.3x2: Astrebla pectinata and/or Astrebla lappacea and/or Aristida latifolia open herbland. In some areas Dactyloctenium radulans, Brachyachne convergens and Iseilema spp. may be seasonally

common. Forbs such as Atriplex spp. and Sclerolaena spp. occur, and in less favourable seasons tend to predominate. Isolated shrubs of Acacia tetragonophylla or Senna spp. may occur. Occurs on level to gently undulating plains formed by superficial Cainozoic clay deposits overlying a range of geologies. Soils shallow to deep, crusted red and minor brown medium to heavy clays. Small to moderate amounts of ironstone, chalcedony, laterite, and silcrete gravel occur in the profile and on the surface. Not a Wetland. (BVG1M: 30b).
5.9.3x3: Seasonally variable sparse to open tussock grassland/herbland, dominant grasses include Astrebla pectinata, Aristida spp., Enneapogon avenaceus and Sporobolus actinocladus. Annual grasses such as Dactyloctenium radulans, Iseilema vaginiflorum and Brachyachne ciliaris may be seasonally abundant. Forbs such as Atriplex spp., Sclerolaena spp., Osteocarpum acropterum, Maireana spp., *Portulaca oleracea, Salsola australis and Neobassia proceriflora are common and in less favourable seasons tend to predominate forming a sparse ground cover (<10%). Isolated shrubs may be conspicuous, but trees are absent. Occurs on flat to gently undulating plains with abundant ironstone surface gravel cover. Soils moderately deep to deep, may be weakly gilgaied or strongly gilgaied with depressions parallel to the contour, crusted, red cracking clays. Ground cover always sparse, varies with amount of stone cover and seasonal conditions. Not a Wetland. (BVG1M: 30b).

5.9.4 Aristida contorta sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover

Regional ecosystem	5.9.4
Vegetation Management Act class	Least concern
Short description	Aristida contorta sparse tussock grassland on fresh Cretaceous sediments with dense gravel cover
Structure category	Grassland
Structure code	Sparse Tussock Grassland
Description	Aristida contorta usually predominates forming an open to sparse tussock grassland. Other short grasses including Oxychloris scariosa, Enneapogon avenaceus, Sporobolus actinocladus and Tripogon loliiformis are common. Annual grasses such as Brachyachne prostrata and Eriachne pulchella occur frequently, while the perennial Aristida

latifolia and Eragrostis xerophila may be locally common. Forbs such as Gnephosis arachnoidea, Rhodanthe floribunda, Maireana dichoptera and Sclerolaena lanicuspis may predominate after winter rain. Sparsely scattered shrubs may occur in places. Short grasses build up after wet summers, while forbs common after winter rainfall. Occurs on flat to gently undulating plains with abundant surface gravel cover of ironstone, chalcedony, laterite, silcrete or silicified sandstone. Soils shallow to deep, desert loams, with gravelly, sandy clay loams overlying structured medium clays. Ground cover always sparse, varies with amount of stone cover and seasonal conditions. Not a Wetland. (BVG1M: 31b).

Vegetation communities in this regional ecosystem include:
5.9.4x1: Aristida contorta sparse to open tussock grassland +/- Oxychloris scariosa +/- Enneapogon avenaceus +/- Sporobolus actinocladus. Ephemeral forbs may predominate after winter rain. Sparsely scattered shrubs such as Senna spp. And Acacia tetragonophylla may occur in places. Local shallow deposits of windblown sand support ephemeral forbs such as Calotis plumulifera, Gnephosis eriocarpa, Rhodanthe moschata and Polycalymma stuartii, and less commonly isolated patches of Senna spp. Shrubland. Sparsely scattered trees, such as Corymbia terminalis, Hakea eyreana, and Grevillea striata may occur in places. Floristic composition varies with seasonal conditions, density of stone pavement and gilgai micro relief. Occurs on level to gently undulating plains formed by Cainozoic colluvial and residual deposits overlying deeply weathered Cretaceous sediments. Associated soils shallow to deep gravely to sandy desert loams. Not a Wetland. (BVG1M: 31b).
5.9.4x2: Astrebla pectinata sparse to open herbland commonly with Sporobolus actinocladus, Brachyachne ciliaris, Atriplex spp., Sclerolaena spp., Salsola australis and Osteocarpum spp. Mosaic of sparse to open tussock grassland in gilgai depressions dominated by Astrebla pectinata, and sparse herbland on benches and dense gravels dominated by Sporobolus actinocladus, Brachyachne ciliaris, Enneapogon avenaceus, Sclerolaena spp., Atriplex spp., Salsola australis, Osteocarpum spp., *Portulaca oleracea. Occurs on level to gently undulating plains formed by Cainozoic colluvial and residual deposits overlying deeply weathered Cretaceous sediments. Deep stony often gilgaied soils with depressions sometime parallel to contour, soils range from desert loams to moderately deep crusted red-brown cracking clays. Moderate to large amounts of ironstone gravel on surface. Not a Wetland. (BVG1M: 30b).

Appendix 10: Flora List

Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
			131	59	76	29	36	13
Aizoaceae	*Tetragonia moorei*	New Zealand Spinach	1					
Aizoaceae	*Tetragonia tetragonoides*	New Zealand Spinach	1	1	1			
Aizoaceae	*Trianthema pilosum*	Trianthema	1	1	1			
Amaranthaceae	*Alternanthera denticulata*	Lesser Joyweed	1	1	1		1	
Amaranthaceae	*Amaranthus sp.*	Amaranth	1	1				
Amaranthaceae	*Ptilotus latifolius*	Tangled Mulla Mulla	1		1			
Amaranthaceae	*Ptilotus obovatus*	Silver Tails	1		1			
Amaranthaceae	*Ptilotus polystachyus*	Long Tails	1		1			
Apiaceae	*Daucus glochidiatus*	Native Carrot	1			1		
Asphodelaceae	*Bulbine alata*	Desert Leek-lily	1	1			1	
Asteraceae	*Brachyscome ciliaris*	Variable Daisy	1		1		1	
Asteraceae	*Calocephalus platycephalus*	Yellow Billybuttons	1		1		1	
Asteraceae	*Calotis hispidula*	Bogan Flea	1	1			1	
Asteraceae	*Gnaphalium diamantinense*	Diamantina Cudweed	1	1				
Asteraceae	*Gnephosis arachnoidea*	Spidery Button-flower	1	1				1
Asteraceae	*Leiocarpa websteri*	Narrow Plover-daisy	1					
Asteraceae	*Millotia greevesii*	Woolly Sand Daisy	1	1				
Asteraceae	*Pluchea dunlopii*	Pink Plains-bush	1		1			
Asteraceae	*Polycalymma stuartii*	Poached Egg Daisy	1		1	1		
Asteraceae	*Pterocaulon sphacelatum*	Fruit Salad Plant	1	1	1			

Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
Asteraceae	*Pycnosorus eremaeus*	Golden Billy-buttons	1	1				1
Asteraceae	*Rhodanthe floribunda*	Large White Sunray	1	1	1	1	1	1
Asteraceae	*Rhodanthe moschata*	Musk Daisy	1		1			
Asteraceae	*Senecio gregorii*	Fleshy Groundsel	1	1				
Asteraceae	*Streptoglossa adscendens*	Desert Daisy	1	1				
Boraginaceae	*Halgania cyanea*	Blue Halgania	1		1			
Boraginaceae	*Trichodesma zeylanicum*	Camel Bush	1		1	1		
Brassicaceae	*Harmsiodoxa blennodioides*	Hairypod Cress	1	1				
Brassicaceae	*Lepidium phlebopetalum*	Veined Peppercress	1		1	1	1	
Campanulaceae	*Wahlenbergia tumidifructa*	Swollen-fruit Bluebell	1		1			
Celastraceae	*Macgregoria racemigera*	Snowflake	1		1			
Chenopodiaceae	*Atriplex holocarpa*	Pop Saltbush	1	1			1	
Chenopodiaceae	*Atriplex spongiosa*	Small Pop Saltbush	1	1	1		1	
Chenopodiaceae	*Atriplex stipitata*	Kidney Saltbush	1	1			1	
Chenopodiaceae	*Chenopodium cristatum*	Crested Goosefoot	1	1	1			
Chenopodiaceae	*Einadia nutans*	Climbing Saltbush	1		1			
Chenopodiaceae	*Enchylaena tomentosa*	Ruby Saltbush	1		1			
Chenopodiaceae	*Maireana astrotricha*	Low Bluebush	1		1		1	
Chenopodiaceae	*Maireana coronata*	Crown Fissure-plant	1	1				
Chenopodiaceae	*Maireana georgei*	Satiny Bluebush	1		1			
Chenopodiaceae	*Maireana spongiocarpa*	Spongy-fruit Bluebush	1	1				
Chenopodiaceae	*Rhagodia spinescens*	Hedge Saltbush	1		1			
Chenopodiaceae	*Salsola australis*	Coast Saltwort	1	1	1	1	1	
Chenopodiaceae	*Sclerolaena bicornis*	Bassia Burr	1	1	1		1	

Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
Chenopodiaceae	*Sclerolaena decurrens*	Green Copper Burr	1		1		1	
Chenopodiaceae	*Sclerolaena diacantha*	Grey Copperburr	1	1	1		1	1
Chenopodiaceae	*Sclerolaena divaricata*	Tangled Bindyi	1	1			1	1
Chenopodiaceae	*Sclerolaena intricata*	Tangled Poverty Bush	1	1				1
Chenopodiaceae	*Sclerolaena lanicuspis*	Woolly Copper Burr	1	1			1	1
Chenopodiaceae	*Sclerolaena patenticuspis*	Spear-fruit Bindyi	1	1				
Chenopodiaceae	*Sclerolaena uniflora*	Small-spine Bindyi	1	1	1	1		
Convolvulaceae	*Convolvulus erubescens*	Blushing Bindweed	1	1	1		1	
Cucurbitaceae	*Citrullus amarus*	Paddy Melon	1		1	1		
Euphorbiaceae	*Euphorbia drummondii*	Mat Spurge	1			1		
Euphorbiaceae	*Euphorbia tannensis*	Bottle Tree Caustic	1	1	1			1
Fabaceae	*Acacia aneura*	Broad-leaf Mulga	1		1			
Fabaceae	*Acacia ligulata*	Small Cooba	1		1	1		
Fabaceae	*Acacia murrayana*	Murray's Wattle	1			1		
Fabaceae	*Acacia tetragonophylla*	Dead Finish	1		1			
Fabaceae	*Acacia victoriae*	Acacia Bush	1		1			
Fabaceae	*Crotalaria novae-hollandiae*	New Holland Rattlepod	1		1			
Fabaceae	*Cullen australasicum*	Native Scurf-pea	1	1				
Fabaceae	*Cullen graveolens*	Native Lucerne	1	1				
Fabaceae	*Cullen pallidum*	Woolly Scurf-pea	1			1		
Fabaceae	*Lotus cruentus*	Pink-flower Tefoil	1	1			1	
Fabaceae	*Senna artemisioides*	Desert Cassia	1		1			
Fabaceae	*Senna phyllodinea*	Silver Cassia	1		1			
Fabaceae	*Senna pleurocarpa*	Chocolate Bush	1			1		
Fabaceae	*Swainsona campylantha*	Gilgai Darling Pea	1	1	1			

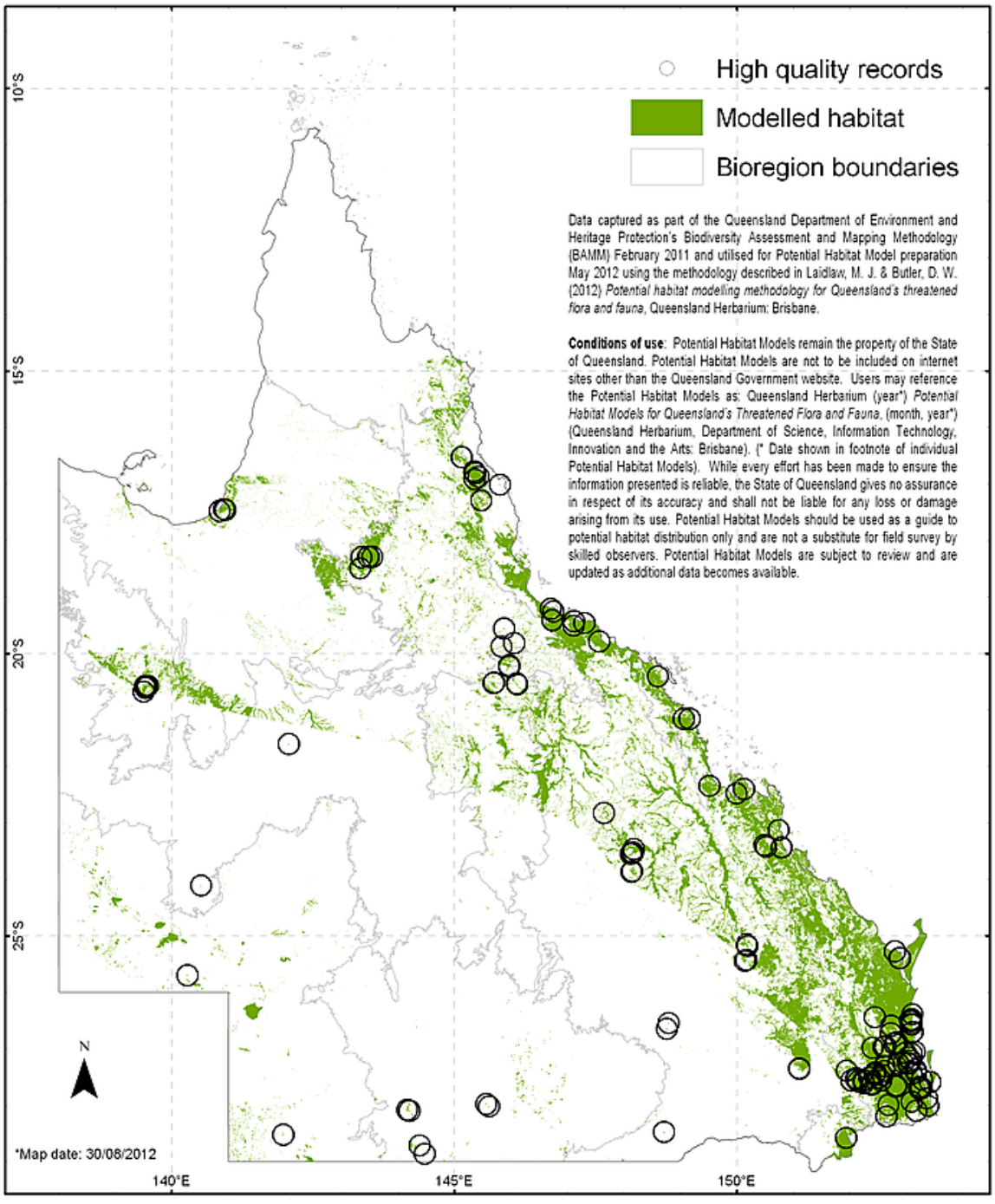
Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
Fabaceae	*Swainsona phacoides*	Woodland Swainsona	1	1				
Frankeniaceae	*Frankenia serpyllifolia*	Thyme Sea-heath	1	1				
Geraniaceae	*Erodium cygnorum*	Erodium	1	1				
Goodeniaceae	*Goodenia cycloptera*	Serrated Goodenia	1	1				
Goodeniaceae	*Goodenia fascicularis*	Silky Goodenia	1		1		1	
Goodeniaceae	*Lechenaultia divaricata*	Tangled Lechenaultia	1			1		
Goodeniaceae	*Scaevola depauperata*	Skeleton Fanflower	1			1		
Goodeniaceae	*Scaevola spinescens*	Spiny Fanflower	1		1			
Lamiaceae	*Teucrium racemosum*	Grey Germander	1	1				
Loranthaceae	*Amyema maidenii*	Pale-leaf Mistletoe	1		1			
Malvaceae	*Abutilon leucopetalum*	Desert Lantern-bush	1		1			
Malvaceae	*Abutilon otocarpum*	Desert Lantern	1		1	1		
Malvaceae	*Hibiscus brachysiphonius*	Low Hibiscus	1	1				
Malvaceae	*Hibiscus krichauffianus*	Velvet-leaf Hibiscus	1		1	1		
Malvaceae	*Sida ammophila*	Sand Sida	1			1		
Malvaceae	*Sida fibulifera*	Pin Sida	1	1	1		1	
Marsileaceae	*Marsilea drummondii*	Clover Fern	1	1	1			
Meliaceae	*Owenia acidula*	Sour Apple	1		1			
Myrtaceae	*Corymbia terminalis*	Northern Bloodwood	1		1			
Myrtaceae	*Eucalyptus coolabah*	Coolabah	1	1				
Nyctaginaceae	*Boerhavia dominii*	Tar Vine	1		1			
Plantaginaceae	*Plantago drummondii*	Dark Plantain	1	1	1		1	
Plantaginaceae	*Stemodia florulenta*	Blue-rod	1	1	1			
Poaceae	*Aristida anthoxanthoides*	Yellow Three-awn	1	1		1		
Poaceae	*Aristida contorta*	Bunched Kerosene Grass	1	1	1			1

Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
Poaceae	*Aristida holathera*	Erect Kerosene Grass	1	1	1			1
Poaceae	*Astrebla pectinata*	Barley Mitchell Grass	1		1		1	
Poaceae	*Dactyloctenium radulans*	Button Grass	1			1		
Poaceae	*Digitaria brownii*	Cotton Panic-grass	1				1	
Poaceae	*Enneapogon avenaceus*	Bottlewashers	1	1	1		1	
Poaceae	*Enneapogon polyphyllus*	Leafy Bottle-washers	1		1		1	
Poaceae	*Eragrostis dielsii*	Lovegrass	1		1	1		
Poaceae	*Eragrostis parviflora*	Lovegrass	1				1	
Poaceae	*Eragrostis setifolia*	Lovegrass	1	1	1		1	
Poaceae	*Eriachne aristidea*	Three-awn Wanderrie	1		1	1		
Poaceae	*Eriachne helmsii*	Woollybutt Wanderrie	1	1			1	
Poaceae	*Iseilema membranaceum*	Small Flinders-grass	1	1				
Poaceae	*Iseilema vaginiflorum*	Red Flinders-grass	1				1	1
Poaceae	*Panicum decompositum*	Stargrass	1	1			1	1
Poaceae	*Paractaenum refractum*	Bristle-brush Grass	1			1		
Poaceae	*Sporobolus actinocladus*	Ray Grass	1	1	1		1	1
Poaceae	*Triodia basedowii*	Hard Spinifex	1		1	1		
Poaceae	*Zygochloa paradoxa*	Sandhill Cane-grass	1			1		
Polygonaceae	*Duma florulenta*	Tangled Lignum	1	1				
Portulacaceae	*Calandrinia balonensis*	Broad-leaf Parakeelya	1		1	1		
Portulacaceae	*Portulaca intraterranea*	Buttercup Purslane	1	1				
Portulacaceae	*Portulaca oleracea*	Munyeroo	1	1		1		
Proteaceae	*Grevillea juncifolia*	Honeysuckle Spider Flower	1		1			
Proteaceae	*Grevillea stenobotrya*	Rattle-pod Grevillea	1		1	1		
Proteaceae	*Grevillea striata*	Beefwood	1		1			

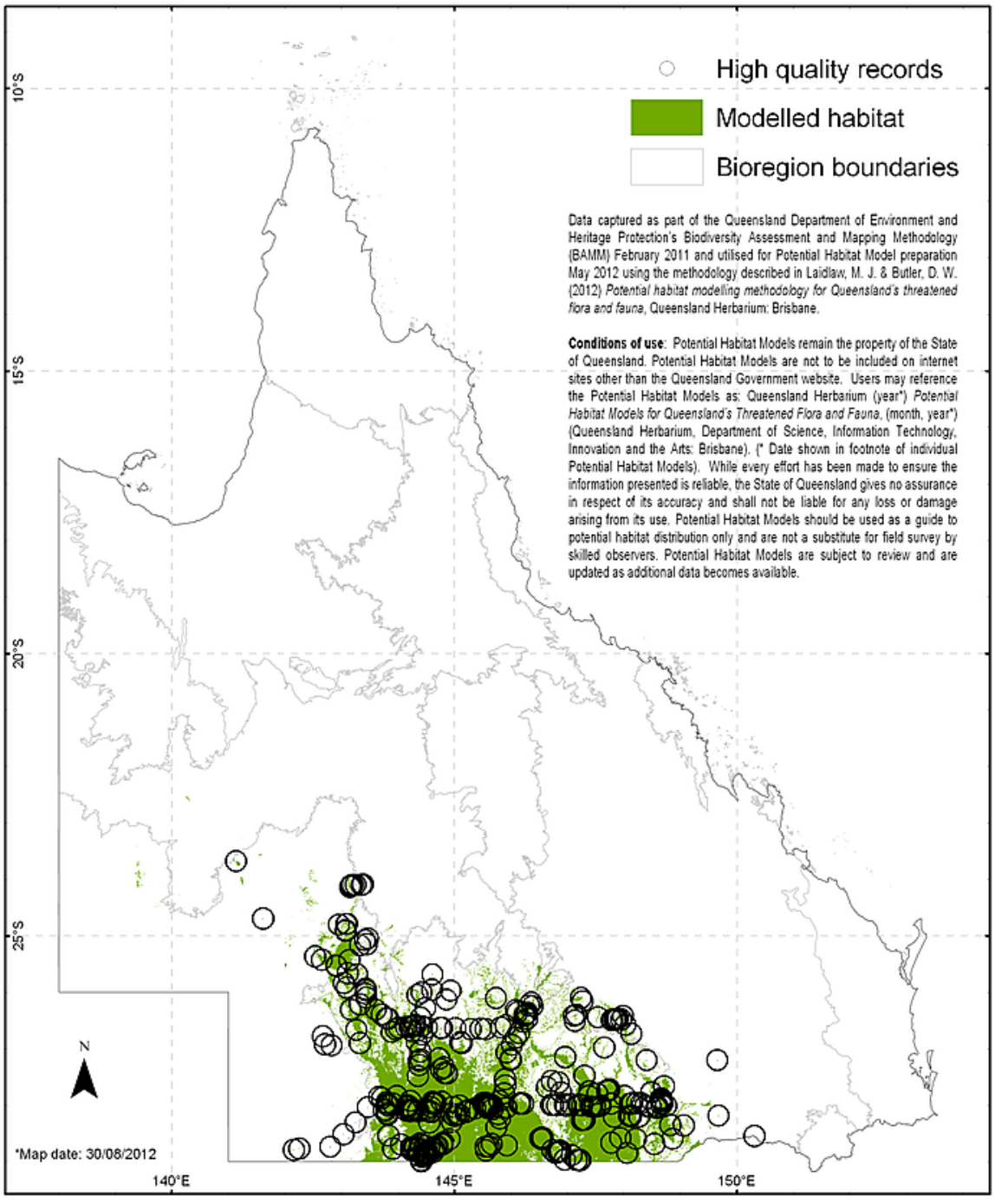
Family	Species Name	Vernacular Name	PL1125	RE 5.3.22	RE 5.6.4	RE 5.6.5 / RE 5.6.8	RE 5.9.3	RE 5.9.4
Proteaceae	*Hakea eyreana*	Fork-leaf Corkwood	1		1			
Proteaceae	*Hakea leucoptera*	Needle Hakea	1		1			
Sapindaceae	*Atalaya hemiglauca*	Whitewood	1		1			
Sapindaceae	*Dodonaea viscosa*	Sticky Hop-bush	1		1			
Scrophulariaceae	*Eremophila longifolia*	Dogwood	1		1			
Scrophulariaceae	*Eremophila macgillivrayi*	Dog-bush	1		1			
Scrophulariaceae	*Eremophila obovata*	Eremophila	1		1			
Solanaceae	*Solanum ellipticum*	Potato Bush	1				1	
Thymelaeaceae	*Pimelea simplex*	Pimelea	1				1	
Zygophyllaceae	*Roepera ammophila*	Sand Twinleaf	1		1	1		
Zygophyllaceae	*Roepera howittii*	Clasping Twinleaf	1				1	
Zygophyllaceae	*Roepera similis*	White Twinleaf	1	1			1	

Appendix 11: Listed Species Habitat Models

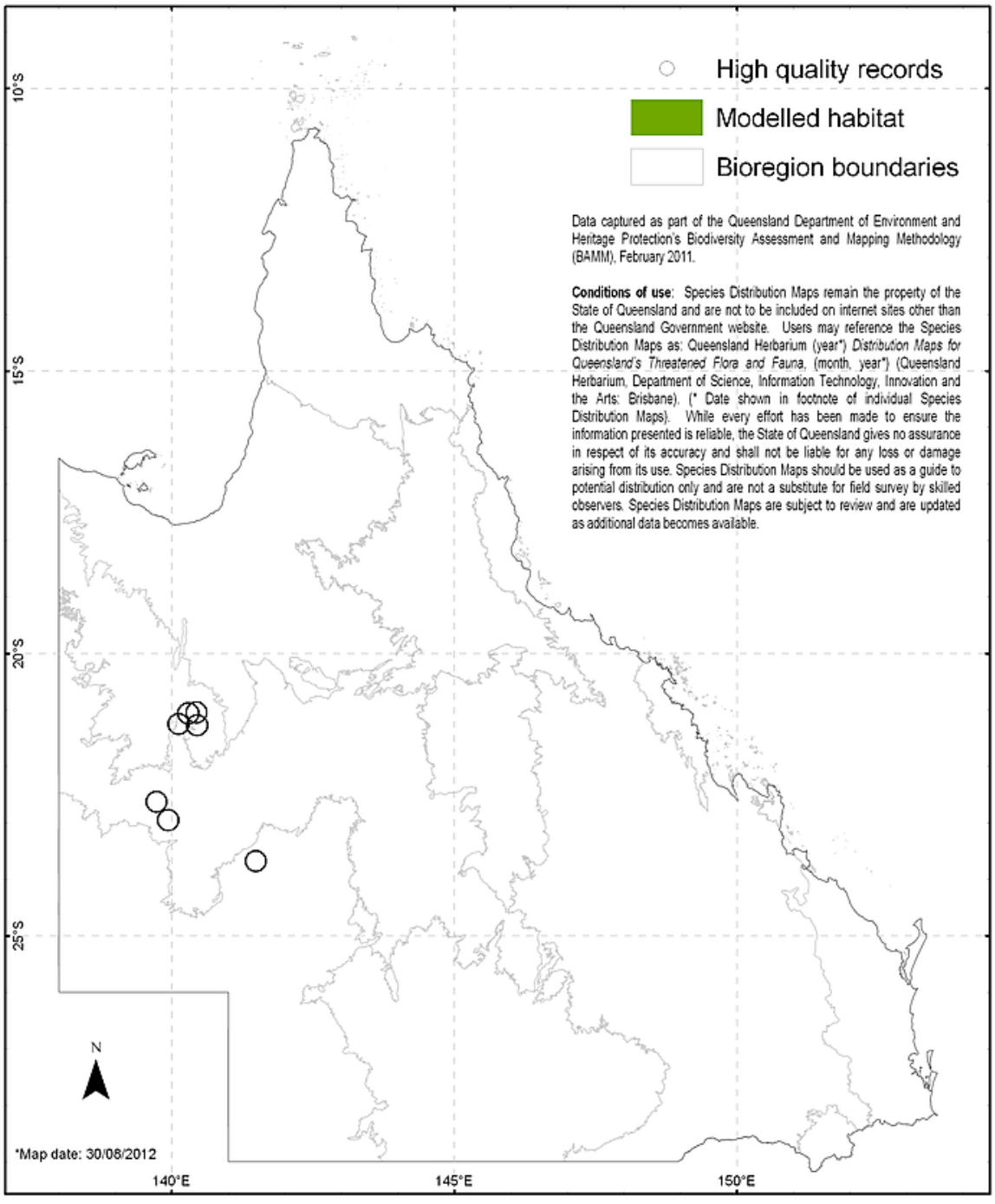
Potential habitat model for *Rostratula australis* Australian painted snipe



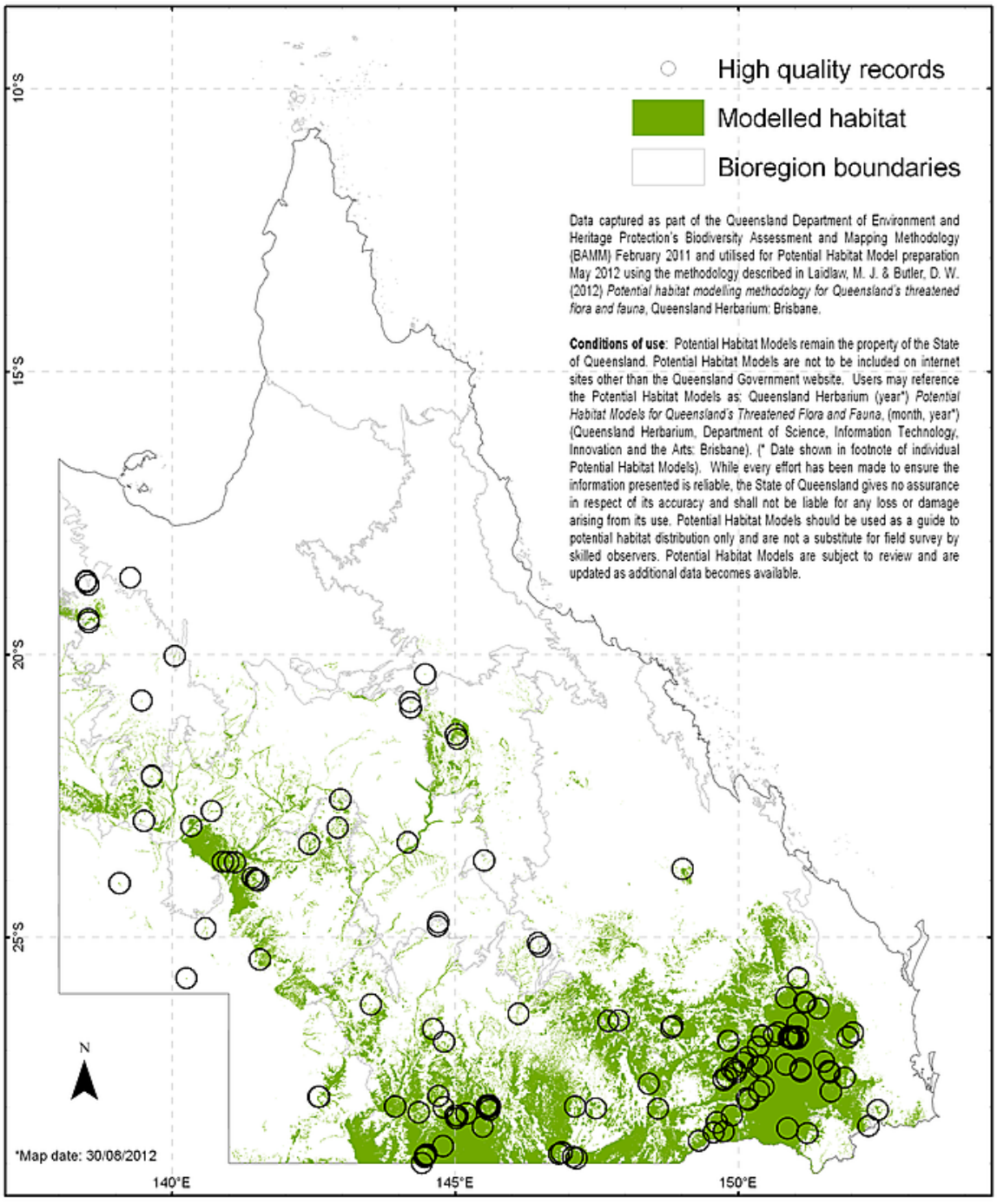
Potential habitat model for *Lophochroa leadbeateri* Major Mitchell's cockatoo



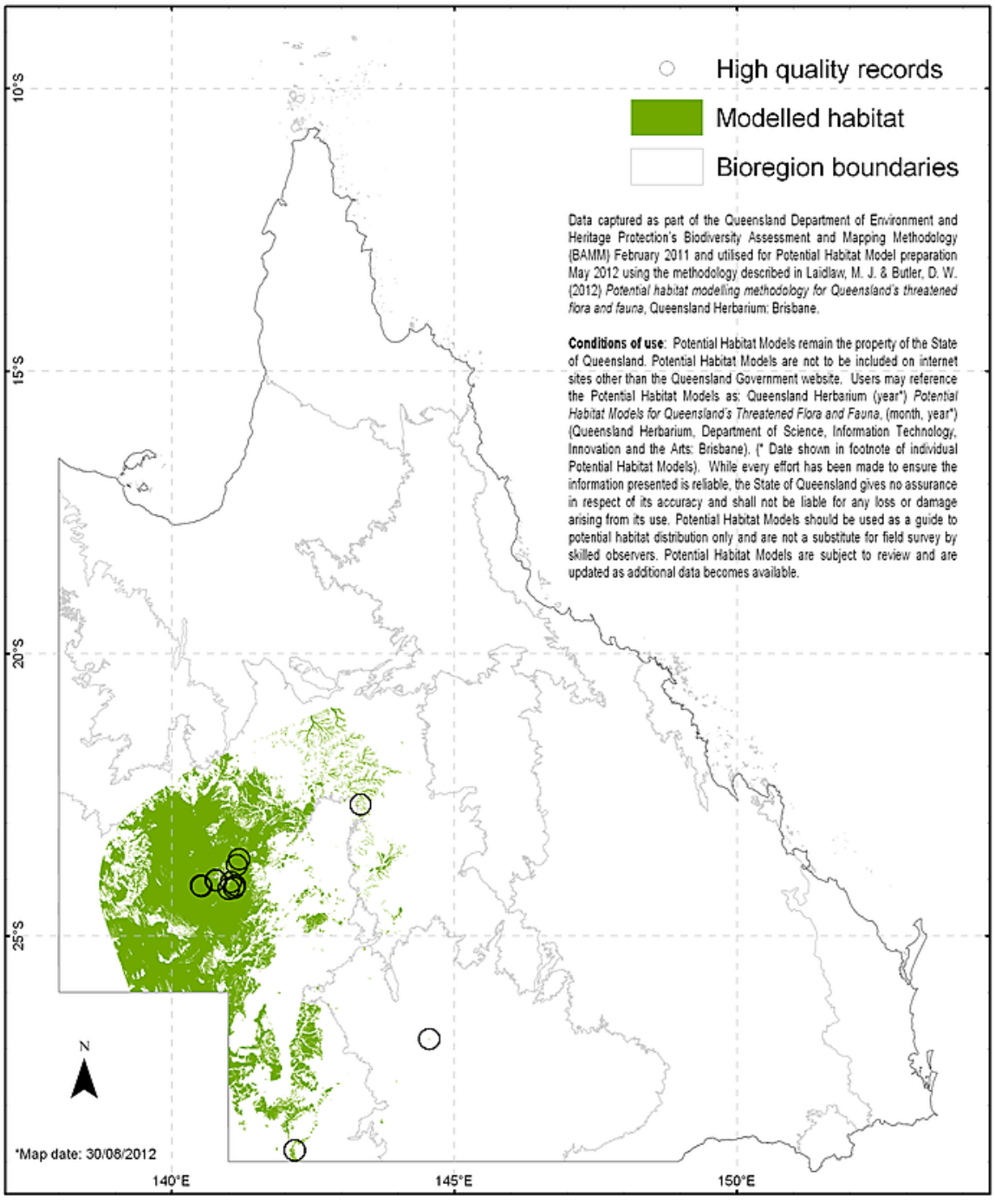
Distribution map for
Pezoporus occidentalis
night parrot



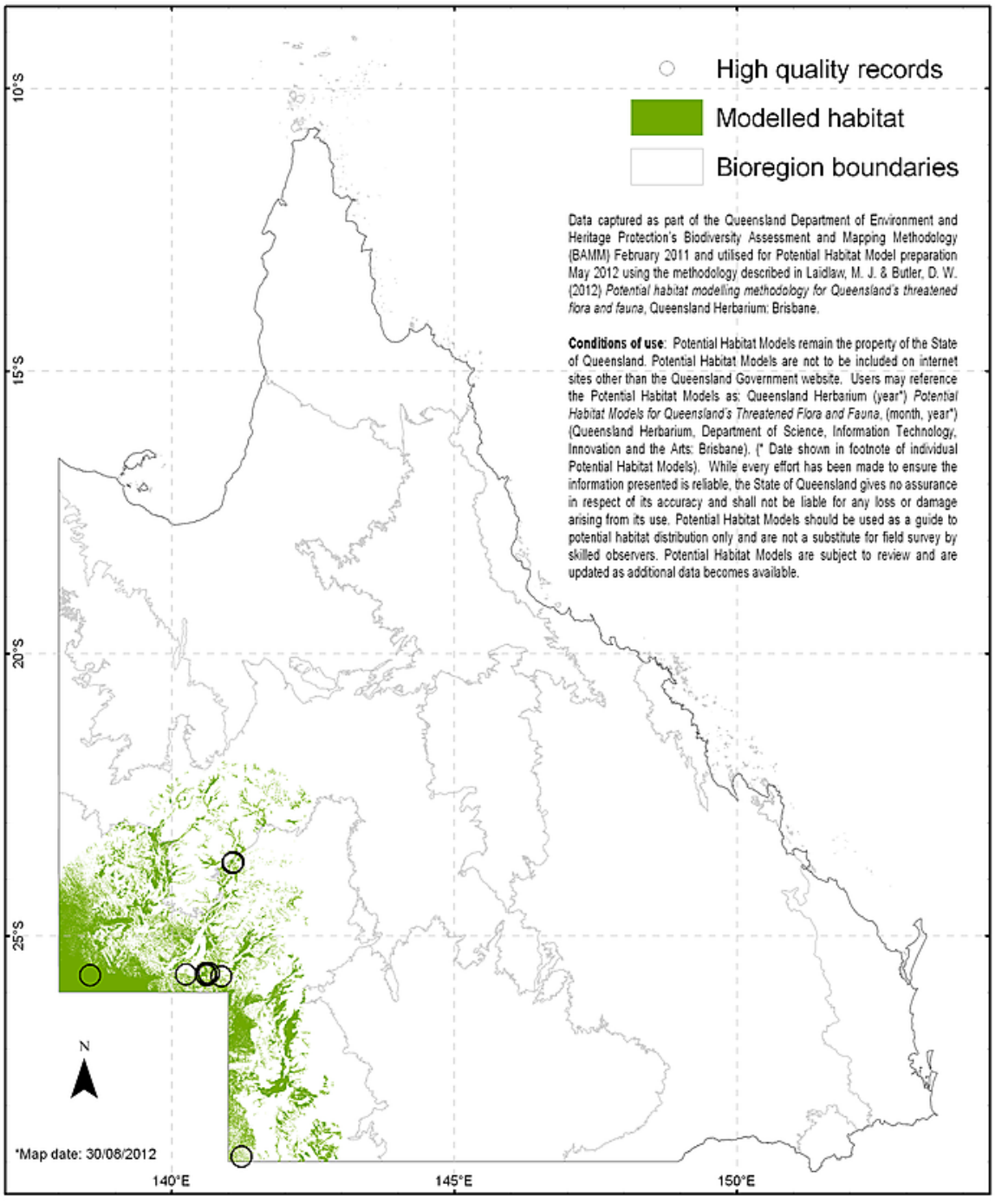
Potential habitat model for *Grantiella picta* painted honeyeater



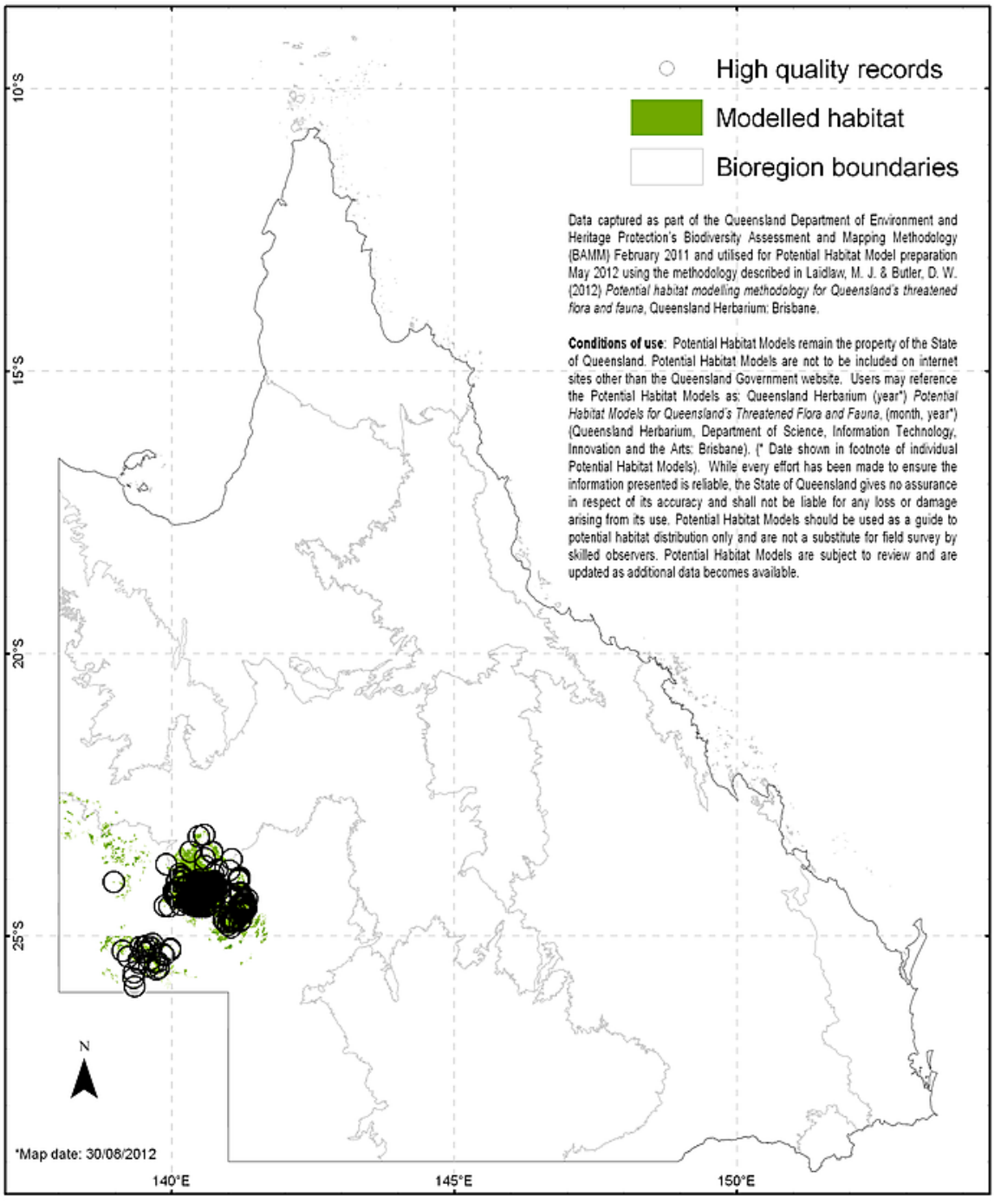
Potential habitat model for *Pedionomus torquatus* plains-wanderer



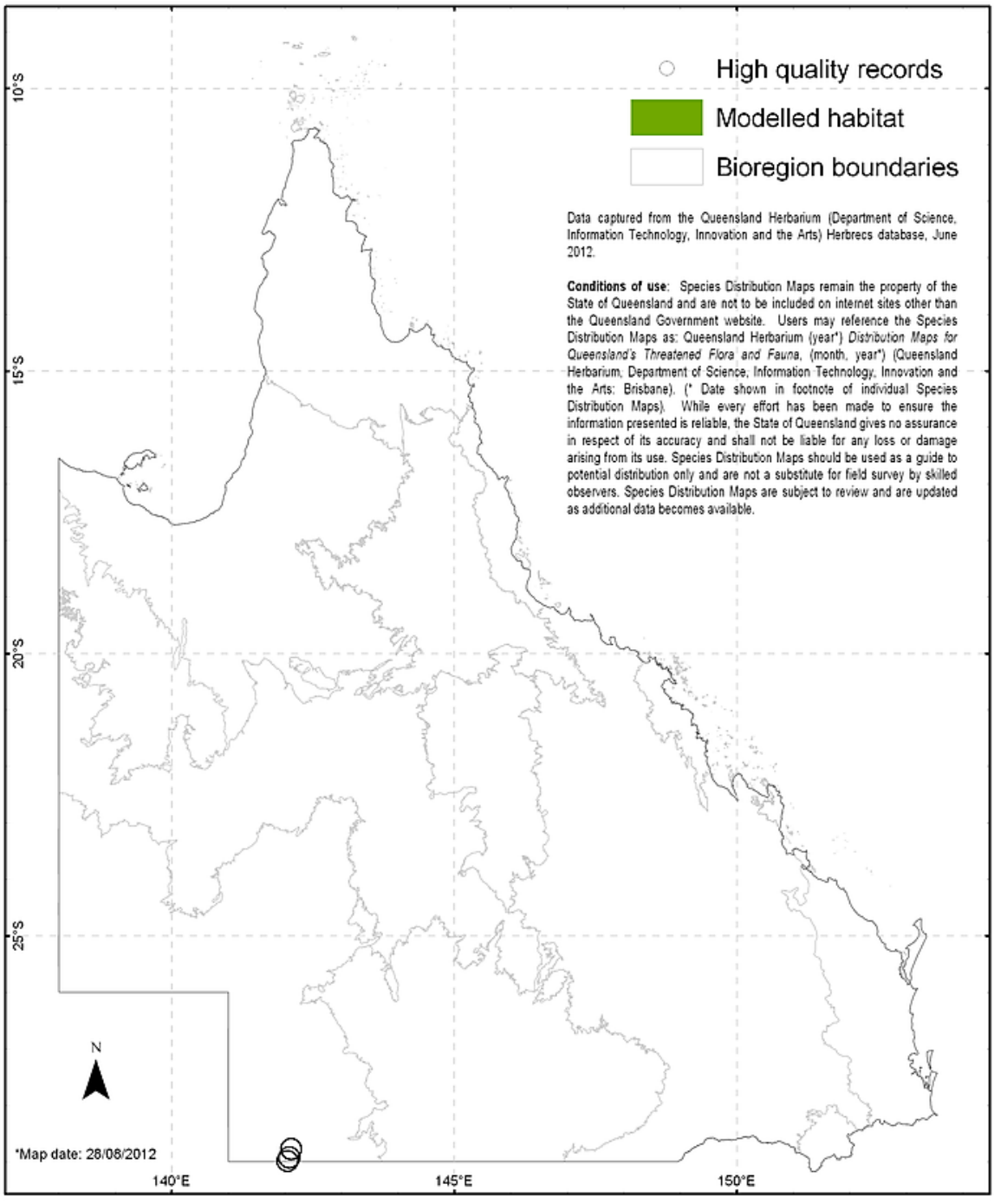
Potential habitat model for *Notomys fuscus* dusky hopping-mouse



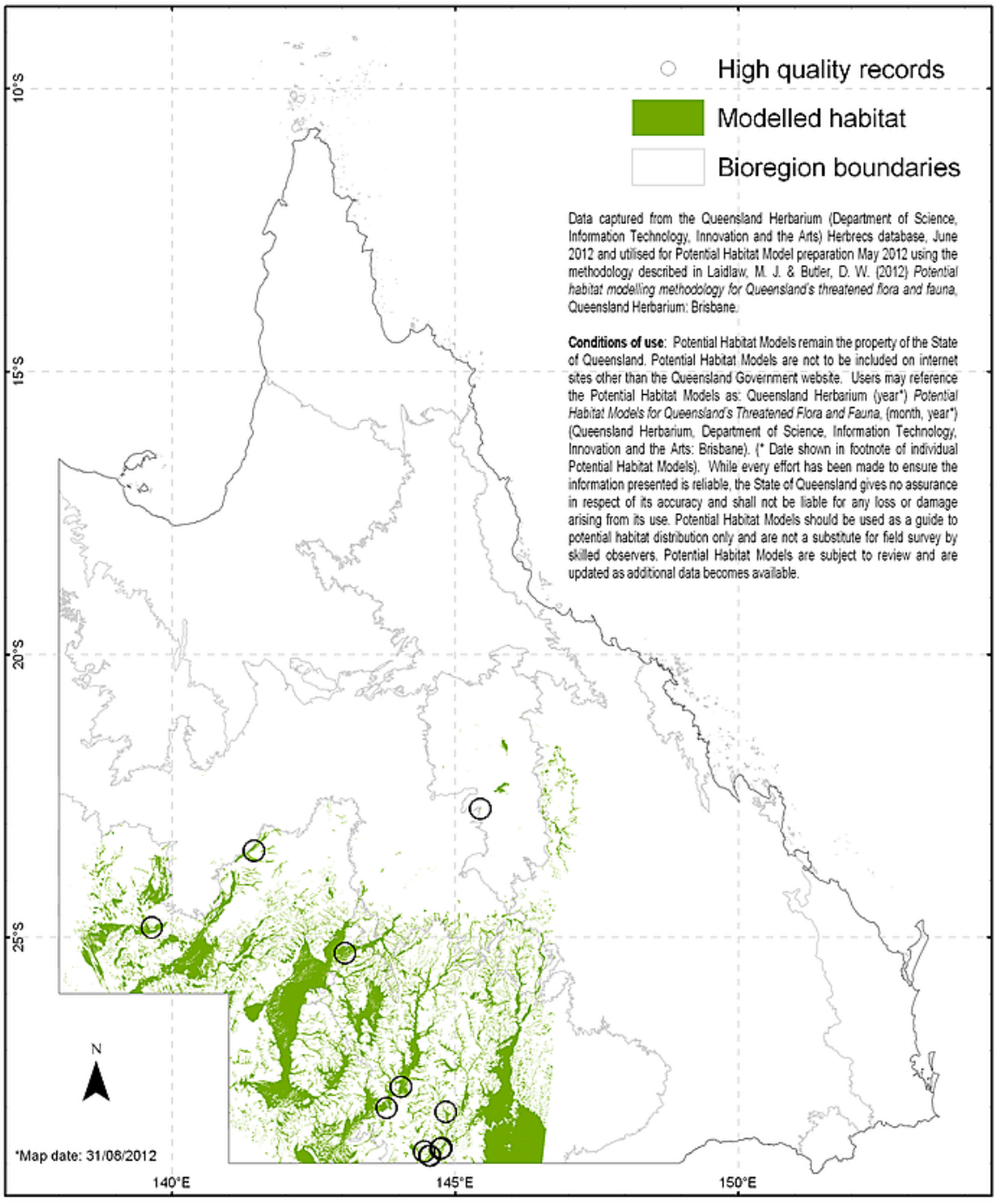
Potential habitat model for *Macrotis lagotis* greater bilby



Distribution map for *Grevillea kennedyana*



Potential habitat model for *Sclerolaena walkeri*



Appendix 12: Significant Residual Impact Assessment Figures

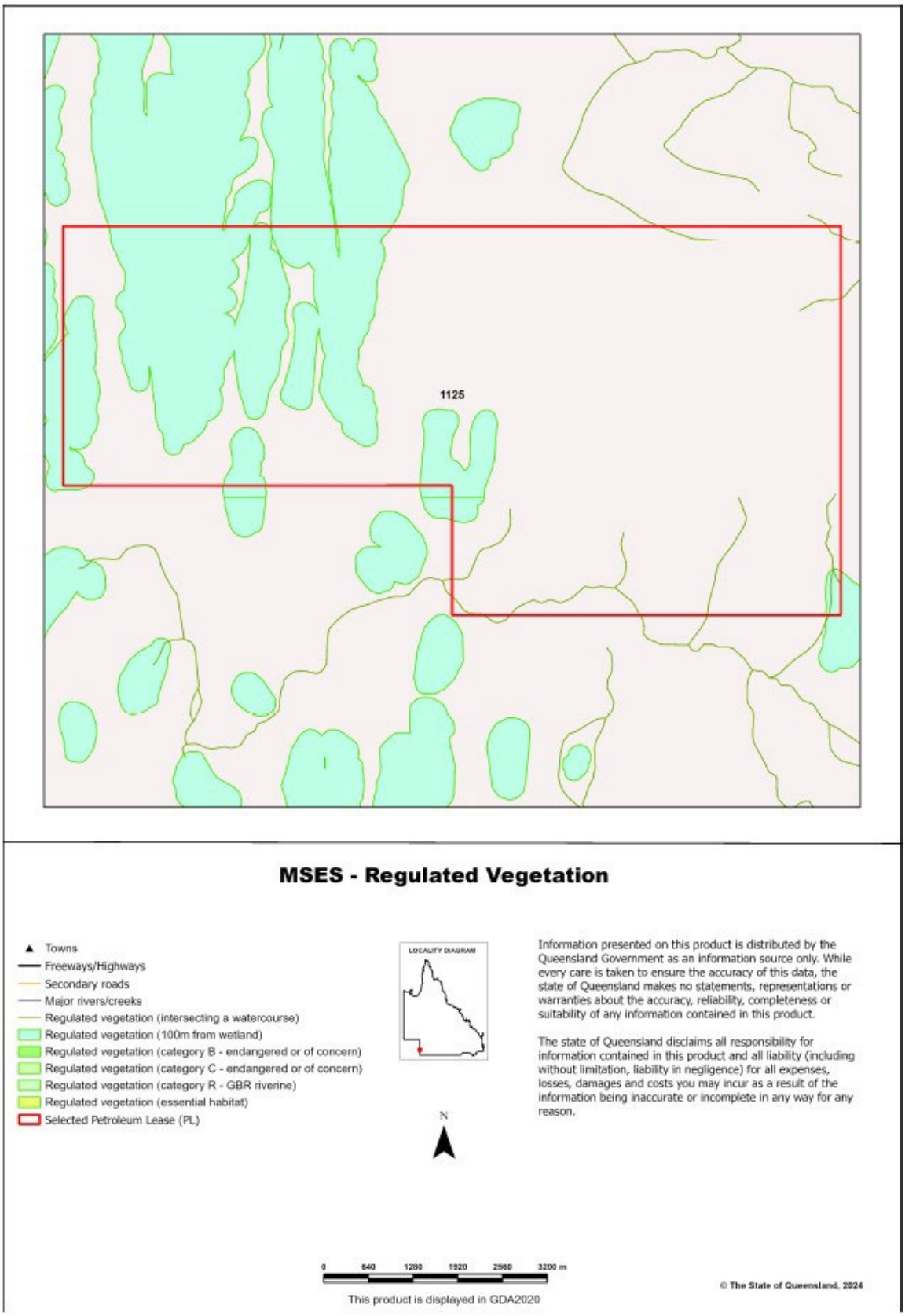


Figure 1. MSES – Regulated Vegetation within PL 1125

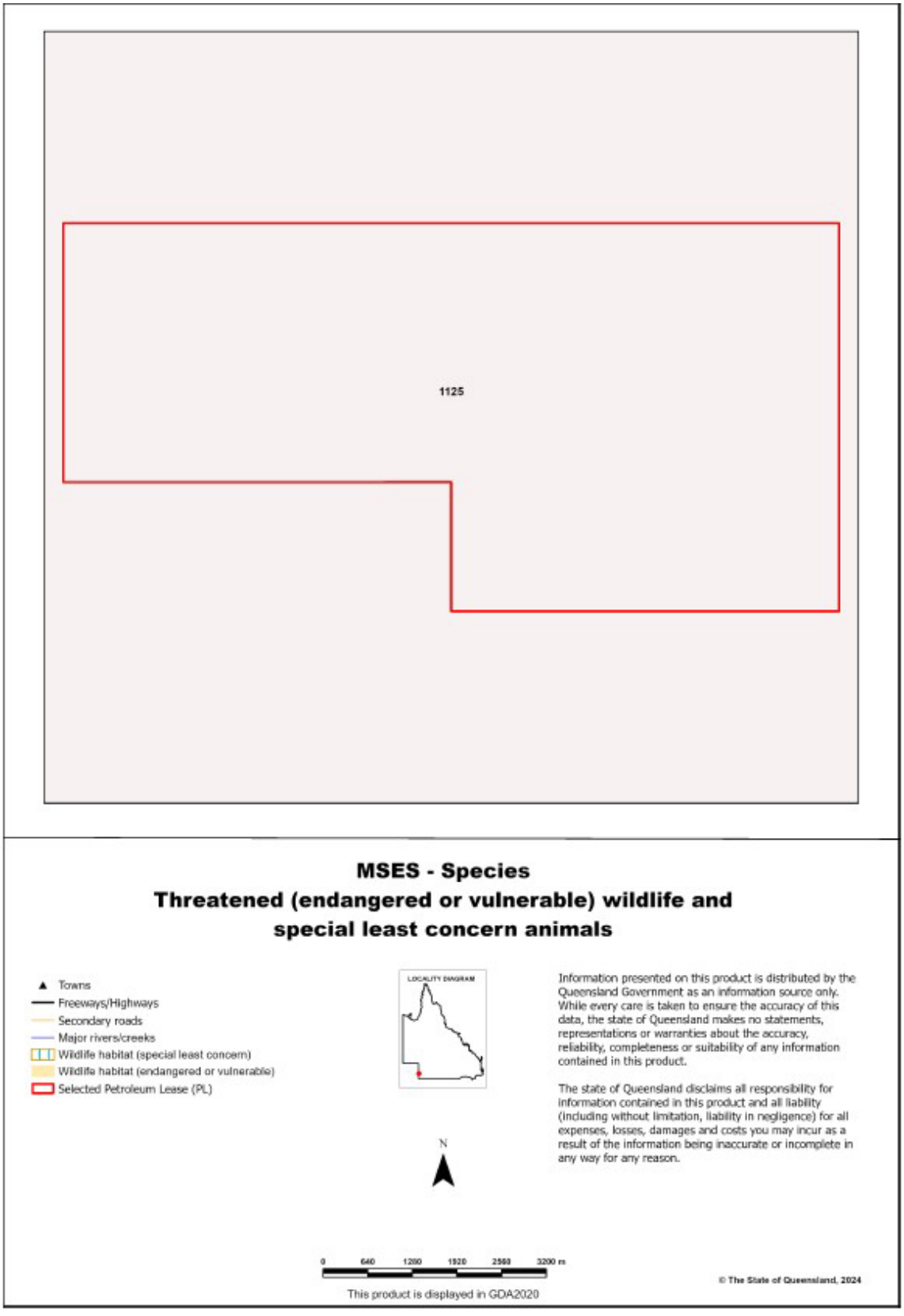


Figure 2. MSES Threatened (endangered and vulnerable) wildlife and special least concern animals within PL 1125

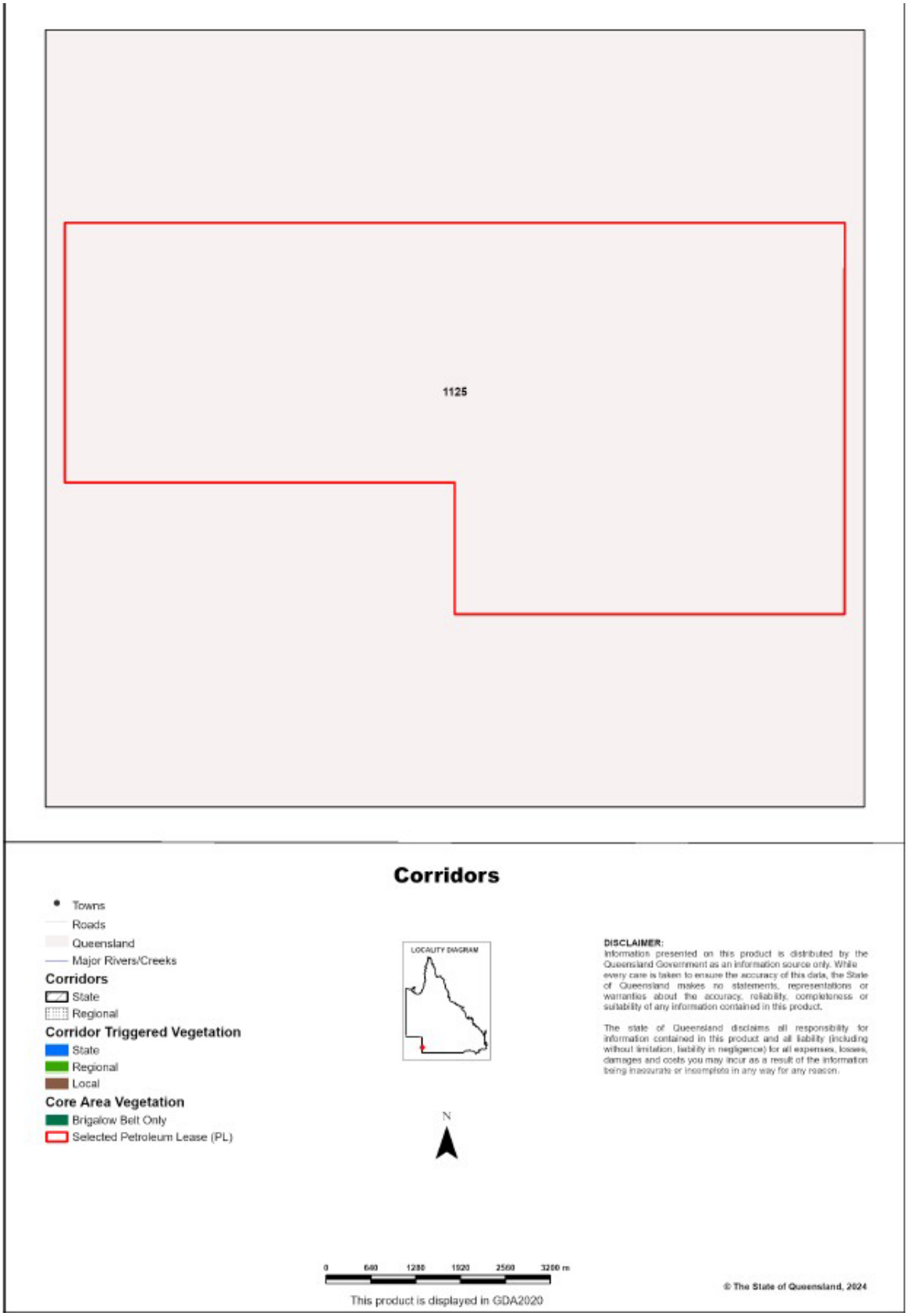


Figure 3. MSES Corridors within PL 1125

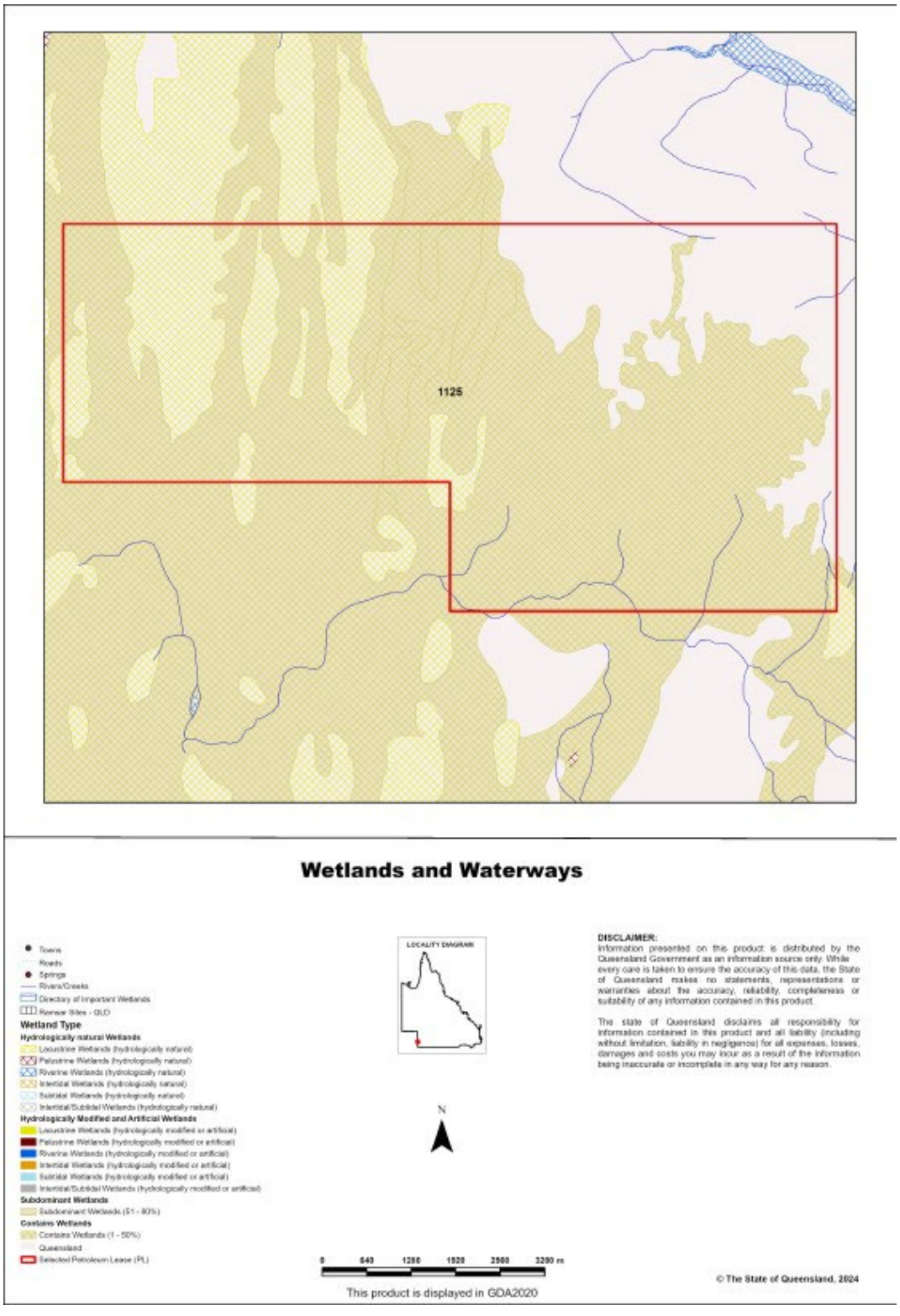


Figure 4. Wetlands and Waterways

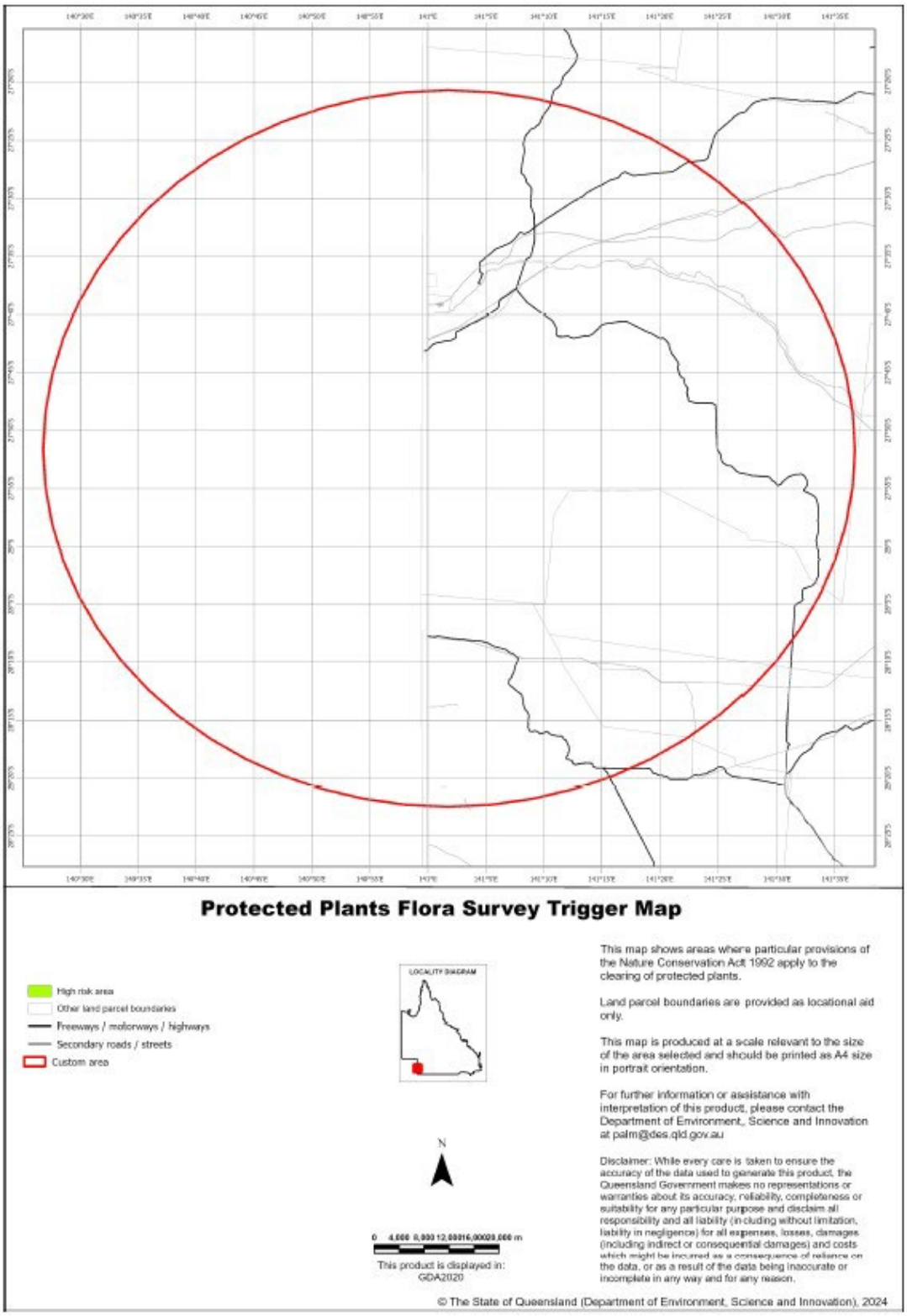


Figure 5. MSES Protected Plants Flora Survey Trigger Map for PL 1125 with 50 km buffer

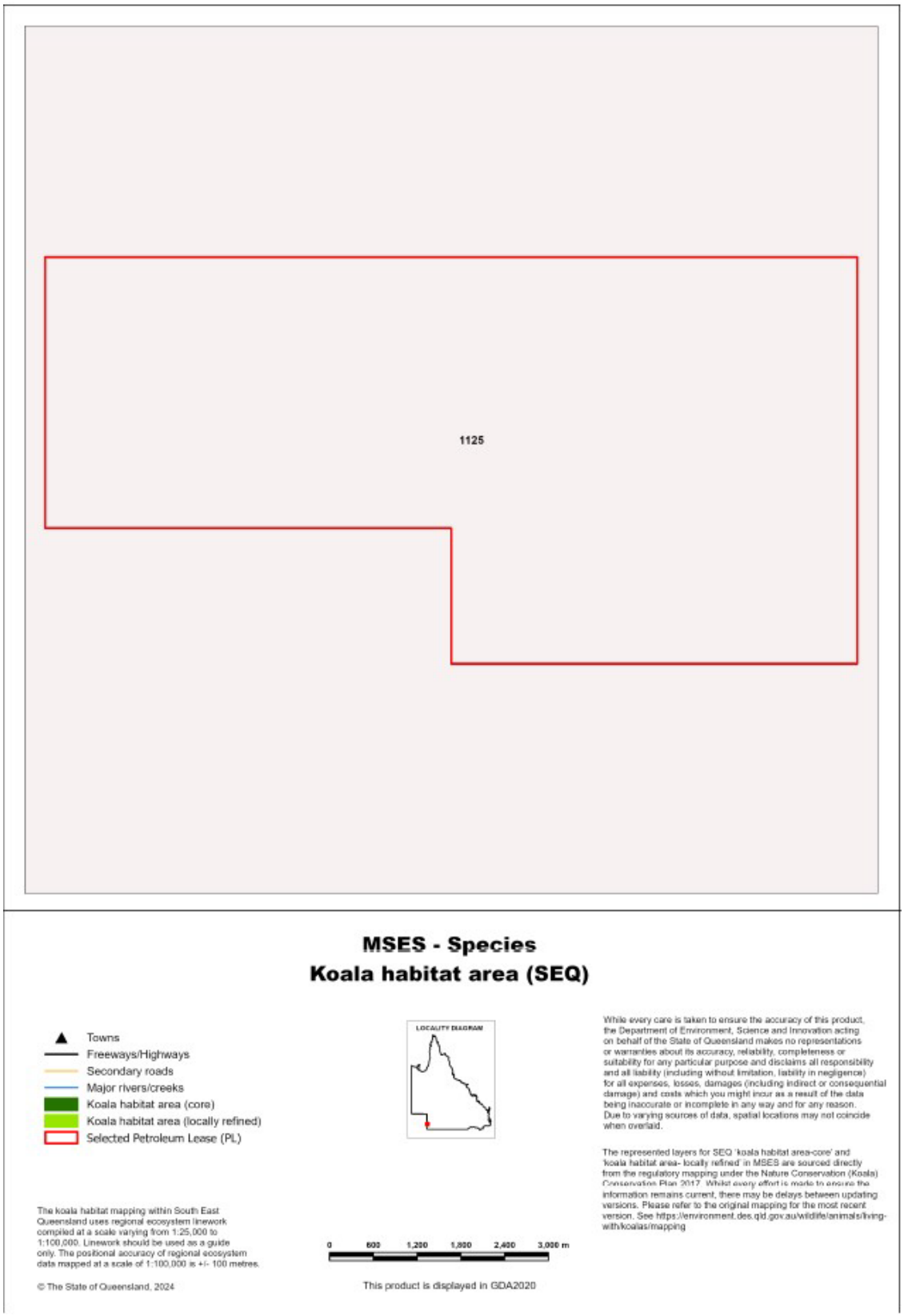


Figure 6. MSES – Koal habitat area within PL 1125

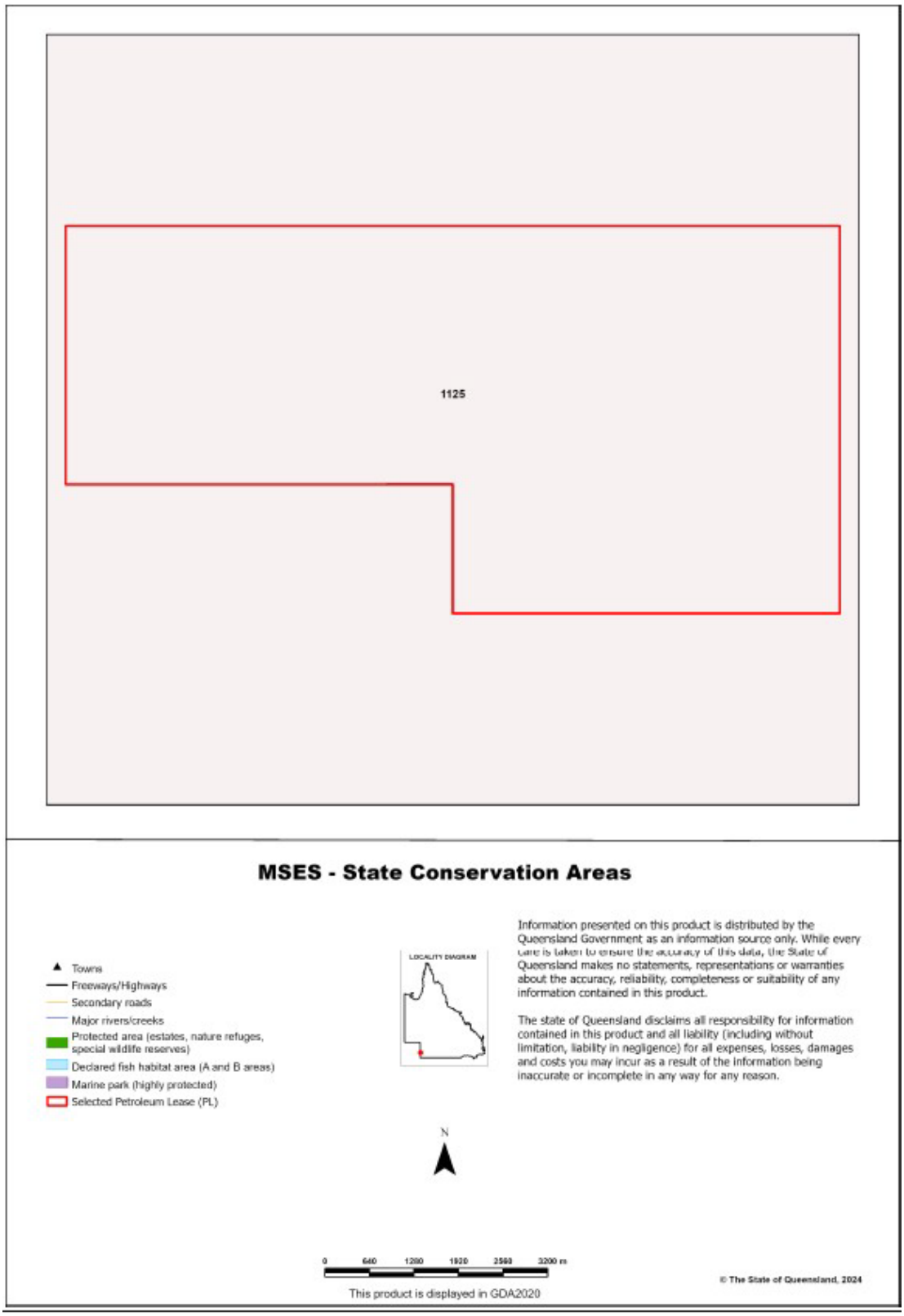


Figure 7. MSES - State Conservation Areas within PL 1125

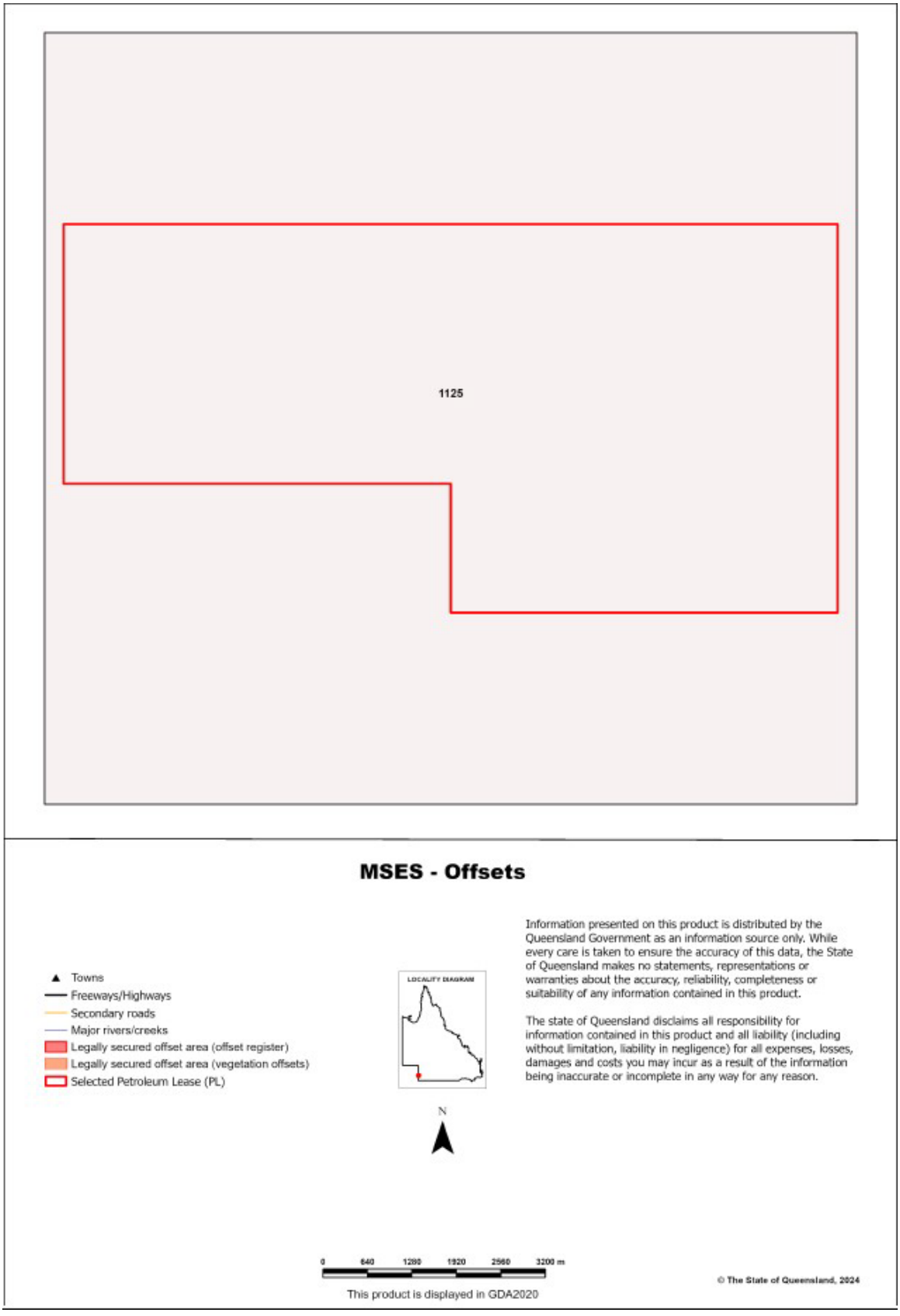


Figure 8. MSES Offsets within PL 1125