Appendix C Terrestrial Ecology Technical Report (Centurion Project – Assessment of Matters of State Environmental Significance)

Centurion North Extension Project

P-EA-100658735 and P-PRCP-100669070_V3

Centurion Coal Mining Pty Ltd

SLR Project No.: 620.042575.00001

31 October 2025



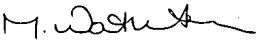
Centurion Project - Assessment of Matters of State Environmental Significant

31 October 2025

Centurion Coal Mining Pty Ltd
Level 14, 31 Duncan Street, Fortitude Valley, Qld 4006



Document Management

Rev.	Issue Date	Description	Author (s)	Approved	Signature
A	13/08/2025	Issued for review	Elizabeth Smith Harry Johnson Kurtis Kemp	Meredith Watherston	
B	17/10/2025	Issued for review	Tash Vella Kurtis Kemp	Meredith Watherston	
0	28/10/2025	Final	Kurtis Kemp	Meredith Watherston	

Document Reference: X:\JOBS\~2023\QEJ23080\23080j_EA Amendment\DELIVERABLES\QEJ23080j_Centurion_Project-MSES_Assessment_RevA.docx

DISCLAIMER

1. **Scope, Use and Purpose**
   a. This document has been prepared by e2m solely for Centurion Coal Mining Pty Ltd and may only be used and relied upon by Centurion Coal Mining Pty Ltd for the specific purpose agreed between e2m and Centurion Coal Mining Pty Ltd (**Agreed Purpose**).
   b. This document may not contain sufficient information for purposes extraneous to the Agreed Purpose and e2m will not be liable for any loss, damage, liability or claim if this document or its contents is used or relied upon for any purpose extraneous to the Agreed Purpose.
2. **Limitations of this document**
   a. The opinions, conclusions, recommendations and information included in this document are:
      i. limited to the scope of the relevant engagement agreed between e2m and Centurion Coal Mining Pty Ltd;
      ii. limited by the limitations indicated in this document;
      iii. based on e2m's knowledge and approach, and the conditions encountered and information reviewed by e2m, as at the date of the preparation of this document (**Prevailing Knowledge**);
      iv. based on e2m's assumptions described or indicated in this document (**Assumptions**); and
      v. based on information provided to e2m by Centurion Coal Mining Pty Ltd and others including government authorities (**Supplied Information**).
   b. Centurion Coal Mining Pty Ltd acknowledges that any Prevailing Knowledge may have ceased or may in the future cease to be correct, accurate or appropriate in light of subsequent knowledge, conditions, information or events. e2m has no obligation to update Centurion Coal Mining Pty Ltd with respect to changes in the Prevailing Information occurring after the date this document was prepared.
   c. While e2m does not have any reason to believe any Assumptions are incorrect, e2m has not made any independent investigations with respect to the Assumptions and shall have no liability arising from any incorrect Assumptions.
   d. Supplied Information has not been independently verified by e2m. e2m shall have no liability in connection with Supplied Information, including errors and omissions in this document which were caused by errors or omissions in the Supplied Information.
3. **Warranties, Liabilities and Consequential Loss**
   a. A reference to 'liability' or 'liable' in this disclaimer refers to any liability for any direct or indirect loss, damage, liability, cost, expense or claim.
   b. e2m excludes implied warranties to the extent legally permissible and shall have no liability arising out of the reliance on such implied warranties.
   c. e2m shall have no liability for any interpretation, opinion or conclusion that Centurion Coal Mining Pty Ltd may form as a result of examining this document.
   d. Centurion Coal Mining Pty Ltd acknowledges and agrees that the maximum aggregate liability of e2m in connection with the preparation and provision of this document is limited to the value of the consideration paid or payable by Centurion Coal Mining Pty Ltd to e2m for it.
   e. e2m will not be liable to Centurion Coal Mining Pty Ltd or any other person for any special, indirect, consequential, economic loss, or loss of profit, revenue, business, contracts or anticipated savings suffered or incurred by Centurion Coal Mining Pty Ltd or any other person arising out of or in connection with the provision of this document.
4. **Third Parties**
   a. This document may not, without e2m's prior written consent, be disclosed to any person other than Centurion Coal Mining Pty Ltd (**Third Party**).
   b. This document may not contain sufficient information for the purposes of a Third Party and is prepared and provided without e2m assuming or owing a duty of care to any Third Party.

c. e2m will not be liable to a Third Party for any liability arising out of or incidental to this document or any publication of, use of or reliance on it (Third Party Liability). Centurion Coal Mining Pty Ltd and any Third Party assumes all risk, and releases, indemnifies and will keep indemnified e2m from any Third Party Liability.

Contact Information	
Ph: 07 3062 6960	Website: e2m.com.au
Level 3, 19 Lang Parade, Milton, Queensland, 4064	PO Box 1444, Milton, Queensland, 4064

Contents

Definitions 7

Abbreviations 9

Executive summary 11

1 Introduction 14
- 1.1 Project background 14
- 1.2 Project description 14
- 1.3 Purpose and scope 15
- 1.4 Study Area overview 15

2 Regulatory framework 18
- 2.1 Commonwealth 18
- 2.2 Queensland 18

3 Methods 22
- 3.1 Desktop assessment 22
- 3.2 Field assessment 22
- 3.3 Field survey standards 33
- 3.4 Likelihood of occurrence 44
- 3.5 Species habitat mapping 44
- 3.6 Habitat quality assessment 45
- 3.7 Limitations 46

4 Desktop assessment 47
- 4.1 Soils and geology 47
- 4.2 Queensland Government vegetation mapping 48
- 4.3 Watercourses and wetlands 53
- 4.4 Queensland-listed species and communities 53
- 4.5 Connectivity and biodiversity significance 54
- 4.6 Waterways providing fish passage 54
- 4.7 Environmentally Sensitive Areas 56
- 4.8 Review of previous studies in the region 56

5 Description of the existing environment 59
- 5.1 Vegetation communities 59
- 5.2 Flora values 64
- 5.3 Fauna values 71
- 5.4 Connectivity areas 90
- 5.5 Waterways providing for fish habitat 90
- 5.6 Environmentally sensitive areas 91
- 5.7 Summary of MSES 92

6 Direct and indirect impacts 95
6.1 Overview 95
6.2 Direct impacts 96
6.3 Indirect impacts 98

7 Impact avoidance and mitigation measures 103
7.1 Overview 103
7.2 Impact avoidance and minimisation 103
7.3 Mitigation 103
7.4 Cumulative impacts 108

8 Significant residual impact assessments 111
8.1 Overview 111
8.2 Regulated vegetation 111
8.3 Protected wildlife habitat 112
8.4 Connectivity 134
8.5 Waterways providing for fish passage 135
8.6 Summary of impacts to MSES 135

9 Conclusions and biodiversity offsets 138

10 References 139

List of Tables

Table 1: Survey timing and conditions 23
Table 2: Fauna survey effort undertaken within the Study Area 30
Table 3: Survey effort compared with survey guidelines for fauna and flora 34
Table 4: Surface geology and equivalent land zones within the Study Area 47
Table 5: REs mapped within the Study Area under the Queensland Herbarium map amendment (MAR3577) 50
Table 6: Previous ecological studies within the region with identified MSES 56
Table 7: Ground-truthed REs within the Study Area 60
Table 8: Queensland Herbarium certified map amendment (MAR3577) endangered and of concern REs within the Study Area 63
Table 9: Pest flora in the Study Area 71
Table 10: Summary of MSES within the Study Area 93
Table 11: Direct impacts to vegetation communities within the Disturbance Footprint 96
Table 12: Direct impacts to MSES fauna and flora habitat within the Disturbance Footprint 97
Table 13: Projects near the Study Area 109
Table 14: Regional ecosystems remaining in the region 110
Table 15: Regulated vegetation significant residual impact assessment 111
Table 16: Significant residual impact assessment for king bluegrass (*Dichanthium queenslandicum*) 113
Table 17: Significant residual impact assessment for koala (*Phascolarctos cinereus)* 116

Table 18: Significant residual impact assessment for squatter pigeon (southern) (*Geophaps scripta scripta*) 120
Table 19: Significant residual impact assessment for Australian painted snipe (*Rostratula australis*) 123
Table 20: Significant residual impact assessment for Latham's snipe (*Gallinago hardwickii*) 126
Table 21: Significant residual impact assessment for ornamental snake (*Denisonia maculata*) 129
Table 22: Significant impact assessment for white-throated needletail (*Hirundapus caudacutus*) 131
Table 23: Significant residual impact assessment for short-beaked echidna (*Tachyglossus aculeata*) 133
Table 24: Landscape fragmentation and connectivity significant residual impact assessment 134
Table 25: Summary of significant impacts to MSES within the Study Area 136

List of Figures

Figure 1: Study Area overview 17
Figure 2: Flora survey sites within the Study Area 26
Figure 3: Fauna survey sites within the Study Area 32
Figure 4: Queensland Government regulated vegetation mapping within the Study Area 49
Figure 5: Queensland Herbarium certified map amendment (MAR3577) for the Study Area 52
Figure 6: BPA corridors within the Study Area 55
Figure 7: Ground-truthed regional ecosystems 62
Figure 8: King bluegrass records and habitat within the Study Area 67
Figure 9: Finger panic records and habitat within the Study Area 70
Figure 10: Koala records and habitat within the Study Area 75
Figure 11: Squatter pigeon (southern) records and habitat within the Study Area 78
Figure 12: Australian painted snipe habitat within the Study Area 81
Figure 13: Latham's snipe habitat within the Study Area 83
Figure 14: Ornamental snake habitat within the Study Area 86
Figure 15: Short-beaked echidna records and habitat within the Study Area 89

Appendices

Appendix A Desktop search results
Appendix B Likelihood of occurrence assessments
Appendix C Vegetation Community Descriptions
Appendix D Species Lists
Appendix E Landscape Fragmentation and Connectivity Tool Output

Definitions

Term	Definition
Conservation significant	Species and communities listed as critically endangered, endangered, vulnerable or near threatened. Includes special least concern and migratory species.
Disturbance Footprint	The Disturbance Footprint is inclusive of all infrastructure required for the Project (excluding offsite facilities being utilised to minimise this footprint) and includes all areas of proposed surface disturbance and is depicted on Figure 1. The infrastructure that is underground that will not result in surface disturbance have not been assessed as part of this report and is not included in the Disturbance Footprint.
Dry season survey	Referring to a dry season ecological assessment conducted in either June 2025 or July 2024 by e2m.
High-value regrowth	Category C vegetation that does not meet the definition of a remnant regional ecosystem (see remnant vegetation) and is a regional ecosystem that has not been cleared for at least 15 years. Includes vegetation that has regrown after clearing or been heavily thinned or logged (Neldner et al., 2022).
Matters of National Environmental Significance	The Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) protects certain nationally significant habitats, species and places referred to a Matters of National Environmental Significance (MNES). These MNES protected under the EPBC Act are: • world heritage properties • national heritage places • wetlands of international importance (Ramsar wetlands) • nationally threatened species and ecological communities • migratory species • Commonwealth marine areas • the Great Barrier Reef Marine Park • nuclear actions (including uranium mining); and a water resource, in relation to coal seam gas development and large coal mining development.
Non-remnant vegetation	All vegetation that is not mapped as remnant vegetation. Includes high-value regrowth, young woody regrowth, heavily thinned or logged and significantly disturbed vegetation that fails to meet the structural and/ or floristic characteristics of remnant vegetation. It also includes urban and cropping land (Neldner et al., 2022).
Prescribed environmental matter	Terrestrial ecology matters of national, state and/or local significance listed under the *Environmental Offsets Act 2014* and/or *Environment Protection and Biodiversity Conservation Act 1999*.
Regional ecosystem	A vegetation community in a bioregion that is consistently associated with a particular combination of geology, landform and soil (Neldner et al., 2022) and Regional Ecosystems and described in the Regional Ecosystem Description Database, produced by the Queensland Herbarium.

Term	Definition
Remnant vegetation	Category B vegetation that has not undergone recent clearing. It is defined under the Queensland *Vegetation Management Act 1999* as: "forming the predominant canopy of the vegetation— (i) covering more than 50% of the undisturbed predominant canopy; and (ii) averaging more than 70% of the vegetation's undisturbed height; and (iii) composed of species characteristic of the vegetation's undisturbed predominant canopy."
Special least concern	Those species that are not currently threatened, but are prescribed due to their significance in trade, harvesting and ecological and cultural significance. Includes migratory species for which there are international agreements.
Study Area	Area of assessment including Mining Leases (MLs) in which e2m have undertaken the terrestrial ecological assessment, identified in Figure 1.
Threatened species	A threatened species is any plant or animal species that is at risk of extinction, including species listed as critically endangered (CE) or (CR), endangered (E) or vulnerable (V) under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* or the Queensland *Nature Conservation Act 1992* (NC Act).
Vegetation community	An area of vegetation, which is relatively uniform with respect to structure and floristic composition (Neldner et al., 2022).
Wet season survey	The wet season ecological assessment conducted in February 2024 by e2m.
Young woody regrowth	Is non-remnant vegetation that has a significant woody component that is attributable to a RE but fails to meet the structural and floristic characteristics of Category C high-value regrowth or Category B remnant vegetation.

Abbreviations

Abbreviation	Description
AHD	Australian Height Datum
ALA	Atlas of Living Australia
AU	Assessment Unit
BAR	Bioacoustic recorder
Biosecurity Act	Queensland *Biosecurity Act 2014*
BoM	Bureau of Meteorology
CCM	Centurion Coal Mine
CMS	Conservation of Migratory Species
CND	Centurion North Development
CSG	Coal Seam Gas
DAWE	Former Commonwealth Department of Agriculture, Water and the Environment (now DCCEEW)
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
DEHP	Former Queensland Department of Environment and Heritage Protection (now DETSI)
DES	Former Queensland Department of Environment and Science (now DETSI)
DESI	Former Queensland Department of Environment, Science and Innovation (now DETSI)
DETSI	Queensland Department of Environment, Tourism, Science and Innovation
DEWHA	Former Commonwealth Department of the Environment, Water, Heritage and the Arts (now DCCEEW)
DNRMMRRD	Queensland Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development
DoR	Former Queensland Department of Resources (now DNRMMRRD)
DotE	Former Commonwealth Department of the Environment (now DCCEEW)
DSEWPaC	Former Commonwealth Department of Sustainability, Environment, Water, Population and Communities (now DCCEEW)
e2m	e2m Pty Ltd
EA	Environmental Authority
EO Act	Queensland *Environmental Offsets Act 2014*
EO Regulation	Queensland Environmental Offsets Regulation 2014

Abbreviation	Description
EP Act	Queensland *Environmental Protection Act 1994*
EPBC Act	Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
ESA	Environmentally Sensitive Area
Fisheries Act	Queensland *Fisheries Act 1994*
GPS	Global Positioning System
ha	Hectares
HES	High ecological significance
HQA	Habitat quality assessments
HVR	High-value regrowth
LIKTs	Locally Important Koala Tree species
m	Metres
ML	Mining Lease
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
SRI Guideline	Queensland Environmental Offsets Policy: Significant Residual Impact Guideline
NC Act	Queensland *Nature Conservation Act 1992*
Peabody	Peabody Energy Australia Pty Ltd
PEM	Prescribed environmental matter
PMST	Protected Matters Search Tool
PRCP	Progressive Rehabilitation and Closure Plan
RE	Regional ecosystem
REDD	Regional Ecosystem Description Database
SEQ	South East Queensland
SLC	Special least concern
sp.	Singular species. For example, *Eucalyptus* sp. refers to a single species of *Eucalyptus*
spp.	Multiple species. For example, *Eucalyptus* spp. refers to multiple species of *Eucalyptus*
TSSC	Threatened Species Scientific Committee
VM Act	Queensland *Vegetation Management Act 1999*
WoNS	Weeds of National Significance

Executive summary

Background

Centurion Coal Mine Pty Ltd a subsidiary of Peabody Energy Australia Pty Ltd (Peabody) currently operates the Centurion Coal Mine (CCM) located approximately 40 km north of the township of Moranbah in central Queensland. Peabody has secured the rights to explore resources within Mining Lease (ML) 1790, located immediately adjacent to and directly north of the CCM, which is situated on ML 6949. The Centurion North Extension Project (the Project) involves development of supporting infrastructure and sampling programs to enable coal seam gas (CSG) extraction and safe underground coal mining operations within ML1790. The Project is planned to form part of future planned development at the site which is subject of separate assessment under the *State Development and Public Works Organisation Act 1971*.

The Study Area is situated in the agricultural and resource areas of the Isaac Region. The region primarily consists of *Eucalyptus* and *Acacia* woodlands, natural grasslands, grazing lands, mining activities and regional townships. Non-remnant areas and vegetation near dams that have frequent cattle disturbance had higher abundance of non-native pasture grasses such as buffel grass (*Cenchrus ciliaris*), Indian bluegrass (*Bothriochloa pertusa*) and parthenium (*Parthenium hysterophorus*). Watercourses within the Study Area are of low stream order showing little evidence of bed and bank definition nor riparian vegetation. The beginning of Goonyella Creek exists in the south of the Study Area and the headwaters of Kennedy Creek are associated with dams in the east. Existing infrastructure within the Study Area is minimal, consisting mainly of unsealed access roads, cattle fencing, powerlines, a homestead and dams and troughs. However, historic disturbance from mining and gas exploration activities was observed throughout the Study Area. These exist as parallel tracks and small pads through remnant wooded vegetation, grasslands and non-remnant areas. Stock yards and cleared grazing paddocks are present both within the Study Area and surrounding region.

This assessment of matters of state environmental significance (MSES) has been prepared as supporting documentation for an application to amend the existing Environmental Authority (EA) P-EA-100658735 under the Queensland *Environmental Protection Act 1994*. The Study Area consists of a variety of vegetation types including remnant woodlands and grasslands, regrowth and non-remnant vegetation.

Existing environment

e2m Pty Ltd (e2m) identified and evaluated the terrestrial ecological values within the Study Area through a desktop assessment and wet and dry seasonal field surveys. Seasonal ecological field surveys were undertaken over three survey events in February and July 2024 and June 2025, in consideration of relevant Commonwealth and State survey and assessment guidelines and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Queensland *Nature Conservation Act 1992* (NC Act) and *Environmental Offsets Act 2014* (EO Act).

During the field survey a total of eleven remnant and high-value regrowth regional ecosystems (REs) were identified and mapped within the Study Area including three endangered REs (11.5.16, 11.5.17 and 11.9.5) and one of concern RE (11.8.11), listed under the Queensland *Vegetation Management Act 1999*.

A Queensland Herbarium certified map amendment (MAR3577) was previously approved for the Study Area based on submission of field-validated data and mapping undertaken by Kleinfelder in 2024, separately but in parallel with this current assessment. The map amendments have not been adopted by the Queensland Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD) as part of the Queensland Government regulated vegetation mapping at the time this assessment was prepared. Nonetheless, the Queensland Herbarium certified map amendment (MAR3577) has been used when assessing MSES regulated vegetation for this Project. This mapping

identified twelve REs within the Study Area including five endangered REs (11.4.8, 11.4.9, 11.5.16, 11.8.13, 11.9.5) and two of concern REs (11.3.4 and 11.8.11).

As a result of the field surveys a number of conservation significant species were recorded within the Study Area including:

- king bluegrass (*Dichanthium queenslandicum*) – endangered under the EPBC Act and vulnerable under the NC Act
- finger panic (*Digitaria porrecta*) – near threatened under the NC Act
- koala (*Phascolarctos cinereus)* – endangered under the EPBC Act and NC Act
- squatter pigeon (southern) *(Geophaps scripta scripta)* – vulnerable under the EPBC Act and NC act; and
- short-beaked echidna (*Tachyglossus aculeatus*) – special least concern under the NC Act.

Other conservation significant species that potential use habitats in the Study Area but were not identified during the field surveys, include:

- Australian painted snipe (*Rostratula australis*) – endangered under the EPBC Act and NC Act
- Latham's snipe (*Gallinago hardwickii*) – vulnerable under the EPBC Act and NC Act
- ornamental snake (*Denisonia maculata*) – vulnerable under the EPBC Act and NC Act
- white-throated needletail (*Hirundapus caudacutus*) – vulnerable and migratory under the EPBC Act and vulnerable under the NC Act; and
- migratory birds - migratory under the EPBC Act and special least concern (migratory) under the NC Act.

The following MSES were determined to require assessment against the *Queensland Environmental Offset Policy - Significant Residual Impact Guideline*:

- regulated vegetation
  - endangered and of concern REs
- protected wildlife habitat
  - king bluegrass
  - koala
  - squatter pigeon (southern)
  - Australian painted snipe
  - Latham's snipe
  - ornamental snake
  - white-throated needletail
  - short-beaked echidna; and
- connectivity areas.

Assessment of impacts and mitigation

The location of the Disturbance Footprint is largely defined by the nature and extent of the underground coal deposit. As such, it is constrained by resource, geographic, existing infrastructure, and feasibility considerations. However, through use of field-validated ecological constraint mapping the Project footprint has been reduced, reconfigured and refined through multiple design iterations to avoid environmentally sensitive areas and matters of conservation significance as far as possible.

Drill pads, boreholes, goaf drainage lines and access tracks have been located and designed to utilise non-remnant areas and existing areas of disturbance where possible, particularly for siting any new or extending access tracks. Furthermore, some components of the Project, e.g. sampling boreholes, will utilise low impact methods of access and where there is opportunity, further reduce the footprint through on ground refinements.

The Project will utilise existing surface and underground infrastructure at the CCM, e.g. raw water storage, underground power supply, permanent office, crib and workshop facilities, accommodation village, where possible and will not require any new off lease infrastructure to support the Project. The Project will utilise existing waste and water management facilities within the CCM.

Nonetheless, the Project will include construction and operational activities that have the potential to directly and indirectly impact ecological values occurring or potentially occurring within the Study Area. Direct and indirect impacts have been assessed and will include the removal of native vegetation and habitat. Potential indirect disturbance to threatened species' habitat will be adequately managed with the implementation of specific management plans and use of industry accepted measures.

Despite the iterative design process and measures proposed to avoid and minimise direct impacts, unavoidable residual impacts to ecological values, including MSES, will remain. These residual impacts have been assessed in accordance with the Queensland Environmental Offsets Policy: Significant Residual Impact Guideline and found that the Project has the potential to have a significant residual impact on the koala due to the extent of habitat clearing proposed. Significant residual impacts are considered unlikely to occur because of the Project on regulated vegetation, other species or habitats or connectivity areas due to:

1. absence of direct impacts
2. configuration of the Disturbance Footprint
3. implementation of industry standard and recognised mitigation and management measures to avoid and minimise disruption to breeding places and individuals
4. mobility of the conservation significant species; and/or
5. proportion of habitat proposed to be impacted compared with that remaining locally within the Study Area and more broadly in the regional landscape.

Significant residual impacts to MSES are likely to require offsetting in accordance with the Queensland EO Act and associated offset framework.

1 Introduction

1.1 Project background

Centurion Coal Mine Pty Ltd a subsidiary of Peabody Energy Australia Pty Ltd (Peabody), currently operates the Centurion Coal Mine (CCM) located approximately 40 km north of the township of Moranbah in central Queensland. Peabody has secured the rights to explore resources within Mining Lease (ML) 1790, located immediately adjacent to and directly north of the CCM, which is situated on ML 6949. The Centurion North Extension Project (the Project) involves the development of supporting infrastructure and sampling programs to enable coal seam gas (CSG) extraction and safe underground coal mining operations within ML1790. The Project is planned to form part of the larger Centurion North Development (CND), which will be the subject of a separate Environmental Impact Study (EIS) under Part 4 of the *State Development and Public Works Organisation Act 1971* (SDPWO Act).

Previous amendment of Peabody's Environmental Authority (EA) P-EA-100658735 and Progressive Rehabilitation and Closure Plan (PRCP) P-PRCP-100669070_V1 was approved on 26 March 2025, by the Department of the Environment, Tourism, Science and Innovation (DETSI) to allow the 'Pilot CSG Exploration and Extraction Programme' to commence from 2025 until 2027. These previously approved works have been commenced within the Project area.

The Project also requires an amendment to the current Environmental Authority (EA) P-EA-100658735 and Progressive Rehabilitation and Closure Plan (PRCP) P-PRCP 100669070_V1 under the Queensland *Environmental Protection Act 1994* (EP Act). This assessment of matters of state environmental significance (MSES) will support an application to amend the EA and PRCP.

The Project area, existing approved works currently under development (i.e. associated with EA P-E-100658735), as well as other previously disturbed areas, are presented in Figure 1.

1.2 Project description

The Project will include the following key activities on ML 1790:

- construction of new access tracks
- installation of a laydown area
- construction of drill pads for surface-to-inseam wells, vertical production wells, gas risers, service boreholes, sampling boreholes and a bleeder shaft
- drilling and operation of vertical and lateral surface-to-inseam wells to drain gas from coal seams
- construction of gas risers to manage gas transfer to surface facilities
- construction of service boreholes to transfer materials from the surface to underground
- drilling of boreholes for gas, coal propensity, geotechnical and exploration sampling purposes
- development of a bleeder shaft for mine ventilation and safe gas management; and
- disturbance for future goaf drainage lines.

For the purposes of this assessment, the activities described above, and their relative surface disturbance requirements will be referred to herein as the Disturbance Footprint (Figure 1).

1.3 Purpose and scope

This report has been produced to support an application to DETSI for an EA amendment under the EP Act. Specifically, this report details ecological surveys undertaken to date within the Study Area and focuses on the MSES assessed as known or likely to occur within the Disturbance Footprint. It will also present proposed avoidance, minimisation and mitigation strategies to reduce direct and indirect impacts to protected environmental matters (PEMs). Any residual impacts have been assessed under the relevant guidelines to determine if the Project will result in a significant impact to a MSES. The scope of this assessment includes:

- a desktop assessment including a review of online databases
- a description of field survey effort completed to date
- methods and results from the field surveys including any confirmed or likely occurring MSES and associated habitat mapping
- a likelihood of occurrence assessment utilising desktop and ground-truthed information
- assessment of direct and indirect impacts that the Project may have on MSES and any avoidance and mitigation measures to minimise these impacts; and
- assessments against the *Queensland Environmental Offsets Policy: Significant Residual Impact Guideline* (SRI guideline) for MSES considered to potentially occur.

1.4 Study Area overview

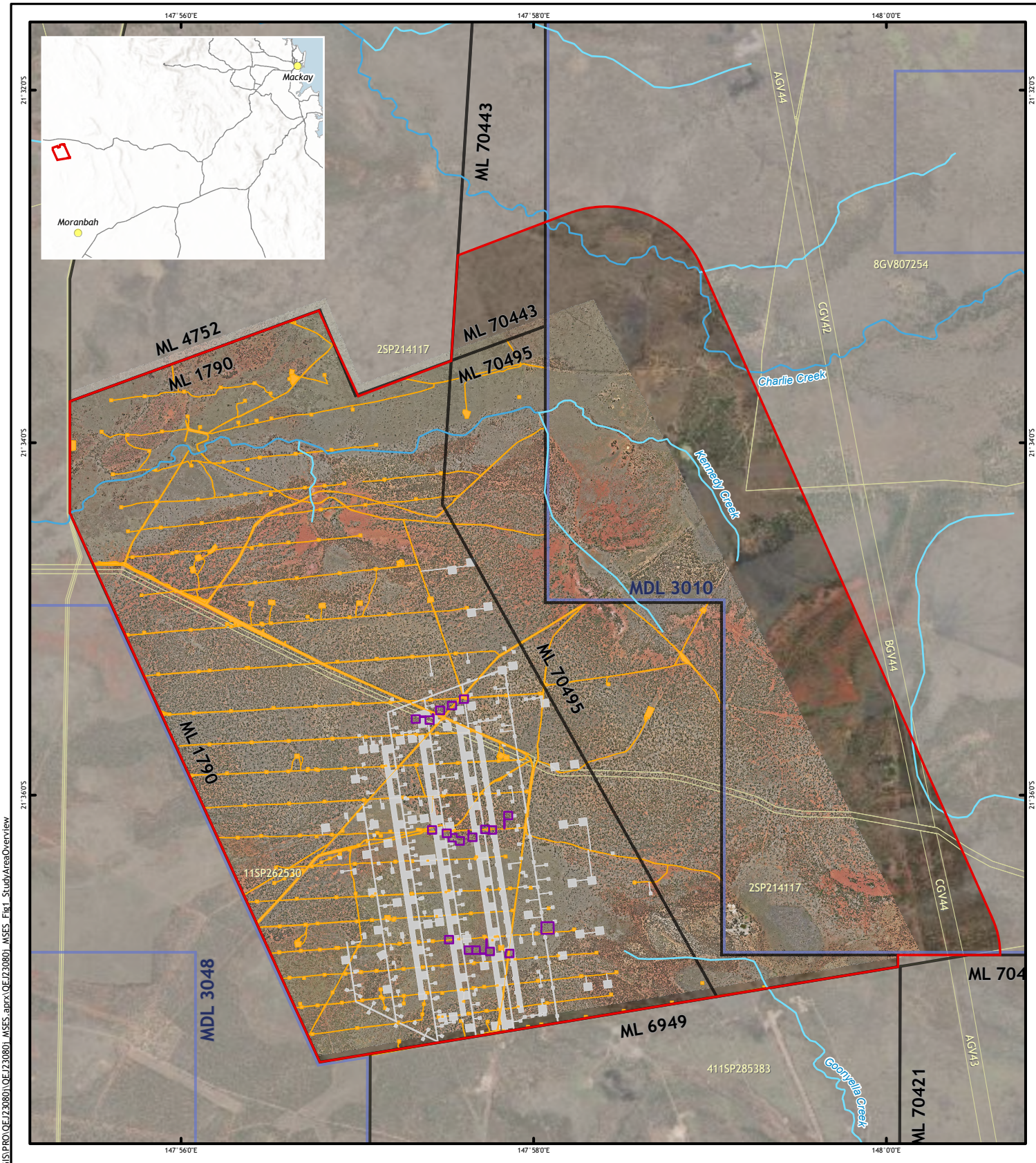
The Study Area for this assessment covers a much broader area than the Disturbance Footprint for the Project shown in Figure 1 and described in Section 1.1. This broad Study Area is relevant to the wider CND project, and as the studies commenced for the CND project encompassed the Disturbance Footprint, they are considered highly relevant to this Project. For this reason, this assessment uses outcomes of desktop assessments and field surveys undertaken for the broader Study Area.

The Study Area is situated in the agricultural and resource areas of the Isaac Region. It is located approximately 40 km north of Moranbah within the Isaac Regional Council Local Government Area in central Queensland. The Study Area is accessed from Moranbah via the Goonyella Road, the Red Hill Road and the North Goonyella Mine Access Road. Mackay is located approximately 140 km (and approximately 188 km by road) to the east and is accessed via the Peak Downs Highway and the Suttor Developmental Road. The region primarily consists of *Eucalyptus* and *Acacia* woodlands, natural grasslands, grazing lands, mining activities and regional townships.

The Study Area consists of a variety of vegetation types, including remnant woodlands and grasslands, regrowth and non-remnant vegetation. The centre of the Study Area is dominated by eucalypt woodlands of narrow-leaved ironbark (*Eucalyptus crebra*) and Brown's box (*E. brownii*) on old residual red sandy soils. Areas of exposed weathered basalt within these older residual soils and sands sometimes supported *Acacia* spp. woodland or sparse semi-evergreen vine thicket. Edges of sandy and rocky areas moved into red weathered basalt clays that supported brigalow (*Acacia harpophylla*) woodland with high gravel influence. Undulating hills and plains in the north and south of the Study Area comprised a mosaic of natural grasslands and mountain coolibah (*Eucalyptus orgadophila*) woodland on dark black to brown basalt clays. Non-remnant areas and vegetation near dams that have frequent cattle disturbance had higher abundance of non-native pasture grasses such as buffel grass (*Cenchrus ciliaris*), Indian bluegrass (*Bothriochloa pertusa*) and parthenium (*Parthenium hysterophorus*).

Watercourses within the Study Area are of low stream order, showing little evidence of bed and bank definition nor riparian vegetation. The beginning of Goonyella Creek exists in the south of the Study Area, and the headwaters of Kennedy Creek are associated with dams in the east. Two tributaries of Kennedy Creek begin in the Study Area (both stream order 1), which converge and exit the north-west edge of the Study Area (stream order 2). Kennedy Creek runs through native grasslands on basalt plains and does not support riparian vegetation. Charlie Creek is located in the far north-east of the Study Area, which has a shallow defined bank and a wide bed of basalt clays and mixed native and pastoral grasses. The vegetation is dominated by a sparse open canopy of black tea-tree (*Melaleuca bracteata*) with occasional river red gum (*Eucalyptus camaldulensis*) and Queensland blue gum (*Eucalyptus tereticornis*).

Existing infrastructure within the Study Area is minimal, consisting mainly of unsealed access roads, cattle fencing, powerlines, a homestead and dams and troughs. However, historic disturbance from mining and gas exploration activities was observed throughout the Study Area. These exist as parallel tracks and small pads through remnant wooded vegetation, grasslands and non-remnant areas. Stock yards and cleared grazing paddocks are present both within the Study Area and the surrounding region.



Legend

Watercourse (Stream Order)

1 2

Cadastre

Study Area

Mineral Development Licence

Mining Lease

Disturbance Footprint

Existing Approved Works (EA 100658735)

Previously Disturbed Areas

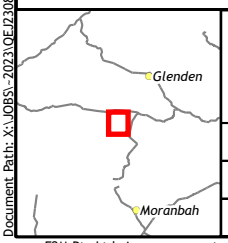
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	15/10/2025

FIGURE 1: STUDY AREA OVERVIEW

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig1_StudyAreaOverview

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

2 Regulatory framework

2.1 Commonwealth

2.1.1 Commonwealth EPBC Act 1999

Actions that have or are likely to have a significant impact on Matters of National Environmental Significance (MNES) require approval from the Commonwealth Government Minister for the Environment (the Minister) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). MNES protected under the EPBC Act include:

- threatened species and ecological communities
- listed migratory species
- wetlands of international importance
- the Commonwealth marine environment
- World Heritage properties
- National Heritage places
- nuclear actions
- the Great Barrier Reef Marine Park; and
- water resources, in relation to coal seam gas development and large coal mining development.

Assessment of a Project under the EPBC Act for MNES considered to occur in the Study Area may be required against the Commonwealth *EPBC Act Significant Impact Guidelines 1.1 – Matters of National Environmental Significance* (DotE, 2013b) (SIA Guidelines). MNES for which a significant impact is likely may require offsets in accordance with the *EPBC Act Environmental Offsets Policy* (DSEWPaC, 2012) described below.

2.1.1.1 EPBC Act Environmental Offsets Policy

The EPBC Act *Environmental Offsets Policy* defines the Commonwealth Government's approach to environmental offsets under the EPBC Act, providing a streamlined national framework for environmental assessments and approvals. Where relevant, environmental offsets are considered during the environmental impact assessment process to address any residual significant impacts an action may have on MNES after all feasible avoidance and mitigation measures have been explored.

2.2 Queensland

2.2.1 Environmental Protection Act 1994

The Queensland *Environmental Protection Act 1994* regulates prescribed environmentally relevant activities and resource activities (which include a mining activity) through the issuing of Environmental Authorities (EAs) and the enforcement of the conditions of granted authorities. An EA for a resource activity is required to authorise the proposed mining activities within the lease area. State-protected environmental values and biodiversity are required to be considered as part of an EA application including Environmentally Sensitive Areas (ESAs). ESAs include three categories, A, B and C, which are defined

under the *Environmental Protection Regulation 1994*. ESAs are defined and conditioned within an EA for a Project.

2.2.2 Nature Conservation Act 1992

The NC Act prohibits the taking or destruction, without authorisation, of protected flora and fauna species in the wild. All native plants and animals in Queensland are protected under Section 71 of the Act. This Act also provides for an integrated and comprehensive approach to conserving nature. It provides a legislative basis for research, community education, dedicating, declaring and managing protected areas, and protecting native wildlife and its habitat.

The *Nature Conservation (Animals) Regulation 2020* (NC (Animals) Regulation) and the *Nature Conservation (Plants) Regulation 2020* (NC (Plants) Regulation) lists the plants and animals considered presumed extinct in the wild, critically endangered, endangered, vulnerable, near threatened, least concern, special least concern and international and prohibited. The NC Regulations discuss their significance and state the declared management intent and the principles to be observed in any taking and use for each group.

Appropriate authorisations or permits under the NC Act are required prior to clearing of listed conservation significant plant species (Protected Plants Permit), interfering with an animal breeding place (Species Management Program), or removing protected animals, unless the activity is exempt.

2.2.3 Vegetation Management Act 1999

The *Vegetation Management Act 1999* (VM Act) regulates the clearing of native vegetation, including remnant regional ecosystems (REs), high-value regrowth (HVR) and non-remnant areas on certain tenures, except for exemptions under the NC Act, the *Land Act 1994*, and the *Forestry Act 1959*. While approvals and permits under the VM Act do not apply to mining leases, the VM Act provides useful guidelines for the mapping and classification of vegetation communities in Queensland, which are required to be assessed as part of the approvals process for this Project under the EP Act and *Environmental Offsets Act 2014*.

Remnant vegetation is defined as vegetation that has not undergone recent clearing and form the predominant canopy of the vegetation:

i. covering more than 50% of the undisturbed predominant canopy; and

ii. averaging more than 70% of the vegetation's undisturbed height; and

iii. composed of species characteristic of the vegetation's undisturbed predominant canopy.

HVR areas are those which have not been cleared for over 15 years if the area is an endangered, of concern or least concern RE.

The status of REs and HVR is based on their pre-clearing and remnant extent, as gazetted under the VM Act and listed in the Regional Ecosystem Description Database (REDD) maintained by the DNRMMRRD. An RE considered to have "Vegetation Management Status" is described as an:

- endangered regional ecosystem:
  - less than 10% of its pre-clearing extent remaining; or
  - 10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 hectares (ha).
- of concern regional ecosystem:

- 10% to 30% of its pre-clearing extent remaining; or
- more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha.

- least concern regional ecosystem:
  - more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10,000 ha.

2.2.4 Queensland Environmental Offsets Act 2014

The *Environmental Offsets Act 2014* (EO Act) establishes Queensland's framework for environmental offsets and specifies how they should be provided. While environmental offsets are not a trigger for assessment, they can be imposed as a condition of approval under the EO Act for a prescribed activity (listed in Schedule 1 of the *Environmental Offsets Regulation 2014*) that has a significant residual impact (SRI) on a PEM, i.e. matters of national, state, or local environmental significance. MSES are listed in Schedule 2 of the EO Regulation and include:

- regulated vegetation (limited to endangered and of concern REs, vegetation management wetlands, essential habitat and vegetation associated with a vegetation management watercourse)
- connectivity areas
- wetlands and watercourses
- designated precinct in a strategic environmental area
- protected wildlife habitat
- protected areas
- highly protected zones of State marine parks
- fish habitat areas
- waterways providing for fish passage
- marine plants; and
- legally secured offset areas.

Native vegetation clearing is a prescribed activity, and several MSES are relevant to the Project; therefore offsets, can be conditioned if a SRI on a MSES is likely after all feasible avoidance and mitigation measures have been applied.

However, it is noted that Section 15 of the EO Act prevents state and local governments from imposing an offset condition for a prescribed activity if the same or substantially the same PEM and impacts have already been assessed under the EPBC Act as a 'controlled action'.

2.2.4.1 Environmental Offsets Policy

The Queensland Environmental Offsets Policy is a statutory instrument established under the EO Act as a decision-support tool, enabling state and local administering agencies to evaluate the requirement for offsets and whether an offset proposal aligns with the requirements of the EO Act. A number of additional guidelines are referred to in the Queensland Environmental Offsets Policy, including SRI Guidelines, which are used to assess the significance of impacts under the EO Act.

Potential impacts of the Project on MSES have been assessed against the *Queensland Environmental Offsets Policy Significant Residual Impact Guideline, December 2014* (SRI Guideline) (Department of Environment and Heritage Protection (DEHP), 2014a).

2.2.5 Biosecurity Act 2014

The *Biosecurity Act 2014* ensures a consistent, risk-based approach to biosecurity in Queensland. The Act provides biosecurity measures to safeguard Queensland's economy, agricultural and tourism industries and environment from:

- pests (e.g. wild dogs and weeds)
- diseases (e.g. foot-and-mouth disease); and
- contaminants (e.g. lead on grazing land).

The Act categorises pests (including animals and plants) according to their biosecurity risk or general obligation. Under the Act, all persons have a general biosecurity obligation to take all reasonable and practical measures to prevent or minimise the biosecurity risk. This includes:

- preventing or minimising adverse effects of a biosecurity risk
- minimising the likelihood of causing a biosecurity event and deal with a biosecurity matter by limiting the consequences of a biosecurity event should one arise; and
- not exacerbating the effects of a biosecurity matter.

3 Methods

3.1 Desktop assessment

A desktop assessment was undertaken prior to field surveys to identify potential PEMs within the Study Area, including MNES and MSES. This report will only present information on MSES. The assessment included a review of the following:

- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool (DCCEEW, 2025a)
- Commonwealth Bureau of Meteorology (BoM) Groundwater Dependent Ecosystem (GDE) Atlas (BoM, 2025b)
- Queensland DETSI Regional Ecosystem (RE) mapping (version 13.1)
- Queensland DETSI MSES mapping (DETSI, 2025a)
- Queensland DETSI WildNet database for species listed under the NC Act (DETSI, 2025b)
- Queensland DETSI Protected Plants Flora Survey Trigger Map (DETSI, 2025b)
- Queensland DETSI Map of Environmentally Sensitive Areas (ESA) (DETSI, 2025b)
- Queensland DETSI GDE mapping (Department of Environment and Science (DES), 2018)
- Queensland Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRD) - Regulated Vegetation Management Map and Vegetation Management Supporting Map, including Essential Habitat, watercourse and wetland mapping (DNRMMRRD, 2025c)
- Queensland DNRMMRRD Vegetation management watercourse and drainage feature map (1:100,000 and 1:250,000) - Queensland except South East Queensland (DNRMMRRD, 2025d)
- Queensland DNRMMRRD Detailed Surface Geology (DNRMMRRD, 2025)
- Atlas of Living Australia (ALA) species databases (ALA, 2020)
- latest available aerial photography
- a review of historical aerial photography (DNRMMRRD, 2025a); and
- literature review of available ecological assessment reports for surrounding area.

Where desktop sources required a search extent, a 25 km buffer to the approximate centre of the Study Area was applied (-21.5851, 147.9613). Results of the desktop assessments are provided in Section 4.

3.2 Field assessment

Seasonal field surveys were conducted to identify and characterise the presence, extent and condition of terrestrial ecology values within the Study Area. Seasonal surveys were undertaken to ensure assessments for MSES were undertaken during suitable conditions and in accordance with applicable Commonwealth and State government survey guidelines, as detailed in Section 3.3.

3.2.1 Survey timing and conditions

Surveys undertaken by e2m did not comply with the recommended survey timing in the Queensland Terrestrial Vertebrate Fauna Survey Guidelines; nonetheless, conditions were optimal for the detection of a number of the MSES identified in the desktop and likelihood of occurrence assessments. Three surveys were undertaken within the Study Area, comprising:

- wet season in February 2024
- dry season in July 2024; and
- dry season in June 2025.

Details of each survey event, including weather conditions preceding and during the survey event, are provided in Table 1.

Table 1: Survey timing and conditions

Survey	Survey dates	Weather conditions
February 2024	12 – 21 February 2024 (10 days)	A total of 333 mm of rain was recorded during the three months preceding the survey period (BoM, 2025a). A rainfall event of 57.8 mm was recorded (Station: 34035 Moranbah Airport) (BoM, 2025a) during the survey. Conditions during the survey were warm and humid. Daily maximum temperatures ranged from 28.6 ºC to 34.7 ºC while minimum daily temperatures ranged from 19.7 ºC to 23.9 ºC (Station: 34035) (BoM, 2025a). Conditions were considered suitable for a number of threatened flora species, with reproductive structures present (i.e. seed and flowers), as well as threatened fauna and migratory species. Larger dams retained shallow ponding, while watercourses were generally dry, with the exception of scattered pools in Kennedy Creek in the north-west of the Study Area.
July 2024	8 – 17 July 2024 (10 days)	During the three months preceding this survey, a total of 109 mm of rain was recorded, with 98.4 mm recorded in the month prior to the field survey (i.e. June) (Station: 34035 Moranbah Airport (approximately 43 km to the west)) (BoM, 2025a). No rain was recorded during the survey. Weather conditions during the survey were cool and dry. Daily maximum temperatures ranged from 21.8 ºC to 26.2 ºC while minimum daily temperatures ranged from 2.2 ºC to 13.8 ºC (Station: 34035) (BoM, 2025a). At the time of the survey, water was low in most dams. Watercourses and ephemeral drainage features were dry.
June 2025	11 – 22 June 2025 (12 days)	During the three months preceding the survey, a total of 286.4 mm was recorded, with 26.8 mm recorded in the month prior to the field survey (i.e. May) (Station: 34035 Moranbah Airport (approximately 43 km to the west)) (BoM, 2025a). Notably, almost 200 mm of rain fell over 10 days from 27 March to 5 April 2025. Daily maximum temperatures ranged from 17.0 ºC to 24.7 ºC while minimum daily temperatures ranged from 0.3 ºC to 13.3 ºC (BoM, 2025a). Conditions during the survey were cool and dry. However, vegetation was readily identifiable due to the above-average late wet-season rainfall that occurred two months prior to the survey. As such, permanent water features (dams) were at capacity, overflow areas were presenting as large wetlands, and Kennedy Creek had flow due to the overflow of a dam. Ephemeral water was occasionally present in low-lying areas such as gilgais and depressions.

3.2.2 Flora field survey

Assessment of vegetation and impacts to MSES has been assessed using a combination of Queensland Government mapping, a previously certified map amendment and field survey data as described in the following sections.

Vegetation and flora surveys were undertaken to categorise vegetation groups, understand floristic diversity and determine the presence of flora values that are listed as PEMs within the Study Area. Section 3.3 details the overall survey effort and demonstrates compliance with relevant survey guidelines.

Flora survey sites were initially identified through the use of aerial imagery, RE mapping and geological information to stratify the Study Area. Additional sites were conducted, and site locations adjusted during the field surveys as required based on ground-truthed findings.

3.2.2.1 Regional ecosystems

An RE map amendment was submitted by Kleinfelder and approved by the Queensland Herbarium (MAR3577) in June 2024 to refine vegetation mapping within the Study Area prior to this current assessment. MSES impact assessments and calculations relative to MSES regulated vegetation will utilise this Queensland Herbarium certified amendment mapping. However, ground-truthed RE mapping undertaken by e2m as part of this current assessment will be utilised for habitat mapping for all other MSES values.

Vegetation within the Study Area was ground-truthed and mapped in accordance with the *Methodology for surveying and mapping of regional ecosystems and vegetation communities in Queensland* (Neldner et al., 2022). Tertiary and quaternary vegetation assessments were undertaken across the Study Area over the 2024 and 2025 surveys, as depicted in Figure 2. Tertiary assessments comprised a comprehensive survey of flora species (by strata), relative abundance and overall vegetation structure, such as height and cover. Quaternary surveys are a rapid assessment used to verify REs based on the structure, composition and condition of the ecologically dominant layer.

Vegetation was categorised into three classes based on RE description, vegetation structure and condition. These categories comprised:

- **Remnant** - communities that conform with the definition under the Queensland *Vegetation Management Act 1999* (VM Act) and referenced by Neldner et al. (2022). Specifically, this comprises 'vegetation, part of which forms the predominant canopy of the vegetation:
  - covering more than 50% of the undisturbed predominant canopy
  - averaging more than 70% of the vegetation's undisturbed height; and
  - composed of species characteristic of the vegetation's undisturbed predominant canopy.'
- **High value regrowth** – vegetation communities that have previously been cleared but meet the broad floristics and structural characteristics consistent with a particular RE. Specifically, this comprises native vegetation regrowth that has not be cleared or substantially thinned in the previous 15 years and meets either the minimum cover or the minimum height requirements to be considered remnant vegetation, but not both.
- **Non-remnant** – all vegetation that is not mapped as remnant or high-value regrowth vegetation, including:
  - young woody regrowth: vegetation that contained species composition consistent with a particular RE, but failed to meet the undisturbed height or canopy cover consistent with that of remnant vegetation and has been disturbed in the previous 15 years; and

- other vegetation: native and non-native vegetation that has been historically cleared/disturbed or heavily modified (i.e. improved pastures, weed dominated etc).

Where benchmark strata height and cover data were unavailable for a particular RE, information provided in the *Regional Ecosystem Technical Descriptions for the Brigalow Belt* (DES, 2018b) and vegetation formations defined by Specht (1970) were used to determine remnant height thresholds.

A total of 468 quaternary assessments and 29 tertiary assessments were undertaken throughout the Study Area. Results of vegetation assessments are discussed in Section 5.1.

3.2.2.2 Threatened flora

3.2.2.2.1 Threatened flora meanders

The random meander technique (Cropper, 1993) was undertaken to survey for potential threatened flora in suitable habitats within the Study Area. The technique involves traversing each habitat type that is suitable for the target species within the Study Area in a manner that maximises the coverage of habitat and potential to encounter threatened flora species. This method also allows for exploration of microhabitat features and the discovery of clumps of individuals encountered during the survey. A variation of this method has been adopted as the preferred method under the NC Act *Flora Survey Guidelines - Protected Plants* (DETSI, 2025a) (Flora Survey Guidelines) and *Draft Survey Guidelines for Australia's Threatened Orchids* (DotE, 2013). No species-specific survey guidelines are available for other threatened flora species returned from database searches.

Timed meander surveys described in the Flora Survey Guidelines were undertaken during the field assessment. Areas of suitable habitat were surveyed until the habitat patch was exhausted, or 30 minutes had expired. When a threatened flora species was identified, a threatened flora plot survey was undertaken to determine density, and the survey was stopped.

3.2.2.2.2 Threatened flora plot surveys

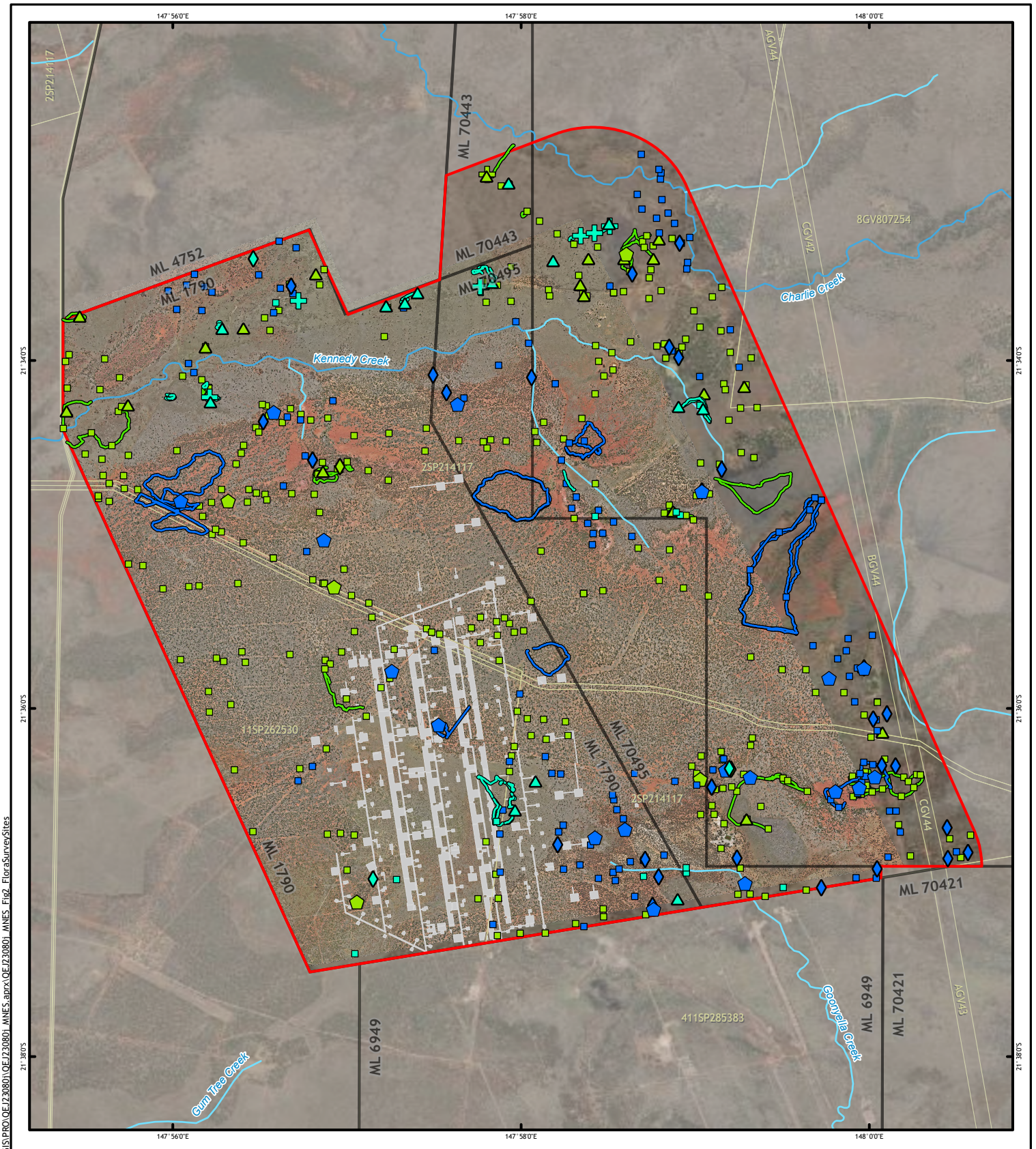
A variation of the threatened flora plot surveys described in the Flora Survey Guidelines was undertaken. Threatened flora plot surveys were used to estimate population sizes of threatened flora species in the patches where they were recorded. Upon encountering individuals of a target species, a 50 m x 4 m plot was established within the habitat patch. Within the plot, each threatened flora species was counted. Separate tussocks were counted as individuals within the plot, where relevant.

Population size (e.g. tussocks per ha) in a patch was then estimated by averaging the count per plot within the broader habitat area and multiplying to convert to a density per hectare. This density is based on areas of suitable habitat where the species is present.

A total of 28 plots were established in grassland habitat. The locations of these plots are depicted in Figure 2.

3.2.2.3 Opportunistic observations

Flora species, including threatened species, observed that were not recorded via other survey methods, were also recorded as opportunistic observations. This included those species observed while driving or walking between survey sites.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

June 2025 Survey

- Brigalow TEC survey site
- Grasslands TEC survey site
- Threatened flora plot
- Quaternary vegetation survey site
- Threatened flora meander

July 2024 Survey

- Brigalow TEC survey site
- Tertiary vegetation survey site
- Quaternary vegetation survey site
- Threatened flora meander

February 2024 Survey

- Brigalow TEC survey site
- Grasslands TEC survey site
- Threatened flora plot
- Tertiary vegetation survey site
- Quaternary vegetation survey site
- Threatened flora meander

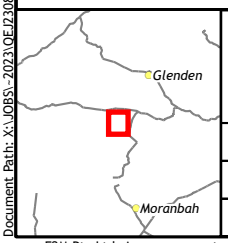
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 2: FLORA SURVEY SITES WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j 2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j MNES.aprx\QEJ23080j MNES Fig2 FloraSurveySites

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

3.2.3 Fauna field survey

A suite of fauna survey methods was undertaken to detect the presence of fauna species listed as PEMs within the Study Area in accordance with relevant Commonwealth and State Government survey guidelines throughout three survey periods.

To determine ideal survey sites to survey for fauna species, aerial imagery, RE mapping and geological information assisted in the initial identification of potential suitable habitat for fauna species within the Study Area. These areas were selected as survey sites and adjusted during the field surveys as required based on ground-truthed observations.

3.2.3.1 Rapid habitat assessment

Rapid habitat assessments were undertaken throughout the Study Area to identify the presence of habitat features that may support fauna. Assessments focused on the identification of key microhabitat features for general fauna as well as threatened species. Fauna habitat assessments were conducted within representative habitats throughout the Study Area to document:

- the presence and condition of watercourses, wetlands, or artificial waterbodies (e.g., dams), including relative permanency of water
- abundance of feed trees and Locally Important Koala Tree species (LIKTs) and ancillary shelter species as identified by Youngentob et al. (2021)
- presence and abundance of native grasses and forbs
- abundance of hollow bearing trees and logs
- abundance of coarse woody debris and leaf litter
- soil crack abundance and depth; and
- evidence of existing threats, including:
  - presence and abundance of feral species (i.e. wild dogs, feral cats, European foxes etc.)
  - woody weed encroachment; and
  - presence and abundance of barbed wire fencing, etc.

A total of 142 rapid habitat assessments were undertaken within the Study Area and are presented in Figure 3. Delineation between each survey period is presented in Table 2.

3.2.3.2 Pitfall and funnel trapping

Pitfall and funnel trapping was undertaken to target threatened reptile species identified from the desktop assessment in accordance with the *Draft Referral Guidelines for Nationally Listed Brigalow Belt Reptiles* (DSEWPC, 2011). Each trap site utilised the 'T configuration', comprising a 30 m and 15 m drift fence with 4 pitfall buckets and 6 funnel traps arranged at a set distance along the drift fences, as described by (Eyre et al., 2022). Two sites contained both funnel and pitfall traps, while four sites only contained funnel traps. Traps were deployed primarily in brigalow and, to a lesser extent, other woodland vegetation communities. A total of six trap sites were installed, deployed over a four-night period at the locations depicted in Figure 3.

3.2.3.3 Nocturnal spotlighting

Nocturnal spotlighting surveys were undertaken to target fauna that are most active and detectable at night and adopted relevant techniques for applicable species under the following guidelines:

- *Survey guidelines for Australia's threatened reptiles* (DSEWPC, 2011b)
- *Terrestrial Vertebrate Fauna Survey Guidelines for Queensland* (Fauna Survey Guidelines) (Eyre et al., 2022)
- *Draft Referral Guidelines for Nationally Listed Brigalow Belt Reptiles* (DSEWPC, 2011); and
- species specific guidelines published by the Commonwealth DCCEEW (2023d).

Nocturnal spotlighting on foot commenced approximately 30 minutes after sunset for a duration up to five person hours per night (Figure 3). A team of two ecologists walked parallel at a maximum of 100 m apart, meandering transects using a handheld torch and/or a head torch to detect eye shine and investigate microhabitats (e.g. peeling bark or lifting coarse woody debris). Nocturnal driving transects were also undertaken, allowing for extensive areas to be surveyed efficiently. Nocturnal slow-drive vehicle transects involved scanning suitable vegetation with handheld spotlights (50-100 watts) across woodland areas within the Study Area.

Surveys were undertaken over five consecutive nights in the February 2024 survey and four consecutive nights in the July 2024 survey. Spotlighting effort during the February 2024 survey focused on walking transects in *Acacia harpophylla* (brigalow) dominated vegetation to focus survey effort on ornamental snake (*Denisonia maculata*). Spotlighting effort during the July 2024 survey focused on driving transects through eucalypt woodlands to focus survey effort on koala (*Phascolarctos cinereus*) and greater glider (southern) (*Petauroides volans*).

3.2.3.4 Call playback

Call playback was undertaken within the Study Area in association with spotlighting surveys (Figure 3). Calls of koala were broadcast on a loudspeaker for a period of two minutes, followed by 15 minutes of silence, during which observers listened for call backs. Calls of koala were then broadcast a second time (for a period of two minutes), followed by another 15-minute listening period. A total of four call playbacks were undertaken over four nights.

3.2.3.5 Wetland and waterpoint bird surveys

Wetland and waterpoint bird surveys were undertaken in the early morning and late afternoon during each survey period, across multiple sites within the Study Area (Figure 3). Bird surveys occurred in accordance with the area search method prescribed in the *Survey guidelines for Australia's threatened birds* (Department of the Environment, Water, Heritage and the Arts (DEWHA), 2010). Surveys were completed at dams and suitable wetland habitats, including gilgai. In teams of two, surveyors used water source watches and flushing techniques at dawn, dusk and other times during the day to observe threatened wetland bird species.

3.2.3.6 Woodland and aerial bird surveys

Woodland and aerial bird searches were undertaken during each survey period on-foot by meandering transects and driving transects in suitable habitat and opportunistically while undertaking other fauna habitat assessments (Figure 3). The bird surveys were undertaken in accordance with methods prescribed in the *Fauna Survey Guidelines* (Eyre et al., 2022). These surveys targeted woodland and aerial birds that occupy habitat away from water sources.

3.2.3.7 Active searches

Active searches were undertaken concurrently with and opportunistically between other assessments (Figure 3), following methods prescribed in the *Fauna Survey Guidelines* (Eyre et al., 2022). Active searches involved searching suitable microhabitat features (e.g. fallen woody debris, leaf litter, decorticating bark) for fauna or evidence of fauna (e.g. scats, scratches, burrows), and included the SAT method (Phillips & Callaghan, 2011) to detect scats around trees. Slow driving transects were undertaken in suitable habitat and when moving between survey sites (Figure 3).

3.2.3.8 Motion-activated cameras

Motion detection cameras baited with dog food and fish oil to target pest fauna species (i.e. wild dogs, feral cats and feral pigs) were deployed within the Study Area (Figure 3) between five and ten consecutive nights during the 2024 survey periods. All photos were reviewed to identify the presence of the target species as well as other native and pest fauna species.

3.2.3.9 Bioacoustic recorders

Bioacoustic recorders (BARs) were deployed (and moved) at eight sites over three or four consecutive nights during the February 2024 survey in suitable habitat within the Study Area to record calls projected by koalas (Figure 3).

BAR recordings were processed in two stages in order to identify the presence of target species. Audio recordings were initially screened through a computer vision-based call detection model. These call detection models used the current industry-accepted audio detection framework identified by Stowell (2022), which is a Convolutional Neural Network trained on 100s to 1000s of examples of target species' calls. Specifically, the call detection models used a ResNet-34 model with pre-trained weights that was fine-tuned for the target calls, which typically achieves high performance in image and acoustic recognition tasks (He et al., 2016; Stowell, 2022; Stowell et al., 2019). The call detection models targeted the loudest, most frequently heard and most readily identifiable calls and vocalisations of the target species (Higgins et al., 2006; Pizzey & Knight, 2007). Following the call detection model screen, all potential calls identified by the model were manually reviewed by an e2m ecologist. This approach required the manual discrimination among sympatric species with similar calls.

3.2.3.10 Opportunistic surveys

Opportunistic observations (of both native and pest fauna) were also made while undertaking other activities throughout the Study Area on foot or while driving throughout the Study Area between survey activities.

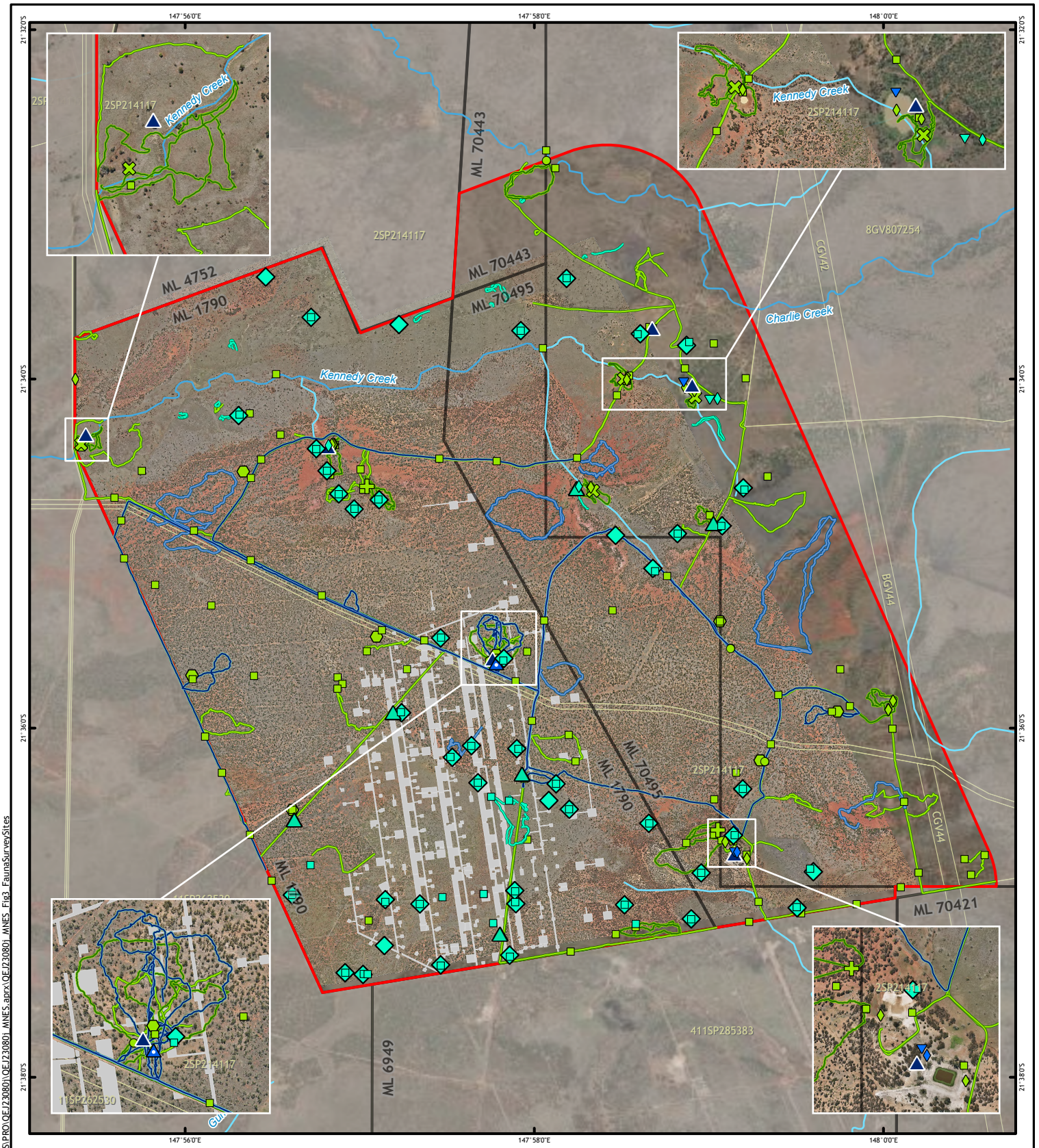
3.2.3.11 Fauna survey effort

Table 2 below summarises the total fauna survey effort and the target species.

Table 2: Fauna survey effort undertaken within the Study Area

Technique	Survey effort period			Total Effort	Target species
	February 2024	July 2024	June 2025		
Rapid habitat assessment	90 rapid habitat assessments	-	52 rapid habitat assessments	142 rapid habitat assessments	All MSES fauna
Pitfall and funnel trapping	8 pitfall trapline nights 24 funnel trapline nights	-	-	8 pitfall trapline nights 24 funnel trapline nights	Ornamental snake
Nocturnal spotlighting	24 person hours on-foot over 5 nights 2 person hours of nocturnal driving transects over 3 nights, totalling 7 km	11 person hours on-foot over 4 consecutive nights 11 person hours of nocturnal driving transects over 4 consecutive nights, totalling 40 km	-	35 person hours on-foot over 9 nights 13 person hours of nocturnal driving transects over 7 nights, totalling 47 km	Ornamental snake Koala Greater glider Short-beaked echidna
Call playback	4 call playback sessions over 4 nights	-	-	4 call playback sessions over 4 nights	Koala
Wetland and waterpoint bird surveys	9 person hours of water source watch surveys over 7 days 3 person hours of flushing surveys over 6 days	2.5 person hours of water source watch surveys over 2 days	4 person hours of water source watch surveys over 3 days 1 person hour of flushing surveys over one day	15.5 person hours of water source watch surveys over 12 days 4 person hours of flushing surveys over 7 days	Latham's snipe Australian painted snipe Squatter pigeon (southern) White-throated needletail

Technique	Survey effort period			Total Effort	Target species
	February 2024	July 2024	June 2025		
Woodland and aerial bird surveys	24 person hours on-foot over 8 days 9 person hours of diurnal driving transects over 6 days, totalling 80 km	24 person hours on-foot over 6 days	5 person hours on-foot over 4 days	53 person hours on-foot over 18 days 9 person hours of diurnal driving transects over 6 days, totalling 80 km	Squatter pigeon (southern) White-throated needletail
Active searches	1.5 person hours of microhabitat searches over 2 days 1 Spot Assessment Technique (SAT) 9 person hours of diurnal driving transects over 6 days, totalling 80 km	1 SAT	-	1.5 person hours of microhabitat searches over 2 days 2 SATs 9 person hours of diurnal driving transects over 6 days, totalling 80 km	Koala Greater glider Short-beaked echidna
Motion cameras	-	6 remote cameras, totalling 43 trap nights, over 7 consecutive nights	6 remote cameras totalling 45 trap nights, over 5 to 10 consecutive nights	12 remote cameras, totalling 88 trap nights, over 5 to 10 consecutive nights	Pest fauna Koala Short-beaked echidna
Bioacoustic recorders (BARs)	8 recorders deployed for a total of 25 trap nights, over 3 to 4 consecutive nights	-	-	8 recorders deployed for a total of 25 trap nights, over 3 to 4 consecutive nights	Koala
Opportunistic surveys	54 person hours of opportunistic surveys including travel between surveys sites.	20 person hours of opportunistic surveys including travel between surveys sites.	33 person hours of opportunistic surveys including travel between surveys sites.	107 person hours of opportunistic observations including while travelling between sites.	All fauna



Legend

Watercourse
(Stream Order)
1 2
Study Area
Mining Lease
Disturbance Footprint

June 2025 Survey
- Bird survey site
- Watersource survey site
- Rapid habitat assessment
- Motion camera location
- Habitat quality site
- Diurnal survey track

July 2024 Survey
- Bird survey site
- Watersource survey site
- SAT survey site
- Motion camera location
- Diurnal survey track
- Nocturnal spotlighting track

February 2024 Survey
- Funnel trap site
- Funnel / pitfall trap site
- Call playback site
- Watersource survey site
- Rapid habitat assessment
- BAR location

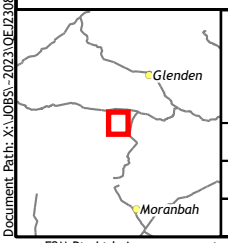
- Diurnal survey track
- Nocturnal spotlighting track

N

Scale 1:55,000 (A4)

0 1 2
Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 3: FAUNA SURVEY SITES WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j_MNES.aprx\QEJ23080j_MNES_Fig3_FaunaSurveySites

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

3.3 Field survey standards

Table 3 provides a review of survey effort against minimum requirements listed in Commonwealth and Queensland State government guidelines and supporting documents, including:

- Commonwealth Government:
  - *Draft Referral Guidelines for Nationally Listed Brigalow Belt Reptiles v1.1* (DCCEEW, 2023a)
  - *Survey guidelines for Australia's threatened birds* (DEWHA, 2010)
  - *Survey guidelines for Australia's threatened mammals* (DSEWPC, 2011a)
  - Species Profile and Threats Database (DCCEEW, 2025b)
  - *Survey Guidelines for Australia's Threatened Birds* (DEWHA, 2010)
- Queensland State Government:
  - Flora Survey Guideline (Department of the Environment, Tourism, Science and Innovation (DETSI), 2025a)
  - *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland* (V. 4.0) (Eyre et al., 2022)
  - *Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus* (Phillips & Callaghan, 2011); and
  - *A review of koala habitat assessment criteria and methods* (Youngentob et al., 2021).

Table 3: Survey effort compared with survey guidelines for fauna and flora

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
Threatened flora						
King blue-grass *(Dichanthium queenslandicum)*	Seeds from March (DES, 2022).	No specific survey guidelines are prescribed. The Flora Survey Guidelines (Department of the Environment, Tourism, Science and Innovation (DETSI), 2025a) recommend in areas >100 ha, at least six meanders should be undertaken. If recorded, the population extent and density must be determined.	14 threatened flora meanders totalling 11.5 km 16 threatened flora plot surveys	-	21 threatened flora meanders totalling 7.5 km 12 threatened flora plot surveys	**Survey guidelines met.** Surveys conducted in wet season conditions and seed heads were visible for accurate identification and detectability. Detection of the species throughout habitat areas is evidence that the survey effort was appropriate.
Finger panic grass *(Digitaria porrecta)*	Seeds from March to April (DES, 2022).	No specific survey guidelines are prescribed. The Flora Survey Guidelines (Department of the Environment, Tourism, Science and Innovation (DETSI), 2025a) recommend in areas >100 ha, at least six meanders should be undertaken. If recorded, the population extent and density must be determined.	14 threatened flora meanders totalling 11.5 km 16 threatened flora plot surveys	-	21 threatened flora meanders totalling 7.5 km 12 threatened flora plot surveys	**Survey guidelines met.** Surveys conducted in June, immediately following seeding and were effective to identify this species during field survey. Seeds were visible for detectability. Detection of the species throughout habitat areas is evidence that the survey effort was appropriate.
Ptilotus uncinellus	Flowers and fruits have been documented from April to July (DCCEEW, 2025c)	No specific survey guidelines are prescribed. The Flora Survey Guidelines (Department of the Environment, Tourism, Science and Innovation (DETSI), 2025a) recommend in areas >100 ha, at	14 threatened flora meanders totalling 11.5 km	-	21 threatened flora meanders totalling 7.5 km	**Survey guidelines met.** Surveys conducted in June and July, during flowering and fruiting. As such, reproductive plant material would have been visible for accurate identification.

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		least six meanders should be undertaken. If recorded, the population extent and density must be determined.				
Threatened fauna						
Australian painted snipe	No optimal survey period specified. However, species movement has been attributed to seasonal patterns and water presence. As such, wet conditions may be preferred (DCCEEW, 2022).	Surveys are recommended to include targeted stationary observations at dawn and dusk at suitable wetlands for 10 hours over 5 days (DEWHA, 2010). G General wetland bird survey methods may be applied, including on-foot ground surveys around wetlands or scanning wetlands from vantage points (Eyre et al., 2022).	Surveys undertaken at dawn and dusk totalling: • 9 person hours of water source watch surveys over 7 days • 3 person hours of flushing surveys over 6 days	Surveys undertaken at dawn and dusk totalling: • 2.5 person hours of water source watch surveys over 2 days	Surveys undertaken at dawn and dusk totalling: • 4 person hours of water source watch surveys over 3 days • 1 person hour of flushing surveys over 1 day	**Survey guidelines met.** Although water source watch surveys conducted in February 2024 did not meet the survey guidelines by one hour, additional flushing surveys were undertaken within the same habitat to increase detection probability. Additional water source watch surveys were also undertaken in the July 2024 and June 2025 surveys. Although not a recommended method under Commonwealth guidelines, Australian painted snipe was also surveyed concurrently with flushing surveys, consistent with methodologies suggested under State guidelines.
Greater glider	No optimal survey period specified. However, the Survey guidelines for Australia's threatened non-flying mammals (DSEWPC, 2011) states	No specific survey effort is prescribed for this species. However, general arboreal mammal survey methods and effort	Nocturnal surveys totalling: • 24 person hours on-	Nocturnal surveys totalling: • 11 person hours on-	-	**Survey guidelines met.** All suggested survey techniques were undertaken over nine nights, including four consecutive nights during the July 2024 survey. Total surveys comprised over 35 hours

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
	that surveys should avoid very windy or rainy nights as these conditions can reduce fauna activity and the observers' ability to detect fauna.	may be applied (DSEWPC, 2011). These include: • spotlighting comprising 30-person minute spotlight searches per 100 x 100 m survey site; and • scat and sign searches, which can coincide with systematic diurnal active searches (Eyre et al., 2022).	foot of spotlighting over 5 nights • 2 person hours of nocturnal driving transects over 3 nights, totalling 7 km Diurnal surveys totalling: • 1.5 person hours of microhabitat searches over 2 days • 1 SAT	foot of spotlighting over 4 consecutive nights • 11 person hours of nocturnal driving transects over 4 consecutive nights, totalling 40 km Diurnal surveys totalling: • 1 SAT		of on-foot and 13 hours of driving spotlighting over multiple nights.
Koala	No optimal survey period specified. However, koala activity is highest during breeding in spring and summer (DETSI, 2025a).	Survey effort is not formally prescribed but general established arboreal mammal survey methods and effort as well as recommendations for koala may be applied. These include: • spotlighting comprising 30-person minutes spotlight	Nocturnal surveys totalling: • 24 person hours on-foot of spotlighting over 5 nights	Nocturnal surveys totalling: • 11 person hours on-foot of spotlighting over 4	Nocturnal surveys totalling: • 6 remote cameras totalling 45 trap nights, over 5 to	**Survey guidelines met.** All suggested survey techniques were undertaken and were sufficient as evidenced by call recognition of the koala at two BAR locations during field surveys.

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		searches per 100 x 100 m survey site • call playback over two sessions undertaken at the midpoint of the survey site • scat and sign search, including SAT surveys, which can coincide with systematic diurnal active searches (DSEWPC, 2011; Eyre et al., 2022; Phillips & Callaghan, 2011); or • Passive acoustic recorders during breeding season for a minimum of 4-7 nights (Youngentob et al., 2021).	• 2 person hours of nocturnal driving transects over 3 nights, totalling 7 km • 4 call playback sessions over 4 nights • 8 recorders deployed for a total of 25 trap nights, over 3 to 4 consecutive nights Diurnal surveys totalling: • 1.5 person hours of microhabitat searches over 2 days • 1 SAT	consecutive nights • 11 person hours of nocturnal driving transects over 4 consecutive nights, totalling 40 km • 6 remote cameras, totalling 43 trap nights, over 7 consecutive nights Diurnal surveys totalling: • 1 SAT	10 consecutive nights	

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
			9 person hours of diurnal driving transects over 6 days, totalling 80 km			
Latham's snipe	October – February (DCCEEW, 2024c).	No specific survey guidelines are prescribed for this species. However general shorebird survey methods and effort may be applied (Commonwealth of Australia, 2017; Eyre et al., 2022). Area searches or line transects in suitable habitat on foot, preferably with several observers in a line advancing in unison. Additionally, mist netting can be used (DCCEEW, 2025b). General wetland bird survey methods may be applied, including on-foot ground surveys around wetlands or scanning wetlands from vantage points (Eyre et al., 2022). Survey guidelines for Australian painted snipe may also be appropriate for this species.	Surveys undertaken at dawn and dusk totalling: • 9 person hours of water source watch surveys over 7 days • 3 person hours of flushing surveys over 6 days	Surveys undertaken at dawn and dusk totalling: • 2.5 person hours of water source watch surveys over 2 days	Surveys undertaken at dawn and dusk totalling: • 4 person hours of water source watch surveys over 3 days • 1 person hour of flushing surveys over 1 day	**Survey guidelines met.** Although this species does not have specific minimum survey guidelines, flushing surveys were conducted in habitat areas during wet season conditions and when the species is present in Australia (February). Survey guidelines suitable for Australian painted snipe were applied to this species and were not met by one hour during the February 2024 survey period. However, supplementary water source watch surveys were undertaken in July 2024 and June 2025 to increase the possibility of detection for the species.
Ornamental snake	Late-September to late-March (DSEWPC, 2011).	The *Draft Referral Guidelines for Nationally Listed Brigalow Belt Reptiles v1.1* (DCCEEW, 2023a) recommends 1.5 hours of spotlighting per ha of suitable ornamental snake habitat, with	Nocturnal surveys undertaken across the	Nocturnal surveys undertaken across the	-	**Survey guidelines not met.** While a number of potential suitable techniques for detection of this species were applied to Brigalow and other woodland habitat in the broader Study Area

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		surveys undertaken over a minimum of three nights. Supported by methodologies outlined in the Fauna Survey Guidelines (Eyre et al., 2022), funnel and pitfall traps are also recommended, across a period of four days.	broader Study Area, totalling: • 8 pitfall trapline nights • 24 funnel trapline nights • 24 person hours on-foot spotlighting over 5 nights • 2 person hours of nocturnal driving transects over 3 nights, totalling 7 km	broader Study Area, totalling: • 11 person hours on-foot over 4 consecutive nights • 11 person hours of nocturnal driving transects over 4 consecutive nights, totalling 40 km		(as per preceding columns), few were focussed exclusively within gilgai habitat largely due to survey timing. Nonetheless, this habitat has been identified and delineated and, as a precautionary approach, use of this habitat by ornamental snake has been assumed in this assessment.
Squatter pigeon (southern subspecies)	May to October (DCCEEW, 2024c).	The *Survey Guidelines for Australia's Threatened Birds* (DEWHA, 2010) recommends 15 hours of area searches or transect surveys in suitable habitat, or 10 hours of flushing surveys, over	Diurnal surveys undertaken throughout the Study Area, totalling: • 9 person hours of	Diurnal surveys undertaken throughout the Study Area, totalling: • 2.5 person hours of	Diurnal surveys undertaken throughout the Study Area, totalling:	**Survey guidelines met.** More than 80 person hours were applied to actively searching for this species over three seasons, using all of the recommended techniques in the relevant guidelines. Furthermore,

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		three days for areas less than 50 ha. Additional recommended survey methods include slow drive transects on two consecutive days followed by diurnal stationary observations at water sources on the following two consecutive days (DCCEEW, 2025b).	water source watch surveys over 7 days • 3 person hours of flushing surveys over 6 days • 24 person hours on-foot over 8 days • 9 person hours of diurnal driving transects over 60 days, totalling 80 km	water source watch surveys over 2 days • 24 person hours on-foot over 8 days	• 4 person hours of water source watch surveys over 3 days • 1 person hour of flushing surveys over one day • 5 person hours on-foot over 4 days	detection of numerous individuals of this species at a number of locations is evidence that survey effort met the relevant guidelines.
White-throated needletail	October to April (DCCEEW, 2024c)	No specific survey guidelines are prescribed for this species. However, the Commonwealth Referral guideline for 14 birds listed as migratory species under the EPBC Act (DotE, 2015) suggests that swifts should be counted from elevated viewpoints by	Diurnal surveys undertaken throughout the Study Area, totalling: • 9 person hours of	Diurnal surveys undertaken throughout the Study Area, totalling: • 2.5 person hours of	Diurnal surveys undertaken throughout the Study Area, totalling:	**Survey guidelines met.** A range of survey methods and more than 80 person hours was applied during the seasonal surveys to detect this and other aerial species and raptors (which were detected during surveys). While this species was not detected

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		experienced persons. General diurnal bird survey methods outlined in the Fauna Survey Guidelines are appropriate (Eyre et al., 2022), including: • dawn, mid-morning and dusk bird surveys comprising 5-10 min area searches (e.g., flushing, transects, opportunistic) within a 100 x 100m survey site on at least 6 occasions during the survey period.	water source watch surveys over 7 days • 3 person hours of flushing surveys over 6 days • 24 person hours on-foot over 8 days • 9 person hours of diurnal driving transects over 6 days, totalling 80 km	water source watch surveys over 2 days • 24 person hours on-foot over 8 days	• 4 person hours of water source watch surveys over 3 days • 1 person hour of flushing surveys over one day • 5 person hours on-foot over 4 days	during the surveys, it is a relatively distinctive species often flying in small or large groups. Given the survey effort, white-throated needletail would have been readily detected if overflying the Study Area during the surveys.
Other Conservation Significant Fauna						
Short-beaked echidna	No optimal survey period specified.	No specific survey guidelines are prescribed for the species. However, general mammal survey methods may be applied from the Fauna Survey Guidelines (Eyre et al., 2022), including:	Nocturnal surveys undertaken throughout the Study Area, totalling:	Nocturnal surveys undertaken throughout the Study Area, totalling:	Nocturnal surveys undertaken throughout the Study	**Survey guidelines met.** A range of survey methods, including active searches totalling more than 115 person hours, was applied during the seasonal surveys to detect this species.

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
		• cage trapping • camera trapping • spotlighting • scat and sign searches; and incidental observations.	• 24 person hours on-foot over 5 nights • 2 person hours over 3 nights, totalling 7 km Diurnal surveys undertaken throughout the Study Area, totalling: • 3 person hours of flushing surveys over 6 days • 24 person hours on-foot over 8 days • 9 person hours over 6 days, totalling 80 km • 1.5 person hours of	• 11 person hours on-foot over 4 consecutive nights • 11 person hours over 4 consecutive nights, totalling 40 km • 6 remote cameras, totalling 43 trap nights, over 7 consecutive nights Diurnal surveys undertaken throughout the Study Area, totalling: • 24 person hours on-foot over 6 days • 1 SAT	Area, totalling: • 6 remote cameras, totalling 45 trap nights, over 5 to 10 consecutive nights Diurnal surveys undertaken throughout the Study Area, totalling: • 1 person hour of flushing surveys over one day • 5 person hours on-foot over 4 days	Sufficient survey effort is evidenced by detection of this species at a number of locations in the Study Area during the seasonal surveys.

Ecological Value	Optimal Survey Timing	Survey Effort Considerations	Surveys Undertaken			Comparison Against Survey Guidelines
			February 2024	July 2024	June 2025	
			microhabitat searches over 2 days • 1 SAT			

3.4 Likelihood of occurrence

Information from the desktop assessment, field survey and previous ecological assessments was used to assess the likelihood of species listed as MSES occurring within the Study Area.

The criteria for assessing the likelihood of occurrence are detailed below:

- **Known to occur:** the species has been observed within the Study Area.
- **Likely to occur:** though not observed within the Study Area, suitable habitat to support the species is present and:
  - the species is known to occur within the Study Area and surrounds (based on field observations or contemporary records within the desktop search extent); and
  - failure to detect the species during surveys may be attributed to the transient or intermittent use of habitat and/or low detectability of the species during surveys.
- **Possibly occurring:** the Study Area is located within the species' known distribution and suitable habitat to support the species is present, however:
  - the species has not previously been recorded within the desktop search extent or records are greater than 30 years old; and/or
  - suitable habitat is degraded, limited in extent, and/or isolated from areas of known occupied habitat, thereby reducing the likelihood of occurrence.
- **Unlikely to occur:** the Study Area does not comprise suitable habitat for the species and/or is outside of the species' known distribution, or:
  - records are greater than 30 years old and/or predate the decline and likely extinction of a species within the Study Area and surrounds; and/or
  - any occurrence within or in close proximity to the Study Area would be rare or transient as part of wider movements.

3.5 Species habitat mapping

Desktop and field investigations were used to map areas of habitat for MSES species known or likely to occur within the Study Area based on:

- known habitat requirements and RE associations of target species (as documented in DCCEEW's Species Profile and Threats database, conservation advice, recovery plans and other relevant published literature)
- vegetation communities identified within the Study Area
- the known or likely presence of key habitat features and resources required for foraging, breeding, shelter and dispersal (based on field observations within the Study Area)
- patch size and connectivity with areas of known and likely occupied habitat within or adjacent to the Study Area; and
- patch occupancy and persistence of the species in consideration of likely threats (e.g. predators, weeds) and historic disturbance (e.g. fragmentation, thinning, fire):

- the scope and severity of threats currently operating within the Study Area and immediate surrounds (e.g., presence of feral predators); and
- past disturbance/fragmentation of habitat including clearing/thinning of native vegetation cover and fire (based on the results of field and desktop investigations).

For threatened flora species considered known or likely to occur, habitat within the Study Area is mapped as;

- **Known habitat:** patches of habitat where individuals were recorded; and
- **Potential habitat**: patches of habitat that meet the species requirements, but no individuals were recorded in the patch.

For target threatened and migratory fauna species considered known or likely to occur, habitat within the Study Area was further categorised as containing the following, where relevant:

- **Breeding habitat:** habitat, or microhabitat, was present that comprised suitable breeding places (e.g., nests, tree hollows), habitat connectivity and access to foraging resources.
- **Foraging habitat:** habitat utilised intermittently or seasonally for foraging (or dispersing) individuals, which is unlikely to meet a species' breeding requirements.
- **Roosting habitat**: habitat utilised intermittently or seasonally for sleep, shelter and rest by winged animals (e.g., birds and bats) but not nesting or breeding.
- **Dispersal habitat**: habitat that may be utilised to facilitate movement of individuals between areas of foraging, breeding and roosting habitat.

Habitat relevant for each conservation significant flora or fauna species is detailed in Sections 5.2 and 5.3, respectively.

3.6 Habitat quality assessment

Habitat quality assessments were undertaken in accordance with the *Guide to Determining Terrestrial Habitat Quality* (Version 1.3) (Department of Environment and Science (DES), 2020) (Habitat Quality Guide). Habitat quality assessments utilise a combination of desktop and field-based attributes to measure the overall viability and capacity of a site to support MSES, in the form of habitat quality scores. The Habitat Quality Guide outlines mandatory methodologies for assessing terrestrial habitat quality for PEMs required under the Queensland Environmental Offsets Framework (Offsets Framework). The Offsets Framework considers the:

- *Environmental Offsets Act 2014* (EO Act)
- *Environmental Offsets Regulation 2014* (EO Regulation); and
- *Queensland Environmental Offsets Policy* (Offset policy).

Field-based assessment involves the capture of site-specific condition and habitat attributes to determine overall suitability and quality of habitat for a particular MSES. Site-specific data captured in the Study Area included:

- a series of vegetation condition data collected in accordance with the *BioCondition Assessment Manual v2.2 (*Eyre et al., 2015a*)* (BioCondition Manual), which included floristic composition and structure characteristics in a 50 m x 100 m plot; and
- fauna species specific habitat attribute indicators relative to:

- quality and availability of food and habitat required for foraging
- quality and availability of habitat required for shelter and breeding
- quality and availability of habitat required for mobility; and
- scope and severity of threats.

As depicted in Figure 3, 47 habitat quality assessments were undertaken within the Study Area and focused on the Disturbance Footprint where possible. These assessments were used to further understand vegetation and habitat values within the Study Area. They will also be used to understand compensatory habitat requirements that may be conditioned under Queensland and Commonwealth biodiversity legislation for the Project.

3.7 Limitations

Ecological surveys have a range of inherent limitations associated with the timing of surveys, variable seasonal and climatic conditions and species' behaviour and ecology (e.g. cryptic behaviour, natural rarity). Surveys generally allow for short-term observations, and results are influenced by preceding and present conditions. Seasonal survey events minimise the limitation of short duration field surveys and provide a greater opportunity to detect a species on site. Nonetheless, field surveys often fail to detect all flora and fauna that may use a given site and therefore, a likelihood of occurrence assessment has also been undertaken to consider the potential for species to occur despite the lack of detection, as described in Section 2.4.

Surveys conducted in the February 2024 and June 2025 coincided with optimal conditions following significant rain events and were therefore suitable for the detection of forbs and grasses that were fruiting and flowering. The wetter conditions preceding the June 2025 survey period were unseasonal. The survey period was not optimal for threatened flora species that usually flower in Spring; however, these species were recognisable by vegetative structure alone (refer to Table 3).

Survey events occurred outside the recommended *Fauna Survey Guidelines* (Eyre et al., 2022) timing for the Brigalow belt (Spring to early Summer and Autumn). Although not all threatened species have an optimal survey timing prescribed, the majority of target fauna species are relatively detectable year-round. Additionally, surveys were conducted when the target migratory species were likely to occur within the area. Weather events provide variability in species' activity during the survey periods. Cold evening temperatures between 2.2 ºC to and 13.8 ºC during the July 2024 survey period were a limitation to the detection of nocturnal fauna and potentially the activity of diurnal fauna.

4 Desktop assessment

The desktop assessment identified the following ecological values occurring within or in close proximity to the Study Area. Results of the desktop assessment are discussed in the following sections, and database search results are provided in Appendix A.

4.1 Soils and geology

The Geological Survey of Queensland Detailed Surface Geology Mapping and GeoScience Australia 1:250,000 geology mapping (Geological Survey of Queensland, 2023) identified 11 geological units mapped within the Study Area (Table 4). Based on these mapped geological units, five potential land zones, as described by Wilson and Taylor (2012), are present within the Study Area:

- land zone 3: recent Quaternary alluvial systems (alluvial river and creek flats)
- land zone 4: Tertiary-early Quaternary clay plains (clay plains)
- land zone 5: Tertiary-early Quaternary loamy and sandy plains and plateaus (old loamy and sandy plains)
- land zone 8: Cainozoic igneous rocks (basalt plains and hills); and
- land zone 9: metamorphic rocks (hills and lowlands on metamorphic rocks).

Table 4: Surface geology and equivalent land zones within the Study Area

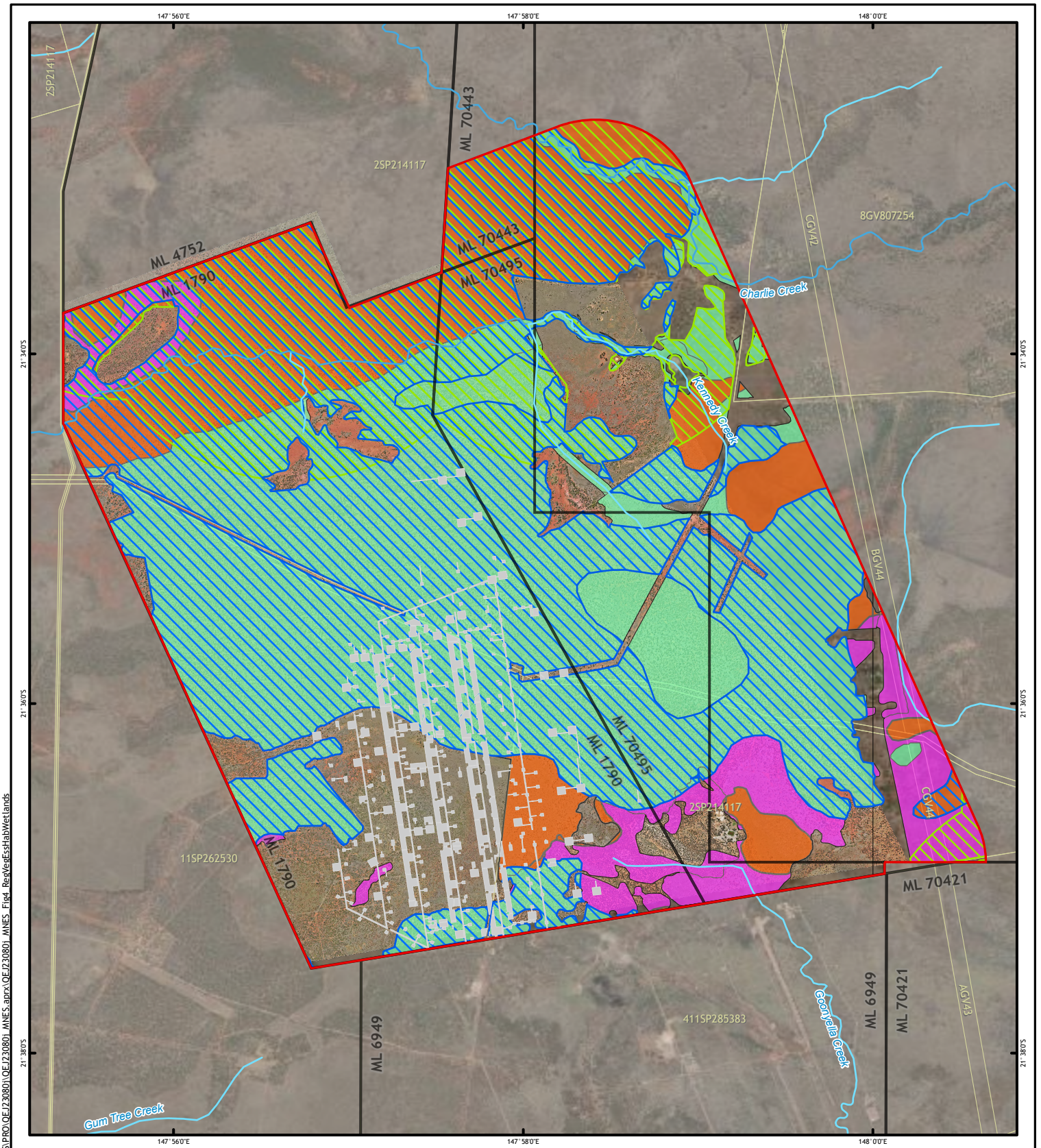
Geological unit*	Rock types	Lithology descriptions	Equivalent land zone
Pwt	Late Permian stratified unit (including volcanic and metamorphic)	Lithic sandstone, conglomerate, mudstone, carbonaceous shale, coal, tuff, tuffaceous (cherty) mudstone	9
Tb	Tertiary stratified unit (including volcanic and metamorphic)	Mostly olivine basalt flows and some plugs; some areas of nephelinite, basanite etc.	8
TQa	Late Tertiary-Quaternary stratified unit (including volcanic and metamorphic)	Locally red-brown mottled, poorly consolidated sand, silt, clay, minor gravel; high-level alluvial deposits (generally related to present stream valleys but commonly dissected)	3, 5 and 8
TQr	Late Tertiary-Quaternary stratified unit (including volcanic and metamorphic)	Clay, silt, sand, gravel and soil; colluvial and residual deposits (generally on older land surfaces)	3, 5 and 8
TQr\c	Late Tertiary- Quaternary stratified unit (including volcanic and metamorphic)	Clay and black soil; pediment slope wash, colluvial and residual deposits	4 and 8

Geological unit*	Rock types	Lithology descriptions	Equivalent land zone
TQr\f	Late Tertiary- Quaternary stratified unit (including volcanic and metamorphic)	Older residual soils, colluvium (ferruginous)	8
TQr\f>Pb	Late Tertiary- Quaternary composite unit (dominantly stratified)	Older residual soils, colluvium (ferruginous)	8
TQr\f>Pwt	Late Tertiary- Quaternary composite unit (dominantly stratified)	Older residual soils, colluvium (ferruginous soils)	8
TQr>Tb	Late Tertiary- Quaternary composite unit (dominantly stratified)	Clay, silt, sand, gravel and soil; colluvial and residual deposits (generally on older land surfaces)	3, 5 and 8
TQr>Tu	Late Tertiary- Quaternary composite unit (dominantly stratified)	Clay, silt, sand, gravel and soil; colluvial and residual deposits (generally on older land surfaces)	3, 5 and 8
Qa	Quaternary stratified unit (including volcanic and metamorphic)	Clay, silt, sand and gravel; flood-plain alluvium	3, 5 and 8

* Geological units are defined by Wilson and Taylor (2012).

4.2 Queensland Government vegetation mapping

Queensland Government regulated RE mapping (version 13.1) identifies remnant and high-value regrowth vegetation within the Study Area, represented by two endangered, one of concern and four least concern REs listed under the VM Act (refer to Figure 4).



Legend

Watercourse (Stream Order) 1 2

Cadastre

Study Area

Mining Lease

Disturbance Footprint

High-risk Area on the Flora Survey Trigger Map

Essential Habitat
Species:
Ornamental snake
Squatter pigeon (southern)
King bluegrass
Finger panic grass

Regional Ecosystems
Vegetation Management Status

Endangered

Of Concern

Least Concern

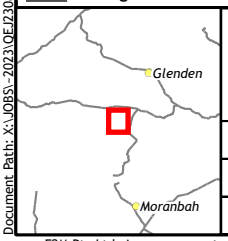
Non-remnant

N

Scale 1:55,000 (A4)

0 1 2
Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024
Vegetation Management Regional Ecosystem Map version 13.00: © DNRMMRRD 2025
Essential Habitat Map version 12.15: © DNRMMRRD 2025

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	15/10/2025

FIGURE 4: QUEENSLAND GOVERNMENT REGULATED VEGETATION MAPPING WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j_MNES.aprx\QEJ23080j_MNES_Fig4_RegVegEssHabWetlands

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

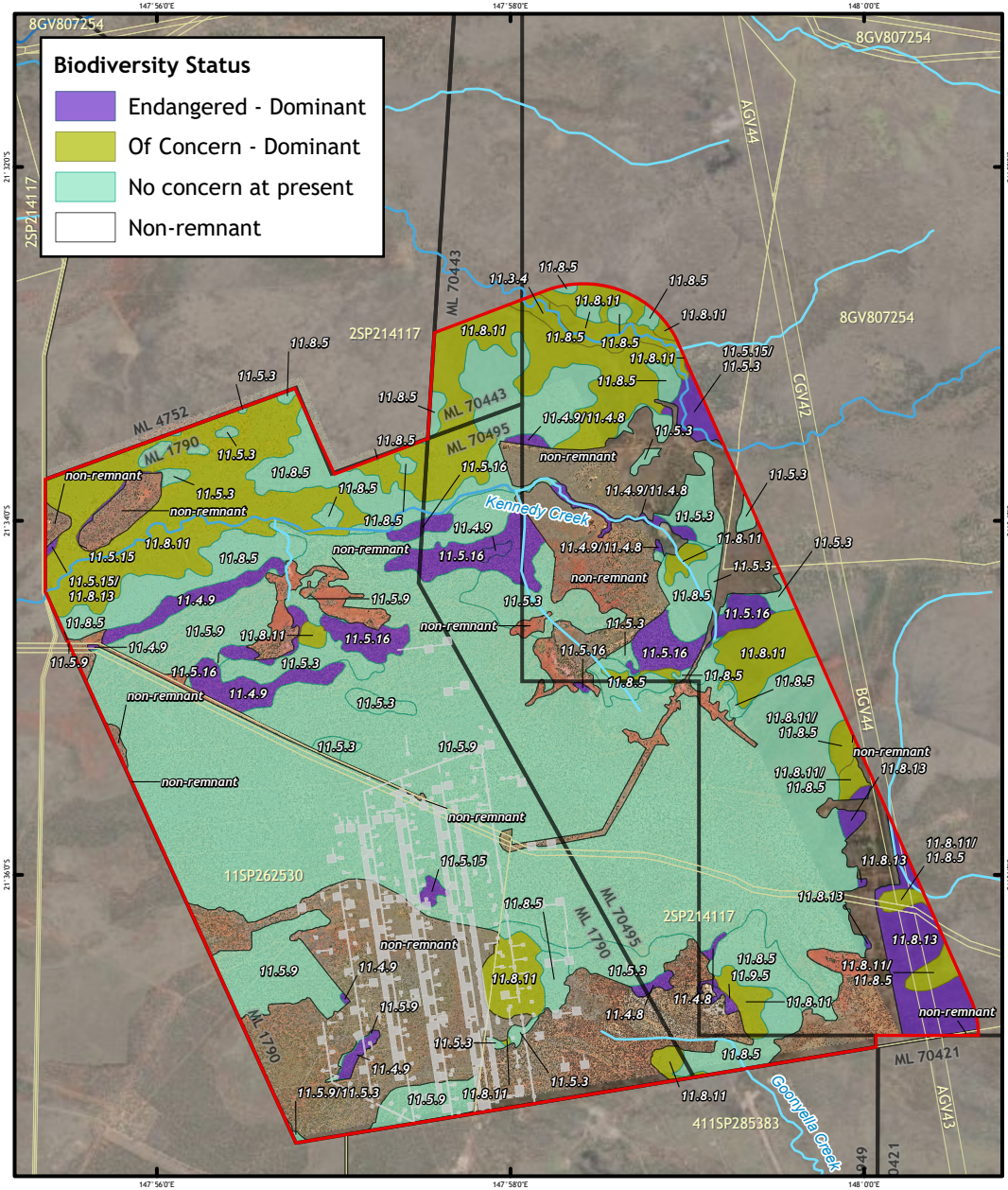
In addition to this mapping, a Queensland Herbarium certified map amendment (MAR3577) applies to the Study Area (refer to Figure 5). This map amendment was approved by the Queensland Herbarium in 2024 and is based on the submission of field-validated data and mapping prepared by Kleinfelder in 2024, undertaken separately from this current assessment. These map amendments have not been adopted by the DNRMMRRD as part of the regulated vegetation mapping at the time this assessment was prepared. This mapping is provided in Figure 5 and illustrates both biodiversity and vegetation management status of REs mapped for the Study Area. A brief description of each of the REs presented on this certified mapping within the Study Area is provided in Table 5.

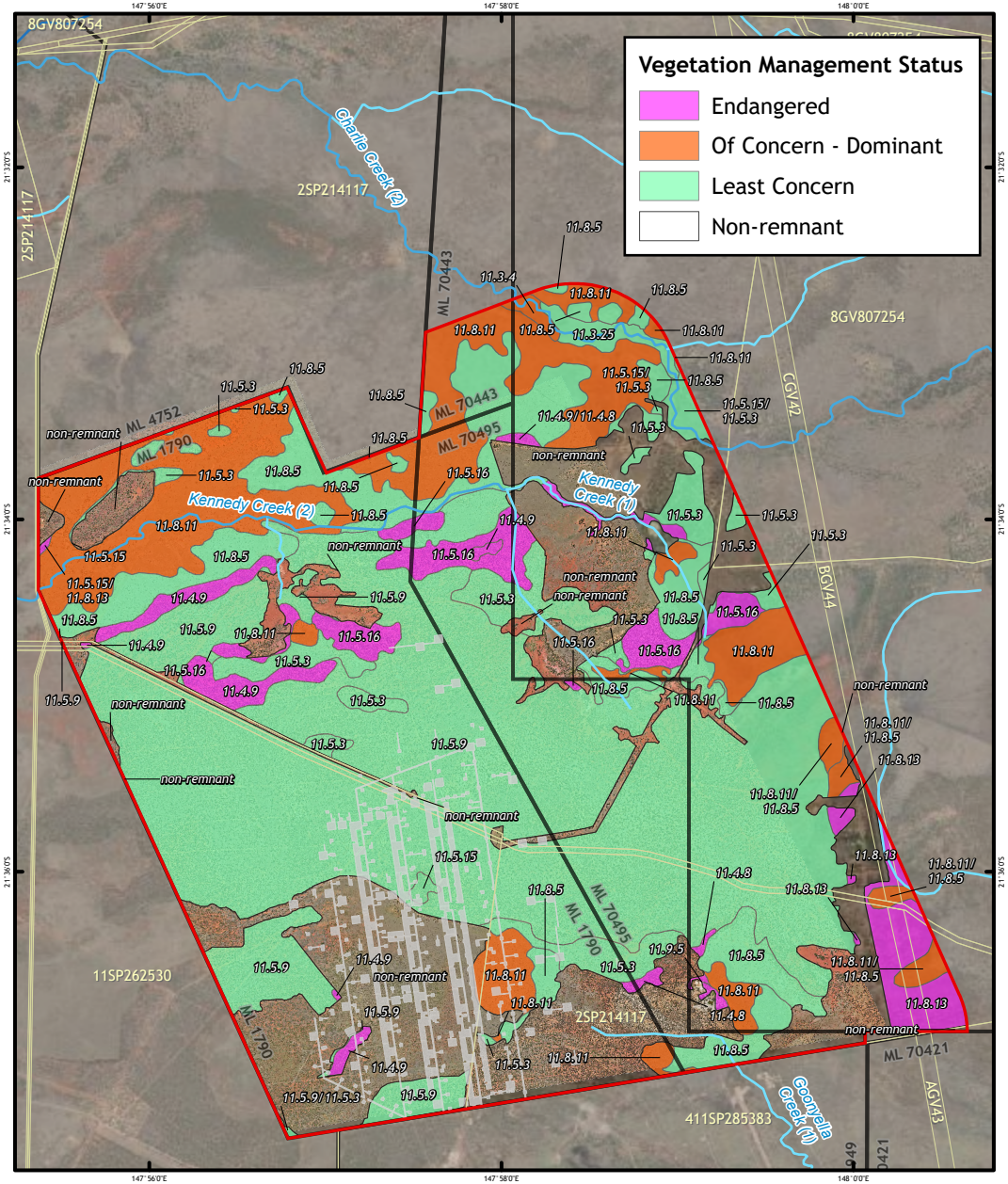
Table 5: REs mapped within the Study Area under the Queensland Herbarium map amendment (MAR3577)

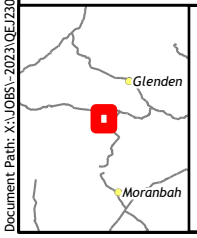
RE	Short description*	VM Act Status	Biodiversity Status
11.3.4	*Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland on alluvial plains.	of concern	of concern
11.3.25	*Eucalyptus tereticornis* or *E. camaldulensis* woodland fringing drainage lines.	least concern	of concern
11.4.8	*Eucalyptus cambageana* woodland to open forest with *Acacia harpophylla* or *A. argyrodendron* on Cainozoic clay plains	endangered	endangered
11.4.9	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	endangered	endangered
11.4.9/11.4.8	Refers to a heterogenous polygons of REs 11.4.9 and 11.4.8	endangered/ endangered	endangered/ endangered
11.5.3	*Eucalyptus populnea* +/- *E. melanophloia* +/- *Corymbia clarksoniana* woodland on Cainozoic sand plains and/or remnant surfaces.	least concern	no concern at present
11.5.9	*Eucalyptus crebra* and other *Eucalyptus spp.* and *Corymbia spp.* woodland on Cainozoic sand plains and/or remnant surfaces	least concern	no concern at present
11.5.15	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces.	least concern	endangered
11.5.16	*Acacia harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains and remnant surfaces	endangered	endangered
11.5.9/11.5.3	Refers to a heterogenous polygons of REs 11.5.9 and 11.5.3	least concern/ least concern	no concern at present/ no concern at present
11.5.15/11.5.3	Refers to a heterogenous polygons of REs 11.5.15 and 11.5.3	least concern/ least concern	no concern at present/ endangered
11.5.15/11.8.13	Refers to a heterogenous polygons of REs 11.5.15 and 11.8.13	least concern/ endangered	endangered/ endangered

RE	Short description*	VM Act Status	Biodiversity Status
11.8.5	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	least concern	no concern at present
11.8.11	*Dichanthium sericeum* grassland on Cainozoic igneous rocks.	of concern	of concern
11.8.13	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks.	endangered	endangered
11.8.11/11.8.5	Refers to a heterogenous polygons of REs 11.8.11 and 11.8.5.	of concern/ least concern	of concern/ no concern at present
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest to woodland on fine-grained sedimentary rocks	endangered	endangered

* short description in accordance with the *REDD, Version 13.1* (Queensland Herbarium, 2024)







N

Scale 1:75,000 (A4)

0 1 2 3

Kilometres

Coordinate System: GDA2020

Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Cadastre: © DNRMMRRD 2024
Regional Ecosystems with Biodiversity & Vegetation Management Status:
© Queensland Herbarium 2025

Watercourse (Stream Order)
1 2 3

Cadastre
Study Area
Mining Lease
Disturbance Footprint

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	15/10/2025

FIGURE 5: QUEENSLAND HERBARIUM CERTIFIED MAP AMENDMENT (MAR3577) FOR THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS~2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig5_KleinfelderHerbariumRE_Landscape

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

4.3 Watercourses and wetlands

Four watercourses were identified within the Study Area: Kennedy Creek, Charlie Creek, Goonyella Creek and Skull Creek. Kennedy Creek extends throughout the northern portion of the Study Area, beginning within the Study Area and exiting at the western boundary and comprising stream orders 1 and 2. Charlie Creek traverses the north-eastern corner of the Study Area, and is present as stream order 2. Goonyella Creek originates in the southern portion of the Study Area and exits through the southern boundary as stream order 1. A section of an unnamed tributary of Skull Creek intersects the eastern boundary of the Study Area, as a stream order 1 watercourse.

No Wetlands of International Importance or MSES wetlands (including wetlands of High Ecological Significance or vegetation management wetlands) are mapped within the Study Area.

4.4 Queensland-listed species and communities

The desktop assessment identified the following additional conservation significant values as potentially occurring within, or near, the Study Area.

4.4.1 Regulated vegetation

In consideration of the most currently adopted vegetation mapping by the Queensland Government, being the Queensland Herbarium certified map amendment (MAR3577), regulated vegetation will be assessed as per this vegetation mapping, as described in Section 4.2 and presented in Figure 5. The following REs with an endangered or of concern VM Act class are mapped within the Study Area:

- endangered REs: 11.4.8, 11.4.9, 11.5.16, 11.8.13, 11.9.5; and
- of concern REs: 11.3.4 and 11.8.11.

As outlined in Section 4.3, a number of 1st and 2nd order watercourses are mapped by the Queensland Government within the Study Area. Many of these intersect with remnant vegetation mapped on the Queensland Herbarium certified map amendment and therefore, are considered an MSES – regulated waterway vegetation. Vegetation management watercourses within the Study Area are discussed further in Section 5.1.3. No vegetation management wetlands are mapped within or adjacent to the Study Area.

4.4.2 Threatened and near threatened flora

Database searches identified three endangered, five vulnerable and two near threatened flora species listed under the NC Act as potentially occurring in the desktop search area. Database search results are provided in Appendix A. An assessment of the likelihood of these species to occur in the Study Area is provided in Appendix B.

Queensland Government essential habitat mapping for two flora species is present within and in close proximity to the Study Area, including king bluegrass (*Dichanthium queenslandicum*) and finger panic grass (*Digitaria porrecta*) (Figure 4).

Additionally, the Queensland Government Protected Plants Flora Survey Trigger Map identifies high-risk areas (HRA) in the northern portion and south-eastern corner of the Study Area (Appendix A). Although this mapping does not provide the details of species for which this HRA mapping has been undertaken, its location in relation to essential habitat mapping suggests it is likely to represent HRAs for king bluegrass and finger panic grass.

A list of NC Act-listed threatened and near threatened flora returned from database searches and an assessment of their likelihood to occur in the Study Area is provided in Appendix A and Appendix B.

4.4.3 Threatened and special least concern fauna

A total of 25 threatened fauna were returned from database searches as potentially occurring in the search area. This included 13 birds, 5 mammals and 7 reptiles. Database search results are provided in Appendix A. An assessment of the likelihood of these species to occur in the Study Area is provided in Appendix B.

Database searches identified the potential for one special least concern fauna species to occur in the desktop search extent as discussed in Section 5.3.1.7.

The desktop assessment identified essential habitat mapping for two fauna species within the Study Area, including ornamental snake (*Denisonia maculata*) and squatter pigeon (southern) (*Geophaps scripta scripta*) (refer to Figure 4).

A list of NC Act-listed threatened and special least concern fauna returned from database searches and an assessment of their likelihood to occur in the Study Area is provided in Appendix A and Appendix B.

4.4.4 Protected areas

No protected area estates, nature refuges or special wildlife reserves were identified within the desktop search extent.

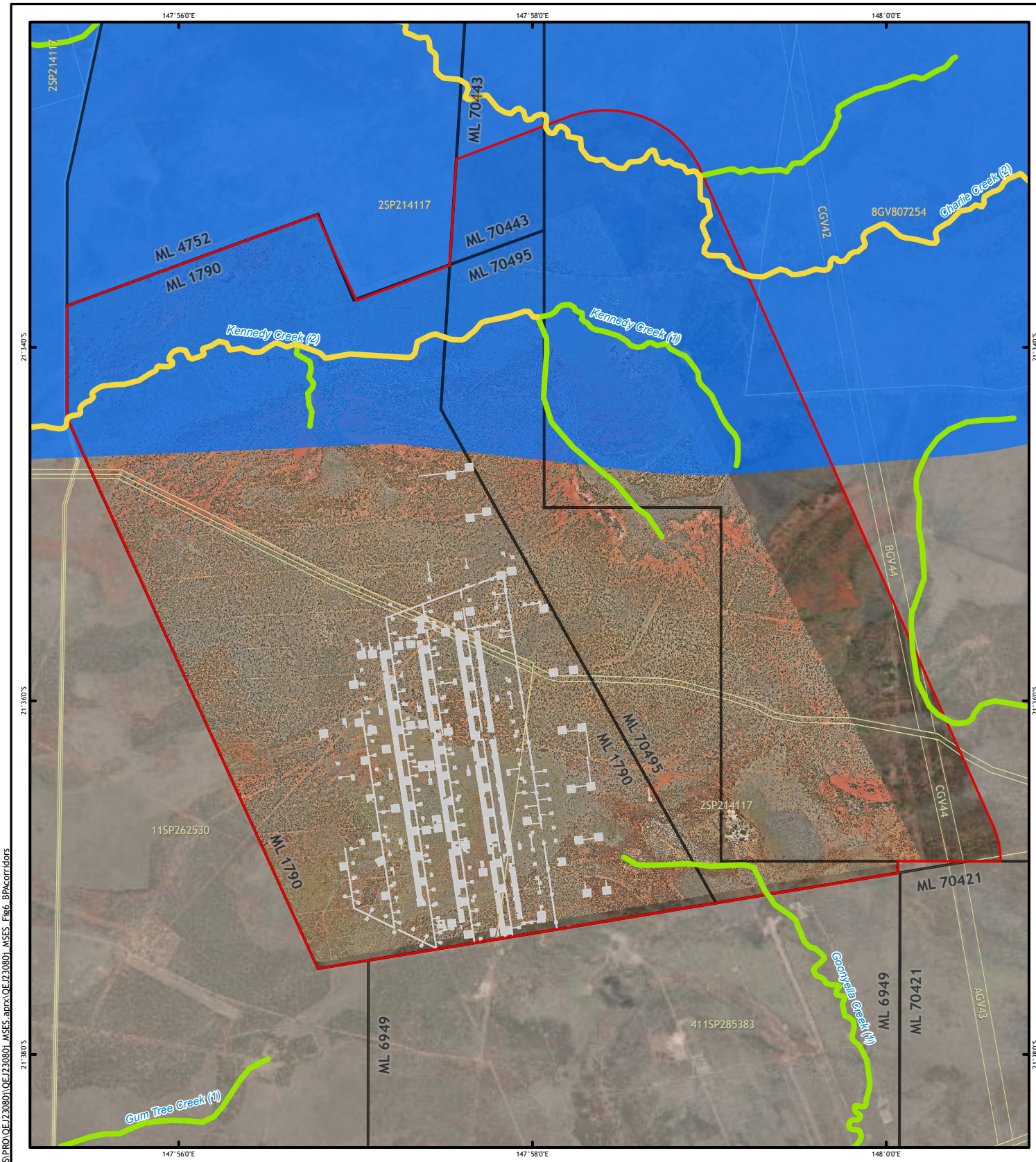
4.5 Connectivity and biodiversity significance

A review of the Biodiversity Planning Assessment (BPA) for the Brigalow Belt Bioregion demonstrates that the north of the Study Area is intersecting a buffer area of a terrestrial State-wide biodiversity corridor (refer to Figure 6).

The Study Area exists within a fragmented landscape and is surrounded by large areas of non-remnant and regrowth vegetation predominantly from historical cattle grazing. Coal and resource mining are also present in the region. Remnant wooded vegetation within the Study Area has limited connectivity to other large patches of remnant wooded vegetation. Remnant grasslands are abundant in the north and east of the Study Area, which are utilised for cattle grazing. Connectivity is discussed further in Section 5.4.

4.6 Waterways providing fish passage

Waterways providing for fish passage have been assessed using the waterways for waterway barrier works layer mapped under the *Fisheries Act 1994*. Waterways within the Study Area are mapped as low or moderate risk level waterways and are shown on Figure 6.



Legend

Watercourse (Stream Order): 1, 2

Cadastre

Study Area

Mining Lease

Disturbance Footprint

Terrestrial Wildlife Corridor

State Significant

Waterways for Waterway Barrier Works

Fish Passage Attribute

Low

Moderate

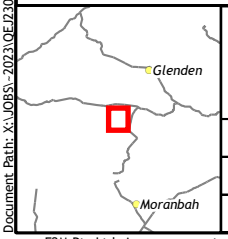
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024
Statewide Corridors: © DETSI 2020

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 6: BPA CORRIDORS WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig6_BPAcorridors

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

4.7 Environmentally Sensitive Areas

Environmentally Sensitive Areas (ESAs), as defined under Schedule 19 of the *Environmental Protection Regulation 2019,* have been mapped by the Queensland Government within the Study Area, and comprise Category B ESA - endangered (biodiversity status) REs including remnant and high value regrowth. Queensland Government ESA mapping is provided in Appendix A.

4.8 Review of previous studies in the region

A review of existing EPBC Act referrals in the PMST search (Appendix A) identified 12 projects near the Study Area with MSES known to occur within their project areas. These are summarised in Table 6.

Table 6: Previous ecological studies within the region with identified MSES

Project name	EPBC referral reference	Distance to Study Area (km)	Matters known to occur in the Project Area
Queensland Pacific Metals (QPM) Energy Project (EMM, 2021)	2021/9033	*Large referral area intersects with Study Area*	Threatened fauna: • bare-rumped sheathtail bat (*Saccolaimus saccolaimus nudicluniatus*) – endangered under the NC Act • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act
Central Queensland Integrated Rail Project - Goonyella to Abbot Point (AECOM, 2012)	2012/6321	*Large referral area intersects with Study Area*	Threatened flora: • black ironbox (*Eucalyptus raveretiana*) – vulnerable under the NC Act • king blue grass (*Dichanthium queenslandicum*) – vulnerable under the NC Act Threatened fauna: • ornamental snake (*Denisonia maculata*) – vulnerable under the NC Act • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act
Eaglefield Expansion Project (Matrixplus, 2008)	2009/4682	*Large referral area intersects with Study Area*	Threatened fauna: • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act
Burdekin Pipeline (Golder Associates, 2005)	2005/2209	*Large referral area intersects with Study Area*	Threatened fauna: • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act
BHP Billiton Goonyella to	2011//6082	7 km	Threatened flora:

Project name	EPBC referral reference	Distance to Study Area (km)	Matters known to occur in the Project Area
Abbot Point Rail Project (BHP Billiton MetCoal Holdings Pty Ltd, 2011)			• waxy cabbage palm (*Livistona lanuginosa*) – vulnerable under the NC Act Threatened fauna: • black-throated finch (southern) (*Poephila cincta cincta*) – endangered under the NC Act • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act • koala (*Phascolarctos cinereus*) – endangered under the NC Act
Red Hill Mining Project (URS Australia Pty Limited, 2013b, 2013a)	2013/6865	8 km	Threatened flora: • king blue grass (*Dichanthium queenslandicum*) – vulnerable under the NC Act Threatened fauna: • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act • koala (*Phascolarctos cinereus*) – endangered under the NC Act • ornamental snake (*Denisonia maculata*) – vulnerable under the NC Act
Arrow Bowen Pipeline (Arrow Energy Pty Ltd, 2012)	2012/6459	10 km	Threatened flora: • black ironbox (*Eucalyptus raveretiana*) – vulnerable under the NC Act Threatened fauna: • fitzroy river turtle (*Rheodytes leukops*) – endangered under the NC Act • ornamental snake (*Denisonia maculata*) – vulnerable under the NC Act • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act • water mouse (*Xeromys myoides*) – vulnerable under the NC Act • yellow chat (Dawson) (*Epthianura crocea macgregori*) – endangered under the NC Act
New Lenton Coal Project (Sinclair	2012/6303	12.93 km	Threatened fauna:

Project name	EPBC referral reference	Distance to Study Area (km)	Matters known to occur in the Project Area
Knight Merz, 2012)			• squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act
Moranbah North Extension Project (Hansen Bailey, 2018)	2018/8338	33 km	Threatened fauna • Australian painted snipe (*Rostratula australis*) – endangered under the NC Act • greater glider (*Petauroides volans*) -endangered under the NC Act • koala (*Phascolarctos cinereus*) – endangered under the NC Act • ornamental snake (*Denisonia maculata*) – vulnerable under the NC Act • squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable under the NC Act

5 Description of the existing environment

The following sections describe the outcomes of the field surveys and assess the likelihood for conservation significant species, habitats and other MSES to occur in the Study Area.

5.1 Vegetation communities

5.1.1 Overview

A total of approximately 3,730.65 ha of remnant vegetation and 409.81 ha of high value regrowth were ground-truthed within the Study Area during the field survey. A summary of REs, associated vegetation condition class and area is provided in Table 7 and depicted in Figure 7. A detailed description of the vegetation communities identified in the Study Area is presented in Appendix C.

Endangered REs were associated with Cainozoic sand plains (land zone 5) and undulating country on fine-grained sedimentary rocks (land zone 9) within the Study Area. Of Concern REs were located along riparian corridors (land zone 3) and Cainozoic basalt plains (land zone 8) within the Study Area.

The extent of remnant vegetation throughout the Study Area was largely consistent with DNRMMRRD Vegetation Management mapping (DNRMMRRD, 2025b). The following primary inconsistencies between DNRMMRRD mapped and ground-truthed vegetation extents within the Study Area were observed:

- heterogenous polygons were observed to contain fewer RE types than mapped in some instances, and in other instances more RE types were recorded than mapped by DNRMMRRD; and
- some areas mapped by DNRMMRRD as non-remnant were observed to support remnant and regrowth vegetation.

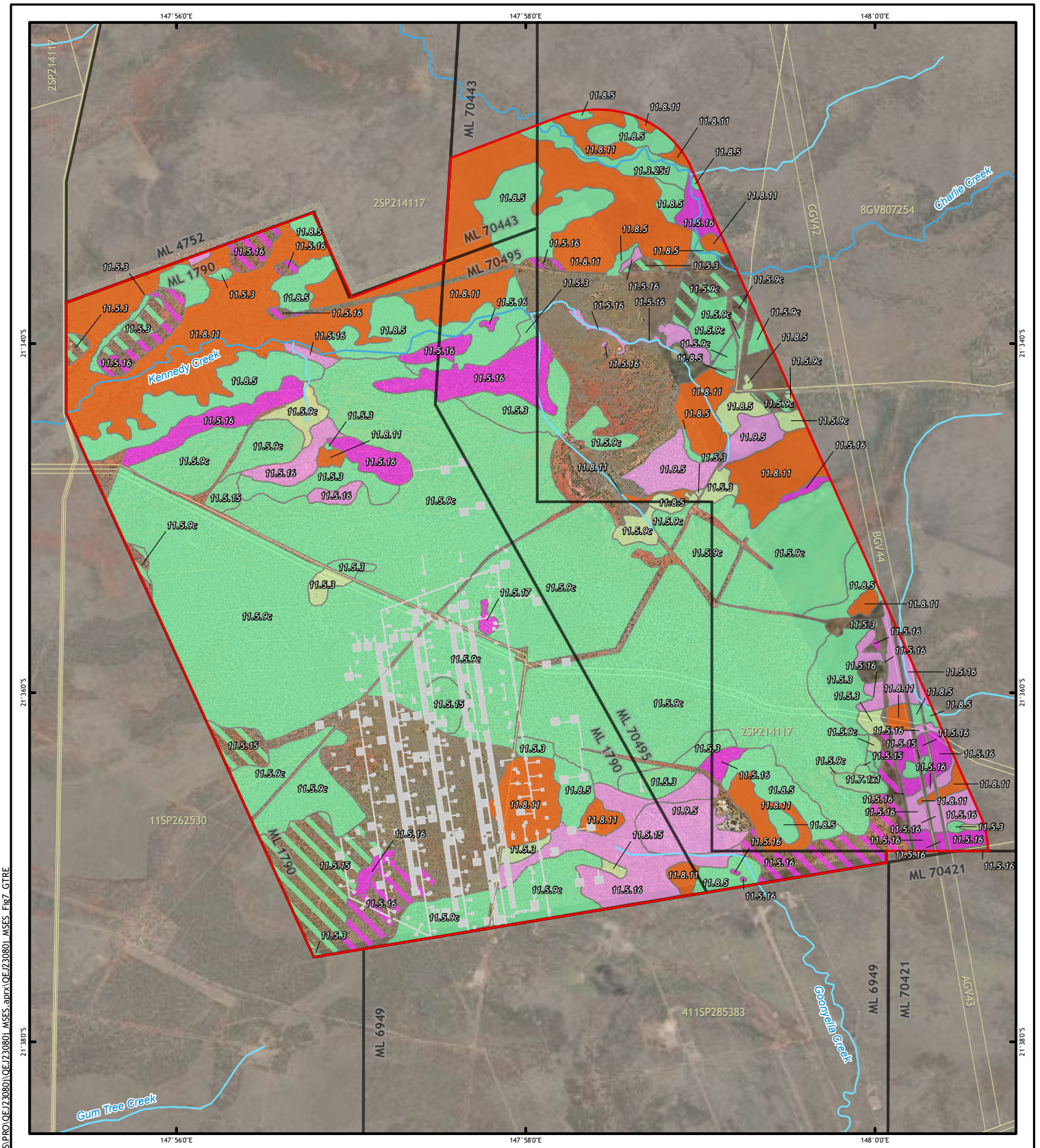
Primary differences between REs ground-truthed during the field survey and the herbarium certified map amendment (MAR3577) include the following:

- Designation of high value regrowth and non-remnant vegetation by e2m. These areas have mostly been assessed as non-remnant vegetation by Kleinfelder/Herbarium.
- Larger extents have been mapped as non-remnant by Kleinfelder/Herbarium. These areas include heavily weathered areas of exposed red soils and rocks. e2m has retained remnant vegetation mapping over some of these areas as remnant RE 11.5.9c and other land zone 5 or 7 REs due to a lack of obvious clearing in historic satellite imagery. Vegetation is naturally thin and bare in these areas due to weathering of the soil.
- RE associations differ in brigalow (*Acacia harpophylla*) dominated communities and Semi-evergreen Vine Thicket (SEVT) communities. Differences are in land zone, while mostly agreeing on general vegetation characteristics. In all cases, the differences do not change the Biodiversity status of relevance under the *Environmental Protection Act 1994* (EP Act).
- e2m has separated out all heterogenous polygons into homogenous polygons using ground truthed quaternary and tertiary data. This provides an accurate extent of each RE.

Table 7: Ground-truthed REs within the Study Area

RE	RE short description (Queensland Herbarium, 2024)	Condition	VM Act class	Extent within Study Area (ha)
11.3.25d	*Eucalyptus tereticornis, E. camaldulensis* and *Melaleuca bracteata* woodland fringing drainage lines	Remnant	Least concern	30.54
11.5.3	*Eucalyptus brownii* woodland on Cainozoic sand plains and/or remnant surfaces	Remnant	Least concern	170.11
		High value regrowth	Least concern	29.64
		Young woody regrowth	n/a	29.91
11.5.9c	*Eucalyptus crebra +/- Corymbia intermedia +/- E. moluccana +/- Blakella dallachiana woodland.* Occurs on Cainozoic sandplains formed on plateaus and broad crests of hills and ranges. Soils are generally deep red earths.	Remnant	Least concern	2,119.64
		High value regrowth	Least concern	35.35
		Young woody regrowth	n/a	34.66
11.5.15	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Remnant	Least concern	32.02
		High value regrowth	Least concern	3.99
		Young woody regrowth	n/a	118.59
11.5.16	*Acacia harpophylla* open forest in depressions on Cainozoic sand plains and remnant surfaces	Remnant	Endangered	196.66
		High value regrowth	Endangered	221.16
		Young woody regrowth	n/a	170.08
11.5.17	*Eucalyptus tereticornis* and *E. camaldulensis* woodland in depressions on Cainozoic sand plains and remnant surfaces	Remnant	Endangered	4.16
11.7.1x1	Semi-evergreen vine thicket on the slopes and scarps of rocky residual ranges with Cainozoic lateritic duricrust.	Remnant	Least concern	10.67

RE	RE short description (Queensland Herbarium, 2024)	Condition	VM Act class	Extent within Study Area (ha)
11.7.2	*Acacia* spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone	Remnant	Least concern	3.50
11.8.5	*Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	Remnant	Least concern	421.79
		High value regrowth	Least concern	20.19
11.8.11	*Dichanthium sericeum* grassland on Cainozoic igneous rocks.	Remnant	Of concern	741.57
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest to woodland on fine-grained sedimentary rocks	High value regrowth	Endangered	99.48
Non-remnant	Cleared paddocks and disturbed areas dominated by introduced pasture grasses such as *Cenchrus ciliaris*	Non-remnant	n/a	320.95



Legend

Watercourse (Stream Order)

1 2

Cadastre

Study Area

Mining Lease

Disturbance Footprint

Ground-Truthed Regional Ecosystem

- Remnant Vegetation (Endangered)
- Remnant Vegetation (Of Concern)
- Remnant Vegetation (Least Concern)
- High Value Regrowth (Endangered)
- High Value Regrowth (Least Concern)
- Young Woody Regrowth (Endangered)
- Young Woody Regrowth (Least Concern)

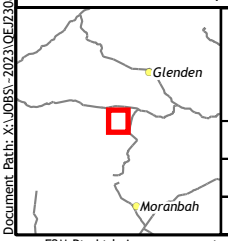
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 7: GROUND-TRUTHED REGIONAL ECOSYSTEMS

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig7_GTRE

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.1.2 Endangered and of concern REs

Endangered and of concern REs are listed as MSES under the EO Act. The Queensland Herbarium certified map amendment (MAR3577) for the Study Area comprises 1,066.81 ha of remnant REs as listed in Table 8, including seven REs listed as endangered or of concern under the VM Act. Table 8 provides a short description of each of these and the area of this regulated vegetation within the Study Area. While the certified map amendment is mapped according to biodiversity status, the equivalent vegetation management status has been provided below as this is the status applied to MSES. Only remnant vegetation was mapped by the Queensland Herbarium in the certified map amendment and only remnant vegetation is defined as an MSES.

Table 8: Queensland Herbarium certified map amendment (MAR3577) endangered and of concern REs within the Study Area

RE	RE short description (Queensland Herbarium, 2024)	VM Act status	Biodiversity status	Extent within Study Area (ha)
11.3.4	*Eucalyptus tereticornis* and/or *Eucalyptus* spp. woodland on alluvial plains	Of concern	Of concern	9.90
11.4.8	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	Endangered	Endangered	8.48
11.4.9	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains/ *Eucalyptus brownii* woodland on Cainozoic sand plains and/or remnant surfaces	Endangered	Endangered	75.68
11.4.9/ 11.4.8	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains/ *Eucalyptus brownii* woodland on Cainozoic sand plains and/or remnant surfaces/ *Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	Endangered/ Endangered	Endangered/ Endangered	12.88/ 3.22
11.5.15/ 11.8.13	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces/ Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Least concern/ Endangered	Endangered/ Endangered	1.09/ 0.12

RE	RE short description (Queensland Herbarium, 2024)	VM Act status	Biodiversity status	Extent within Study Area (ha)
11.5.16	*Acacia harpophylla* and/or *Casuarina cristata* open forest in depressions on Cainozoic sand plains and remnant surfaces	Endangered	Endangered	144.05
11.8.11	*Dichanthium sericeum* grassland on Cainozoic igneous rocks	Of concern	Of concern	674.97
11.8.11/ 11.8.5	*Dichanthium sericeum* grassland on Cainozoic igneous rocks/ *Eucalyptus orgadophila* open woodland on Cainozoic igneous rocks	Of concern/ Least concern	Of concern/ No concern at present	29.36 / 10.27
11.8.13	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Endangered	Endangered	93.73
11.9.5	*Acacia harpophylla* and/or *Casuarina cristata* open forest to woodland on fine-grained sedimentary rocks	Endangered	Endangered	3.08

5.1.3 Watercourse vegetation

Watercourses mapped under the VM Act (DNRMMRRD, 2025c) are present within the Study Area. Queensland Herbarium certified mapping indicates that REs occurring within the defined distance of these watercourses comprises a number of REs as shown in Figure 5.

Vegetation within the defined distance of a watercourse is an MSES and is variably assessed based on the size of the stream order of the watercourse. For the region that the Study Area is located in, these defined distances are:

- Stream order 1 or 2 = 25 metres (m) from the defining bank
- Stream order 3 or 4 = 50 m from the defining bank; and
- Stream order 5 or greater = 100 m from the defining bank(Department of Environment and Science (DES), 2020).

5.2 Flora values

Field surveys recorded a total of 239 native and 22 pest flora species in the Study Area during seasonal surveys. A list of species recorded in the Study Area is provided in Appendix D.

The following sections describe the presence and potential occurrence of conservation significant and pest flora in the Study Area.

5.2.1 Conservation significant flora

Two conservation significant flora species listed under the NC act were identified within the Study Area during field investigations. These include:

- king bluegrass (*Dichanthium queenslandicum*) - vulnerable; and
- finger panic (*Digitaria porrecta*) - near threatened.

The characteristics of habitat mapped for these species are detailed below and the extent of habitat is mapped in Figure 8 and Figure 9. No other threatened flora species listed under the NC Act were considered likely to occur within the Study Area. The likelihood of occurrence assessment of conservation significant flora is provided in Appendix B.

5.2.1.1 King bluegrass (*Dichanthium queenslandicum*)

Distribution and habitat characteristics

King bluegrass is a perennial grass species endemic to central and southern Queensland. The species' habitat comprises native grasslands and open woodlands characterised by a grassy understorey and a canopy composed of mountain coolibah (*Eucalyptus orgadophila*), red bloodwood (*Corymbia erythrophloia)* and coolibah (*E. coolabah*) (TSSC, 2013a). It is mostly confined to natural grassland on heavy black clay soils (basalt downs, basalt cracking clay, open downs) on undulating plains (TSSC, 2013a). King bluegrass co-occurs with other bluegrass species (*Dichanthium* spp. and *Bothriochloa* spp.) as well as other native grasses associated with heavy, black soil types (Simon, 1982). The distribution of the species also overlaps with the Brigalow TEC and the Natural Grasslands TEC (TSSC, 2013a).

Occurrence in the Study Area

A total of 1,800 tussocks of king bluegrass were recorded during the 2024 wet season survey event. An additional 820 tussocks were recorded during the 2025 dry season survey event. This number includes all tussocks recorded in threatened flora plots and incidental observations. The species was recorded in grasslands on basalt plains (RE 11.8.11) with some individuals located in mountain coolibah woodland on basalt plains (RE 11.8.5). Locations where tussocks of this species were observed and plot estimates undertaken are displayed in Figure 8.

The estimated population size for king bluegrass within patches of grassland where the species was recorded is approximately 8,863 tussocks/ha (standard error of ± 188.69 tussocks/ha). Population size is likely to vary throughout the available habitat within the Study Area and density estimates are based on plots undertaken only in locations where the species was recorded. Nonetheless, the species was present in clumps throughout the habitat mapped and abundance and areas of occupancy are likely to change over seasons (TSSC, 2013a).

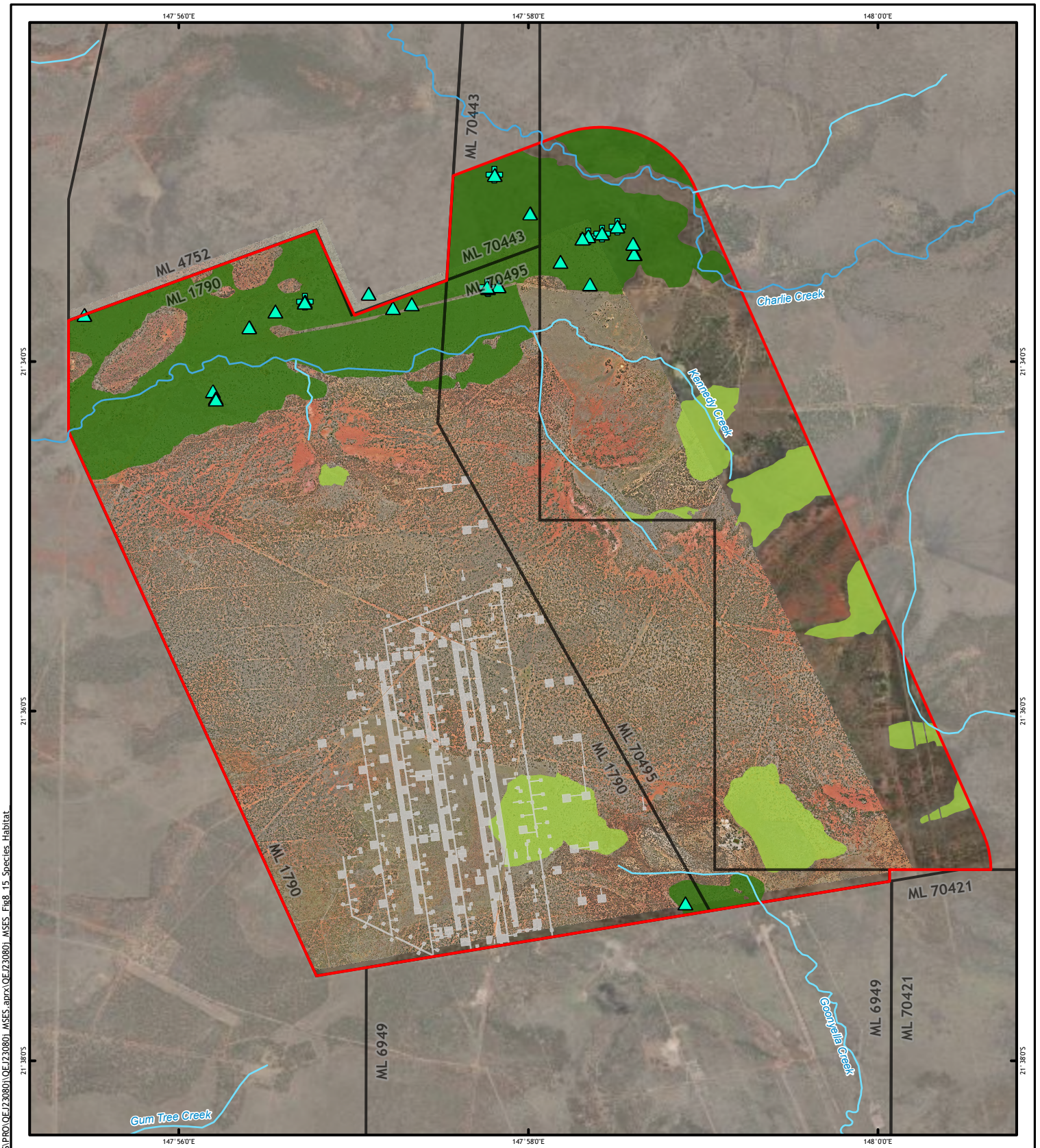
King bluegrass habitat within the Study Area has been mapped in consideration of the approved conservation advice for the species (TSSC, 2013a) and includes:

- known habitat: remnant grasslands and open woodlands on basalt plains (RE 11.8.11 and 11.8.5) where individuals were recorded in the patch; and
- potential habitat: remnant grasslands and open woodlands on basalt plains (RE 11.8.11 and 11.8.5) where no individuals have been recorded but which may provide future habitat to colonise.

The total area of known and potential habitat for the species in the Study Area is presented in Table 10. King bluegrass records and the extent of habitat mapping for the species are shown in Figure 8.



Plate 1: King bluegrass in natural grasslands within the Study Area



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Threatened Flora Record

Areas king bluegrass was recorded

Threatened flora plots where king bluegrass was recorded

King Bluegrass (*Dichanthium queenslandicum*) Habitat

Known Habitat

Potential Habitat

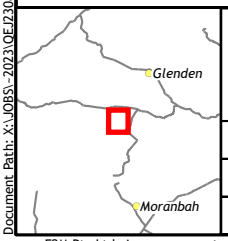
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 8: KING BLUEGRASS (*DICHANTHIUM QUEENSLANDICUM*) RECORDS AND HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig8_15_Species_Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.2.1.2 Finger panic (*Digitaria porrecta*)

Finger panic (*Digitaria porrecta*) is listed as near threatened under the NC Act. As such, this is not considered an MSES species under the EO Act.

Distribution and habitat characteristics

Finger panic is a loosely tufted perennial grass up to 60 cm tall with flowers appearing in late summer. The species is known from Queensland and New South Wales in the Brigalow Belt bioregion. The species grows in heavy cracking clays, sometimes of alluvial origin (TSSC, 2013b). Associated vegetation includes tussock grassland and eucalypt woodland of poplar box (*Eucalyptus populnea*) or river red gum (*E. camaldulensis*) (TSSC, 2013b). The nearest record for the species exists approximately 2 km north of the Study Area.

Occurrence in the Study Area

A total of 71 tussocks of finger panic were recorded during the 2024 wet season survey event. An additional 12 tussocks were recorded in the 2025 dry season survey event. This includes all tussocks recorded during flora meanders, threatened flora plots and incidental observations. The individuals were located in grasslands on basalt plains (RE 11.8.11), as well as in mountain coolibah (*Eucalyptus orgadophila)* woodland on basalt plains (RE 11.8.5). Locations of observations and extent of habitat for the species within the Study Area are displayed in Figure 9.

The estimated population size for finger panic within the mapped suitable habitat is 575 tussocks/ha (standard error of ± 26.06 stems/ha). Population size is likely to vary throughout available habitat within the Study Area and density estimates are based on plots undertaken in locations where the species was recorded. Nonetheless, the species was present in clumps throughout the habitat mapped and abundance and areas of occupancy is likely to change over seasons (TSSC, 2013a).

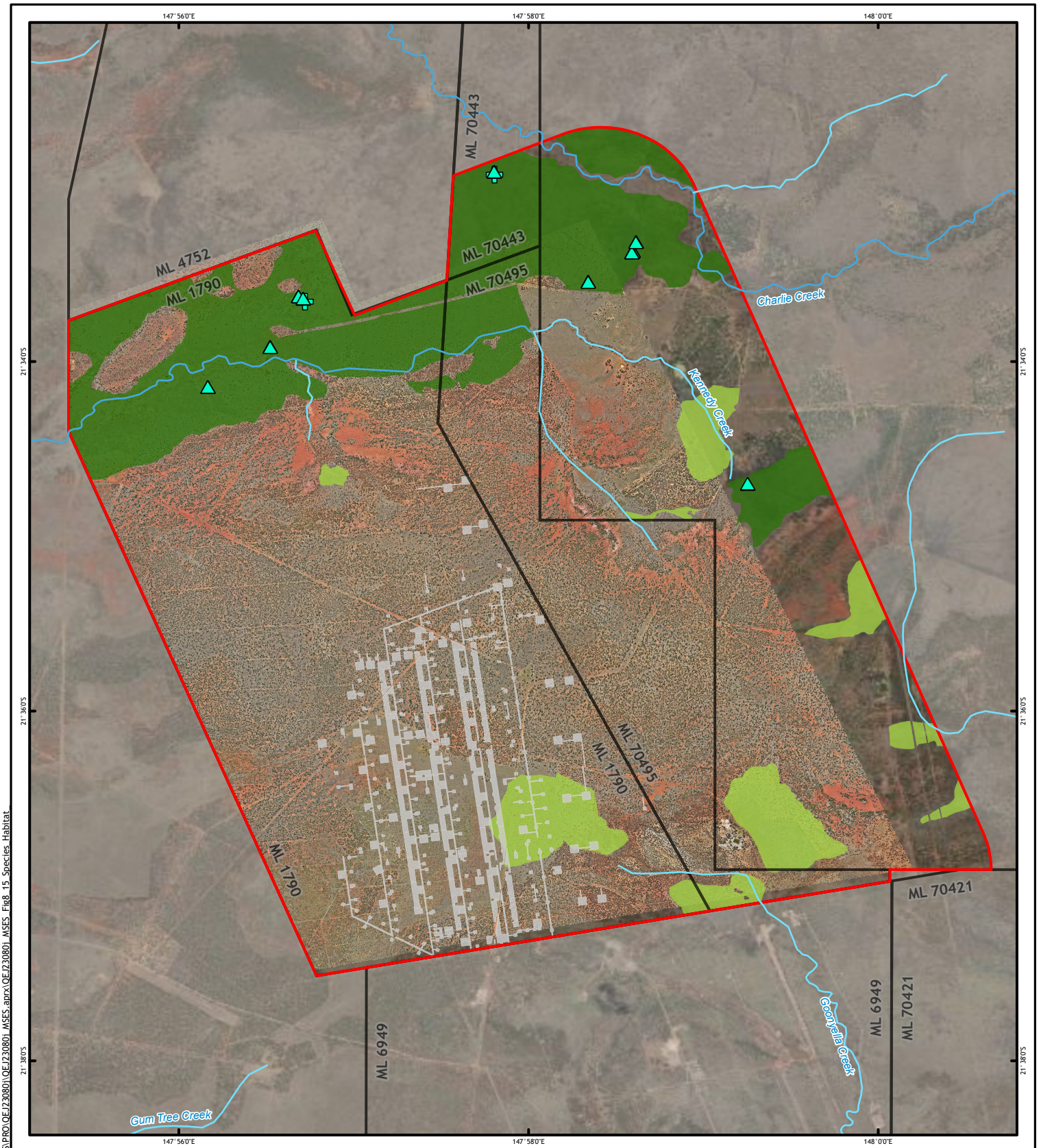
Finger panic habitat within the Study Area has been mapped in consideration of the DCCEEW's previous approved conservation advice for the species (the species has been delisted under the EPBC Act) (TSSC, 2008) and includes:

- known habitat: remnant grasslands and open woodlands on basalt plains (RE 11.8.11 and 11.8.5) where individuals were recorded in the patch; and
- potential habitat: remnant grasslands and open woodlands on basalt plains (RE 11.8.11 and 11.8.5) where no individuals have been recorded but which may provide future habitat to colonise.

The total area of known habitat for the species in the Study Area is 892.44 ha. The total area of potential habitat for the species is 270.91 ha. Combined habitat for the species is 1163.35 ha. Records and mapped habitat for the species are presented in Figure 9.



Plate 2: Finger panic (*Digitaria porrecta*) in natural grasslands within the Study Area



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Threatened Flora Record

Areas finger panic was recorded

Threatened flora plots where finger panic was recorded

Finger Panic (*Digitaria porrecta*) Habitat

Known Habitat

Potential Habitat

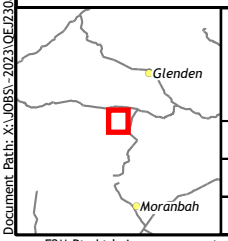
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 9: FINGER PANIC (*DIGITARIA PORRECTA*) RECORDS AND HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig8_15_Species_Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.2.2 Pest flora

Three weed species listed as Weeds of National Significance (WoNS) under the National Weeds Strategy and restricted matters under the Queensland *Biosecurity Act 2014* (Biosecurity Act) were recorded within the Study Area (Table 9).

The cactus-like species (*Harrisia martinii* and *Opuntia tomentosa)* were scattered across remnant and regrowth woodland vegetation types. Parthenium was in high abundance in wet areas across the Study Area.

Other pest flora not listed as WoNS or restricted matters under the Biosecurity Act were prevalent throughout the Study Area. This included introduced pasture grasses such as buffel (*Cenchrus ciliaris*), Indian blue grass (*Bothriochloa pertusa*) and red natal grass (*Melinis repens*) which dominated the ground cover in some locations and were prevalent throughout. Non-native forbs and small shrubs were also common in remnant and non-remnant habitats including *Malvastrum americanum* subsp. *americanum*, siratro (*Macroptilium atropurpureum*) and stylo (*Stylosanthes scabra* and *Stylosanthes hamata*).

Table 9: Pest flora in the Study Area

Scientific name	Common name	WoNS	Biosecurity Act status	Description of abundance
Harrisia martinii	harrisia cactus	WoNS	Category 3	Multiple individuals were observed scattered across the Study Area
Opuntia tomentosa	velvet tree pear	WoNS	Category 3	Several individuals were observed scattered across the Study Area
Parthenium hysterophorus	parthenium	WoNS	Category 3	Patches of parthenium were observed in moderate to high densities across the Study Area associated with wetter areas and areas of high cattle traffic. Areas surrounding Kennedy creek and large dams had high infestations.

5.3 Fauna values

Broad fauna habitats identified in the Study Area include:

- remnant and high value regrowth *Eucalyptus* spp. woodlands (RE 11.5.3, 11.5.9c, and 11.8.5)
- remnant Queensland blue gum (*Eucalyptus tereticornis*) dominated woodland in sandy depressions (RE 11.5.17)
- remnant and high value regrowth brigalow (*Acacia harpophylla*) woodland and open forests (RE 11.5.16 and 11.9.5)
- remnant *Eucalyptus* spp. and black tea tree (*Melaleuca bracteata*) woodland fringing drainage lines (RE 11.3.25d)
- remnant and high value regrowth semi-evergreen vine thicket communities (RE 11.5.15 and 11.7.1x1)
- natural grasslands on black clay soils (RE 11.8.11)
- shallow to moderate depressions in clay soils containing ephemeral water (gilgai); and
- artificial wetlands generated from the overflow of farm dams.

A total of 109 native fauna and 7 exotic fauna species were recorded during the seasonal field investigations. Three conservation significant species listed under the NC Act were detected during the survey event, namely:

- koala (*Phascolarctos cinereus*) - endangered
- squatter pigeon (southern) (*Geophaps scripta scripta*) - vulnerable; and
- short-beaked echidna (*Tachyglossus aculeata*) – special least concern.

These species along with other conservation significant species considered likely to occur in the Study Area are discussed in the following section. A list of species recorded in the Study Area is provided in Appendix D.

5.3.1 Conservation significant fauna

Three conservation significant fauna species listed under the NC Act were identified within the Study Area during the field surveys:

- koala (*Phascolarctos cinereus*) – endangered
- squatter pigeon (southern) (*Geophaps scripta scripta*) – vulnerable; and
- short-beaked echidna (*Tachyglossus aculeata*) – special least concern.

In addition to the species listed above, four threatened fauna species and a number of special least concern (migratory) species listed under the NC Act are considered likely to occur within the Study Area, due to the presence of suitable habitat, records in the region and wide-ranging nature of the species. These species include:

- Australian painted snipe (*Rostratula australis*) – endangered
- Latham's snipe (*Gallinago hardwickii*) – vulnerable
- ornamental snake (*Denisonia maculata*) – vulnerable; and
- white-throated needletail (*Hirundapus caudacutus*) – vulnerable.

The potential for these species to occur in the Study Area and associated habitat mapping is detailed in the following sections and habitat is mapped in Figure 10 to Figure 15. Special least concern migratory species are identified in the likelihood of occurrence assessment provided in Appendix B; however, as these are not threatened nor listed MSES under the EO Act, they have not been considered further.

No additional conservation significant species listed under the NC Act are considered likely to occur within the Study Area. A likelihood of occurrence assessment for species returned from database searches is provided in Appendix B.

5.3.1.1 Koala (*Phascolarctos cinereus*)

Distribution and habitat preferences

The koala is listed as endangered under the NC Act. Koalas inhabit a range of eucalypt-dominated, temperate, sub-tropical and tropical forests, woodlands and semi-arid communities along the eastern coast of Australia (DAWE, 2022). While occurring throughout much of Queensland's coast, the species' distribution is patchy, spanning the coastal and inland areas of Queensland north to Herberton and westwards to hotter and drier semi-arid climates of central Queensland (DAWE, 2022). The range and density of the species is typically determined by specific food, habitat and environmental requirements,

including altitude (limited to <800 m above sea level), temperature, the presence of preferred feed trees, and leaf moisture (Munks et al., 1996). Within the species' distribution, suitable habitat can generally be considered as those areas containing species within the *Angophora*, *Blakella*, *Corymbia*, *Eucalyptus*, *Lophostemon* and *Melaleuca* genera.

Connectivity of habitat areas is also important for allowing dispersing koalas to establish territories and access foraging and breeding opportunities (Youngentob et al., 2021). A lack of habitat connectivity may confine koala populations to a small area increasing the susceptibility of the species to disease or stochastic events such as a bushfire, as well as increasing the species' susceptibility to threats such as dogs and vehicles.

Riverine environments that provide a high abundance of refugia and eucalypt trees with high moisture content are of high importance to the continuation of koala populations in rural Queensland. (DAWE, 2022; Runge et al., 2014; Seabrook et al., 2011). Stream fringing eucalypts (*Eucalyptus camaldulensis* and *E. tereticornis*) have the highest leaf moisture content, and as koalas largely rely on diet to meet their water intake requirements, the presence of eucalypts with a high leaf moisture content is likely to positively influence habitat suitability, particularly during times of drought (Seabrook et al., 2011). This habitat often provides refuge opportunities for this species (DAWE, 2022a). Koalas are known to utilise all types of eucalypt woodland across their range where Locally Important Koala Trees (LIKTs) and Ancillary trees defined in *A review of koala habitat assessment criteria and method*s (Youngentob et al., 2021) are abundant.

LIKTs are important in defining habitat for the koala as they consider nutritional quality and preferred foraging species in a regional context (Youngentob, et al., 2021). LIKTs that are present within the Study Area include *Eucalyptus brownii*, *Eucalyptus camaldulensis*, *Eucalyptus crebra*, *Eucalyptus melanophloia*, *Eucalyptus orgadophila*, and *Eucalyptus tereticornis* (Youngentob, et al., 2021).

Ancillary trees are trees that koalas do not use for foraging but may utilise for shelter, dispersal or other resources that can be important for koalas (Youngentob, et al., 2021). Ancillary trees present within the Study Area include *Acacia harpophylla*, *Acacia saligna*, *Corymbia dallachiana*, *Corymbia erythrophloia*, *Corymbia tessellaris*, *Eucalyptus cambageana*, and *Melaleuca bracteata* (Youngentob, et al., 2021).

Occurrence in the Study Area

Koala was identified within the Study Area through call recognition from two BARs within areas of *Eucalyptus crebra* woodland (RE 11.5.9c) and *Eucalyptus brownii* woodland (RE 11.5.3). Calls were recorded on four separate nights at 13 intervals (measured as a call more than 30 minutes from the last) and were mostly recorded after midnight in the early hours of the morning. The locations of the BARs are presented in Figure 10.

No individuals were identified during spotlighting or diurnal surveys in the wet or dry season surveys, nor were scat and scratches positively identified for the species. This may indicate that the species is at a low density in the local landscape. The landscape is highly fragmented within the Study Area having limited connectivity to other tracts of remnant vegetation or major watercourses with riparian woodland where the species is commonly recorded in the region. RE 11.3.25d in the north of the Study Area consists of a sparse canopy and a limited number of LIKTs and is unlikely to support the species as a key connectivity corridor or an area of climate refuge. Connectivity between the Study Area and intact areas in the region is almost entirely interrupted by treeless corridors associated with the presence of natural grassland communities, mining, petroleum and exploration activities, major roads and other historic landscape clearing and disturbance.

Koala habitat has been mapped as either breeding and foraging or dispersal habitat, with consideration of *A review of koala habitat assessment criteria and methods* (Youngentob et al., 2021) and the presence of LIKTs and ancillary habitat trees.

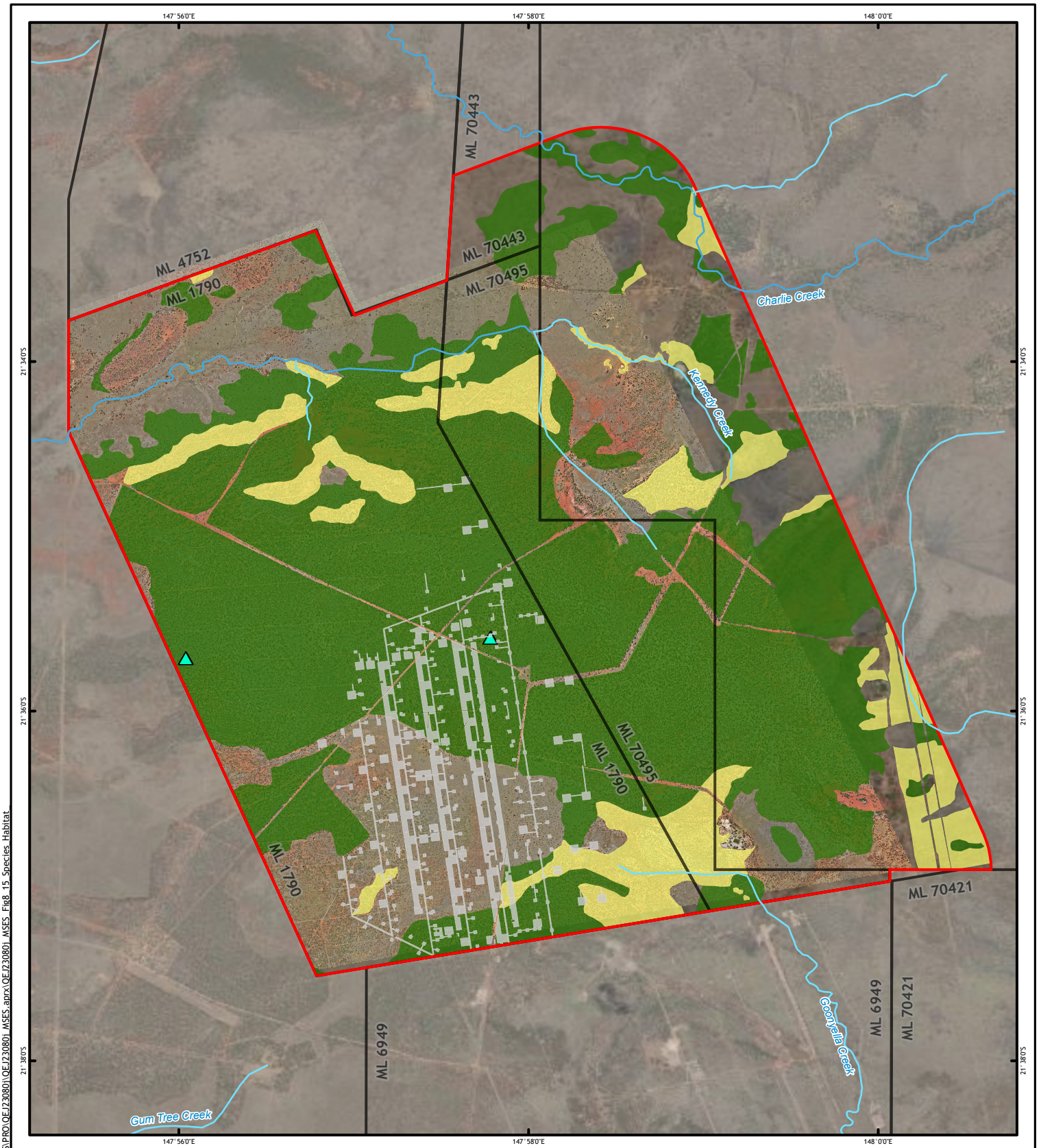
Breeding and foraging habitat for the species within the Study Area includes:

- areas of remnant and high-value regrowth eucalypt vegetation communities that are dominated by or contain LIKTs, which comprise REs 11.3.25d, 11.5.3, 11.5.9c, 11.5.15, 11.5.17 and 11.8.5.

Dispersal habitat for the species within the Study Area includes:

- areas of remnant and high-value regrowth *Acacia harpophylla* dominated communities that provide ancillary trees, comprising REs 11.5.16 and 11.9.5.

The total area of breeding and foraging habitat and dispersal habitat in the Study Area is presented in Table 10. Koala records and habitat mapping for the species within the Study Area are shown in Figure 10.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Threatened Fauna Record

Areas koalas have been recorded (BAR Record)

Koala Habitat

Breeding and Foraging

Dispersal

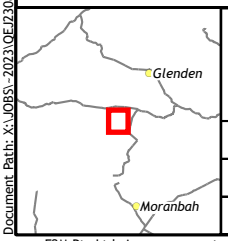
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 10: KOALA RECORDS AND HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig8_15_Species_Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.1.2 Squatter pigeon (southern) (*Geophaps scripta scripta*)

Distribution and habitat preferences

The squatter pigeon (southern) is listed as vulnerable under the NC Act. The subspecies occurs on the inland slopes of the Great Dividing Range from the Burdekin-Lynd Divide in central Queensland, west to Longreach and Charleville and south to Moree in New South Wales (TSSC, 2015). The subspecies inhabits woodland communities with a grassy understorey in proximity to permanent and seasonal water sources, such as rivers, creeks and farm dams (TSSC, 2015).

The squatter pigeon (southern) is a ground-dwelling bird that inhabits the grassy understorey of open woodland, as well as sown grasslands with scattered remnant trees, disturbed areas (such as roads, railways, settlements and stockyards, scrubland, and *Acacia* regrowth DAWE, 2020). Key habitat features include open forest to sparse, open woodlands and scrub that are:

- mostly dominated in the overstorey by *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* species
- remnant, regrowth or partly modified vegetation communities; and
- within 3km of suitable permanent or seasonal water bodies or water courses (DCCEEW, 2025d).

The species prefers well-draining, gravelly, sandy or loamy soils with patchy native perennial tussock-grass and low shrubs or forbs, particularly where the ground layer doesn't exceed 33% cover. These ground layer characteristics allow dust-bathing, foraging for primarily grass seed, ground-nesting habitat and dispersal movements. These ground layer characteristics are generally associated with land zones 5 and 7 in Queensland. Water sources, which may include rivers, creeks, lakes, ponds, dams, may occur on land zones 3, 4 or 10. The species is therefore likely to occur in habitats on these land zones, and also in habitat nearby on land zones 5 and 7. Breeding habitat occurs within these types of habitat, within 1km of permanent water sources (DCCEEW, 2025d).

Lloyd et al. (2025) have recently found that squatter pigeon habitat remains poorly understood. This study showed that squatter pigeons (southern) prefer alluvial landforms and most nests are recorded on alluvial plains approximately 245 ± 214 m from a perennial water source. Squatter pigeon (southern) records were associated with gentle slopes (0.64 - 2.36 °) and nearby perennial water sources (496 ± 554 m) with 95% of records within 1.7 km of a perennial water source. Ground vegetation in remnant and high-value regrowth communities inhabited by squatter pigeon (southern) ranges between 24% and 73%.

The species is considered sedentary or locally nomadic. They are likely to be sedentary where both food and water resources are reliable, however, when these resources become unavailable they may disperse along vegetated corridors to areas where there is access to permanent water (Squatter Pigeon Workshop, 2011). Squatter pigeon (southern) dispersal habitat is any forest or woodland, occurring between patches of foraging or breeding habitat. The species may also disperse through modified or degraded areas, e.g. improved pastures, but generally will not traverse cleared areas exceeding 100 m between habitats, as the species is unlikely to move too far from cover from predatory birds (DCCEEW, 2025d).

Occurrence in the Study Area

Squatter pigeon (southern) records within the Study Area occurred in close proximity to dams and trees areas in which they could disperse if necessary (Figure 11 and Plate 3). A total of 65 squatter pigeon (southern) individuals were recorded across the Study Area. All individuals were recorded nearby dams and often in small groups. A flock of 11 was encountered near a small water source in the north of the Study Area. In consideration of the conservation advice, the ground cover during the wet season was dense and mostly unsuitable for squatter pigeon (southern). However, during the dry season grass cover became sparser demonstrating a variation of ground cover across the seasons, likely due to grazing and

seasonal rainfall. Areas with trees had lower levels of grass productivity with mid-dense to sparse ground cover. These areas are likely to be more suitable for squatter pigeon (southern) foraging habitat. Within the Study Area, permanent water sources are limited to farm dams and water troughs. Permanent water sources outside of the Study Area that may have buffer area overlapping within the Study Area were determined using aerial imagery. Seasonal water sources such as depressions and pooling areas in watercourses were mapped in the Study Area. The entirety of the Study Area is within 3 km of a permanent or seasonal water source (refer to Figure 11).

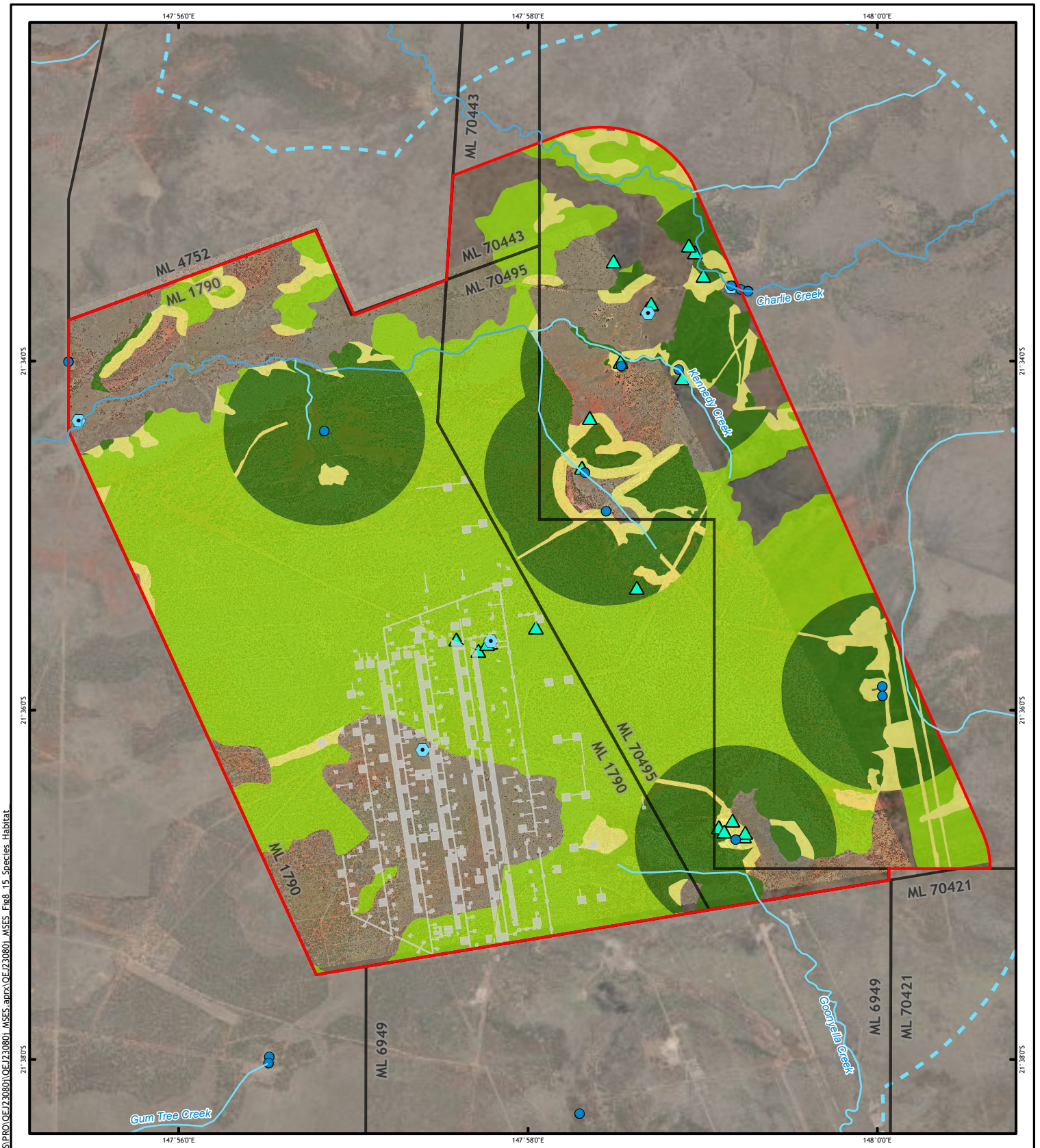
Squatter pigeon (southern) habitat within the Study Area has been mapped as breeding, foraging or dispersal habitat in consideration of the DCCEEW species profile and conservation advice (DotE, 2025b) and the recent 2025 study be Lloyd et. al., as follows:

- breeding and foraging habitat - within the Study Area has been mapped as remnant and high-value regrowth communities that support *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* spp. which are within 1 km of permanent water sources
- foraging (only) habitat - within the Study Area has been mapped as any remnant and high-value regrowth communities that support *Eucalyptus*, *Corymbia*, *Acacia* or *Callitris* spp. which are within 3 km of permanent and seasonal water sources; and
- dispersal habitat - within the Study Area has been mapped to include other areas that connect breeding and foraging habitat in the landscape, but which are generally within 100 m of breeding and foraging habitat (i.e. wooded cover for the species).

The total area of breeding and foraging habitat, foraging (only) habitat and dispersal habitat in the Study Area is presented in Table 10 and illustrated in Figure 11.



Plate 3: Squatter pigeon (southern) group (left) and individual in a tree (right)



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Seasonal Water Sources

Permanent Water Sources

Areas squatter pigeons (southern) were recorded

Squatter Pigeon (southern) Habitat

Breeding and Foraging

Foraging (only)

Dispersal

Water Source within 3km

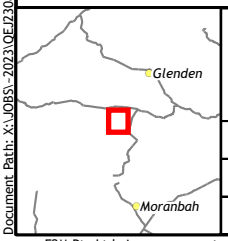
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 11: SQUATTER PIGEON (SOUTHERN) RECORDS AND HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig8_15_Species_Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.1.3 Australian painted snipe (*Rostratula australis*)

Distribution and habitat preferences

The Australian painted snipe is listed as endangered under the NC Act. This species occurs in all states of Australia but is most common in eastern Australia and is well-known from the Murray-Darling basin (DCCEEW, 2025b). Other sightings include the Channel Country and the Fitzroy Basin, and recently from the floodwater plains of coastal central and north Queensland. Suspected to be regular migrants to coastal floodwater plains in autumn and winter.

This species generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DCCEEW, 2025b). The species also uses inundated or waterlogged grassland, saltmarsh, dams, rice crops, sewage farms and bore drains. The species has been recorded to utilise areas lined with trees, or that have some scattered fallen or washed-up timber. Breeding habitat requirements for the Australian painted snipe include shallow wetlands with areas of bare, wet mud and mixed heights of low vegetation, with nest records from on or near small islands in freshwater wetlands with a combination of very shallow water, exposed mud, dense low vegetation cover or sometimes tall, dense vegetation (DCCEWW, 2022). Breeding occurs in shallow wetlands with areas of bare wet mud and both upper and lower canopy cover nearby, typically from or near small islands in freshwater wetlands (DCCEEW, 2025b).

The *National Recovery Plan for the Australian Painted Snipe* (DCCEWW, 2022) estimates the population to be 340 mature individuals. Australian painted snipes are described as dispersive or migratory and their movements as nomadic, with no fixed spatial or temporal pattern (DCCEWW, 2022). Movements of the species have been attributed to local conditions, with the species dispersing to seasonally available suitable wetland habitat (DCCEWW, 2022).

Occurrence in the Study Area

Australian painted snipe is listed as endangered under the EPBC Act and the NC Act. Australian painted snipe was not detected during survey events. However, the species is highly mobile and may utilise areas of habitat within the Study Area intermittently for foraging and roosting and is therefore considered likely to occur.

Wetland depressions associated with RE 11.5.17 were amongst woodlands of Queensland blue gum (*Eucalyptus tereticornis*). Vegetation surrounding these depressions included very sparse *Cyperus* spp., *Eleocharis* spp. and *Waltheria indica* and did not provide vegetation cover (5%) suitable for this species.

The species may use areas within the Study Area periodically after high rain events. These areas are associated with the overflow of man-made dams and shallow to moderate gilgais containing ephemeral water. Overflow areas were significant in size and provide wetland habitat that the species has the potential to utilise seasonally. These large areas resembled lakes and lacked inland islands or fringing peninsulas which the species is known to utilise almost exclusively for breeding (DCCEEW, 2022). Edge vegetation was dominated by weeds and included spiny mudgrass (*Pseudoraphis spinescens*), Indian heliotrope (*Heliotropium indicum*), stylo (*Stylosanthes scabra*), dwarf cassia (*Chamaecrista mimosoides*) and parthenium. Scattered tree cover of *Acacia* spp. and *Eucalyptus* spp. was present at the edge of the overflow wetlands.

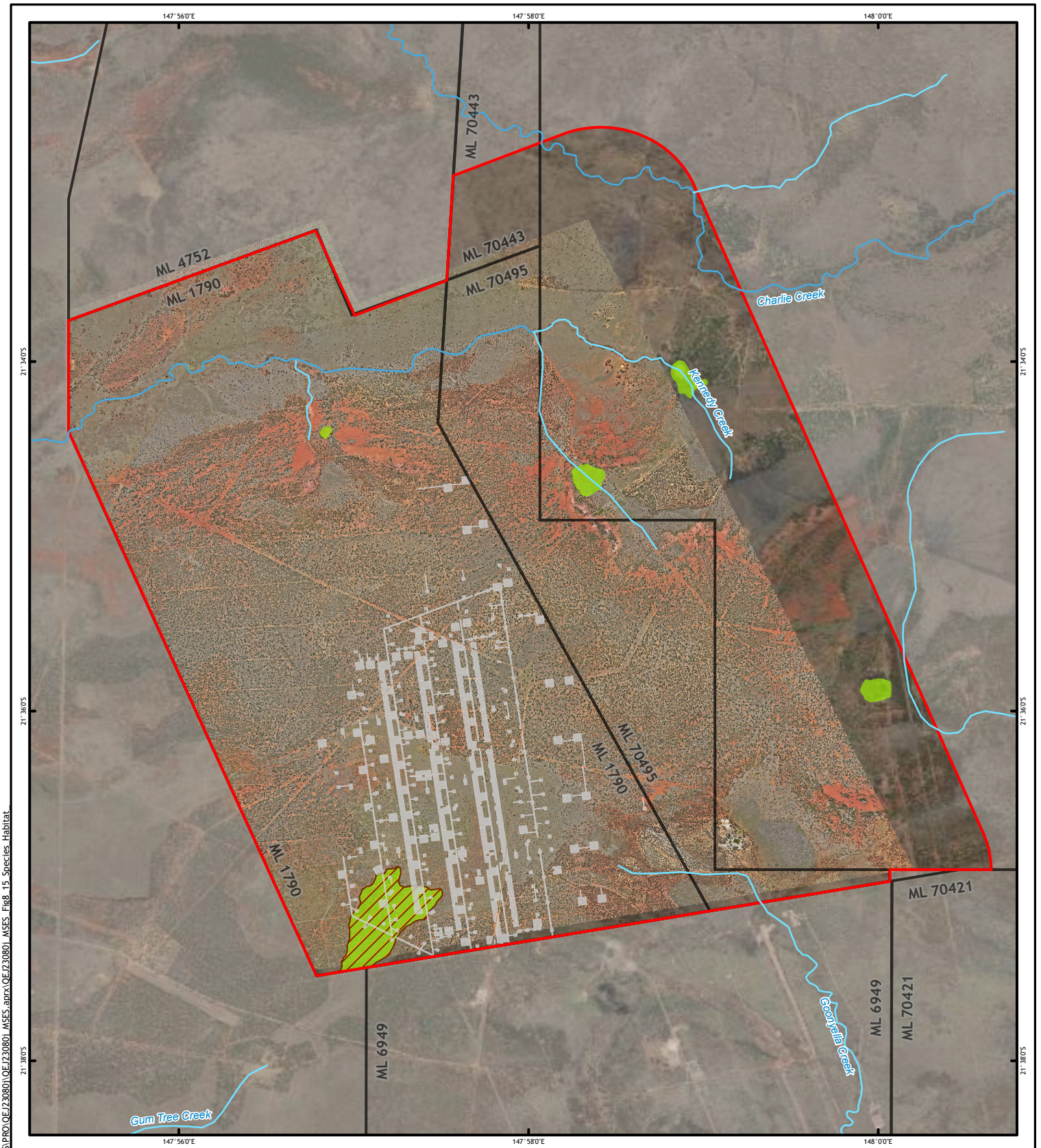
Few large seasonally inundated shallow to moderately deep gilgais were present in the south-west extent of the Study Area. This area is isolated and does not comprise an extensive system of small mounds which the species would utilise to breed (DCCEEW, 2022). These gilgais were surrounded by fallen timber in remnant and scattered young woody regrowth brigalow (RE 11.5.16), with *Waltheria indica*, *Ammannia baccifera* and sesbania pea (*Sesbania cannabina*) that provided edge vegetation to the gilgais. These areas

are likely to provide appropriate vegetation cover (20%) for the species. Although, the young woody regrowth brigalow was degraded from previous clearing and cattle disturbance.

It is therefore considered that the Study Area periodically provides foraging and roosting habitat for these species. Foraging and roosting habitat for the species has been mapped within the Study Area and includes:

- areas of wetland from overflow of dams; and
- gilgais of varying sizes in brigalow vegetation.

The total area of foraging and roosting habitat in the Study Area is presented in Table 10 and illustrated in Figure 12.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Australian Painted Snipe Habitat

Foraging and Roosting

Habitat Containing Gilgai

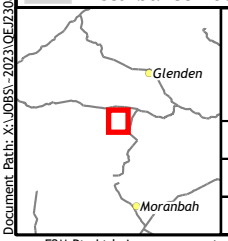
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 12: AUSTRALIAN PAINTED SNIPE HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j 2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j MSES.aprx\QEJ23080j MSES Fig8 15 Species Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.1.4 Latham's snipe (*Gallinago hardwickii*)

Distribution and habitat preferences

Latham's snipe is listed as vulnerable under the NC Act. The species is known from all east coast areas and extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to the west of the Great Dividing Range in New South Wales. It is occasionally recorded in south-western Queensland (DCCEEW, 2025b). The species is migratory and breeds only in the northern hemisphere (DCCEEW, 2024).

This species typically occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) (DCCEEW, 2025b). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats and in habitats located close to humans or human activity. Various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains (DCCEEW, 2025b).

Occurrence in the Study Area

Latham's snipe was not detected during survey events however the species is highly mobile and may utilise areas of habitat within the Study Area intermittently for foraging and roosting. The species may use areas within the Study Area periodically after high rain events and is considered likely to occur. These areas are associated with overflows of man-made dams and shallow to moderate gilgais containing ephemeral water.

Wetland depressions associated with RE 11.5.17 were amongst woodlands of Queensland blue gum (*Eucalyptus tereticornis*). Vegetation surrounding these depressions included very sparse *Cyperus* spp., *Eleocharis* spp. and *Waltheria indica* and did not provide vegetation cover (5%) suitable for this species.

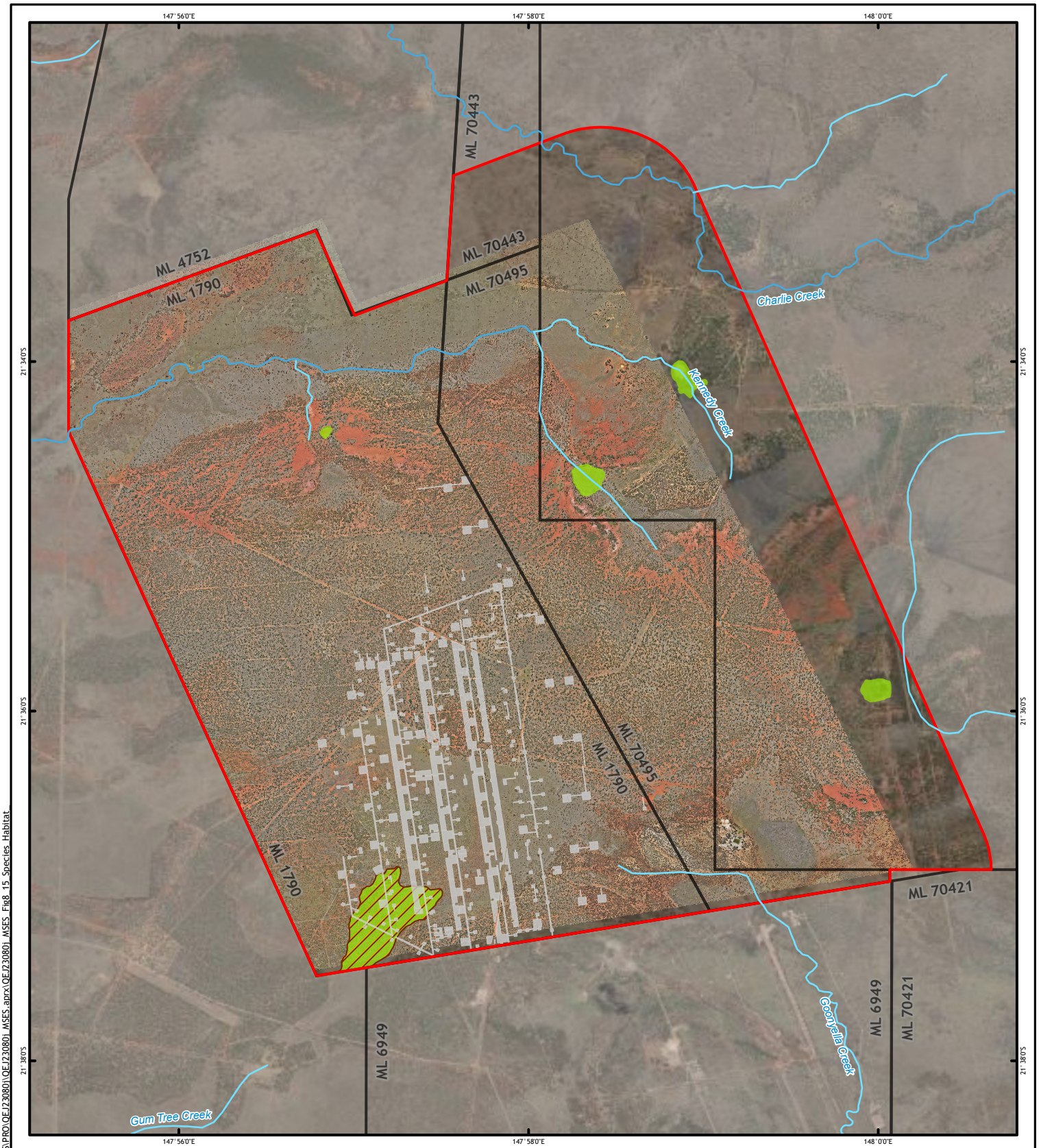
Overflow wetland areas were significant in size and provide wetland habitat that the species has the potential to utilise seasonally. Edge vegetation was dense in areas and often dominated by weeds. Species included spiny mudgrass (*Pseudoraphis spinescens*), Indian heliotrope (*Heliotropium indicum*), stylo (*Stylosanthes scabra*), dwarf cassia (*Chamaecrista mimosoides*) and parthenium. Scattered tree cover of *Acacia* spp. and *Eucalyptus* spp. was present at the edge. Many dead stags in the centre of the lake were present at two of these wetlands.

Few large seasonally inundated shallow to moderately deep gilgais were present in the south-west extent of the Study Area. These gilgais were surrounded by fallen timber in remnant and scattered young woody regrowth brigalow (RE 11.5.16), with *Waltheria indica*, *Ammannia baccifera* and sesbania pea (*Sesbania cannabina*) that provided edge vegetation to the gilgais. These areas are likely to provide appropriate vegetation cover (20%) for the species.

It is therefore considered that the Study Area periodically provides wetland habitat for these species. Foraging and roosting habitat for the species has been mapped within the Study Area and includes:

- areas of wetland from overflow of dams; and
- gilgais of varying sizes in brigalow vegetation.

The total area of foraging and roosting habitat in the Study Area is presented in Table 10 and illustrated in Figure 13.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Latham's Snipe Habitat

Foraging and Roosting

Habitat Containing Gilgai

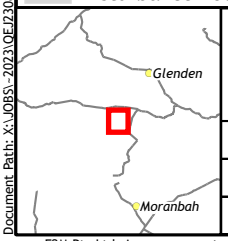
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 13: LATHAM'S SNIPE HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ2308O\23080j 2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j MSES.aprx\QEJ23080j MSES Fig8 15 Species Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.1.5 Ornamental snake (*Denisonia maculata*)

Distribution and habitat preferences

Ornamental snake is listed as vulnerable under the NC Act. This species prefers moist areas in woodlands and open forests, particularly in depressions located in Queensland REs on land zone 4 and generally characterised by gilgai mounds occurring in areas of deep cracking alluvial soils with high clay content (DCCEEW, 2011). In addition, the species' preferred habitat is that within or in close proximity to habitat used by frogs, which are the primary prey species of ornamental snake (DCCEEW, 2011; DEWHA, 2014). The species habitat is generally found in *Acacia harpophylla*, *A. cambagei*, *A. argyrodendron* or *Eucalyptus coolabah* dominated communities including primarily REs 11.4.3, 11.4.6, 11.4.8 and 11.4.9 (DCCEEW, 2011). Habitat is also found in grasslands that contain gilgai (DCCEEW, 2011). Ornamental snake shelter under logs, leaf litter, bark, rocks and coarse woody debris on the ground, and during dry periods they will seek refuge within clay cracks in gilgai (Brigalow Belt Reptiles Workshop, 2010).

Habitat characteristics that are shared across locations in which ornamental snake have been recorded include:

- areas in the lowest part of the catchment
- diversity of gilgai size and depth
- soils of high clay content and deep cracking characteristics
- common presence of ground timber (especially piles)
- abundance of burrowing frogs; and
- habitat patches that are greater than 10 ha and are within, or connected, to larger areas of remnant vegetation (DCCEEW, 2011).

Occurrence in the Study Area

Ornamental snake was not identified in the Study Area during targeted field surveys, however habitat for the species was identified in the south-west of the Study Area where areas of large gilgai with considerable water retention were observed in the 2025 June survey. This species is considered likely to occur in these areas, which consist of remnant and young woody regrowth brigalow in RE 11.5.16. These gilgais were surrounded by woody debris and aquatic vegetation. Large cracks were not evident at the time of the survey although these are not always evident in wet conditions.

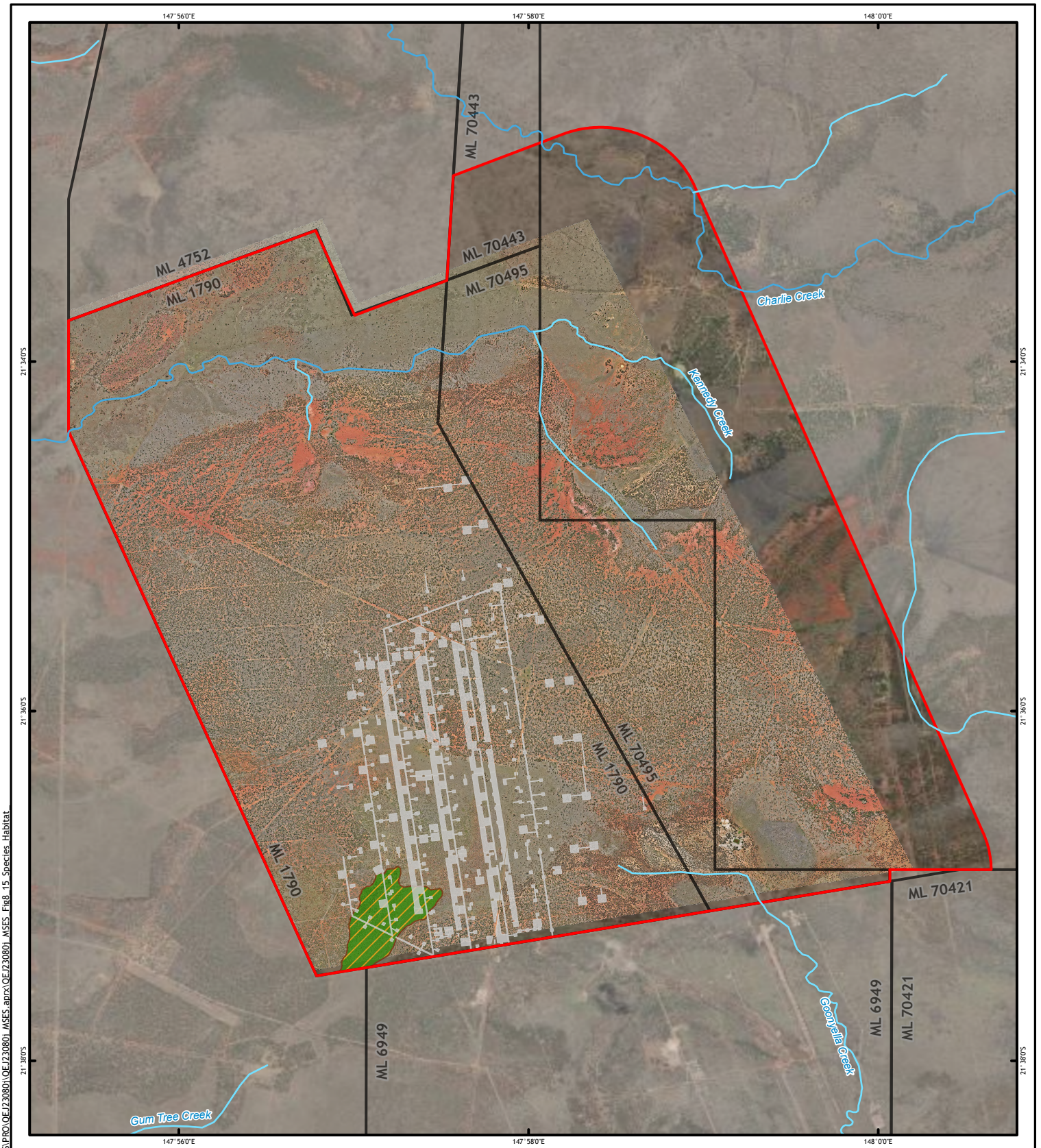
Other areas of brigalow dominated vegetation also in RE 11.5.16 occurring in other parts of the Study Area were on dark red clay soils derived from weathered basalt. These basalt derived clay soils had a high sand content and did not show evidence of water retention throughout the seasonal surveys and instead supported many small drainage features with limited gilgai presence. The occasional gilgai that were present in other parts of the Study Area were shallow and did not support deep cracks or woody debris which provide essential refuge habitat for this species (DEWHA, 2014). These areas also did not show evidence of aquatic vegetation which suggest a limited duration of water retention. The brigalow dominated communities within the Study Area have been previously cleared, and although some have regained remnant status due to meeting height and cover requirements, woody debris is generally not present in suitable abundance in these areas to support the species.

The species is known to disperse between areas of suitable breeding and foraging habitat. However, this is likely to be toward the south where the altitude drops into more extensive gilgai habitat outside the Study Area.

Therefore, only habitat identified in the south-west of the Study Area provides breeding and foraging opportunities for the ornamental snake. These areas include:

- remnant RE 11.5.16 containing deep gilgais where woody debris was present with enough water retention to support frog breeding habitat; and
- young woody regrowth brigalow vegetation with shallow to moderately deep gilgais of varying sizes with woody debris and enough water retention to support frog breeding habitat.

The total area of breeding and foraging habitat in the Study Area is presented in Table 10 and illustrated in Figure 14.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Ornamental Snake Habitat

Breeding and Foraging

Habitat Containing Gilgai

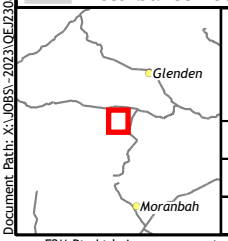
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 14: ORNAMENTAL SNAKE HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j 2nd Major EA Amendment\GIS\PRO\QEJ23080j\QEJ23080j MSES.aprx\QEJ23080j MSES Fig8 15 Species Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.1.6 White-throated needletail (*Hirundapus caudacutus*)

Distribution and habitat preferences

The white-throated needletail is listed as vulnerable under the NC Act. The species is a non-breeding visitor to Australia where it is widespread across eastern and south-eastern Queensland (TSSC, 2019). It is most often recorded above wooded areas such as open forest and rainforest (TSSC 2019) and has been recorded roosting in emergent trees with hollows in woodlands on hills, cliffs and on the edges of tall forest at the edge of clearings (DCCEEW, 2025a).

The species is almost exclusively aerial in Australia, where it is most often recorded above wooded areas such as open forest and rainforest and is less common above woodland and open treeless areas (DCCEEW, 2025d; TSSC, 2019). The species forages aerially on insects above a wide range of habitats including heavily treed forests to open areas (DCCEEW, 2025d). They also often forage in areas of updraft such as along the edges of low pressure systems which lift prey above the ground (DCCEEW, 2025d).

Although it rarely alights, the species has been recorded roosting in emergent trees at night (amongst foliage, in tree hollows or while clinging to the side of rough-barked trees). Roosting has been recorded in woodlands on hills, cliffs and on the edges of tall forest at the edge of clearings and may do so if hot or during inclement weather (DCCEEW, 2025d; Tarburton, 2015; TSSC, 2019). Roosting birds likely require a clear airspace when approaching roost trees at night and are known to roost in canopy trees on ridges, low spurs and trees at the edges of clearings (Tarburton, 2015).

This species has been recorded throughout the eastern coastline of Australia and there are a number of published records in the region surrounding the Study Area, the nearest being adjacent to the north-western extent of the Study Area (ALA, 2025).

Occurrence in the Study Area

This species was not detected during the field surveys. The species has been previously recorded on a number of occasions within approximately 20 km of the Study Area (ALA, 2020) and is therefore considered likely to overfly the Study Area. Suitable overfly habitat for the species includes a broad range of vegetation communities that are likely to support invertebrate feeding resources in the airspace above, particularly in remnant and high-value regrowth condition. No potential roosting areas of emergent trees with hollows in woodlands or tall trees at the edges of clearing were observed within the Study Area. The species is unlikely to use habitat within the Study Area.

Therefore, white-throated needletail habitat has not been mapped for the Study Area but is likely to comprise the air space above forested areas, i.e. wooded remnant and high-value regrowth vegetation. The total area of overfly habitat for the species over the Study Area is presented in Table 10.

5.3.1.7 Short-beaked echidna (*Tachyglossus aculeatus*)

Distribution and habitat preferences

The short-beaked echidna is listed as special least concern under the NC Act. Short-beaked echidna are found in a variety of terrestrial habitats including mountains, tropics, open woodlands, grasslands, arid zones and coastal environments (Brice et al., 2002; *Echidnas*, 2020; S. C. Nicol et al., 2011). They prefer to inhabit areas with vegetation that provides cover such as gaps under rocks, hollow logs, hollows at the base of trees, piles of leaves or bunched grasses (S. C. Nicol et al., 2011). The species also enters a period of torpor or deep hibernation during autumn and winter, during which time it also requires these forms of cover (ALA, 2025b). The species' preferred food is ant and termite species which are prevalent in many ecosystems. Therefore, an abundance of termite mounds is likely to indicate foraging habitat for the species (Rismiller & McKelvey, 2000).

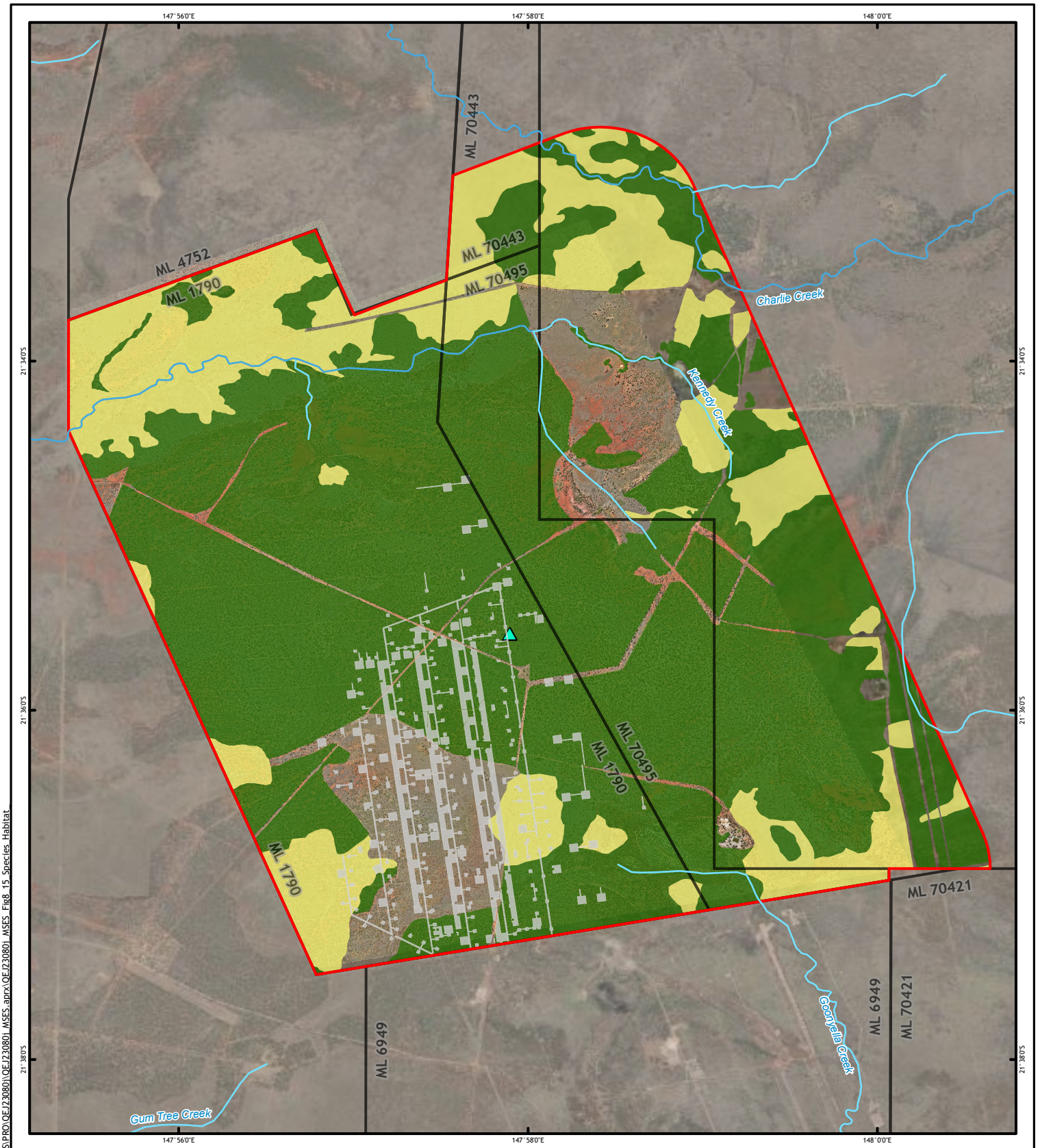
Female echidnas dig a nursery burrow or utilise existing burrows dug by other animals, in which they raise their young (S. C. Nicol et al., 2011). Nursery burrows may be located within mulch or wood piles and the entrance is often closed off or plugged by the female when she leaves to ensure safety for the young (Land for Wildlife Queensland, 2011). Short-beaked echidna have a home-range to which they show strong fidelity through all life phases (S. C. Nicol et al., 2011). Home ranges are 40 – 60 ha on average and often overlap with other individuals (ALA, 2025b).

Occurrence in the Study Area

One individual short-beaked echidna was recorded within the Study Area during the 2024 wet season survey in remnant narrow-leaved ironbark (*Eucalyptus crebra*) woodland (RE 11.5.9c). Scats attributable to the species were also recorded in multiple locations in remnant vegetation within the Study Area. As a habitat generalist, the short-beaked echidna is considered likely to occur within remnant and non-remnant vegetation communities within the Study Area. However, the species is more likely to utilise areas with habitat features such as logs, dense shrubs, and ant mounds for foraging and burrowing. Young woody regrowth and other non-remnant areas within the Study Area did not support large woody debris, shrubby areas and logs suitable for short-beaked echidna. Therefore, short-beaked echidna habitat has been mapped within the Study Area as:

- breeding and foraging habitat - remnant and high-value regrowth vegetation comprising wooded REs; and
- dispersal habitat - other vegetated areas, including natural grasslands and young woody regrowth vegetation that occur between areas of breeding and foraging habitat.

The total area of breeding and foraging habitat and dispersal habitat in the Study Area is presented in Table 10. Short-beaked echidna records and habitat mapping for the species within the Study Area are shown in Figure 15.



Legend

Watercourse (Stream Order)

1 2

Study Area

Mining Lease

Disturbance Footprint

Threatened Fauna Record

Areas short-beaked echidnas were recorded

Short-beaked Echidna Habitat

Breeding and Foraging

Dispersal

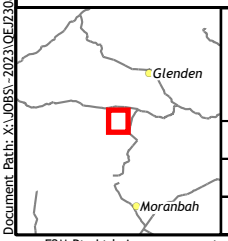
N

Scale 1:55,000 (A4)

0 1 2

Kilometres

Coordinate System: GDA2020



Notes:
Aerial Imagery: © ESRI 2025
Watercourse: © DNRMMRRD 2024
Road: © DNRMMRRD 2024
Mining Lease: © DNRMMRRD 2024
Mining Development Licence: © DNRMMRRD 2024

Rev	Description	Drawn	Approved	Date
A	Issued for Review	HM	KK	16/10/2025

FIGURE 15: SHORT-BEAKED ECHIDNA RECORDS AND HABITAT WITHIN THE STUDY AREA

Centurion North Extension Project MSES Report
Centurion Coal Mine Pty Ltd

Map Number	Job Number	Rev
1 of 1	QEJ23080j	A

Document Path: X:\JOBS\-2023\QEJ23080\23080j_2nd Major EA Amendment\GIS\PRO\QEJ23080\QEJ23080j_MSES.aprx\QEJ23080j_MSES_Fig8_15_Species_Habitat

E2M Pty Ltd gives no warranty in relation to the data (including accuracy, reliability, completeness or suitability) and accepts no liability for any loss, damage or costs (including consequential damage) relating to any use of the data in this map.

5.3.2 Pest fauna

Five pest fauna species were recorded within the Study Area. Four of these species were listed as restricted matters under the Biosecurity Act, including:

- cane toad (*Rhinella marina*), general biosecurity obligations
- cat (*Felis catus*) – Category 3, 4 and 6 restricted matter
- wild dogs (*Canis lupus*) – Category 3, 4 and 6 restricted matter
- European rabbit (*Oryctolagus cuniculus*) – Category 3, 4, 5, and 6 restricted matter; and
- feral pig (*Sus scrofa*) – Category 3, 4, and 6 restricted matter.

Evidence of habitat degradation caused by feral pig rooting was observed, including damage around gilgais as well as within SEVT vegetation. Wild dogs and cats were recorded on multiple occasions during the survey events with records during diurnal driving transects, spotlighting and motion camera recordings and evidence such as tracks, scats and bird remains.

5.4 Connectivity areas

Approximately 3,902.25 ha of remnant vegetation has been mapped across the Study Area as part of the Queensland Herbarium certified map amendment. This remnant cover is somewhat fragmented in the landscape from historic clearing for cattle grazing. Highly fragmented landscapes are more likely to be susceptible to further fragmentation and degradation compared with more intact landscapes.

Corridors to other areas of remnant wooded vegetation were limited. Connectivity around the Study Area is almost entirely interrupted by treeless corridors associated with the presence of natural grassland communities, mining, petroleum and exploration activities, major roads and other historic landscape clearing and disturbance. However, a small corridor (of approximately 200 m in width) exists from the east of the Study Area through brigalow dominated vegetation to connect to woodland associated with a tributary of the Isaac River further east. This tributary provides riparian woodland habitat that is likely to facilitate dispersal for many fauna species through the landscape.

Charlie Creek eventually runs west into the Suttor River which also provides habitat connectivity in the landscape. However, Charlie Creek has a sparse cover of *Eucalyptus tereticornis* and *Eucalyptus camaldulensis* and a low tree layer of *Melaleuca bracteata* and intersects with natural grasslands, which lack vegetation and limit dispersal of many fauna species. Assessment of impacts to connectivity areas is discussed in Section 8.3.8.

5.5 Waterways providing for fish habitat

A number of waterways potentially providing for fish passage are mapped by the Queensland Government within the Study Area as having low and moderate potential fish passage attributes. These waterways are listed as MSES under the *Environmental Offsets Regulation 2014*, where project works involve construction, installation or other modification of the waterway, which limits fish passage.

These waterways were identified as ephemeral within the Study Area, therefore their potential use for fish passage is likely to be temporary, intermittent and seasonal.

5.6 Environmentally sensitive areas

A number of ESAs were identified within the Study Area as discussed in Sections 5.1 to 5.3 and illustrated on Figure 7 to Figure 14. These include:

- Category B ESA:
  - remnant and high-value regrowth endangered (Biodiversity Status) REs including 11.5.15, 11.5.16 and 11.9.5
- Category C ESA:
  - remnant and high-value regrowth of concern (Biodiversity Status) REs including 11.3.25d and 11.8.11
  - ground-truthed habitat for endangered and vulnerable species listed under the NC Act including:
    - king bluegrass – vulnerable under the NC Act
    - koala - endangered under the NC Act
    - squatter pigeon (southern) – vulnerable under the NC Act
    - Australian painted snipe – endangered under the NC Act
    - Latham's snipe – vulnerable under the NC Act
    - ornamental snake – vulnerable under the NC Act; and
    - white-throated needletail – vulnerable under the NC Act.

Impacts to these matters as a result of the Project are discussed in sections 6.2.

5.7 Summary of MSES

Some of the vegetation, species and habitat values described in Sections 5.1 to 5.6 are prescribed MSES under the EO Act. Table 10 provides a summary of these MSES that have been identified within the Study Area.

Table 10: Summary of MSES within the Study Area

MSES	Likelihood to occur	VM Act/ NC Act status	EPBC Act status	Extent within the Study Area (ha)					
Endangered and of concern regulated vegetation (as per Queensland Herbarium certified mapping (MAR3577))									
RE 11.3.4	Known	OC	n/a						9.90
RE 11.4.8	Known	E	n/a						8.48
RE 11.4.9	Known	E	n/a						75.68
RE 11.4.9/ 11.4.8	Known	E/ E	n/a						12.88/ 3.22
RE 11.5.15/ 11.8.13	Known	LC/E	n/a						1.09/ 0.12
RE 11.5.16	Known	E	n/a						144.05
RE 11.8.11	Known	OC	n/a						674.97
RE 11.8.11/ 11.8.5	Known	OC/LC	n/a						29.36 / 10.27
RE 11.8.13	Known	E	n/a						93.73
RE 11.9.5	Known	E	n/a						3.08
Protected wildlife habitat - Flora				***Known (ha)***			***Potential (ha)***		***Total (ha)***
King bluegrass (*Dichanthium queenslandicum*)	Known	V	E	864.36			298.99		1163.35
Protected wildlife habitat - Fauna				***Breeding & foraging (ha)***	***Foraging (only) (ha)***	***Foraging and roosting (ha)***	***Foraging and dispersal (ha)***	***Dispersal (ha)***	***Total (ha)***

MSES	Likelihood to occur	VM Act/ NC Act status	EPBC Act status	Extent within the Study Area (ha)				
Koala (*Phascolarctos cinereus*)	Known	E	E	2867.41			517.31	3384.72
Squatter pigeon (southern) (*Geophaps scripta scripta*)	Known	V	V	1087.80	2391.58		316.76	3796.14
Australian painted snipe (*Rostratula australis*)	Likely	E	E			76.24		76.24
Latham's snipe (*Gallinago hardwickii*)	Likely	V	V			76.24		76.24
Ornamental snake (*Denisonia maculata*)	Likely	V	V	54.63				54.63
White-throated needletail (*Hirundapus caudacutus*)	Likely	V	V			3398.89		3398.89
Short-beaked echidna (*Tachyglossus aculeatus*)	Known	SLC	n/a	3398.89			1047.21	4446.10
Connectivity areas								
Remnant vegetation containing a prescribed RE	Present	Various						3,081.56

[1] - E = endangered, OC = of concern, LC = least concern
[2] - CE = critically endangered, E = endangered, V = vulnerable, M = migratory, - = not listed
[3] - CR = critically endangered, E = endangered, V = vulnerable, OC = of concern, SLC = special least concern, - = not listed

6 Direct and indirect impacts

6.1 Overview

The Project is scheduled to commence in 2026 and planned to precede the CND, which will be subject to an EIS under the SDPWO Act. Development of surface and underground infrastructure and extraction of CSG is proposed to continue until the commencement of longwall mining, which is anticipated to commence in 2029, pending the CND EIS and approval process.

Surface and underground works are expected to operate continuously, 24 hours per day, 363 days per year. A range of machinery and equipment will be used for development, operation and maintenance of the Project, including:

- earth moving equipment such as dozers, graders, truck, rollers and slashers
- water trucks
- 60 kV diesel generators
- drill rigs, well head infrastructure, valves, fittings, flares and vents
- gas, water and mud pumps
- separation and processing equipment
- measurement and monitoring devices; and
- safety and environmental control equipment.

The Project will utilise existing surface and underground infrastructure at the CCM, e.g. raw water storage, underground power supply, permanent office, crib and workshop facilities, accommodation village, where possible and will not require any new off lease infrastructure to support the Project. The Project will utilise existing waste and water management facilities within the CCM. The Project will utilise previously cleared and disturbed areas where possible in the Disturbance Footprint, particularly for siting of new access tracks.

Nonetheless, the location of the Disturbance Footprint is largely defined by the nature and extent of the coal deposit and associated gas seams. As such, it is constrained by resource, geographic, existing infrastructure, and feasibility considerations. Therefore, clearing and disturbance for the Project is unavoidable and is described in the following sections. Assessment of significance of impacts specifically to MSES are provided in Section 8 and will consider the impacts described in the following sections.

Indirect impacts from the Project as a result of subsidence associated with underground gate roads and future goaf drainage lines are considered negligible (39-45 mm) (SCT Operations, 2025) to terrestrial ecology values and will not be considered further in this assessment.

The implementation of impact avoidance, minimisation and mitigation measures will assist in reducing impacts on ecological values identified within the Study Area and surrounds. While the location of coal seams will dictate the location of infrastructure and disturbance necessary for the Project, measures are proposed throughout all phases of the Project to reduce overall impacts where possible and these are outlined in Section 7.

6.2 Direct impacts

6.2.1 Vegetation clearing and habitat removal

Clearing and removal of native vegetation within the Disturbance Footprint has the potential to directly impact MSES by:

- clearing areas of threatened flora habitat
- eliminating or reducing the extent and availability of nesting, denning, roosting and shelter habitat for threatened fauna
- fragmenting habitat
- removing or reducing the availability of food and foraging habitat; and
- increasing competition through reduced availability of resources.

Vegetation clearing can also exacerbate the impact of other threatening processes on threatened species/communities (Neldner et al., 2017). A summary of direct impacts on vegetation communities within the Disturbance Footprint is provided in Table 11. These proposed impacts are an upper limit of the extent of potential clearing and disturbance required and may be reduced through on-ground siting and mitigation measures. These measures would be employed during construction activities and in response to outcomes of pre-clearance surveys outlined in Section 7.3.1.

Table 11: Direct impacts to vegetation communities within the Disturbance Footprint

RE	Condition	VM Act class	Extent within Disturbance Footprint (direct impact)	
			Queensland Herbarium certified mapping (ha)	Ground-truthed RE (ha)
11.4.9	Remnant	Endangered	0.28	-
11.5.3	Remnant	Least concern	1.11	0.36
	HVR	Least concern	-	0.69
11.5.9	Remnant	Least concern	56.06	-
11.5.9c	Remnant	Least concern	-	57.94
11.5.15	Remnant	Least concern	0.70	3.85
11.5.16	Remnant	Endangered	0.03	0.29
	HVR	Endangered	-	3.26
11.5.17	Remnant	Endangered	-	0.37
11.8.5	Remnant	Least concern	1.17	1.63
11.8.11	Remnant	Of concern	3.55	6.58

Vegetation clearing for the Project will also have direct impacts on protected wildlife habitat within the Disturbance Footprint. A summary of habitat for MSES directly impacted by the Project is presented in Table 12.

Table 12: Direct impacts to MSES fauna and flora habitat within the Disturbance Footprint

MSES	Likelihood to occur	VM Act/ NC Act status	EPBC Act status	Extent within the Disturbance Footprint (ha)					
Protected wildlife habitat - Flora							***Known (ha)***	***Potential (ha)***	***Total (ha)***
King bluegrass (*Dichanthium queenslandicum*)	Known	V	E					8.20	8.20
Protected wildlife habitat - Fauna				***Breeding & foraging (ha)***	***Foraging (only) (ha)***	***Foraging and roosting (ha)***	***Foraging and dispersal (ha)***	***Dispersal (ha)***	***Total (ha)***
Koala (*Phascolarctos cinereus*)	Known	E	E	64.83				3.55	68.38
Squatter pigeon (southern) (*Geophaps scripta scripta*)	Known	V	V	0.11	69.78			1.40	71.30
Australian painted snipe (*Rostratula australis*)	Likely	E	E			5.28			5.28
Latham's snipe (*Gallinago hardwickii*)	Likely	V	V			5.28			5.28
Ornamental snake (*Denisonia maculata*)	Likely	V	V	5.28					5.28
White-throated needletail (*Hirundapus caudacutus*)	Likely	V	V				68.38		68.38
Short-beaked echidna (*Tachyglossus aculeatus*)	Known	SLC	n/a	68.38				9.38	77.76

6.2.2 Fragmentation of habitat and connectivity

The Study Area is comprised predominantly of remnant vegetation with large, cleared areas used for agricultural purposes. Similarly, the surrounding area and regional landscape have also been cleared for agricultural and mining activities. A previously cleared network of tracks exists within the Study Area, which the Project design has utilised where possible. However, clearing to support infrastructure for the Project will be required within the Disturbance Footprint and will further fragment habitat within the Study Area.

Vegetation within and adjacent to the Disturbance Footprint is important for fauna movement within the Study Area and wider surrounds. The Disturbance Footprint does not involve large areas of consolidated clearing and is limited to multiple pads with connecting roads, pipelines and additional minor infrastructure. Clearing for the Project has the potential to interrupt movement and connectivity for some animals, particularly smaller, ground dwelling mammals, reptiles and amphibians. However, while fragmentation of vegetation will occur clearing of corridors for linear infrastructure is unlikely to restrict or cause substantial barriers to movement due to the narrow width of the majority of the proposed clearing.

6.2.3 Fauna mortality and injury

Construction and operation activities have the potential to lead to fauna injury or mortality. Vehicles and machinery can cause injury or mortality to fauna if individuals are struck. Similarly, fauna that are unable to disperse away from areas under active clearing are also particularly susceptible to this impact. Other causes of injury or mortality include animals becoming trapped in excavations and trenches.

6.3 Indirect impacts

In addition to direct vegetation and habitat loss, the Project may result in the disturbance and degradation of ecological values adjacent to the Disturbance Footprint, via:

- habitat degradation and edge effects
- establishment and spread of pest flora and fauna species
- noise, light and dust emissions
- erosion, contamination from spills and leaks
- increased risk of fire
- changes to surface water quality, quantity, and flow paths; and
- groundwater drawdown; and
- increased risk of fire.

Each of these impacts are discussed in further detail below.

6.3.1 Habitat degradation and edge effects

Clearing and construction activities within the Disturbance Footprint will likely degrade areas of adjoining habitat as a result of edge effects (i.e., reduced quality and suitability of habitat due to changes in vegetation cover along ecotones and adjacent disturbance areas (Laurance & Yensen, 1991)). Potential edge effects on adjacent habitat include: incursions by feral plants and animals (see 6.3.2 below), increased predation risk, increased frequency of human-wildlife interactions, as well as increased dust,

noise and light levels (Ben-Ami & Ramp, 2013; Laurance & Yensen, 1991; Pickering et al., 2007; Ramp et al., 2005; Weston et al., 2011; Wolf & Croft, 2014). Edge effects will be exacerbated by the network of linear infrastructure clearing and tracks proposed increasing the volume of adjacent habitat subject to disturbance.

6.3.2 Pest flora and fauna

Vegetation clearing and other activities associated with the Project have the potential to impact native flora and fauna within the Study Area and surrounds through the introduction and spread of pest plant and animal species.

Introduced flora species disrupt ecosystems by outcompeting and replacing native species, resulting in altered ecosystem diversity and function. Proliferation and spread of environmental weeds and pests may occur with vegetation clearing, soil disturbance and increased movement of heavy machinery and vehicles. Weed seeds can be transported in contaminated landfill, seed and material on machinery, vehicles or personnel. Construction activities have the potential to spread or introduce weeds throughout adjacent environs, resulting in the reduction in vegetation/habitat quality and native species assemblages. The presence of invasive plants, such as harissa cactus and parthenium has been identified within the Study Area. Further pest flora incursions have the potential to impact native species in the Study Area through the degradation of vegetation community structure and composition, particularly proliferation of parthenium within natural grassland communities. Resulting changes in vegetation structure and composition can also result in increased fuel loads and more frequent and intense fires. Changes in vegetation structure and condition can also result in increased risk of erosion, further degrading and reducing the availability of habitats.

Evidence of wild dogs, feral pigs, rabbits, cats and cane toads were identified frequently throughout the Study Area. Pest fauna species have varying adverse impacts on the environment. Feral pigs are known to contribute to habitat degradation by damaging the banks of wetlands, creek lines and gilgai, uprooting vegetation, causing soil erosion, spreading weeds and grazing native flora. Carnivorous pest fauna such as feral cats and wild dogs are a significant threat to threatened species such as koala and squatter pigeon (southern). Opportunistic carnivores such as feral pigs, are known to directly predate native fauna. In addition, cane toads outcompete native amphibians and are toxic to animals such as snakes and other reptiles that predate upon them.

The Project has potential to increase the abundance of feral animals moving through the area through improper waste disposal and increased permanency of water sources (e.g. water dams and troughs). This could result in adverse impacts to native species occurring within the Study Area and nearby areas, through:

- increased competition of resources
- predation
- spreading weeds
- introduction and spread of diseases (e.g. chlamydia) and pathogens (e.g. myrtle rust)
- poisoning (e.g., cane toads)
- soil disturbance (e.g., feral pig diggings), and
- reduced water quality (e.g., eutrophication and/or increased sedimentation and turbidity).

These potential impacts will require management throughout the Project and are discussed in Section 7.3.3.

6.3.3 Erosion, sedimentation and spills

Erosion and contamination of soils and water may occur as a result of construction, operation and remediation activities, such as vegetation clearing, earthworks, unexpected releases, remediation of subsided areas and operation of heavy machinery. Erosion can remove the most productive part of the soil profile, the topsoil, resulting in a greatly reduced opportunity for natural regeneration of vegetation communities (unless stockpiled). Where these activities occur on dispersive soils and/or on slopes, sedimentation of watercourses can occur. Impacts to aquatic ecosystems can include build-up of sediment in waterholes with a resultant reduction in available microhabitat and smothering of aquatic plants and substrate.

Inappropriate disposal of liquid and solid wastes, including spills and leaks from transfers (fuel, chemicals) and inadequate storage may also result in point-source contamination of surrounding land, including habitats of threatened and migratory species. Direct adverse impacts include toxic impacts on vegetation (resulting in degradation or loss), direct toxic impacts on fauna (from contact, inhalation or ingestion) or indirect impacts on threatened species from habitat loss. Direct adverse impacts on surface and groundwater quality are also possible.

These types of impacts are well understood and there are standard design and management measures available to avoid, minimise and mitigate the risk of these types of impacts from taking place. This is discussed in Section 7.3.6.

6.3.4 Noise, light and dust

Construction and operation activities can disrupt local fauna roosting, breeding and foraging activities as a result of increased exposure to artificial lighting, noise and vibration. Artificial lighting poses risks to fauna, as increased light allows predators to locate prey more easily. Additionally, noise and vibration can also lead to increased predation of some species, as it makes it harder for prey to detect approaching predators.

Excessive dust deposition on foliage can cause impacts to vegetation, including reducing photosynthetic processes, respiration, transpiration, health and growth rates. Potential dust impacts on vegetation are concentrated near dust sources such as haul roads and areas with active mine pits and stockpiles as a result of construction/operation activities and vehicle and heavy machinery movements. Areas of remnant vegetation adjacent to the Project may be subject to degradation from dust deposition on foliage. In general, impacts from introduction of artificial noise, light and dust emissions can be managed and minimised as discussed in Section 7.3.4.

6.3.5 Modification of surface hydrology

The Project has the potential to alter existing hydrological conditions within the Study Area and surrounds, including surface water flows and groundwater levels. This will occur through vegetation clearing and earthworks for the Disturbance Footprint. Changes in surface water quality and quantity within the Study Area can have negative implications for surrounding ecosystems, particularly vegetation and moisture levels.

Fluctuations in surface water quality present additional challenges to vegetation health and ecosystem integrity. The presence of pollutants or changes in nutrient levels can disrupt the balance of riparian communities, affecting the distribution and abundance of flora species. Such alterations in water quality may also have cascading effects on terrestrial habitats, influencing soil moisture levels and nutrient availability. Furthermore, reduced surface water quantity can exacerbate moisture stress in vegetation, potentially leading to decreased growth rates and increased susceptibility to disease and pests.

Changes in surface water flow from surface disturbance can change ponding areas and landforms which in time has the potential to adjust boundaries of vegetation communities and species composition. Ponding may drown vegetation or create vectors for weeds and pest animals. Heavy rain events during construction in combination with altered landforms may create surface runoff at speeds and volumes not usually experienced in the area and damage soils and ground vegetation within adjacent areas.

The significance of potential impacts on surface and ground waters will depend on the quantity and nature of surface disturbance as well as contaminants that may be released to surface waters. If spills or leaks occur in construction areas, contaminants will either soak into soils or be captured by sediment containment devices and/or permanent stormwater systems.

There are no riparian communities or waterways within close proximity to the Disturbance Footprint. Therefore, the risk of impacts to surface waters is relatively minor provided industry standard risk management and mitigation measures are employed for the Project, particularly in relation to high rainfall events. An assessment of impacts to surface water regimes is discussed in the *Centurion North Extension Project Environmental Authority Amendment Application Supporting Information* (SLR, 2025).

6.3.6 Impacts to groundwater

Groundwater plays a vital role in maintaining ecological balance of ecosystems within the Study Area. Changes in groundwater within the Study Area can have profound implications for surrounding ecosystems, particularly vegetation and moisture levels. GDEs, including riparian communities along waterways, are highly sensitive to alterations in water dynamics. Riparian and floodplain tree species, which rely on access to reliable water sources, including surface flows and groundwater, face risks of habitat degradation due to shifts in water availability. Species with obligate groundwater dependency, such as river red gum, may struggle to survive prolonged periods of drought if access to groundwater is compromised. Lowering of groundwater levels could potentially have an adverse impact on terrestrial GDEs and associated habitat for conservation significant matters within the Study Area, particularly koalas, as these are dependent on deeper rooted vegetation assemblages and riparian habitats for refuge.

Fluctuations in groundwater quality can also have significant repercussions for vegetation health and ecosystem integrity. Changes in pollutant levels or nutrient concentrations can disrupt the balance of riparian communities, affecting the distribution and abundance of flora species. These alterations may further impact terrestrial habitats by influencing soil moisture levels and nutrient availability. Reduced groundwater availability can exacerbate moisture stress in vegetation, potentially leading to decreased growth rates and increased susceptibility to diseases and pests.

It is expected that some vegetation communities within the Study Area will interact with groundwater. However, there is limited groundwater information for the Study Area at present, particularly with regard to the alluvium extent and depth. As such, the groundwater drawdown modelling that has been undertaken for the Project is conceptual at this stage and based on conservative assumptions about the existing groundwater environment.

The results of this modelling indicates there is potential for drawdown in the alluvium ground layer (i.e. the layer most likely interacting with deep rooted terrestrial vegetation) of between 0.1 and 0.5 m associated with Kennedy Creek. Kennedy creek does not support any tree dominated vegetation in the areas where drawdown is expected so impacts to terrestrial GDEs here are not expected. There are drawdown extents up to 2.3 m in areas of vegetation outside the Study Area. There is potential for this drawdown to impact terrestrial GDEs in the medium to long-term, although this will require further investigation to understand the dependence of vegetation on this groundwater. The *Centurion North Extension Project Groundwater Assessment* (SLR Consulting Australia Pty Ltd, 2025) provides detailed information about predicted groundwater impacts and the bore hole monitoring and testing network

required to precisely assess the extent of Project impacts on groundwater. Section 7.3.8 outlines monitoring and further investigations proposed for the Project, depending on outcomes of refined modelling.

6.3.7 Increased fire risk

Accidental ignitions in the Study Area may be caused by machinery, an accident or collision, scheduled burns getting out of control, hot works or from the incorrect disposal of flammable items. These ignitions have the potential to cause uncontrollable fires that can have pronounced impacts on vegetation and habitat within and adjacent to the Study Area. Large proportions of vegetation within the Study Area consist of grassy eucalypt woodlands, native grasslands and non-remnant paddocks which commonly have high fuel loads. A small proportion of vegetation surrounding the Disturbance Footprint are brigalow dominated vegetation types, which typically do not carry fire, except where invaded by exotic species, such as buffel grass (Butler & Fairfax, 2008). The development of appropriate bushfire management measures should consider the surrounding vegetation types and their relationship with fire.

7 Impact avoidance and mitigation measures

7.1 Overview

The implementation of impact avoidance, minimisation and mitigation measures will assist in reducing impacts on ecological values identified within the Study Area and surrounds. While the location of coal seams will dictate the location of infrastructure and disturbance necessary for the Project, measures are proposed throughout all phases of the Project to reduce overall impacts where possible. These measures are discussed in the following sections.

7.2 Impact avoidance and minimisation

The location of the Disturbance Footprint is largely defined by the nature and extent of the underground coal deposit. As such, it is constrained by resource, geographic, existing infrastructure, and feasibility considerations. Nonetheless, through use of field-validated ecological constraint mapping the Project footprint has been reduced, reconfigured and refined through multiple design iterations to avoid environmentally sensitive areas and matters of conservation significance as far as possible.

Drill pads, boreholes, goaf drainage lines and access tracks have been located and designed to utilise non-remnant areas and existing areas of disturbance where possible, particularly for siting any new or extending access tracks. Furthermore, some components of the Project, e.g. access tracks and drill pads for sampling boreholes, will utilise low impact methods of access and where there is opportunity, will further reduce the footprint through on-ground refinements.

The Project will not require any new off-lease infrastructure to support the Project. The Project will utilise the following infrastructure at the CCM on ML 6949 (adjacent to south of ML 1790):

- mine-waste co-disposal facility
- workshops and administrative buildings
- water management infrastructure
- offsite gas abatement plans (to be determined); and
- mine access road.

The use of the existing nearby off-site accommodation village will continue for the Project and there is no requirement for an increase in employees or contractors for the duration of the Project.

The majority of the Project has been located in non-remnant vegetation to avoid ecological values. However, additional clearing and disturbance for the Project is unavoidable and therefore measures to minimise and manage impacts, as a result of this disturbance, are outlined in the following sections.

7.3 Mitigation

7.3.1 Native vegetation clearing and habitat removal

A range of measures will be implemented over the construction and operational phases of the Project to mitigate and minimise the removal of native vegetation and fauna habitat within the Study Area. These measures include:

- Vegetation clearing extents will be kept to the minimum area necessary for construction. Areas that must not be cleared or damaged would also be clearly identified on construction plans.
- Use of low impact methods will be used where possible for some infrastructure, including access tracks and pads. For example, in highly sensitive areas (ESAs and habitats supporting conservation significant species) that cannot be avoided, selective meandering access (including around gilgai), and avoidance of tree and shrub removal will be implemented where possible.
- Placement of temporary infrastructure such as laydown equipment, facilities, and parking bays are to be located outside of remnant vegetation, with areas previously cleared/degraded (non-remnant) to be prioritised.
- Boundaries of areas to be cleared (e.g. construction pads, laydown areas, vehicle tracks) and areas not to be cleared are to be clearly defined during clearing activities and communicated to all necessary construction personnel. Where necessary, signage, flagging and/or barricade fencing will be used to demarcate sensitive and no-go areas.
- Threatened Species Management Plans will be developed prior to the commencement of construction to comply with Commonwealth and Queensland legislation and promote conservation outcomes for:
  - king bluegrass
  - koala
  - ornamental snake; and
  - squatter pigeon (southern)

  The Threatened Species Management Plans will include species-specific mitigation measures and controls to minimise and mitigate long term impacts on these species, such as:
  - for koalas, a located individual is to be left to vacate the area on its own accord utilising dispersal routes and connecting trees in accordance with the Queensland *Nature Conservation (Koala) Conservation Plan 2017*.
- Queensland legislation requires preparation of a Species Management Program (SMP) to manage breeding places during construction projects. SMPs will include, but not be limited to:
  - pre-clearance fauna surveys, to be undertaken by a suitably experienced and qualified ecologist to identify fauna at direct risk from clearing activities
  - identification and mapping of weed 'hotspots' for future monitoring and management where necessary
  - the presence of a suitably experienced and qualified fauna spotter catcher during all clearing, earthworks where there is potential for disturbance to habitat features for animals
  - inspection of all hollow-bearing trees prior to removal and measures to manage active hollows
  - methods for felling hollow-bearing trees providing shelter for native fauna, e.g. slowly or in sections, to minimise the risk of injury to fauna
  - treatment of captured fauna, e.g. relocations and measures for injured fauna
  - methods for vegetation clearing e.g. gradual, directional and sequential clearing over the life of the Project to allow fauna species the opportunity to disperse away from clearing areas
  - regular inspections and monitoring of work areas and excavations (trenches) to check for trapped fauna and installation of fauna shelter and escape measures; and

- installation of fauna exclusion fencing where required and considering trench and pit depth.

7.3.2 Fragmentation and edge effects

Potential impacts associated with fragmentation and edge effects will be largely managed in association with measures detailed within the following sections. In summary, potential impacts to adjacent vegetation and habitat will be managed through development of the following plans:

- Rehabilitation Management Plan (refer to Section 7.3.10)
- Weed and Pest Management Plan (refer to Section 7.3.3)
- Dust Management Plan and mitigation measures to minimise impacts associated with artificial lighting and noise (refer to Section 7.3.4); and
- Erosion and Sediment Control Plan (refer to Section 7.3.6).

7.3.3 Pest flora and fauna management

A Weed and Pest Management Plan for the Project will be developed to help minimise and mitigate impacts of pest species on native flora and fauna within the Study Area. This plan will include measures to manage weed and pest animal species within the Disturbance Footprint and surrounds during construction and operational phases of the Project, as detailed below:

- Proliferation of parthenium and other invasive species in areas of sensitive habitat will be monitored and managed to ensure it is reduced in cover over the Study Area throughout construction and operation of the Project.
- Weeds or soil removed during construction activities are to be appropriately disposed of or stored separately to minimise potential spread and proliferation of weed species.
- Prior to vegetation clearing activities, a pre-clearance weed survey (as part of pre-clearance surveys outlined in Section 7.3.1) will be undertaken to identify and map infestations of biosecurity matters to minimise their spread during clearing works and the operational phase.
- Waste management, including suitable disposal of waste food to minimise occurrences of pest fauna, including awareness training for the construction and operation workforce.
- All vehicles, equipment and materials (e.g. landfill, soil) brought to site are to be certified free of biosecurity matters and carry weed hygiene certification.
- Rehabilitation monitoring will occur throughout operational and rehabilitation stages to identify environmental weeds within stockpiles and rehabilitated areas.
- Biosecurity monitoring to identify and assess the risk of spread of weed and pest occurrences within the Project, particularly in relation to sensitive areas to be retained e.g. habitats for threatened species to be retained.
- Reasonable and achievable control measures will be implemented for biosecurity threats and invasive species identified within the Project.

7.3.4 Light, noise and dust management

To mitigate the potential impacts of light, noise and dust during construction and operation of the Project, the following management measures will be applied:

- scheduling activities in more sensitive areas (e.g. ESAs and habitat supporting conservation significant species) during daylight hours
- where artificial lighting is required, directional lighting and glare guards should be implemented to:
  - focus on work areas; and
  - avoid and minimise lighting of adjacent remnant vegetation and habitat.
- development of a Dust Management Plan including the following measures:
  - topsoil stockpiles are to be kept to a maximum height of 3 m
  - side slopes profiled to decrease wind erosion and dispersal of stockpiled soil
  - roads are to be regularly watered (or applied with dust suppressants) to minimise dust generation potential and to be maintained in good condition to minimise emissions
  - cleared areas will be rehabilitated as soon as possible after use; and
- regular maintenance of machinery and mobile plants will be undertaken to minimise unnecessary noise.

7.3.5 Increased risk of fire

Potential impacts from bushfire risk for the Project will be mitigated through the following measures:

- development of a fire/bushfire management plan by a suitably qualified expert
- handling and disposal of chemicals in accordance with the relevant Material Safety Data Sheets
- establishment and maintenance of access tracks to be used by Queensland Fire and Rescue Service for emergency purposes; and
- implementation of an Emergency Response Procedure for fires prepared in consultation with emergency services.

7.3.6 Erosion, sediment and spills

An Erosion and Sediment Control Plan will be developed to reduce the amount of sediment laden run-off entering waterways adjacent to the Disturbance Footprint. The following general principles will apply to erosion and sediment controls:

- minimise the extent of land clearing and amount of soil disturbance upstream of drainage paths
- where possible, apply local temporary erosion control measures (e.g., silt fencing)
- intercept run-off from undisturbed areas and divert around surface disturbance areas, through the use of up-catchment diversions
- where temporary measures are likely to be ineffective, direct surface water run-off from surface disturbance areas to sediment dams prior to release from the Project; and
- rehabilitate disturbed areas to reduce the level of exposed soils as soon as practicable.

To minimise the risk of hazardous substances entering receiving waters adjacent or downstream of work areas, the following will be implemented:

- protocols for significant weather events, will include emergency response to substantial overland flow
- bunding and appropriate storage of fuels and other hazardous and flammable materials will be undertaken in accordance with AS1940:2004 and where practical, located away from any waterbodies
- oil spill recovery equipment will be available when working adjacent to drainage channels with the ability to discharge off site; and
- spill kits for containing and cleaning up chemical spills will be located with construction crews conducting activities with the potential for significant spills.

7.3.7 Fauna injury and/or mortality

To mitigate potential impacts to native fauna, the following management measures will be implemented during construction and operation phases of the Project:

- workforce awareness training
- vehicles are to remain on designated access tracks and adhere to site rules relating to speed limits
- speed limits are to be clearly signposted to minimise potential fauna strike
- removal of roadkill should be undertaken to minimise the risk of attracting other fauna to the road corridor
- contingencies and procedures for the treatment of injured fauna
- where installation of wire fencing is required to exclude personnel or vehicular traffic, consideration should be given to movement of fauna around and/or through such fencing; and
- barbed wire should not be used on the top strand of wire fences unless necessary for security.

The above measures will also be included in Threatened Species Management Plans and SMPs.

7.3.8 Changes in hydrology

Effective monitoring and management of surface and ground water impacts on ecological values will be required. Impacts on surface water quality and flows may require the design and installation of stormwater infrastructure to manage runoff into areas adjoining the Disturbance Footprint to minimise erosion, sedimentation, and ponding of adjacent areas.

Further investigation of groundwater extent and depth is required to better understand the distribution and impact to GDEs as a result of Project. Depending on further detailed groundwater depth and impact modelling, monitoring of vegetation condition in areas of shallower groundwater may be required.

Detailed monitoring and management measures in relation to surface water impacts are provided in the *Centurion North Extension Project Environmental Authority Amendment Application Supporting Information* (SLR, 2025). Detailed monitoring, further assessment, modelling and mitigation of potential ground water impacts is provided in the *Centurion North Extension Project Groundwater Assessment* (SLR Consulting Australia Pty Ltd, 2025).

7.3.9 Monitoring

Monitoring will be undertaken during the construction and operation phases of the Project (and, where necessary, after completion of the Project) in order to assess impacts on MSES and gauge the efficacy of

proposed mitigation measures. Monitoring will focus on the quality and condition of vegetation and MSES habitat adjacent to the Disturbance Footprint as well as vegetation communities located downstream of the Project. Monitoring methods, frequency of monitoring, and criteria for assessing the success (or otherwise) of impact mitigation measures will be detailed in the following management plans:

- Fire/Bushfire Management Plan
- Weed and Pest Management Plan
- Dust Management Plan
- Rehabilitation Management Plan
- Threatened Species Management Plan
- Species Management Program; and
- Erosion and Sediment Control Plan.

7.3.10 Rehabilitation

A Rehabilitation Management Plan will be developed outlining requirements for land to be progressively rehabilitated to achieve completion criteria for a safe, stable and non-polluting landform able to sustain an agreed post-mining land use, which is proposed for cattle grazing. The Rehabilitation Management Plan will detail:

- rehabilitation objectives, indicators and performance criteria for rehabilitation activities during construction and operation
- a methodology for achieving rehabilitation objectives; and
- any monitoring and maintenance requirements regarding rehabilitation areas to assess and demonstrate the efficacy of measures outlined in the plan.

The Rehabilitation Management Plan will include measures to ensure:

- topsoil within areas for any short-term infrastructure is stockpiled for redistribution during rehabilitation activities
- rehabilitation in remnant areas including natural grasslands will consist of reapplying stockpiled topsoil and reseeding with local native species, rather than exotic species, to preserve habitat value; and
- hollow bearing trees, woody debris, logs and rocks, providing shelter habitat for fauna, are salvaged for re-use in rehabilitation areas or relocated into adjacent areas of retained habitat.

7.4 Cumulative impacts

7.4.1 Local cumulative impacts

The Project is an early works gas extraction including preparatory underground works. All works associated with the Project will be undertaken within ML 1790. The Project forms part of the CND which will include a larger gas extraction network, for the purposes of safe underground coal mining, and an underground metallurgical coal mine within MLs 1790 and 70495.

The Project will utilise existing infrastructure already present at the CCM where possible and will not result in additional camps, offsite lay down areas or road capacity advancements to facilitate the Project.

The use of the existing nearby off-site accommodation village will continue for the Project and there is no requirement for an increase in employees or contractors for the duration of the Project.

7.4.2 Regional cumulative impacts

The Project is located in the Northern Bowen Basin which is a part of the Northern Brigalow Belt bioregion. This region includes extensive agricultural practices and large-scale regional development comprising several existing Projects (Table 13).

Table 13: Projects near the Study Area

EPBC Act referral title	Distance from the Study Area (km)
Queensland Pacific Metals (QPM) Energy Project	Intersects with Study Area
Alpha coal project	Intersects with Study Area
Bowen Gas Project	Intersects with Study Area
Eaglefield Expansion Project	Intersects with Study Area
Galilee Coal Mine	Intersects with Study Area
Burdekin Pipeline	Intersects with Study Area
Wards Well West Project	5.42
Central Queensland Integrated Rail Project	6
Galilee Infrastructure Corridor Project	6.25
BHP Billiton Goonyella to Abbot Point Rail Project	7
Gas Pipeline	7.78
Red Hill Mining Project	8
Arrow Bowen Pipeline	10
Wollombi Open Cut Coal Mine	11.68
Goonyella Mine	12.42
New Lenton Coal Project	12.93
Ellensfield Underground Coal Mine	23.75
Byerwen Coal Mine	25.67
Broadlea North Coal Project	31.18
Moranbah North Extension Project	33

The Project will result in the removal of 143.06 ha of remnant, high-value regrowth, young woody regrowth and other non-remnant vegetation. The REs and fauna habitat types to be cleared during the life of the Project occur widely in surrounding landscapes and subregions.

The cumulative impact on the MSES identified within the Study Area was determined by comparing the Project's direct impact to the area of REs present within the Northern Bowen Basin. It was conservatively assumed that all remnant vegetation contains the necessary microhabitat for each species. Therefore, for species and communities that occur in regrowth areas, this assessment is an under-estimate of available

habitat in the region. It also has limitations in the assumptions of microhabitat features in remnant vegetation e.g. gilgai, which is also conservatively underrepresented due to the feature persisting in regrowth and non-remnant vegetation. The total amount of remnant vegetation that remains in the Northern Bowen Basin region for each RE present within the Study Area is presented in Table 14.

The Project's impact on the environment is additive to past and present grazing, agriculture and mining activities within the surrounding area. However, it is expected that the potential cumulative impacts on threatened species arising from the Project are minimal because of the localised nature of the Project compared to the wider distribution of the species and associated habitats and communities in the surrounding landscapes and subregions, together with the highly disturbed existing character of the Disturbance Footprint.

Table 14: Regional ecosystems remaining in the region

RE	Remnant remaining in the Northern Bowen Basin region as of 2021 (Accad et al., 2024) (ha)	Removed for the Project (Queensland Herbarium certified mapping) (ha)	Impacted proportion (%)
11.4.9	6,168.07	0.28	<0.002
11.5.3	77,284.38	1.11	<0.002
11.5.9	865.48	56.06	<6.5
11.5.9c	32,093.77	0.0	0
11.5.15	2,018.80	0.7	<0.04
11.5.16	1,769.04	0.03	<0.002
11.5.17	0	0.0	0
11.8.5	31,420.80	1.17	<0.004
11.8.11	21,580.52	3.55	<0.02

8 Significant residual impact assessments

8.1 Overview

Significant residual impact assessments have been undertaken for MSES known or likely to occur within the Disturbance Footprint, including:

- regulated vegetation:
  - endangered and of concern vegetation
- protected wildlife habitat:
  - king bluegrass (vulnerable) – known to occur
  - koala (endangered) – known to occur
  - squatter pigeon (southern) (vulnerable) – known to occur
  - Australian painted snipe (endangered) – likely to occur
  - Latham's snipe (vulnerable) – likely to occur
  - ornamental snake (vulnerable) – likely to occur
  - white-throated needletail (vulnerable) – likely to occur; and
  - short-beaked echidna (special least concern) – known to occur
- connectivity areas.

Near threatened and migratory species are not listed MSES under the EO Act and therefore significance of impacts has not been assessed for the finger panic. Assessment of the significance of impacts to MSES has been undertaken using the *Queensland Environmental Offsets Policy Significant Residual Impact Guideline* (Department of Environment and Heritage Protection (DEHP), 2014a) (SRI guideline).

8.2 Regulated vegetation

Using the Queensland Herbarium certified mapping (MAR3577), MSES Regulated Vegetation occurring within the Disturbance Footprint has been assessed against the SRI guideline in Table 15. This assessment shows that an SRI is likely to occur to of concern RE 11.8.11. No vegetation management wetlands or waterways will be impacted by the Project.

Table 15: Regulated vegetation significant residual impact assessment

MSES Regulated Vegetation type	RE	Structure Category	Assessment criteria	Assessment	Significant residual impact likely?
Endangered REs	11.4.9	Sparse	Clearing of an area greater than 2 ha where in a sparse (structural category) RE.	Clearing of up to 0.28 ha of remnant RE 11.4.9 will be undertaken within the Disturbance Footprint.	No, the clearing threshold is not exceeded.

MSES Regulated Vegetation type	RE	Structure Category	Assessment criteria	Assessment	Significant residual impact likely?
Endangered REs	11.5.16	Mid-dense	Clearing of an area greater than 0.5 ha where in a dense to mid-dense (structural category) RE.	Clearing of remnant RE 11.5.16 will comprise up to 0.03 ha within the Disturbance Footprint.	No, the clearing threshold is not exceeded.
Of concern REs	11.8.11	Woody grassland	Clearing of an area greater than 5 ha where in a grassland (structural category) RE.	Clearing of remnant RE 11.8.11 will comprise up to 3.55 ha within the Disturbance Footprint.	No, the clearing threshold is not exceeded.

8.3 Protected wildlife habitat

8.3.1 King bluegrass (*Dichanthium queenslandicum*)

King bluegrass is listed as vulnerable under the NC Act.

8.3.1.1 Habitat preferences and distribution

King bluegrass is a perennial grass species endemic to central and southern Queensland. The species habitat comprises native grasslands and open woodlands characterised by a grassy understory and a canopy composed of mountain coolibah (*Eucalyptus orgadophila)*, red bloodwood (*Corymbia erythrophloia*) and coolibah (*E. coolabah*) (TSSC, 2013a). This species occurs from near Dalby north to about 90 km north of Hughenden and west as far as Clermont. The main concentration of populations is in central Queensland in the Emerald region (TSSC, 2013a).

For additional information on the king bluegrass habitat preferences and distribution, refer to Section 5.2.1.1.

8.3.1.2 Presence in the Study Area

The Study Area contains 1,163.35 ha of suitable habitat for the species. The estimated population size for king bluegrass within patches of grassland where the species has been recorded is 8,863 tussocks/ha (standard error of ± 188.69 tussocks/ha). However, the species was not observed in the Disturbance Footprint, despite the presence of 8.20 ha of potentially suitable habitat.

For additional information on the presence of king bluegrass in the Study Area, refer to Section 5.2.1.1.

8.3.1.3 Threatening processes

Threats to king bluegrass have been identified as follows:

- loss of habitat through the continuation and expansion of mining activities
- road construction and other infrastructure developments

- cultivation and crop production
- inappropriate or unsustainable grazing levels/management; and
- weed invasion (TSSC, 2013a).

8.3.1.4 Recovery actions

Priority actions listed in the approved conservation advice for the species (DSEWPC, 2013) are as follows:

- 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
- identify populations of high conservation priority
- ensure there is no disturbance in areas where king bluegrass occurs, excluding necessary actions to manage the conservation of the species/ecological community
- investigate formal conservation arrangements, management agreements and covenants on private land, and for crown and private land investigate and/or secure inclusion in reserve tenure if possible
- manage any other known, potential or emerging threats, including mining practices, grazing, weed invasion and climate change
- develop and implement a management plan for king bluegrass for the control of parthenium (*Parthenium hysterophorus*) and parkinsonia (*Parkinsonia aculeata*) in the region
- ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on king bluegrass; and
- develop and implement a stock management plan for roadside verges and travelling stock routes.

8.3.1.5 Significant residual impact assessment

The Project will result in the clearing of up to 8.20 ha of potential habitat for this species as part of the Disturbance Footprint (Figure 8). There is also potential for indirect impacts to habitat that will remain in the Study Area, particularly from the invasion and spread of weeds that may degrade and alter the composition of the community and changes to surface water flows because of adjacent vegetation clearing and earthworks. However, management plans described in Section 7.3 will include measures specifically aimed at avoiding and minimising the risk and degree of potential indirect impacts through industry accepted and practically implemented measures.

A significant residual impact assessment has been completed for the king bluegrass against the SRI guideline (DEHP, 2014b) in Table 16.

Table 16: Significant residual impact assessment for king bluegrass (*Dichanthium queenslandicum*)

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
The Project will directly remove up to 8.20 ha of potential habitat for the species; however, the species was not recorded in this habitat patch. Given the prevalence of individuals in the surrounding landscape and the lack of direct impact to individuals, the Project is not predicted to lead to a long-term decrease in the size of a population, or local population.

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:
• reduce the extent of occurrence of the species
The Project will result in the removal of up to 8.20 ha of habitat for the species; however no tussocks will be directly removed. The species exists in large natural grasslands to the north of the Project and will remain in the Study Area and local area. Therefore, the Project is not expected to reduce the area of occupancy or extent of occurrence of the species.
• fragment an existing population
King bluegrass is primarily wind pollinated and seed dispersed. These processes will not be affected by disturbance from the Project. Therefore, the Project will not fragment existing populations into two or more populations as genetic exchange is likely to continue.
• result in genetically distinct populations forming as a result of habitat isolation
The species is primarily wind pollinated and seed dispersed, therefore it is considered unlikely that this impact would result in genetically distinct populations forming because of habitat isolation. Furthermore, the species is likely to persist in the local area despite the clearing due to the size of the population and availability of habitat that will remain in the Study Area.
• result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat
Fragmentation of natural grassland habitats has the potential to result in degradation of remaining patches through infestation and spread of exotic species, particularly parthenium and buffel grass. However, invasion by exotic pasture and parthenium, grazing by cattle and disturbance by feral pigs, are existing and ongoing threats to habitats for the king bluegrass in the Study Area as described in Section 8.3.1.3. The risk of exacerbation of this threat by the Project will be managed through implementation of the Pest and Weed Management Plan and Sediment and Erosion Control Plan, including but not limited to; weed and seed washdowns, targeted management and rectification measures, and ensuring appropriate drainage systems are in place to avoid altered surface water flow. Therefore, with targeted monitoring (including baseline surveys and pre-clearance surveys) and management (as described in Section 7) throughout construction and operation of the Project, the risk of invasive species becoming more established in king bluegrass habitat will be feasibly managed.
• introduce disease that may cause the population to decline
No diseases or pathogens are currently listed as threats to the species in the approved conservation advice or listing advice for the species (DSEWPC, 2013; TSSC, 2013a). It is unlikely the Project will introduce diseases that may cause the species to decline.
• interfere with the recovery of the species
Recovery actions for the species specifically recommend that no disturbance takes place where king bluegrass occurs. The Project will remove up to 8.20 ha of potential habitat for the species, however, given that no tussocks will be directly impacted or were found to occur in the patch being impacted, and with implementation of impact avoidance and mitigation measures described in Section 7, the Project is considered unlikely to interfere with the recovery of the species.

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:
• cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species
The Project will require clearing of up to 8.20 ha of habitat; however, no tussocks were recorded in this area during the field surveys (Section 5.2.1.1). As such, the Project is unlikely to cause disruption to ecologically significant locations.
***Conclusion**: As no removal of known habitat where the species occurs nor tussocks of the species is proposed, the Project is considered unlikely to have a significant residual impact on king bluegrass.*

8.3.2 Koala (Phascolarctos cinereus)

The koala is listed as endangered under the NC Act.

8.3.2.1 Habitat preferences and distribution

Koalas inhabit a range of temperate, sub-tropical and tropical forest, woodland and semi-arid communities dominated by species from the genera *Eucalyptus*, *Corymbia* and *Angophora* (Martin & Handasyde, 1999). Within central Queensland, koalas have been studied at Tambo (Mitchell Grass Downs bioregion), Springsure and Blair Athol (both in Brigalow Belt North bioregion). Koalas in this region typically occur in low densities and have large home ranges (Ellis et al., 2002).

For additional information on koala habitat and preferences, refer to Section 5.3.1.1.

8.3.2.1.1 Presence in the Study Area

This species was identified within the Study Area at two locations from calls recorded on BARs deployed in areas of narrow-leaved ironbark woodland and Brown's box woodland (RE 11.5.9c and 11.5.3). Based on desktop and field investigations, the Study Area contains 3,384.72 ha of habitat for the species. This includes:

- 2,867.41 ha of breeding and foraging habitat
- 517.31 ha of dispersal habitat

For additional information on koala presence in the Study Area, refer to Section 5.3.1.1.

8.3.2.1.2 Threatening processes

The main identified threats to the species are (DAWE, 2022b):

- climate change driven processes and threats;
  - loss of climatically suitable habitat
  - increased intensity/frequency of drought, heatwaves and bushfire
  - declining nutritional value of foliage
- human related activities;
  - clearing and degradation of koala habitat
  - encounter mortality with vehicles and dogs; and

- disease and health;
    - koala retrovirus (KoRV) and chlamydia (*Chlamydia percorum*).

Drought and extreme heat are also known to cause significant mortality, and post-drought recovery may be substantially impaired by the range of other threatening factors (DAWE, 2022b).

8.3.2.1.3 Recovery actions

The objectives for the recovery of the species listed in the National Recovery Plan for the Koala (DAWE, 2022b) are as follows:

- the area of occupancy and estimated size of populations that are declining, suspected to be declining, or predicted to decline are instead stabilised then increased
- the area of occupancy and estimated size of populations that are suspected and predicted to be stable are maintained or increased
- metapopulation processes are maintained or improved; and
- partners, communities and individuals have a greater role and capability in koala monitoring, conservation and management.

8.3.2.1.4 Significant residual impact assessment

Direct impacts on Koala from the Project will include vegetation clearing and the associated loss of LIKTs for the species in the local area. The Project is likely to remove up to 68.38 ha of habitat for the species. This will comprise of 64.83 ha of breeding and foraging and 3.55 ha of dispersal habitat (Figure 10). Indirect impacts will include construction disturbance, increased traffic, and weed and pest incursion. These indirect impacts are expected to be managed by mitigation measures and protocols used broadly throughout the industry that have had success in managing these impacts, as discussed in Section 7.3.

A significant residual impact assessment for koala has been completed against the SRI guideline (DEHP, 2014b) in Table 17.

Table 17: Significant residual impact assessment for koala (*Phascolarctos cinereus*)

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
The Project is likely to remove up to 68.38 ha of habitat for the species. This will comprise of 64.83 ha of breeding and foraging habitat and 3.55 ha of dispersal habitat. Breeding and foraging habitat within the Disturbance Footprint consists of eucalypt woodlands with abundant LIKTs. The area does not support any refuge habitat such as riparian corridors or cooler microclimate landforms. The removal of habitat will be predominantly linear in nature in any given location. Local populations are expected to be at low density within the Study Area and broader landscape. Therefore, the species is likely to persist within the area and the area of proposed clearing unlikely to cause a decline in the local population.
• reduce the extent of occurrence of the species

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:

The extent of occurrence was calculated as 1,667,850 km^2 (DAWE, 2022b). In 2023, the area of occupancy for the species was calculated as 19,428 km^2 with a contracting trend (DCCEEW, 2023).

The Project is proposed to directly impact up to 68.38 ha of habitat for koala with substantially greater areas of habitat persisting within the Study Area and broader landscape. Koalas will disperse through cleared or treeless areas (DAWE, 2022b) and will likely remain in habitats in the landscape, albeit at already low densities. Therefore, the scale and nature of the clearing for the Project is unlikely to reduce the area of occupancy or the extent of occurrence of this species.

- fragment an existing population

Koalas are known to traverse up to 1-3 km on ground and will often travel through cleared or treeless areas (DAWE, 2022b).

Clearing within the Disturbance Footprint is unlikely to fragment an existing population into two or more populations as clearing will be patchy, predominately of a linear nature and not involve large continuous tracts of the landscape. Therefore, the Project is unlikely to fragment the population of koalas in the area.

- result in genetically distinct populations forming as a result of habitat isolation

Koalas do not have specific breeding habitat requirements. Males are most active during the breeding season and can cover areas of several kilometres with limited vegetation (DAWE, 2022a). Clearing for the Project would not fragment habitat to the extent that dispersing males looking for mates would be unable to do so. However, vegetation clearing during construction activities, has the potential to disrupt or stress breeding individuals, therefore, koala specific management measures will be put in place as part of the Threatened Species Management Plan and SMPs to ensure this threat is mitigated (Section 7.3.1). Important measures will include but not be limited to; pre-clearance surveys to detect the presence of koalas, directional clearing towards habitat to be retained, leaving identified koalas in place with dispersal routes and connecting trees available until the individual has moved on without interference.

The Project will result in the removal of up to 68.38 ha of koala habitat that is relatively widespread in the landscape and which does not provide refuge opportunities for the species. This disturbance is linear and patchy in nature in any given location and therefore will not result in the removal of vast tracts of koala habitat. This disturbance will not create dispersal barriers that would result in genetically distinct populations forming as the species is capable of dispersing through cleared, or treeless areas (DAWE, 2022b).

- result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat

The primary invasive species, which poses a threat to koala are wild dogs. Wild dogs were recorded in the Study Area during the field survey and the Project is unlikely to result in any new invasive species becoming established in koala habitat within the Study Area. The Project will operate under specific environmental management plans including a Pest and Weed Management Plan to mitigate the threat of wild dogs. However, this threat to koalas will continue to be present in the broader landscape.

The Project is unlikely to result in invasive species that are harmful to koala becoming established in koala habitat.

- introduce disease that may cause the population to decline

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:

Diseases such as Chlamydia (*Chlamydia pecorum*) and koala retrovirus (KoRV) have been identified in the populations within the region. The prevalence of disease (chlamydiosis) has been found to increase following extreme stress from hot weather, drought, habitat loss and fragmentation (Lunney et al., 2012; McCallum et al., 2017). Symptoms of individuals carrying Chlamydia can become overt when subjected to additional stress. Such stress may be caused by habitat clearing associated with the Project. However, koala specific management measures will be put in place as part of the Threatened Species Management Plan and SMPs to ensure this threat is mitigated. Important measures will include but not be limited to; pre-clearance surveys to detect the presence of koalas, directional clearing towards habitat to be retained, leaving identified koalas in place with dispersal routes and connecting trees available until the individual has moved on without interference. Implementation of these measures will minimise the potential for the introduction of disease or exacerbation of existing diseases that may cause the species to decline.

- interfere with the recovery of the species

The National Recovery Plan identifies recovery objectives and threats to be managed for the recovery of the species (Section 8.3.2.1.3). The key threats to the species listed in the recovery plan that are relevant to the Project include habitat loss, fragmentation and degradation. In relation to these threats:

- the Disturbance Footprint will involve clearing of habitat, although will not impact refuge habitat and will not fragment remaining habitat to the extent the species cannot continue to disperse through the landscape; and
- suitable habitat will remain in the Study Area and will continue to be available to support the long-term persistence of the species.

While the species is expected to persist in the Study Area, the extent of clearing for the Project has the potential to interfere with the recovery of the species.

- cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species

It is proposed that up to 64.83 ha of breeding and foraging habitat will be cleared for the Project. This clearing will result in the removal of LIKTs that are considered ecologically significant locations to the koala as they are utilised for breeding, feeding and resting. Therefore, the project is likely to cause disruption to ecologically significant locations of the species.

***Conclusion**: Due to the extent of clearing proposed, the Project will cause disruption to ecologically significant locations and potentially interference with the species' recovery. Therefore, there is potential for the Project to have a significant residual impact on the koala.*

8.3.3 Squatter pigeon (southern) (*Geophaps scripta scripta*)

The squatter pigeon (southern) is listed as vulnerable under NC Act.

8.3.3.1 Habitat preferences and distribution

The subspecies occurs on the inland slopes of the Great Dividing Range from the Burdekin-Lynd Divide in central Queensland, west to Longreach and Charleville and south to Moree in New South Wales (TSSC, 2015). The squatter pigeon (southern) inhabits eucalypt woodland communities with a grassy understorey in proximity to permanent water sources, such as rivers, creeks and farm dams (TSSC, 2015).

For additional information on the squatter pigeon (southern) habitat preferences and distribution, refer to Section 5.3.1.2.

8.3.3.2 Presence in the Study Area

A total of 65 squatter pigeon (southern) individuals were recorded across the Study Area. All individuals were recorded near dams and often in small groups. A flock of 11 was encountered near a small water source in the north of the Study Area. Based on desktop and field investigations to date, the Study Area contains 3,796.14 ha of habitat for the species, including:

- 1087.79 ha of breeding and foraging habitat
- 2,391.58 ha of foraging (only) habitat; and
- 316.76 ha of dispersal habitat.

The locations of squatter pigeon (southern) observations and extent of habitat for the species within the Study Area is shown in Figure 11, and representative photographs are provided in Plate 3. For additional information on the presence of squatter pigeon (southern) in the Study Area, refer to Section 5.3.1.2.

8.3.3.3 Threatening processes

Current threats to the squatter pigeon (southern) include (Department of Climate Change, Energy, the Environment and Water (DCCEEW), 2025b; Garnett & Crowley, 2000):

- ongoing vegetation clearance and fragmentation
- overgrazing of habitat by livestock and feral herbivores such as rabbits, cows and sheep
- introduction and degradation of habitats by invasive weeds, such as buffel grass
- inappropriate fire regimes
- thickening of understorey vegetation
- predation by feral cats and foxes and avian predators; and
- trampling of nests by domestic stock.

8.3.3.4 Recovery actions

Conservation and management actions specified by the Approved Conservation Advice (TSSC, 2015) for the species are as follows:

- identify sub-populations of high conservation priority, especially in the southern part of the squatter pigeon (southern) range

- protect and rehabilitate areas of vegetation that support important sub-populations
- protect sub-populations of the listed subspecies through the development of covenants, conservation agreements or inclusion in reserve tenure
- develop and implement a stock management plan for key sites
- develop and implement a management plan, or nominate an existing plan to be implemented, for the control and eradication of feral herbivores in areas inhabited by the squatter pigeon (southern); and
- raise awareness of the squatter pigeon (southern) within the local community, particularly among land managers.

8.3.3.5 Significant residual impact assessment

Direct impacts on squatter pigeon (southern) habitat includes vegetation clearing, potential modification of available water sources and potential mortality risk from increased traffic. The Project is likely to remove up to 71.30 ha of habitat for the species. This will comprise of 0.11 ha of breeding and foraging habitat, 69.78 ha of foraging (only) habitat and another 1.40 ha of potential dispersal habitat (Figure 11). Indirect impacts of the Project, particularly the spread of invasive weeds in the ground layer, disturbance of habitat by feral animals, particularly feral pigs, and predation by wild dogs has the potential to impact the squatter pigeon (southern), although management of these impacts is described in Section 7.3.

A significant residual impact assessment for squatter pigeon (southern) has been completed against the SRI guideline (DEHP, 2014b) in Table 18.

Table 18: Significant residual impact assessment for squatter pigeon (southern) (*Geophaps scripta scripta*)

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
The species will persist in the region including in the Disturbance Footprint despite the impacts proposed. Therefore, the Project is not expected to lead to a long-term decrease in the size of a local population.
• reduce the extent of occurrence of the species
The extent of occurrence for the species has been calculated at 1,684,230 km^2 and the area of occupancy to be 2,888 km^2 (Queensland Resources Council, 2015). As this is a highly mobile species and has relatively broad and widely distributed habitat requirements, it will persist in the region and broader Study Area despite the impacts proposed. Therefore, the Project is not expected to reduce the extent of occurrence of the species.
• fragment an existing population
Removal of squatter pigeon (southern) habitat will be largely linear in nature in any given location and involve relatively small discrete areas. Squatter pigeon (southern) will be able to disperse throughout this type of disturbed area because it is a highly mobile avian species. As a result, habitat removal is not likely to fragment the population.
• result in genetically distinct populations forming as a result of habitat isolation

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:

The removal of up to 71.30 ha of habitat for the species is proposed for the Project. This habitat is widespread in the Study Area and surrounding area. The species will be able to disperse and forage throughout remaining habitat as well as in non-remnant areas with preferable grass seed where trees are nearby to disperse into (Squatter Pigeon Workshop, 2011a). This will include areas within the Disturbance Footprint where rehabilitation will occur post-construction and during operational stages of the Project. The species is also highly mobile and is commonly recorded in disturbed areas.

All other indirect impacts from construction works will be managed under specific management plans as described in Section 7.3. Therefore, the Project is not expected to isolate habitats to the extent that genetically distinct populations are likely to form.

- result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat

Threats to the species include overgrazing by feral herbivores such as rabbits, proliferation of weed species and predation by feral carnivores such as foxes and feral cats. The Disturbance Footprint is already impacted by grazing, clearing and mining activities and invasive species are established in the area including those listed as potential threats above. Implementation of a Weed and Pest Management Plan, as described in Section 7.3.3, will include standard industry accepted measures to minimise the spread of weeds and proliferation of pest animals that have the potential to degrade the ground layer and foraging resources for the squatter pigeon (southern). Therefore, the Project is unlikely to contribute to an invasive species becoming established in squatter pigeon (southern) habitat.

- introduce disease that may cause the population to decline

Disease has not been identified as a threat to the squatter pigeon (southern). Therefore, the Project will not introduce disease that may cause the population to decline.

- interfere with the recovery of the species

Given the scale of proposed direct and indirect impacts, relative to the availability and quality of habitat elsewhere in the region and industry accepted mitigation proposed, it is unlikely the Project will interfere with the recovery of the squatter pigeon (southern).

- cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species

Habitat for the squatter pigeon (southern) that occurs in the Disturbance Footprint is widespread and abundant within the Study Area and the surrounding region. The species occupies a wide variety of habitat types including non-remnant vegetation and no permanent water sources, considered necessary for breeding will be impacted for the Project. Therefore, the Project is not expected to adversely impact ecologically significant locations, particularly with the implementation of the management measures and plans outlined in Section 7.3.

***Conclusion**: The Project is unlikely to have a significant impact on the squatter pigeon (southern), due to the extent of similar habitat that will remain in the region.*

8.3.4 Australian painted snipe (*Rostratula australis*)

The Australian painted snipe is listed as endangered under the NC Act.

8.3.4.1 Habitat preferences and distribution

This species generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans (DCCEEW, 2025b). This species occurs in all states of Australia but is most common in eastern Australia and is well-known from the Murray-Darling basin (DCCEEW, 2025b).

For additional information on the Australian painted snipe habitat preferences and distribution, refer to Section 5.3.1.3.

8.3.4.2 Presence in the Study Area

Australian painted snipe was not detected during survey events however the species is highly mobile and may utilise areas of habitat within the Study Area intermittently for foraging and roosting. It is therefore considered that the Study Area periodically provides wetland habitat for these species. The Study Area contains 76.24 ha of potential foraging and roosting habitat for the Australian painted snipe as presented in Figure 12.

For additional information on Australian painted snipe habitat in the Study Area, refer to Section 5.3.1.3.

8.3.4.3 Threatening processes

The main identified threat to the Australian painted snipe is the loss and degradation of wetlands, through drainage and the diversion of water for agriculture and reservoirs. Loss of breeding habitat is noted for the Murray-Darling Basin through hydrological changes. These changes have occurred in parallel with an extended period of drought in Australia, which has intensified the impacts of wetland degradation and water diversion in the Murray-Darling Basin (Lane & Rogers, 2000) (Rogers et al., 2005).

Other more broadly described threats to the Australian painted snipe include (Department of Sustainability, Environment, Water, 2013):

- grazing and the associated trampling of wetland vegetation and nests
- nutrient enrichment
- reduced rainfall and runoff in the Murray Darling basin associated with climate change
- predation by feral animals (e.g. nest predation by foxes or cats)
- coastal port and infrastructure development
- shale oil mining near autumn-winter sites; and
- the replacement of native wetland vegetation by invasive weeds.

8.3.4.4 Recovery actions

The *National recovery plan for the Australian painted snipe* describes an objective as sustaining a positive population trend in the number of mature individuals (DCCEEW, 2022). The strategies to achieve this objective are listed below:

- 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; and
- coordinate, review and report on recovery progress.

8.3.4.5 Significant residual impact assessment

Up to 5.28 ha of potential foraging and roosting habitat will be impacted for the Project. However, only gilgai habitat will be impacted, which is disturbed, small in scale and unlikely to provide foraging habitat that would persist in the landscape for extended periods after flooding. More intact and persistent habitat areas to the north-east of the Disturbance Footprint will not be impacted. There is potential for further indirect impacts to this species, although this can be reasonably managed using industry accepted measures as outlined in Section 7.3. A significant impact assessment has been completed against the SRI guideline for the Australian painted snipe (DEHP, 2014b) in Table 19.

Table 19: Significant residual impact assessment for Australian painted snipe (*Rostratula australis*)

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
The Project will result in the removal of up to 5.28 ha of foraging and roosting habitat that may support Australian painted snipe, but which does not provide breeding opportunities and is largely degraded as described in Section 5.3.1.3. The population is small, likely to be continuous, dispersive or migratory (DCCEWW, 2022) and unlikely to comprise local sub-populations. Therefore, impact to this area of potential foraging and roosting habitat is unlikely to lead to a long-term decrease in the size of the population.
• reduce the extent of occurrence of the species
The area of occupancy for the Australian painted snipe is estimated to be 2000 km^2, with low reliability (Garnett et al., 2011). The extent of occurrence for the species is estimated at 7,100,00 km^2 (Garnett et al., 2011). The removal of up to 5.28 ha of foraging habitat is considered unlikely to reduce the extent of occurrence of the species as this is a highly mobile, and potentially nomadic species that will persist in the landscape, including at three dams illustrated on Figure 12 that will remain in the Study Area.
• fragment an existing population
This is a highly mobile species for which the Project is unlikely to create barriers to movement and the species will be able to persist within the landscape. Therefore, the Project is not expected to fragment an existing population.
• result in genetically distinct populations forming as a result of habitat isolation

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:

The Study Area was observed to contain 76.24 ha of foraging and roosting habitat for the species. The removal of up to 5.28 ha of ephemeral foraging habitat is unlikely to decrease the availability of habitat to the extent that the species is likely to decline due to the availability of better-quality and more permanent habitat elsewhere in the Study Area. The highly mobile nature of the species also minimises the risk of isolation of habitat.

- result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat

The Study Area is already impacted by grazing, clearing and mining and gas extraction activities and invasive species are established in the area. Threats to the species as a result of this existing disturbance include proliferation of weed species, degradation of wetland habitat by feral pigs and predation by feral carnivores such as foxes and feral cats.

The implementation of a Weed and Pest Management Plan, as described in Section 7.3.3, will include standard industry accepted measures to minimise the spread of weeds and pest animals that have the potential to degrade the ground layer and foraging resources for the Australian painted snipe and prey on the species. Therefore, the Project is unlikely to contribute substantially to an invasive species becoming established in Australian painted snipe habitat.

- introduce disease that may cause the population to decline

There are no diseases listed as threats to the Australian painted snipe. Therefore, the Project is not expected to result in the introduction of a disease that would cause the population to decline.

- interfere with the recovery of the species

The strategies identified to achieve the recovery plan objectives include the management and protection of known habitat at a landscape level, reducing or eliminating threats at breeding and non-breeding habitat, as well as research activities relating to population trajectories, habitat requirements, and the engagement of stakeholders (DCCEWW, 2022).

The removal of up to 5.28 ha of ephemeral foraging habitat is not expected to interfere with the recovery plan strategies. Furthermore, the large dams that provide better quality habitat will remain in the Study Area and will continue to provide habitat for the species. Therefore, the Project is not expected to interfere with the recovery of the species.

- cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species

The Project proposes the removal of gilgai habitat that would provide ephemeral habitat following rain events. The removal of up to 5.28 ha of this gilgai habitat is not expected to result in a disruption to ecologically significant locations (feeding, migration or resting habitat) for the species due to the ephemeral nature of the habitats, greater abundance of this type of habitat in intact brigalow communities elsewhere in the landscape and the absence of breeding resources in the Disturbance Footprint.

***Conclusion**: As the project involves impacts to largely degraded and ephemeral habitat and this habitat does not provide breeding resources, the Project is unlikely to have a significant impact on the Australian painted snipe.*

8.3.5 Latham's snipe (*Gallinago hardwickii*)

The Latham's snipe is listed as vulnerable under the NC Act.

8.3.5.1 Habitat preferences and distribution

This species typically occurs in permanent and ephemeral wetlands up to 2,000 m above sea level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies) (DCCEEW, 2025b). The species is known from all east coast areas and extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to the west of the Great Dividing Range in New South Wales (DCCEEW, 2025b).

For additional information on Latham's snipe habitat preferences and distribution, refer to Section 5.3.1.4.

8.3.5.2 Presence in the Study Area

Latham's snipe was not detected during survey events. However, the species is highly mobile and may utilise areas of habitat within the Study Area intermittently for foraging and roosting. It is therefore considered that the Study Area periodically provides wetland habitat for these species.

The Study Area contains up to 76.24 ha of potential foraging and roosting habitat for the Latham's snipe as presented in Figure 13. For additional information on Latham's snipe presence in the Study Area, refer to Section 5.3.1.4.

8.3.5.3 Threatening processes

Threats to the Latham's snipe, as identified on the SPRAT profile include loss of habitat, which includes drainage and modification of wetlands, and excess mortality from hunting. However, bans on shooting have been implemented throughout Australia (DCCEEW, 2025b).

Threats identified in the Latham's snipe Conservation Advice (DCCEEW, 2024) include, habitat loss caused by residential and commercial development, habitat degradation by high-intensity grazing, increased frequency or severity of drought and fires, cat and fox predation, broad-leaved tea-tree invasion of grasslands, and hunting.

8.3.5.4 Recovery actions

Latham's snipe does not have an adopted or made Recovery Plan. Conservation and recovery actions, listed in the Conservation Advice includes the following:

- habitat loss
- habitat degradation caused by high-intensity grazing
- climate change and severe weather impacts; and
- hunting (DCCEEW, 2024).

8.3.5.5 Significant residual impact assessment

Up to 5.28 ha of ephemeral foraging and roosting habitat for the Latham's snipe will be impacted by the Project. There is potential for further indirect impacts to this species, although this is able to be reasonably managed using industry accepted measures as outlined in Section 7.3.

A significant residual impact assessment for the Latham's snipe has been completed against the SRI guideline (DEHP, 2014b) in Table 20.

Table 20: Significant residual impact assessment for Latham's snipe (*Gallinago hardwickii*)

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
The entire population of Latham's snipe migrate to Australia for summer and return to the northern hemisphere to breed in winter, and therefore local populations do not occur in the Study Area. The proposed impact of up to 5.28 ha of ephemeral foraging and roosting habitat includes temporally inundated gilgai habitat, which may provide foraging habitat following rainfall events. The removal of up to 5.28 ha of marginal foraging and roosting habitat is unlikely to result in a long-term decrease in the size of a population of Latham's Snipe.
• reduce the extent of occurrence of the species
The extent of occurrence for Latham's snipe has been estimated at 13,000 km^2 (DCCEEW, 2024). Up to 5.28 ha of ephemeral foraging and roosting habitat is proposed to be removed within the Disturbance Footprint. Due to the relatively small impact area, the availability of similar and better-quality habitat in the broader landscape and mobility of this species, the Project is not expected to result in the reduction of the extent of occurrence of the Latham's snipe.
• fragment an existing population
Latham's Snipe are a highly mobile species that is able to travel long distances. The Project will not cause a barrier to movement for this species. The species will be able to persist in remaining habitats in the Study Area and broader landscape. Therefore, the Project is not expected to result in the fragmentation of an existing population of Latham's snipe.
• result in genetically distinct populations forming as a result of habitat isolation
Latham's snipe do not breed in Australia and the removal of up to 5.28 ha of ephemeral foraging and roosting habitat is unlikely to cause the creation of genetically distinct populations.
• result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat
The Study Area is already impacted by grazing, clearing and mining and gas extraction activities and invasive species are established in the area. Threats to the species as a result of this existing disturbance includes proliferation of weed species, degradation of wetland habitat by feral pigs and predation by feral carnivores such as foxes and feral cats. The implementation of a Weed and Pest Management Plan, as described in Section 7.3.3, will include standard industry accepted measures to minimise the spread of weeds and pest animals that have the potential to degrade the ground layer and foraging resources for the Latham's snipe and prey on the species. Therefore, the Project is unlikely to contribute substantially to an invasive species becoming established in Latham's snipe habitat.
• introduce disease that may cause the population to decline

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:
The Approved conservation advice for Latham's snipe does not identify any diseases that are likely to impact the species (DCCEEW, 2024). The Project is not expected to result in the introduction of a disease that would impact Latham's snipe.
• interfere with the recovery of the species
The removal of up to 5.28 ha of ephemeral foraging habitat is not expected to interfere with the recovery of the species. Furthermore, the large dams that that provide better quality habitat, will remain in the Study Area and will continue to provide habitat for the species. Therefore, it is unlikely the Project will interfere with the recovery of the species.
• cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species
The Project proposes the removal of gilgai habitat that would provide ephemeral habitat following rain events. The removal of up to 5.28 ha of this marginal gilgai habitat will not cause disruption to ecologically significant locations (feeding, migration or resting habitat) for the species due to the ephemeral nature of the habitats, greater abundance of this type of habitat in intact brigalow communities elsewhere in the landscape and the absence of breeding habitat in Australia.
***Conclusion**: The Project is unlikely to have a significant residual impact on the Latham's Snipe due to the relatively small area of habitat proposed to be impacted, and small numbers of individuals likely to use the Study Area.*

8.3.6 Ornamental snake (*Denisonia maculata*)

The ornamental snake is listed as vulnerable under the NC Act.

8.3.6.1 Habitat preferences and distribution

This species prefer moist areas in woodlands and open forests, particularly in depressions located in Queensland RE Land Zone 4 and in gilgai mounds occurring in areas of deep cracking alluvial soils with high clay content (DCCEEW, 2011). Ornamental snake shelter under logs, leaf litter, bark, rocks and coarse woody debris on the ground, and during dry periods they will seek refuge within clay cracks in gilgai (Brigalow Belt Reptiles Workshop, 2010).

For additional information on the ornamental snake habitat preferences and distribution, refer to Section 5.3.1.5.

8.3.6.2 Presence in the Study Area

Ornamental snake was not identified in the Study Area during targeted field surveys. The closest known record for this species is 17 km south-west of the Study Area, recorded in 2006 (ALA, 2025). Based on field investigations, the Study Area supports approximately 54.63 ha of breeding and foraging habitat for the ornamental snake as depicted in Figure 14.

For additional information on the ornamental snake presence in the Study Area, refer to Section 5.3.1.5.

8.3.6.3 Threatening processes

The ornamental snake has undergone a decline in abundance in the past few decades. There are a variety of factors that are possibly contributing to this decline, including:

- habitat loss through clearing (roads, ploughing, railways, mining-related activities, pipeline constructions)
- habitat fragmentation
- habitat degradation by overgrazing by stock, especially cattle, or grazing of gilgais during the wet season leads to soil compaction and compromising of soil structure
- alteration of landscape hydrology in and around gilgai environments
- alteration of water quality through chemical and sediment pollution of wet areas
- contact with the cane toad
- predation by feral species; and
- invasive weeds (Brigalow Belt Reptiles Workshop 2010; Cogger et al. 1993).

8.3.6.4 Recovery actions

The ornamental snake does not have a contemporary recovery plan. Research priorities and conservation actions are described in the species conservation advice and include the following matters:

- refine understanding of population metrics, habitat needs, and threat impacts
- develop and apply monitoring in key habitats and priority areas
- track existing populations to identify emerging threats
- evaluate recovery progress and adapt management strategies as needed
- identify and prioritise key populations for conservation
- explore legal protection options for private and crown lands, including reserve inclusion
- reduce land-use pressures at known sites
- control invasive species, particularly pigs, at critical locations
- establish and implement cane toad management practices; and
- promote awareness of the ornamental snake within the Brigalow Belt Bioregion (DEWHA, 2014).

8.3.6.5 Significant impact assessment

Ornamental snake was not recorded within the Study Area during field surveys. However, potentially suitable breeding and foraging habitat for the species is present within the Study Area where gilgai depressions and mounds are present. Direct impacts to the species will include removal of up to 5.28 ha of potential breeding and foraging habitat (Figure 14). There is potential for further indirect impacts to this species, although this can be reasonably managed using industry accepted measures as outlined in Section 7.3.

A significant residual impact assessment for the ornamental snake has been completed against the SRI guideline (DEHP, 2014b) in Table 21.

Table 21: Significant residual impact assessment for ornamental snake (*Denisonia maculata*)

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
The Project will result in the direct loss of up to 5.28 ha of suitable habitat for the species. Although, the majority of this habitat clearing is within already cleared and disturbed gilgai habitat with limited remnant vegetation remaining. The majority of this habitat will remain and more extensive areas of similar habitat were observed to extend south beyond the Study Area. Therefore, the proposed clearing is unlikely to result in the long-term decrease in the size of a local population.
• reduce the extent of occurrence of the species
The Project will result in the direct loss of up to 5.28 ha of suitable habitat for the species. The current area of occupancy for this species is 21,315 km^2 and the extent of occurrence is 376,319 km^2 (ALA, 2020). Given that the distribution of ornamental snake includes the Brigalow Belt bioregion and the Burdekin and Fitzroy natural resource management regions (DCCEEW, 2024b), the Project is not located near the edge of the species known distribution. Additionally, the majority of habitat will remain in the Study Area and similar habitats are known to occur in the surrounding regions. As such, the Project is considered unlikely to reduce the extent of occurrence of the species.
• fragment an existing population
The Project will result in the direct loss of up to 5.28 ha of habitat for the species within areas containing gilgais. The removal of this habitat may result in localised fragmentation of habitat within the Study Area but is unlikely to split an existing population as clearing will be narrow and dispersal between gilgais and beyond the Disturbance Footprint will be possible for this species. The balance of this habitat area will remain in the landscape within and beyond the Study Area. Furthermore, the Project will not create a significant barrier to movement for this species between areas of habitat. As such, it is unlikely that the Project will fragment an existing population of the species.
• result in genetically distinct populations forming as a result of habitat isolation
The Project will result in the direct loss of up to 5.28 ha of habitat for the species on the edge of a larger patch of potentially suitable habitat that extends beyond the Disturbance Footprint and Study Area. This clearing is unlikely to isolate habitat or populations, and direct and potential indirect impacts to individuals and remaining habitat will be managed under specific management plans. Therefore, the Project is not expected to impact habitat to the extent that genetically distinct populations will form.
• result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat
Threats to the species include overgrazing and degradation by feral herbivores such as rabbits and feral pigs, proliferation of weed species and predation by feral carnivores, such as foxes and feral cats. The Study Area is already impacted by grazing, clearing and mining and gas extraction activities and invasive species are already established in the landscape, including those listed as potential threats above. Implementation of a Weed and Pest Management Plan, as described in Section 7.3.3, will include standard industry accepted measures to minimise the spread of weeds and proliferation of pest animals that have the potential to degrade the ground layer. Therefore, the Project is unlikely to contribute to an invasive species becoming established in ornamental snake habitat.

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:
introduce disease that may cause the population to decline
No introduced diseases are known to significantly impact this species. It is unlikely the Project would introduce such a disease in this region.
interfere with the recovery of the species
The direct loss of 5.28 ha of potentially important habitat for the species is unlikely to interfere with the recovery of the species, as this is a relatively small area and extensive similar gilgai habitat is known to occur in the region.
• cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species
The habitat in the Study Area and Disturbance Footprint is likely to be used for breeding and feeding by ornamental snake, however it is unlikely to be ecologically more significant than any other locations, particularly given its cleared and degraded non-remnant condition. Other remnant brigalow vegetation that supports gilgai and other micro-habitat features are likely to be more ecologically significant for this species.
***Conclusion**: The Project is unlikely to have a significant residual impact on ornament snake because a relatively small portion of cleared non-remnant habitat is proposed to be cleared, substantial similar and better-quality habitats will remain within the broader region, the species can persist in the remaining habitat in the Study Area and the project will not fragment, isolate or disrupt the breeding of the local population.*

8.3.7 White-throated needletail (*Hirundapus caudacutus*)

The white-throated needletail is listed as vulnerable under the NC Act.

8.3.7.1 Habitat preferences and distribution

The white-throated needletail is a non-breeding visitor to Australia where it is widespread across eastern and south-eastern Queensland (TSSC, 2019). It is most often recorded above wooded areas such as open forest and rainforest (TSSC 2019).

For additional information on white-throated needletail habitat preferences and distribution, refer to Section 5.3.1.6.

8.3.7.2 Presence in the Study Area

The species was not detected during the field surveys. The species has been previously recorded nearby (20 km) the Study Area (ALA, 2020) and is considered likely to overfly the Study Area. Based on desktop and field investigations to date, the Study Area contains 3,398.89 ha of foraging and dispersal habitat for the white-throated needletail as illustrated in ground-truthed vegetation mapping in Figure 7.

For additional information on white-throated needletail presence in the Study Area, refer to Section 5.3.1.6.

8.3.7.3 Threatening processes

Due to the widespread distribution and aerial nature of the white-throated needletail, no significant threats have been identified for the species in Australia (DCCEEW, 2025c; TSSC, 2019). Some potential

threats have been suggested to include collision with wind turbines, overhead wires, windows and lighthouses, and degradation of forest and woodland area resulting in the loss of roosting sites and reduction in availability of prey (TSSC, 2019).

8.3.7.4 Recovery actions

No specific recovery actions have been identified for the white-throated needletail, however primary conservation actions relevant to the species within Australia include:

- identify requirements of important habitat in Australia
- support initiatives to improve habitat management at key sites in Australia
- stakeholder engagement to promote conservation and the exchange of information
- enhance existing monitoring programs particularly to improve coverage in under surveyed parts of Australia; and
- information and research priorities including improved knowledge on threatened processes and understanding of life history, population size, distribution and ecological requirements in Australia (TSSC, 2019).

8.3.7.5 Significant impact assessment

Direct impacts to the species will include removal of 68.38 ha of foraging and dispersal overfly habitat (Figure 7). The vegetation being removed has the potential to provide habitat for invertebrate prey species that may occupy the airspace above. Indirect impacts to the species are limited due to the species still being able to utilise habitat above the Disturbance Footprint as foraging habitat.

A significant impact assessment has been completed for the white-throated needletail against the SRI guideline (DEHP, 2014b) in Table 22.

Table 22: Significant impact assessment for white-throated needletail (*Hirundapus caudacutus*)

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
Given the species' migratory and highly mobile nature the Study Area is unlikely to support a persistent or regular visiting local population. Therefore, removal of vegetation is not expected to result in a long-term decrease in the size of a local population.
• reduce the extent of occurrence of the species
The species is likely to continue to overfly the Study Area and landscapes within the broader region regardless of the clearing and disturbance associated with the Project. Therefore, the Project will not reduce the extent of occurrence of the species.
• fragment an existing population
This is a highly mobile, almost exclusively aerial species. Therefore, the clearing of vegetation within the Disturbance Footprint is unlikely to fragment a population.
• result in genetically distinct populations forming as a result of habitat isolation

An action is likely to have a significant impact on endangered and vulnerable wildlife if the impact on the habitat is likely to:
Clearing and disturbance of vegetation communities, over which this species is likely to forage and disperse, is proposed to be cleared. However, this species is highly mobile, and almost exclusively aerial, occurring over a variety of habitats throughout Australia. The Project will not create any barriers to movement and migration and will result in a negligible impact to the airspace above the Disturbance Footprint, which is unlikely to result in the formation of distinct populations.
• result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat
Publicly available literature does not identify any invasive species that are considered likely to impact this species (TSSC 2019). The Project is not expected to result in the introduction of an invasive species that would be harmful to white-throated needletails becoming established within overfly habitat for this species.
• introduce disease that may cause the population to decline
There are no specific diseases known to specifically this species (TSSC 2019). The Project is not expected to result in the introduction of a disease that would impact the population of white-throated needletails.
• interfere with the recovery of the species
The species is unlikely to directly use vegetation communities or other habitats in the Disturbance Footprint therefore the Project is unlikely to interfere with the recovery of the species.
• cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species
Given this is a non-breeding visitor to Australia, an almost exclusively aerial species and the Disturbance Footprint and surrounding Study Area is unlikely to provide preferred roosting habitat for this species, the Project will not cause disruption to an ecologically significant location for the species.
***Conclusion**: The species is almost exclusively aerial, it is unlikely to use the Disturbance Footprint for roosting, it does not breed in Australia and the Disturbance Footprint is unlikely to provide an ecologically significant location for the species, therefore, the Project is considered unlikely to result in a significant residual impact to the white-throated needletail.*

8.3.8 Short-beaked echidna (*Tachyglossus aculeata*)

Short-beaked echidna is listed as special least concern under the NC Act.

8.3.8.1 Habitat preferences and distribution

The short-beaked echidna is widespread and occurs throughout Australia in a broad variety of habitats where there is a supply of ants and termites upon which it feeds (Van Dyck & Strahan, 2008). The species also utilises microhabitat features such as thick bushes, hollow logs and debris piles for shelter (Van Dyck & Strahan, 2008) (refer to Section 5.3.1.7).

8.3.8.2 Presence in the Study Area

One short-beaked echidna was recorded within the Study Area during the 2024 wet season survey in remnant narrow-leaved ironbark woodland (RE 11.5.9c) near the Disturbance Area. Scats attributable to the species were also recorded in multiple locations in remnant vegetation within the Study Area. Approximately 3,398.89 ha of breeding and foraging and 1,047.21 ha of dispersal habitat is mapped for this species in the Study Area.

8.3.8.3 Threatening processes

Across most of its range, the short-beaked echidna is considered to have few major threats (Aplin, 2015). At an individual scale they are susceptible to predation by feral cats and pigs as well as being hit by motor vehicles (S. Nicol, 2015). Land clearing for agriculture and livestock may reduce habitat quality and microhabitat availability for the species (Eldridge et al., 2016).

8.3.8.4 Recovery actions

There are no recovery actions for the short beaked echidna as the species has a wide distribution, is a habitat generalist and there are limited key threats to the species.

8.3.8.5 Significant residual impact assessment

Direct impacts to the species will include removal of 68.38 ha of breeding and foraging habitat and 9.38 ha of dispersal habitat for this species (Figure 15). There is potential for further indirect impacts to this species, although this is able to be feasibly managed using industry accepted measures as outlined in Section 7.3. To determine if the Project is likely to have a significant impact on short-beaked echidna, an assessment in accordance with the SRI guideline has been undertaken in Table 23.

Table 23: Significant residual impact assessment for short-beaked echidna (*Tachyglossus aculeata*)

An action is likely to have a significant impact on endangered and vulnerable wildlife if it is likely that it will result in:
• a long-term decrease in the size of a local population
Up to 68.38 ha of breeding and foraging habitat and 9.38 ha of dispersal habitat associated with woodland vegetation will be cleared within the Disturbance Footprint. This is unlikely to lead to a long-term decrease in the size of the local short-beaked echidna population, given: • measures will be implemented to mitigate mortality or injury of animals during clearing and construction works (as detailed in Section 7.3.7 of this report) • the presence and extent of similarly suitable habitat adjacent to and connected with the Disturbance Footprint • the species' mobility and continued ability to access foraging and shelter resources within the Study Area and surrounds; and • their potential to use cleared and disturbed areas for foraging following rehabilitation or revegetation works.
• a reduced extent of occurrence of the species
The Project is unlikely to reduce the species' extent of occurrence given the extent of similarly suitable habitat adjoining and connected with the Disturbance Footprint and within the surrounding landscape. The species' mobility will ensure its continued ability to access breeding, foraging and shelter resources within the Study Area and surrounds.

An action is likely to have a significant impact on endangered and vulnerable wildlife if it is likely that it will result in:
• fragmentation of an existing population
The Project is unlikely to fragment an existing population, as this is a mobile species, the Project will not present permanent barriers to movement and the species is known to move across cleared areas.
• result in genetically distinct populations forming as a result of habitat isolation
Although up to 77.76 ha of breeding, foraging and dispersal habitat for the species is proposed to be removed, the nature and extent of the Project activities will not result in a long-term barrier to movement for this species. It is therefore unlikely that the Project will result in habitat isolation or genetically distinct populations forming.
• disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species
The Study Area is unlikely to support ecologically significant locations for this species given the similar nature of vegetation and habitat across the landscape in this region. Furthermore, Threatened Species Management Plans and an SMP will be prepared as discussed in Section 7.3.1, and which will include industry standards to avoid and minimise impacts to animal breeding places and unnecessary stress on native fauna.
***Conclusion**: The Project is unlikely to result in a significant impact on short-beaked echidna as the species is likely to continue to occupy the surrounding landscape and the Project is unlikely to fragment or isolate populations of the species.*

8.4 Connectivity

The Landscape Fragmentation Connectivity tool performs a desktop assessment of development impacts on connectivity areas containing remnant vegetation. The tool is a test for significant residual impacts on connectivity, a MSES under the Environmental Offsets Framework. It is also effective as a mechanism for quantifying the fragmentation of remnant REs at the bioregion scale.

The Landscape Fragmentation Connectivity tool results for the Project are summarised in Table 24 below. This assessment used the Queensland Herbarium certified mapping for the Study Area (Figure 5). The outcome of this tool determined that no significant impact would occur for connectivity areas. Particularly, the change of core remnant areas post impact is low (4.28%) and the number of areas remain the same. The raw output for the tool is provided in Appendix E.

Table 24: Landscape fragmentation and connectivity significant residual impact assessment

Output	Value
Significance test one	
Regional total area	152,841.39 ha
Regional extent of core remnant	63,103.68 ha (41.29 %)
Area of core at the local scale (pre impact)	7,257.16 ha
Area of core at the local scale (post impact)	6,996.22 ha

Output	Value
Percent change of core at the local scale (post impact)	3.60 %
Significance test two	
The number of core remnant areas occurring on the site	7
The number of core remnant areas occurring on the site post impact	7
Result	**This analysis has determined no significant impact on connectivity areas**

8.5 Waterways providing for fish passage

No waterways were identified in the Disturbance Footprint or are proposed to be impacted for the Project, therefore an assessment of significant residual impacts to this MSES has not been undertaken.

8.6 Summary of impacts to MSES

A summary of impacts to MSES as a result of the Project is presented in Table 25.

Table 25: Summary of significant impacts to MSES within the Study Area

MSES	Likelihood to occur	VM Act[1]/ NC Act status[2]	EPBC Act status[3]	Extent within the Study Area (ha)					Significant impact result
Endangered and of concern regulated vegetation (as per Queensland Herbarium certified mapping (MAR3577))									
RE 11.4.9	Known	E	n/a					0.28	unlikely
RE 11.5.16	Known	E	n/a					0.03	unlikely
RE 11.8.11	Known	OC	n/a					3.55	unlikely
Protected wildlife habitat - Flora				***Known (ha)***			***Potential (ha)***		***Total (ha)***
King bluegrass (*Dichanthium queenslandicum*)	Known	V	E					8.20	unlikely
Protected wildlife habitat - Fauna				***Breeding & foraging (ha)***	***Foraging (only) (ha)***	***Foraging and roosting (ha)***	***Foraging and dispersal (ha)***	***Dispersal (ha)***	***Total (ha)***
Koala (*Phascolarctos cinereus*)	Known	E	E	64.83				3.55	likely
Squatter pigeon (southern) (*Geophaps scripta scripta*)	Known	V	V	0.11	69.78			1.40	unlikely
Australian painted snipe (*Rostratula australis*)	Likely	E	E			5.28			unlikely
Latham's snipe (*Gallinago hardwickii*)	Likely	V	V			5.28			unlikely
Ornamental snake (*Denisonia maculata*)	Likely	V	V	5.28					unlikely

MSES	Likelihood to occur	VM Act[1]/ NC Act status[2]	EPBC Act status[3]	Extent within the Study Area (ha)			Significant impact result
White-throated needletail (*Hirundapus caudacutus*)	Likely	V	V		68.38		unlikely
Short-beaked echidna (*Tachyglossus aculeatus*)	Known	SLC	n/a	68.38		9.38	unlikely
Connectivity areas							
Remnant vegetation containing a prescribed RE	Present	Various					unlikely

[1] - E = endangered, OC = of concern, LC = least concern
[2] - CE = critically endangered, E = endangered, V = vulnerable, M = migratory, - = not listed
[3] - CR = critically endangered, E = endangered, V = vulnerable, OC = of concern, SLC = special least concern, - = not listed

9 Conclusions and biodiversity offsets

While a number of MSES have been identified within the Study Area, design of the Project has aimed to avoid impacts to MSES where possible, particularly large and intact areas supporting or potentially supporting conservation significant species. Furthermore, a number of mitigation strategies and management plans will be put in place for the Project to minimise indirect impacts. Nonetheless, this assessment has found that the Project has the potential to result in a significant residual impact to MSES as described in Section 8. As such, suitable environmental offsets may need to be secured under the Queensland environmental offsets framework.

There is a real chance or possibility of significant residual impacts to one MSES, koala, as a result of the Project.

For the remaining MSES identified or considered to potentially occur in the Study Area the Project is unlikely to cause a significant residual impact because of the relatively small scale of clearing, the extent of habitat remaining elsewhere in the region or the lack of ecologically significant locations. These MSES include:

- regulated vegetation
- king bluegrass
- squatter pigeon (southern)
- Australian painted snipe
- Latham's snipe
- ornamental snake
- white-throated needletail
- short-beaked echidna
- connectivity areas; and
- waterways providing for fish passage

Under the Queensland environmental offset framework, offsets are required to compensate for significant residual impacts. Therefore, it is expected that offsets will be conditioned as part of approvals for the Project.

10 References

Accad, A., Kelley, J. A. R., Richter, D., Neldner, V. . J., & Ryan, T. S. (2024). *Remnant Regional Ecosystem Vegetation in Queensland (Version 13.1), Analysis 1997-2021*. Queensland Department of Environment, Science and Innovation.

AECOM. (2012). *Central Queensland Integrated Rail Project - Goonyella to Abbot Point Referral Document (2012/6321), prepared on behalf of QR National*.

Aplin, K. (2015). IUCN Red List of Threatened Species: Tachyglossus aculeatus. *IUCN Red List of Threatened Species*. https://www.iucnredlist.org/en

Arrow Energy Pty Ltd. (2012). *Referral document for the Arrow Bowen Pipeline Project (2012/6459)*.

Atlas of Living Australia (ALA). (2020). *Atlas of Living Australia Occurrence Records (ALA)*. https://www.ala.org.au/

Atlas of Living Australia (ALA). (2025a). *Atlas of Living Australia Occurrence Records*. https://www.ala.org.au/

Atlas of Living Australia (ALA). (2025b). *Atlas of Living Australia Species Profile*. Atlas of Living Australia. https://www.ala.org.au/

Ben-Ami, D., & Ramp, D. (2013). Impact of roadside habitat on swamp wallaby movement and fitness. *Wildlife Research*, *40*(6), 512–522.

BHP Billiton MetCoal Holdings Pty Ltd. (2011). *Referral document for the BHP Billiton Goonyella to Abbot Point Rail Project*.

Brice, P. H., Grigg, G. C., Beard, L. A., & Donovan, J. A. (2002). Heat tolerance of short-beaked echidnas (Tachyglossus aculeatus) in the field. *Journal of Thermal Biology*, *27*(6).

Brigalow Belt Reptiles Workshop. (2010). *Proceedings from the workshop for the nine listed reptiles of the Brigalow Belt bioregions*. Queensland Herbarium.

Bureau of Meteorology (BoM). (2025a). *Climate Data Online*. http://www.bom.gov.au/climate/data/

Bureau of Meteorology (BoM). (2025b). *Groundwater Dependent Ecosystems Atlas*. http://www.bom.gov.au/water/groundwater/gde/

Butler, D. W., & Fairfax, R. J. (2008). Buffel Grass and fire in a Gidgee and Brigalow woodland: A case study from central Queensland. *Ecological Management & Restoration*, *4*(2). https://onlinelibrary.wiley.com/doi/full/10.1046/j.1442-8903.2003.00146.x

Commonwealth of Australia. (2017). *EPBC Act Policy Statement 3.21—Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species*. Commonwealth of Australia. https://www.dcceew.gov.au/sites/default/files/documents/bio4190517-shorebirds-guidelines.pdf

Cropper, S. (1993). *Management of Endangered Plants*. CSIRO Publishing.

DCCEEW. (2023). *National Koala Recovery Team 2023, Annual Report 2023, National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory)*.

DCCEEW. (2025a). *Protected Matters Search Tool*. https://pmst.awe.gov.au/

DCCEEW. (2025b). *Species Profile and Threats Database*. https://www.environment.gov.au/sprat

DCCEEW. (2025c). *Species Profile and Threats Database*. http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Department of Agriculture Water and the Environment. (2020). *Species Profile and Threats Database*.

Department of Agriculture, Water and the Environment (DAWE). (2022a). *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory*. Department of Agriculture, Water and Environment. https://www.environment.gov.au/biodiversity/threatened/species/pubs/85104-conservation-advice-12022022.pdf

Department of Agriculture, Water and the Environment (DAWE). (2022b). *National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory)*.

Department of Climate Change, Energy, the Environment and Water. (2024). *Conservation Advice for Gallinago hardwickii (Latham's snipe)*.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2011, May 31). *Species Profile and Threats Database—Denisonia maculata (Ornamental snake)*.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2022). *National Recovery Plan for the Australian Painted Snipe (Rostratula australis)*. Commonwealth of Australia. https://www.dcceew.gov.au/sites/default/files/documents/national-recovery-plan-australian-painted-snipe-2022.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2023a). *Draft referral guidelines for the nationally listed Brigalow Belt reptiles v1.1*. Department of Climate Change, Energy, the Environment and Water (DCCEEW). https://www.dcceew.gov.au/sites/default/files/documents/draft-referral-guidelines-nationally-listed-brigalow-belt-reptiles.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2023b). *Species Profile and Threats Database*. Species Profile and Threats Database. https://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025a). *Apus pacificus—Fork-tailed Swift Species Profile and Threats Database*. Australian Government. https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025b). *Geophaps scripta scripta—Squatter Pigeon (southern) in Species Profile and Threats (SPRAT) Database*. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64440

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025c). *Geophaps scripta scripta—Squatter Pigeon (southern) SPRAT Profile in Species Profile and Threats Database*. https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64440

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025d). *Hirundapus caudacutus - White-throated Needletail SPRAT Profile*. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?showprofile=Y&taxon_id=682

Department of Environment and Heritage Protection (DEHP). (2014a). *Queensland Environmental Offsets Policy Significant Residual Impact Guideline*. State of Queensland.

Department of Environment and Heritage Protection (DEHP). (2014b). *Queensland Environmental Offsets Policy Significant Residual Impact Guideline*. State of Queensland.

Department of Environment and Science (DES). (2018). *Groundwater dependent ecosystems and potential aquifer mapping—Queensland* [Map]. Department of Ennvironment and Science. http://qldspatial.information.qld.gov.au/catalogue/

Department of Environment and Science (DES). (2020). *Guide to determining terrestrial habitat quality (Version 1.3): Methods for assessing habitat quality under the Queensland Environmental Offsets Policy*. https://environment.des.qld.gov.au/__data/assets/pdf_file/0017/102833/habitat-quality-assessment-guide-v1-3.pdf

Department of Environment and Science (DES). (2022). *Species profile—Digitaria porrecta*. Species Profiles. https://apps.des.qld.gov.au/species-search/details/?id=14599

Department of Environment (DotE). (2013). *Draft Guidelines for Australia's Threatened Orchids*. Commonwealth of Australia.

Department of Environment, Tourism, Science and Innovation (DETSI). (2025a). *Environmental reports online*. https://www.qld.gov.au/environment/management/environmental/environmental-reports-online

Department of Environment, Tourism, Science and Innovation (DETSI). (2025b). *Maps of Environmentally Sensitive Areas*. https://environment.des.qld.gov.au/management/maps-of-environmentally-sensitive-areas

Department of Environment, Tourism, Science and Innovation (DETSI). (2025c). *Regional ecosystems technical descriptions*. Queensland Government. https://www.publications.qld.gov.au/dataset/re-technical-descriptions

Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development. (2025). *Queensland Detailed Surface Geology*. Department of Resources.

Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD). (2025a). *Queensland Spatial Catalogue (QSpatial)*. https://qldspatial.information.qld.gov.au/catalogue/

Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD). (2025b). *Vegetation management Regional Ecosystem map Version 13.00* [Map]. Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development

(DNRMMRRD). https://qldspatial.information.qld.gov.au/catalogue/custom/detail.page?fid={BCFBDC29-85AF-46B5-85E3-41C5A4B2057A}

Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD). (2025c). *Vegetation management regulated vegetation management map—Version 7.04*. https://qldspatial.information.qld.gov.au/catalogue/custom/detail.page?fid={9CC053EC-585B-4C41-A713-E1D04543CCC2}

Department of Natural Resources and Mines, Manufacturing and Regional and Rural Development (DNRMMRRD). (2025d). *Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)—Queensland except South East Queensland Version 7.01*. Department of Resources. https://www.data.qld.gov.au/dataset/vegetation-management-act-series/resource/83632bbd-16d3-4fe0-b47f-4fa4748e7467

Department of Sustainability, Environment, Water, P. and C. (2013). *Approved Conservation Advice for Rostratula australis (Australian painted snipe)*. In effect under the EPBC Act from 15-May-2013.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). (2011a). *Survey guidelines for Australia's threatened mammals*. Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). https://www.awe.gov.au/sites/default/files/documents/survey-guidelines-mammals.pdf

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). (2011b). *Survey guidelines for Australia's threatened reptiles*. Australian Government. https://www.dcceew.gov.au/sites/default/files/documents/survey-guidelines-reptiles.pdf

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). (2013, February 26). *Approved Conservation Advice for Dichanthium queenslandicum (king blue-grass)*. Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). https://www.environment.gov.au/biodiversity/threatened/species/pubs/5481-conservation-advice.pdf

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). (2011). *Draft Referral guidelines for the nationally listed Brigalow Belt reptiles*. Australian Government.

https://www.agriculture.gov.au/sites/default/files/documents/draft-referral-guidelines-comment-brigalow-reptiles.pdf

Department of Sustainability, Environment, Water, Population and Communities (DSEWPC). (2012). *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Department of Sustainability, Environment, Water, Population and Communities.

Department of the Environment (DotE). (2013). *Matters of National Environmental Significance: Significant Impact Guidelines 1.1*. Australian Government.

Department of the Environment, Tourism, Science and Innovation (DETSI). (2025a). *Flora Survey Guidelines—Protected Plants*. State of Queensland. https://www.des.qld.gov.au/policies?a=272936:policy_registry/gl-wl-pp-flora-survey.pdf

Department of the Environment, Tourism, Science and Innovation (DETSI). (2025b). *Protected Plants Flora Survey Trigger Map (Version 10)*. https://apps.des.qld.gov.au/map-request/flora-survey-trigger/

Department of the Environment, Water, Heritage and the Arts (DEWHA). (2010). *Survey guidelines for Australia's threatened birds*. Australian Government. https://www.awe.gov.au/sites/default/files/documents/survey-guidelines-birds-april-2017.pdf

Department of the Environment, Water Heritage and the Arts (DEWHA). (2014). *Approved Conservation Advice for Denisonia maculata (Ornamental Snake)*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/1193-conservation-advice.pdf

DES. (2022). *Species profile—Dichanthium queenslandicum* [Text]. corporateName=The State of Queensland; jurisdiction=Queensland. https://apps.des.qld.gov.au/species-search/details/?id=11064

DETSI. (2025a). *Koala facts*. https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/facts

DETSI. (2025b). *Wildlife Online Extract*. https://apps.des.qld.gov.au/report-request/species-list/

DotE. (2015, September). *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act*. https://www.dcceew.gov.au/sites/default/files/documents/migratory-birds-draft-referral-guideline.pdf

DSEWPC. (2011). *Survey guidelines for Australia's threatened mammals*. https://www.dcceew.gov.au/sites/default/files/documents/survey-guidelines-mammals.pdf

DSEWPC. (2013). *Approved Conservation Advice for Dichanthium queenslandicum (king blue-grass)*. Department of Sustainability, Environment, Water, Population and Communities. http://www.environment.gov.au/biodiversity/threatened/species/pubs/5481-conservation-advice.pdf

Echidnas. (2020, February 19). Native Animal Facts. https://www.environment.nsw.gov.au/topics/animals-and-plants/native-animals/native-animal-facts/echidnas#:~:text=They%20are%20Australia's%20most%20widespread,in%20holes%20among%20tree%20roots.

Eldridge, D. J., Poore, A. G., Ruiz-Colmenero, M., Letnic, M., & Soliveres, S. (2016). Ecosystem structure, function, and composition in rangelands are negatively affected by livestock grazing. *Ecological Applications*, *26*(4), 1273–1283.

Ellis, W. A. H., Melzer, A., Carrick, F. N., & Hasegawa, M. (2002). Tree use, diet and home range of the koala (Phascolarctos cinereus) at Blair Athol, central Queensland. *Wildlife Research*, *29*, 303–311.

EMM. (2021). *Townsville Energy Chemicals Hub Project, Matters of National Environmental Significance Assessment Report, prepared for Queensland Pacific Metals Pty Ltd* (No. B200887 RP1).

Eyre, T. J., Ferguson, D. J., Smith, G. C., Mathieson, M. T., Venz, M. F., Hogan, L. D., Hourigan, C. L., Kelly, A. L., & Rowland, J. (2022). *Terrestrial Vertebrate Fauna Survey Assessment Guidelines for Queensland (V. 4.0)*. Department of Environment and Science.

Garnett, S. T., & Crowley, G. M. (2000). *The Action Plan for Australian Birds 2000*.

Garnett, S. T., Szabo, J. K., & Dutson, G. (2011). *The Action Plan for Australian Birds 2010*. CSIRO Publishing.

Geological Survey of Queensland. (2023). *Australian Geological Survey Organisations Network (AGSON) Geoscience Portal*. https://portal.geoscience.gov.au/

Golder Associates. (2005). *Referral Document for the Burdekin Pipeline Project (BPP), prepared on behalf of SunWater*.

Hansen Bailey. (2018). *Section 7—Moranbah North Extension Project: EPBC Act Environmental Assessment Report*.

He, K., Zhang, X., Ren, S., & Sun, J. (2016). Deep residual learning for image recognition. *Proceedings of the IEEE Conference on Computer Vision and Pattern Recognition*, 770–778. https://doi.org/10.1109/cvpr.2016.90

Higgins, P. J., Peter, J. M., & Cowling, S. J. (2006). *Handbook of Australian, New Zealand and Antarctic Birds* (Vol. 7). Oxford University Press. https://doi.org/10.1676/1559-4491(2007)119[516:hoanza]2.0.co;2

Land for Wildlife Queensland. (2011). *Note A6: Short-beaked echidnas*.

Lane, B. A., & Rogers, D. (2000). The Australian painted snipe Rostratula (benghalensis) australis: An endangered species? *Stilt*, *36*, 26–34.

Laurance, W. F., & Yensen, E. (1991). Predicting the impacts of edge effects in fragmented habitats. *Biological Conservation*, *55*(1), 77–92.

Lunney, D., Crowther, MS., & Shannon, I. (2012). Koalas and climate change: A case study on the Liverpool Plains, north-west New South Wales. *Wildlife and Climate Change: Towards Robust Conservation Strategies for Australian Fauna*, pp,150-168.

Martin, R., & Handasyde, K. (1999). *The Koala: Natural history, conservation and management*. UNSW Press.

Matrixplus. (2008). *Terrestrial Flora & Fauna Impact Assessment Report for Eaglefield Expansion Project, prepared for Peabody Energy Australia Coal Pty Limited* (No. Rev 1.1).

McCallum, H., Kerlin, D., Ellis, W., & Carrick, F. (2017). Assessing the significance of endemic disease in conservation—Koalas, chlamydia, and koala retrovirus as a case study. *Society of Conservation Biology*, *11*(4). https://doi.org/10.1111/conl.12425

Munks, S., Corkrey, R., & Foley, W. (1996). Characteristics of arboreal marsupial habitat in the semiarid woodlands of northern Queensland. *Wildlife Research*, *23*, 185–195.

Neldner, V. J., Laidlaw, M. J., McDonald, K. R., Mathieson, M. T., Melzer, R. I., Seaton, R., McDonald, W. J. F., Hobson, R., & Limpus, C. J. (2017). *Scientific review of the impacts of land clearing on threatened species in Queensland*. Queensland Government.

Neldner, V. J., Wilson, B. A., Dillewaard, H. A., Ryan, T. S., Butler, D. W., McDonald, W. J. F., Richter, D., Addicott, E. P., & Appelman, C. N. (2022). *Methodology for survey and mapping of regional ecosystems and vegetation communities in Queensland v.6.0*. Queensland Herbarium, Queensland Department of Environment and Science.

Nicol, S. (2015). Family Tachyglossidae (echidnas). In *Handbook of the mammals of the world: Marsupials and monotremes*.

Nicol, S. C., Vanpé, C., Sprent, J., Morrow, G., & Andersen, N. A. (2011). Spatial ecology of a ubiquitous Australian anteater, the short-beaked echidna (Tachyglossus aculeatus). *Journal of Mammalogy*, *92*(1), 101–110.

Phillips, S., & Callaghan, J. (2011). The Spot Assessment Technique: A tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus. *Australian Zoologist*, *35*(3), 774–779.

Pickering, C., Bear, R., & Hill, W. (2007). Indirect Impacts of Nature Based Tourism and Recreation: The Association Between Infrastructure and the Diversity of Exotic Plants in Kosciuszko National Park, Australia. *Journal of Ecotourism*, *6*(2), 146–157.

Pizzey, G., & Knight, F. (2007). *The field guide to the birds of Australia*. Harper Collins Publishers.

Queensland Herbarium. (2024). *Regional Ecosystem Description Database (REDD). Version 13.1*. Department of Environment, Science and Innovation.

Queensland Resources Council. (2015). *Submission on the proposed delisting of Geophaps scripta scripta*.

Ramp, D., Caldwell, J., Edwards, K., Warton, D., & Croft, D. (2005). Modelling of wildlife fatality hotspots along the Snowy Mountain Highway in New South Wales, Australia. *Biological Conservation*, *126*(4), 474–490.

Rismiller, P., & McKelvey, M. (2000). Frequency of Breeding and Recruitment in the Short-Beaked Echidna, Tachyglossus aculeatus. *Journal of Mammalogy - J MAMMAL*, *81*, 1–17. https://doi.org/10.1644/1545-1542(2000)081%253C0001:FOBARI%253E2.0.CO;2

Rogers, D., Hnace, I., Paton, S., Tzaros, C., Griffioen, P., Herring, M., Jaensch, R., Oring, L., Silcocks, A., & Weston, M. (2005). The breeding bottleneck: Breeding habitat and population decline in the Australian painted snipe. Status and Conservation of Shorebirds in the East Asian-Australasian Flyway. *Proceedings of the Australasian Shorebirds Conference*.

Runge, C. A., Martin, T. G., Possingham, H. P., Willis, S. G., & Fuller, R. A. (2014). Conserving mobile species. *Frontiers in Ecology and the Environment*, *12*(7), 395–402.

SCT Operations. (2025). *Assessment of Subsidence Due to Development of First Workings in Initial Area at Centurion North Mine* (No. NGY5910). SCT Operations PTY Limited.

Seabrook, L., McAlpine, C., Baxter, G., Rhodes, J., Bradley, A., & Lunney, D. (2011). Drought-driven change in wildlife distribution and numbers: A case study of koalas in south west Queensland. *Wildlife Research*, *38*(6), 509–524.

Simon, B. (1982). New Species of Gramineae from south-eastern Queensland. *Austrobaileya*, *1*(5), 455–467.

Sinclair Knight Merz. (2012). *Referral document for the New Lenton Coal Project (2012/6303), prepared for New Hope Corporation Ltd*.

SLR Consulting Australia Pty Ltd. (2025). *Centurion North Extension Project Groundwater Assessment* (No. Report reference 620.042334.00001-R01-v1.0. 31) [Dataset].

Specht, R. L. (1970). Vegetation. In *Australian Environment* (4th ed., pp. 44–67). Melbourne University Press.

Squatter Pigeon Workshop. (2011a). *Proceedings from the workshop for the Squatter Pigeon (southern)*.

Squatter Pigeon Workshop. (2011b). *Proceedings from the workshop for the Squatter Pigeon (southern). 14-15 December 2011*. Toowoomba Office of the Queensland Parks and Wildlife Service.

Stowell, D. (2022). Computational bioacoustics with deep learning: A review and roadmap. *PeerJ*, *10*, e13152–e13152. PubMed. https://doi.org/10.7717/peerj.13152

Stowell, D., Wood, M. D., Pamuła, H., Stylianou, Y., & Glotin, H. (2019). Automatic acoustic detection of birds through deep learning: The first Bird Audio Detection challenge. *Methods in Ecology and Evolution*, *10*(3), 368–380. https://doi.org/10.1111/2041-210x.13103

Tarburton, M. (2023). *Swiftsoftheworld*. https://www.swiftsoftheworld.info/Species/caudacutus.pdf

Tarburton, M. K. (2015). Now you see them...Finding the White-throated Needletail. Australian. *Australian Birdlife*, *4*(4), 30–33.

Threatened Species Scientific Committee. (2015). *Conservation Advice Geophaps scipta scipta (squatter pigeon southern)*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/64440-conservation-advice-31102015.pdf

Threatened Species Scientific Committee (TSSC). (2008). *Approved Conservation Advice for Digitaria porrecta (Finger Panic Grass)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf

Threatened Species Scientific Committee (TSSC). (2019, July 4). *Conservation Advice, Hirundapus caudacutus, White-throated Needletail*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/682-conservation-advice-04072019.pdf

TSSC. (2013a). *Commonwealth Listing Advice on Dichanthium queenslandicum (king blue-grass)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/5481-listing-advice.pdf

TSSC. (2013b). *Commonwealth Listing Advice on Digitaria porrecta (Finger Panic Grass)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf

URS Australia Pty Limited. (2013a). *Red Hill Mining Lease Flora Technical Report, prepared for BM Alliance Coal Operations Pty Ltd* (No. 42626730/01/C).

URS Australia Pty Limited. (2013b). *Red Hill Mining Lease Terrestrial Fauna Technical Report, prepared for BM Alliance Coal Operations Pty Ltd* (No. 42626730/01/02).

Van Dyck, S., & Strahan, R. (Eds.). (2008). *The Mammals of Australia* (3rd ed.). New Holland Publishers.

Weston, N., Goosem, M., Marsh, H., Cohen, M., & Wilson, R. (2011). Using canopy bridges to link habitat for arboreal mammals: Successful trials in the Wet Tropics of Queensland. *Australian Mammalogy*, *33*(1), 93–105.

Wilson, P. R., & Taylor, P. M. (2012). *Land zones of Queensland*. Queensland Herbarium, Department of Science, Information Technology, Innovation and the Arts.

Wolf, I., & Croft, D. (2014). Impacts of tourism hotspots on vegetation communities show a higher potential for self-propagation along roads than hiking trails. *Journal of Environmental Management*, *143*, 173–185.

Youngentob, K., Marsh, K., & Skewes, J. (2021). *A review of koala habitat assessment criteria and methods*. Department of Agriculture, Water and the Environment.

Youngentob, K. N., Marsh, K. F., & Skewes, J. (2021). *A review of koala habitat assessment criteria and methods*. Department of Agriculture, Water and the Environment. https://www.agriculture.gov.au/sites/default/files/documents/review-koala-habitat-assessment-criteria-and-methods-2021.pdf

Appendix A Desktop search results

Australian Government

Department of Climate Change, Energy, the Environment and Water

EPBC Act Protected Matters Report

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

Report created: 12-Jun-2025

Summary

Details

- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat

Acknowledgements

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	4
Listed Threatened Species:	35
Listed Migratory Species:	10

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:	16
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:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	1
EPBC Act Referrals:	27
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

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

Community Name	Threatened Category	Presence Text	Buffer Status
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Community known to occur within area	In feature area
Natural Grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered	Community likely to occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community likely to occur within area	In feature area
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area	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			
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Gallinago hardwickii](#) Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Geophaps scripta scripta](#) Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Grantiella picta](#) Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In buffer area only
[Neochmia ruficauda ruficauda](#) Star Finch (eastern), Star Finch (southern) [26027]	Endangered	Species or species habitat likely to occur within area	In feature area
[Poephila cincta cincta](#) Southern Black-throated Finch [64447]	Endangered	Species or species habitat may occur within area	In feature area
[Rostratula australis](#) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
[Tyto novaehollandiae kimberli](#) Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
[Dasyurus hallucatus](#) Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
[Macroderma gigas](#) Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
[Nyctophilus corbeni](#) Corben's Long-eared Bat, South-eastern Long-eared Bat [83395]	Vulnerable	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Petauroides minor			
Greater Glider (northern), Greater Glider (north-eastern Queensland) [92008]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat known to occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat known to occur within area	In feature area
PLANT			
Bertya opponens			
[13792]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Denhamia megacarpa			
Large-fruited Denhamia [91342]	Endangered	Species or species habitat may occur within area	In buffer area only
Dichanthium queenslandicum			
King Blue-grass [5481]	Endangered	Species or species habitat known to occur within area	In feature area
Dichanthium setosum			
bluegrass [14159]	Vulnerable	Species or species habitat known to occur within area	In buffer area only
Eucalyptus raveretiana			
Black Ironbox [16344]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Omphalea celata			
[64586]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Polianthion minutiflorum			
[82772]	Vulnerable	Species or species habitat may occur within area	In feature area
Ptilotus uncinellus			
[91385]	Endangered	Species or species habitat known to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Solanum graniticum Granite Nightshade [84819]	Endangered	Species or species habitat may occur within area	In buffer area only
REPTILE			
Denisonia maculata Ornamental Snake [1193]	Vulnerable	Species or species habitat known to occur within area	In feature area
Egernia rugosa Yakka Skink [1420]	Vulnerable	Species or species habitat may occur within area	In feature area
Elseya albagula Southern Snapping Turtle, White-throated Snapping Turtle [81648]	Critically Endangered	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Lerista allanae Allan's Lerista, Retro Slider [1378]	Endangered	Species or species habitat may occur within area	In buffer area only
Lerista vittata Mount Cooper Striped Skink, Mount Cooper Striped Lerista [1308]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Rheodytes leukops Fitzroy River Turtle, Fitzroy Tortoise, Fitzroy Turtle, White-eyed River Diver [1761]	Endangered	Species or species habitat likely to occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cuculus optatus			
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Motacilla flava			
Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos			
Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata			
Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea			
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos			
Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus			
Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat may occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
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 known to occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat may occur within area overfly marine area	In buffer area only
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only

Extra Information

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

EPBC Act Referrals				[Resource Information]
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Galilee Infrastructure Corridor Project	2012/6489		Post-Approval	In buffer area only
Moranbah North Extension Project, Moranbah, Qld	2018/8338		Post-Approval	In buffer area only
Queensland Pacific Metals (QPM) Energy Project, high-pressure gas pipeline and gas compression	2022/09329		Post-Approval	In feature area

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
facility				
Controlled action				
Alpha Coal Project - Mine and Rail Development	2008/4648	Controlled Action	Post-Approval	In feature area
Arrow Bowen Pipeline (CSG), QLD	2012/6459	Controlled Action	Post-Approval	In buffer area only
BHP Billiton Goonyella to Abbot Point rail project	2011/6082	Controlled Action	Completed	In buffer area only
Bowen Gas Project	2012/6377	Controlled Action	Post-Approval	In feature area
Central Queensland Integrated Rail Project	2012/6321	Controlled Action	Completed	In buffer area only
Central Queensland Integrated Rail Project	2012/6322	Controlled Action	Completed	In buffer area only
Develop the Byerwen Coal Mine	2010/5778	Controlled Action	Post-Approval	In buffer area only
Eaglefield Expansion Project - new open-cut coal mine pit	2009/4682	Controlled Action	Completed	In feature area
Ellensfield Underground Coal Mine	2007/3643	Controlled Action	Post-Approval	In buffer area only
Establishment of Galilee Coal Mine and Associated Infrastructure	2009/4737	Controlled Action	Post-Approval	In feature area
Gas pipeline	2002/728	Controlled Action	Post-Approval	In buffer area only
Goonyella Riverside Coal Mine Expansion	2005/2248	Controlled Action	Completed	In buffer area only
Goonyella Riverside Mine to South Walker Creek Mine Dragline Move	2016/7788	Controlled Action	Completed	In buffer area only
New Lenton Coal Project	2012/6303	Controlled Action	Completed	In buffer area only
New Lenton Coal Project, 65kms north of Moranbah, QLD	2020/8778	Controlled Action	Assessment Approach	In buffer area only
Red Hill Mining Project,20kms north of Moranbah, Qld	2013/6865	Controlled Action	Post-Approval	In buffer area only
Wollombi Open Cut Coal Mine (Suttor Creek ML4761 Extension)	2005/2015	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Broadlea North Coal Project open cut mine and associated	2005/2179	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
infrastructure				
Construction of Burdekin Pipeline	2005/2209	Not Controlled Action	Completed	In feature area
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Mining exploration on Wards Well West Project, Bowen Basin, Qld	2014/7256	Not Controlled Action	Completed	In feature area
North Goonyella Coal Co-disposal Facility	2008/4570	Not Controlled Action	Completed	In buffer area only
Rail link in central Qld	2005/2170	Not Controlled Action	Completed	In feature area
Not controlled action (particular manner)				
BHP Mitsui Coal???s Wards Well Exploration Program, QLD	2011/5820	Not Controlled Action (Particular Manner)	Post-Approval	In feature area

Caveat

1 PURPOSE

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

The report contains the mapped locations of:

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

2 DISCLAIMER

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

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

3 DATA SOURCES

Threatened ecological communities

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

Threatened, migratory and marine species

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

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

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

4 LIMITATIONS

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

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

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

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

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

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

Acknowledgements

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

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

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

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

© Commonwealth of Australia

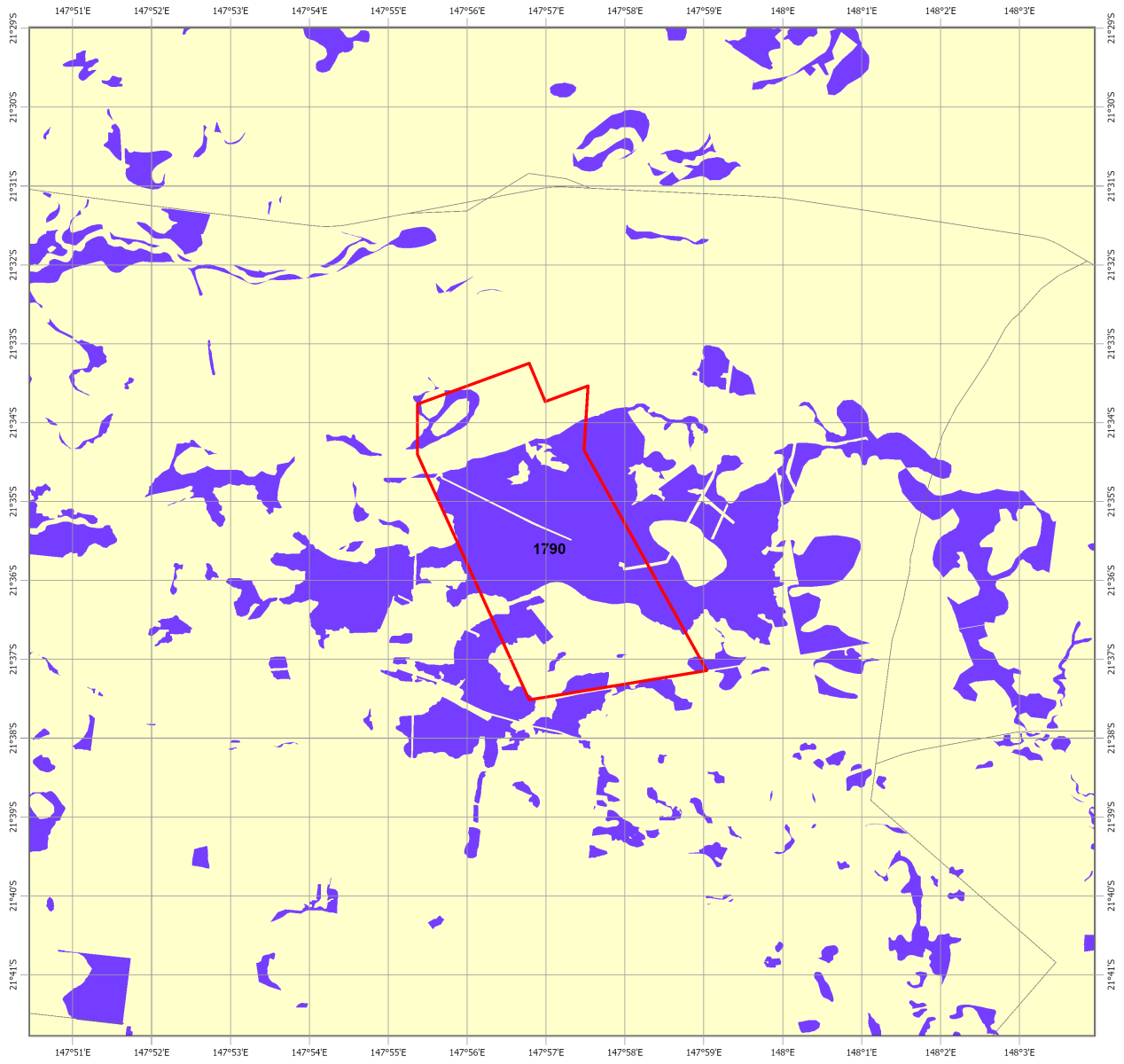
Department of Climate Change, Energy, the Environment and Water
GPO Box 3090
Canberra ACT 2601 Australia
+61 2 6274 1111

WildNet Results

WN Taxon ID	Kingdom	Class	Family	Scientific name	Common name	NCA status	EPBC status	Superseded	Conservation significant	Establishment	Sensitive species	Area survey lists	Sighting records	Specimen records	Sighting summary
1971	Animalia	Aves	Apodidae	Hirundapus caudacutus	white-throated needletail	V	V	FALSE	TRUE	QAI			1	0	1
1785	Animalia	Aves	Columbidae	Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	V	FALSE	TRUE	QA			10	0	10
1825	Animalia	Aves	Threskiornithidae	Plegadis falcinellus	glossy ibis	SL		FALSE	TRUE	QAI			1	0	1
2455	Animalia	Mammalia	Pseudocheiridae	Petauroides volans volans	southern greater glider	E	E	FALSE	TRUE	QA			13	0	13
838	Animalia	Mammalia	Tachyglossidae	Tachyglossus aculeatus	short-beaked echidna	SL		FALSE	TRUE	QAI			10	0	10
483	Animalia	Reptilia	Elapidae	Denisonia maculata	ornamental snake	V	V	FALSE	TRUE	Q			70	0	70
40980	Plantae	Equisetopsida	Amaranthaceae	Ptilotus uncinellus		E	E	FALSE	TRUE	NTQ	FALSE		1	1	1
8936	Plantae	Equisetopsida	Apocynaceae	Cerbera dumicola		NT		FALSE	TRUE	NTQ	FALSE		1	1	1
33856	Plantae	Equisetopsida	Campanulaceae	Lobelia concolor		SL		FALSE	TRUE	NTQ	FALSE		1	1	1
26376	Plantae	Equisetopsida	Campanulaceae	Lobelia leucotos		SL		FALSE	TRUE	NTQ	FALSE		1	1	1
15918	Plantae	Equisetopsida	Campanulaceae	Wahlenbergia gracilis	sprawling bluebell	SL		FALSE	TRUE	NTQ	FALSE		1	1	1
11323	Plantae	Equisetopsida	Euphorbiaceae	Bertya opponens		C	V	FALSE	TRUE	NTQ	FALSE		1	1	1
11064	Plantae	Equisetopsida	Poaceae	Dichanthium queenslandicum		V	E	FALSE	TRUE	NTQ	FALSE		26	26	26
14599	Plantae	Equisetopsida	Poaceae	Digitaria porrecta		NT		FALSE	TRUE	NTQ	FALSE		4	4	4

Centred on tenure: ML: 1790

Map requested: 24/06/2025 09:05:35



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Seaward Side of Highest Astronomical Tide
- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Mining Lease (ML)

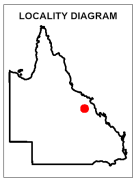
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

This product is displayed in GDA2020

Information presented on this product is distributed by the Queensland Government as an information source only. While every care is taken to ensure the accuracy of this data, The State of Queensland makes no statements, representations or warranties about the accuracy, reliability, completeness or suitability of any information contained in this product.

The State of Queensland disclaims all responsibility for information contained in this product and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

NOTE TO USER: Themes presented in this map are indicative only. Field survey may be required to verify the 'true' spatial extent and value. Not all environmentally sensitive areas are presented in this map. A user should refer to the particular circumstances relevant to their situation to assess the 'completeness' of themes provided.

The user should note that some boundaries and indicated values are ambient and may change over time (e.g. regional ecosystem boundaries and conservation status, watercourse mapping etc.).

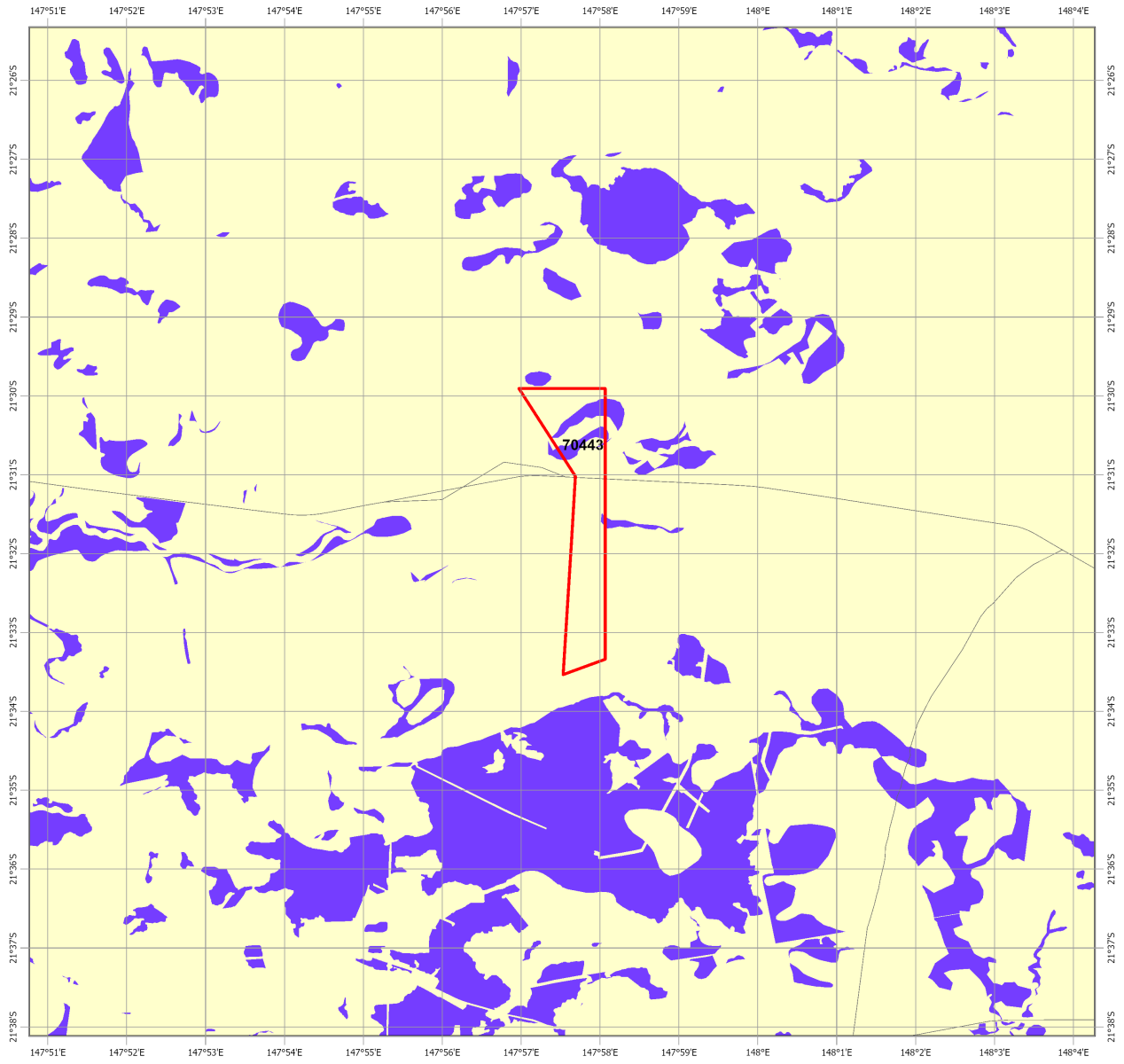
The user should be aware that due to multiple overlapping themes/ layers present, some themes/layers may be obscured by others. Ordering in the Legend does not accurately reflect the order by which themes/layers are displayed.

© The State of Queensland, 2025

Queensland Government

Centred on tenure: ML: 70443

Map requested: 24/06/2025 09:06:43



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

CATEGORY A

- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B

- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Seaward Side of Highest Astronomical Tide
- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Mining Lease (ML)

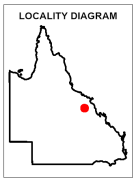
CATEGORY C

- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS

- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

This product is displayed in GDA2020

Information presented on this product is distributed by the Queensland Government as an information source only. While every care is taken to ensure the accuracy of this data, The State of Queensland makes no statements, representations or warranties about the accuracy, reliability, completeness or suitability of any information contained in this product.

The State of Queensland disclaims all responsibility for information contained in this product and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

NOTE TO USER: Themes presented in this map are indicative only. Field survey may be required to verify the 'true' spatial extent and value. Not all environmentally sensitive areas are presented in this map. A user should refer to the particular circumstances relevant to their situation to assess the 'completeness' of themes provided.

The user should note that some boundaries and indicated values are ambient and may change over time (e.g. regional ecosystem boundaries and conservation status, watercourse mapping etc.).

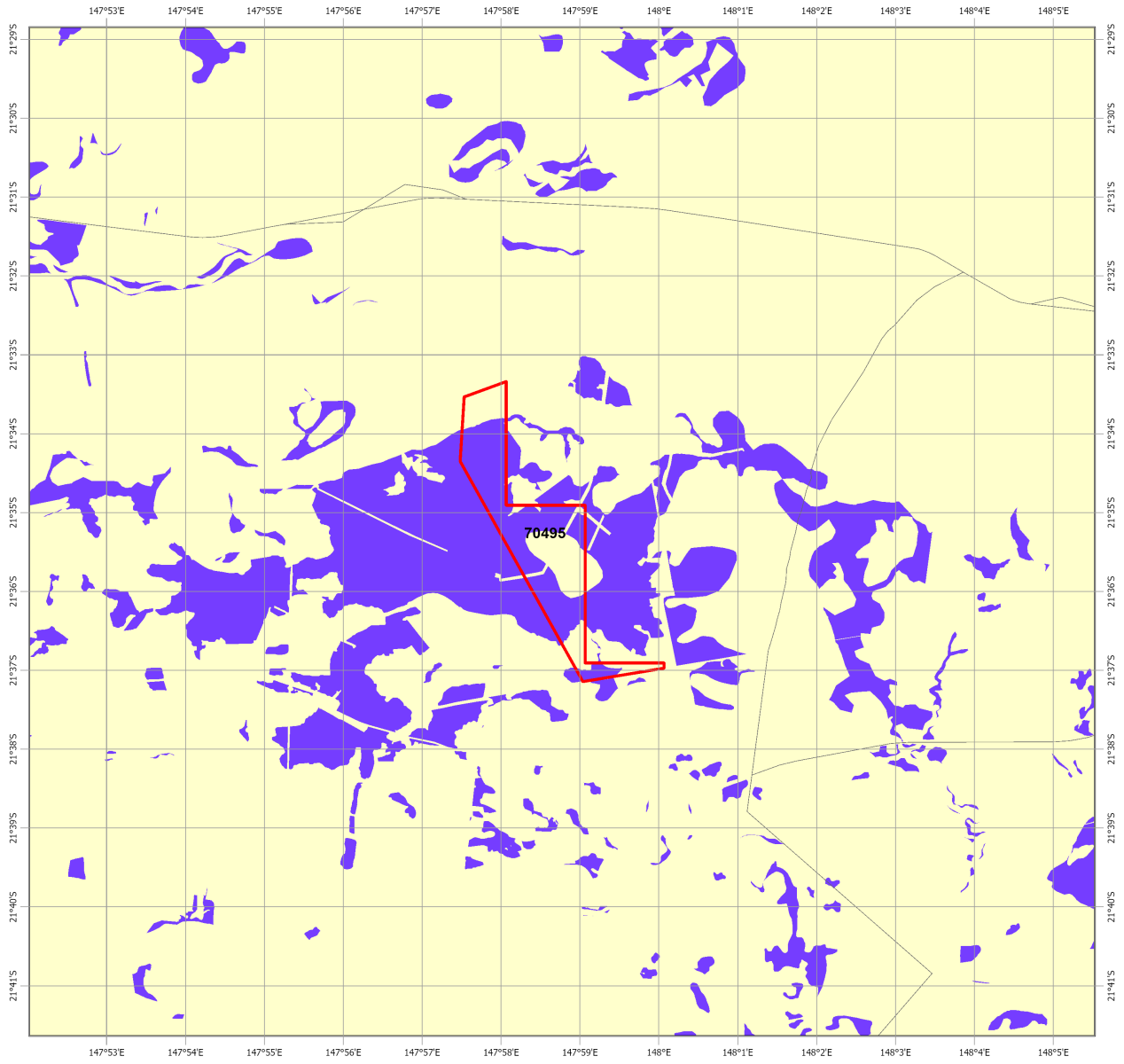
The user should be aware that due to multiple overlapping themes/ layers present, some themes/layers may be obscured by others. Ordering in the Legend does not accurately reflect the order by which themes/layers are displayed.

© The State of Queensland, 2025

Queensland Government

Centred on tenure: ML: 70495

Map requested: 24/06/2025 09:06:47



ENVIRONMENTALLY SENSITIVE AREAS - Mining Activities

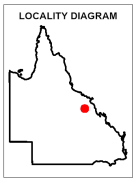
CATEGORY A
- National Parks
- Conservation Parks
- Forest Reserves
- Special Wildlife Reserve
- Wet Tropics World Heritage Area
- Great Barrier Reef Region
- Marine Parks other than General Use Zones

CATEGORY B
- Queensland Heritage Register Places
- Ramsar Sites
- Cultural Heritage Registered Areas and DLA's other than Stanbroke
- Special Forestry Areas
- Seaward Side of Highest Astronomical Tide
- Fish Habitat Areas
- Coordinated Conservation Areas
- Endangered Regional Ecosystems - regrowth and remnant (Biodiversity Status)
- General Use Zones of Marine Parks
- Marine Plants
- Selected Mining Lease (ML)

CATEGORY C
- Nature Refuges
- Resources Reserve
- State Forests
- Timber Reserves
- River Improvement Areas
- Stanbroke DLA
- Coastal Management District
- Dams and Weirs

OTHERS
- Towns
- Roads
- Repealed Wild River Nominated Waterways
- Repealed Wild River Preservation Areas
- Repealed Wild River High Preservation Areas
- Mahogany Glider Habitat
- Directory of Important Wetlands
- Queensland

LOCALITY DIAGRAM



N

0 1,000 2,000 3,000 4,000 5,000 m

This product is displayed in GDA2020

Information presented on this product is distributed by the Queensland Government as an information source only. While every care is taken to ensure the accuracy of this data, The State of Queensland makes no statements, representations or warranties about the accuracy, reliability, completeness or suitability of any information contained in this product.

The State of Queensland disclaims all responsibility for information contained in this product and all liability (including without limitation, liability in negligence) for all expenses, losses, damages and costs you may incur as a result of the information being inaccurate or incomplete in any way for any reason.

NOTE TO USER: Themes presented in this map are indicative only. Field survey may be required to verify the 'true' spatial extent and value. Not all environmentally sensitive areas are presented in this map. A user should refer to the particular circumstances relevant to their situation to assess the 'completeness' of themes provided.

The user should note that some boundaries and indicated values are ambient and may change over time (e.g. regional ecosystem boundaries and conservation status, watercourse mapping etc.).

The user should be aware that due to multiple overlapping themes/ layers present, some themes/layers may be obscured by others. Ordering in the Legend does not accurately reflect the order by which themes/layers are displayed.

© The State of Queensland, 2025

Queensland Government



Vegetation management report

For Lot: 411 Plan: SP285383
25/06/2025

nrmmrrd.qld.gov.au

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

© State of Queensland, (2025)

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons - Attribution 4.0 International (CC BY) licence.

Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.



You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Note: Some content in this publication may have different licence terms as indicated.

For more information on this licence, visit https://creativecommons.org/licenses/by/4.0/

The information contained herein is subject to change without notice. The Queensland Government shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.

Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details 6
1.1 Tenure and title area 6
1.2 Property location 6
2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development) 7
2.1 Exempt clearing work 7
2.2 Accepted development vegetation clearing codes 7
2.3 Area management plans 8
2.4 Development approvals 8
2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development 8
3. Vegetation management framework for Lot: 411 Plan: SP285383 9
3.1 Vegetation categories 9
3.2 Regional ecosystems 11
3.3 Watercourses 12
3.4 Wetlands 12
3.5 Essential habitat 12
3.6 Area Management Plan(s) 13
3.7 Coastal or non-coastal 13
3.8 Agricultural Land Class A or B 13
4. Vegetation management framework maps 15
4.1 Regulated vegetation management map 16
4.2 Vegetation management supporting map 17
4.3 Coastal/non-coastal map 18
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture 19
5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI)) 20
5.1 Clearing in high risk areas on the flora survey trigger map 20
5.2 Clearing outside high risk areas on the flora survey trigger map 20
5.3 Exemptions 20
5.4 Contact information for DETSI 20
5.5 Protected plants flora survey trigger map 21
6. Koala protection framework (administered by DETSI) 23
6.1 Koala mapping 23
6.2 Koala habitat planning controls 24
6.3 Koala Conservation Plan clearing requirements 25
6.4 Contact information for DETSI 25
7. Koala protection framework details for Lot: 411 Plan: SP285383 26
7.1 Koala districts 26
7.2 Koala priority area, koala habitat area and identified koala broad-hectare map 26
7.3 Koala habitat regional ecosystems for core koala habitat areas 27
8. Other relevant legislation contacts list 28

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 411 Plan: SP285383 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
A	CP846331	Easement	341,200
B	GV73	Easement	84,360
C	GV73	Easement	0
D	GV73	Easement	0
411	SP285383	Freehold	69,920,000
A	GV43	Easement	0
C	GV44	Easement	207,650

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 411 Plan: SP285383 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 411 Plan: SP285383, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Isaac Regional

Catchment(s)
Fitzroy
Burdekin

Bioregion(s)	Subregion(s)
Brigalow Belt	Northern Bowen Basin

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 411 Plan: SP285383

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	2,687.94
Category C	305.49
Category R	82.39
Category X	3,925.96

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

The following Property Map of Assessable Vegetation (PMAVs) may be present on this property.
Reference number:
2009/000987

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.3.1	Endangered	B	57.88	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.1	Endangered	R	10.10	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.2	Of concern	B	2.85	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.25	Least concern	B	95.44	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.25	Least concern	C	5.98	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.25	Least concern	R	5.98	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.4	Of concern	B	1.55	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Sparse
11.4.8	Endangered	B	84.60	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.8	Endangered	C	27.91	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.8	Endangered	R	12.03	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.9	Endangered	B	152.87	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.4.9	Endangered	C	46.51	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.4.9	Endangered	R	34.86	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.5.15	Least concern	B	11.18	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.15	Least concern	C	0.42	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense

11.5.3	Least concern	B	243.64	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	C	22.56	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	R	7.26	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.8.11	Of concern	B	1,353.34	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.11	Of concern	C	97.08	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.11	Of concern	R	4.11	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.13	Endangered	B	23.37	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	C	56.63	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	R	0.62	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.15	Endangered	B	45.12	Eucalyptus brownii or Eucalyptus populnea woodland on Cainozoic igneous rocks	Sparse
11.8.5	Least concern	B	604.62	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.8.5	Least concern	C	41.60	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.8.5	Least concern	R	0.51	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.9.1	Endangered	B	11.48	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Mid-dense
11.9.1	Endangered	C	6.81	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Mid-dense
11.9.1	Endangered	R	6.94	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Mid-dense
non-rem	None	X	3,925.96	None	None

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
483	Denisonia maculata	ornamental snake	V	Riparian woodland/open forest and shrub/woodland including Brigalow Acacia harpophylla; into drier habitats in summer.	100-450m.	Cracking clay with gilgai/soil crack microrelief and sandy loam substrates.	Near freshwater waterholes/creeks and low lying poorly drained areas that are frequently inundated by freshwater.
1785	Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	Dry eucalypt woodland (including poplar box, spotted gum, yellow box, acacia and callitris), with sparse short grass, often on sandy areas near to permanent water; grassy eucalypt woodlands. Nest on ground near or under grass tussock, log or low bush.			Gravelly ridges, traprock and river flats.
11064	Dichanthium queenslandicum		V	tussock grassland occasional with scattered trees of Corymbia spp. or Eucalyptus spp. or Acacia spp.; woodland of Corymbia erythrophloia, or Eucalyptus orgadophila, or Eucalyptus melanophloia with grassy understorey.	100 to 900 m	black cracking clay	flat terrain, gentle undulatling plain

Label	Regional Ecosystem (mandatory unless otherwise specified)
483	10.3.2, 10.3.3, 10.3.4, 10.3.7, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.27, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.4, 10.4.5, 10.4.6, 10.4.7, 10.4.8, 10.5.5, 10.9.1. 10.9.6. 10.9.7, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.9, 11.3.10, 11.3.12, 11.3.15, 11.3.21, 11.3.23, 11.3.24, 11.3.25, 11.3.27, 11.3.28, 11.3.31, 11.3.34, 11.3.37, 11.3.38, 11.3.40, 11.4.2, 11.4.3, 11.4.4, 11.4.6, 11.4.7, 11.4.8, 11.4.9, 11.4.11, 11.5.2, 11.5.3, 11.5.16, 11.8.11, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.7, 11.9.11, 11.9.12, 11.9.14, 11.11.15, 11.12.6
1785	8.2.1, 8.2.7, 8.2.8, 8.2.12, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.13, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.9.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.6, 8.12.7, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.9, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.18, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.23, 9.4.1, 9.4.2, 9.4.3, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.16, 9.7.1, 9.7.2, 9.7.3, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.4, 9.8.5, 9.8.6, 9.8.9, 9.8.10, 9.8.11, 9.10.1, 9.10.3, 9.10.6, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.11, 9.11.12, 9.11.13, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.23, 9.11.26, 9.11.28, 9.11.29, 9.11.31, 9.11.32, 9.12.1, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.26, 9.12.28, 9.12.30, 9.12.31, 9.12.33, 9.12.35, 9.12.37, 9.12.39, 10.3.1, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.19, 10.3.20, 10.3.22, 10.3.27, 10.3.28, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.5, 10.4.8, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.7, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.7.13, 10.9.1, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.23, 11.3.25, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.8, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.4, 11.7.6, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.2, 11.9.3, 11.9.7, 11.9.9, 11.9.14, 11.10.1, 11.10.4, 11.10.6, 11.10.7, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.15, 11.11.16, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.20, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.2.11, 12.3.3, 12.3.6, 12.3.10, 12.3.12, 12.3.14, 12.3.18, 12.3.19, 12.5.1, 12.5.2, 12.5.4, 12.5.5, 12.5.7, 12.5.8, 12.5.11, 12.5.12, 12.7.1, 12.7.2, 12.8.14, 12.8.16, 12.8.17, 12.8.19, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.12, 12.9-10.13, 12.9-10.25, 12.9-10.26, 12.9-10.28, 12.11.5, 12.11.7, 12.11.8, 12.11.14, 12.11.15, 12.11.20, 12.11.21, 12.11.22, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.7, 12.12.8, 12.12.9, 12.12.12, 12.12.14, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.27, 13.3.1, 13.3.4, 13.3.7, 13.11.1, 13.11.3, 13.11.4, 13.11.8, 13.12.2, 13.12.3, 13.12.5, 13.12.8, 13.12.9, 13.12.10.
11064	9.8.13, 11.3.4, 11.3.21, 11.4.4, 11.8.5, 11.8.11, 11.9.3

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

Class A (with urban areas masked as per SPP): 3032.95 ha

Class B (with urban areas masked as per SPP): 11.53 ha

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 411 Plan: SP285383.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request

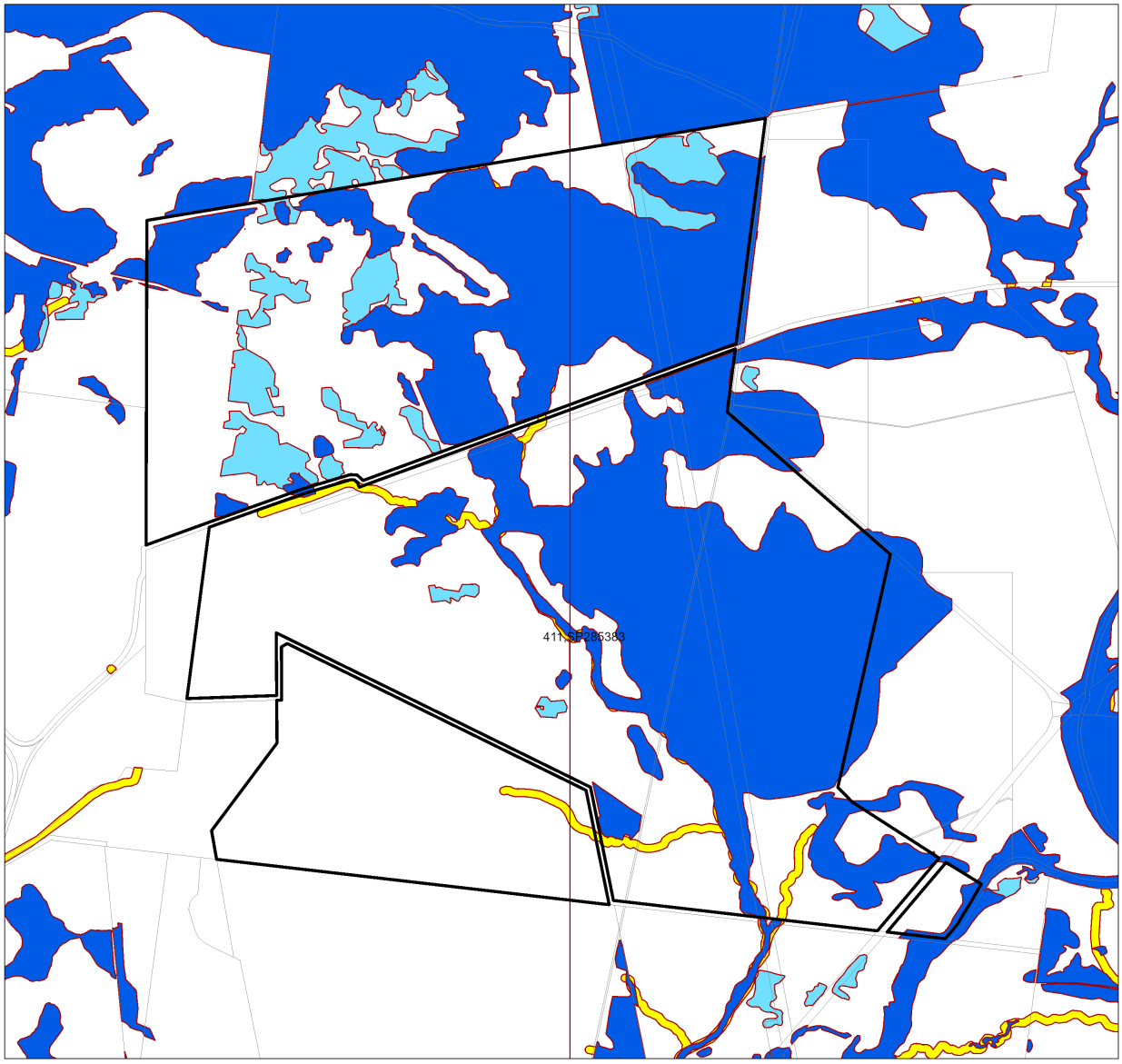
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map

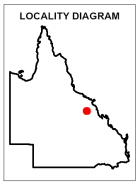


Regulated Vegetation Management Map

Queensland Government

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

LOCALITY DIAGRAM



N

0 770 1,540 2,310 3,080 3,850 m

This product is displayed in:
GDA2020

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

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

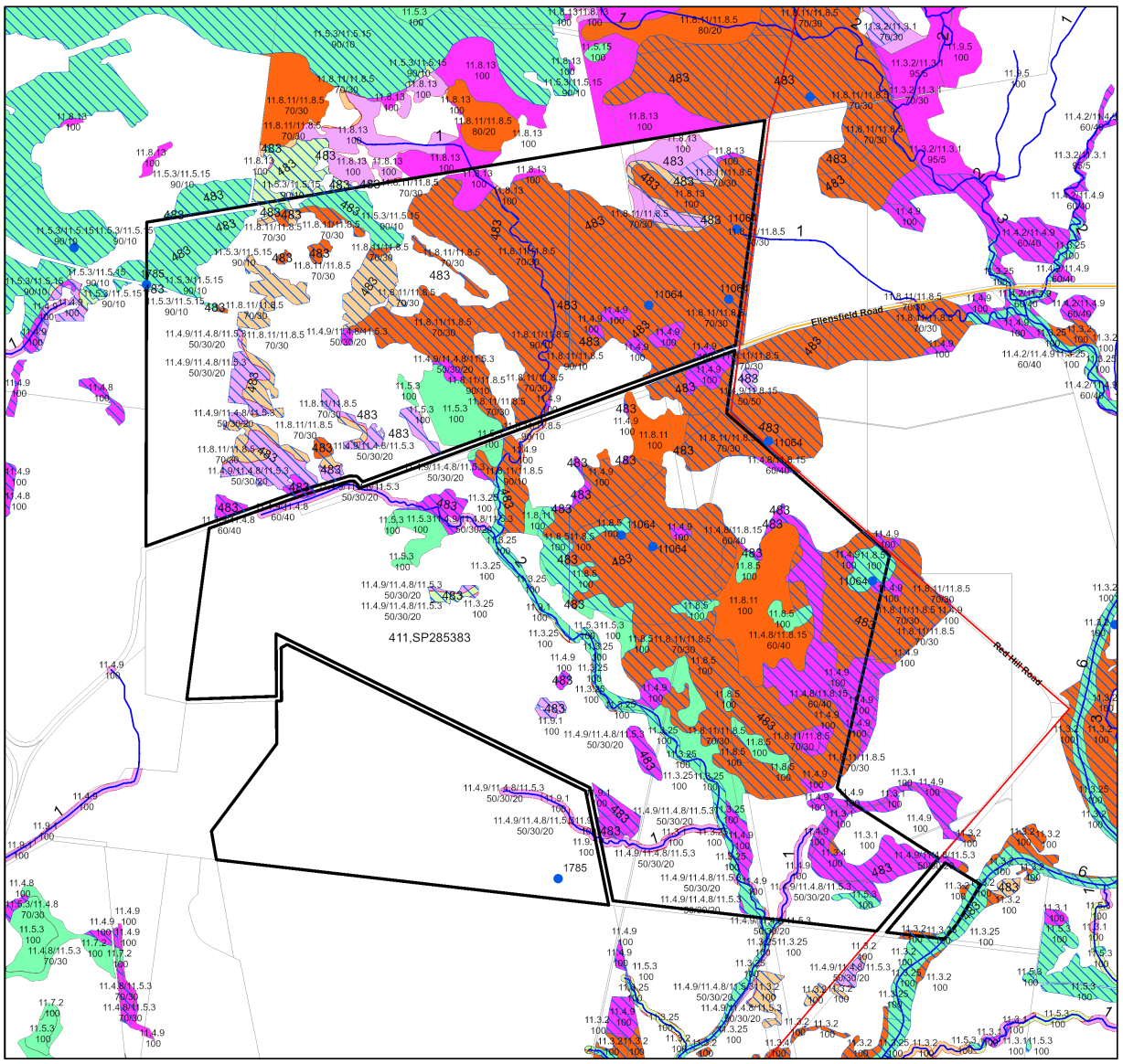
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

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

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.2 Vegetation management supporting map

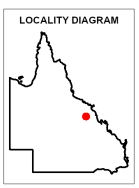


Vegetation Management Supporting Map

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

Queensland Government

LOCALITY DIAGRAM



N

0 550 1,100 1,650 2,200 2,750 m

This product is displayed in: GDA2020

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

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

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

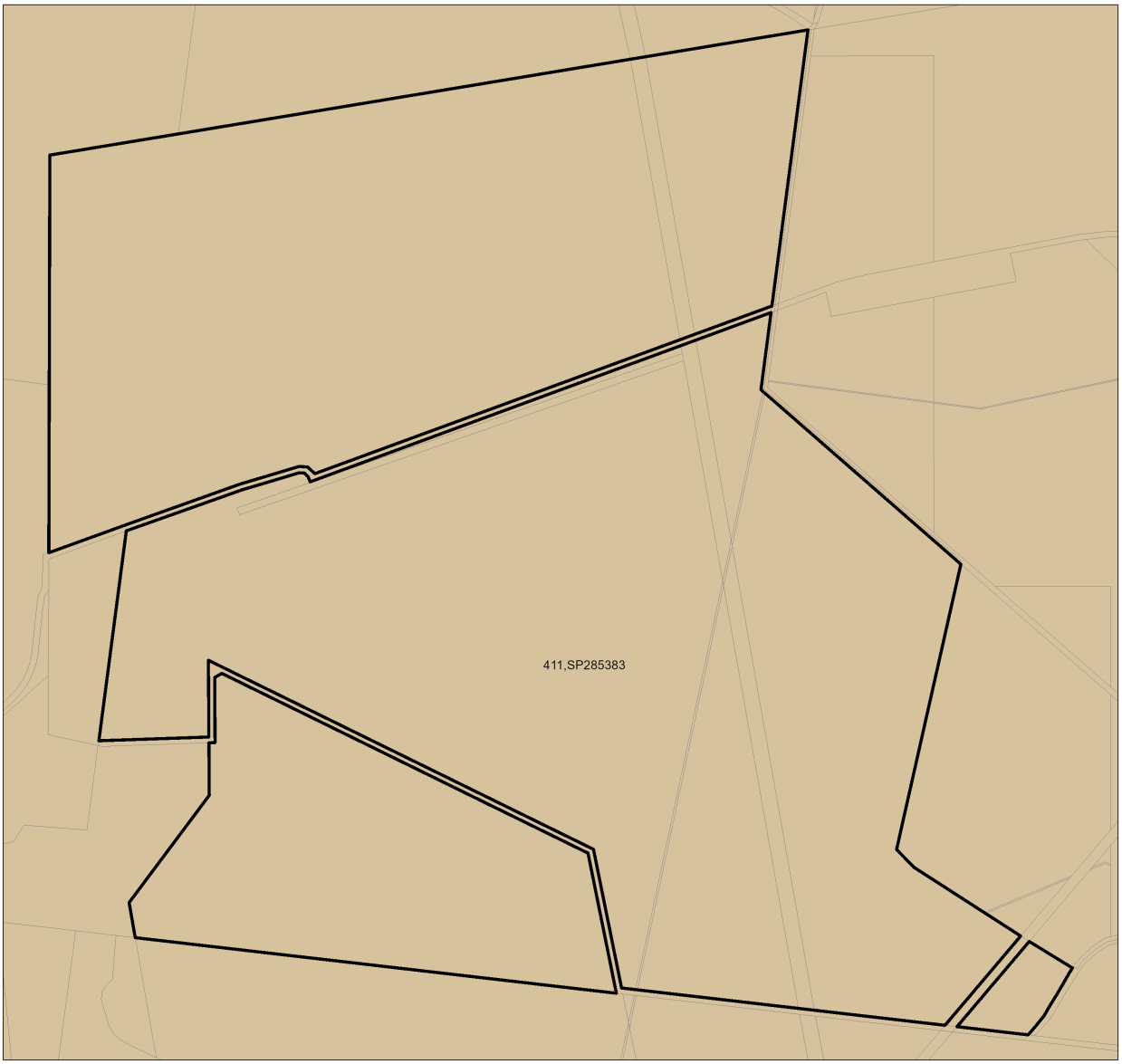
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

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

Land parcel boundaries are provided as locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

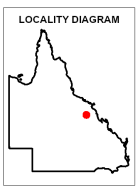
4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 630 1,260 1,890 2,520 3,150 m

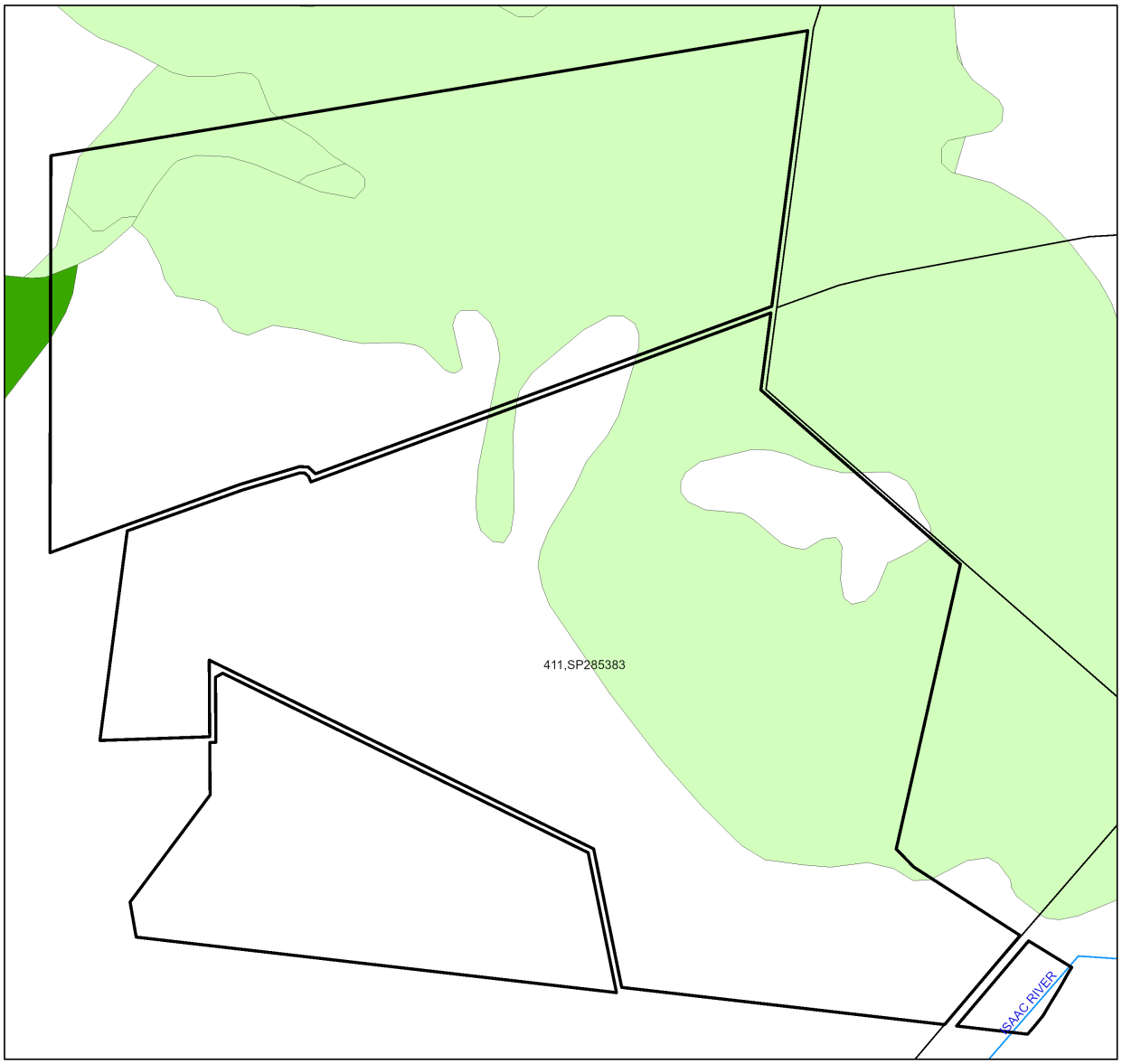
This product is displayed in:
GDA2020

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

Land parcel boundaries shown are provided as a locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture

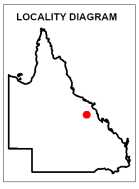


Agricultural Land Class A or B
as per State Planning Policy: State Interest for Agriculture

- Towns
- Rivers and creeks
- Freeways / motorways; Highways
- Secondary roads; Streets

Agricultural land class A or B

- A
- B
- Not class A or B
- Selected Lot and Plan



N

0 640 1280 1920 2560 3200 m

This product is displayed in:
GDA2020

Disclaimer
Whilst every care is taken to ensure the accuracy of these details all data custodians and/or the State of Queensland 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 to which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland, 2025

5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 420 840 1,260 1,680 2,100 m

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@des.qld.gov.au

Disclaimer: While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland (Department of the Environment, Tourism, Science and Innovation), 2025

6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

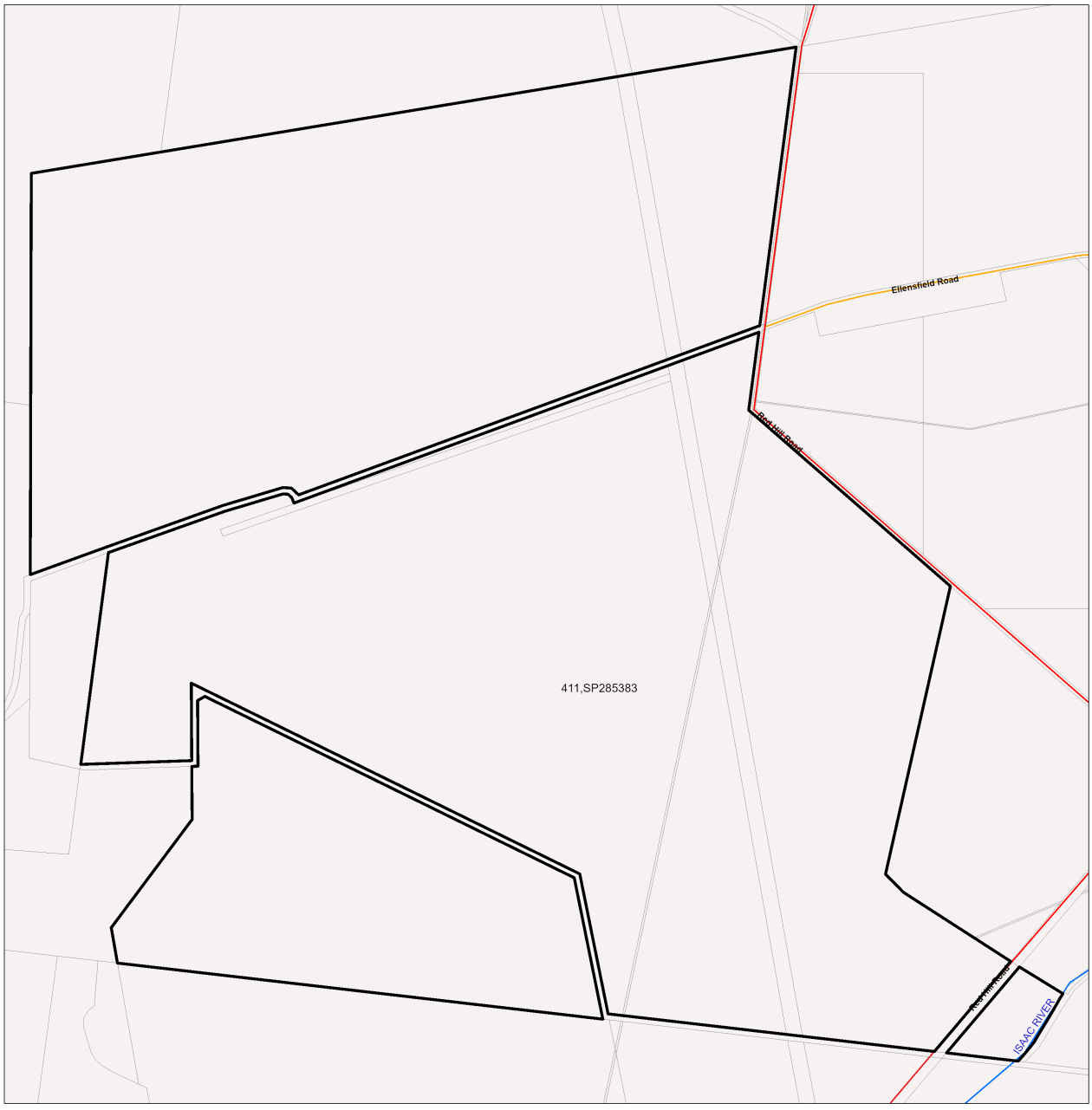
For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@detsi.qld.gov.au
Visit https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 411 Plan: SP285383

7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



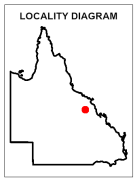
Koala priority area, koala habitat area and identified koala broad-hectare area map

- Koala habitat area (core)
- Koala habitat area (locally refined)
- Koala priority area
- Identified koala broad-hectare area
- Cadastral Boundaries
- Towns
- Major rivers/creeks
- Highway
- Connector
- Street/Local Road
- Queensland
- Selected Lot and Plan

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

© The State of Queensland, 2025

LOCALITY DIAGRAM



N

0 580 1,160 1,740 2,320 2,900 m

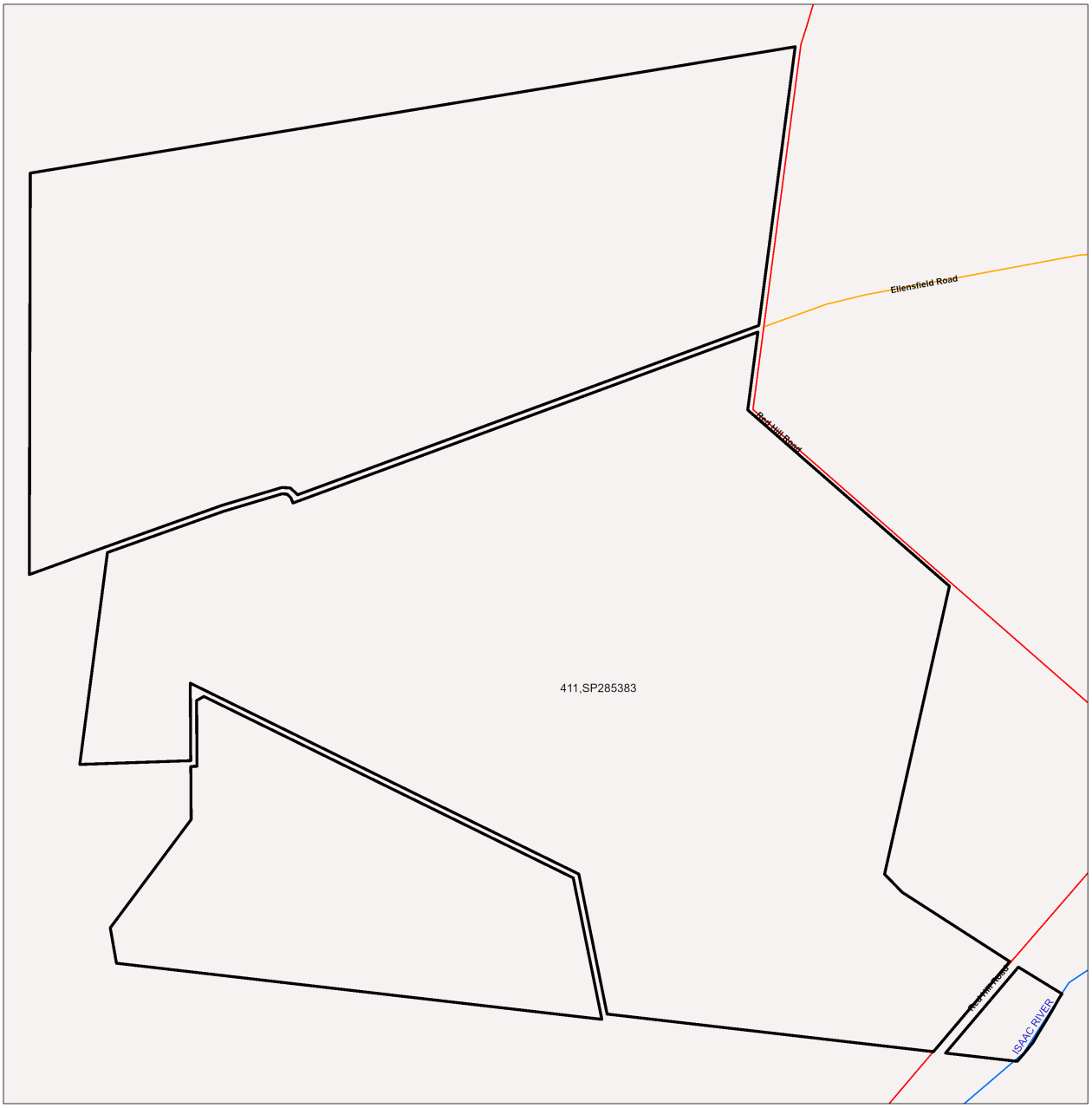
This product is displayed in GDA2020

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason. Due to varying sources of data, spatial locations may not coincide when overlaid.

The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at: https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping/. The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 580 1,160 1,740 2,320 2,900 m

This product is displayed in GDA2020

DISCLAIMER:

While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
Due to varying sources of data, spatial locations may not coincide when overlaid.

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.

© The State of Queensland, 2025

8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	*Water Act 2000*	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	*Soil Conservation Act 1986*	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrrd.qld.gov.au
Fire Permits	*Fire and Emergency Services Act 1990*	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	*Nature Conservation Act 1992* *Planning Act 2016*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	*Nature Conservation Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959*	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 803 772 www.dcceew.gov.au
Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act 1993*	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	*Transport Infrastructure Act 1994*	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Your relevant local government office	Local Government Contact Directory



Vegetation management report

For Lot: 11 Plan: SP262530
25/06/2025

nrmmrrd.qld.gov.au

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

© State of Queensland, (2025)

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons - Attribution 4.0 International (CC BY) licence.

Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.



You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Note: Some content in this publication may have different licence terms as indicated.

For more information on this licence, visit https://creativecommons.org/licenses/by/4.0/

The information contained herein is subject to change without notice. The Queensland Government shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.

Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details 6
1.1 Tenure and title area 6
1.2 Property location 6
2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development) 7
2.1 Exempt clearing work 7
2.2 Accepted development vegetation clearing codes 7
2.3 Area management plans 8
2.4 Development approvals 8
2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development 8
3. Vegetation management framework for Lot: 11 Plan: SP262530 9
3.1 Vegetation categories 9
3.2 Regional ecosystems 11
3.3 Watercourses 11
3.4 Wetlands 11
3.5 Essential habitat 12
3.6 Area Management Plan(s) 13
3.7 Coastal or non-coastal 13
3.8 Agricultural Land Class A or B 13
4. Vegetation management framework maps 14
4.1 Regulated vegetation management map 15
4.2 Vegetation management supporting map 16
4.3 Coastal/non-coastal map 17
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture 18
5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI)) 19
5.1 Clearing in high risk areas on the flora survey trigger map 19
5.2 Clearing outside high risk areas on the flora survey trigger map 19
5.3 Exemptions 19
5.4 Contact information for DETSI 19
5.5 Protected plants flora survey trigger map 20
6. Koala protection framework (administered by DETSI) 22
6.1 Koala mapping 22
6.2 Koala habitat planning controls 23
6.3 Koala Conservation Plan clearing requirements 24
6.4 Contact information for DETSI 24
7. Koala protection framework details for Lot: 11 Plan: SP262530 25
7.1 Koala districts 25
7.2 Koala priority area, koala habitat area and identified koala broad-hectare map 25
7.3 Koala habitat regional ecosystems for core koala habitat areas 26
8. Other relevant legislation contacts list 27

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 11 Plan: SP262530 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
C	SP195380	Easement	268,600
J	SP102362	Easement	268,700
11	SP262530	Freehold	58,270,000
F	SP175263	Easement	125,100
E	SP175262	Easement	326,200

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 11 Plan: SP262530 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 11 Plan: SP262530, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Isaac Regional

Catchment(s)
Fitzroy
Burdekin

Bioregion(s)	Subregion(s)
Brigalow Belt	Northern Bowen Basin

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 11 Plan: SP262530

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	1,645.90
Category C	24.35
Category R	43.03
Category X	4,114.33

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

The following Property Map of Assessable Vegetation (PMAVs) may be present on this property.
Reference number:
2009/000987

2008/005351

2021/000753

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.3.4	Of concern	B	29.70	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Sparse
11.3.4	Of concern	R	34.42	Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains	Sparse
11.4.11	Of concern	B	0.35	Dichanthium sericeum and Astrebla spp. grassland with patchy Acacia harpophylla or Eucalyptus coolabah on Cainozoic clay plains	Woody grassland
11.4.11	Of concern	R	0.23	Dichanthium sericeum and Astrebla spp. grassland with patchy Acacia harpophylla or Eucalyptus coolabah on Cainozoic clay plains	Woody grassland
11.4.8	Endangered	B	8.84	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.8	Endangered	R	0.07	Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	Sparse
11.4.9	Endangered	B	21.15	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.4.9	Endangered	C	13.62	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.4.9	Endangered	R	6.43	Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	Sparse
11.5.15	Least concern	B	152.37	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.15	Least concern	C	1.07	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.15	Least concern	R	0.14	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.3	Least concern	B	1,371.36	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse

11.5.3	Least concern	C	9.66	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	R	1.27	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.7.2	Least concern	R	less than 0.01	Acacia spp. woodland on Cainozoic lateritic duricrust. Scarp retreat zone	Sparse
11.8.11	Of concern	B	10.89	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.13	Endangered	B	37.26	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	C	less than 0.01	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	R	0.34	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.5	Least concern	B	3.59	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.9.1	Endangered	B	1.40	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Mid-dense
11.9.1	Endangered	R	0.13	Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	Mid-dense
11.9.9	Least concern	B	8.97	Eucalyptus crebra woodland on fine-grained sedimentary rocks	Sparse
non-rem	None	B	less than 0.01	None	None
non-rem	None	X	4,114.33	None	None

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
483	Denisonia maculata	ornamental snake	V	Riparian woodland/open forest and shrub/woodland including Brigalow Acacia harpophylla; into drier habitats in summer.	100-450m.	Cracking clay with gilgai/soil crack microrelief and sandy loam substrates.	Near freshwater waterholes/creeks and low lying poorly drained areas that are frequently inundated by freshwater.
1785	Geophaps scripta scripta	squatter pigeon (southern subspecies)	V	Dry eucalypt woodland (including poplar box, spotted gum, yellow box, acacia and callitris), with sparse short grass, often on sandy areas near to permanent water; grassy eucalypt woodlands. Nest on ground near or under grass tussock, log or low bush.			Gravelly ridges, traprock and river flats.

Label	Regional Ecosystem (mandatory unless otherwise specified)
483	10.3.2, 10.3.3, 10.3.4, 10.3.7, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.27, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.4, 10.4.5, 10.4.6, 10.4.7, 10.4.8, 10.5.5, 10.9.1. 10.9.6. 10.9.7, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.9, 11.3.10, 11.3.12, 11.3.15, 11.3.21, 11.3.23, 11.3.24, 11.3.25, 11.3.27, 11.3.28, 11.3.31, 11.3.34, 11.3.37, 11.3.38, 11.3.40, 11.4.2, 11.4.3, 11.4.4, 11.4.6, 11.4.7, 11.4.8, 11.4.9, 11.4.11, 11.5.2, 11.5.3, 11.5.16, 11.8.11, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.7, 11.9.11, 11.9.12, 11.9.14, 11.11.15, 11.12.6
1785	8.2.1, 8.2.7, 8.2.8, 8.2.12, 8.3.2, 8.3.3, 8.3.5, 8.3.6, 8.3.13, 8.5.2, 8.5.3, 8.5.5, 8.5.6, 8.9.1, 8.11.1, 8.11.3, 8.11.4, 8.11.5, 8.11.6, 8.11.8, 8.12.6, 8.12.7, 8.12.9, 8.12.12, 8.12.14, 8.12.20, 8.12.22, 8.12.23, 8.12.25, 9.3.1, 9.3.2, 9.3.3, 9.3.4, 9.3.5, 9.3.6, 9.3.7, 9.3.8, 9.3.9, 9.3.11, 9.3.13, 9.3.14, 9.3.15, 9.3.16, 9.3.17, 9.3.18, 9.3.19, 9.3.20, 9.3.21, 9.3.22, 9.3.23, 9.4.1, 9.4.2, 9.4.3, 9.5.3, 9.5.4, 9.5.5, 9.5.6, 9.5.7, 9.5.8, 9.5.9, 9.5.10, 9.5.11, 9.5.12, 9.5.16, 9.7.1, 9.7.2, 9.7.3, 9.7.5, 9.7.6, 9.8.1, 9.8.2, 9.8.4, 9.8.5, 9.8.6, 9.8.9, 9.8.10, 9.8.11, 9.10.1, 9.10.3, 9.10.6, 9.10.7, 9.10.8, 9.11.1, 9.11.2, 9.11.3, 9.11.4, 9.11.5, 9.11.7, 9.11.10, 9.11.11, 9.11.12, 9.11.13, 9.11.15, 9.11.16, 9.11.17, 9.11.18, 9.11.19, 9.11.23, 9.11.26, 9.11.28, 9.11.29, 9.11.31, 9.11.32, 9.12.1, 9.12.3, 9.12.4, 9.12.5, 9.12.6, 9.12.7, 9.12.10, 9.12.11, 9.12.12, 9.12.13, 9.12.16, 9.12.17, 9.12.18, 9.12.19, 9.12.20, 9.12.21, 9.12.22, 9.12.23, 9.12.24, 9.12.26, 9.12.28, 9.12.30, 9.12.31, 9.12.33, 9.12.35, 9.12.37, 9.12.39, 10.3.1, 10.3.2, 10.3.3, 10.3.4, 10.3.5, 10.3.6, 10.3.8, 10.3.9, 10.3.10, 10.3.11, 10.3.12, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.19, 10.3.20, 10.3.22, 10.3.27, 10.3.28, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.5, 10.4.8, 10.5.1, 10.5.2, 10.5.4, 10.5.5, 10.5.7, 10.5.8, 10.5.9, 10.5.10, 10.5.11, 10.5.12, 10.7.1, 10.7.2, 10.7.3, 10.7.4, 10.7.5, 10.7.7, 10.7.9, 10.7.10, 10.7.11, 10.7.12, 10.7.13, 10.9.1, 10.9.2, 10.9.3, 10.9.5, 10.10.1, 10.10.3, 10.10.4, 10.10.5, 10.10.7, 11.2.1, 11.2.5, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.7, 11.3.8, 11.3.9, 11.3.10, 11.3.12, 11.3.13, 11.3.14, 11.3.15, 11.3.16, 11.3.17, 11.3.18, 11.3.19, 11.3.23, 11.3.25, 11.3.27, 11.3.28, 11.3.29, 11.3.30, 11.3.35, 11.3.36, 11.3.37, 11.3.38, 11.3.39, 11.4.2, 11.4.3, 11.4.5, 11.4.8, 11.4.10, 11.4.12, 11.4.13, 11.5.1, 11.5.2, 11.5.3, 11.5.4, 11.5.5, 11.5.8, 11.5.9, 11.5.12, 11.5.13, 11.5.14, 11.5.17, 11.5.20, 11.5.21, 11.7.1, 11.7.2, 11.7.4, 11.7.6, 11.8.2, 11.8.4, 11.8.5, 11.8.8, 11.8.9, 11.8.11, 11.8.12, 11.8.14, 11.8.15, 11.9.2, 11.9.3, 11.9.7, 11.9.9, 11.9.14, 11.10.1, 11.10.4, 11.10.6, 11.10.7, 11.10.11, 11.10.12, 11.10.13, 11.11.1, 11.11.3, 11.11.4, 11.11.6, 11.11.7, 11.11.8, 11.11.9, 11.11.10, 11.11.11, 11.11.15, 11.11.16, 11.11.19, 11.11.20, 11.12.1, 11.12.2, 11.12.3, 11.12.5, 11.12.6, 11.12.7, 11.12.8, 11.12.9, 11.12.10, 11.12.11, 11.12.12, 11.12.13, 11.12.14, 11.12.17, 11.12.20, 12.2.5, 12.2.6, 12.2.7, 12.2.10, 12.2.11, 12.3.3, 12.3.6, 12.3.10, 12.3.12, 12.3.14, 12.3.18, 12.3.19, 12.5.1, 12.5.2, 12.5.4, 12.5.5, 12.5.7, 12.5.8, 12.5.11, 12.5.12, 12.7.1, 12.7.2, 12.8.14, 12.8.16, 12.8.17, 12.8.19, 12.9-10.5, 12.9-10.7, 12.9-10.8, 12.9-10.12, 12.9-10.13, 12.9-10.25, 12.9-10.26, 12.9-10.28, 12.11.5, 12.11.7, 12.11.8, 12.11.14, 12.11.15, 12.11.20, 12.11.21, 12.11.22, 12.11.24, 12.11.25, 12.11.26, 12.11.27, 12.11.28, 12.12.7, 12.12.8, 12.12.9, 12.12.12, 12.12.14, 12.12.21, 12.12.22, 12.12.23, 12.12.24, 12.12.25, 12.12.27, 13.3.1, 13.3.4, 13.3.7, 13.11.1, 13.11.3, 13.11.4, 13.11.8, 13.12.2, 13.12.3, 13.12.5, 13.12.8, 13.12.9, 13.12.10.

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

Class A (with urban areas masked as per SPP): 896.79 ha

Class B (with urban areas masked as per SPP): 925.01 ha

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 11 Plan: SP262530.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request

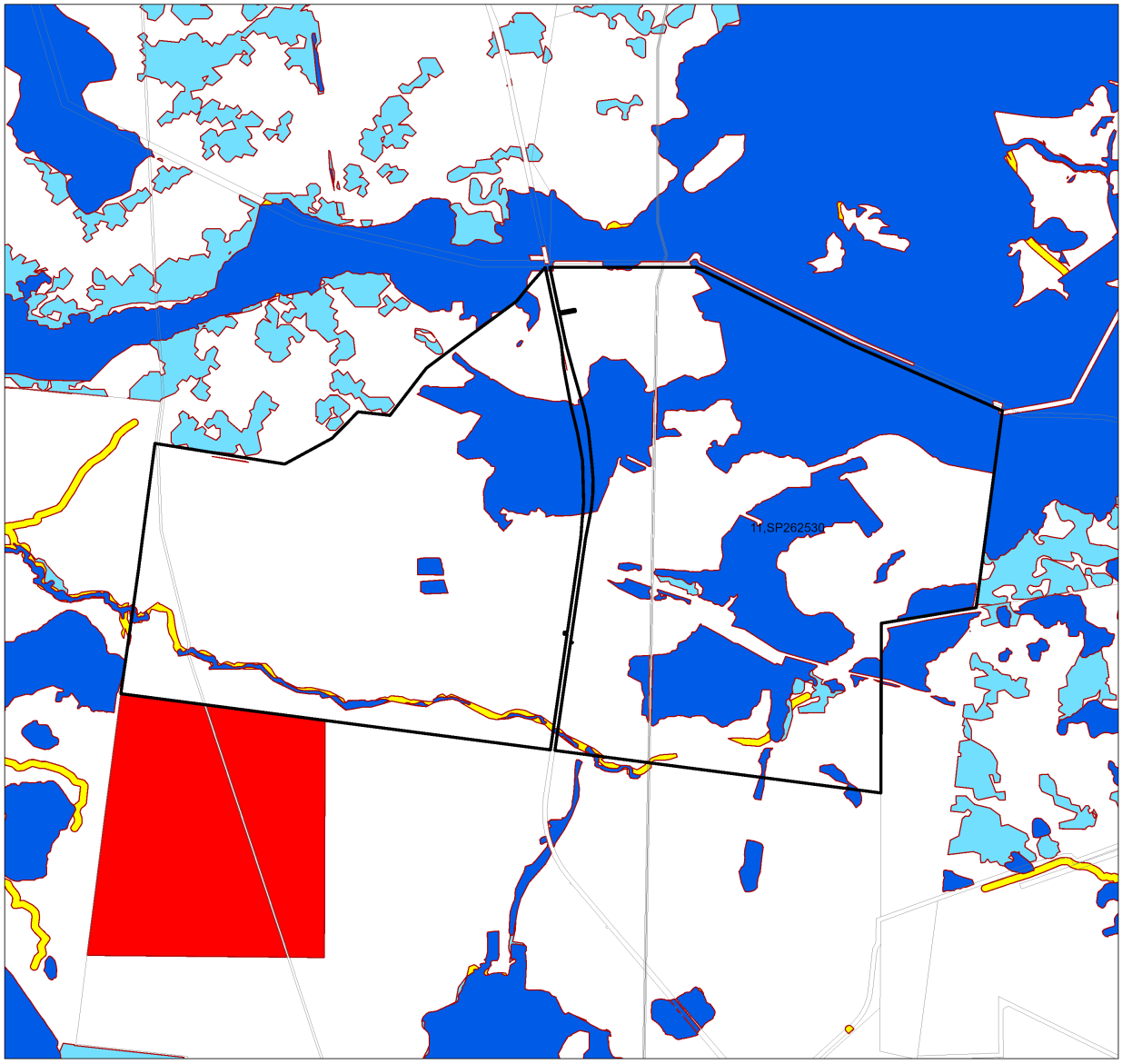
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map

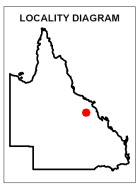


Regulated Vegetation Management Map

Queensland Government

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

LOCALITY DIAGRAM



N

0 850 1,700 2,550 3,400 4,250 m

This product is displayed in:
GDA2020

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

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

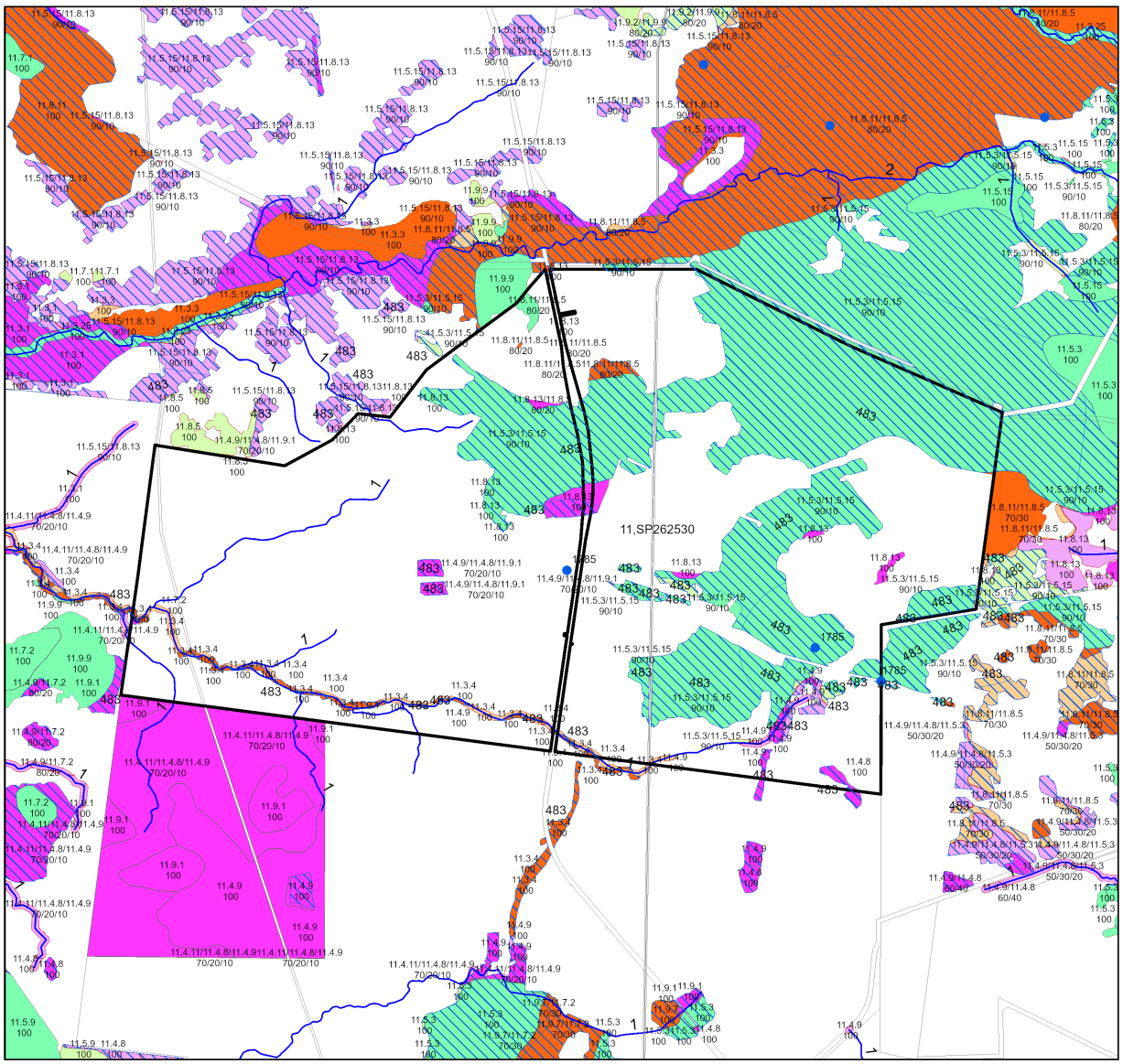
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

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

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.2 Vegetation management supporting map

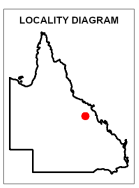


Vegetation Management Supporting Map

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

Queensland Government

LOCALITY DIAGRAM



N

0 610 1,220 1,830 2,440 3,050 m

This product is displayed in: GDA2020

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

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

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

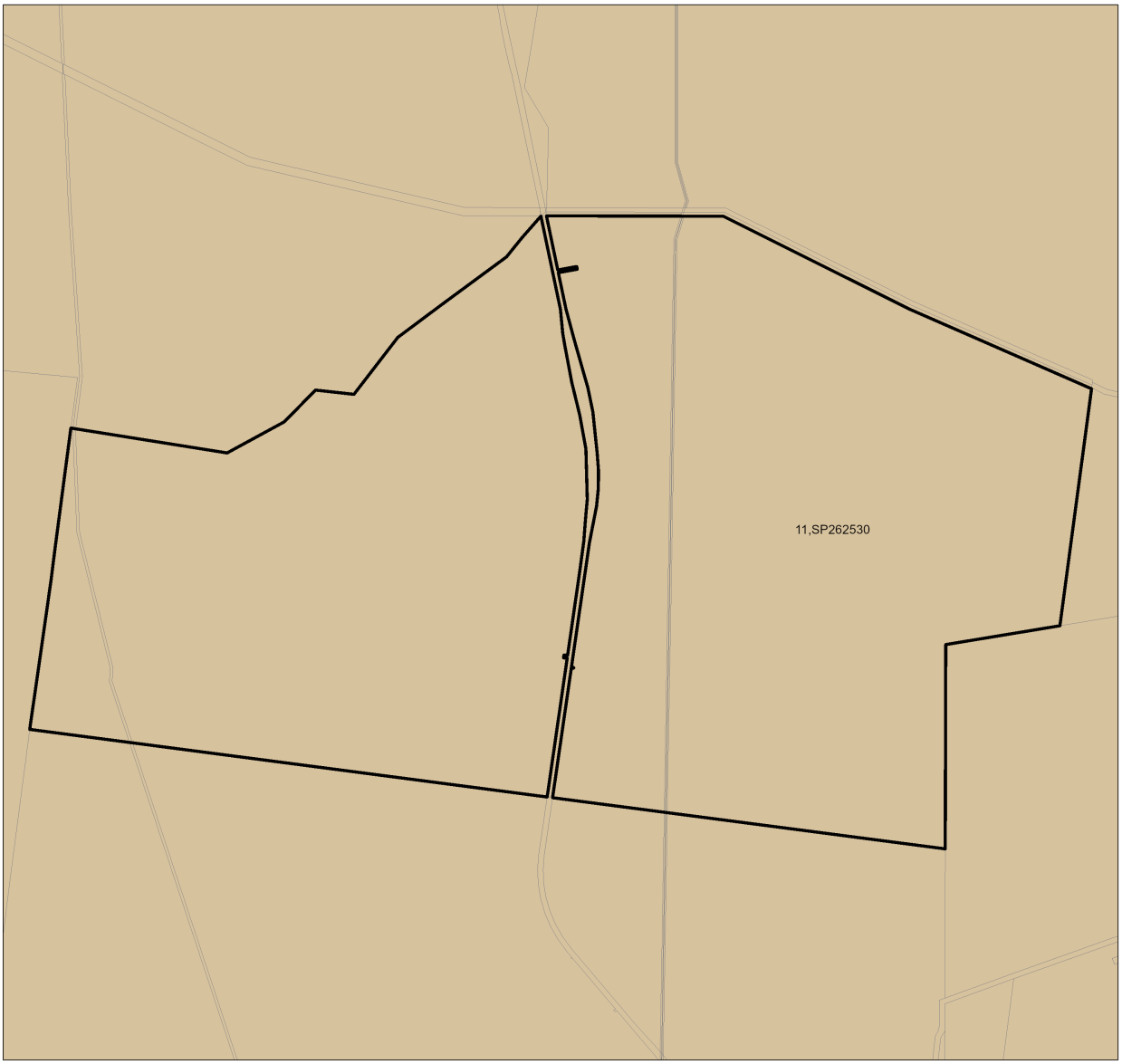
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

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

Land parcel boundaries are provided as locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

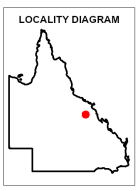
4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 710 1,420 2,130 2,840 3,550 m

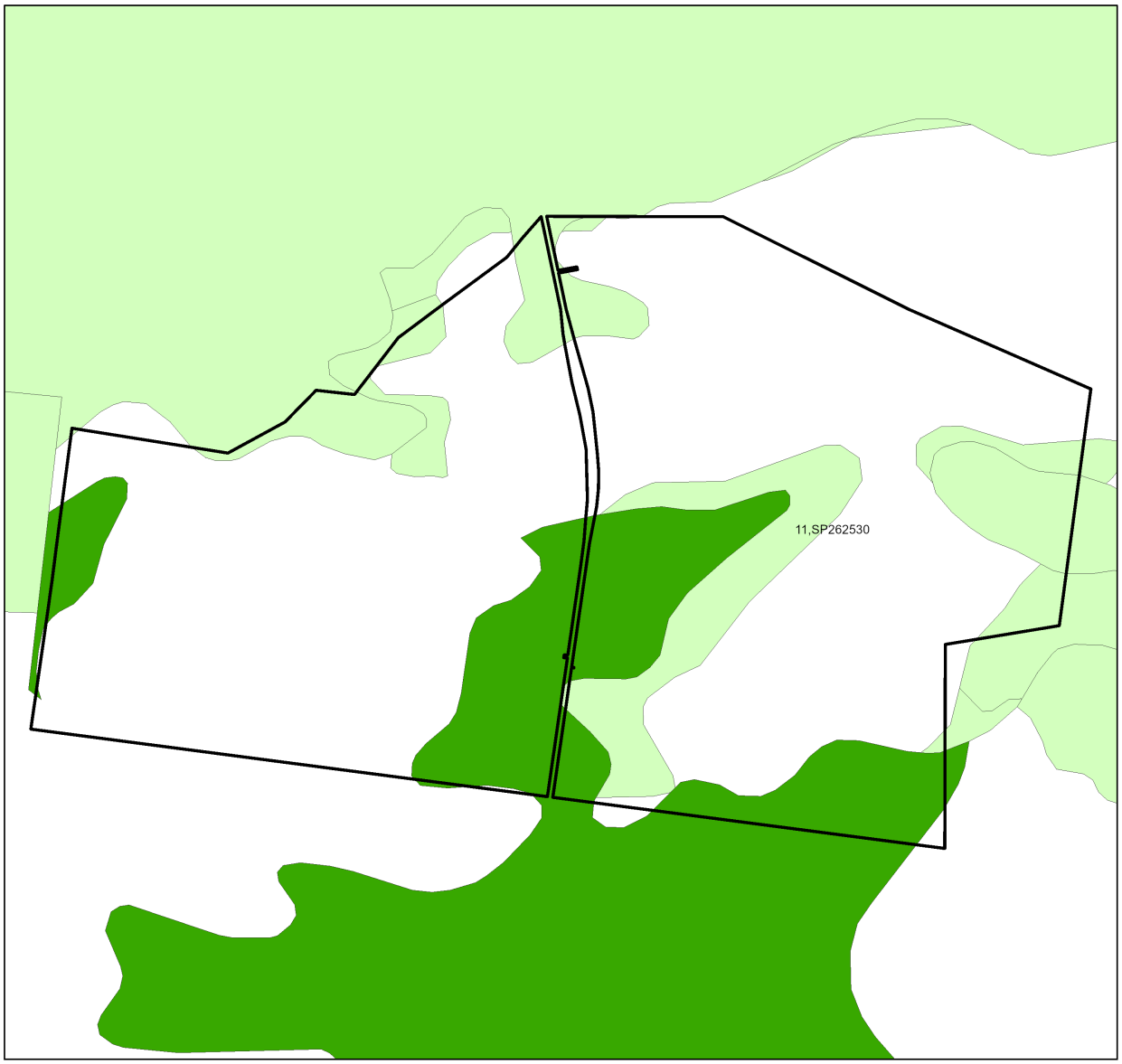
This product is displayed in:
GDA2020

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

Land parcel boundaries shown are provided as a locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



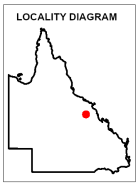
Agricultural Land Class A or B
as per State Planning Policy: State Interest for Agriculture

- Towns
- Rivers and creeks
- Freeways / motorways; Highways
- Secondary roads; Streets

Agricultural land class A or B

- A
- B
- Not class A or B
- Selected Lot and Plan

LOCALITY DIAGRAM



N

0 720 1440 2160 2880 3600 m

This product is displayed in:
GDA2020

Disclaimer
Whilst every care is taken to ensure the accuracy of these details all data custodians and/or the State of Queensland 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 to which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland, 2025

5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

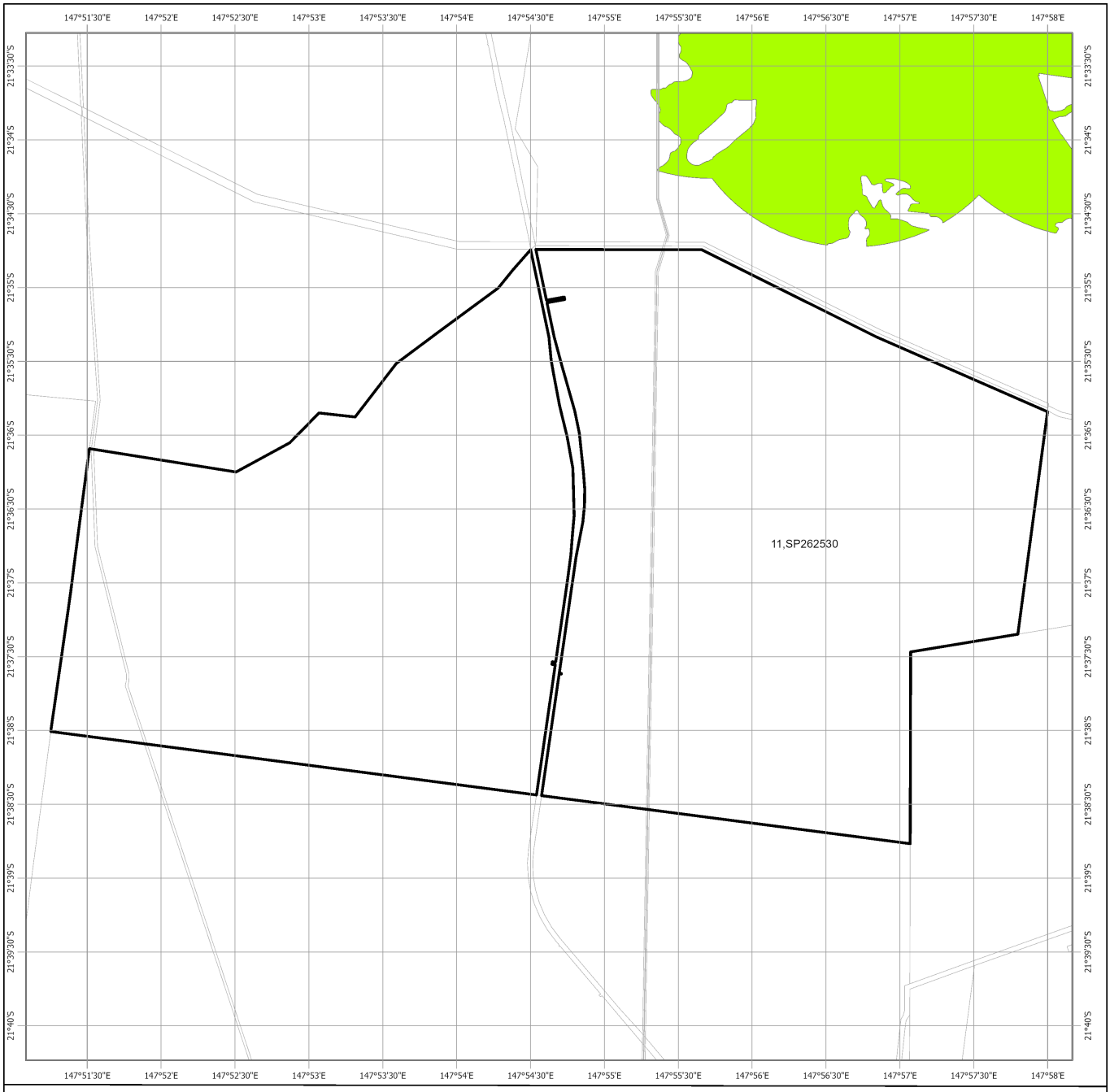
This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

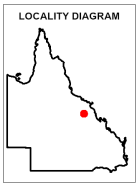
Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 490 980 1,470 1,960 2,450 m

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@des.qld.gov.au

Disclaimer: While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland (Department of the Environment, Tourism, Science and Innovation), 2025

6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@detsi.qld.gov.au
Visit https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 11 Plan: SP262530

7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



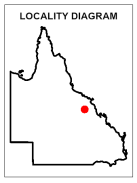
Koala priority area, koala habitat area and identified koala broad-hectare area map

- Koala habitat area (core)
- Koala habitat area (locally refined)
- Koala priority area
- Identified koala broad-hectare area
- Cadastral Boundaries
- Towns
- Major rivers/creeks
- Highway
- Connector
- Street/Local Road
- Queensland
- Selected Lot and Plan

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

© The State of Queensland, 2025

LOCALITY DIAGRAM



N

0 680 1,360 2,040 2,720 3,400 m

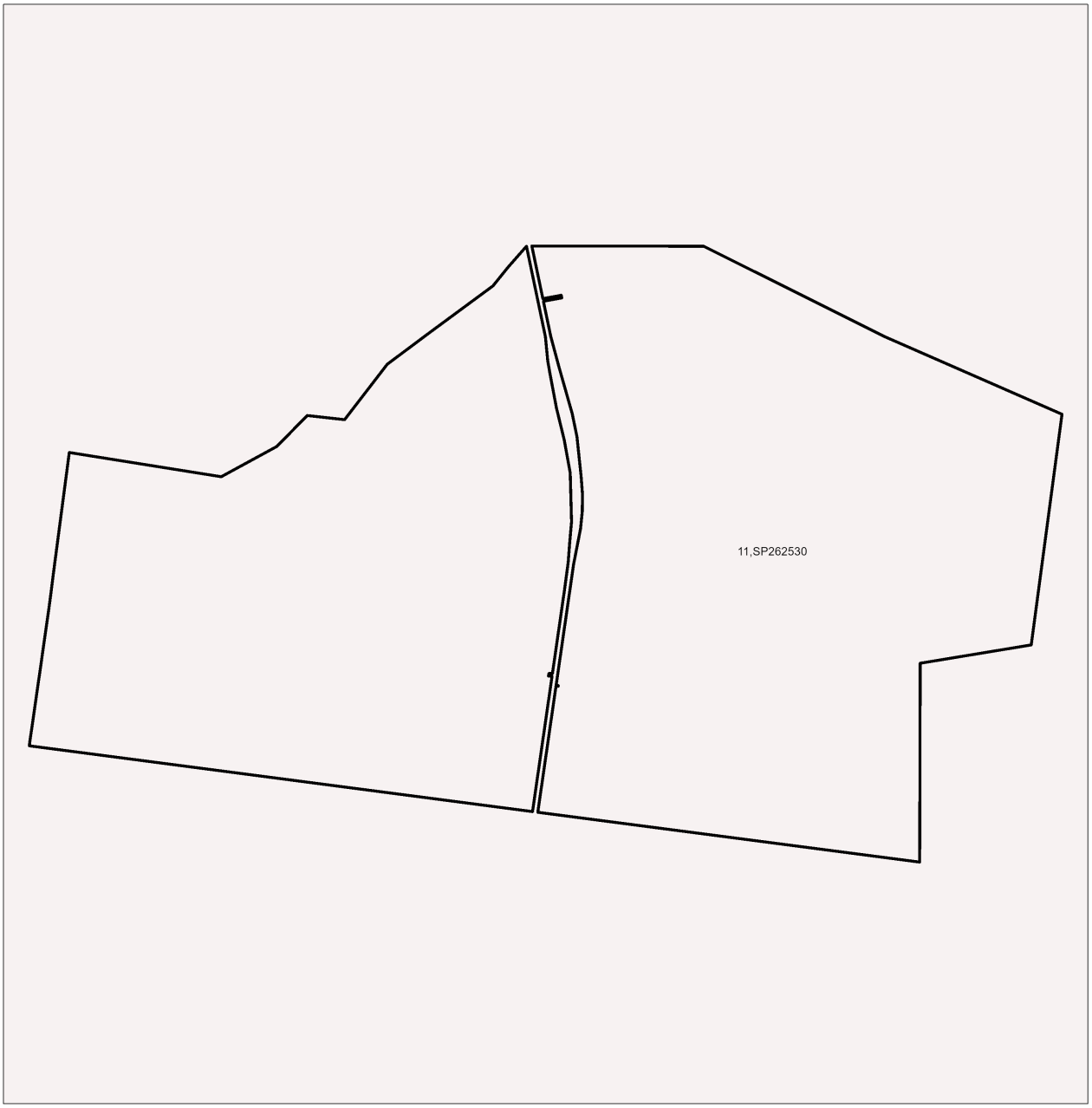
This product is displayed in GDA2020

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason. Due to varying sources of data, spatial locations may not coincide when overlaid.

The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at: https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping/. The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 680 1,360 2,040 2,720 3,400 m

This product is displayed in GDA2020

DISCLAIMER:

While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
Due to varying sources of data, spatial locations may not coincide when overlaid.

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.

© The State of Queensland, 2025

8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	*Water Act 2000*	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	*Soil Conservation Act 1986*	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrrd.qld.gov.au
Fire Permits	*Fire and Emergency Services Act 1990*	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	*Nature Conservation Act 1992* *Planning Act 2016*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	*Nature Conservation Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959*	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 803 772 www.dcceew.gov.au
Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act 1993*	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	*Transport Infrastructure Act 1994*	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Your relevant local government office	Local Government Contact Directory



Vegetation management report

For Lot: 2 Plan: SP214117
25/06/2025

nrmmrrd.qld.gov.au

Queensland Government

This publication has been compiled by Operations Support, Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

© State of Queensland, (2025)

The Queensland Government supports and encourages the dissemination and exchange of its information. The copyright in this publication is licensed under a Creative Commons - Attribution 4.0 International (CC BY) licence.

Under this licence you are free, without having to seek our permission, to use this publication in accordance with the licence terms.



You must keep intact the copyright notice and attribute the State of Queensland as the source of the publication.

Note: Some content in this publication may have different licence terms as indicated.

For more information on this licence, visit https://creativecommons.org/licenses/by/4.0/

The information contained herein is subject to change without notice. The Queensland Government shall not be liable for technical or other errors or omissions contained herein. The reader/user accepts all risks and responsibility for losses, damages, costs and other consequences resulting directly or indirectly from using this information.

Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of the Environment, Tourism, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of the Environment, Tourism, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details 6
1.1 Tenure and title area 6
1.2 Property location 6
2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development) 7
2.1 Exempt clearing work 7
2.2 Accepted development vegetation clearing codes 7
2.3 Area management plans 8
2.4 Development approvals 8
2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development 8
3. Vegetation management framework for Lot: 2 Plan: SP214117 9
3.1 Vegetation categories 9
3.2 Regional ecosystems 12
3.3 Watercourses 13
3.4 Wetlands 13
3.5 Essential habitat 13
3.6 Area Management Plan(s) 14
3.7 Coastal or non-coastal 14
3.8 Agricultural Land Class A or B 14
4. Vegetation management framework maps 15
4.1 Regulated vegetation management map 16
4.2 Vegetation management supporting map 17
4.3 Coastal/non-coastal map 18
4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture 19
5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI)) 20
5.1 Clearing in high risk areas on the flora survey trigger map 20
5.2 Clearing outside high risk areas on the flora survey trigger map 20
5.3 Exemptions 20
5.4 Contact information for DETSI 20
5.5 Protected plants flora survey trigger map 21
6. Koala protection framework (administered by DETSI) 23
6.1 Koala mapping 23
6.2 Koala habitat planning controls 24
6.3 Koala Conservation Plan clearing requirements 25
6.4 Contact information for DETSI 25
7. Koala protection framework details for Lot: 2 Plan: SP214117 26
7.1 Koala districts 26
7.2 Koala priority area, koala habitat area and identified koala broad-hectare map 26
7.3 Koala habitat regional ecosystems for core koala habitat areas 27
8. Other relevant legislation contacts list 28

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 2 Plan: SP214117 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
2	SP214117	Lands Lease	103,000,000
E	SP195381	Easement	1,373
L	SP103681	Easement	1,406
D	SP195381	Easement	125,600
C	GV44	Easement	207,650
D	GV73	Easement	0
A	GV44	Easement	341,200
K	SP103681	Easement	125,700
B	GV44	Easement	538,740
H	GV73	Easement	19,500

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 2 Plan: SP214117 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 2 Plan: SP214117, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Isaac Regional

Catchment(s)
Fitzroy
Burdekin

Bioregion(s)	Subregion(s)
Brigalow Belt	Northern Bowen Basin

2. Vegetation management framework (administered by the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2023, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 2 Plan: SP214117

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category A	533.89
Category B	7,487.20
Category C	522.99
Category R	30.90
Category X	1,897.17

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

The following Property Map of Assessable Vegetation (PMAVs) may be present on this property.
Reference number:
2021/000753

2017/001272

2014/004874

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
11.10.3	Least concern	A	3.91	Acacia shirleyi or A. catenulata open forest on coarse-grained sedimentary rocks. Crests and scarps	Mid-dense
11.10.3	Least concern	B	6.82	Acacia shirleyi or A. catenulata open forest on coarse-grained sedimentary rocks. Crests and scarps	Mid-dense
11.10.3	Least concern	C	0.59	Acacia shirleyi or A. catenulata open forest on coarse-grained sedimentary rocks. Crests and scarps	Mid-dense
11.10.4	Least concern	A	0.98	Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks	Sparse
11.10.4	Least concern	B	1.70	Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks	Sparse
11.10.4	Least concern	C	0.15	Eucalyptus decorticans, Lysicarpus angustifolius +/- Eucalyptus spp., Corymbia spp., Acacia spp. woodland on coarse-grained sedimentary rocks	Sparse
11.3.1	Endangered	A	8.26	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.1	Endangered	B	10.84	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.1	Endangered	C	16.11	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.1	Endangered	R	less than 0.01	Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	Mid-dense
11.3.2	Of concern	A	82.30	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.2	Of concern	B	227.99	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.2	Of concern	C	41.61	Eucalyptus populnea woodland on alluvial plains	Sparse

11.3.2	Of concern	R	less than 0.01	Eucalyptus populnea woodland on alluvial plains	Sparse
11.3.25	Least concern	A	0.10	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.25	Least concern	B	138.81	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.25	Least concern	C	0.21	Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines	Sparse
11.3.3	Of concern	B	4.92	Eucalyptus coolabah woodland on alluvial plains	Sparse
11.5.15	Least concern	B	430.69	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.15	Least concern	C	109.29	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.15	Least concern	R	11.92	Semi-evergreen vine thicket on Cainozoic sand plains and/or remnant surfaces	Dense
11.5.3	Least concern	B	1,736.71	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	C	60.05	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.5.3	Least concern	R	10.16	Eucalyptus populnea +/- E. melanophloia +/- Corymbia clarksoniana woodland on Cainozoic sand plains and/or remnant surfaces	Sparse
11.8.11	Of concern	A	280.13	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.11	Of concern	B	3,461.98	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.11	Of concern	C	31.00	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.11	Of concern	R	1.73	Dichanthium sericeum grassland on Cainozoic igneous rocks	Woody grassland
11.8.13	Endangered	B	330.15	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	C	116.15	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.13	Endangered	R	0.77	Semi-evergreen vine thicket and microphyll vine forest on Cainozoic igneous rocks	Dense
11.8.5	Least concern	A	74.93	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse

11.8.5	Least concern	B	902.26	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.8.5	Least concern	C	8.57	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.8.5	Least concern	R	0.43	Eucalyptus orgadophila open woodland on Cainozoic igneous rocks	Very sparse
11.9.2	Least concern	B	14.21	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Sparse
11.9.2	Least concern	C	66.86	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Sparse
11.9.2	Least concern	R	3.53	Eucalyptus melanophloia +/- E. orgadophila woodland to open woodland on fine-grained sedimentary rocks	Sparse
11.9.5	Endangered	A	83.29	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Mid-dense
11.9.5	Endangered	B	163.32	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Mid-dense
11.9.5	Endangered	C	30.43	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Mid-dense
11.9.5	Endangered	R	less than 0.01	Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	Mid-dense
11.9.9	Least concern	B	56.82	Eucalyptus crebra woodland on fine-grained sedimentary rocks	Sparse
11.9.9	Least concern	C	41.98	Eucalyptus crebra woodland on fine-grained sedimentary rocks	Sparse
11.9.9	Least concern	R	2.36	Eucalyptus crebra woodland on fine-grained sedimentary rocks	Sparse
non-rem	None	B	less than 0.01	None	None
non-rem	None	X	1,897.17	None	None

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses
Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

There are no vegetation management wetlands present on this property.

3.5 Essential habitat
Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
483	Denisonia maculata	ornamental snake	V	Riparian woodland/open forest and shrub/woodland including Brigalow Acacia harpophylla; into drier habitats in summer.	100-450m.	Cracking clay with gilgai/soil crack microrelief and sandy loam substrates.	Near freshwater waterholes/creeks and low lying poorly drained areas that are frequently inundated by freshwater.
11064	Dichanthium queenslandicum		V	tussock grassland occasional with scattered trees of Corymbia spp. or Eucalyptus spp. or Acacia spp.; woodland of Corymbia erythrophloia, or Eucalyptus orgadophila, or Eucalyptus melanophloia with grassy understorey.	100 to 900 m	black cracking clay	flat terrain, gentle undulatling plain
14599	Digitaria porrecta		NT	open grassland on undulating downs country; woodland of Melaleuca bracteata with emergent Eucalyptus coolabah along drainage line; open forest of Eucalyptus populnea with grassy understorey on plain; open forest of Eucalyptus tereticornis with grassy understorey on plain	200 to 600 m	black cracking clay	plain, gentle undulating terrain, gentle to moderate hill slope

Label	Regional Ecosystem (mandatory unless otherwise specified)
483	10.3.2, 10.3.3, 10.3.4, 10.3.7, 10.3.13, 10.3.14, 10.3.15, 10.3.16, 10.3.27, 10.3.30, 10.3.31, 10.4.1, 10.4.2, 10.4.3, 10.4.4, 10.4.5, 10.4.6, 10.4.7, 10.4.8, 10.5.5, 10.9.1. 10.9.6. 10.9.7, 11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.9, 11.3.10, 11.3.12, 11.3.15, 11.3.21, 11.3.23, 11.3.24, 11.3.25, 11.3.27, 11.3.28, 11.3.31, 11.3.34, 11.3.37, 11.3.38, 11.3.40, 11.4.2, 11.4.3, 11.4.4, 11.4.6, 11.4.7, 11.4.8, 11.4.9, 11.4.11, 11.5.2, 11.5.3, 11.5.16, 11.8.11, 11.9.1, 11.9.2, 11.9.3, 11.9.5, 11.9.7, 11.9.11, 11.9.12, 11.9.14, 11.11.15, 11.12.6
11064	9.8.13, 11.3.4, 11.3.21, 11.4.4, 11.8.5, 11.8.11, 11.9.3
14599	11.3.2, 11.3.3, 11.3.4, 11.3.21, 11.3.25, 11.8.5, 11.8.11

3.6 Area Management Plan(s)

Nil

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?
Class A (with urban areas masked as per SPP): 7395.86 ha

Class B (with urban areas masked as per SPP): 147.52 ha

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 2 Plan: SP214117.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request

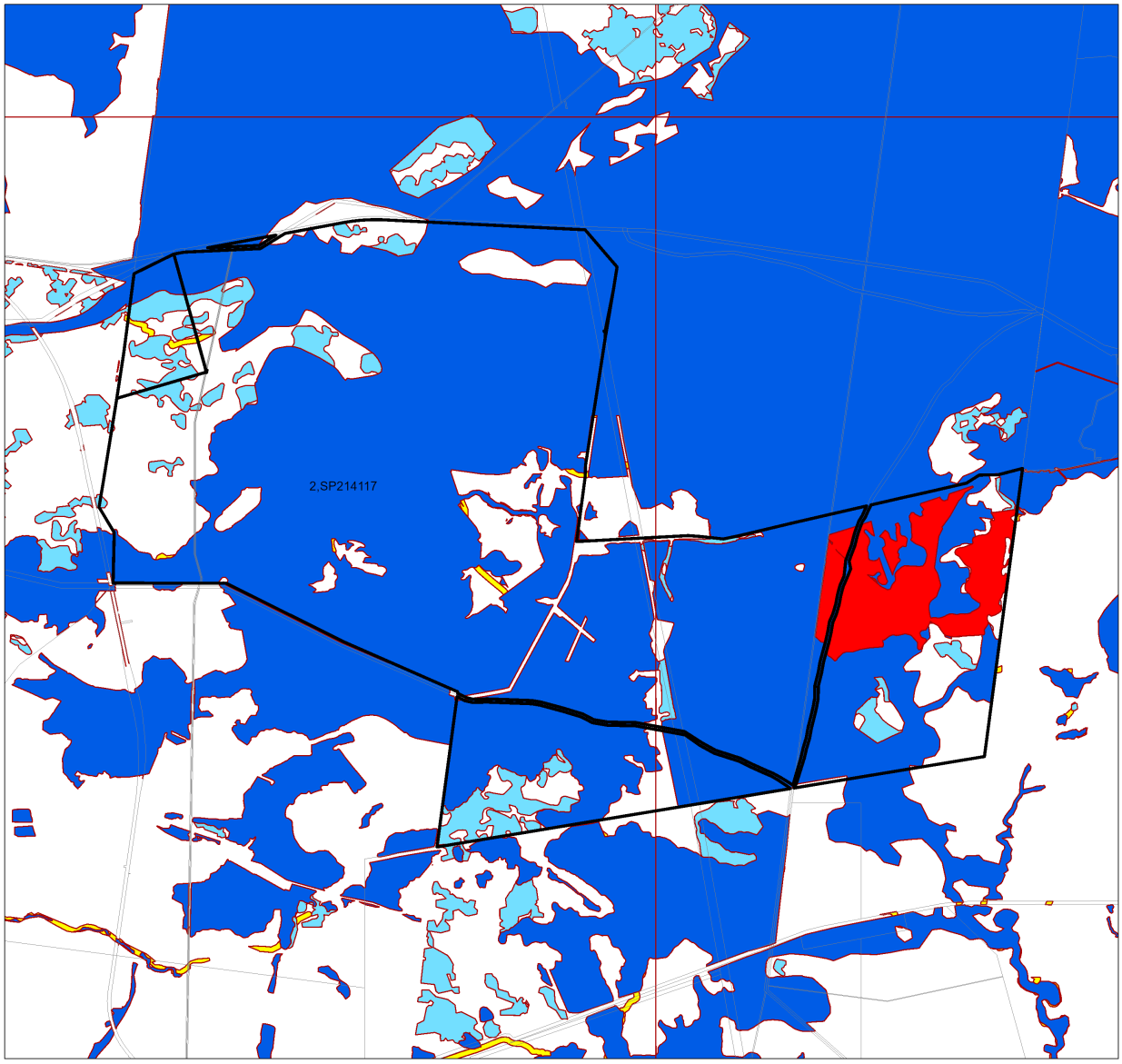
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

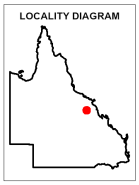
4.1 Regulated vegetation management map



Regulated Vegetation Management Map

Queensland Government

LOCALITY DIAGRAM



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

N

0 1,000 2,000 3,000 4,000 5,000 m

This product is displayed in:
GDA2020

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

Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

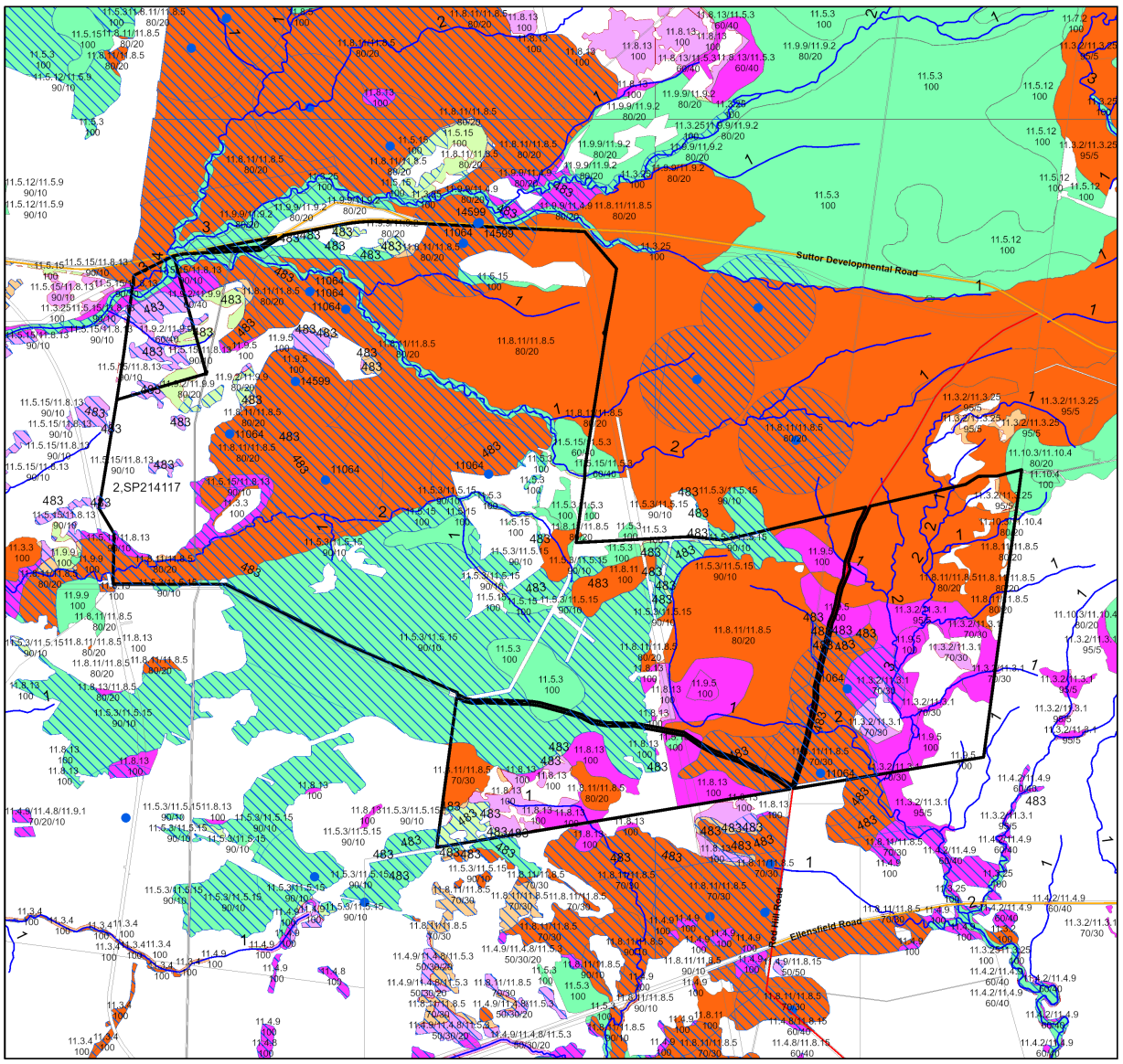
Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.spatial.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

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

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.2 Vegetation management supporting map

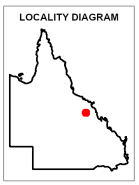


Vegetation Management Supporting Map

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

Queensland Government

LOCALITY DIAGRAM



N

0 810 1,620 2,430 3,240 4,050 m

This product is displayed in: GDA2020

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

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

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

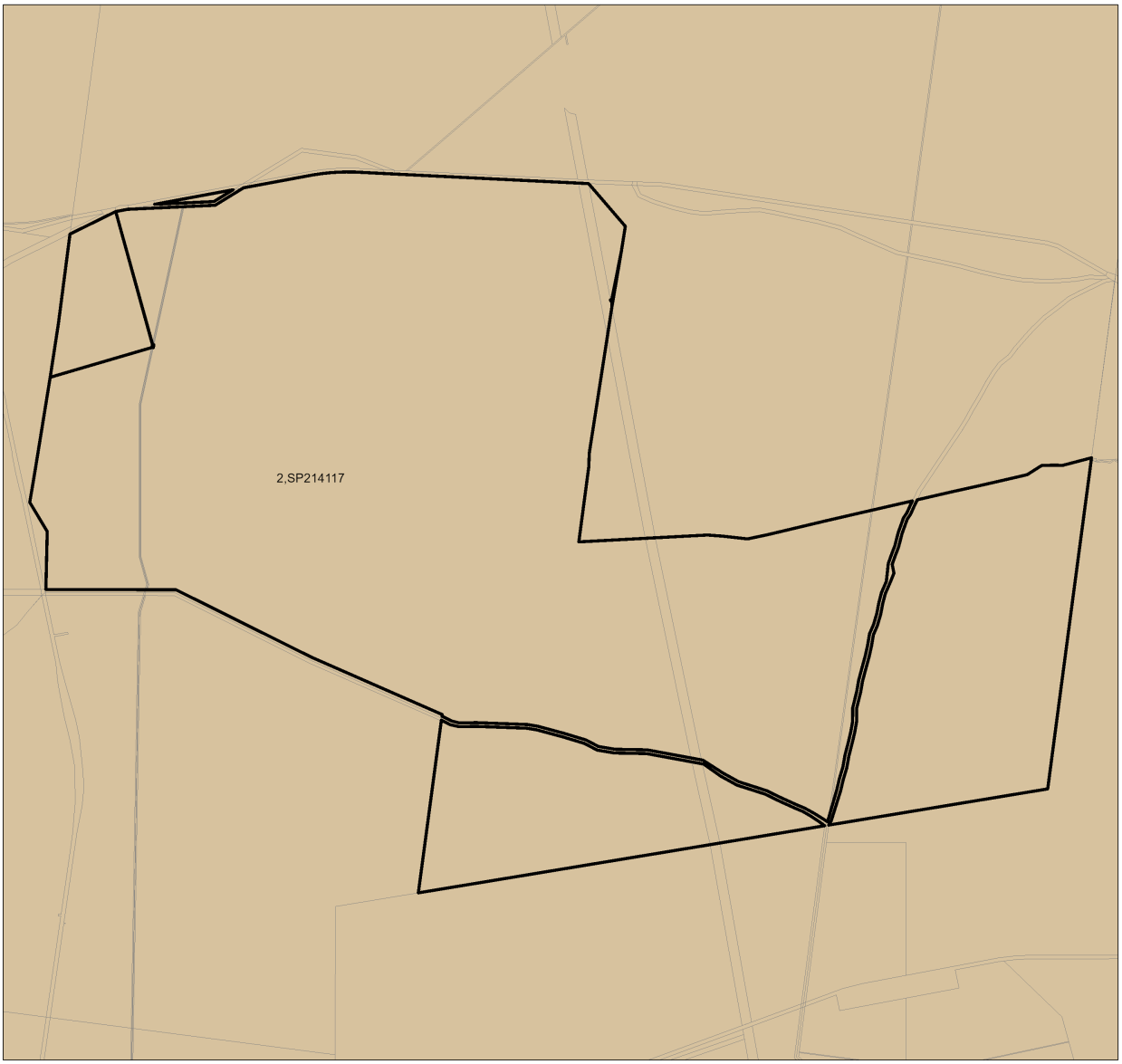
Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.nrmmrrd.qld.gov.au or contact the Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development.

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

Land parcel boundaries are provided as locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

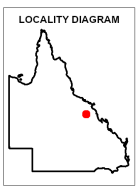
4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM



N

0 975 1,950 2,925 3,900 4,875 m

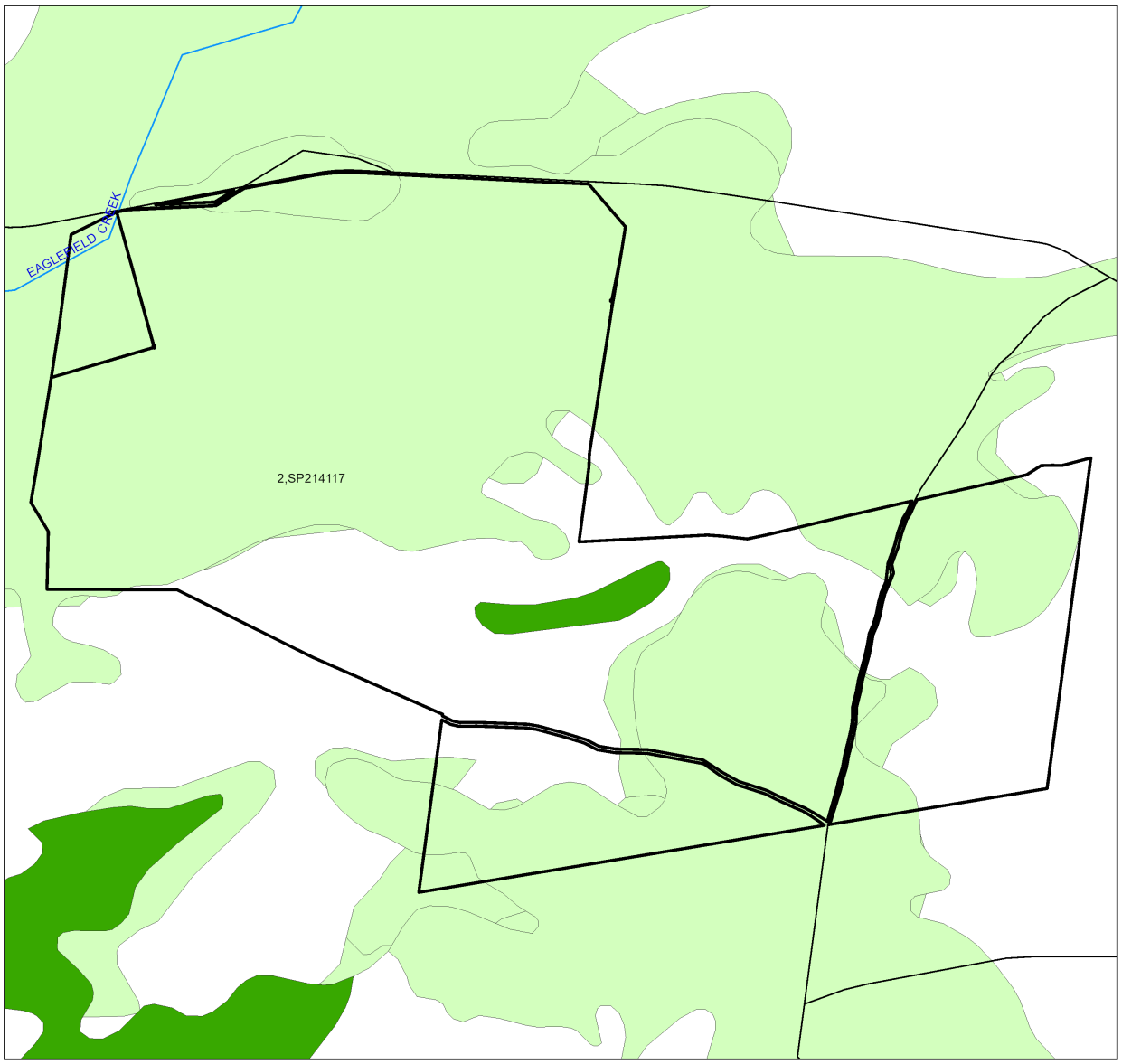
This product is displayed in:
GDA2020

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

Land parcel boundaries shown are provided as a locational aid only.

© The State of Queensland (Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development), 2025

4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



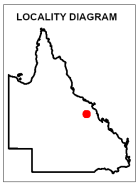
Agricultural Land Class A or B
as per State Planning Policy: State Interest for Agriculture

- Towns
- Rivers and creeks
- Freeways / motorways; Highways
- Secondary roads; Streets

Agricultural land class A or B

- A
- B
- Not class A or B
- Selected Lot and Plan

LOCALITY DIAGRAM



N

0 975 1950 2925 3900 4875 m

This product is displayed in:
GDA2020

Disclaimer
Whilst every care is taken to ensure the accuracy of these details all data custodians and/or the State of Queensland 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 to which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland, 2025

5. Protected plants framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of Endangered, Vulnerable, Near-Threatened (EVNT) plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of the Environment, Tourism, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DETSI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

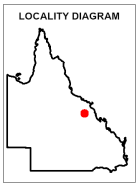
Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of the Environment, Tourism, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of the Environment, Tourism, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM



N

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

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of the Environment, Tourism, Science and Innovation at palm@des.qld.gov.au

Disclaimer: While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

© The State of Queensland (Department of the Environment, Tourism, Science and Innovation), 2025

6. Koala protection framework (administered by the Department of the Environment, Tourism, Science and Innovation (DETSI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

6.4 Contact information for DETSI

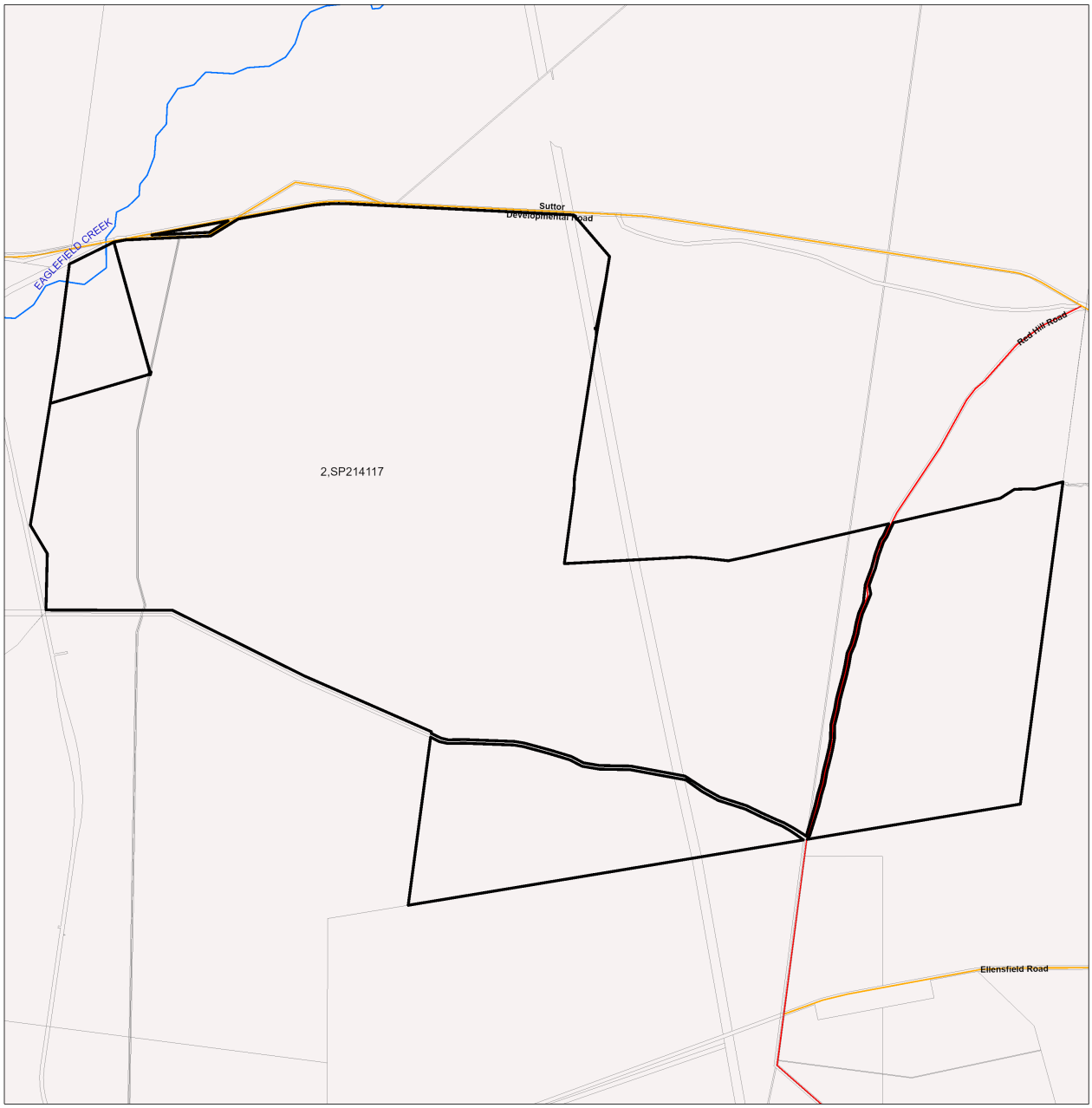
For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@detsi.qld.gov.au
Visit https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 2 Plan: SP214117

7.1 Koala districts

Koala District C

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



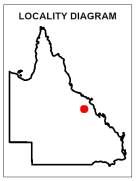
Koala priority area, koala habitat area and identified koala broad-hectare area map

- Koala habitat area (core)
- Koala habitat area (locally refined)
- Koala priority area
- Identified koala broad-hectare area
- Cadastral Boundaries
- Towns
- Major rivers/creeks
- Highway
- Connector
- Street/Local Road
- Queensland
- Selected Lot and Plan

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

© The State of Queensland, 2025

LOCALITY DIAGRAM



N

0 940 1,880 2,820 3,760 4,700 m

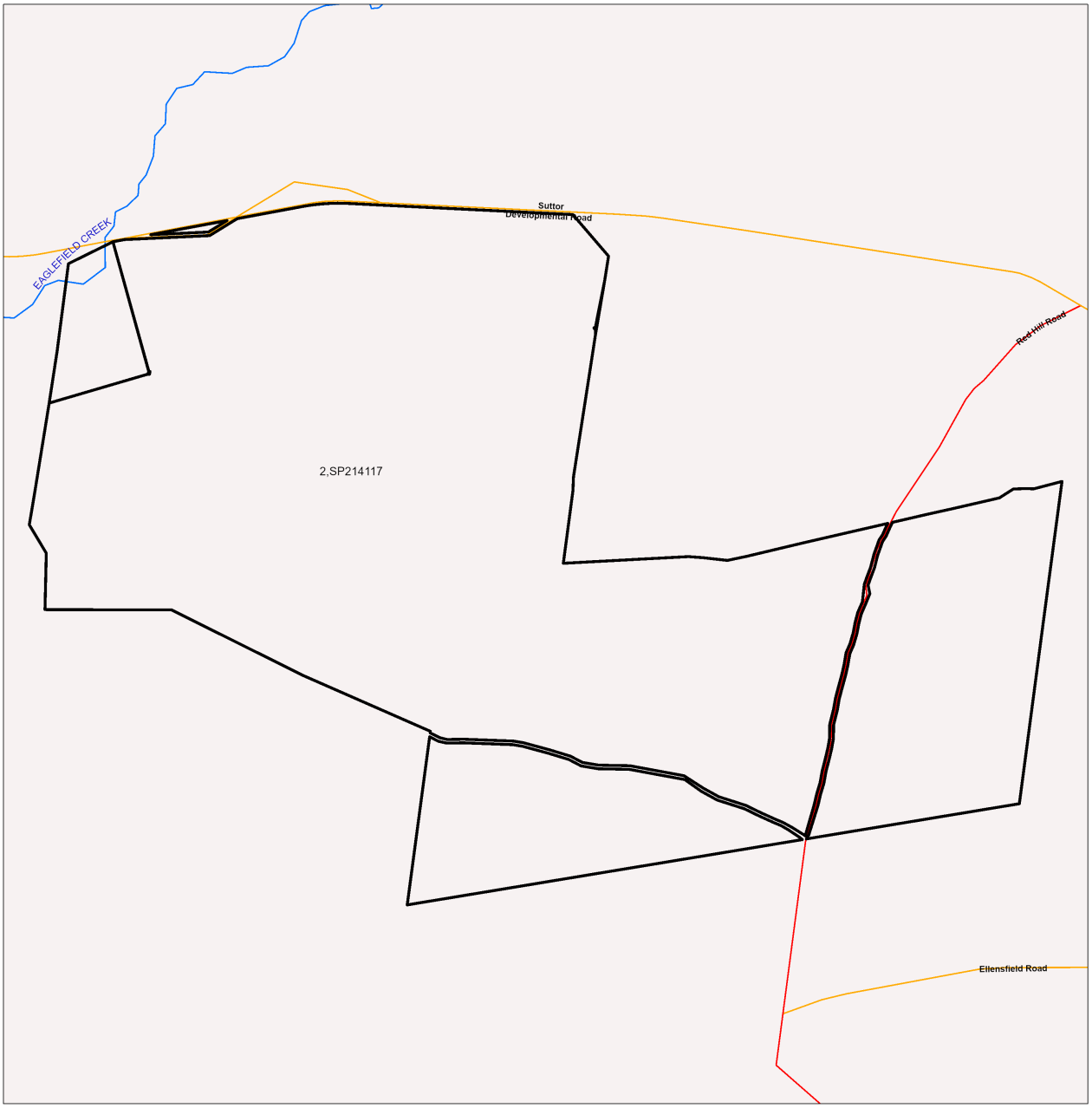
This product is displayed in GDA2020

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason. Due to varying sources of data, spatial locations may not coincide when overlaid.

The koala conservation plan maps will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

In order to ensure that the most recent map for an area of interest can be accessed, prior to the annual update, a register of changes made to koala habitat areas as a result of the map amendment process will be available at: https://environment.desi.qld.gov.au/wildlife/animals/living-with/koalas/mapping/. The register will include lot on plan for the change, the date the decision was made and the map issued to the landholder which shows areas determined to be koala habitat areas.

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 940 1,880 2,820 3,760 4,700 m

This product is displayed in GDA2020

DISCLAIMER:

While every care is taken to ensure the accuracy of this product, the Department of the Environment, Tourism, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
Due to varying sources of data, spatial locations may not coincide when overlaid.

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.

© The State of Queensland, 2025

8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
Interference with overland flow	*Water Act 2000*	Department of Local Government, Water and Volunteers	Ph: 13 QGOV (13 74 68) www.dlgwv.qld.gov.au
Earthworks, significant disturbance	*Soil Conservation Act 1986*	Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development	Ph: 13 QGOV (13 74 68) www.nrmmrrd.qld.gov.au
Fire Permits	*Fire and Emergency Services Act 1990*	Queensland Fire Department	Ph: 13 QGOV (13 74 68) www.fire.qld.gov.au
Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Queensland Department of Women, Aboriginal and Torres Strait Islander Partnerships and Multiculturalism	Ph: 13 QGOV (13 74 68) www.tatsipca.qld.gov.au
Mining and environmentally relevant activities Infrastructure development (coastal) Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) www.detsi.qld.gov.au
Protected plants and protected areas	*Nature Conservation Act 1992* *Planning Act 2016*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 1300 130 372 (option 4) palm@detsi.qld.gov.au www.detsi.qld.gov.au
Koala mapping and regulations	*Nature Conservation Act 1992*	Queensland Department of the Environment, Tourism, Science and Innovation	Ph: 13 QGOV (13 74 68) Koala.assessment@detsi.qld.gov.au
Interference with fish passage in a watercourse, mangroves Forestry activities	*Fisheries Act 1994* *Forestry Act 1959*	Queensland Department of Primary Industries	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Climate Change, Energy, the Environment and Water (Australian Government)	Ph: 1800 803 772 www.dcceew.gov.au
Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Queensland Department of State Development, Infrastructure and Planning	Ph: 13 QGOV (13 74 68) www.planning.qld.gov.au
Coordinated projects	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Office of the Coordinator-General	Ph: 13 QGOV (13 74 68) www.statedevelopment.qld.gov.au/coordinator-general
Wet Tropics World Heritage Area	*Wet Tropics World Heritage Protection and Management Act 1993*	Queensland Wet Tropics Management Authority	Ph: (07) 4241 0500 www.wettropics.gov.au
Requirements on State controlled road	*Transport Infrastructure Act 1994*	Queensland Department of Transport and Main Roads	Ph: 13 QGOV (13 74 68) https://www.tmr.qld.gov.au
Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Your relevant local government office	Local Government Contact Directory

Appendix B Likelihood of occurrence assessments

Threatened Flora

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Cerbera dumicola	NT		*Current distribution: Cerbera dumicola* is known from central coastal and subcoastal Queensland, with a few populations located in central Queensland. The most northern populations are located 23km southwest of Charters Towers and the most southern population occurs at Baralaba (DESI, 2024). *Habitat preferences: Cerbera dumicola* occurs across a range of habitats in central and southern Queensland. Associated vegetation and species include: sandstone hills in open *E. umbra* subsp. *carnea*; on plateaus, in woodland of *Acacia shirleyi* with *Corymbia dolichocarpa*; acidic soils in mine rehabilitation area; woodland of *A. catenulata* and *A. shirleyi* with *E. thozetiana* on a slope of sand/clay soil; semi-deciduous notophyll-microphyll vine forest of *Brachychiton australis*, *Gyrocarpus americanus*, *Flindersia australis*, *Pleiogynium timorense*, *Drypetes deplanchei* and *Sterculia quadrifida* on rhyolite hillslopes; open-woodland of *E. melanophloia* with occasional *Acacia shirleyi*, *E. populnea* and *E. brownii*; semi-evergreen vine thicket with *Corymbia citriodora* and *Corymbia aureola* emergents; woodland of *A. rhodoxylon* on brown, sandy loam; and in *Corymbia tessellaris - Acacia aneura* open woodland (DESI, 2024). *Closest known record*: Approximately 17km to the south of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** This species was not identified during the ecological assessment. Suitable habitat for the species was present in REs 11.5.9c and 11.5.3 and adjacent areas of lateritic duricrusts. However, this is a vegetatively distinctive species, and it was not detected in the Disturbance Footprint or wider Study Area.
Large-fruited denhamia *Denhamia megacarpa*	E	PMST	*Current distribution*: This species occurs in three subpopulations in eastern central Queensland. This includes 1) the tableland at the locality of Mackenzie, north of Dingo, 2) the Junee Tableland near Middlemount, and 3) at Newlands, west of Mackay. These three subpopulations are geographically isolated, confined to separate geological features that are in effect ecological islands (J. J. Halford & Jessup, 2020).	**Unlikely to occur** The Study Area is outside the known distribution of the three known isolated populations. This is a tree species which would have been easily

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Habitat preferences: The species is found on shallow Cainozoic lateritic duricrusts on or near steep upper slopes, found in association with *Acacia shirleyi* and/or *A. catenulata* or within woodland of *Eucalyptus crebra* and *Corymbia bracycarpa* (J. J. Halford & Jessup, 2020). *Notable features*: Flowering occurs in November and April. Fruits mature in February (J. J. Halford & Jessup, 2020). *Closest known record*: Approximately 41km to the north of the Disturbance Footprint (ALA, 2025)	detected if present in the Study Area.
King blue-grass *Dichanthium queenslandicum*	V	PMST, Wildlife Online	*Current distribution*: This species is endemic to central and southern Queensland. It occurs in 1) the Hughenden district, 2) from Nebo to Monto and west to Clermont and Rolleston, and 3) the Dalby district (DSEWPaC, 2013; TSSC, 2013a). The main concentration of populations in central Queensland is in the Emerald region (DESI, 2024). *Habitat preferences*: This species occurs on black cracking clay in tussock grasslands in association with other species of blue grasses (*Dichanthium spp.* & *Bothriochloa spp.*). It is mostly confined to natural grassland on heavy black clay soils (basalt downs, basalt cracking clay, open downs) on undulating plains. Other species include *Aristida leptopoda, Bothriochloa erianthoides, Moorochloa eruciformis, Corchorus trilocularis, Cyperus bifax, Dichanthium sericeum, Digitaria brownii, D. divaricatissima, Eulalia fulva, Ipomoea lonchophylla, Iseilema vaginiflorum, Panicum decompositum, P. queenslandicum, Paspalidium globoideum, Parthenium hysterophorus* and *Thellungia advena*. Other associated communities include *Acacia salicina* thickets in grassland and eucalypt woodlands (i.e. *Corymbia dallachiana, C. erythrophloia, E. orgadophila*) (DSEWPaC, 2013; TSSC, 2013a). *Notable features*: Flowering occurs throughout the year, particularly from March (Queensland Government, 2025).	**Known to occur** This species was identified within the Disturbance Footprint in moderate to high densities in grasslands and woodlands on black soil derived from basalt (RE 11.8.11 and 11.8.5) (refer Figure 11).

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Closest known record: This species was recorded in the Study Area and has been recorded as part of previous surveys in the Study Area (AECOM, 2015; ALA, 2025). It is also been recorded at a number of locations elsewhere in the desktop search extent (ALA, 2025).	
Finger panic grass *Digitaria porrecta*	NT	Wildlife Online	*Current distribution:* This species occurs in four disjunct areas extending over 1000 km. In Queensland, it occurs in the Nebo district, south-west of Mackay; the Central Highlands between Springsure and Rolleston; and from Jandowae south to Warwick. In NSWNew South Wales it occurs from Graman and Croppa Creek (near Inverell), south to the Liverpool Plains near Coonabarabran and Werris Creek (TSSC, 2013b). *Habitat preference:* This species usually occurs in grasslands on extensive basaltic plains, and in undulating woodlands and open forests with an underlying basaltic geology. It usually occurs on dark and fine textured soils with some degree of seasonal cracking. It also persists in disturbed habitats, such as fallow paddocks, but its capability to maintain a viable population is unknown. In Queensland occurs in communities dominated by *Eucalyptus orgadophila* on hills and slopes and *E. tereticornis* and *E. populnea* in drainage lines. Associated grasses and forbs include *Dichanthium sericeum, Panicum decompositum, Digitaria divaricatissima, Aristida leptopoda, Boerhavia dominii, Mentha satureioides, Psoralea tenax, Rhynchosia minima, Panicum queenslandicum, Paspalidium globoideum, Themeda avenacea, Ixiolaena brevicompta, Sclerolaena muricata* and *Tribulus micrococcus*. In NSWNew South Wales it has been recorded in communities dominated by *Eucalyptus albens* and *Acacia pendula* with common grasses and forbs as for Queensland sites, plus *Austrostipa aristiglumis, Enteropogon acicularis, Cyperus bifax, Hibiscus trionum* and *Neptunia gracilis* (TSSC, 2013b).	**Known to occur** This species was identified within the Disturbance Footprint in low to moderate densities in grasslands and woodlands on black soil derived from basalt (RE 11.8.11 and 11.8.5) (refer Figure 9).

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Closest record: This species was recorded in the Study Area during field surveys. It has also been recorded by others approximately 1km to the north of the Disturbance Footprint (ALA, 2025).	
Black iron box *Eucalyptus raveretiana*	V	PMST	*Current distribution*: This species is endemic to Queensland and occurs between Rockhampton and Townsville (DEWHA, 2008a; TSSC, 2010). *Habitat preferences:* This species grows along watercourses and occasionally on river flats or open woodland. Soil varies from sand through to heavy clay. Altitudinal range is 0–300m and the climate of the area is sub-tropical with an annual rainfall of 650–1100m. The species is said to be highly salt tolerant. It does not occur in pure stands, but is co-dominant with species such as *Melaleuca leucadendra*, *M. fluviatilis*, *Eucalyptus tereticornis*, *E. camaldulensis*, *Casuarina cunninghamiana, Blakella tessellaris* and occasionally in semi-evergreen vine-thicket along watercourses (e.g. *Brachychiton australis*, *Brachychiton rupestris*, *Geijera salicifolia* and *Lysiphyllum* spp.) (DEWHA, 2008a). *Notable features:* Flowering occurs from December to January. Fruits are mature between March and April. *Closest known record*: Approximately 40km to the east of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** This species is distinctive and readily identifiable. Suitable riparian woodland habitat is not present within the Disturbance Footprint.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Omphalea celata	V	PMST	*Current distribution*: This species occurs at three sites in central Queensland; Hazlewood Gorge, near Eungella; Gloucester Island, near Bowen; and Cooper Creek in the Homevale Station area, north-west of Nebo (DEWHA, 2008b). *Habitat preferences*: At Hazlewood Gorge, this species grows in fragmented semi-evergreen vine-thicket along a watercourse on weathered metamorphics in a steep-sided gorge at an altitude of 560 m. On Gloucester Island, the species grows in a rocky granitic gully near Araucaria microphyll vine forest (Forster, 1995). At Cooper Creek, the species grows in the creek bed and adjacent bank (DEWHA, 2008b). *Notable features*: Flowering occurs between June and September. Fruiting occurs between December and February (DEWHA, 2008b). *Closest known record*: Approximately 56km to the east of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** The broader Study Area contains suitable habitat including semi-evergreen vine thicket in 11.5.15, however, the Study Area is outside the distribution of this species and the closest record is 56km towards the coast.
Polianthion minutiflorum	V	PMST	*Current distribution*: This species occurs from Redcliffe Vale, about 110 km west of Mackay, south to Kingaroy, covering approximately 800km. It is specifically known from five areas including 1) Redcliffe Vale, 2) near Blackwater, 3) Callide Range, north-east of Biloela, 4) East Boogalgopal, west of Monto, and 5) in Kingaroy (DEWHA, 2008d). *Habitat preferences*: It grows in forest and woodland on sandstone slopes and gullies with skeletal soil, or deeper soils adjacent to deeply weathered laterite (DEWHA, 2008d). *Notable features*: Flowering occurs throughout the year. Fruiting occurs in August and November (DEWHA, 2008d). *Closest known record*: Approximately 40km to the north of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** Suitable substrate of sandstone and laterite were not present within the Study Area. There are no nearby records of the species.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Ptilotus uncinellus	E	PMST	*Current distribution*: This species occurs from a very restricted range near Eaglefield and Moranbah in the Brigalow Belt North bioregion in Queensland (TSSC, 2024). *Habitat preferences*: The species grows in shallow, pink, gravelly loams on the slopes of jump-ups in *Acacia shirleyi* open woodland with a semi-evergreen vine-thicket understorey and sparse grassy ground layer (Bean, 2010). Associated species include *Erythroxylum australe, Croton insularis, Acalypha eremorum, Grevillea helmsiae, Ancistrachne uncinulata, Paspalidium* sp. and *Leptochloa decipiens*. The species co-occurs with *Cenchrus ciliatus* and *Salsola australis* (Bean, 2010; Queensland Herbarium, 2020). *Notable features*: Flowering and fruiting occurs from April to July but may also occur outside this period (TSSC, 2024). *Closest known record*: Two records occur 35km to the north and 20km to the south of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** This species was not identified during targeted flora surveys, despite extensive survey of rocky areas of exposed weathered rock that potentially provide suitable geology for the species. Additionally, *Acacia shirleyi* woodland was not identified within the Disturbance Footprint during surveys.
Solanum graniticum	E	PMST	*Current distribution*: This species is endemic to Queensland. It occurs in four locations: Gloucester Island, Cape Gloucester north of Proserpine, Eungella Dam, and Mount Zero- Taravale Sanctury (TSSC, 2021). *Habitat preferences*: The species grows in open eucalypt woodland on hillsides with shallow soil derived from granite or granodiorite. *Eucalyptus drepanophylla* is often present and dominant in the vegetation. Slight variation occurs between the four locations. At Gloucester Island and Cape Gloucester, it often occurs with *Allocasuarina littoralis* and *Lophostemon confertus* (REs 8.12.12d, 8.12.29b, 11.12.16, 8.12.6b, 8.12.14a). At Eungella Dam and Taravale it occurs with *Corymbia erythrophloia* (RE 11.12.1 and RE 9.12.23) (Queensland Herbarium, 2012; TSSC, 2021). *Notable features*: The species appears to be naturally rare. Flowering occurs in March. Fruits are mature in March, May and July (TSSC, 2021).	**Unlikely to occur** Suitable underlying geology is not present in the Disturbance Footprint and there are no records for this species within the region.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Closest known record: Approximately 62km to the north-east of the Disturbance Footprint (ALA, 2025).	
Quassia *Samadera bidwillii, Quassia bidwilii*	V	PMST	*Current distribution*: This species is endemic to Queensland. It occurs between Scawfell Island, near Mackay, and Goomboorian, north of Gympie (DEWHA, 2008c). *Habitat preferences*: The species commonly occurs in lowland rainforest often with *Araucaria cunninghamii* or on rainforest margins. It can also be found in other forest types, such as open forest and woodland. It is commonly found in areas adjacent to both temporary and permanent watercourses up to 510 m altitude (Hewson, 1985). Commonly associated trees in the open-forest and woodlands include *Blakella citriodora, Eucalyptus propinqua, E. acmenoides, E. tereticornis, Corymbia intermedia, E. siderophloia, E. moluccana, E. cloeziana* and *E. fibrosa* (DEWHA, 2008c). *Notable features*: Flowering and fruiting occurs from November to March (DEWHA, 2008c). *Closest known record*: Approximately 180km to the south-east of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** This species is distinctive and readily identifiable. Suitable riparian or woodland habitat with commonly associated species is not present within the Disturbance Footprint.

[1] CR = critically endangered, E = endangered, V = vulnerable, NT = near threatened, LC = least concern under the Queensland *Nature Conservation Act 1992*

[2] PMST = Protected Matters Search Tool, Wildlife Online = Wildlife Online Database

Threatened Fauna

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Birds				
Australian painted snipe *Rostratula australis*	E	PMST	*Current distribution:* This species is endemic to and occurs throughout Australia. It is most common in eastern Australia from Queensland to South Australia though recent records suggest it occurs more widely and frequently in the remote arid and tropical regions of Australia than was previously thought. In Queensland, the species is well-known from the Channel Country and Fitzroy Basin and recently from the floodwater plains of central and north Queensland (BirdLife Australia, 2023; TSSC, 2013). *General habitat preferences:* This species inhabits shallow terrestrial freshwater (occasionally brackish) wetlands (ephemeral and permanent). This primarily includes temporary and permanent lakes, swamps, claypans, inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Vegetation in these habitat areas typically include emergent tussocks of grass, sedges, rushes, reeds or samphire, often with *Muehlenbeckia* sp., *Melaleuca*; sometimes tree-lined, with some scattered fallen or washed-up timber (BirdLife Australia, 2023; TSSC, 2013). The structure of vegetation is important for the species, with patchy to continuous low vegetation in and/or surrounding the wetland being essential. Extensive reed-beds (or similar) are avoided (Rogers et al., 2003). The species uses modified habitats, such as low-lying woodlands converted to grazing pasture, sewage farms, dams, bores and irrigation schemes (BirdLife Australia, 2023). *Breeding habitat:* This species breeds in shallow wetlands with areas of bare wet mud and both upper and canopy cover nearby, typically from or near small islands in freshwater wetlands (BirdLife Australia, 2023; TSSC, 2013). *Closest known record:* The nearest sighting (circa. 1996) of this species is approximately 85.9 km north-east of the Disturbance Footprint (ALA, 2025).	**Likely to occur** Although this species was not detected during targeted fauna surveys, the Disturbance Footprint contains areas of gilgai habitat that may be suitable following periods of high rainfall (refer Figure 12). The species has also been recorded from within the desktop search extent. The species may use this potentially suitable habitat occasionally and temporarily during suitable seasonal conditions.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Common greenshank, Greenshank *Tringa nebularia*	E	PMST	*Current distribution*: This species has a wide global distribution and the widest distribution of any shorebird in Australia, found along all coastlines of Australia, including several wetland areas inland. It does not breed in Australia. In Queensland, it is widespread in the Gulf country and eastern Gulf of Carpentaria and has been recorded in most coastal regions, possibly with a gap between north Cape York Peninsula and Cooktown. Inland, there have been a few records south of a line from near Dalby to Mt Guide, and sparsely scattered records elsewhere. Sites of international importance in Queensland include South East Gulf of Carpentaria and Great Sandy Strait (DCCEEW, 2024b; Higgins & Davies, 1996a). *General habitat preferences*: This species inhabits a wide variety of inland wetlands and sheltered coastal habitats of varying salinity, including sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass, both permanent and ephemeral terrestrial wetlands, including swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans and salt flats (DCCEEW, 2024b; Higgins & Davies, 1996a). The species occurs in a variety of freshwater, marine, and artificial wetlands having been recorded within swamps, open muddy or rocky shores of lakes and large rivers, sewage farms, saltworks, inundated rice-fields, ponds, reservoirs, flooded grasslands, saltmarshes, sandy or muddy coastal flats, mangroves, estuaries, lagoons, pools on tidal reefs, or in areas of exposed coral. The species generally avoids areas of open coastline (DCCEEW, 2024b). *Breeding habitat:* Nests are typically a shallow scrape on open ground, often within clearings in woods. They are typically next to a piece of dead wood or beside rocks, trees, fences, and sticks (DCCEEW, 2024b). *Foraging habitat*: This species forages at the edge of wetland, in soft mud on mudflats, in channels, or within shallows around the edge of waterbodies. It is often situated near or among mangroves or other sparse, emergent or fringing vegetation such as sedges or saltmarsh. They occasionally forage amongst seagrass beds (DCCEEW, 2024b).	**Unlikely to occur** The Disturbance Footprint contains areas of gilgai habitat that may be marginally suitable following periods of high rainfall; however, the species has not been recorded within the desktop search extent and is typically found in coastal areas. This species was not detected during targeted fauna surveys and is not known to occur the region.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Closest known record: Approximately 53km to the south of the Disturbance Footprint (ALA, 2025).	
Curlew sandpiper *Calidris ferruginea*	CR	PMST	*Current distribution*: This species has a wide global distribution. In Australia they occur in the far south-east and north-west. In Queensland, this species is more widespread in coastal areas south of Cairns, however scattered records also occur in the Gulf of Carpentaria and around Mount Isa (DCCEEW, 2023a). This species does not breed in Australia (del Hoyo et al., 1996). *General habitat preferences*: This species is commonly associated with Australian coastal sites and occasionally inland in suitable wetland habitats. *Foraging habitat*: This species forages in intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms and inland around ephemeral and permanent lakes, dams, waterholes and bore drains (DCCEEW, 2025c; Higgins & Davies, 1996a). *Roosting habitat*: This species roosts in gregarious colonies, in both fresh and brackish waters and usually with bare edges of mud or sand (Higgins & Davies, 1996a). *Closest known record*: Approximately 132km to the east of the Disturbance Footprint with the majority of the records along the coastline (ALA, 2025).	**Unlikely to occur** The Disturbance Footprint contains areas of gilgai habitat that may be marginally suitable following periods of high rainfall; however, the species has not been recorded within the desktop search extent and is typically found in coastal areas. This species was not detected during targeted fauna surveys and is not known to occur in the region.
Grey falcon *Falco hypoleucos*	V	PMST	*Current distribution*: The grey falcon is poorly understood and is considered to be Australia's rarest falcon and the rarest Falco species in the world (Schoenjahn, 2013). It occurs in arid and semi-arid Australia, with a stronghold in arid and semi-arid zones with a mean annual rainfall <500 mm but seldom in waterless desert, with the exception of drought conditions following wet years where the species may become marginally more widespread (BirdLife Australia, 2023; TSSC, 2020). This includes the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia (TSSC, 2020). It is a highly mobile species travelling hundreds of kilometres dispersing during periods of drought to coastal areas, with wintering occurring within northern Australia (mostly immature	**Unlikely to occur** The species is associated with arid environments. The Disturbance Footprint doesn't comprise woodlands in lowland plains intersected by tree-lined watercourses suitable for this species. Furthermore,

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			birds) (NSW Scientific Committee, 2009). It is a resident or nomadic visitor to inland parts of all mainland states, recorded from most of Australia except Cape York Peninsula and areas east of the Great Dividing Range in Queensland and New South Wales (S. Garnett et al., 2021; TSSC, 2020). Their home range size is not specified however it is likely to be larger than 100km^2 (NSW Scientific Committee, 2009) *General habitat preferences*: The grey falcon occurs over open country and wooded lands of tropical and temperate Australia (BirdLife Australia, 2023; TSSC, 2020). It mainly occurs on sandy and stony plains of inland drainage systems, lightly timbered with acacia scrublands and intersected by eucalypt-lined, wooded, watercourses (BirdLife Australia, 2023). They hunt far into open areas, over spinifex (Triodia), tussock grassland (Astrebla), and low shrubland (e.g. bluebush), as well as near and over swamps, bores and waterholes, where surface water attracts prey, similarly occurring in tussock grasslands and open woodlands during winter (BirdLife Australia, 2023; TSSC, 2020). Occasionally they are found near the coast in open woodlands (e.g. mallee), lightly timbered plains and grasslands of lowlands and foothills, as well as occasionally entering country towns (BirdLife Australia, 2023). *Breeding habitat*: Nesting occurs usually on slender, sloping, or vertical forks in the top part of the tallest tree in an area, usually near water or dry watercourses. Nest height ranges from 6 m to over 25 m (BirdLife Australia, 2023). *Closest known record*: Approximately 68km to the south-west of the Disturbance Footprint (ALA, 2025).	the species is considered a rare vagrant to areas of eastern Queensland.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Latham's snipe, Japanese snipe *Gallinago hardwickii*	V	PMST	*Current distribution*: This species is known from all east coast areas. Its distribution extends inland over the eastern tablelands in south-eastern Queensland (and occasionally from Rockhampton in the north), and to west of the Great Dividing Range in New South Wales. It is occasionally recorded in south-western Queensland. Breeding occurs entirely in Japan and Russia (DCCEEW, 2025b). *General habitat preferences*: In Australia the species typically occurs in permanent and ephemeral wetlands up to 2000 m above sea-level. They inhabit open, freshwater wetlands with low, dense vegetation. However, they can also occur in habitat saline or brackish water, in modified or artificial wetlands, and in areas located close to humans or human activity. They generally occupy flooded meadows, seasonal or semi-permanent swamps, or open waters, but various other freshwater habitats can be used including bogs, waterholes, billabongs, lagoons, lakes, creek or river margins, river pools and floodplains. (DCCEEW, 2025b). *Foraging habitat*: This species feeds in soft mudflats or shallow water typically at night, early morning, or evening. It is omnivorous and feeds on plant material from species in families including Cyperaceae, Poaceae, Juncaceae, Polygonaceae, Ranunculaceae, and Fabaceae (DCCEEW, 2025b). *Roosting habitat*: This species roosts individually or in aggregations, where there is adequate shallow flooded or inundated substrate. They are found amongst dense cover comprising sedges, grasses, lignum, reeds, and rushes. They are also known to use crops and pasture (DCCEEW, 2025b). *Closest known record*: This species was recorded during ecological surveys at the nearby Red Hill mining lease, approximately 17 – 25 km away from the Study Area (BMA, 2014). Otherwise the nearest published record is approximately 26km to the east of the Disturbance Footprint (ALA, 2025).	**Likely to occur** Although this species was not detected during targeted fauna surveys, the Disturbance Footprint contains areas of gilgai habitat that may be suitable following periods of high rainfall (refer Figure 12). The species has also been recorded from within the desktop search extent. The species may use this potentially suitable habitat occasionally and temporarily during suitable seasonal conditions.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Masked owl *Tyto novaehollandiae kimberli*	V	PMST	*Current distribution*: This subspecies is very poorly understood. Three populations have been suggested in the Kimberley, Northern Territory and Cape York. In Queensland it occurs along the southern rim of the Gulf of Carpentaria, throughout Cape York Peninsula and south to the Atherton Tablelands and the Einasleigh-Burdekin divide. There is some confusion about where the Queensland southern limit of the subspecies is, with authorities suggesting Mackay or Coomooboolaroo Station, west of Rockhampton (S. Garnett et al., 2011; TSSC, 2015). The masked owl (northern) is sedentary or resident with no evidence for migration (BirdLife Australia, 2023). It is territorial over a large home range and usually seen singularly but occasionally in pairs or family groups (BirdLife Australia, 2023). Radio-tracked females of the southern subspecies *T. n. novaehollandiae* stayed within a core area of approximately 155 ha and within a home range of 1017-1178 ha and always within <5 km of centre of home-range in the non-breeding period (BirdLife Australia, 2023; Higgins, 1999; Kavanagh & Murray, 1996). *General habitat preferences*: This species typically inhabits coastal or upland areas of sclerophyll forest or woodland, often near ecotones with open areas, such as grassland, heath or cane fields, and typically grassy or with a mosaic of sparse and dense ground-cover (BirdLife Australia, 2023). In the Northern Territory, the species inhabits riparian forests and *Melaleuca* spp. swamps (BirdLife Australia, 2023). Other associated vegetation has been described from historical occurrences in New South Wales as dominated by eucalypt species (BirdLife Australia, 2023). *Closest known record*: Approximately 182km to the north of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** This species has not been recorded within the Disturbance Footprint and is typically associated with coastal and adjacent ranges. The Disturbance Footprint is outside the current known distribution of this species and there are no records in the region.
Painted honeyeater *Grantiella picta*	V	PMST	*Current distribution:* This species is widespread and sparsely distributed from southeastern Australia to northwestern Queensland and eastern Northern Territory (S. T. Garnett & Crowley, 2000). The greatest concentrations and	**Unlikely to occur**

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			almost all breeding occurs on the inland slopes of the Great Dividing Range in New South Wales, Victoria and southern Queensland (DotE, 2015). Painted honeyeater follows a seasonal north-south movement dictated by mistletoe fruiting (DotE, 2015). After breeding, the species then moves to semi-arid areas such as central and western Queensland (DAWE, 2021). Given this, the species is considered to be highly dispersive and nomadic, and thus can occur across a wide variety of landscapes (DAWE, 2021). *General habitat preferences:* This species' habitat mostly comprises a strong association with mistletoes, occurring in eucalypt forests, woodlands, riparian woodlands of *Eucalyptus largiflorens* and *E. camaldulensis*, box-ironbark-yellow gum woodlands, acacia dominated woodlands, paperbarks, *Casuarina* spp., *Callitris* spp. and trees on farmland or in gardens (BirdLife Australia, 2023; DotE, 2015). The species prefer woodlands that with a higher number of mature trees which generally contain more mistletoes, and are more common in wider areas of woodland than in narrower strips (DotE, 2015). It mainly occurs in box-ironbark woodlands and forests on inland foothills of the Great Divide, dominated by species such as Red Ironbark, Mugga, Yellow Box, *E. dives* or *E. macrorrhyncha* with mistletoe species; *Amyema pendulum* and *A. miquelii*; also in box-casuarina woodlands, especially those dominated by Yellow Gum with Buloke, and Belah (BirdLife Australia, 2023). It is also common in riparian forests of river sheoak with the mistletoe *Amyema cambagei* (BirdLife Australia, 2023). It is often found on plains with scattered eucalypts, and remnant trees on farmland, sometimes in stands of acacia, such as Myall, *A. victoriae*, Mulga, Brigalow and silver wattle with mistletoes, including *Amyema quandang* and *A. preissii* (BirdLife Australia, 2023). The species Also occurs in woodlands dominated by native pine, Callitris; or River Red Gum and Black Box, with Box and Drooping Mistletoes (BirdLife Australia, 2023). Sometimes observed in urban parks and gardens, especially those with large eucalypts (BirdLife Australia, 2023).	The Disturbance Footprint is outside the current known distribution of this species.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Closest known record: Approximately 250km to the south of the Disturbance Footprint and 300km to the west of the Disturbance Footprint (ALA, 2025).	
Red goshawk *Erythrotriorchis radiatus*	E	PMST	*Current distribution*: The range of the red goshawk has significantly retracted in recent years towards northern Australia and the species is now considered locally extinct in southern Queensland and New South Wales (DCCEEW, 2023b). It appears the species is no longer present or is present at critically low levels in eastern Australian Temperate Forests and Brigalow Tropical Savannah ecoregions in coastal and sub-coastal eastern Australia. It is thought the species is no longer present in the Rockhampton and Eungella regions (MacColl et al., 2023). Recent records in Queensland suggest that the species is existing in National Parks or State forests with a stronghold in north-east Queensland and eastern Cape York Peninsula (DERM, 2012; MacColl et al., 2023). *General habitat preferences:* The species occurs over wooded and forested lands of tropical and warm-temperate Australia, coastal and sub-coastal (BirdLife Australia, 2023). It prefers intact and extensive woodlands and forests with a mosaic of vegetation types, as well as areas containing permanent water and large prey populations (i.e. birds). Tall open forest, woodland and rainforest edges, riverine vegetation and forests of intermediate density are favoured, as are ecotones between habitats of differing densities: e.g. between rainforest and eucalypt forest, between gallery forest and woodland, or on edges of woodland and forest where they meet grassland, cleared land, roads or watercourses (BirdLife Australia, 2023; DCCEEW, 2023b). The species avoids very dense and very open habitats, although it is sometimes seen over open agricultural land or grassland. It rarely enters dense forest (rainforest, tall wet forest), except as drought refuge; but may occur on edges and in clearings, penetrate along roads or watercourses, or hunt over canopy (BirdLife Australia, 2023). Immature birds have been reported from mangroves, open river floodplains, low open woodland, agricultural land and pasture, but such habitats not used regularly (BirdLife Australia, 2023).	**Unlikely to occur** The Disturbance Footprint does not support large riverine habitat where the species is known to breed, nor is the remnant vegetation within the Disturbance Footprint well connected to intact and extensive forests mosaics. The species' distribution is thought to have contracted substantially to northern areas in Australia in recent years.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Breeding habitat: Nesting occurs in tall trees within one kilometre of permanent water, generally in open, biologically rich forest or woodlands (DCCEEW, 2023b). *Closest known record*: There are no contemporary records within the desktop search extent, the nearest being approximately 30km to the east of the Disturbance Footprint recorded in 2013 (ALA, 2025).	
Sharp-tailed sandpiper *Calidris acuminata*	V	PMST	*Current distribution:* This species has a widespread global distribution. It inhabits Australia during the non-breeding season and are found mostly in the south-east but are widespread in both inland and coastal locations including freshwater and saline habitats. In Queensland, they are recorded in most regions, being widespread along much of the coast and are very sparsely scattered inland, particularly in central and south-western regions (Higgins & Davies, 1996b). There are 39 internationally important sites across Australia, four of which are in Queensland comprising south-east Gulf of Carpentaria, Lake Machattie, Lake Yamma Yamma, and Lake Numalla (DCCEEW, 2024a). *General habitat preferences:* This species inhabits muddy edges of shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh, or other low vegetation. This includes lagoons, swamps, lakes and pools near the coast, and dams, waterholes, soaks, bore drains and bore swamps, saltpans and hypersaline salt lakes inland. The species may use flooded paddocks, sedgelands and other ephemeral wetlands, but vacate these habitats during dry conditions. Marine habitats for the species include intertidal mudflats in sheltered bays, inlets, estuaries, or seashores, and swamps and creeks lined with mangroves. They sometimes occur on rocky shores and rarely on exposed reefs (DCCEEW, 2024a). *Foraging habitat:* This species forages in fresh and hypersaline environments along the edge of water on mudflats, coastal and inlands wetlands, and sewage ponds. The species may also forage in agricultural pasture following a rain	**Unlikely to occur** The Disturbance Footprint contains areas of gilgai habitat that may be suitable following periods of high rainfall. However, this species is typically found in coastal areas and there are no records within the desktop search extent.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			event. During migration, they are found to forage on rocky and sandy beaches and freshwater and inland saltwater habitats (Higgins & Davies, 1996b). *Roosting habitat*: During their migration, the species roosts on rocky and sandy beaches, freshwater and inland saltwater habitats (Higgins & Davies, 1996b). *Closest known record:* Approximately 25km to the east of the Disturbance Footprint (ALA).	
Southern black-throated finch *Poephila cincta cincta*	E	PMST	*Current distribution:* The historic range has largely contracted and is now only locally common in Queensland at sites near Townsville and Charters Towers, with small flocks scattered throughout the Brigalow Belt North and Desert Uplands bioregions (Black-throated Finch Recovery Team et al., 2007). Very few records occur south of Rockhampton after the 1970s and no populations are known to occur on conservation reserves (DCCEEW, 2025c). There are no modern records (since 2000) in the northern Bowen Basin (DAWE, 2023). Although movements are poorly known they are probably sedentary or resident around Charters Towers, Innisfail, Townsville and Rockhampton in Queensland (BirdLife Australia, 2023). *General habitat preferences:* This species occurs mainly in dry, open, grassy woodlands and forests, typically dominated by *Eucalyptus*, *Corymbia* and *Melaleuca*, and occasionally in tussock grasslands of the tropics and subtropics with seeding grasses and free water (BirdLife Australia, 2023; DCCEEW, 2025c). They mainly inhabit dry, open to very open (savanna) eucalypt woodlands, often along or near watercourses, or in the vicinity of water but also woodlands dominated by paperbarks or acacias (BirdLife Australia, 2023; DCCEEW, 2025c). Almost all recent records of the finch from south of the tropics have been in riparian habitat (Black-throated Finch Recovery Team, 2004). Some of the more common species of eucalypts in woodlands and forests frequented by the subspecies include *Eucalyptus platyphylla*, *Corymbia clarksoniana*, *Melaleuca viridiflora*, *E. melanophloia*, *E. brownii*, *E. similis*, *E. crebra*, *E. tereticornis* and *E. camaldulensis*. (DAWE, 2023).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			Areas with a high diversity of grass species, particularly native grass species are likely to be favoured by the species as they are a specialist granivores requiring year-round access to grass seed (DAWE, 2023). *Closest known record:* Approximately 320 km to the east of the Disturbance Footprint on the coast (ALA, 2025).	
Squatter pigeon (southern) *Geophaps scripta scripta*	V	PMST, Wildlife Online	*Current distribution:* The species is locally abundant within the northern part of its range (i.e. Brigalow Belt (North) and Desert Uplands Bioregions). It is considered to be common in grazing country north of the Tropic of Capricorn. The squatter pigeon (southern) occurs on the inland slopes of the Great Dividing Range. Its current distribution extends from the Burdekin-Lynd Divide in central Queensland, west to Longreach and Charleville, east to the coast between Port Curtis and Proserpine, and south to New South Wales north of 29°S (Cooper et al., 2015). There is a broad zone of hybridisation with the northern subspecies along the Burdekin-Lynd Divide (S. T. Garnett & Crowley, 2000; Higgins & Davies, 1996b). It is known to occur within the following natural resource management regions: Desert Channels, Burdekin, Mackay Whitsunday, Fitzroy, Burnett Mary, South East Queensland, Condamine, Border Rivers and Maranoa-Balonne, and South West Queensland (DCCEEW, 2025c). *General habitat preferences:* The species is generally found in areas mostly dominated in the overstorey by *Eucalyptus*, *Acacia* and *Callitris* species, in remnant, regrowth or partly modified vegetated communities and within 3km of water bodies or water courses (DCCEEW, 2025c). Water bodies suitable for the species include permanent or seasonal rivers, creeks, lakes, ponds and waterholes (BirdLife Australia, 2023; TSSC, 2015). The species drinks daily and prefers to drink where there is gently sloping, bare ground on which to approach and stand at the water's edge. A small patch (less than a square metre) of bare ground at the water's edge is what the bird requires (DCCEEW, 2025c). Squatter Pigeon (southern) habitat is known to occur on well-draining, sandy or loamy soils on low, gently sloping, flat to undulating plains and foothills (LZ 5) and and lateritic (duplex) soils on low 'jump-ups' and escarpments (LZ 7). It mainly	**Known to occur** This species was observed within the Disturbance Footprint and within the larger Study Area near dams, small waterbodies or within lightly wooded areas (refer Figure 16).

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			forages on seeds which have fallen to the ground from low vegetation, such as grasses, herbs and shrubs (Chrome 1976b; Chrome and Shields 1992). The species forages in areas with patchy ground cover (rarely exceeding 33% cover) of native, perennial tussock grass, with some amount of low shrubs and forbs tolerated (DCCEEW, 2025c). *Breeding habitat:* Breeding habitat comprises foraging habitat within 1km of permanent water sources, particularly in areas that are well draining (DCCEEW, 2025c). *Nearest record:* This species was recorded in the Study Area during seasonal surveys and is well known from the region (ALA, 2025). A previous ecological survey observed a pair of squatter pigeon (southern) in open grassy woodland approximately 10 km from the Study Area (AECOM, 2015). This species was also recorded during ecological surveys at the nearby Red Hill mining lease, approximately 20 km from the Study Area (BMA, 2014).	
Star finch (eastern), Star finch (southern) *Neochmia ruficauda ruficauda*	E	PMST	*Current distribution:* The distribution of the star finch is poorly known but it is thought to only occur in central Queensland. The distribution is thought to be from Bowen in the north, to Winton in the west and Wowan in the south. It is possible that the distribution extends farther north to Mount Surprise and the Cloncurry-Mount Isa region, but records from these locations could relate to the subspecies *N. r. subclarescens*. The total population has been estimated as being 50 or less breeding birds. It is thought to be extinct in south-east Queensland (DCCEEW, 2025c). *General habitat preferences:* The species occurs mainly in grasslands and grassy woodlands that are located close to bodies of fresh water. It also occurs in cleared or suburban areas such as along roadsides and in towns (DCCEEW, 2025c). *Closest known record:* There are no recent records within 100km of the Study Area (ALA, 2025).	**Unlikely to occur** This species has not been sighted in this region in recent history.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
White-throated needletail *Hirundapus caudacutus*	V	PMST	*Current distribution:* The species breeds in Siberia from April to August and in the non-breeding season is widespread in eastern and south-eastern Australia, where it occurs in all coastal regions and occasionally in adjacent inland plains. It is widespread in Victoria south of the Great Dividing Range and less so in western Victoria. In South Australia it occurs west to the Yorke Peninsula and Mount Lofty Ranges. It is widespread in Tasmania. It only occurs as vagrants in the Northern Territory and Western Australia (DCCEEW, 2025c). *General habitat preferences:* In the non-breeding season, it can occur over most habitat types, being most often recorded above wooded areas including open forest, closed forest and rainforest. It is recorded from ground level up to 1000m altitude and is almost exclusively aerial in Australia. It is commonly observed high on storm fronts feeding exclusively on insects (DCCEEW, 2025c). *Roosting habitat*: The species has been recorded roosting in hollows in Australia. Roosting habitat has been recorded as hollow-bearing trees on cliffs, ridges, edges of clearing areas and emergent trees (DCCEEW, 2025c). *Closest known record:* Approximately 13km to the east of the Disturbance Footprint (ALA, 2025). Additionally, this species was recorded during ecological surveys at the nearby Red Hill mining lease, approximately 17 – 25 km from the Study Area (BMA, 2014).	**Likely to occur** This species was not detected during targeted fauna surveys. This species has been recorded in the desktop search extent. It is predominately aerial and may overfly the Study Area, including the Disturbance Footprint as part of wider foraging and dispersal movements. However, no potential roosting habitat, such as edges of woodland with tall trees and hollows adjacent to open, cleared areas, was identified within the Disturbance Footprint.
Mammals				
Corben's long-eared bat, South-eastern long-eared bat *Nyctophilus corbeni*	V	PMST	*Current distribution:* The species is found in southern central Queensland, central western New South Wales, north-western Victoria and eastern South Australia, where it is patchily distributed, with most of its range in the Murray Darling Basin. Most records are from inland of the Great Dividing Range. The species is uncommon within this distribution and is rarely recorded, except in some areas including the Nandewar and Brigalow Belt South bioregions in New South Wales and Queensland (TSSC, 2015).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			General habitat preferences: This species inhabits inland woodland vegetation types, including woodlands of *Allocasuarina luehmannii*, *Acacia harpophylla*, *Casuarina cristata*, *Angophora costata*, *Eucalyptus camaldulensis*, *E. largiflorens* and various types of tree mallee, however, the most common is box, ironbark and cypress pine vegetation (TSSC, 2016). The species is most abundant in more extensive stands of vegetation and habitats with a distinct tree canopy and dense, cluttered understorey (TSSC, 2016). It also appears to prefer old-growth forest where it roosts in dead trees or dead spouts of live trees (TSSC, 2016). The species has also been found to nest in exfoliating bark (DEWHA, 2010). It generally forages in concentrated tree patches within the landscape (TSSC, 2016). *Closest known record:* Approximately 270km to the south of the Disturbance Footprint (ALA, 2025).	
Ghost bat *Macroderma gigas*	E	PMST	*Current distribution:* The species' current range is discontinuous, with geographically disjunct colonies occurring in the Pilbara, Kimberley (including several islands), Northern Territory (including Groote Eylandt), the Gulf of Carpentaria, coastal and near coastal eastern Queensland from Cape York to near Rockhampton, and western Queensland (including Riversleigh and Cammoweal districts (TSSC, 2016a). *General habitat preferences:* The species occurs across a range of habitats, from arid Pilbara to tropical savanna woodlands and rainforests. During the daytime they roost in caves, rock crevices and old mines. Roost sites used permanently are generally deep natural caves or disused mines with a relatively stable temperature of 23°–28°C and a moderate to high relative humidity of 50–100 percent. The average foraging distance is approximately 2 km from the daytime roost (TSSC, 2016a). *Closest known record:* There are very few records within 100 km of the Study Area and almost all are historic or at least 20 years old. The nearest record is	**Unlikely to occur** No suitable roosting habitat was observed within the Disturbance Footprint or surrounds. There are no records of the species within the desktop search extent.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			from 1978 approximately 57km to the east of the Disturbance Footprint (ALA, 2025).	
Greater glider (northern) *Petauroides minor*	V	PMST	*Current distribution:* The greater glider (northern) occurs in the wet-dry tropical region of north-eastern Australia, including the Wet Tropics World Heritage Area. It is distributed from around Townsville northwards to the Windsor Tablelands. This distribution is very patchy with some isolated subpopulations, for example in the Gregory Range/Gilbert Plateau west of Townsville and Blackbraes National Park (DCCEEW, 2025c) *General habitat preferences:* The greater glider (northern) is an arboreal nocturnal marsupial, predominantly solitary and largely restricted to eucalypt forests and woodlands of north-eastern Australia. It is typically found in highest abundance on high elevation, wetter sites in open woodland to open forests, containing relatively old trees and abundant hollows. It is likely that only a proportion of forest in potential habitat areas is suitable for the species, as the structural attributes of the forest overstorey and forage quality it relies on vary considerably across the landscape. *Shelter and denning habitat:* During the day it shelters in tree hollows, with a particular preference for large hollows (diameter >10 cm) in large, old trees. *Eucalyptus acmenoides* and *Corymbia citriodora* are favoured denning trees for the greater glider (northern). In the north of its range, *E. tereticornis* are favoured for denning (DCCEEW, 2025c). *Closest known record:* Recorded approximately 12 km south-east of the Disturbance Footprint in 2015 (ALA, 2025). However, these records pre-date the separation of the species into at least two separate species in 2020 and therefore are likely to be the currently accepted greater glider (southern and central).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution. The nearby record in the ALA is most likely the central or southern subspecies.
Greater glider (southern and central)	V	PMST	*Current distribution:* The species occurs in eastern Australia, where it has a broad distribution from around Proserpine in Queensland, south through New South Wales and the Australian Capital Territory, to Wombat State Forest in	**Unlikely to occur** This species was not detected during targeted

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Petauroides volans			central Victoria. It occurs across an elevational range of 0–1200 m above sea level (DAWE, 2022a). *General habitat preferences:* This species is largely restricted to eucalypt forests and woodlands of eastern Australia, typically found in highest abundance in taller, montane, moist eucalypt forest on fertile soils, with relatively old trees and abundant hollows. Six species were identified as dominant or co-dominant species to the majority of greater glider habitat: *Corymbia citriodora, Eucalyptus moluccana, E. tereticornis, E. crebra, C. intermedia and E. portuensis*. Size of trees is also important for Greater Gliders, with trees >30cm DBH preferred for foraging and >50cm DBH for denning as they are more likely to contain suitable hollows for sheltering. Greater glider shelters in tree hollows, with a preference for large hollows in large old trees that are both dead and alive. They can be found in regrowth forest provided sufficient hollows are present and conversely are absent when there are insufficient hollows. The species has a preference to large intact areas of forest (Eyre et al., 2022). *Shelter and denning habitat:* In South East Queensland, the species shows a strong preference for three den-tree species; broad-leaved white mahogany, red ironbark, and forest red gum. The species requires at least two-four live den trees for every 2 ha of suitable forest habitat. The species also prefers a cool microclimate and favours protected gullies, sheltered high elevation areas, coastal lowland areas and southern slopes (DAWE, 2022a). *Closest known record:* In consideration of the separation of the species into two separate species in 2020, the nearby records of *Petauroides minor* approximately 12km to the south-east of the Study Area in the ALA are likely to be that of the southern and central subspecies (ALA, 2025).	fauna surveys. Habitat assessments recorded low abundance (<2 hollows) of large hollow bearing trees at 62% of sites, moderate abundance (2-4 hollows) at 22% of sites and high abundance (>4 hollows) at 16% of sites. However, hollow-bearing trees generally supported only small hollows, with large hollows (>10cm diameter) at low abundance across the Disturbance Footprint. Furthermore, source habitat (riparian and alluvial woodland) necessary to maintain populations during extremely dry weather events, had limited connectivity to habitat (*Eucalyptus crebra* woodland) within the Disturbance Footprint. Vegetation between these habitat patches comprised grassland, brigalow and non-remnant communities, inhibiting dispersal of the species. Charlie Creek in

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
				the north-east of the Disturbance Footprint comprised a sparse canopy (<20% cover) of *Eucalyptus tereticornis* and *Eucalyptus camaldulensis* of 15m median height. Distances between canopy trees (50-100 m in many locations), were too great to support dispersal.
Koala *Phascolarctos cinereus*	E	PMST	*Current distribution:* The listed population of the koala has a wide but patchy distribution that spans the coastal and inland areas of Queensland north to the Herberton area and westwards into hotter and dryer semi-arid climates of central Queensland, New South Wales and the Australian Capital Territory. Koalas are widespread across Queensland, occurring in patchy and often low-density populations across the different bioregions. They occur as far north as the Einasleigh Uplands and Wet Tropics bioregions, and to the south and west in the Desert Uplands, Central Mackay Coast, Mitchell Grass Downs, Mulga Lands, Brigalow Belt North, Brigalow Belt South, and South Eastern Queensland bioregions, where they are most frequently sighted (DAWE, 2022b). *General habitat preferences:* In Queensland, koalas inhabit moist coastal forests, southern and central western subhumid woodlands, and several eucalypt woodlands adjacent to waterbodies in semi-arid western parts of the state. Surveys in north-western Queensland found koalas were patchily distributed and associated with creek-lines and areas of higher tree species richness, with higher abundance correlating with leaf-moisture content. Koalas are reported to utilise more than 400 different tree species for their food and habitat requirements, with tree species varying by habitat type and location across their range. Primary food species differ across habitats and may be as	**Known to occur** This species was detected on bioacoustic recorders at two locations within the Study Area. One of these locations is within the Disturbance Footprint (refer Figure 13).

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			few as two at a particular location. Koalas feed on approximately 120 species of *Eucalyptus, Corymbia and Angophora* across their range (DAWE, 2022b). *Closest known record:* This species was recorded in the Study Area during the seasonal field surveys for the Project and was recorded in 2024 from 4 km north-west of the Disturbance Footprint (ALA, 2025). This species was also recorded during ecological surveys at the nearby Red Hill mining lease, approximately 20 km from this Study Area (BMA, 2014).	
Short-beaked echidna *Tachyglossus aculeatus*	SL	Wildlife Online	*Current distribution:* The short-beaked echidna is found throughout Australia including Tasmania (Van Dyck & Strahan, 2008). *General habitat preferences:* The species occurs throughout Australia in a wide variety of habitats including mountains, tropics, open woodlands, grasslands, arid zones and coastal environments; wherever there is a supply of ants and termites, upon which it feeds. They prefer to inhabit areas with vegetation that provides cover such as gaps under rocks, hollow logs, hollows at the base of trees, piles of leaves or bunched grasses (Nicol et al., 2011). The species also enters a period of torpor or deep hibernation during autumn and winter, during which time it also requires these forms of cover (Atlas of Living Australia, 2022). *Closest known record:* This species was recorded in the Study Area during field surveys. It has also been recorded approximately 10 km south-west of the Disturbance Area in 2012 (ALA, 2025).	**Known to occur** This species was recorded within the Disturbance Footprint (refer Figure 21).
Reptiles				
Allan's lerista, Retro slider *Lerista allanae*	E	PMST	*Current distribution:* Allan's lerista is only known from black soil downs in the Brigalow Belt North Bioregion in Queensland, between Clermont and Capella (DCCEEW, 2025c). *General habitat preferences:* It is found in association with *Eucalyptus orgadophila/E. erythrophloia* open woodlands and *Melaleuca bracteata*. It is currently associated with altered landscapes that have areas with leaf litter and friable surface soils beneath trees and shrubs. These sites were characterised by	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution. Although potential suitable vegetation communities and geology occur in the region,

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			dark chocolate non-cracking clay-based soils which are mapped as Regional Ecosystem 11.8.5 and 11.8.11 (DCCEEW, 2025c). Soil types associated with records were described as 'fairly friable (clay content 30-64%), alkaline and rich, chocolate brown in colour' (Borsboom et al., 2010). Specimens have been collected in leaf litter and friable soil under *Geijera parviflora* and *Acacia salicina* with an adjacent grassy understory composed of *Cenchrus ciliaris* and native species (Borsboom et al., 2010). *Closest known record:* The closest known record is from 1948 and is approximately 95 km south-west of the Disturbance Area (ALA, 2025).	it has not been recorded in the region despite numerous surveys for resource projects in the region.
Dunmall's snake *Furina dunmalli*	V	PMST	*Current distribution:* Dunmall's snake is found from near the Queensland border throughout the Brigalow Belt South and Nandewar bioregions, and as far south as Ashford in New South Wales. In Queensland, it occurs primarily in the Brigalow Belt region in the south-eastern interior. The snake is very rare or secretive with limited records existing. It has been recorded at Archokoora, Oakey, Miles, Glenmorgan, Wallaville, Gladstone, Lake Broadwater, Mount Archer, Tarong Power Station, Exhibition Range National Park, roadside reserves between Inglewood and Texas, Rosedale, Yeppoon and Lake Broadwater Conservation Park (DCCEEW, 2025c). *General habitat preferences:* The species inhabits a range of habitats including forests and woodlands on black alluvial cracking clay and clay loams dominated by *Acacia harpophylla*, other wattles (*A. burowii*, *A. deanii*, *A. leiocalyx*), Callitris spp. or *Allocasuarina luehmannii*; and *Corymbia citriodora*, *Eucalyptus crebra*, *E. melanophloia*, *Callitris glaucophylla* and *A. luehmannii* open forest and woodland associations on sandstone derived soils (DCCEEW, 2025c). The species has been found sheltering under fallen timber and ground litter and may use cracks in alluvial clay soils. Records indicate the species prefers habitats between 200 to 500 m above sea level (DSEWPC, 2011). *Closest known record:* Recorded in 1999 approximately 155 km south-west of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
Fitzroy river turtle, *Rheodytes leukops*	E	PMST	*Current distribution:* The species is restricted to the Fitzroy River and its tributaries. Known sites include Boolburra, Gainsford, Glenroy Crossing, Theodore, Baralba, the Mackenzie River, the Connors River, Duaringa, Marlborough Creek, and Gogango (DCCEEW, 2025c; DEWHA, 2008c). *General habitat preferences:* The Fitzroy River turtle occurs in flowing rivers with large deep pools with rocky, gravelly or sandy substrates, connected by shallow riffles. Preferred areas have high water clarity and are often associated with ribbon weed (*Vallisneria* sp.) beds. Common riparian vegetation includes *Eucalyptus tereticornis*, *Casuarina cunninghamiana*, *Callistemon viminalis* and *Melaleuca linariifolia* (DCCEEW, 2025c; DEWHA, 2008c). *Closest known record:* Recorded in 2002 approximately 125 km south-east of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution and no suitable aquatic habitat is present.
Mount Cooper striped skink, Mount Cooper striped Lerista *Lerista vittata*	E	PMST	*Current distribution:* The species only occurs in a small area around Mt Cooper Station, near Charters Towers in Queensland. Only four museum specimens have been collected from approximately 90 km south-east of Charters Towers (DCCEEW, 2025c; DEWHA, 2008a). The known distribution of the species is fragmented due to agricultural clearing with populations known to occur on freehold land and in road reserves (Brigalow Belt Reptiles Workshop, 2010). *General habitat preferences:* This species occurs in semi-deciduous vine thicket on sandy soils and adjacent open patches of low vegetation on heavier soils. In the Mt Cooper area, it can found in Ironbark (*Eucalyptus crebra* and *E. melanophloia*) and bloodwood (*Corymbia clarksonia* and *C. intermedia*) dominated woodlands with shrub and/or grassy ground layers on deep red earths (RE 11.5.9), and undulating plains and steep hills on granitic rocks (RE 9.12.1a) (Brigalow Belt Reptiles Workshop, 2010; Cogger, 1993; Wilson & Knowles, 1988). However, remnant and regrowth semi-evergreen vine thicket (RE 11.5.15) on deep, porous, coarse, yellow-red sandy soils and adjacent heavier ironstone, is considered important habitat. In the Einasleigh Uplands, it can be found in *Cochlospermum gregorii*/*C. gillivraei* dominated low woodland to low open	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution and no suitable habitat is present.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			woodland (RE 9.12.36a), *Eucalyptus crebra*/*E. similis* dominated grassy, low open woodland on undulating plains and granitic rises (RE 9.12.14), *Eucalyptus crebra* and *Corymbia citriodora* dominated open forest, with a well-developed grassy understorey on red and yellow earths and sandy soils on the margins of high-altitude, sandstone plateaus (RE 2.10.3), *E. leucophylla*, *Corymbia terminalis* and *E. tectifica* dominated woodlands on flat sandy plains and deep yellow podzolic soils (RE 2.5.10) (Brigalow Belt Reptiles Workshop, 2010; Cogger, 1993). *Closest known record:* Recorded in 2022 approximately 165 km north-west of the Disturbance Footprint (ALA, 2025).	
Ornamental snake *Denisonia maculata*	V	PMST, Wildlife Online	*Current distribution:* The ornamental snake is only known from the Brigalow Belt North, and parts of the Brigalow Belt South Bioregions. The stronghold of this species is within the Fitzroy and Dawson River catchments, particularly in the area surrounding Moranbah (DCCEEW, 2025c). *General habitat preferences:* Ornamental snake prefer moist areas in woodlands and open forests, particularly in depressions located in on Land Zone 4 and in gilgai mounds occurring in areas of deep cracking alluvial soils with high clay content (DCCEEW, 2025c).The species habitat is generally found in *Acacia harpophylla*, *A. cambagei*, *A. argyrodendron* or *Eucalyptus coolabah* dominated communities including primarily REs 11.4.3, 11.4.6, 11.4.8 and 11.4.9 (DCCEEW, 2025c). Habitat is also found in grasslands that contain gilgai (DCCEEW, 2025c). Habitat characteristics that are shared across locations in which ornamental snake have been recorded include: being located in the lowest part of the catchment having a diversity of gilgai size and depth containing soils of high clay content and deep cracking characteristics the common presence of ground timber (especially piles) an abundance of burrowing frogs; and,	**Likely to occur** Seasonal targeted surveys failed to detect this species within the Disturbance Footprint. Large gilgai that had retained water surrounded by suitable woody debris were located in the south-west of the Disturbance Footprint (refer Figure 15). This area is connected to suitable habitat with large gilgai to the south, beyond the Study Area, where records for the species exist.

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			habitat patches greater than 10 ha and within, or connected, to larger areas of remnant vegetation (DCCEEW, 2025c). *Shelter and refuge habitat:* Ornamental snake shelter under logs, leaf litter, bark, rocks and coarse woody debris on the ground, and during dry periods they will seek refuge within clay cracks in gilgai (Brigalow Belt Reptiles Workshop, 2010). *Closest known record:* A previous ecological survey observed an ornamental snake on a creek bed approximately 3 km north of the Study Area (AECOM, 2015). Otherwise, the species has been commonly recorded within 20 km of the Study Area (ALA, 2025).	
Southern snapping turtle, White-throated snapping turtle *Elseya albagula*	CR	PMST	*Current distribution:* This species is found only in Queensland in the Fitzroy, Mary and Burnett Rivers and associated smaller drainages in south eastern Queensland. The Fitzroy catchment population has been separated from the Mary and Burnett catchments for an extended period (TSSC, 2014). *General habitat preferences:* The white-throated snapping turtle is recognised as a habitat specialist. Within the river system the white-throated snapping turtle prefers clear, flowing, well-oxygenated waters. This preference appears to be associated with their physiological adaption to extract oxygen from water via cloacal respiration. White throated snapping turtles do occur in non-flowing waters, but typically at much reduced densities (DCCEEW, 2025c). *Closest known record:* Recorded in 1998 approximately 125.6 km south-east of the Disturbance Footprint (ALA, 2025).	**Unlikely to occur** The Disturbance Footprint is outside the species' current known distribution and no suitable aquatic habitat is present.
Yakka skink *Egernia rugosa*	V	PMST	*Current distribution:* Yakka skink is endemic to Queensland where its distribution is patchy. Isolated populations occur throughout subhumid areas in the interior of Queensland from St George in the south, to Coen and Cape York in the north. In the southern half of the Brigalow Belt it occurs near Rockhampton, south to St George and west to Chesterton Range National Park (DotE, 2014). *General habitat preferences:* The species is known to occur in open dry sclerophyll forest, woodland and scrub, including on Land Zones 3, 4, 5, 7, 9 and	**Unlikely to occur** No latrines or burrow systems were identified during the ecological assessment and suitable micro-habitat features such as dense ground vegetation, large hollow logs, woody

Species	NC Act Status[1]	Record source[2]	Distribution and habitat	Likelihood to occur
			10. Common woodland and open forest types include *Acacia harpophylla*, *A. aneura*, *A. catenulata*, *A. shirleyi*, *Casuarina cristata*, *Eucalyptus populnea*, *Eucalyptus* spp. and *Callitris glaucophylla*. This species will often take refuge among dense ground vegetation, large hollow logs, cavities in soil-bound root systems of fallen trees and beneath rocks. The species also utilises coarse woody debris and rabbit warrens (DCCEEW, 2025c). It is commonly found in cavities under and between partly buried rocks, logs or tree stumps, root cavities and abandoned animal burrows. The species often takes refuge in large hollow logs and has been known to excavate deep burrow systems, sometimes under dense ground vegetation. In cleared habitat, this species can persist where there are shelter sites such as raked log piles, deep gullies, tunnel erosion/sinkholes and rabbit warrens. This species is not generally found in trees or rocky habitats (DoE, 2025). *Closest known record:* Recorded in 2000 approximately 230 km south-east of the Disturbance Footprint (ALA, 2025).	debris and large burrows is limited in the Study Area. There are no records of the species within the region.

[1] CR = critically endangered, E = endangered, V = vulnerable, NT = near threatened, SL = special least concern, LC = least concern under the Queensland *Nature Conservation Act 1992*.

[2] PMST = Protected Matters Search Tool, Wildlife Online = Wildlife Online Database.

Reference List

AECOM Australia Pty Ltd (AECOM). (2015, June 26). *Wards Well 1 and Lancewood 1 Wet Season Ecological Surveys—Memorandum*.

ALA. (2025). *Spatial Portal | Atlas of Living Australia*. https://spatial.ala.org.au/?q=lsid:https:%2F%2Fbiodiversity.org.au%2Fafd%2Ftaxa%2Fa80e865c-a5f4-46f1-ab0e-777cd1d9a011&qualityProfile=ALA

Atlas of Living Australia. (2022). *Echidna*. https://bie.ala.org.au/species/https://biodiversity.org.au/afd/taxa/0d4c9c0c-51d3-44e0-a365-fe0f8b791c66

Bean, A. R. (2010). Kelita (Amaranthaceae), a new genus from Queensland, Australia. *Muelleria*, *28*(2), 106–109.

Beehler, B. M., Pratt, T. K., & Zimmerman, D. A. (1986). *Field guide to the birds of New Guinea*. Princeton University Press.

BHP Billiton Mitsubishi Alliance (BMA). (2014). *Red Hill Mining Lease Environmental Impact Statement—Section 09 Terrestrial Ecology*. https://eisdocs.dsdip.qld.gov.au/Red%20Hill%20Mining%20Lease/EIS/Section%2009_Terrestrial%20Ecology.pdf

BirdLife Australia. (2023). *Handbook of Australian, New Zealand and Antarctic Birds Contents*.

Black-throated Finch Recovery Team. (2004). *Recovery Plan for the Black-throated Finch Southern Subspecies Poephila cincta cincta*. Department of Environment and Conservation and Queensland Parks and Wildlife Service.

Black-throated Finch Recovery Team, Department of Environment and Climate Change (NSW), & Queensland Parks and Wildlife Service. (2007). *National recovery plan for the black-throated finch southern subspecies Poephila cincta cincta*.

Blakers, M., Davies, S. J. J. F., & Reilly, P. N. (1984). *The Atlas of Australian Birds*. Melbourne University Press.

Borsboom, A. C., Couper, P. J., Amey, A., Hobson, R., & Wilson, S. K. (2010). *Rediscovery of the endangered Retro Slider (Lerista allanae) in the Clermont region of central Queensland*. Department of Environment and Resource Management (DERM).

Brigalow Belt Reptiles Workshop. (2010). *Proceedings from the workshop for the nine listed reptiles of the Brigalow Belt bioregions*. Queensland Herbarium.

Coates, D. J., & Bishop, K. D. (1997). *A Guide to the Birds of Wallacea Sulawesi, The Moluccas and Lesser Sunda Islands, Indonesia*. Dove Publications.

Cogger, H. G. (1993). *The action plan for Australian reptiles*. Australian Nature Conservation Agency.

Cooper, R. M., McAllan, I. A. W., & Curtis, B. R. (2015). *The Atlas of the Birds of NSW and the ACT* (Vol. 1). CSIRO Publishing.

DAWE. (2020). *Proposed expansion of extractive operation, Clarkes Road, Gin Gin, Queensland (EPBC 2017/7922)*. Australian Government.

del Hoyo, J., Elliot, A., & Sargatal, J. (1996). *Handbook of the Birds of the World, vol. 3: Hoatzin to Auks* (Vol. 3). Lynx Edicions.

Department of Agriculture, Water and the Environment (DAWE). (2021). *National Recovery Plan for the Painted Honeyeater (Grantiella picta)*. Department of Agriculture, Water and the Environment (DAWE).

Department of Agriculture, Water and the Environment (DAWE). (2022a). *Conservation Advice for Petauroides volans (greater glider (southern and central))*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-05072022.pdf

Department of Agriculture, Water and the Environment (DAWE). (2022b). *Conservation Advice for Phascolarctos cinereus (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/85104-conservation-advice-12022022.pdf

Department of Agriculture, Water and the Environment (DAWE). (2023, June). *Draft National Recovery Plan for the southern black-throated finch* Poephila cincta cincta.

https://www.dcceew.gov.au/sites/default/files/documents/draft-national-recovery-plan-southern-black-throated-finch.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2023a). *Conservation Advice for Calidris ferruginea (curlew sandpiper)*. Department of Climate Change, Energy, the Environment and Water (DCCEEW). https://www.environment.gov.au/biodiversity/threatened/species/pubs/856-conservation-advice-18122023.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2023b). *Conservation Advice for Erythrotriorchis radiatus (red goshawk)*. Department of Climate Change, Energy, the Environment and Water (DCCEEW).

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2024a). *Conservation Advice for Calidris acuminata (sharp-tailed sandpiper)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/874-conservation-advice-05012024.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2024b). *Conservation Advice for Tringa nebularia (common greenshank)*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/832-conservation-advice-05012024.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025a). *Apus pacificus—Fork-tailed Swift Species Profile and Threats Database*. Australian Government. https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=678

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025b). *Gallinago hardwickii—Latham's Snipe, Japanese Snipe Species Profile and Threats Database*. Australian Government.

Department of Climate Change, Energy, the Environment and Water (DCCEEW). (2025c). *Species Profile and Threats Database*. https://www.environment.gov.au/sprat

Department of Environment and Resource Management. (2012). *National recovery plan for the red goshawk Erythrotriorchis radiatus* [Report to the Department of Sustainability, Environment,

Water, Population and Communities]. Queensland Department of Environment and Resource Management.

Department of Environment (DotE). (2015). *Appendix A: Supporting information for each of the 14 migratory listed birds*. Department of the Environment (DotE).

Department of Environment, Science and Innovation (DESI). (2024). *Species Profile Search*. https://apps.des.qld.gov.au/species-search/

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). (2013, February 26). *Approved Conservation Advice for Dichanthium queenslandicum (king blue-grass)*. Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). https://www.environment.gov.au/biodiversity/threatened/species/pubs/5481-conservation-advice.pdf

Department of the Environment (DotE). (2014, April 29). *Approved Conservation Advice for Egernia rugosa (Yakka Skink)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/1420-conservation-advice.pdf

Department of the Environment (DotE). (2015). *Approved Conservation Advice for Grantiella picta (Painted Honeyeater)*. Department of the Environment (DotE). http://www.environment.gov.au/biodiversity/threatened/species/pubs/470-conservation-advice.pdf

Department of the Environment, Water, Heritage and the Arts (DEWHA). (2008a). *Approved Conservation Advice for Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin*. Department of the Environment, Water, Heritage and the Arts (DEWHA). https://www.environment.gov.au/biodiversity/threatened/communities/pubs/99-conservation-advice.pdf

Department of the Environment, Water, Heritage and the Arts (DEWHA). (2008b, March 26). *Approved Conservation Advice for Dichanthium setosum*. Department of the Environment, Water, Heritage and the Arts (DEWHA).

Department of the Environment, Water, Heritage and the Arts (DEWHA). (2008c, July 3). *Approved Conservation Advice for Quassia bidwillii (Quassia)*. Department of the Environment, Water,

Heritage and the Arts (DEWHA). https://www.environment.gov.au/biodiversity/threatened/species/pubs/10094-conservation-advice.pdf

Department of the Environment, Water, Heritage and the Arts (DEWHA). (2008d, December 16). *Approved Conservation Advice for Trymalium minutiflorum*. Department of the Environment, Water, Heritage and the Arts (DEWHA). https://www.environment.gov.au/biodiversity/threatened/species/pubs/24514-conservation-advice.pdf

DESI. (2024). *Species Profile Search* [Dataset]. https://apps.des.qld.gov.au/species-search/

DETSI. (2025). *Species Profile Search* [Dataset]. https://apps.des.qld.gov.au/species-search/

DEWHA. (2008a). *Approved Conservation Advice for Lerista vittata (Mount Cooper Striped Lerista)*. Department of the Environment, Water, Heritage and the Arts. http://www.environment.gov.au/biodiversity/threatened/species/pubs/1308-conservation-advice.pdf

DEWHA. (2008b). *Approved Conservation Advice for Omphalea celata*. Department of the Environment, Water, Heritage and the Arts. http://www.environment.gov.au/biodiversity/threatened/species/pubs/64586-conservation-advice.pdf

DEWHA. (2008c). *Approved Conservation Advice for Rheodytes leukops (Fitzroy Tortoise)*. http://www.environment.gov.au/biodiversity/threatened/species/pubs/1761-conservation-advice.pdf

DEWHA. (2010). *Survey guidelines for Australia's threatened bats*. Australian Government. https://www.agriculture.gov.au/sites/default/files/documents/survey-guidelines-bats.pdf

DoE. (2025). *Egernia rugosa in Species Profile and Threats Database*. Departent of Climate Change, Energy, the Environment and Water. http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1420

DotE. (2015, September). *Draft referral guideline for 14 birds listed as migratory species under the EPBC Act*. https://www.dcceew.gov.au/sites/default/files/documents/migratory-birds-draft-referral-guideline.pdf

DSEWPC. (2011). *Survey guidelines for Australia's threatened reptiles*. https://www.dcceew.gov.au/sites/default/files/documents/survey-guidelines-reptiles.pdf

Eyre, T. J., Smith, G. C., Venz, M. F., Mathieson, M. T., Hogan, L. D., Starr, C., Winter, J., & McDonald, K. (2022). *Guide to greater glider habitat in Queensland*. Department of Environment and Science, Queensland Government.

Forster, P. I. (1995). Omphalea celata, a new species of Euphorbiaceae from central Queensland. In *Austrobaileya* (Vol. 4, pp. 381–385).

Garnett, S., Baker, G. B., & ProQuest, E. (2021). *The Action Plan for Australian Birds 2020*. CSIRO Publishing.

Garnett, S., Szabo, J., & Dutson, G. (2011). *The Action Plan for Australian Birds*. CSIRO Publishing.

Garnett, S. T., & Crowley, G. M. (2000). *The Action Plan for Australian Birds 2000*. Environment Australia and Birds Australia. http://www.environment.gov.au/biodiversity/threatened/publications/action/birds2000/index.html

Halford, D. A., & Henderson, R. J. F. (2002). Studies in Euphorbiaceae A.L.Juss. Sens. Lat. 3. A revision of Bertya Planch. (Ricinocarpeae Müll.Arg., Bertyinae Müll.Arg.). *Austrobaileya*, *6*(2), 187–245.

Halford, J. J., & Jessup, L. W. (2020). Denhamia megacarpa J.J.Halford & Jessup and D. peninsularis J.J.Halford & Jessup (Celastraceae), two new species from Queensland. *Austrobaileya: A Journal of Plant Systematics*, *10*(4), 594–603. https://doi.org/10.5962/p.299927

Hewson, H. J. (1985). Simaroubaceae. In *Flora of New South Wales* (25th ed.). Australian Government Publishing Service.

Higgins, P. J. (1999). *Handbook of Australian, New Zealand and Antarctic Birds* (J. N. Davies & K. Y. Dabbagh, Eds.; Vol. 4). Oxford University Press.

Higgins, P. J., & Davies, S. J. J. F. (1996a). *Handbook of Australian, New Zealand and Antarctic Birds*. (Vol. 3). Oxford University Press.

Higgins, P. J., & Davies, S. J. J. F. (1996b). *Handbook of Australian, New Zealand and Antarctic Birds.* (Vol. 3). Oxford University Press.

Kavanagh, R. P., & Murray, M. (1996). Distribution of nocturnal forest birds and mammals in north-eastern Newcastle, New South Wales. *Emu*, *96*.

MacColl, C., Leseberg, N. P., Seaton, R., Murphy, S. A., & Watson, J. E. M. (2023). Rapid and recent range collapse of Australia's Red Goshawk Erythrotriorchis radiatus. *Emu - Austral Ornithology*, *123*(2), 93–104.

Marchant, S., & Higgins, P. J. (1990). *Handbook of Australian, New Zealand and Antarctic Birds. Volume One—Ratites to Ducks* (Vol. 1).

McGoldrick, I. (2013). Weipa commissions Northern Quoll surveys. *Rio Tinto Alcan*.

Nicol, S. C., Vanpé, C., Sprent, J., Morrow, G., & Andersen, N. A. (2011). Spatial ecology of a ubiquitous Australian anteater, the short-beaked echidna (Tachyglossus aculeatus). *Journal of Mammalogy*, *92*(1), 101–110.

NSW Scientific Committee. (2009). *Grey Falcon Falco hypoleucos*.

Pizzey, G., & Knight, F. (2007). *The field guide to the birds of Australia*. Harper Collins Publishers.

Queensland Government. (2025). *Taxon Record 11064—Dichanthium queenslandicum*. https://wildnet.science-data.qld.gov.au/taxon-detail?taxon_id=11064

Queensland Herbarium. (2012). *Regional Ecosystem Assessment Kit*. Department of Science, Information Technology, Innovation and the Arts.

Queensland Herbarium. (2020). *Herbarium records for Ptilotus uncinellus*. DES.

Rogers, D., Hance, I., & Paton, S. (2003). The Breeding Bottleneck: Breeding Habitat and Population Decline in the Australian Painted Snipe. *Australasian Shorebirds Conference*, *18*.

Schoenjahn, J. (2013). A hot environment and one type of prey: Investigating why the Grey Falcon (Falco hypoleucos) is Australia's rarest falcon. *Emu*, *113*, 19–25.

Threatened Species Scientific Committee. (2015). *Conservation Advice Nyctophilus corbeni south-eastern long-eared bat*. Department of the Environment.

Threatened Species Scientific Committee (TSSC). (2010). *Advice from the Threatened Species Scientific Committee (the Committee) on the list of Threatened Species under the Environment Protection*

and Biodiversity Conservation Act 1999 (EPBC Act). Eucalyptus raveretiana (black ironbox) Listing Advice. Department of Climate Change, Energy, the Environment and Water (DCCEEW). https://www.environment.gov.au/biodiversity/threatened/species/pubs/16344-listing-advice.pdf

Threatened Species Scientific Committee (TSSC). (2013). *Commonwealth Listing Advice on Rostratula australis (Australian Painted Snipe)*. Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC). http://www.environment.gov.au/biodiversity/threatened/species/pubs/77037-listing-advice.pdf

Threatened Species Scientific Committee (TSSC). (2014). *Conservation Advice—Elseya albagula (white-throated snapping turtle)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/81648-conservation-advice.pdf

Threatened Species Scientific Committee (TSSC). (2015). *Conservation Advice Tyto novaehollandiae kimberli masked owl (northern)*. Department of Climate Change, Energy, the Environment and Water. https://www.environment.gov.au/biodiversity/threatened/species/pubs/26048-conservation-advice-01102015.pdf

Threatened Species Scientific Committee (TSSC). (2016a). *Conservation Advice for Macroderma gigas ghost bat*.

Threatened Species Scientific Committee (TSSC). (2016b, December 16). *Conservation Advice: Bertya opponens*. Department of the Environment and Energy (DEE).

Threatened Species Scientific Committee (TSSC). (2020, July 9). *Conservation Advice Falco hypoleucos Grey Falcon*. Department of Agriculture, Water and the Environment. https://www.environment.gov.au/biodiversity/threatened/species/pubs/929-conservation-advice-09072020.pdf

Threatened Species Scientific Committee (TSSC). (2021). *Conservation Advice Solanum graniticum Granite Nightshade*. www.environment.gov.au/biodiversity/threatened/species/pubs/84819-conservation-advice-08122021.pdf

Threatened Species Scientific Committee (TSSC). (2024). *Conservation Advice Ptilotus uncinellus*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/91385-conservation-advice-04092024.pdf

TSSC. (2012). *Commonwealth Conservation Advice on Dichanthium setosum (bluegrass)*. Department of Sustainability, Environment, Water, Population and Communities.

TSSC. (2013a). *Commonwealth Listing Advice on Dichanthium queenslandicum (king blue-grass)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/5481-listing-advice.pdf

TSSC. (2013b). *Commonwealth Listing Advice on Digitaria porrecta (Finger Panic Grass)*. https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf

TSSC. (2015). *Approved Conservation Advice for Geophaps scripta scripta (Squatter Pigeon (southern)*. Department of the Environment. https://www.environment.gov.au/biodiversity/threatened/species/pubs/64440-conservation-advice-31102015.pdf

TSSC. (2016). *Conservation Advice Nyctophilus corbeni (South-eastern long-eared bat)*. Threatened Species Scientific Committee. http://www.environment.gov.au/biodiversity/threatened/species/pubs/83395-conservation_advice-01102015.pdf

TSSC. (2020, July 9). *Conservation Advice Falco hypoleucos (Grey Falcon)*. Threatened Species Scientific Committee.

Van Dyck, S., & Strahan, R. (Eds.). (2008). *The Mammals of Australia* (3rd ed.). New Holland Publishers.

Watkins, D. (1993). *A national plan for shorebird conservation in Australia* (RAOU Report Series).

Wilson, S. K., & Knowles, D. G. (1988). *Australia's Reptiles: A Photographic Reference to the Terrestrial Reptiles of Australia*. Collins Publishers.

Woinarski, J., Oakwood, M., Winter, J., Burnett, S., Milne, D., Foster, P., Myles, H., & Holmes, B. (2008). *Surviving the toads: Patterns of persistence of the northern quoll Dasyurus hallucatus in Queensland*. Report submitted to the Natural Heritage Trust Strategic Reserve Program.

Yalden, D. W. (2008). Diet, food availability and habitat selection of breeding Common Sandpipers Actitis hypoleucos. *Ibis*, *128*(1).

Appendix C Vegetation Community Descriptions

RE 11.3.25d: *Eucalyptus tereticornis* and *Melaleuca bracteata* open woodland fringing drainage lines on basalt plains (least concern)

This vegetation community is present in the north-east of the Study Area associated with Charlie Creek. The vegetation consists of an open canopy of occasional *Eucalyptus tereticornis* of low cover (5-10%) with a low tree layer of *Melaleuca bracteata* also with a low cover (5-15%) fringing drainage features. The canopy is discontinuous and large gaps exist between tree species. The bed of Charlie Creek is wide and flat and supports a mixed native and non-native grassland on clay derived from basalts. Ground layer species included *Dichanthium sericeum*, *Panicum decompositum*, *Eriochloa crebra* and *Aristida latifolia*. Ground cover vegetation is similar on the upper bank of the defined channel. Where the bed is wide (20-40 m), the bank is only 0.5 m high, but where the bed becomes narrower in the east, the bank becomes 1-2 m in depth.

This community was only represented by remnant vegetation in the Study Area. No mature regrowth or young woody regrowth was observed within the Study Area. A mixture of weedy species such as *Parthenium hysterophorus*, *Echinochloa colona*, *Cenchrus ciliaris* and *Bothriochloa pertusa* were common in this ecosystem.



RE 11.5.3: *Eucalyptus brownii* woodland on gently undulating plains (least concern)

This vegetation community typically occurred on gently undulating plains with red sandy to loamy soils. It occurred in areas adjacent *Eucalyptus crebra* woodlands and *Acacia harpophylla* woodlands. Often with a loamier substrate than the red weathered sands of the *E. crebra* woodlands. It is characterised by a woodland to open woodland structure, with canopy heights typically ranging from 8-16m and canopy cover varying between sparse (20-50%) and vary sparse (<20%). The dominant canopy species is consistently *E. brownii*, occasionally co-dominant or with sub-dominant *E. crebra, E. populnea* or *Corymbia erythrophloia* in more structurally diverse patches.

In remnant patches, a relatively intact and diverse canopy is present with emergent and subcanopy layers comprising species such as *Cassia brewsteri*, *Ventilago viminalis*, *A. harpophylla*, and *Terminalia oblongata*. The shrub layer is well developed, with *Carrisia ovata*, *Grewia latifolia*, *Erythroxylum australe*, and *Pittosporum angustifolium*. The ground layer is dominated by native grasses such as *Aristida latifolia*, *Eriochloa crebra* and *Bothriochloa bladhii*, alongside a variety of native forbs including *Neptunia gracilis*, *Phyllanthus virgatus*, and *Panicum effusum*. Weed presence is moderate, with *Parthenium hysterophorus*, *Cenchrus ciliaris*, *B. pertusa*, and *Stylosanthes scabra* commonly recorded.

Mature regrowth areas exhibit a recovering canopy dominated by *Eucalyptus brownii* and associated species. Canopy heights reach approximately 8-12m, with moderate to high cover (30-50%). The understorey includes sparse shrubs such as *Capparis mitchelli*, *Ehretia membranifolia*, *Pittosporum angustifolium*, and *Grewia savannicola*. The ground layer is diverse and largely native, with species such as *Themeda triandra*, *Eriochloa crebra, Panicum decompositum*, and *Heteropogon contortus*, as well as forbs such as *Galactia tenuiflora, Melhania oblongifolia, and Sida hackettiana*. Weed pressure is present but typically lower than in younger woody regrowth areas.

In young woody regrowth areas, the canopy consists of dense juvenile *Eucalyptus brownii* and *E. crebra*, forming low woodlands (6-10m tall) with limited subcanopy development. The shrub layer is sparse, typically featuring *Cassia brewsteri*, *Grewia latifolia*, and *Ehretia membranifolia*. The ground layer includes native grasses and forbs like *Sporobolus caroli*, *Aristida* spp., and *Neptunia gracilis*, though these areas often exhibit high exotic cover, particularly of *Cenchrus ciliaris*, *Parthenium hysterophorus*, and *Stylosanthes scabra*.



RE 11.5.9c: *Eucalyptus crebra* woodland on red sand plains with a diverse understorey (least concern)

This vegetation community corresponds to RE 11.5.9c, typically occurring on flat to gently undulating red sand plains and rises of heavily weathered basalt. Its presence was expansive in the centre of the Study Area over weathered undulating sand plains. In remnant condition within the Study Area, the community is characterised by a woodland to open woodland structure dominated by *Eucalyptus crebra*, with commonly occurring subdominant species such as *Corymbia clarksoniana*, *Blakella dallachiana*, and *E. brownii*. Canopy heights range from 10–20 m with variable density and contain scattered hollow-bearing trees. The understorey consists of a sparse to moderate shrub layer, with common species such as *Bursaria incana*, *Petalostigma pubescens*, *Alphitonia excelsa*, *Acacia leiocalyx*, and *Denhamia cunninghamii*. Some areas also support *Clerodendrum floribundum*, *Grewia latifolia*, and *Ehretia membranifolia*. The ground layer is grassy and often diverse, with native species including *Heteropogon contortus*, *Themeda triandra*, *Digitaria* spp., *Aristida calycina*, and *Panicum decompositum*. Forb diversity is high in most areas, with species such as *Waltheria indica*, *Evolvulus alsinoides*, *Galactia tenuiflora*, *Sida hackettiana*, and *Phyllanthus virgatus*.

Mature regrowth areas exhibit dense mid-age cohorts of *Eucalyptus crebra* and *E. brownii*, a recovering shrub layer, and a largely native ground cover. Canopy heights range between 5-7 m and canopy cover between 43-45%. Common shrubs include *Capparis mitchellii*, *Ehretia membranifolia*, and *Carissa ovata*. Native grasses such as *Chrysopogon fallax*, *A. latifolia*, and *Eriachne mucronata* are present alongside forb species including *Phyllanthus maderaspatensis* and *Rhynchosia minima*. Weed presence is moderate, with *Cenchrus ciliaris*, *Stylosanthes scabra*, and *Parthenium hysterophorus* frequently recorded.

Young woody regrowth areas typically form low woodlands (6–10 m) of dense juvenile *E. crebra* and *E. brownii*, with a sparse understorey and variable ground cover. While native species such as *Sporobolus caroli*, *Aristida spp.*, and *Neptunia gracilis* are present, exotic grasses and forbs often dominate, particularly *Bothriochloa pertusa* and *Melinis repens*.



RE 11.5.15 and 11.7.1x: Semi-evergreen vine thicket on sand plains and weathered basalts (least concern)

Areas of semi-evergreen vine thicket within the Study Area are located on gently undulating plains and low rises underlain by red sandy soils and exposed weathered basalt rock. In remnant condition, the community is an open-scrub to low woodland with a sparse canopy and mid-dense subcanopy and shrub layer. The community is dominated by dry microphyll vine forest species and *Brachychiton* spp. with eucalypts being rare or entirely absent.

The canopy, or in some cases the emergent layer, is generally composed of species such as *Brachychiton australis*, *B. rupestris*, *Lysiphyllum hookeri*, *Ventilago viminalis*, *Bridelia leichhardtii*, *Croton phebalioides*, *Notelaea microcarpa*, and *Acacia excelsa*. The shrub layer is diverse and often includes *Geijera salicifolia*, *Acalypha eremorum*, *Bursaria incana*, *Alphitonia excelsa*, *Carissa ovata*, and *Ehretia membranifolia*, along with other dry rainforest and vine thicket margin species such as *Denhamia oleaster*, *Alectryon connatus*, and *Pittosporum spinescens*. The ground layer is variable in cover and composition but typically contains a mix of native grasses such as *Themeda triandra*, *Heteropogon contortus*, *Digitaria brownii*, and *Aristida calycina*. Forbs and vines are also common, with species such as *Clematicissus opaca*, *Jasminum didymum*, and *Secamone elliptica*. Weed presence is high in some patches where the canopy cover is absent. Non-native grasses such as *Cenchrus ciliaris* and *Bothriochloa pertusa* dominate in these areas. *Parthenium hysterophorus*, and *Stylosanthes scabra* were also recorded.

Mature regrowth areas had an even-aged canopy dominated by species such as *Alphitonia excelsa*, *Lysiphyllum hookeri*, *Ventilago viminalis*, and *Ehretia membranifolia*, often with scattered *Eucalyptus crebra* or *Acacia harpophylla*. The median canopy height is 4 m, with canopy cover typically sparse. The shrub layer includes common regenerating species like *Croton phebalioides*, *Geijera salicifolia*, *Bridelia leichhardtii*, and *Grewia latifolia*. The ground layer remains predominantly native, with a diversity of grasses and forbs such as *Enneapogon lindleyanus*, *Themeda triandra*, *Aristida* spp., *Rhynchosia minima*, and *Evolvulus alsinoides*. Weed cover is present but generally lower than in younger woody regrowth.

Young woody regrowth was observed in areas subject to previous clearing or disturbance. These patches are typically dominated by dense juvenile cohorts of *Brachychiton* spp., *Alphitonia excelsa*, and *Ventilago viminalis*, *Carissa ovata* and *Pittosporum spinescens*. The ground layer is a mix of native grasses and forbs but often shows high exotic cover. Invasive species such as *Cenchrus ciliaris*, *Parthenium hysterophorus*, and *Stylosanthes scabra* are common and dominate in highly disturbed areas.



RE 11.5.16: *Acacia harpophylla* dominated woodland to open forest with dry rainforest elements on weathered basalt clays (endangered)

Vegetation dominated by *Acacia harpophylla* within the Study Area occurs on flat to gently undulating plains or slopes of dark red to brown clay soils derived from weathered basalt. The community was observed as a woodland to open forest with varying structural and floristic complexity depending on condition state. Often the community comprised a dense stand of *Acacia harpophylla* with minimal cover of other tree species. Occasionally *Eucalyptus cambageana* formed a consistent low abundance in the canopy. Remnant patches typically support a relatively intact canopy with average heights of 10–13 m and a well-established subcanopy. Tree species commonly observed in the canopy included *Terminalia oblongata*, *Lysiphyllum hookeri*, *Eremophila mitchellii*, *Atalaya hemiglauca*, *Flindersia dissosperma*, and *Petalostigma pubescens*. The subcanopy and shrub layers included *Ehretia membranifolia*, *Carissa ovata*, *Denhamia oleaster*, and *Alectryon diversifolius*. Occasional vine species such as *Clematicissus opaca*, *Leichhardtia viridiflora*, *Capparis lasiantha* and *Parsonsia lanceolata* were common. The ground layer is predominantly native, comprising grasses like *Bothriochloa bladhii*, *Enteropogon ramosus*, *Eriochloa crebra*, and *Dichanthium sericeum*, with a variety of native forbs and vines. Weed presence is moderate, with *Cenchrus ciliaris*, *Bothriochloa pertusa*, *Parthenium hysterophorus*, and *Stylosanthes scabra* often present in disturbed zones.

Mature regrowth areas retain a well-developed canopy dominated by *A. harpophylla*, often with subdominant *Eucalyptus populnea*, *L. hookeri*, and *E. mitchellii*. Canopy height is typically 10–13 m with moderate cover. The shrub layer varies from sparse to moderately dense and supports species such as *Carissa ovata*, *Capparis lasiantha*, *Grewia latifolia*, *Ventilago viminalis*, and *Geijera salicifolia*. The ground layer is diverse and largely native, featuring species such as *Astrebla squarrosa*, *Brachyachne convergens*, *Sporobolus* spp., and a wide array of forbs including *Neptunia gracilis*, *Phyllanthus maderaspatensis*, *Indigofera linifolia*, *Evolvulus alsinoides*, and *Brunoniella australis*. Weed cover is variable but often lower than in younger woody regrowth.

Young woody regrowth is dominated by dense juvenile cohorts of *A. harpophylla*, forming low woodlands with canopy heights typically <10 m and limited structural stratification. Subcanopy and shrub layers are present but less developed, with early colonisers such as *Ehretia membranifolia*, *Cassia brewsteri* (Brewster's cassia), and *Carissa ovata* observed. Ground cover varies and includes native grasses such as *Aristida* spp., *Thellungia advena*, and *Eragrostis trichophora*, with forbs such as *Abelmoschus ficulneus*, *Trianthema triquetra*, and *Sida* spp. However, these areas often exhibit high weed cover, particularly of *Cenchrus ciliaris*, *Parthenium hysterophorus*, and *Stylosanthes scabra*.



RE 11.5.17: *Eucalyptus tereticornis* woodland in seasonally waterlogged depressions (endangered)

This vegetation community was observed in the centre of the Study Area within a large patch of 11.5.9c. The community exists as a few large depressions that were seasonally inundated and supporting wetland vegetation that were surrounded by large *Eucalyptus tereticornis* and *Melaleuca nervosa*. The canopy is moderately tall (15-20m), with a generally sparse foliage cover (15-20%). The subcanopy is patchy but includes *M. nervosa*, *E. crebra*, and *Corymbia clarksoniana*. Evidence of water retention was present in the 2024 surveys but the area was at full capacity in the June 2025 survey season.

The shrub layer is typically sparse but includes juvenile forms of canopy species such as *Eucalyptus tereticornis* and *Melaleuca nervosa*. The ground layer is diverse, supporting both upland and wetland species such as *Aristida calycina*, *Digitaria brownii* and *Eragrostis parviflora*, *Eleocharis sp.*, *Isolepis sp.*, *Juncus sp.*, *Cyperus sp.*, *Alternanthera denticulata*, *Marsilea drummondii*, and *Ammania baccifera*.

Non-native species are present in moderate abundance (up to 40%), particularly along disturbed edges where water movement has occurred. Common invasive species include *Stylosanthes scabra*, *Echinochloa colona*, *Bothriochloa pertusa* and *Eragrostis trichophora*.

This community exhibits a highly dynamic structure, driven by episodic flooding and likely plays a significant ecological role in supporting wetland biodiversity, facilitating groundwater recharge, and providing key habitat for water-dependent fauna.



RE 11.7.2: *Acacia catenulata* low woodland on rocky scarps (least concern)

This vegetation community typically occurs on skeletal soils on scarps and rocky rises. Within the Study Area, the community is expressed as a low woodland to open woodland dominated by *Acacia catenulata*. On patch in the south, was dominated by *Acacia aneura*, which is at the eastern distribution of this species. Canopy cover was sparse (10-20%), with average canopy heights around 9 m.

The understorey includes a low to mid-layer shrub stratum, with common species such as *Denhamia sp.*, *Carissa ovata*, *Clematicissus opaca* and *Senna artemisioides*. The ground layer is generally sparse, comprising native grasses and forbs such as *Digitaria spp.*, *Aristida spp.*, *Cheilanthes distans*, and *Sida spp.*, with occasional *Sporobolus caroli,* and *Oxalis spp.*

This community is considered representative of a bendee woodland adapted to shallow, rocky substrates with limited water retention. The presence of *A. aneura* and associated species in some patches suggests ecotonal variation or transition into more arid-adapted vegetation. Overall, the community displays structural and floristic variation reflective of topographic position and soil constraints and is considered representative of RE 11.7.2 in a remnant condition, albeit with signs of natural sparsity and possible grazing or historical clearing in parts.



RE 11.8.5: *Eucalyptus orgadophila* open woodland on basaltic hills and plains (least concern)

Eucalyptus orgadophila dominated open woodlands were present in the Study Area on basalt derived clay soils on hills and undulating plains. The community often has a sub-dominant abundance of *Corymbia erythrophloia*, *Acacia salicina*, and occasionally *E. brownii*. Tree cover is generally very sparse to sparse (≤20%), with canopy heights ranging from 8–17 m. In remnant condition, the canopy is sparse with limited scattered hollow-bearing trees. The understorey across remnant areas includes native grasses such as *Heteropogon contortus*, *Dichanthium sericeum*, *Eriochloa crebra*, and *Aristida latifolia*, along with native forbs such as *Neptunia gracilis*, *Rhynchosia minima* and *Boerhavia dominii*. The shrub layer is discontinuous but includes *Capparis lasiantha*, *Cassia brewsteri*, and *Santalum acuminatum*. Weed presence is generally low in higher-quality remnant patches, though some areas show evidence of past disturbance, particularly around edges or areas of historical clearing.

Mature regrowth areas are characterised by a recovering canopy dominated by *Eucalyptus orgadophila*, with occasional *Eriochloa crebra* and *Corymbia erythrophloia*. The median canopy height is estimated at 8 m, with canopy cover typically sparse. These patches typically show even-aged cohorts and smaller diameter at breast height classes, along with active canopy recruitment. The ground layer in regrowth areas includes a diverse mix of native grasses and forbs, though often with moderate to high weed cover. Invasive species such as *Bothriochloa pertusa*, *Cenchrus ciliaris*, *Parthenium hysterophorus*, and *Opuntia tomentosa* are common in more disturbed regrowth patches, particularly around edges or areas of historical clearing.



RE 11.8.11: Native grassland dominated by *Dichanthium* spp. on basalt plains and hills (of concern)

This vegetation community occurs on basalt-derived or black cracking clay soils on undulating hills and in low-lying plains. It was observed as a native grassland occasionally with scattered trees. The grassland was commonly dominated by *Dichanthium sericeum*, *Panicum queenslandicum*, *Dichanthium queenslandicum*, *Eriochloa crebra*, and *Aristida latifolia*. These species are characteristic of intact native grasslands adapted to seasonally dry conditions and heavy clay soils. Tree species that were present included *Acacia salicina*, *Cassia brewsteri*, and *Eucalyptus orgadophila*.

The ground layer also supports a moderate to high native forb diversity, with species such as *Rhynchosia minima*, *Ipomoea lonchophylla*, *Sida trichopoda* and *Neptunia gracilis*. However, condition varies across remnant patches. While some areas retain a high cover of native grasses and forbs with minimal disturbance, others exhibit significant weed invasion and resulted in a lower cover of tussocks. However, these areas still retained remnant status with a 50% native perennial cover. Exotic species such as *Parthenium hysterophorus*, *Cenchrus ciliaris*, *Bothriochloa pertusa*, and *Melinis repens* are prevalent in some patches around waterways where cover exceeds 80–90%.



RE 11.9.5: *Acacia harpophylla* regrowth woodland on cracking clay soils (endangered)

This vegetation community occurs on fine-grained sedimentary soils where rocky gravel and stones are scattered on the surface. It is characterised by *Acacia harpophylla* forming a low closed forest to woodland structure. Within the Study Area, the community was recorded in mature regrowth condition. Occasionally *Eucalyptus cambageana* was a common feature in the canopy.

Regrowth patches featured a relatively dense canopy dominated by *Acacia harpophylla* with occasional associated species such as *Terminalia oblongata*, *Atalaya hemiglauca*, *Santalum lanceolatum*, and *Lysiphyllum hookeri*. Canopy height ranged from approximately 5–7 m, with high canopy cover (>40%), and evidence of active regeneration across multiple strata. The understorey included sparse shrubs such as *Carissa ovata* and *Capparis mitchellii*, while the ground layer supported a moderately diverse assemblage of native grasses, including *Panicum decompositum*, *Eriochloa crebra* and *Sporobolus caroli*. Forb diversity was moderate to high, with commonly recorded species such as *Rhynchosia minima*, *Neptunia gracilis*, and *Phyllanthus maderaspatensis*. Although minor weed presence was observed, the canopy structure, native groundcover, and recruitment indicate a recovering but relatively intact regrowth state that aligns with the diagnostic characteristics of RE 11.9.5.



Cleared paddocks and disturbed areas dominated by introduced pasture grasses such as *Cenchrus ciliaris*

These vegetation communities occur across previously cleared paddocks and disturbed areas. The original canopy layer has been largely removed or reduced to scattered regrowth individuals. The scattered regrowth, soils, and preclearing regional ecosystem mapping indicates the vegetation was previously *Acacia harpophylla* woodlands, eucalypt woodlands, grasslands and semi-evergreen vine thicket in various locations across the Study Area. Structure is lacking in these areas, with scattered trees and shrubs and high density of non-native grass cover remaining. Groundcover across these areas is dominated by exotic pasture grasses and forbs, with species such as *Cenchrus ciliaris*, *Bothriochloa pertusa*, *Stylosanthes scabra*, *Melinis repens* and *Parthenium hysterophorus* widespread and often forming a continuous layer. Non-native cover frequently exceeds 60-90% in most areas. In some areas *Opuntia tomentosa*, *Harrisia martinii*, and *Malvastrum americanum* subsp. *americanum* are also present.

Although isolated native species persist in the ground layers, such as *Neptunia gracilis*, *Rhynchosia minima*, *Sida* spp., and *Digitaria* spp., their overall abundance is minimal. These areas no longer resemble their pre-clearing ecological function and are considered to have low ecological integrity.

Appendix D Species Lists

Flora species list

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Acanthaceae	*Brunoniella australis*	blue trumpet	C	-	-	-
Acanthaceae	*Rostellularia adscendens*	pink tongues	C	-	-	-
Aizoaceae	*Trianthema triquetra*	red spinach	C	-	-	-
Aizoaceae	*Zaleya galericulata*	-	C	-	-	-
Amaranthaceae	*Achyranthes aspera*	devil's horsewhip	C	-	-	-
Amaranthaceae	*Alternanthera denticulata*	lesser joyweed	C	-	-	-
Amaranthaceae	*Atriplex muelleri*	Mueller's saltbush	C	-	-	-
Amaranthaceae	*Gomphrena celosioides*	gomphrena weed	C	-	-	-
Amaranthaceae	*Nyssanthes erecta*	-	C	-	-	-
Amaranthaceae	*Ptilotus polystachyus*	prince of wales feather	C	-	-	-
Amaranthaceae	*Sclerolaena birchii*	galvanised burr	C	-	-	-
Amaranthaceae	*Sclerolaena muricata*	black rolypoly	C	-	-	-
Amaranthaceae	*Sclerolaena tetracuspis*	brigalow burr	C	-	-	-
Anacardiaceae	*Pleiogynium timorense*	Burdekin plum	C	-	-	-
Apocynaceae	*Alstonia constricta*	bitterbark	C	-	-	-
Apocynaceae	*Carissa ovata*	currant bush	C	-	-	-
Apocynaceae	*Cynanchum viminale*	-	C	-	-	-
Apocynaceae	*Leichhardtia viridiflora*	green berry creeper	C	-	-	-
Apocynaceae	*Parsonsia eucalyptophylla*	Gargaloo	C	-	-	-
Apocynaceae	*Parsonsia lanceolata*	northern silkpod	C	-	-	-
Apocynaceae	*Secamone elliptica*	corky milk vine	C	-	-	-
Asparagaceae	*Lomandra multiflora*	many-flowered mat-rush	C	-	-	-
Asphodelaceae	*Dianella revoluta*	blue flax-lily	C	-	-	-
Asteraceae	*Chrysocephalum apiculatum*	common everlasting	C	-	-	-
Asteraceae	*Hypochaeris glabra*	annual flatweed	C	-	-	-
Asteraceae	*Parthenium hysterophorus**	parthenium weed	-	-	Category 3	Yes
Asteraceae	*Xanthium occidentale**	noogoora burr	-	-	-	-
Bignoniaceae	*Pandorea pandorana*	wonga vine	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Boraginaceae	*Ehretia membranifolia*	weeping koda	C	-	-	-
Boraginaceae	*Trichodesma zeylanicum*	camel bush	C	-	-	-
Cactaceae	*Harrisia martinii**	harissa cactus	-	-	Category 3	Yes
Cactaceae	*Opuntia tomentosa**	velvety tree pear	-	-	Category 3	Yes
Caesalpiniaceae	*Cassia brewsteri*	Leichhardt bean	C	-	-	-
Caesalpiniaceae	*Lysiphyllum carronii*	ebony tree	C	-	-	-
Caesalpiniaceae	*Lysiphyllum hookeri*	Queensland ebony	C	-	-	-
Caesalpiniaceae	*Senna artemisioides*	silver cassia	C	-	-	-
Capparaceae	*Apophyllum anomalum*	broom bush	C	-	-	-
Capparaceae	*Capparis arborea*	brush caper berry	C	-	-	-
Capparaceae	*Capparis canescens*	wild orange	C	-	-	-
Capparaceae	*Capparis lasiantha*	nipan	C	-	-	-
Capparaceae	*Capparis loranthifolia*	narrow-leaf bumble	C	-	-	-
Capparaceae	*Capparis canescens*	wild orange	C	-	-	-
Capparaceae	*Capparis mitchellii*	wild orange	C	-	-	-
Celastraceae	*Denhamia cunninghamii*	-	C	-	-	-
Celastraceae	*Denhamia oleaster*	stiff-leafed denhamia	C	-	-	-
Celastraceae	*Denhamia pittosporoides*	orange boxwood	C	-	-	-
Celastraceae	*Elaeodendron australe var dissimilis*	red olive-berry	C	-	-	-
Chenopodiaceae	*Einadia nutans*	nodding saltbush	C	-	-	-
Chenopodiaceae	*Enchylaena tomentosa*	ruby saltbush	C	-	-	-
Chenopodiaceae	*Salsola australis*	-	C	-	-	-
Cleomaceae	*Cleome viscosa*	tick-weed	C	-	-	-
Combretaceae	*Terminalia oblongata*	yellowwood	C	-	-	-
Commelinaceae	*Commelina ensifolia*	scurvy grass	C	-	-	-
Convolvulaceae	*Convolvulus erubescens*	Australian bindweed	C	-	-	-
Convolvulaceae	*Evolvulus alsinoides*	baby blue eyes	C	-	-	-
Convolvulaceae	*Ipomoea lonchophylla*	common cow-vine	C	-	-	-
Convolvulaceae	*Ipomoea plebeia*	slender bindweed	C	-	-	
Convolvulaceae	*Polymeria calycina*	slender bindweed	C	-	-	-
Cyperaceae	*Cyperus difformis*	variable flatsedge	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Cyperaceae	*Cyperus gracilis*	slender sedge	C		-	-
Cyperaceae	*Cyperus rotundus**	purple nutgrass	-	-	-	-
Cyperaceae	*Eleocharis plana*	flat spike-sedge	C	-	-	-
Cyperaceae	*Fimbristylis dichotoma*	common fringe-rush	C	-	-	-
Cyperaceae	*Scleria sphacelata*	razor grass	C	-	-	-
Dilleniaceae	*Hibbertia stirlingii*	-	C	-	-	-
Dioscoreaceae	*Dioscorea transversa*	native yam	C	-	-	-
Ebenaceae	*Diospyros humilis*	small-leaved ebony	C	-	-	-
Erythroxylaceae	*Erythroxylum australe*	cocaine tree	C	-	-	-
Euphorbiaceae	*Acalypha eremorum*	soft acalypha	C	-	-	-
Euphorbiaceae	*Croton insularis*	Queensland cascarilla	C	-	-	-
Euphorbiaceae	*Croton phebalioides*	narrow-leaved croton	C	-	-	-
Euphorbiaceae	*Euphorbia drummondii*	caustic weed	C	-	-	-
Euphorbiaceae	*Euphorbia tannensis subsp. Eremophila*	desert sponge	C	-	-	-
Fabaceae	*Chamaecrista rotundifolia*	round-leaf cassia	C	-	-	-
Fabaceae	*Clitoria ternatea**	butterfly pea	-	-	-	-
Fabaceae	*Crotalaria brevis*	short-leaved rattlepod	C	-	-	-
Fabaceae	*Desmodium brachypodum*	large tick-trefoil	C	-	-	-
Fabaceae	*Desmodium varians*	-	C	-	-	-
Fabaceae	*Erythrina vespertilio*	bat-wing coral tree	C		-	-
Fabaceae	*Galactia tenuiflora*	snail flower	C	-	-	-
Fabaceae	*Glycine tomentella*	woolly glycine	C	-	-	-
Fabaceae	*Hovea heterophylla*	-	C	-	-	-
Fabaceae	*Indigofera linnaei*	Birdsville indigo	C	-	-	-
Fabaceae	*Indigofera linifolia*	narrowleaf indigo	C	-	-	-
Fabaceae	*Indigofera pratensis*	forest indigo	C	-	-	-
Fabaceae	*Macroptilium atropurpureum**	siratro	-	-	-	-
Fabaceae	*Rhynchosia minima*	least snoutbean	C	-	-	-
Fabaceae	*Senna coronilloides*	brigalow senna	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Fabaceae	*Sesbania cannabina*	yellow pea bush	C	-	-	-
Fabaceae	*Stylosanthes hamata**	caribbean stylo	C	-	-	-
Fabaceae	*Stylosanthes scabra**	stylo	C	-	-	-
Goodeniaceae	*Goodenia glabra*	smooth goodenia	C	-	-	-
Haloragaceae	*Haloragis erecta*	Fireweed	C	-	-	-
Lamiaceae	*Clerodendrum floribundum*	lolly bush	C	-	-	-
Laxmanniaceae	*Eustrephus latifolius*	wombat berry	C	-	-	-
Loranthaceae	*Lysiana subfalcata*	northern mistletoe	C	-	-	-
Luthraceae	*Ammania baccifera*	blistering ammannia	C	-	-	-
Malvaceae	*Abelmoschus ficulneus*	native rosella	C	-	-	-
Malvaceae	*Abutilon grandiflolium*	hairy Indian mallow	C	-	-	-
Malvaceae	*Abutilon micropetalum*	-	C	-	-	-
Malvaceae	*Abutilon oxycarpum*	flannel weed	C	-	-	-
Malvaceae	*Gossypium australe*	native cotton	C	-	-	-
Malvaceae	*Grewia latifolia*	emu berry	C	-	-	-
Malvaceae	*Grewia savannicola*	dysentery bush	C	-	-	-
Malvaceae	*Hibiscus heterophyllus*	native rosella	C	-	-	-
Malvaceae	*Hibiscus sturtii*	Sturt's hibiscus	C	-	-	-
Malvaceae	*Hibiscus verdcourtii*	-	C		-	-
Malvaceae	*Malvastrum americanum* subsp. *americanum**	-	-	-	-	-
Malvaceae	*Melhania oblongifolia*	velvet hibiscus	C	-	-	-
Malvaceae	*Sida hackettiana*	spiked sida	C	-	-	-
Malvaceae	*Sida spinosa**	prickly sida	-	-	-	-
Malvaceae	*Sida trichopoda*	-	C		-	-
Malvaceae	*Waltheria indica*	sleepy morning	C	-	-	-
Marsileaceae	*Marsilea drummondii*	common nardoo	C	-	-	-
Meliaceae	*Owenia acidula*	emu apple	C	-	-	-
Mimosaceae	*Acacia aneura*	mulga	C	-	-	-
Mimosaceae	*Acacia catenulata*	bendee	C	-	-	-
Mimosaceae	*Acacia excelsa*	ironwood	C	-	-	-
Mimosaceae	*Acacia harpophylla*	brigalow	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Mimosaceae	*Acacia leiocalyx*	early-flowering black wattle	C	-	-	-
Mimosaceae	*Acacia salicina*	doolan	C	-	-	-
Mimosaceae	*Archidendropsis basaltica*	red lancewood	C	-	-	-
Mimosaceae	*Neptunia gracilis*	native sensitive plant	C	-	-	-
Mimosaceae	*Neptunia Monosperma*	tall sensitive plant	C	-		
Mimosaceae	*Vachellia farnesiana**	-	-	-	-	-
Myrtaceae	*Blakella dallachiana*	Dallachy's gum	C	-	-	-
Myrtaceae	*Blakella tessellaris*	Moreton Bay ash	C	-	-	-
Myrtaceae	*Corymbia clarksoniana*	Clarkson's bloodwood	C	-	-	-
Myrtaceae	*Corymbia erythrophloia*	variable-barked bloodwood	C	-	-	-
Myrtaceae	*Eucalyptus brownii*	Reid River box	C	-	-	-
Myrtaceae	*Eucalyptus camaldulensis*	river red gum	C	-	-	-
Myrtaceae	*Eucalyptus cambageana*	Dawson gum	C	-	-	-
Myrtaceae	*Eucalyptus crebra*	narrow-leaved red ironbark	C	-	-	-
Myrtaceae	*Eucalyptus orgadophila*	mountain coolibah	C	-	-	-
Myrtaceae	*Eucalyptus populnea*	poplar box	C	-	-	-
Myrtaceae	*Eucalyptus tereticornis*	Queensland blue gum	C	-	-	-
Myrtaceae	*Melaleuca bracteata*	black tea-tree	C	-	-	-
Myrtaceae	*Melaleuca nervosa*	-	C	-	-	-
Nyctaginaceae	*Boerhavia dominii*	-	C	-	-	-
Oleaceae	*Jasminum didymum*	desert jasmine	C	-	-	-
Oleaceae	*Jasminum simplicifolium*	native jasmine	C	-	-	-
Oleaceae	*Notelaea microcarpa*	native olive	C	-	-	-
Onagraceae	*Ludwygia octovalvis*	willow primrose	C	-	-	-
Orchidaceae	*Cymbidium canaliculatum*	tiger orchid	C	-	-	-
Oxalidaceae	*Oxalis chnoodes*	-	C	-	-	-
Papaveraceae	*Argemone ochroleuca**	-	-	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Phyllanthaceae	*Breynia oblongifolia*	coffee bush	C	-	-	-
Phyllanthaceae	*Bridelia leichhardtii*	Leichhardt's ironbark	C	-	-	-
Phyllanthaceae	*Flueggea leucopyrus*	-	C	-	-	-
Phyllanthaceae	*Phyllanthus maderaspatensis*	-	C	-	-	-
Phyllanthaceae	*Phyllanthus virgatus*	twiggy phyllanthus	C	-	-	-
Picrodendraceae	*Petalostigma pubescens*	quinine tree	C	-	-	-
Pittosporaceae	*Bursaria incana*	prickly pine	C	-	-	-
Pittosporaceae	*Pittosporum angustifolium*	native apricot	C	-	-	-
Pittosporaceae	*Pittosporum spinescens*	orange thorn	C	-	-	-
Poaceae	*Ancistrachne uncinulata*	hooky grass	C	-	-	-
Poaceae	*Aristida caput-medusae*	many-headed wire grass	C	-	-	-
Poaceae	*Aristida holathera*	erect kerosene grass	C	-	-	-
Poaceae	*Aristida hygrometrica*	northern kerosene grass	C	-	-	-
Poaceae	*Aristida latifolia*	feathertop wiregrass	C	-	-	-
Poaceae	*Aristida lazaridis*	three-awn grass	C	-	-	-
Poaceae	*Aristida leptopoda*	white speargrass	C	-	-	-
Poaceae	*Aristida queenslandica*	-	C	-	-	-
Poaceae	*Aristida ramosa*	purple wiregrass	C	-	-	-
Poaceae	*Astrebla lappacea*	curly mitchell grass	C	-	-	-
Poaceae	*Astrebla squarrosa*	bull mitchell grass	C	-	-	-
Poaceae	*Bothriochloa bladhii*	forest blue grass	C	-	-	-
Poaceae	*Bothriochloa erianthoides*	satintop grass	C	-	-	-
Poaceae	*Bothriochloa pertusa**	-	-	-	-	-
Poaceae	*Brachyachne convergens*	common native couch	C	-	-	-
Poaceae	*Cenchrus ciliaris**	-	-	-	-	-
Poaceae	*Chionachne hubbardiana*	-	C	-	-	-
Poaceae	*Chloris divaricata*	dogs-tooth star grass	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Poaceae	*Chloris pectinata*	comb windmill grass	C	-	-	-
Poaceae	*Chloris truncata*	windmill grass	C	-	-	-
Poaceae	*Chrysopogon fallax*	golden beard grass	C	-	-	-
Poaceae	*Cynodon dactylon*	bermuda grass	C	-	-	-
Poaceae	*Dactyloctenium radulans*	button grass	C	-	-	-
Poaceae	*Dichanthium aristatum**	angleton grass	C	-	-	-
Poaceae	*Dichanthium queenslandicum*	king blue grass	V	E	-	-
Poaceae	*Dichanthium sericeum subsp. sericeum*	Queensland blue grass	C	-	-	-
Poaceae	*Digitaria ammophila*	silky umbrella grass	C	-	-	-
Poaceae	*Digitaria brownii*	cotton panic grass	C	-	-	-
Poaceae	*Digitaria divaricatissima*	spreading umbrella grass	C	-	-	-
Poaceae	*Digitaria hystrichoides*	curly umbrella grass	C	-	-	-
Poaceae	*Digitaria porrecta*	finger panic grass	NT	-	-	-
Poaceae	*Echinochloa colona**	jungle rice	-	-	-	-
Poaceae	*Enneapogon gracilis*	slender nineawn	C	-	-	-
Poaceae	*Enneapogon lindleyanus*	conetop nineawn	C	-	-	-
Poaceae	*Enneapogon polyphyllus*	leafy nineawn	C	-	-	-
Poaceae	*Enneapogon robustissimus*	nine-awn grass	C	-	-	-
Poaceae	*Enneapogon virens*	nine-awn grass	C	-	-	-
Poaceae	*Enteropogon ramosus*	curly windmill grass	C	-	-	-
Poaceae	*Eragrostis elongata*	clustered lovegrass	C	-	-	-
Poaceae	*Eragrostis leptostachya*	paddock lovegrass	C	-	-	-
Poaceae	*Eragrostis lacunaria*	purple lovegrass	C	-	-	-
Poaceae	*Eragrostis parviflora*	weeping lovegrass	C	-	-	-
Poaceae	*Eragrostis trichophora**	-	C	-	-	-
Poaceae	*Eriachne mucronata*	-	C	-	-	-
Poaceae	*Eriochloa crebra*	spring grass	C	-	-	-
Poaceae	*Heteropogon contortus*	black speargrass	C	-	-	-
Poaceae	*Iseilema vaginiflorum*	red flinders grass	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Poaceae	*Leptochloa digitata*	finger sprangletop	C	-	-	-
Poaceae	*Megathyrsus maximus**	guinea grass	-	-	-	-
Poaceae	*Melinis repens**	red natal grass	-	-	-	-
Poaceae	*Mnesithea formosa*	jointtail grass	C	-	-	-
Poaceae	*Moorochloa eruciformis**	-	-	-	-	-
Poaceae	*Oplismenus aemulus*	creeping beard grass	C	-	-	-
Poaceae	*Panicum decompositum*	native millet	C	-	-	-
Poaceae	*Panicum effusum*	hairy panic	C	-	-	-
Poaceae	*Panicum queenslandicum*	Yadbila grass	C	-	-	-
Poaceae	*Paspalidium caespitosum*	brigalow grass	C	-	-	-
Poaceae	*Paspalidium distans*	-	C	-	-	-
Poaceae	*Paspalidium globoideum*	sago grass	C	-	-	-
Poaceae	*Setaria incrassata**	-	-	-	-	-
Poaceae	*Setaria parviflora**	slender pigeon grass	-	-	-	-
Poaceae	*Sporobolus australasicus*	Australian dropseed	C	-	-	-
Poaceae	*Sporobolus caroli*	fairy grass	C	-	-	-
Poaceae	*Sporobolus creber*	western rat's tail grass	C	-	-	-
Poaceae	*Thellungia advena*	coolibah grass	C	-	-	-
Poaceae	*Themeda triandra*	kangaroo grass	C	-	-	-
Poaceae	*Tragus australianus*	small burr grass	C	-	-	-
Poaceae	*Urochloa foliosa*	leafy panic	C	-	-	-
Poaceae	*Urochloa mosambicensis**	sabi grass	-	-	-	-
Pontederiaceae	*Pontederia vaginalis*	heartshape false pickerelweed	C	-	-	-
Portulacaceae	*Portulaca australis*	-	C	-	-	-
Portulacaceae	*Portulaca oleracea**	pigweed	-	-	-	-
Proteaceae	*Grevillea helmsiae*	-	C	-	-	-
Proteaceae	*Grevillea striata*	beefwood	C	-	-	-
Proteaceae	*Hakea lorea*	corkwood	C	-	-	-
Pteridaceae	*Cheilanthes distans*	bristly cloak fern	C	-	-	-
Rhamnaceae	*Alphitonia excelsa*	soap tree	C	-	-	-

Family	Scientific name	Common name	NC Act Status[1]	EPBC Act status[2]	Biosecurity Act[3]	WoNS[4]
Rhamnaceae	*Ventilago viminalis*	supplejack	C	-	-	-
Rubiaceae	*Everistia vacciniifolia*	-	C	-	-	-
Rubiaceae	*Psydrax forsteri*	psydrax shrub	C	-	-	-
Rubiaceae	*Psydrax odorata*	shiny-leafed canthium	C	-	-	-
Rubiaceae	*Psydrax oleifolia*	myrtle tree	C	-	-	-
Rubiaceae	*Spermacoce brachystemma*	-	C	-	-	-
Rutaceae	*Citrus glauca*	lime bush	C	-	-	-
Rutaceae	*Flindersia dissosperma*	scrub leopardwood	C	-	-	-
Rutaceae	*Geijera parviflora*	wilga	C	-	-	-
Rutaceae	*Geijera salicifolia*	brush wilga	C	-	-	-
Santalaceae	*Santalum acuminatum*	quandong	C	-	-	-
Santalaceae	*Santalum lanceolatum*	sandalwood	C	-	-	-
Sapindaceae	*Alectryon connatus*	brey birds-eye	C	-	-	-
Sapindaceae	*Alectryon diversifolius*	scrub boonaree	C	-	-	-
Sapindaceae	*Alectryon oleifolius*	Boonaree	C	-	-	-
Sapindaceae	*Atalaya hemiglauca*	whitewood	C	-	-	-
Scrophulariaceae	*Eremophila debilis*	winter apple	C	-	-	-
Scrophulariaceae	*Eremophila mitchellii*	false sandalwood	C	-	-	-
Scrophulariaceae	*Myoporum acuminatum*	coastal boobialla	C	-	-	-
Solanaceae	*Solanum ellipticum*	potato bush	C	-	-	-
Solanaceae	*Solanum esuriale*	potato bush	C	-	-	-
Sparrmanniaceae	*Corchorus trilocularis*	native jute	C	-	-	-
Sparrmanniaceae	*Grewia latifolia*	dysentery plant	C	-	-	-
Sterculiaceae	*Brachychiton australis*	broad-leaved bottle tree	C	-	-	-
Sterculiaceae	*Brachychiton populneus*	kurrajong	C	-	-	-
Sterculiaceae	*Brachychiton rupestris*	narrow-leaved bottle tree	C	-	-	-
Thymelaeaceae	*Pimelea haematostachya*	pimelea poppy	C	-	-	-
Verbenaceae	*Verbena macrostachya*	-	C	-	-	-
Vitaceae	*Clematicissus opaca*	grape	C	-	-	-

[1] **NC Act:** *Nature Conservation Act 1992* – Queensland legislation for the conservation of nature, including native plants and animals
[2] **EPBC Act:** *Environmental Protection and Biodiversity Conservation Act 1999*- Australia's central piece of environmental legislation for protecting biodiversity
Conservation status under the EPBC Act 1999 and NC Act 1992:
EX = Extinct, CR = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near Threatened (NC Act only), C = Least Concern n (NC Act only), - = Not listed
[3] **Biosecurity Act:** *Biosecurity Act 2015* – Australian legislation that governs the management of biosecurity threats to plant, animal and human health and Categorises the level of threat
[4] **WoNS (Weeds of National Significance):** A classification used by the Australian government for plant species that pose the greatest threat to Australia's natural ecosystems, agriculture and communities
* Species has been introduced to Australia

Fauna species list

Family	Scientific name	Common name	NC Act status[1]	EPBC Act status[2]	Biosecurity Act[3]
Birds					
Acanthizida	*Acanthiza chrysorrhoa*	yellow-rumped thornbill	C	-	-
Acanthizida	*Gerygone olivacea*	white-throated gerygone	C	-	-
Acanthizida	*Smicrornis brevirostris*	weebill	C	-	-
Acanthizida	*Acanthiza nana*	yellow thornbill	C	-	-
Accipitridae	*Aquila audax*	wedge-tailed eagle	C	-	-
Accipitridae	*Haliastur sphenurus*	whistling kite	C	-	-
Alcedinidae	*Dacelo leachii*	blue-winged kookaburra	C	-	-
Alcedinidae	*Dacelo novaeguineae*	laughing kookaburra	C	-	-
Alcedinidae	*Todiramphus macleayii*	forest kingfisher	C	-	-
Anatidae	*Anas superciliosa*	Pacific black duck	C	-	-
Anatidae	*Chenonetta jubata*	Australian wood duck	C	-	-
Anatidae	*Cygnus atratus*	black swan	C	-	-
Anatidae	*Dendrocygna eytoni*	plumed whistling-duck	C	-	-
Ardeidae	*Ardea intermedia*	intermediate egret	C	-	-
Ardeidae	*Ardea pacifica*	white-necked heron	C	-	-
Ardeidae	*Nycticorax caledonicus*	nankeen night-heron	C	-	-
Artamidae	*Artamus leu corynchus*	white-breasted woodswallow	C	-	-
Artamidae	*Cracticus nigrogularis*	pied butcherbird	C	-	-
Cacatuidae	*Cacatua galerita*	sulphur-crested cockatoo	C	-	-
Cacatuidae	*Eolophus roseicapilla*	galah	C	-	-
Cacatuidae	*Nymphicus hollandicus*	cockatiel	C	-	-
Campephagidae	*Coracina novaehollandiae*	black-faced cuckoo-shrike	C	-	-
Campephagidae	*Coracina papuensis*	white-bellied cuckoo-shrike	C	-	-
Campephagidae	*Lalage tricolor*	white-winged triller	C	-	-
Charadriidae	*Elseyornis melanops*	black-fronted dotterel	C	-	-
Charadriidae	*Vanellus miles*	masked lapwing	C		-
Cisticolidae	*Cisticola exilis*	golden-headed cisticola	C	-	-

Family	Scientific name	Common name	NC Act status[1]	EPBC Act status[2]	Biosecurity Act[3]
Columbidae	*Geopelia humeralis*	bar-shouldered dove	C	-	-
Columbidae	*Geopelia striata*	peaceful dove	C	-	-
Columbidae	*Geophaps scripta scripta*	squatter pigeon (southern subspecies)	V	V	-
Columbidae	*Ocyphaps lophotes*	crested pigeon	C	-	-
Columbidae	*Phaps chalcoptera*	common bronzewing	C	-	-
Coraciidae	*Eurystomus orientalis*	dollarbird	C	-	-
Corcoracidae	*Corcorax melanorhamphos*	white-winged chough	C	-	-
Corcoracidae	*Struthidea cinerea*	apostlebird	C	-	-
Corvidae	*Corvus orru*	Torresian crow	C	-	-
Dromaiidae	*Dromaius novaehollandiae*	emu	C	-	-
Estrildidae	*Taeniopygia bichenovii*	double-barred finch	C	-	-
Falconidae	*Falco berigora*	brown falcon	C	-	-
Falconidae	*Falco cenchroides*	nankeen kestrel	C	-	-
Gruidae	*Grus rubicunda*	brolga	C	-	-
Hirundinidae	*Hirundo neoxena*	welcome swallow	C	-	-
Locustellidae	*Cincloramphus mathewsi*	rufous songlark	C	-	-
Maluridae	*Malurus cyaneus*	superb fairy-wren	C	-	-
Maluridae	*Malurus melanocephalus*	red-backed fairy-wren	C	-	-
Meliphagidae	*Acanthagenys rufogularis*	spiny-cheeked honeyeater	C	-	-
Meliphagidae	*Entomyzon cyanotis*	blue-faced honeyeater	C	-	-
Meliphagidae	*Gavicalis virescens*	singing honeyeater	C	-	-
Meliphagidae	*Manorina flavigula*	yellow-throated miner	C	-	-
Meliphagidae	*Philemon citreogularis*	little friarbird	C	-	-
Meliphagidae	*Philemon corniculatus*	noisy friarbird	C	-	-
Meliphagidae	*Plectorhyncha lanceolata*	striped honeyeater	C	-	-
Meropidae	*Merops ornatus*	rainbow bee-eater	C	-	-
Monarchidae	*Grallina cyanoleuca*	magpie-lark	C	-	-
Motacillidae	*Anthus novaeseelandiae*	Australasian pipit	C	-	-
Oriolidae	*Oriolus sagittatus*	olive-backed oriole	C	-	-
Oriolidae	*Ardeotis australis*	Australian bustard	C	-	-
Pachycephalidae	*Colluricincla harmonica*	grey shrike-thrush	C	-	-

Family	Scientific name	Common name	NC Act status[1]	EPBC Act status[2]	Biosecurity Act[3]
Pachycephalidae	*Pachycephala rufiventris*	rufous whistler	C	-	-
Pardalotidae	*Pardalotus striatus*	striated pardalote	C	-	-
Petroicidae	*Microeca fascinans*	jacky winter	C	-	-
Phasianidae	*Coturnix ypsilophora*	brown quail	C	-	-
Podargidae	*Podargus strigoides*	tawny frogmouth	C	-	-
Podicipedidae	*Tachybaptus novaehollandiae*	Australasian grebe	C	-	-
Pomatostomidae	*Pomatostomus temporalis*	grey-crowned babbler	C	-	-
Psittaculidae	*Aprosmictus erythropterus*	red-winged parrot	C	-	-
Psittaculidae	*Melopsittacus undulatus*	budgerigar	C	-	-
Psittaculidae	*Platycercus adscitus*	pale-headed rosella	C	-	-
Psittaculidae	*Trichoglossus haematodus moluccanus*	rainbow lorikeet	C	-	-
Ptilonorhynchidae	*Ptilonorhynchus maculatus*	spotted bowerbird	C	-	-
Recurvirostridae	*Himantopus himantopus*	black-winged stilt	C	-	-
Rhipiduridae	*Rhipidura leucophrys*	willie wagtail	C	-	-
Strigidae	*Ninox boobook*	southern boobook	C	-	-
Turnicidae	*Turnix velox*	little button-quail	C	-	-
Tytonidae	*Tyto longimembris*	eastern grass owl	C	-	-
Sturnidae	*Acridotheres tristis**	common myna	-	-	-
Mammals					
Canidae	*Canis lupus dingo**	dingo	-	-	Category 3, 4, 5 & 6
Canidae	*Canis lupus familiaris**	dog	-	-	Category 3, 4, 5 & 6
Felidae	*Felis catus**	cat	-	-	Category 3, 4 & 6
Leporidae	*Oryctolagus cuniculus**	rabbit	-	-	Category 3, 4, 5 & 6
Macropodidae	*Aepyprymnus rufescens*	rufous bettong	C	-	-
Macropodidae	*Lagorchestes conspicillatus*	spectacled hare-wallaby	C	-	-
Macropodidae	*Macropus giganteus*	eastern grey kangaroo	C	-	-
Macropodidae	*Wallabia bicolor*	swamp wallaby	C	-	-
Phalangeridae	*Trichosurus vulpecula*	common brushtail possum	C	-	-

Family	Scientific name	Common name	NC Act status[1]	EPBC Act status[2]	Biosecurity Act[3]
Phascolarctidae	*Phascolarctos cinereus*	koala	E	E	-
Suidae	*Sus scrofa**	pig	-	-	Category 3, 4 & 6
Tachyglossidae	*Tachyglossus aculeatus*	short-beaked echidna	SL	-	-
Reptiles					
Agamidae	*Pogona barbata*	bearded dragon	C	-	-
Diplodactylidae	*Diplodactylus vittatus*	wood gecko	C	-	-
Diplodactylidae	*Lucasium steindachneri*	Steindachner's gecko	C	-	-
Diplodactylidae	*Oedura monilis*	ocellated velvet gecko	C	-	-
Gekkonidae	*Gehyra catenata*	chain-backed dtella	C	-	-
Gekkonidae	*Heteronotia binoei*	Bynoe's gecko	C	-	-
Scincidae	*Carlia pectoralis*	open-litter rainbow skink	C	-	-
Scincidae	*Carlia sp.*	-	C	-	-
Scincidae	*Cryptoblepharus virgatus*	striped snake-eyed skink	C	-	-
Scincidae	*Ctenotus strauchii*	eastern barred wedgesnout ctenotus	C	-	-
Scincidae	*Morethia boulengeri*	south-eastern morethia skink	C	-	-
Amphibians					
Bufonidae	*Rhinella marina**	cane toad	-	-	-
Hylidae	*Cyclorana alboguttata*	greenstripe frog	C	-	-
Hylidae	*Litoria caerulea*	common green treefrog	C	-	-
Hylidae	*Litoria inermis*	bumpy rocketfrog	C	-	-
Hylidae	*Litoria latopalmata*	broad palmed rocketfrog	C	-	-
Hylidae	*Litoria rubella*	ruddy treefrog	C	-	-
Limnodynastidae	*Limnodynastes salmini*	salmon striped frog	C	-	-
Limnodynastidae	*Limnodynastes tasmaniensis*	spotted grassfrog	C	-	-
Limnodynastidae	*Limnodynastes terraereginae*	scarlet sided pobblebonk	C	-	-

[1] **NC Act:** *Nature Conservation Act 1992* – Queensland legislation for the conservation of nature, including native plants and animals
[2] **EPBC Act:** *Environmental Protection and Biodiversity Conservation Act 1999*- Australia's central piece of environmental legislation for protecting biodiversity
Conservation status under the EPBC Act 1999 and NC Act 1992:
EX = Extinct, CR = Critically Endangered, E = Endangered, V = Vulnerable, NT = Near Threatened (NC Act only), C = Least Concern n (NC Act only), - = Not listed
[3] **Biosecurity Act:** *Biosecurity Act 2015* – Australian legislation that governs the management of biosecurity threats to plant, animal and human health and Categorises the level of threat
* Species has been introduced to Australia

Appendix E Landscape Fragmentation and Connectivity Tool Output

Department of Environment and Science (DES)
Landscape Fragmentation and Connectivity (LFC) Tool version 1.7 LOGFILE
Process started at 16-10-2025 01:19:21 PM
Python version: 3.11.11 (main, Mar 3 2025, 15:29:37) [MSC v.1938 64 bit (AMD64)]
Arcpy version: 3.5.2
Username: danielle.lane

INPUT PARAMETERS
Output Workspace:
X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\v5
Threshold lookup table:
X:\GIS_New\01_Reference_Data\Queensland\Offsets\DP_ENVOFF_LFC_TOOL\lfc_v2p01_arcpro\LFC_data.gdb\tbl_Regional_frag_local_threshold
Remnant cover layer:
X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\LFC_INPUT.gdb\LFC_Input_RVM_GTRE_Merge2
Cover layer metadata title:Regulated vegetation management map - version 7.16
Remnant cover layer edited: True
Regional buffer extent: 20 kilometres
Local buffer will be: 5 kilometres
Impact layer:
X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\LFC_INPUT.gdb\DisturbanceFootprint_20251010
layer projection: GDA2020_MGA_Zone_55
Raster cell resolution for analysis: 10 metres
Edge Width: 50 metres
(The distance from non-remnant landscapes through to the core ecosystem - the edge of remnant ecosystems)
Default projection:
\\E2MAZFS01.corp.e2m.com.au\data$\GIS_New\01_Reference_Data\Queensland\Offsets\DP_ENVOFF_LFC_TOOL\lfc_v2p01_arcpro\GDA 2020 Queensland AlbersOFFSET.prj

13:19:21	Checking out the spatial analyst tool - required for LFC

13:19:21	_____BEGINNING LANDSCAPE FRAGMENTATION AND CONNECTIVITY ANALYSIS_____

13:19:21	This tool will categorise the landscape into:
{0: 'non-rem', 1: 'patch', 2: 'edge', 3: 'perforated', 4: 'core (< 100 hectares)', 5: 'core (100-500 hectares)', 6: 'core (> 500 hectares)', 7: 'water'}

13:19:23
X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\v5\lyr_file does not exist, creating it now.
13:19:23	Copying across impact site feature(s) and calculating area in hectares (AreaHA)
13:19:27	Making a local copy of the impact site
13:19:41	Preparing remnant cover layer for analysis
13:19:54	Created regional scale buffer of 20 kilometres
13:20:05	Created local scale buffer of 5 kilometres
13:20:17	Clipped the remnant cover to the regional buffer extent

13:20:24 Unioned the pre impact remnant layer with the impact site
13:20:30 Attributed the impact area as cleared
13:20:30 Area of RVM Cat B clearing is 71.01 hectares
13:20:30 SQL selection used is RVM_CAT = 'B' and Landcover = 0 on shapefile X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\v5\LFC_result.gdb\clip_remcover_post

13:20:30 Categorised the cover attributes in clip_remcover_pre ready for raster conversion
13:20:50 Converted clip_remcover_pre to raster

13:20:52 Categorised the cover attributes in clip_remcover_post ready for raster conversion
13:21:10 Converted clip_remcover_post to raster

13:21:10 Run Landscape fragmentation analysis on the pre impact regional landscape

REGULATED VEGETATION TYPES BEING EXTRACTED FROM LAND COVER

IDENTIFYING OF CORE, PATCH, EDGE AND PERFORATIONS

COMBINING FRAGMENTATION CLASSES

CLASSIFYING CORE FOREST PATCHES BY AREA

COMPOSING FINAL FRAGMENTATION MAP

FINISHED: COMPOSING FINAL FRAGMENTATION MAP

(FRAGMENTATION CALCULATION TIME WAS 9.7 MINUTES)

13:31:46 Run Landscape fragmentation analysis on the post impact regional landscape

REGULATED VEGETATION TYPES BEING EXTRACTED FROM LAND COVER

IDENTIFYING OF CORE, PATCH, EDGE AND PERFORATIONS

COMBINING FRAGMENTATION CLASSES

CLASSIFYING CORE FOREST PATCHES BY AREA

COMPOSING FINAL FRAGMENTATION MAP

FINISHED: COMPOSING FINAL FRAGMENTATION MAP

(FRAGMENTATION CALCULATION TIME WAS 13.5 MINUTES)

13:46:07 Extracting a local subset of lfc_regional_pre_impact

13:46:24 Extracting a local subset of lfc_regional_post_impact

13:46:41 Collating pre and post impact statistics and trigger assessment

13:46:41 Summarising area statistics for: lfc_local_pre_impact
13:46:42 Summarising area statistics for: lfc_local_post_impact
13:46:42 Summarising area statistics for: lfc_regional_pre_impact
13:46:43 Summarising patch count for lfc_local_pre_impact
13:46:54 Summarising patch count for lfc_local_post_impact

Analysing impact on Connectivity Areas

SIGNIFICANCE TEST ONE

The regional total area is 152841.39
The regional extent of core remnant is 63103.68
The regional extent of core remnant is 41.29 percent
This level of regional fragmentation sets a local impact threshold of: 10.0 percent

The table below lists the local impact thresholds for categories of regional core remnant extent:

REGIONAL CORE CATEGORY	LOCAL IMPACT THRESHOLD
< 10	2.0
10 - 30	5.0
30 - 50	10.0
50 - 70	20.0
70 - 90	30.0
>90	50.0

Area of core at the local scale (pre impact): 7257.16
Area of core at the local scale (post impact): 6996.22
Percent change of core at the local scale (post impact): 3.60 percent

SIGNIFICANCE TEST TWO

The number of core remnant areas occurring on the site: 7
The number of core remnant areas remaining on the site post impact: 7
(Only core polygons greater than or equal to 1 hectare are included)

RESULT

13:47:32 This analysis has determined any impact on connectivity areas is NOT significant
(A significant reduction in core remnant at the local scale is False OR a change from core to non-core remnant at the site scale is False)

The significance table has been written to:
..\main_output\lfc_significance_assessment.csv
The local scale summary table has been written to:
..\main_output\lfc_local_scale_summary.csv
The site scale summary table has been written to:

..\main_output\lfc_site_scale_summary.csv
GIS layer files copied into folder \lyr_file within the project folder.
View layers in ArcPro
using..\X:\GIS_New\07_ArcPro\DanielleScratchWorkspace\QEJ23080j_LFC_Tool_Output\v5\lyr_file\Connectivity Area Impact Assessment.lyrx

Please scrutinise the output tables and spatial layers to confirm the desktop modelling of connectivity area impact

This analysis used an edited version of the Regulated Vegetation layer.

13:48:00 _____COMPLETED LANDSCAPE FRAGMENTATION AND CONNECTIVITY ANALYSIS_____