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# **ABBREVIATIONS**

 $The following abbreviations \ are \ used \ throughout \ this \ Supporting \ Information \ Report.$ 

Abbreviation	Description
ALA	Atlas of Living Australia
BSC	Banana Shire Council
СНІМА	Cultural Heritage Investigation and Management Agreement
CSG	Coal seam gas
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DESI	Department of Environment, Science and Innovation
DLWs	Duel-lateral wells
DoR	Department of Resources
EA	Environmental Authority
EMP	Environmental Management Plan
EP Act	Environmental Protection Act 1994 (Qld)
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
GIS	Geographic Information System
GNP	Gaangalu National People
HVR	High Value Regrowth
LIKTs	Locally Important Koala Trees
MNES	Matters of National Environmental Significance
OAG	Offset Assessment Guide
OAMP	Offset Area Management Plan
OMS	Offset Management Strategy
PD	Preliminary Documentation
PL	Petroleum Lease
PMST	Protected Matters Search Tool
PTD	Permit to Disturb
RE	Regional Ecosystem
RFI	Request for Information
RPZ	Riparian Protection Zone
SMP	Species Management Plan
SLATS	Statewide Landcover and Trees Study
SSMP	Significant Species Management Plan
SPRAT	Species Profile and Threat Database
TEC	Threatened Ecological Community
VM Act	Vegetation Management Act 1999 (Qld)

### 1 INTRODUCTION

### 1.1. Overview

Westside CSG A Pty Ltd and Westside CSG D Pty Ltd acquired a 51% interest in the Dawson Coal Seam Gas (CSG) Fields on Petroleum Lease (PL) 94 in the Bowen Basin on 1 July 2010. In a joint venture with Mitsui E and P Australia Pty Ltd, PL94 is operated by Westside Corporation Pty Ltd (Westside).

Currently, 250 CSG wells have been approved for PL94, which was granted in 1996. Westside is seeking approval for the development of an additional 350 CSG wells, for a total of 600 CSG wells located on PL94.

The Project (proposed action) includes the construction, operation, decommissioning and rehabilitation of an additional 350 CSG wells, and their associated supporting infrastructure that is not previously approved under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

In July 2021, Westside submitted a referral for the Project in accordance with the EPBC Act (2021/9117). On June 30<sup>th</sup>, 2022, the Project was deemed a controlled action by a delegate of the Minister for the Environment and Water, with assessment to be undertaken on Preliminary Documentation (PD). On 5 August 2022, a Request for Information (RFI) detailing further information to be included in the PD was issued.

This PD and all attachments respond to the RFI. The controlling provisions under Part 3 of the EPBC Act are:

Listed threatened species and communities (section 18 & section 18A).

A summary of the existing operation is provided as follows to give background on the existing operation, not subject to this PD. The existing operations on PL94 is a brownfield development (referred to as Stage 1) that includes:

- 250 Gas production wellheads, constructed from 1996 and continuing to be implemented.
- Ancillary linear infrastructure including gas and water pipelines, access tracks, power lines and communication lines necessary for the 250 gas production wells.
- Gas compression facilities.
- Water management infrastructure including purpose built above ground tanks with double liners.
- Other ancillary activities and facilities to support construction and operations.

The Project (Stage 2) describes the scope of works that is the subject of this PD (2021/9117). The Project involves the construction, operation and rehabilitation of the following:

- 350 gas production wellheads.
- Ancillary linear infrastructure including gas and water pipelines, access tracks, power lines, and communication lines.
- Gas compression facilities upgrades as required.
- Water management infrastructure.
- Other ancillary activities and facilities to support construction and operations.

Stage 1 and 2 are already authorised by the Queensland government under Environmental Authority (EA) (EPPG00783713) pursuant to the *Environmental Protection Act 1994* (EP Act) which allows up to 600 CSG wells.

The final number, well type, and location of these Project activities will be determined progressively over the life of the Project development. Ongoing field development planning principles which include consideration of agricultural values and land access agreements negotiated with landholders, environmental values, cultural heritage values, topography, and constructability will be used to determine infrastructure locations. However, based on known Project components and quantities, construction of the Project is estimated to require a disturbance footprint of approximately 500 ha.

### 1.2. Project Location and Background

The Project Area is defined as the land contained within Petroleum Lease (PL) 94, excluding Mining Leases (refer to Figure 1). The Project Area is still defined in the same way as in the original referral (2021-9117). However, updates following surveying by Anglo American (circa 2025) on the adjoining Mining Leases have updated and corrected the lease boundaries, which has resulted in an increase of 94.5 ha to the Project Area, even though its definition remains unchanged. The Project Area now covers approximately 21,002 ha.

The Project Area is in the Moura-Theodore district of the Banana Shire, Queensland, within the Bowen Basin. The field development occurs as 'pods' within an area extending approximately 36 kilometres (km) north to south and up to 8 km east to west. Moura is located within the PL94 tenure on the western boundary and is located 3.5 km South of the PL94 northern boundary and 33 km north of the southern boundary. The development lies between the western boundary of various Mining Leases held by Anglo Coal and the Dawson River. Access to the gas fields utilise public roads and associated secondary roads, which provide access to local properties.

The land within the PL94 tenure and the Project Area is predominantly freehold, with the predominant land use being agricultural activities (cotton, grain and cattle production) (refer to Figure 2). The terrain of the area is flat to gently undulating, with an elevation between 100 metres (m) and 150 m Australian Height Datum. The region has been extensively cleared for agricultural use, with small patches of remnant vegetation present along the Dawson River and its tributaries, and within isolated fragments across the remaining landscape.

The target gas-producing formation for the Project is the Baralaba Coal Measures. The Baralaba Coal Measures are a water-bearing formation. As a confined aquifer, it is comprised of the target coal seams inter-bedded with sandstone, siltstone, and shales, which are termed 'inter-burden' or 'over-burden' depending on its spatial distribution relative to the coal seam. The fine-grained shale and siltstone rocks are typically of low permeability and function as aquitards, while the target seams are generally more permeable. Given the presence of both permeable and impermeable units, the Baralaba Coal Measures can be described as follows:

- The siltstone and shale that form inter-burden or overburden are hydrogeologically 'tight' and low yielding;
- The coal seams range in permeability from low to moderate and are the predominant water-bearing strata; and
- Groundwater storage and movement occurs with coal seam cleats and fissures, and with fractures.

The Baralaba Coal Measures are overlain by the Rewan Group, which is considered to comprise an aquitard. As such, any abstraction from the Baralaba Coal Measures will induce a 'leakage' of groundwater from the Rewan Group into the Baralaba Coal Measures. The Rewan Group is predominant in fine-grained rocks (siltstone and shale), with minor sandstone, and is present as outcrops over most of the Project area but is overlain by alluvial sediments in the northern part of the area. Based on a dip for the Baralaba Coal Measures of 5, the thickness of this unit within PL94 area ranges from negligible at the eastern boundary of the site, to 600 m or more in the northwest of the site, and greater than 1,500 m in the southwest.

The Project Area occurs within the Fitzroy Basin, a large drainage area which consists of several individually described basins. Basin 130 is of relevance to this Project. The Dawson River is the largest water body in the area, flowing in a northerly direction and intersecting the western portion of the Project. The general slope of the land is from the low ridges, which define the river catchment, including the Malakoff Range to the East and the Dawson Range to the west. The total catchment area is estimated to be 43,965 square kilometres (km²).

Several westerly flowing ephemeral tributaries cross the Dawson Mine and the Project, discharging in the Dawson River. These include Huon and Kianga Creeks. Their courses have been significantly altered by coal mining activities. Huon Creek is the major watercourse which drains the gas field area. It is ephemeral with permanent or semi-permanent waterholes located along its length. Huon Creek flows generally parallel to the Dawson River for a considerable distance before joining the mainstream and has a wide floodplain. Huon Creek's catchment is approximately 110 km².

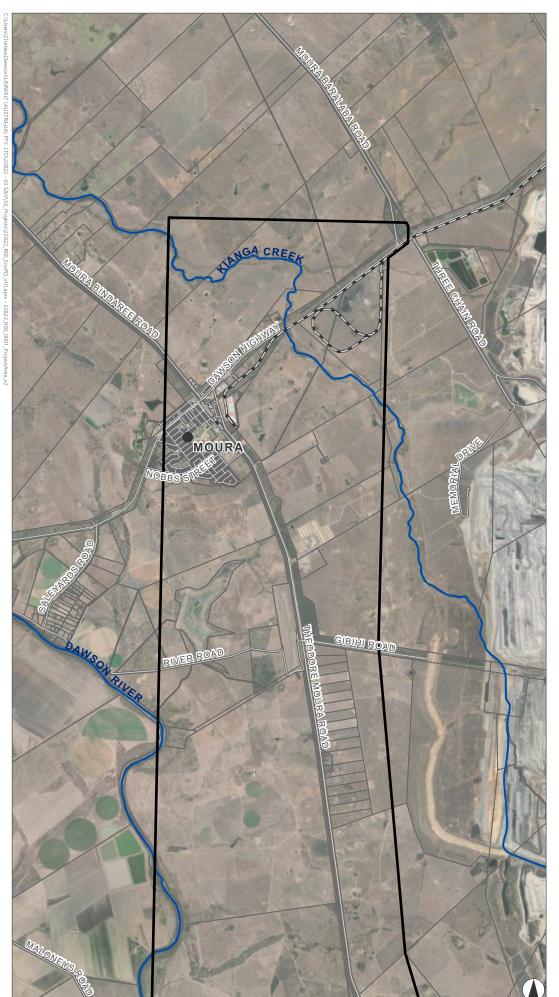
Several lacustrine and palustrine water bodies and wetland regional ecosystems (REs) are present within the Project adjacent to Huon Creek and the Dawson River. Lacustrine systems are associated with natural depressions causing water to pool and form isolated lakes. Palustrine systems are associated with shallow, vegetated wetlands. According to the Queensland Wetland Mapping (version 2.0), no springs are present within the Project Area.

The Project Area is located within the Dawson River Downs subregion of the Brigalow Belt South Interim Biogeographic Regionalisation for Australia bioregion. This bioregion is broadly characterised by mixed eucalypt woodland with areas of brigalow (*Acacia harpophylla*) scrubs and open Mitchell grasslands. Cattle grazing is the major land use in the bioregion. Vegetation within the Project Area includes remnant and regrowth woodland and forest communities, as well as non-remnant pasture. The Project Area has vegetation and habitat that vary significantly in quality and extent. The Project Area has been largely cleared of its native flora for improved pasture, with exotic grasses comprising the dominant species.

Brigalow woodlands are present across the entire Project Area, generally occurring as discontinuous patches, largely upon gently undulating, cracking clay soils, but also as a fringing woodland along waterways. These woodlands are generally characterised by a closed canopy of brigalow and the presence of species such as belah (*Casuarina cristata*), wilga (*Geijera parviflora*), false sandalwood (*Eremophila mitchellii*) and currant bush (*Carissa ovata*). Gilgai formations are often a common feature in the brigalow woodlands.

Riparian woodlands dominated by forest red gum (*Eucalyptus tereticornis*) and coolibah (*Eucalyptus coolabah*) are situated along major waterways and some drainage lines within the PL. These woodlands typically comprise an open shrub layer and conspicuous grassy layer of species such as green panic grass (*Megathyrsus maximus*) and sabi grass (*Urochloa mosambicensis*). Tree species present in these woodlands can include river oak (*Casuarina cunninghamiana*) and river tea-tree (*Melaleuca bracteata*).

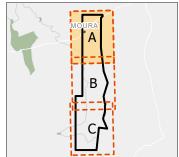




# **Project Area**

#### Legend

- Major Watercourse
- Roads
- Railway
- Project Area (Petroleum Lease 94)
- Cadastre





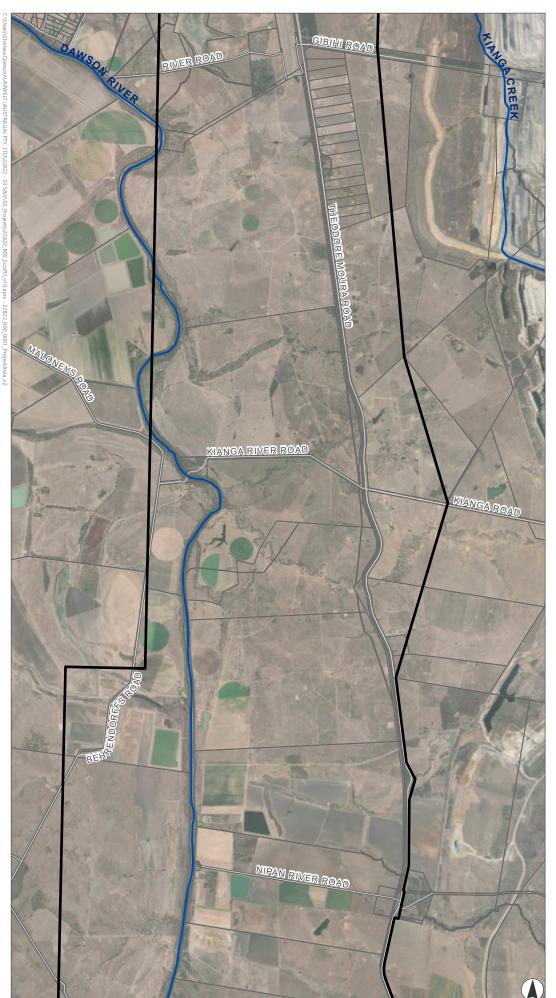


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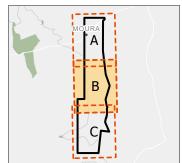




# **Project Area**

### Legend

- Major Watercourse
  - Roads
- Railway
- Project Area (Petroleum Lease 94)
- Cadastre







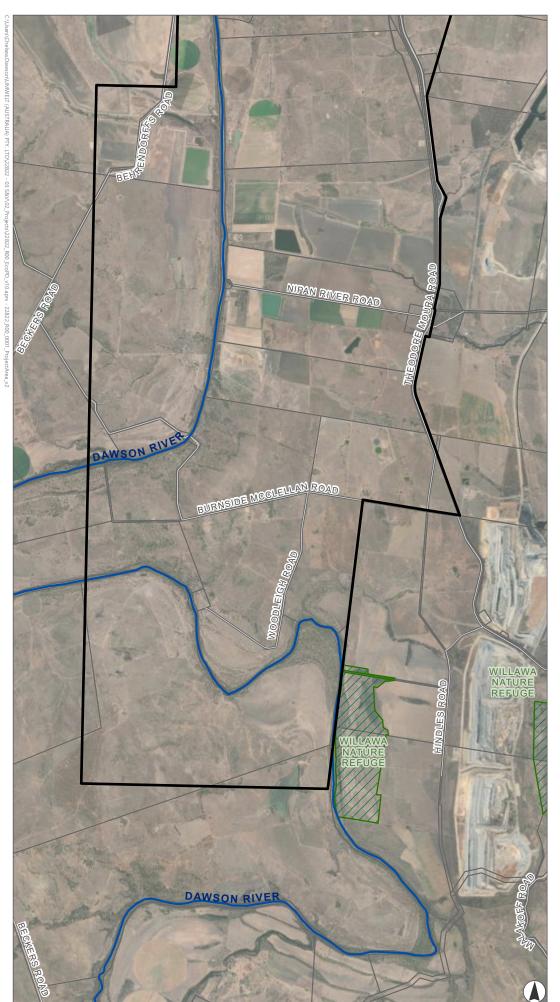
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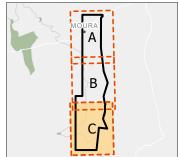




# **Project Area**

#### Legend

- Major Watercourse
- Roads
- Railway
- Project Area (Petroleum Lease 94)
- Cadastre
- ✓ Nature Refuge







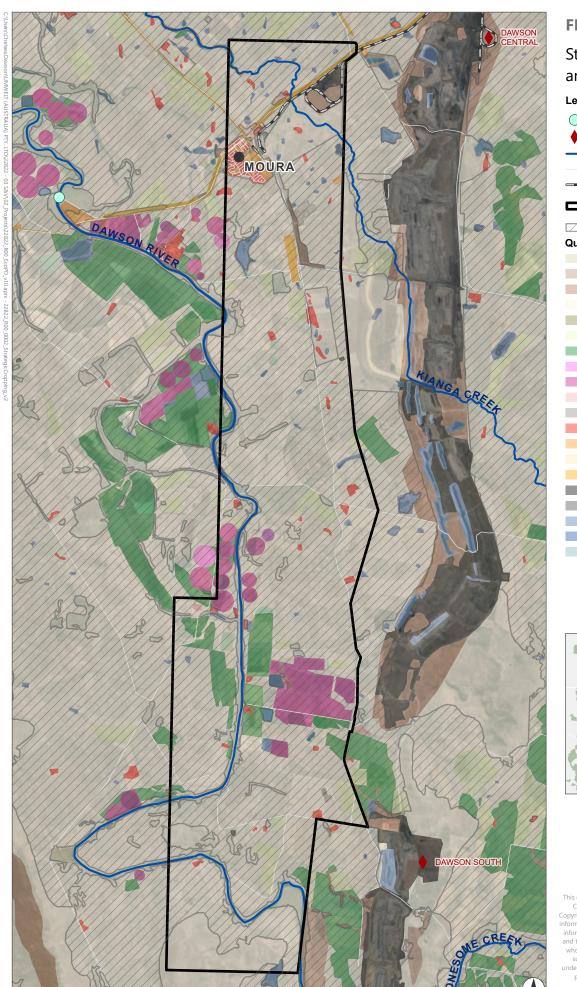
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# Strategic Cropping Land and Land Uses

### Legend

Weir

Coal mine

Major Watercourse

Roads

Railway

Project Area (Petroleum Lease 94)

Strategic cropping land area

Queensland Land Use - Current

Nature conservation

Managed resource protection

Other minimal use

Grazing native vegetation

Plantation forestry

Grazing modified pastures

Cropping

Irrigated modified pastures

Irrigated cropping

Intensive animal husbandry

Manufacturing and industrial

Residential

Services

Utilities

Transport and communication

Mining

Waste treatment and disposal

Reservoir/dam

River

Marsh/wetland





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# 1.3. Summary of Ecological Matters

# 1.3.1. Ecological Surveys

Below in Table 1 is a brief summary of each ecological survey conducted from August 2013 to April 2024. See Table 13 in Section 4.3.2 for a detailed table of ecological studies.

Table 1: Brief Summary of Ecological Studies

Survey Timing	Surveyor	Summary	Survey Effort
August 2013	Niche Environment and Heritage	Ecological assessment of four proposed exploration drill sites.	Two days
June 2016	Arris Pty Ltd	Ecological site assessment for Pipeline project.	One day
July 2017	Arris Pty Ltd	Field survey as part of the 2017 2D Seismic campaign.	Four days
November 2017	Arris Pty Ltd	Field survey of the 2018 Wells Program Area.	Two days
August 2018	Arris Pty Ltd	Field survey to assess vegetation and fauna as part of the 2018 Seismic Campaign.	Three days
October 2019	Umwelt	Ecology assessment as part of an EA amendment application.	Four days
November 2019	Otto Agribusiness	Flora survey targeting threatened flora.	Three days
November 2019	Umwelt	Ecology assessment of the proposed Meridian Trunk Line Phase 2.	Two days
November 2019	Umwelt	Ecology assessment of a proposed pipeline.	Three days
December 2019	Eco Logical Australia	Ecological assessment at locations of proposed CSG infrastructure.	Five days
December 2019	Otto Agribusiness	Flora survey targeting threatened flora.	Three days
February 2020	Otto Agribusiness	Flora survey targeting threatened flora.	Six days
March 2020	Eco Logical Australia	Ecological assessment at locations of proposed CSG infrastructure.	Three days
March 2020	Umwelt	Ecological assessment for the Project targeting ornamental snake.	Five days
March 2021	Umwelt	Ecological assessment of a Permit to Disturb (PTD) area associated with the Project Area.	Two days
July 2022	Eco Logical Australia	Ecological assessment at locations of proposed CSG infrastructure.	Three days

Survey Timing	Surveyor	Summary	Survey Effort
August 2022	Eco Logical Australia	Ecological assessment at locations of proposed CSG infrastructure.	Four days
March 2023	Greentape Solutions	Ecological assessment at locations of proposed CSG infrastructure.	Two days
June 2023	Umwelt	Targeted ornamental snake habitat survey.	Five days
April 2024	28 South	Ecological assessment at locations of proposed CSG infrastructure.	Nine days
	Umwelt	Surveyed habitat quality.	Five days

# 1.3.2. Relevant Matters of National Environmental Significance

The likelihood of occurrence assessment (Appendix B of the Matters of National Environmental Significance (MNES) Assessment Report (Attachment A)) identifies a total of 18 MNES that are considered known to occur, or have a high or moderate likelihood of occurring within the Project Area, including three Threatened Ecological Communities (TECs), three threatened flora species and 12 threatened fauna species (one of which is also listed Migratory) (see Table 2 below). Of the 18 MNES, six are known to occur within the Project Area as per the findings of the field survey program, described further in Section 6.0 of the MNES Assessment Report (Attachment A) with a summary provided in Section 4.3.

Table 2: Project Area MNES (known and potentially occurring)

MNES	EPBC Act Status <sup>1</sup>	Likelihood of Occurrence Outcome
Threatened Ecological Communities		
Brigalow (Acacia harpophylla dominant and co-dominant)	Endangered	Known
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions		
Poplar Box Grassy Woodland on Alluvial Plains		High
Flora Species		
Solanum johnsonianum	Endangered	Known
Solanum dissectum		
Xerothamnella herbacea		
Fauna Species		
Australian painted snipe (Rostratula australis)	Endangered	Moderate
Painted honeyeater (Grantiella picta)	Vulnerable	Moderate
Squatter pigeon (southern) (Geophaps scripta scripta)	Vulnerable	Moderate
White-throated needletail (Hirundapus caudacutus)	Vulnerable / Migratory	Moderate
Ornamental snake (Denisonia maculata)	Vulnerable	Known
Yakka skink ( <i>Egernia rugosa</i> )	Vulnerable	Moderate
Koala (Phascolarctos cinereus)	Endangered	High
Greater glider (southern and central) (Petauroides volans)	Vulnerable	High

Yellow-bellied glider (south-eastern)	Vulnerable	Moderate
(Petaurus australis australis)		
White-throated snapping turtle (Elseya albagula)	Critically Endangered	High
Fitzroy River turtle (Rheodytes leukops)	Vulnerable	High
Boggomoss snail (Adclarkia dawsonensis)	Critically Endangered	Moderate

<sup>1:</sup> Listing under the EPBC Act valid at the time of controlled action decision (dated 30 June 2022).

# 2. BACKGROUND ON REPORTING

# 2.1. Document Structure

Table 3 provides a Table of Contents relevant to this report for the individual RFI items.

Table 3: Document Structure

Report Section	Description	Relevant RFI Items
1. Introduction	Provides a brief introduction to the document, Project, approvals process and site.	N/A (introduction and project background)
2. Background on Reporting	Provides a brief background on the structure of this report, lookup table for RFI items and list of involved personnel	N/A (this section)
3. Description of the Action	Describes the activities (such as construction, operation and closure) that make up the matters relevant to this report.	1.1, 1.2, 1.3
4. Habitat Assessment	Provides description of the habitat assessment process and results.	2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.5, 2.2.1, 2.2.2, 2.2.3, 2.2.4, 2.2.5
5. Constraints Protocol	Summarises the Environmental Constraints Planning and Field Development Protocol Petroleum Lease 94 (Attachment B)	3.1, 3.2, 3.3, 3.4, 3.5, 3.6
6. Impact Assessment	Summarises the findings of the impact assessment, the full assessment is in the MNES Assessment Report (Attachment A)	4.1.1, 4.1.2, 4.1.3, 4.1.4, 4.1.5, 4.1.6, 4.1.7
7. Avoidance, Mitigation and Management Measures	Provides a list of measures taken to reduce the impact that the proposed action will have on protected matters.	5.1, 5.2, 5.3, 5.4, 5.5, 5.6 5.7, 5.8, 5.9, 5.10, 5.11, 5.12
8. Offsets	Summarises offset and offset measures from the Offset Area Management Plan (Attachment D)	6.1, 6.2, 6.3, 6.4
9. Ecologically Sustainable Development (ESD)	Shows how Westside is consistent with the principle/s of ESD	7.1
10. Economic and Social Matters	Shows how Westside has considered each relevant economic and social aspect to the Project	8.1, 8.2, 8.3, 8.4, 8.5
11. Environmental Record of the Person Proposing to take the Action	Displays Westside's Environment Record	9.1, 9.2, 9.3, 9.4
12. References	Lists the sources where information has been gathered	N/A (references)
Attachment A: MNES Assessment Report	MNES Assessment Report	-
Attachment B: Constraints Protocol	Environmental Constraints Planning and Field Development Protocol Petroleum Lease 94	-
Attachment C: Management Plans	Each of the individual Management Plans, including: Environmental Management Plan Significant Species Management Plan Produced water Management Plan	-

Report Section	Description	Relevant RFI Items
	Rehabilitation Management Plan	
Attachment D: Offset Area Management Plan	Offset Area Management Plan	-
Attachment E: Protected Matters Search Tool	Protected Matters Search Tool	-
Attachment F: Public Comment Register	Summary of Public Comments received during public display of the PD, and Westside's response.	-

# 2.2. Public Comments

The draft PD was displayed publicly from 31 July 2025 to 13 August 2025. A summary of comments from this period are attached as Appendix F alongside Westside's responses.

# 2.3. Compliance with the Request for Information

Table 4 offers cross-references that provide evidence of compliance with the RFI items that have been included in this PD and attachments. Table 4 is a cross reference that includes extracts from the RFI.

Table 4: Request for Information Cross Reference Table

RFI Item – Information Required	Compliance
1. Description of the Action	
1.1	Section 3
A description of all components of the action, including the anticipated timing and duration (including start and completion dates) of each component of the project. In addition, any components which were included in the referral material, but are no longer part of the proposed action, must be clarified.	
1.2	Section 3
A description of the operational requirements of the action including any anticipated maintenance works.	
1.3	Section 3
If available – Provide an indicative layout plan for the proposed action area, including the location and type of land use, key infrastructure, and the number and location of well pads and above ground storage tanks. If available – Include mapping and coordinates for each of the above.	
2. Habitat Assessment	
2.1 Species/communities general information	
2.1.1	Section 4
Provide a habitat assessment for relevant listed threatened species and communities. Please note an assessment must be undertaken regardless of whether the species was recorded in the Project Area or not.	
2.1.2	Section 4
Provide detailed mapping of suitable habitat (within, adjacent to and, where relevant, downstream of the project) for all listed threatened species and communities.	
2.1.3	Section 4.3.2
Provide the habitat definitions and habitat mapping rules used for generating the potential habitat maps for relevant listed threatened species and communities.	
2.1.4	Section 4.3.2
Attach all relevant ecological surveys referenced in the referral and preliminary documentation as supporting documents to the preliminary documentation.	
2.1.5	Section 4.3.2
Identify and describe known historical records of the listed threatened species and ecological communities in the broader region. All known records must be supported by an appropriate source (i.e., Commonwealth and State databases, published research, publicly available survey reports, etc.), the year of the record and a description of the habitat in which the record was identified.	

RFI Item – Information Required	Compliance
2.2 Specific threatened species habitat assessment information required.	
2.2.1	Section 4.4
Provide the definitions used for high, medium and low suitability habitat. Discuss how these definitions align with the habitat definitions provided in the Species Profile and Threat Database (SPRAT) profile, Conservation Advise and Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (2011c).	
2.2.2	Section 4.4
A discussion of vegetation composition and structure on relevant land zones (i.e. riparian vegetation, gilgai mounds and depressions, Brigalow TEC, cracking clay soils and microhabitat features).	
2.2.3	Section 4.4
If not already included - Habitat mapping rules for the Ornamental Snake should be expanded to include floodplains, undulating clay pans and along the margins of swamps, lakes and watercourses. It also occurs on adjoining areas of elevated ground and has been recorded in woodlands and open woodlands of coolabah, poplar box, and brigalow, and in fringing vegetation along watercourses. Is known to prefer woodlands and open forests associated with moist areas, particularly gilgais and depressions, but also lake margins and wetlands.	
2.2.4	Section 4.4
Details and locations (including a map) of known food sources (i.e. frog species).	
2.2.5	Section 4.4
A discussion of habitat use requirements (e.g. shelter/refuge, foraging, dispersal, etc.), including consideration of known important habitat and suitable habitats.	
3. Constraints Protocol	
3.1	Section 5
Pre-disturbance surveys must be supervised by a suitably qualified person and undertaken in accordance with the department's survey guidelines in effect at the time of the survey or other equivalent survey methodology.	
Clarification is required regarding the pre-clearance survey procedures and efforts.	
3.2	Section 5
Constraints categories are required to be well defined for assessment.	
3.3	Section 5
Provide clarification on the reporting that will be required to remain consistent with the Constraints protocol and the thresholds which have been used to determine if activities are approved to proceed.	
3.4	Section 5

RFI Item – Information Required	Compliance
Clarification and discussion are required regarding avoidance and mitigation strategies of the potential impacts of habitat fragmentation under the constraints protocol.	
3.5	Section 5
Provide clarification and discussion on the significant impact assessment that would be undertaken for when the project involves disturbance to areas of 'low' and 'moderate' suitability habitat.	
3.6	Section 5
As vegetation communities/ habitat are clarified and further defined within the project site, update all reports, including the constraints protocol, as appropriate.	
4. Impact Assessment	
Listed Threatened Species and Communities	
4.1.1	Section 6.1
An assessment of the likely impacts associated with the vegetation clearance, construction, operational, maintenance and decommissioning components of the project.	
4.1.2	Section 6.2
Include the direct and indirect loss and/or disturbance of MNES individuals and habitat as a result of the proposed action. This must include the quality of the habitat impacted and quantification of the individuals and habitat area (in hectares) to be impacted.	
4.1.3	Section 6.3
An assessment of the impacts of habitat fragmentation in the proposed action area and surrounding areas, including consideration of species' movement patterns.	
4.1.4	Section 6.4
An assessment of the likely duration of impacts to MNES as a result of the proposed action.	
4.1.5	Section 6.4
A discussion of whether the impacts are likely to be repeated, for example as part of maintenance.	
4.1.6	Section 6.4
A discussion of whether any impacts are likely to be unknown, unpredictable or irreversible.	
4.1.7	Section 6.5
Justification, with supporting evidence, how the proposed action will not be inconsistent with:	
Australia's obligations under the Biodiversity Convention, the Convention on Conservation of Nature in the South Pacific (Apia Convention), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); and	

RFI Item – Information Required	Compliance
a recovery plan or threat abatement plan.	
5. Avoidance, Mitigation and Management Measures	
5.1	Section 7.2.1
A detailed summary of measures proposed to be undertaken by the proponent to avoid, mitigate and manage relevant impacts of the proposed action on relevant MNES.	
5.2	Section 7.2.1
The proposed measures must be based on best available practices, appropriate standards, evidence of success for other similar actions and supported by published scientific evidence.	
5.3	Section 7.2.1
All proposed measures for MNES must be drafted to meet the 'S.M.A.R.T' principle:	
S – Specific (what and how)	
M – Measurable (baseline information, number/value, auditable)	
A – Achievable (timeframe, money, personnel)	
R – Relevant (conservation advices, recovery plans, threat abatement plans)	
T – Time-bound (specific timeframe to complete)	
5.4	Section 7.2.1
Include the plans specified above (in approved or draft format) as appendices to the preliminary documentation.	
5.5	Section 7.2.1
Details of specific and measurable environmental outcomes to be achieved for relevant MNES. All commitments must be drafted using committal language (e.g. 'will' and 'must') when describing the proposed measures	
5.6	Section 7.2.1
Details of the proposed measures to be undertaken to avoid, mitigate and manage the relevant impacts of the proposed action, including those required through other Commonwealth, State and local government approvals.	
5.7	Section 7.2.1
Information on the timing, frequency and duration of the proposed avoidance, mitigation, management and monitoring measures, and corrective actions to be implemented.	
5.8	Section 7.2.1

RFI Item – Information Required	Compliance
An assessment of the expected or predicted effectiveness of the proposed measures.	
5.9	Section 7.2.1
Any statutory or policy basis for the proposed measures, including reference to the SPRAT Database and relevant approved conservation advice, recovery plan or threat abatement plan, and a discussion on how the proposed measures are not inconsistent with relevant plans.	
5.10	Section 7.2.2
Details of ongoing management, including monitoring programs to support an adaptive management approach, that validate the effectiveness of the proposed measures and overall demonstrate that environmental outcomes will be achieved.	
5.11	Section 7.2.3
Details of tangible, on-ground corrective actions that will be implemented in the event the monitoring programs indicate that the environmental outcomes have not or will not be achieved.	
5.12	Section 7.2.4
Details of any measures proposed to be undertaken by Queensland and local governments, including the name of the agency responsible for approving each measure.	
The Offset management section is inadequate due to information gaps in RFI section 6.2 and B1. Refer to comments below and in RFI section B1 fo Noting that field surveys and habitat assessments undertaken to date are considered inadequate, a re-assessment of impacts on MNES is required. strategy will be revisited to ensure all residual significant impacts on MNES are adequately compensated for.	
6.1	Section 8
An assessment of the likelihood of residual significant impacts occurring on relevant MNES, after avoidance, mitigation and management measures have been applied.	
6.2	Section 8
A summary of the proposed environmental offset and key commitments to achieve a conservation gain for each protected matter.	
6.3	Section 8
If an offset area has not been nominated, include a draft OMS as an appendix to the PD. The draft OMS must meet the information requirements set out in <u>Appendix B.1.</u>	
6.4	Section 8
Where offset area/s have been nominated, include a draft OAMP as an	

RFI Item – Information Required	Compliance
appendix to the PD. The draft OAMP must meet the information requirements set out in <u>Appendix B.2</u> , and must be prepared by a suitably qualified ecologist and in accordance with the department's <u>Environmental Management Plan</u>	
Guidelines (2024b), available at: www.environment.gov.au/epbc/publications/environmental-management-plan-guidelines.	
7. Ecologically Sustainable Development (ESD)	
7.1	Section 9
A description of how the proposed action meets the principles of ESD, as defined in section 3A of the EPBC Act. The following principles are principles of ecologically sustainable development:	
<ul> <li>Decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;</li> </ul>	
<ul> <li>If there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;</li> </ul>	
The principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;	
The conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;	
Improved valuation, pricing and incentive mechanisms should be promoted.	
8. Economic and Social Matters	
8.1	Section 10
An analysis of the economic and social impacts of the action, both positive and negative.	
8.2	Section 10
Details of any public consultation activities undertaken and their outcomes	
8.4	Section 10
Projected economic costs and benefits of the project, including the basis for their estimate through cost/benefit analysis or similar studies.	
8.5	Section 10
Employment opportunities expected to be generated by the project (including construction and operational phases).	
9 Environmental Record of the Person Proposing to Take Action	
9.1	Section 11
The person proposing to take action.	
9.2	Section 11
	•

RFI Item – Information Required	Compliance
For an action for which a person has applied for a permit, the person making the application;	
9.3	Section 11
If the person is a body corporate- the history of its executive officers in relation to environmental matters;	
9.4	Section 11
If the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.	

### 2.4. Personnel Involved

The personnel, their role and qualifications who were involved with preparing the PD and the supporting attachments are provided below:

- Mark Rodiger Senior Environmental Advisor at Westside
  - Role: Primary Author
  - Qualification: Bachelor of Engineering (Environmental)
- Russell Churchett Health, Safety and the Environment Manager at Westside
  - Role: Westside Reviews
  - Qualification: Master's Environment, Occupational Health and Safety Management.
- Daniel Huff-Hannon Chief Operating Officer at Westside
  - Role: Westside Reviews
  - Qualification: Bachelor of Science
- David Gatfield Principal Ecologist at Umwelt
  - Role: Ecology Lead and Technical Review
  - Qualification: Bachelor of Science (Conservation Biology)
- Jessie McKee Senior Ecologist at Umwelt
  - Role: Ecology Support and Author
  - Qualification: Bachelor of Applied Science (Ecology and Environmental Science)
- Scott Mainey Environmental Planner at ERM
  - Role: Environmental Support and Author
  - Qualification: Bachelor of Urban and Environmental Planning
- John Herron Partner at ERM
  - Role: Technical Review
  - Qualification: Bachelor of Applied Science (Biology) and Master of Environmental Management (Sustainable Development)
- Simon Clark Environmental Planner at ERM
  - Role: Report Support
  - Qualification: Bachelor of Regional and Town Planning
- Alan Key Offsets Specialist at Earthtrade
  - Role: Offsets Support
  - Qualification: Associate Diploma in Rural Techniques (Agriculture) and a Diploma in Financial Planning.

### 3. DESCRIPTION OF THE PROJECT

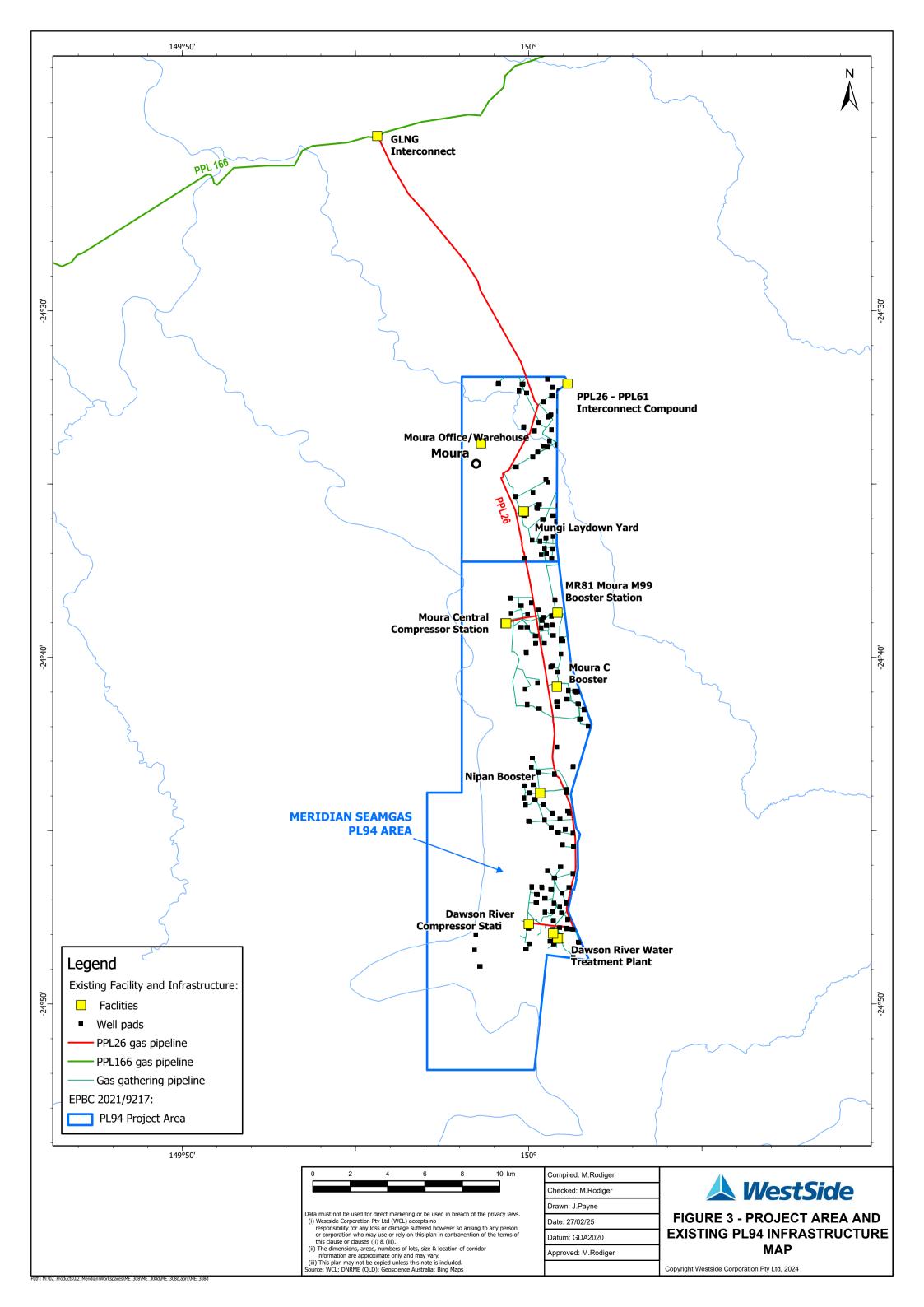
RFI 1.1	A description of all components of the action, including the anticipated timing and duration (including start and completion dates) of each component of the project. In addition, any components which were included in the referral material, but are no longer part of the proposed action, must be clarified
RFI 1.2	A description of the operational requirements of the action including any anticipated maintenance works
RFI 1.3	If available – Provide an indicative layout plan for the proposed action area, including the location and type of land use, key infrastructure, and the number and location of well pads and above ground storage tanks. If available – Include mapping and coordinates for each of the above

Figure 3 shows the layout of the previously approved current Stage 1 infrastructure sited on the Project Area. The location of the additional Project infrastructure is not currently available and will be determined by several considerations, including further resource exploration activities, production assessments of current and future wells, and constraints mapping, as detailed in the Constraints Planning and Field Development Protocol Petroleum Lease 94 (Constraints Protocol) (Attachment B).

There have been no changes to the components of the Project since the referral was made in July 2021.

The Project Area is still defined in the same way as in the original referral (2021-9117). However, updates following surveying by Anglo American (circa 2025) on the adjoining Mining Leases have updated and corrected the lease boundaries, which has resulted in an increase of 94.5 ha to the Project Area, even though its definition remains unchanged. The Project Area now covers approximately 21,002 ha

Some refinements to the habitat assessments and MNES mapping of the Project Area have been completed in response to the RFI. The updated mapping and habitat assessments have identified that avoidance of MNES remains the preferred planning methodology, although some potential impacts to MNES could occur. As a result, maximum disturbance limits and mitigation measures have been proposed in response to the potential impacts. The Constraints Protocol (Attachment B) and other documents have been updated to reflect the refinements of the MNES mapping and habitat assessments.



# 3.1. Proposed Infrastructure

Westside's Stage 2 development of CSG production within PL94 is the subject of this PD. The Project involves the construction, operation, and rehabilitation of the following:

- 350 gas production wellheads;
- Ancillary linear infrastructure including gas and water pipelines, access tracks, power lines, and communication pipelines;
- Gas compression facilities as required (use of existing infrastructure is proposed with no further disturbance);
- Water management infrastructure (use of existing infrastructure is proposed with no further disturbance); and
- Other ancillary activities and facilities to support construction and operations (use of existing infrastructure is proposed with no further disturbance).

The estimated total disturbance footprint for the well pads and ancillary linear infrastructure is 500 ha. As indicated above, use of some existing infrastructure is proposed with no further disturbance

The Constraints Protocol (Attachment B) for the Project Area will be implemented to finalise infrastructure locations. The Constraints Protocol (Attachment B) documents the process for validating MNES, and implementing a hierarchy of avoidance, minimising and mitigating impacts, rehabilitating disturbance and providing offsets for any confirmed significant residual impacts to MNES in accordance with the Offset Area Management Plan (Attachment D).

The exact timing and locations of the Project infrastructure is not currently available as this is determined by several considerations including future resource exploration activities, production assessments of current and future wells, and constraints mapping. Westside is predicting that Project is to commence if approvals are granted and any pre-commencement conditions are met, and that it will be undertaken over a period of 50 years generally in accordance with the following indicative timing:

- Construction The construction of wells will be developed progressively over a period of 30 years.
- Operation The life expectancy of a well is expected to be approximately 20 years.
- Decommissioning The decommissioning of a well is not expected to occur until the well has been producing for at least 20 years.

Therefore, the Project, including construction, operation and decommissioning has the potential to occur over the next 50 years.

### 3.1.1. Production Wells

Westside will continue to implement both single and multi-well pads on PL94 with a preference for multi-well pads where feasible.

#### **Single Wells**

A single well pad could result in a maximum 1.0 hectare (ha) disturbance during construction, which is reduced to a 0.6 ha disturbance area post-construction (operations phase) in accordance with the current Queensland Department of Environment, Science and Innovation (DESI) standards.

### Multi-wells (Preferred)

A multi-well pad could result in a maximum disturbance of 2.0 ha during construction which is reduced to less than 1.0 ha disturbance during the operation phase. Whilst multi-wells do create a larger disturbance area than a single well pad (both during construction and operation), overall, they result in a net reduction of land disturbance as a reduced number of single well pads are required. Multi-well pads can host up to five well heads.

### **Dual-lateral and Tri-lateral wells (downhole)**

Building on more than 25 years of experience in production on PL94, the preferred style of development wells in PL94 are dual-lateral wells. Westside has successfully constructed and operated duel-lateral wells since 2011 and has demonstrated that production performance is better, well interventions are reduced, and uptime is improved with duel-lateral wells.

If required, well stimulation techniques such as hydraulic fracturing, may be used in vertical wells as part of the completion of a well to improve the gas flow rate. Such stimulation will be undertaken in accordance with the existing State EA (EPPG00783713) and any associated regulations.

The total aggregate disturbance footprint for well pads required during construction will be approximately 200 ha, and during operation will occupy up to approximately 100 ha. At the completion of the Project, all well pads will be rehabilitated to the condition of the adjoining land. An example of the Project infrastructure is provided in Photograph 1 and Photograph 2.



Photograph 1: Existing, established well site from stage 1 -  $50 \times 50 \text{ m}$  disturbed area



Photograph 2: Rehabilitation of a Well Pad - Well plugged and abandoned, site reshaped, topsoil replaced and vegetation replanted

### **Standard Drilling Methodology**

Before the drill rig is mobilised to the site, the drill site and access tracks are prepared. This includes three main steps.

- 1. Vegetation is cleared within the well pad and access tracks. Where vegetation is felled, it is stored at the edge of the pad for later rehabilitation use. Recoverable hollow timber, larger rocks, and other features will be stored for later microhabitat rehabilitation.
- Topsoil is removed using earthmoving equipment. This is stockpiled on one side of the pad and/or access track for use in rehabilitation. Finally, earthmoving equipment is used to prepare the site for use.
- 3. A small drill rig arrives to install a large diameter conductor pipe. The main drill rig sets up over the conductor pipe.

Once the drill site is prepared a larger drill rig arrives and drills the surface section of the hole. The surface casing is then cemented in place by pumping cement into the casing and circulating it back through the surface wellbore. This cement isolates any shallow surface aquifers from the hydrocarbon-bearing formation and prevents cross-contamination.

The second stage is to drill the production section of the hole, which is cased and cemented inside the surface casing in the same manner. Above the target formations, the casing is cemented back to the surface, which isolates the formation. The lateral section of the well is then drilled "horizontally" following the coal seam, with a perforated fibreglass liner installed between the production casing and the well's total depth.

A completion rig installs the remaining downhole components of the well after the drill rig departs.

#### **Directional Drilling Methodology**

Horizontal Directional Drilling (HDD) is a trenchless construction method that may be utilised for the installation of pipelines and cables within the Project Area. This method is widely used by several industries including CSG and civil utilities including electrical, water, telecommunications and sewerage. For Westside operations, this drilling method is only considered when standard drilling methods are not feasible, noting it requires specialist equipment and is highly dependent on the nature of the subsurface soil and bedrock materials within the proposed infrastructure location. However, the use of directional drilling (often referred to as trenchless drilling) does have environmental benefits as it:

- Avoids direct disturbance to the pipeline location other than at the drilling launch and receipt points.
  - Allows for the installation of pipelines and cables beneath watercourses without disturbing the riparian vegetation or water body itself. This helps to preserve ecosystem composition, function and quality as well as waterbody characteristics including water quality and flows.
  - The drilling launch and receipt points can be positioned outside sensitive areas (e.g. MNES habitat)
- Reduces sediment release.
  - Traditional open-cut methods can stir up sediments, which can harm aquatic life and degrade water quality. HDD can minimise this risk by drilling beneath the watercourse, reducing sediment release.

- Drilling fluids are contained.
  - HDD uses drilling fluids to lubricate the drill bit and remove cuttings. These fluids are contained
    within the borehole, reducing potential exposure to the surface environment and the risk of
    chemical spills and contamination.
- Inadvertent Returns Management.
  - HDD includes measures to manage inadvertent returns (unintended release of drilling fluids to the surface). This helps prevent the spread of chemicals into unintended areas.

If deemed critical for the development of the Project, Westside may employ directional drilling methods to construct underneath areas of MNES constraint including, but not limited to, watercourses such as the Dawson River and associated riparian vegetation. Any directional drilling works will be subject to detailed planning and review on a site-by-site basis to ensure environmental values (including MNES habitat, groundwater and surface water) are not compromised in any way.

### 3.1.2. Gas and Water Gathering Pipelines

To transport the produced gas and associated water from the production wells to the gas and water facilities, Westside will utilise new and existing gathering infrastructure.

Construction of new gathering pipelines will be undertaken using a combination of conventional earthmoving equipment and specialist pipeline trenching equipment. During the construction process, topsoil is segregated and reinstated to ensure a stable landform is maintained. Gathering pipelines will be High-Density Poly Ethylene pipe and designed and constructed to comply with:

- Australian Standard AS2885 Pipelines Gas and Liquid Petroleum;
- Code of Practice: For the construction and abandonment of coal seam gas and petroleum wells, and associated bores in Queensland (DNRME, 2019); and
- Australian Pipelines and Gas Association Ltd (APGA) Code of Environmental Practice (2022).

Upon the completion of pipeline construction, the pipeline corridors will be rehabilitated to the condition of the adjoining land. An example of the Project infrastructure is provided in Photograph 3, Photograph 4, Photograph 5 and Photograph 6.



Photograph 3 - Rehabilitation of Pipeline



Photograph 4 - Rehabilitation of Pipeline



Photograph 5 - Rehabilitation of Pipeline



Photograph 6 - Rehabilitation of Pipeline

### 3.1.3. Roads and Access Tracks

Construction of access tracks are typically 6m wide to accommodate project vehicles. Westside endeavours to utilise existing access tracks which will potentially be upgraded to allow for site vehicle use. Any new access tracks are co-located with the gathering pipeline network to reduce the overall disturbance footprint.

### 3.1.4. Gas Compression Facility

Existing gas compression facilities will be utilised for export to domestic and/or international markets. Sales gas from the compression facility would be transported through existing gas pipelines in the area. If necessary, additional gas compression facilities would be constructed.

### 3.1.5. Water Management

Produced water will be managed in accordance with the Produced Water Management Plan, located in Attachment C, and was provided in the original referral. A summary of this management plan is provided in Section 3.2.3.

### 3.1.6. Ancillary Activities and Facilities

It is expected that the existing operation's laydown areas, offices, workshops and accommodation would continue to support the Project. Waste will continue to be managed in accordance with the State EA (EPPG00783713) for the PL94 Project Area and waste management requirements of the QLD *Waste Reduction and Recycling Act 2011*.

The Project will use existing chemical storage facilities from the existing Project Activities. These facilities are represented in images shown in Table 5 below and shows setback from surrounding waterways.

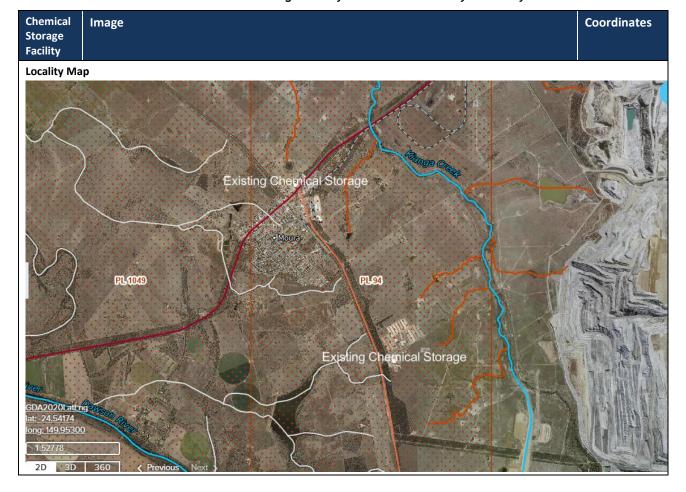
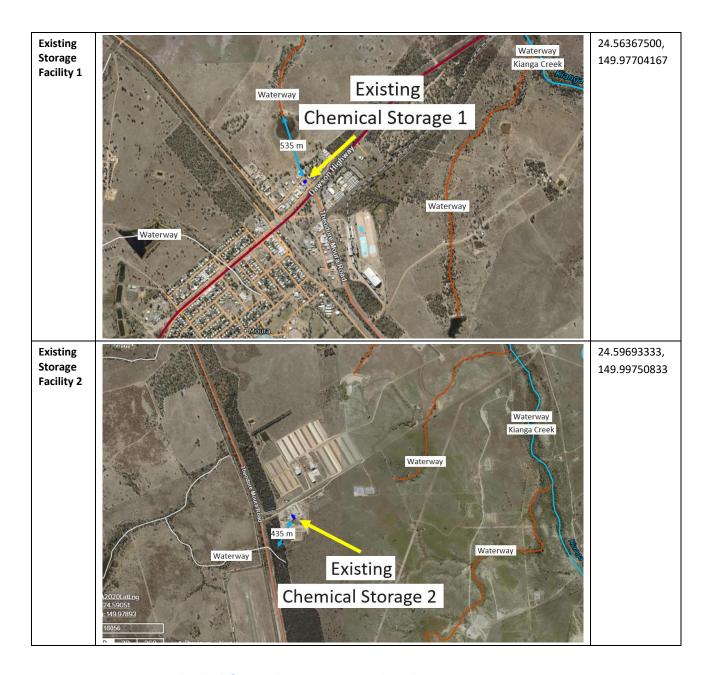


Table 5 Chemical Storage Facility Locations and nearby waterways



## 3.1.7. Activities Excluded from the Action under this Project

The following is the existing operation's activities, which has been authorised under the EA issued under Queensland legislation (Stage 1):

- 250 wells and associated infrastructure, exploration, appraisal, surveying, and associated ancillary and incidental activities;
- Survey, operation, maintenance, remediation, rehabilitation, and decommissioning of existing and approved activities; and
- Gas pipelines constructed or operated by third parties.

## 3.2. Operational Footprint and Maintenance

Maintenance activities do not require clearing of significant vegetation as maintenance activities occur within the operational footprint for the infrastructure. However, there are rare occasions when the maintenance activities require additional work area. Any additional work areas will be located within the original disturbance footprint that was assessed and used during the construction of the infrastructure.

#### 3.2.1. Wells

Westside well sites are connected to both gas and water infrastructure and operate 24 hours a day with a design life of 30 years. Wells are installed with equipment including skid-mounted filtration and separation equipment with electrical control systems that allow the well to be remotely monitored, operated, and shutdown. There are also automated shutdowns for any process excursion events.

The Maintenance and Operations team is responsible for routine operator inspections, as well as standard preventative and corrective maintenance of surface facilities and downhole equipment. These teams also carry out minor well intervention activities to optimise production by clearing blockages from within the wells in addition to optimising downhole pressures and flowrates. Major wellsite maintenance usually involves the use of a workover rig.

#### 3.2.2. Gas Processing

Gas processing facilities contain both gas-driven and electrically driven reciprocating and screw compressors. These facilities compress, separate, filter, and dry gas to sales quality specifications.

The Maintenance and Operations team is responsible for operator inspections as well as standard preventative and corrective maintenance of gas processing facilities. Where required, specialist contractors are engaged for major equipment overhauls. Critical safety and function tests are completed annually, and each site is fitted with emergency shutdown devices.

### 3.2.3. Produced Water Management

The following is a summary of the Produced Water Management Plan which is documented in Attachment C. The purpose of the management plan was to identify potential impacts and strategies to manage the water brought to the surface from Project operations. The aim is to maximise the beneficial use of the produced water, identify potential impacts that may require mitigating, and act in accordance with the regulatory framework. To do this clear information is required, including determining the source, quality and quantity of water, demand locations and available technologies. The plan has set out strategies to establish this information, and to establish the presence and location of any environmental receptors and constraints as well as community concerns and regulatory requirements.

Produced water will be transferred via gathering pipelines and trucks to intermediate water tanks. The water quality varies greatly, so water will then be put through a water treatment process in a water treatment facility. The treated water can then be used for dust suppression, beneficial use, drilling, and construction activities. These are carried out in accordance with the prescribed quality and management requirements outlined in relevant EAs and legislative standards.

As part of the Produced Water Management Plan (Attachment C), several risks were identified and a process has been designed with various mitigation strategies to reduce unintended outcomes. For example, the storage tanks are designed and installed with level detection to prevent loss of containment. Water levels are managed across the field and processes are in place to prevent the uncontrolled discharge of water across the field. This is achieved primarily through shutting in high water-producing wells.

### 3.2.4. Water and Gas Gathering Lines and Pipelines

Westside's Maintenance and Operations team is responsible for the ongoing inspection and maintenance of gas and water pipelines. These activities generally include routine maintenance and operation of low-point drains and high-point vents, cleaning and intelligent pigging of high-pressure pipelines, as well as right-of-way management through regular inspections and vegetation management to ensure the safety and integrity of the infrastructure.

#### 3.2.5. Roads and Access Tracks

Access to infrastructure is achieved through various roads and access tracks which are maintained by Westside operations and construction team. To minimise the impact of operations, where practicable, existing roads and access tracks are used for Project activities. Where this is not practical, consultation and approval are sought through landholder engagement and consultation to upgrade or construct a new track.

## 3.2.6. Decommissioning and Rehabilitation

At the end of operations, equipment and infrastructure will be decommissioned, unless a retention and transfer of ownership of assets is requested and agreed upon with the landholder. Disturbed areas which are no longer required for ongoing operations are identified for rehabilitation. Rehabilitation is achieved by removing surface infrastructure where required and, through planning of required earthworks, creating a stable, non-polluting landform that meets relevant EA and legislative standards, in accordance with the Rehabilitation Management Plan (Attachment C).

### 4. HABITAT ASSESSMENT

"Habitat assessments must be informed by desktop and field surveys (in accordance with departmental guidelines or as defined by best practice surveys), and with reference to relevant departmental documents (e.g. approved Conservation Advices, Recovery Plans, draft referral guidelines and Listing Advices, and SPRAT Database), including published research and other relevant sources.

The department does not accept the consideration of only Queensland Regional Ecosystem (RE) mapping to determine habitat for listed threatened species.

Listed threatened species includes, but is not limited to:

- Ornamental Snake (Denisonia maculata) Vulnerable
- Brigalow (Acacia harpophylla dominant and codominant) Endangered
- Coolibah Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions Endangered
- Xerothamnella herbacea Endangered
- Solanum dissectum:
- Solanum johnsonianum:
- Squatter pigeon (Geophaps scripta scripta) Vulnerable"

To support the PD, Westside have engaged Umwelt Australia Pty Ltd (Umwelt) to prepare a MNES Assessment. The MNES Assessment Report (Attachment A), presents a detailed ecological assessment for the Project and was originally prepared to support the referral of the Project. This assessment was updated during early 2025 to ensure ecology RFI items were addressed, the latest species and community information was considered, and all ecological findings current and relevant to the Project were presented in a single location.

This paragraph will introduce the Constraints Protocol, which is the subject of Section 5 and is further described there, the full Constraints Protocol can be found in Attachment B. We are introducing it now to explain how it enables the Project to be progressively developed while still effectively managing the impact to protected matters. It is common for Projects approved under the EPBC Act have their environmental disturbance calculated and described in advance to put environmental regulators at ease about harm to protected matters. This is unfeasible for this Project and other similar CSG projects because it will be progressively constructed over many years and the locations of wells and associated infrastructure will be determined at a later time. This issue is what the Constraints Protocol (Attachment B) aims to address, and it does this by setting out a series of management requirements, disturbance limits (maximum MNES disturbance limits) and commitments that Westside and the Project must abide by throughout the life of the Project to minimise harm to protected matters.

Consider that the existing habitat assessments have not verified all areas of potential habitat, as is clear through Section 4. Instead, through the implementation of the Constraints Protocol (Attachment B) and the overarching Project Execution Process (described in Section 5 and Figure 24 thereof), field verification will be undertaken to further confirm and identify protected matters as required for proposed infrastructure locations. That is to say, field verification will occur through site scouts prior to any environmental disturbances, and a permit to disturb must be obtained before the disturbance can take place. See Section 5 for more information.

As requested in the RFI dated 5 August 2022, an updated Protected Matters Search Tool (PMST) report was generated and reviewed (presented in Appendix A of the MNES Assessment Report (Attachment A)). Using a 10 km buffer on the Project Area, an updated PMST report has been generated several times since the RFI issue date, but most recently on 14 February 2025. Several threatened species not previously assessed are now identified. Some of the newly listed species have only recently been listed threatened under the EPBC Act. As these listings occurred following the controlled action decision (dated 30 June 2022) they are not subject to further assessment. Five new species on the PMST report were listed at the time of the controlled action decision and are thus likely to have had their predicted distribution extents revised.

- Hairy-joint grass (Arthraxon hispidus) listed Vulnerable
- Cossinia australiana listed Endangered
- Polianthion minutiflorum listed Vulnerable
- Grey falcon (Falco hypoleucos) listed Vulnerable
- Yellow-bellied glider (south-eastern) (Petaurus australis australis) listed Vulnerable

As more than 2 years had passed since the original likelihood of occurrence assessment that supported the referral was completed, all relevant MNES threatened species identified in the desktop as potentially occurring within the Project Area (including the five listed above) were re-assessed (Appendix B of the MNES Assessment Report (Attachment A)). This allowed for updated distributions and habitat definitions (often contained within the species' approved Conservation Advice) to be considered as well as any changes in the Atlas of Living Australia (ALA) records database. Since migratory species are not a controlling provision under the EPBC approval, migratory species were not subject to any further assessment beyond the likelihood of occurrence assessment.

Habitat assessments, informed by desktop and field survey data, have been completed for all potentially occurring and known threatened species and communities within the Project Area, as determined by the likelihood of occurrence assessment. Desktop data that has been considered in the habitat assessments includes, but is not limited to the following:

- Scientific literature;
- Departmental survey;
- Guidelines and relevant department documents;
- Species Profile and Threats (SPRAT) database;
- Listing Advices;
- Recovery Plans; and
- Approved Conservation Advices and referral guidelines.

As above, all of the habitat assessments completed as part of the original assessment were reviewed and updated as necessary in 2024. The koala (*Phascolarctos cinereus*) was listed as Endangered prior to the controlled action decision and as such, koala has been considered as Endangered throughout the PD and all associated attachments.

The presence and extent of potential habitat was delineated by using vegetation community classification and condition as well as information on presence and abundance of microhabitat features necessary for the ecological requirements of each species (i.e. hollow bearing trees, soil cracks and gilgai, coarse woody debris, fallen logs, mistletoe). The size and condition of vegetation patches, as well as proximity to necessary resources (i.e. suitable water sources, other patches of suitable habitat) were also considered in the context of the species mobility capacity. The extent of potential habitat was classified into habitat utilisation for each species (e.g. breeding, foraging, roosting, dispersal).

Refinements to the MNES mapping have also occurred as a result of updates to the habitat assessments and the collection of additional field survey data in both 2023 and 2024.

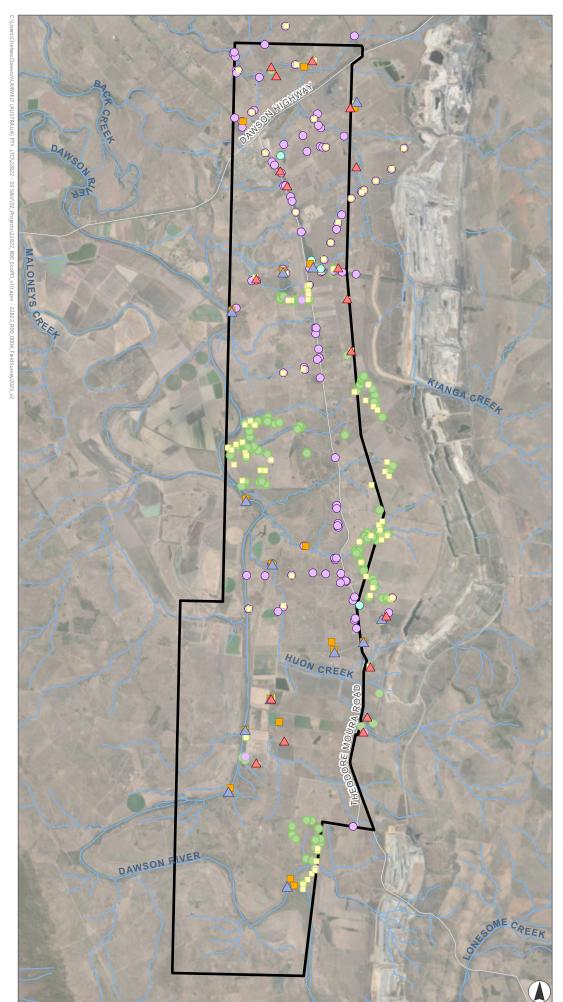
## 4.1. Survey Effort

Significant field survey efforts have been completed across the Project Area to inform the assessment of habitat suitability, availability, and quality. Field surveys occurred across multiple years and sampled all seasons. Since late 2019, a total of 15 ecology field surveys have been completed within the Project Area including three specific to threatened flora (completed by Otto Agribusiness in 2019 and 2020) and three specific to threatened fauna (completed by Umwelt in 2020, 2023 and 2024). Field survey details including timing and methods is outlined in Section 4.3 of the MNES Assessment Report (Attachment A). A brief summary of the survey effort is provided in Table 1 with additional information provided in Table 13, field survey sites are shown in Figure 4.

Surveys which involved the assessment of TECs collected the necessary diagnostic and condition data as identified in the communities' approved Conservation Advice or Listing Advice. For fauna, appropriate survey techniques were determined based on the Department of Climate Change Energy, the Environment and Water (DCCEEW) survey guidelines for Australia threatened fauna, referral guidelines and Queensland DESI targeted survey guidelines where appropriate. Surveys were undertaken in accordance with the following resources:

- Survey Guidelines for Australia's Threatened Mammals (Department of Sustainability, Environment, Water, Populations and Communities (DSEWPC) 2011b);
- Survey Guidelines for Australia's Threatened Birds (DEWHA 2017);
- Survey Guidelines for Australia's Threatened Reptiles (DSEWPC 2011d);
- Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles (DSEWPC 2011c);
- A Review of Koala Habitat Assessment Criteria and Methods (Australian National University 2021);
- Referral guideline for the 14 birds listed migratory under the EPBC Act (Department of the Environment 2015b); and
- Targeted species survey guidelines: Painted honeyeater *Grantiella picta* (Rowland 2012).





### **FIGURE 4**

# **Umwelt Field Survey** Sites 2019/2020, 2023 and 2024

#### Legend

Watercourse

Roads

Project Area

#### **Field Survey Sites**

- Quaternaries
- Tertiary Sites
- Habitat Assessments
- Rapid Vegetation/Habitat
- Spotlighting Sites
  - Active Search Sites
- Habitat Quality Assessment Sites





Scale 1:150,000 at A4 GDA2020 MGA Zone 55

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Survey guideline requirements and the effort undertaken for each relevant species is provided in Table 6 and Table 4.5 in Section 4.3.6 of the MNES Assessment Report (Attachment A). For each species, details are provided regarding the relevant guidelines, the recommended methodology, the survey effort undertaken including methods and timing and the overall survey adequacy. The survey effort undertaken to date, to support the ecological assessment of the Project and this PD response is considered adequate.

Survey locations have targeted representative vegetation and habitat across the Project Area. Greater effort has been undertaken in the central Project Area extent where existing infrastructure which are likely to facilitate the Project (i.e. areas preferential for development) are located. Where survey guideline recommendations have not been met in full, the precautionary principle (as per Section 391 of the EPBC Act) has been applied and presence has been assumed where uncertainty exists. The availability of suitable habitat and habitat resources has been informed by the findings of the habitat assessments, which have been used as a surrogate for presence.

Table 6: Combined ecological survey effort and overall adequacy

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Threatened Ecological Communities (TECs) including Brigalow (Acacia harpophylla dominant and co-dominant) TEC  Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions TEC	Approved Conservation Advice for the Brigalow (Acacia harpophylla dominant and co- dominant) ecological community (Department of the Environment, 2013a)  Commonwealth Listing Advice on Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (Threatened Species Scientific Committee, 2011)	Per patch assessments that consider both key diagnostic and condition criteria as per the relevant guideline.	A total of 59 TEC assessments have been completed within the Project Area, including 51 brigalow assessments, 5 coolibah assessments and 3 poplar box assessments. The number of assessments reflects the relative frequency in which analogous REs have been encountered within the Project Area. Refined vegetation mapping (see Section 4.4.1) has also contributed to the identification of potential TEC areas, ensuring smaller patches of vegetation and	Requirements met  Surveys have consistently employed the recommended survey method. Where field validation has not occurred and the potential presence of analogous REs is identified, TECs have been assumed present. Future site scout assessments will continue to assess the presence and extent of TECs.
Poplar Box Grassy Woodland on Alluvial Plains TEC	Conservation Advice (including listing advice) for the Poplar Box Grassy Woodland on Alluvial Plains (Department of the Environment and Energy, 2019b)		areas of regrowth, possibly not in the State mapping are captured.	

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Threatened flora species including Solanum johnsonianum, Solanum dissectum and Xerothamnella herbacea	There are no Commonwealth- approved species- specific survey guidelines	Although there is no specific methodology recommended, the following is noted in regard to identification of the species:  • Flowering of Solanum johnsonianum has been recorded in March-June and August-September. Fruiting has been recorded in April and May. S. johnsonianum is considered to be most closely related to S. nemophilum and S. innoxium. It differs from the former by the lack of glandular hairs on the upper leaf surface as well as in characteristics of the stellate hairs and from the latter by wider leaves, longer petioles and sometimes by the presence of gland-tipped stellate hairs on the calyx.  • Solanum dissectum flowers July to November and fruits from March to July. S. dissectum is most closely related to S. ferocissimum and the recently described S. lythrocarpum. It differs from both species by its complete lack of stellate hairs and its deeply lobed leaves.  • Xerothamnella herbacea flowers are small, bright pink to mauve, two lipped, to 6.5 mm long, and occur in the upper leaf axils. The fruits are clubshaped, 9 mm long and sparsely glandular hairy.	Targeted searches for the species were completed throughout the field survey program, including during the flowering and fruiting periods for each species.  Searches generally comprised opportunistic and random walking meanders in areas of suitable habitat. Searches were undertaken across all survey days throughout the program including at the 23 secondaries, 32 tertiaries and 332 quaternary sites.  Surveys conducted by Otto agribusiness in 2019 and 2020 were specific to threatened flora and included a total of 79 threatened flora transects.	Effort considered adequate  Although there are no guidelines specifying appropriate survey techniques or effort for the listed species, survey effort undertaken is considered sufficient and included sampling within the species' fruiting period. It is considered reasonable that any populations present within the Project Area would be detected given the effort undertaken.
Squatter pigeon (southern) (Geophaps scripta scripta) White-throated needletail (Hirundapus caudacutus)	In lieu of species- specific guidelines, surveys for all bird species were undertaken in consideration of the Survey guidelines for Australia's threatened birds and the Terrestrial Vertebrate Fauna	<ul> <li>Area searches for the species in representative habitat or transect surveys. Recommended effort is 15 hours over 3 days within an area of 50 ha. Or six x 5–10 minute searches within an area of 1 ha. Longer surveys may be required in complex habitats.</li> <li>Flushing surveys. Recommended effort is 10 hours over 3 days within an area of 50 ha.</li> </ul>	Methods relevant to the detection of the target species were employed during 11 field surveys undertaken between 2019 and 2024, including:  - 223 habitat assessments,	Requirements met Surveys have consistently employed the recommended survey method. Where field validation has not occurred and the potential presence of analogous REs is identified, TECs have been assumed

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Australian painted snipe (Rostratula australis)  Painted honeyeater (Grantiella picta)	Survey Guidelines for Qld.  Targeted species survey guidelines for painted honeyeater (Rowland 2012).	<ul> <li>Waterhole searches: Survey effort not specified.</li> <li>Surveys to be undertaken during peak bird activity.</li> <li>Area searches involving systematically searching for birds and signs of their presence (e.g. nesting habitat), as well as listening for their calls.</li> <li>Area searches (during breeding season, early spring to late summer) involve systematically searching for birds and signs of their presence (e.g. nesting habitat), as well as listening for their calls.</li> <li>Surveys for the painted honeyeater should concentrate on woodland where mistletoe is abundant (particularly when in fruit). Recommended minimum effort is 4 hours over four days but note that detectability during the breeding season is very different to the non-breeding season.</li> </ul>	which included searches for birds and/or signs of their presence.  - 240 person-hours of diurnal birding.  Of the 11 surveys, four occurred in spring/summer, 4 occurred in early autumn and 3 occurred in winter.	present. Future site scout assessments will continue to assess the presence and extent of TECs.
Greater glider (southern and central) (Petauroides volans)	In lieu of species- specific guidelines, surveys for these species were undertaken in	Arboreal mammal survey methods outlined in the Survey guidelines for Australia's threatened mammals include:	A total of 223 habitat assessments, which included searches for arboreal mammals and/or signs of their presence,	Requirements partially met  Surveys employed relevant methodologies across all seasons including high activity

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Yellow-bellied glider (south-eastern) (Petaurus australis australis)	consideration of the Survey guidelines for Australia's threatened mammals and the Terrestrial Vertebrate Fauna Survey Guidelines for Qld.	<ul> <li>Diurnal searches for the presence of potentially suitable habitat resources for nest or den sites as well as signs of the species' presence, such as scratches on tree trunks and scats beneath trees.</li> <li>Stag watching.</li> <li>Spotlight surveys in suitable vegetation types.</li> <li>Call detection and/or call playback surveys for vocal species, in addition to playback of the calls of owl predators that are known to induce a call response.</li> <li>Cage trapping.</li> <li>As per Terrestrial Vertebrate Fauna Survey Guidelines for Qld:         <ul> <li>Spotlighting transects are the most effective method.</li> <li>As standard practice, survey effort should target habitat known to be suitable for listed species.</li> </ul> </li> </ul>	have been undertaken across the Project Area between 2019 and 2024. Spotlighting searches were also conducted across five nights in March 2020. It is acknowledged that spotlighting targeted a variety of habitat types and thus approximately half of the total spotlighting effort is considered relevant to this species (10.4 personhours of spotlighting).	periods (temperatures in March generally between 19 and 32 degrees). Survey effort is considered adequate for the purposes of this assessment, noting the limited availability of habitat present within the main extent of the Project Area (where the Project will occur). Field survey findings support the conclusion that suitable habitat is restricted to the riparian zones of the Dawson River. A precautionary approach has been adopted in the habitat mapping and the presence of microhabitat features has been assumed in areas of potentially suitable habitat.

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Koala (Phascolarctos cinereus)	A review of koala habitat assessment criteria and methods (Youngentob, Marsh and Skewes, 2021).	No specific methodology or effort standards are prescribed for koala surveys. However, where there is a need to critically evaluate the potential impacts of major projects, multiple techniques should be used. Repeat surveys may be necessary to take temporal variation into account.  • Direct observation methods include transect and point surveys, spotlighting, mark-resight or mark-recapture, thermal detection drones, radio-tracking, camera traps and detection dogs.  • Indirect methods include scratching, Spot Assessment Technique (SAT) and other scat search methods, call playback, passive acoustics and landscape nutritional quality surveys. To optimise detection, call playback surveys should be conducted at night during the breeding season, and in the absence of strong winds or rain. Indirect methods are reported to be often the most effective for gathering presence/absence data due to the difficulty in observing koalas and the variable density of koalas across the landscape.	A total of 223 habitat assessments, which included searches for koalas and/or signs of their presence, have been undertaken across the Project Area between 2019 and 2024. Spotlighting searches were also conducted across five nights in March 2020. It is acknowledged that spotlighting targeted a variety of habitat types and thus approximately half of the total spotlighting effort is considered relevant to this species (10.4 personhours of spotlighting).	As recommended, the field survey program employed both direct and indirect methods, including within the months when activity is generally highest. Targeted survey methods employed include spotlighting. Although not all recommended methods have been employed, survey effort is considered sufficient for the purposes of this assessment.

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Ornamental snake (Denisonia maculata)	Draft Referral Guidelines for nationally listed Brigalow Belt reptiles and Survey Guidelines for Australia's Threatened Reptiles.	<ul> <li>One-off diurnal search:         <ul> <li>Active searches of microhabitat for 1.5 hours in each hectare of suitable habitat.</li> <li>A minimum of three days with one repeat (six days).</li> </ul> </li> <li>Spotlighting:         <ul> <li>1.5 hours in each hectare of suitable habitat.</li> <li>A minimum of three nights.</li> </ul> </li> <li>Pitfall and funnel trapping:         <ul> <li>6 x 20L buckets along a 30m drift fence.</li> <li>Two replicates per habitat type, morning and evening checks over four days.</li> </ul> </li> <li>Opportunistic surveys of roads.</li> </ul>	A total of 223 habitat assessments, which included searches for arboreal mammals and/or signs of their presence, have been undertaken across the Project Area between 2019 and 2024. Targeted survey effort was undertaken in March 2020 including 20.75 personhours of spotlighting across five nights (including along tracks and roads) and 12.75 person hours of active diurnal searches. Inclusive of effort completed during habitat assessments, the total active diurnal search effort equates to approximately 68.5 person hours.	Requirements partially met Surveys employed relevant methodologies (direct and indirect) across all seasons including high activity periods (temperatures in March generally between 19 and 32 degrees). Recommended spotlighting effort per ha is not practical given the size of the Project Area. Sampling of habitat has occurred over several seasons (and years), allowing for a more thorough understanding of habitat resource availability over time. Although not all recommended methods have been employed, survey effort is considered sufficient for the purposes of this assessment.

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Yakka skink (Egernia rugosa)	Draft Referral Guidelines for nationally listed Brigalow Belt reptiles and Survey Guidelines for Australia's Threatened Reptiles.	<ul> <li>Diurnal active searches over a minimum of 1.5 person hours per hectare, surveying over minimum three days.</li> <li>Transects positioned in large habitat patches (&gt;10 ha) to sample microhabitats in each habitat type.</li> <li>Spotlighting targeted habitat, over a minimum of 1.5 person hours per hectare over a minimum of three nights.</li> <li>One large Elliott-style trap (15.5 cm x 15 cm x 46 cm) and one cage trap placed as close as possible to burrow entrances, check every morning and early evening over four days.</li> <li>Elliot traps, camera traps and funnel traps to be used around burrows or colonies.</li> </ul>	A total of 223 habitat assessments, which included searches for key microhabitat features (i.e. large fallen logs) and signs of yakka skink presence (i.e. burrow systems and communal defecation sites/latrines), have been undertaken across the Project Area between 2019 and 2024. In March 2020, a total of 12.75 person-hours of diurnal active searches and 20.75 person-hours of spotlighting across five nights was also conducted in March 2020. Inclusive of effort completed during habitat assessments, the total active diurnal search effort equates to approximately 68.5 person hours.	Requirements partially met Surveys employed relevant methodologies across all seasons including high activity periods. While Elliot trapping has not been undertaken, habitat assessments were conducted across a range of suitable habitat types during all surveys. Further, searching for burrow systems and communal defecation sites is stated to be the most reliable method of detection (Department of Sustainability, Environment, Water, 2011). Survey effort is considered adequate for the purposes of this assessment.
White-throated snapping turtle (Elseya albagula)	Survey Guidelines for Australia's Threatened Reptiles.	Diving with a face mask and snorkel: no minimum effort identified.	Habitat assessments have been completed at watercourses across the	Requirements not met but considered sufficient

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Fitzroy River turtle (Rheodytes leukops)		<ul> <li>Seine netting: no minimum effort identified.</li> <li>Yabby traps: no minimum effort identified.</li> </ul>	Project Area including at several locations along the Dawson River. No aquatic trapping survey has been undertaken. In recognition of the difficulties with detecting these species, the precautionary principle has been adopted and the species are assumed to be present.	While species-specific targeted methods have not been employed, habitat assessments have been conducted during all surveys. A precautionary approach has been adopted in the habitat mapping and the presence of microhabitat features has been assumed in areas of potentially suitable habitat. All field validated data
Boggomoss snail (Adclarkia dawsonensis)	No species-specific survey guidelines for <i>Adclarkia</i> exist.	<ul> <li>Diurnal active searches involving rolling logs/rocks and other ground debris, raking leaflitter and dismantling bark piles.</li> <li>Soil/leaflitter samples (minimum 1.0 L) taken to search for juveniles or shell fragments.</li> <li>Microhabitat assessments.</li> </ul>	No targeted survey has been undertaken. In recognition of the difficulties with detecting these species, the precautionary principle has been adopted and the species are assumed to be present.	supports the finding that habitat for these species within the Project Area is limited to a single location (the Dawson River or part of). As such, survey effort is considered adequate for the purposes of this assessment.

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
Migratory terrestrial birds: Fork-tailed swift (Apus pacificus), oriental cuckoo (Cuculus optatus) and rufous fantail (Rhipidura rufifrons)	Draft referral guideline for the 14 birds listed migratory under the EPBC Act.	<ul> <li>2 ha survey in 20 minutes over sufficient survey plots to estimate a density, and hence the population size across the proposed development area.</li> <li>Standardised timed periods.</li> </ul>	Methods relevant to the detection of the target species were employed during 11 field surveys undertaken between 2019 and 2024, including:  223 habitat assessments, which included searches for birds and/or signs of their presence.  240 person-hours of diurnal birding.  Of the 11 surveys, four occurred in spring/summer, four occurred in early autumn and three occurred in winter.	Requirements met Surveys employed relevant methodologies across all seasons including high activity periods. Sampling has occurred over several years, allowing for a range of climatic conditions which could influence presence and abundance to be assessed. Survey effort is considered sufficient for purposes of this assessment, considering the conservative approach undertaken when determining the likelihood of occurrence.

MNES	Relevant Guidelines	Recommended Methodology	Total Survey Effort Undertaken	Survey Adequacy
wetland birds: Common sandpiper (Actitis	Industry guidelines for avoiding, assessing and mitigating impacts on EPBC Act listed migratory shorebird species.	<ul> <li>Bird surveys in suitable habitat:</li> <li>One x survey in December.</li> <li>Two x surveys in January.</li> <li>One x survey in February.</li> </ul>	Methods relevant to the detection of the target species were employed during 11 field surveys undertaken between 2019 and 2024, including:  • 223 habitat assessments, which included searches for birds and/or signs of their presence.  • 240 person-hours of diurnal birding.  Of the 11 surveys, four occurred in spring/summer, four occurred in early autumn and three occurred in winter.	Requirements met  Surveys employed relevant methodologies across all seasons including high activity periods. Sampling has occurred over several years, allowing for a range of climatic conditions which could influence presence and abundance to be assessed. A precautionary approach has been adopted in the habitat mapping and the presence of microhabitat features has been assumed in areas of potentially suitable habitat. Survey effort is considered adequate for the purposes of this assessment.

# 4.2. Terrestrial Habitat Types and Vegetation Communities

To understand the presence and extent of potential habitat for the relevant MNES, a refined vegetation community and habitat map was developed for the Project Area using the Environmental Systems Research Institute Geographic Information Systems (GIS) program ArcGIS Pro. This mapping was progressively updated as new data became available throughout the field survey program. As well as field-validated data, the map was informed by desktop layers including State vegetation mapping (RE and pre-clear REs), Dawson Valley soil mapping, contour mapping (1 m and 10 m interval), LiDAR ground-return point data. Using habitat assessment data collected during the field surveys, terrestrial habitat types were then assigned to the refined vegetation polygons.

The Project Area supports six terrestrial habitat types (Table 7), all of which may support (at least in part) habitat for a relevant MNES. For a detailed description of each terrestrial habitat type, please refer to Section 6.5 of the MNES Assessment Report (Attachment A).

Table 7: Summary of Terrestrial Habitat Types

Table 7: Summary of Te	enes	striat nabitat Types	
Habitat Type		Extent within Project Area (ha)	Portion (%) within Project Area
Acacia harpophylla (brigalow) woodland +/- gilgai		933.1	4.4%

Representative Brigalow habitat and gilgai formations

Representative Brigalow habitat and gilgai formations

Habitat Type	Extent within Project Area (ha)	Portion (%) within Project Area
Riparian open forests of the Dawson River	336.9	1.6%
Representative habitat along the Dawson River	Representative habitat along	the Dayson Birar
Eucalyptus on floodplains, natural wetlands ephemeral streams	889.5	4.2%
Representative photo of ephemeral wetland	Representative photo of floo	dolain habitat

Habitat Type	Extent within Project Area (ha)	Portion (%) within Project Area
Eucalyptus populnea and E. melanophloia woodland on fine- grained sediments	390.4	1.9%
Representative photo of Woodland of Eucalyptus populnea	presentative photo of Woodelanophloia	odland of <i>Eucalyptus</i>
Farm dams and modified wetlands	227.6	1.1%

Photo of artificial water feature: small farm dam

Photo of artificial water feature: large dam

Habitat Type	Extent within Project Area (ha)	Portion (%) within Project Area
Exotic pastures and other non-remnant areas	18,224.5	87%



Representative photo of non-remnant habitat cleared for pasture



Representative photo of non-remnant habitat cleared for pasture

The Project Area contains a variety of REs which are listed in Table 8 below. For a detailed description of each terrestrial habitat type, please refer to Section 6.5 of the MNES Assessment Report (Attachment A).

Table 8: Regional Ecosystems of the Project Area

Regional Ecosystem Name	Regional Ecosystem Number	Vegetation Management Act 1999 (Qld) (VM Act) Status	Analogous TEC
Acacia harpophylla and/or Casuarina cristata open forest on alluvial plains	11.3.1	Endangered	Brigalow TEC
Eucalyptus populnea woodland on alluvial plains.	11.3.2	Of Concern	Poplar Box TEC Components can form Myall TEC
Eucalyptus coolabah woodland on alluvial plains.	11.3.3	Of Concern	Coolibah TEC
Eucalyptus tereticornis and/or Eucalyptus spp. woodland on alluvial plains.	11.3.4	Of Concern	-
Eucalyptus melanophloia woodland on alluvial plains.	11.3.6	Least Concern	-
Eucalyptus populnea woodland with Acacia harpophylla and/or Casuarina cristata on alluvial plains.	11.3.17	Of Concern	Poplar Box TEC
Freshwater wetlands with Eucalyptus tereticornis or E. camaldulensis woodland fringing drainage lines.	11.3.25	Least Concern	-
Acacia harpophylla and/or Casuarina cristata shrubby open forest on Cainozoic clay plains	11.4.3	Endangered	Brigalow TEC
Eucalyptus populnea with Acacia harpophylla and/or Casuarina cristata open forest to woodland on Cainozoic clay plains	11.4.7	Endangered	Poplar Box TEC Brigalow TEC

Regional Ecosystem Name	Regional Ecosystem Number	Vegetation Management Act 1999 (Qld) (VM Act) Status	Analogous TEC
Eucalyptus cambageana woodland to open forest with Acacia harpophylla or A. argyrodendron on Cainozoic clay plains	11.4.8	Endangered	Brigalow TEC
Acacia harpophylla shrubby woodland with Terminalia oblongata on Cainozoic clay plains	11.4.9	Endangered	Brigalow TEC
Acacia harpophylla, Lysiphyllum carronii +/- Casuarina cristata open forest to woodland	11.4.9a	Endangered	Brigalow TEC
Eucalyptus populnea woodland on Cainozoic clay plains	11.4.12	Endangered	Poplar Box TEC
Eucalyptus crebra, Corymbia spp., with E. moluccana woodland on lower slopes of Cainozoic sand plains and/or remnant surfaces.	11.5.2	Least concern	-
Allocasuarina luehmannii low tree layer with or without emergent woodland. Occurs on Cainozoic sandplains which are often below hills and ranges	11.5.2a	Least concern	-
Acacia harpophylla-Eucalyptus cambageana woodland to open forest on fine-grained sedimentary rocks	11.9.1	Endangered	Brigalow TEC
Eucalyptus melanophloia +/- E. orgadophila woodland on fine-grained sedimentary rocks.	11.9.2	Least Concern	-
Acacia harpophylla and/or Casuarina cristata open forest to woodland on fine-grained sedimentary rocks	11.9.5	Endangered	Brigalow TEC
Eucalyptus populnea, Eremophila mitchellii shrubby woodland on fine-grained sedimentary rocks.	11.9.7	Of concern	-
Eucalyptus populnea open forest with a secondary tree layer of Acacia harpophylla and sometimes Casuarina cristata on finegrained sedimentary rocks.	11.9.10	Of concern	-

## 4.3. General Habitat Assessment Information

2.1.1	Provide a habitat assessment for relevant listed threatened species and
	communities. Please note an assessment must be undertaken regardless of
	whether the species was recorded in the project area or not.

#### 4.3.1. Habitat Assessments for Relevant MNES

As described above, the habitat assessments for each of the known and potentially occurring (moderate and high likelihood of occurrence) MNES as listed in Table 9 have been updated and are provided in full in Section 9.0 of the MNES Assessment Report (Attachment A). A full list of the predicted extent of potential habitat for each species is within Figure 9. As identified in Section 6.6 of the MNES Assessment Report (Attachment A), Table 10 below outlines how potential habitat per MNES has been mapped within the Project Area to date. It is important to note that habitat mapping presented in this report will be subject to further revision in the future, as the Project progresses and detailed MNES mapping is produced as part of

the field scout process (described further in Section 8.1 of the MNES Assessment Report (Attachment A) and Constraints Protocol (Attachment B).

Table 9: Habitat Extent for MNES species

Scientific Name	Common Name	Extent within Pro	oject Area (ha)	Total	Proportion of total habitat within Project Area (%)	
		Category	Amount	Habitat (ha)		
-	Brigalow TEC	-	988.8	988.8	4.7	
-	Coolibah TEC	-	105.1	105.1	0.5	
-	Poplar Box TEC	-	705.0	705.0	3.4	
Xerothamnella herbacea	-	-	1,076.8	1,076.8	5.1	
Solanum dissectum	-	-	1,076.8	1,076.8	5.1	
Solanum johnsonianum	-	-	1,076.8	1,076.8	5.1	
Geophaps scripta	Squatter Pigeon (Southern)	Breeding	1,577.2	4,676.8	22.3	
scripta		Foraging	44.6			
		Dispersal	3,055.0			
Rostratula australis	Australian painted snipe	Seasonal Breeding Foraging and Dispersal	1,354.7	1,354.7	6.5	
Grantiella picta	Painted honeyeater	Foraging and Dispersal	2,555.4	2,555.4	12.2	
Phascolarctos	Koala	Climate Refugia	948.6	18,846.9	89.7	
cinereus		Breeding and Foraging	801.0			
		Shelter	800.3			
		Dispersal	16,297.0			
Hirundapus caudacutus	White-throated needletail	Foraging and Dispersal	21,002.1	21,002.1	100%	
Egernia rugosa	Yakka skink	Breeding Foraging and Dispersal	2,205.9	2,205.9	10.5	
		Denning	1,187.1	1,187.1	5.7	

Scientific Name	Common Name	Extent within Pro	ject Area (ha)	Total Habitat	Proportion of total habitat	
		Category	Amount	(ha)	within Project Area (%)	
Petauroides volans	Greater glider (southern and central)	Foraging and Dispersal	-			
Petaurus australis australis	Yellow bellied glider (southeastern)	Denning Foraging and Dispersal	1,039.4	1,039.4	4.9	
Elseya albagula	White-throated snapping turtle	Breeding Foraging and Dispersal	523.9	523.9	2.5	
Rheodytes leukops	Fitzroy River turtle	Breeding Foraging and Dispersal	523.9	523.9	2.5	
Adclarkia dawsonensis	Boggomoss snail	Breeding Foraging and Dispersal	159.0	159.0	0.8	
Denisonia maculata	Ornamental snake	Suitable	4,849.2	4,849.2	23.1	

Table 10: MNES Habitat Identified within the Project Area

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Brigalow TEC					
The Brigalow ecological community is characterised by the presence of brigalow (Acacia harpophylla) as one of the three most abundant tree species. Brigalow is usually either dominant in the tree layer or co-dominant with other species such as Casuarina cristata (belah), other species of Acacia, or species of Eucalyptus. The ecological community has a considerable range of vegetation structure and composition united by a suite of species that tend to occur on acidic and salty clay soils.	-	Remnant and Regrowth	11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.9.1 & 11.9.5.	All patches not field-validated but mapped to comprise an analogous RE >0.5 ha (minimum patch size outlined in condition criteria) are conservatively considered to meet TEC status. Smaller patches that extend beyond the Project Area are also included. These areas will require on-ground assessment against the diagnostic and condition criteria outlined in the communities' Approved Conservation Advice.  Patches that have been field-validated and confirmed to not meet TEC status due to diagnostic criteria or condition criteria relating to patch size are excluded.	988.8
Coolibah TEC					
The Coolibah ecological community represents occurrences of one type of semi-arid to humid subtropical woodland where <i>Eucalyptus coolabah</i> subsp. <i>coolabah</i> (coolibah) and/or <i>Eucalyptus largiflorens</i> (black box) are the dominant canopy species and where the understorey tends to be grassy.	-	Remnant and Regrowth	11.3.3	All patches not field-validated but mapped to comprise an analogous RE >5 ha (minimum patch size outlined in condition criteria) are conservatively considered to meet TEC status. Smaller patches that extend beyond the Project Area are also included. These areas will require on-ground assessment against the diagnostic and condition criteria outlined in the communities' Listing Advice. Patches that have been field-validated and confirmed to not meet TEC status are excluded.	105.1

<sup>1</sup> List of REs is based on what has been recorded within the Project Area and mapped by the State government to date. This list may not include the full list of REs that may meet the habitat definition.

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Poplar Box TEC					
The Poplar Box ecological community is typically a grassy woodland with a canopy dominated by <i>Eucalyptus populnea</i> and understorey mostly of grasses and other herbs. The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin.	-	Remnant and Regrowth	11.3.2, 11.3.17, 11.4.7 & 11.4.12.	All patches not field-validated but mapped to comprise an analogous RE >1 ha (minimum patch size outlined in condition criteria) are conservatively considered to meet TEC status. Smaller patches that extend beyond the Project Area are also included. These areas will require on-ground assessment against the diagnostic and condition criteria outlined in the communities' Approved Conservation Advice.  Patches that have been field-validated and confirmed to not meet TEC status due to diagnostic criteria or condition criteria relating to patch size are excluded.	705.0
Xerothamnella herbacea		•			
Open forests and woodland habitats where brigalow ( <i>Acacia harpophylla</i> ) dominates or codominates on heavy soils. Often in leaf litter and is associated with gilgais.	Suitable habitat	Remnant and Regrowth	11.3.1, 11.3.17, 11.4.3, 11.4.7,	Patches that have been field-validated and confirmed to not contain the species and support a highly disturbed ground layer as a result of extensive cattle grazing and/or incursion from	1,074.9
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat		11.4.8, 11.4.9, 11.4.9a, 11.9.1 & 11.9.5.	exotic grasses, including but not limited to buffel grass ( <i>Cenchrus ciliaris</i> ) and Guinea grass ( <i>Megathyrsus maximus</i> ), are excluded.  As the presence of <i>Xerothamnella herbacea</i> is likely influenced by several factors (i.e. climatic conditions, threat presence and severity and time), areas currently excluded but proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and potentially occurring MNES). If the species is recorded, the patch containing the species will be mapped as habitat.	1.8

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Solanum dissectum					
Open forests and woodland habitat where brigalow (Acacia harpophylla) and/ or lapunyah (Eucalyptus thozetiana) characterise the dominant vegetation types on solodic clay soils.	Suitable habitat	Remnant and Regrowth	11.3.1, 11.3.17, 11.4.3, 11.4.7,	Patches that have been field-validated and confirmed to not contain the species and support a highly disturbed ground layer as a result of extensive cattle grazing and/or incursion from	1,075.9
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat		11.4.8, 11.4.9, 11.4.9a, 11.9.1 & 11.9.5.	exotic grasses, including but not limited to buffel grass ( <i>Cenchrus ciliaris</i> ) and Guinea grass ( <i>Megathyrsus maximus</i> ), are excluded.  As the presence of <i>Solanum dissectum</i> is likely influenced by several factors (i.e. climatic conditions, threat presence and severity and time), areas currently excluded but proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and potentially occurring MNES). If the species is recorded, the patch containing the species will be mapped as habitat.	0.9
Solanum johnsonianum					
Open forest and woodland habitats where brigalow (Acacia harpophylla) dominates or codominates on heavy cracking clay soils. Other associated species include lapunyah (Eucalyptus thozetiana) with and understory of wilga (Geijera parviflora).	Suitable habitat	Remnant and Regrowth	11.3.1, 11.3.17, 11.4.3, 11.4.7, 11.4.8, 11.4.9,	Patches that have been field-validated and confirmed to not contain the species and support a highly disturbed ground layer as a result of extensive cattle grazing and/or incursion from exotic grasses, including but not limited to buffel grass ( <i>Cenchrus ciliaris</i> ) and Guinea grass	1,044.0
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat		11.4.9a, 11.9.1 & 11.9.5.	(Megathyrsus maximus), are excluded.  As the presence of Solanum johnsonianum is likely influenced by several factors (i.e. climatic conditions, threat presence and severity and time), areas currently excluded but proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and	32.7

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
				potentially occurring MNES). If the species is recorded, the patch containing the species will be mapped as habitat.	
Ornamental snake (Denisonia maculata)		1	<u>,                                      </u>		1
Vegetation, generally comprising woodlands and open forests but also non-remnant, associated with 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains) that support key refuge microhabitat (i.e. network of soil cracks including deep cracks). Also includes fringing riparian vegetation along watercourses where substitute refuge microhabitat is supported (ground timber and exposed roots). Vegetation functionally connected to moist areas or watercourses that have low-levels, absent or 'impacted' refuge microhabitat may also be suitable if the areas provide temporary foraging opportunities (i.e. support frog habitat) and/or facilitate movement to other areas of suitable habitat.	Suitable habitat	Remnant, regrowth and non- remnant	11.3.1, 11.3.17, 11.3.2, 11.3.25, 11.3.27f, 11.3.3, 11.3.4, 11.3.6, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.5.2, 11.5.2, 11.5.2a, 11.9.1 & 11.9.5.	In addition to field data, habitat mapping is informed by several additional datasets including DoR Soil and Land Use Survey of Part of the Dawson Valley mapping (to identify 'gilgaied clays' and 'swamp and wetlands' soil units), DoR Contour mapping (1 and 10 m) and ground-return LiDAR (to identify gilgai formations) and historical aerial imagery (to identify previously occurring brigalow communities).  The field survey findings indicate that the composition and quality of suitable habitat for the species varies significantly across the Project Area. However, given the broad nature of the habitat definition, large areas of the Project Area have been confirmed to support habitat.  Any patch that is confirmed to contain the species is suitable habitat.	4,849.2
Vegetation that is not associated with or connected to 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains). Frog habitat is not supported, and area does not facilitate movement to other areas of suitable habitat. This includes vegetation that has been subject to recent land use change or earthworks (i.e. cropping, tilling or ploughing).	Not habitat	Remnant, regrowth and non- remnant			16,152.8

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Koala (Phascolarctos cinereus)			•		
Eucalypt forests or woodlands on alluvial associated with permanent water features (dams, wetlands and/or watercourses) that are resilient to drying conditions, likely to provide a cooler refuge during periods of bushfire and heatwaves.	Climate refugia	Remnant and Regrowth	11.3.2, 11.3.3, 11.3.4, 11.3.25 & 11.3.27f.	Only eucalypt woodlands and open forests on alluvial associated with the Dawson River and the Offstream Storage are considered potential climate refugia. The Dawson River is the only perennial water feature within the Project Area and therefore the only water source likely to provide a reliable resource throughout the year. Water from the Dawson River is diverted to the Offstream Storage by the Moura weir, as described in <b>Section 6.1.5</b> . Given the prevalence of agriculture, surface water flows within the main Project Area extent are likely to have been substantially modified as a result of historical land use change and clearing.	948.6
Any forest or woodland that contains Brigalow Belt 'locally important koala trees' (LIKTs, as described by Youngentob, Marsh and Skewes, (2021)) that is not climate refugia.	Breeding and foraging	Remnant and Regrowth	11.3.1, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.17, 11.4.3, 11.4.7, 11.4.12, 11.5.2, 11.9.1, 11.9.2, 11.9.7 & 11.9.10.	All areas of mapped REs that meet the habitat definition within the Project Area have been considered to comprise breeding and foraging habitat. Where field validated data is lacking, vegetation composition is inferred based on the communities description in the REDD.	801.0
Any forest or woodland community which does not contain LIKTs and may or may not contain Brigalow Belt 'ancillary habitat trees' (as described by Youngentob, Marsh and Skewes, (2021)).	Shelter	Remnant and Regrowth	11.4.8, 11.4.9, 11.4.9a, 11.5.2a & 11.9.5.		800.3

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Vegetation that provides a safe intervening ground for the species to move across the landscape (i.e. free from impediments), particularly to and from areas of potential breeding and foraging habitat. This includes non-remnant shrublands and grasslands, which generally support sporadic small stands of trees and/or individual paddock trees. Excludes areas containing infrastructure, active mining areas, cropping, farm dams and other waterbodies as well as areas that are physically inaccessible (e.g. exclusion fencing is present).	Dispersal	Non- remnant	-	Given the broad nature of this habitat, the mapping approach adopted was intentionally conservative as the species is known to disperse distances up to 20 km. Excludes areas containing infrastructure, active mining areas, cropping and farm dams, were confirmed using field data and/or are visible in recent aerial imagery. It is considered highly likely that mapping extent is overstated due to the presence of additional impediments across the Project Area, as indicated by State mapping (including but not limited to roads and irrigation channels).	16,297.0
Painted honeyeater (Grantiella picta)				,	
Woodlands, forests and riparian woodlands dominated by species from the genera Eucalyptus, Acacia, Melaleuca, Casuarina and/or Callitris, that support mistletoe.	Foraging and dispersal	Remnant and Regrowth	11.3.1, 11.3.2,11.3.3, 11.3.4, 11.3.6, 11.3.17, 11.3.25, 11.3.27f, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.4.12, 11.5.2, 11.9.1, 11.9.2, 11.9.5, 11.9.7 & 11.9.10.	Mistletoe is a key habitat resource for the species and therefore the patch must contain mistletoe to be considered habitat. Existing field data regarding mistletoe indicates presence across the Project Area is inconsistent and as such no areas have been excluded as potential habitat. This has been done to ensure the estimation of habitat availability is conservative. As the presence of mistletoe may change over time, any area proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will complete targeted searches and collect quantitative data regarding mistletoe diversity and abundance.	2,555.4

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Squatter pigeon (southern) (Geophaps scripta scri	pta)			'	_
Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by Eucalyptus, Corymbia, Acacia or Callitris species, on sandy, gravelly or loamy soils with patchy perennial tussock grasses or a mix of perennial tussock grasses and low shrubs and forbs (including but not limited to areas mapped as Queensland land zones 3, 5 or 7) and within 1 km of a permanent or seasonal water source with gently sloping banks.  Any remnant or regrowth open-forest to sparse, open-woodland or scrub dominated by Eucalyptus, Corymbia, Acacia or Callitris species, on sandy, gravelly or loamy soils with patchy perennial tussock grasses or a mix of perennial tussock grasses or a mix of perennial tussock grasses and low shrubs and forbs (including but not limited to areas mapped as Queensland land zones 3, 5 or 7) and within 3 km of a permanent or seasonal water source	Breeding Foraging	Remnant and Regrowth	11.3.1, 11.3.17, 11.3.2, 11.3.25, 11.3.27f, 11.3.3, 11.3.4, 11.3.6, 11.5.2 & 11.5.2a.	Mapped areas include all remnant and regrowth vegetation occurring on land zones 3, 5 or 7 within the designated distance of a suitable water source. Suitable water sources within and adjacent to the Project Area (up to 3 km away) conservatively include all State mapped watercourses, mapped lacustrine wetlands and reservoirs (i.e. farm dams). It is acknowledged that ground layer composition and cover may change over time in response to a number of variables including grazing pressure and rainfall. As such no areas have been excluded as habitat based on existing field data for the ground layer. This has been done to ensure the estimation of habitat availability is conservative. Any area proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will complete targeted searches for the subspecies and assess habitat suitability in consideration of the definition.	44.6
with gently sloping banks.  Any forest or woodland occurring between patches of breeding or foraging habitat that facilitates movement between patches of breeding habitat, foraging habitat and/or water sources, and areas of cleared land less than 100 m wide linking areas of suitable breeding and/or foraging habitat.	Dispersal	Remnant, Regrowth and Non- remnant	11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.9.10, 11.9.12, 11.9.2, 11.9.3, 11.9.4a, 11.9.5 & 11.9.7.	Forest and woodland areas not directly connected or in proximity to a suitable water source or patch of breeding or foraging have been excluded. Non-remnant vegetation included at widths up to 100 m, where connecting to suitable water sources or areas of potential breeding or foraging habitat.	3,055.0

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Greater glider (southern and central) (Petauroides	volans)			<u>'</u>	
Eucalypt forests and woodlands (patches or corridors ≥3 ha) that support potential hollowbearing trees, comprising habitat or potential habitat REs. Alternatively, REs dominated or codominated by the primary associated canopy species (listed below) as per Eyre, Smith, et al. (2022). Eucalypt forests and woodlands that support potential hollow bearing trees but do not align with an RE (i.e. non-remnant communities) may also comprise habitat where dominated by Corymbia intermedia, Corymbia citriodora, Eucalyptus tereticornis, Eucalyptus portuensis, Eucalyptus moluccana and/or Eucalyptus crebra.  Eucalypt forests and woodlands (patches or corridors ≥3 ha) with a canopy height >10 m that do not support potential hollow-bearing trees, comprising habitat or potential habitat regional ecosystems (REs). Alternatively, REs dominated or co-dominated by the primary associated canopy species (listed below) as per Eyre, Smith, et al. (2022). Eucalypt forests and woodlands that do not align with an RE (i.e. non-remnant communities) may also comprise habitat where dominated by Corymbia intermedia, Corymbia citriodora, Eucalyptus tereticornis, Eucalyptus portuensis, Eucalyptus moluccana and/or Eucalyptus crebra.	Foraging and dispersal	Remnant, Regrowth	11.3.2 (Dawson River only), 11.3.25, 11.3.27f, 11.3.4, 11.5.2 & 11.9.2.	Existing field data has been utilised to the greatest extent practical to accurately characterise the presence and extent of potential habitat, particularly to exclude areas that do not meet the habitat definition due to vegetation characterisation (i.e. brigalow-dominated woodlands). All areas of RE 11.4.8 (a potential habitat RE as per Eyre, Smith, et al. (2022)) are currently excluded based on the existing field data for this community within the Project Area which indicates that brigalow consistently dominates the canopy with eucalypts infrequent.  Two REs which are not considered habitat or potential habitat according to the Guide (Eyre, Smith, et al., 2022) (i.e. RE 11.3.2 and 11.3.27f) are currently included as they occur in association with the Dawson River. Areas of RE 11.3.2 mapped as habitat have not been ground-truthed and are anticipated to actually comprise RE 11.3.25 based on existing data. Although no non-remnant eucalypt woodlands were confirmed during the field survey program, it is noted these may occur and could comprise habitat.  Accurate tree size and height data for the Project Area is limited; the majority of field survey scopes did not allow for this level of detail to be captured and were completed prior to the latest  Conservation Advice being published. As such, a conservative approach to the mapping has been undertaken that considers all identified habitat within the Project Area to be suitable for denning purposes.  All areas proposed for clearing will still be subject to assessment (field scout) by a suitably qualified	0.0

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
				ecologist who will assess habitat suitability in	
				consideration of tree DBH	
				and height (>30 cm DBH and >10 m height).	
				For the purposes of this mapping, patch/corridor	
				size and connectivity was assessed using recent	
				aerial imagery and a conservative maximum glide	
				distance of 100 m. Small patches that extend	
				beyond the Project Area boundary were not	
				discounted. The patch was considered isolated (and	
				thus not part of a corridor) if it was separated from	
				habitat by 100 m or greater at the narrowest point,	
				or surrounded by vegetation that does not meet the	
				habitat definition (either utilisation category). The	
				species is not known to utilise other habitat for any	
				part of their lifecycle including dispersal. This	
				includes brigalow woodlands and non-remnant	
				vegetation with isolated trees. Literature on the	
				species maximum glide distance varies significantly,	
				from 40 m (Qld Government, 2024), 75 m (Taylor &	
				Goldingay, 2009) and 100 m (McCarthy &	
				Lindenmayer, 1999 in Norman and Macke, 2024). As	
				such, subsequent field scouts will assess	
				connectivity using tree height data specific to the	
				location and the known gliding angle.	

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Yellow-bellied glider (south-eastern) (Petaurus aus	tralis australi	s)	•		
Floristically diverse, mature eucalypt woodlands and forests dominated by smooth-barks or half-barks, comprising patches or corridors ≥50 ha, that may support (now or in the future) large hollow-bearing trees.	Denning, foraging and dispersal	Remnant	11.3.2 (Dawson River only), 11.3.4, 11.3.25 & 11.5.2	As above, existing field data has been utilised to the greatest extent practical to accurately characterise the presence and extent of potential habitat, particularly to exclude areas that do not meet the habitat definition due to vegetation characterisation.  For the purposes of this mapping, patch/corridor size and connectivity was assessed using recent aerial imagery and a conservative maximum glide distance of 140 m. Small patches (i.e. ≤50 ha) that extend beyond the Project Area boundary were not discounted. The maximum gliding distance may be up to 120 m−140m (Kavanagh & Rohan-Jones 1982; Kambouris et al. 2013; Goldingay 2014), though management should be informed by average gliding performance (Goldingay 2014). The patch was considered isolated (and thus not part of a corridor) if it was surrounded by vegetation that does not meet the habitat definition, 140 m wide or greater at the narrowest point. The species is not known to utilise other habitat for any part of their lifecycle including dispersal. This includes brigalow woodlands and non-remnant vegetation with isolated trees.	1,039.4
White-throated snapping turtle (Elseya albagula) a		er turtle ( <i>Rhed</i>	odytes leukops)		
Permanent waters of rivers and streams with deep pools that may be permanently or periodically inter-connected by shallow riffles.	Breeding and foraging	Remnant	11.3.2& 11.3.25 (Dawson River only)	All riparian vegetation associated with the Dawson River is assumed to provide suitable breeding and foraging habitat for both species. No other watercourses within the Project Area are suitable for the species due to their ephemeral nature, clay substrates and lack of riffle zones, as per field-validated data.	523.9

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
Includes a range of habitats, although more often over wooded areas, where it is almost exclusively aerial.	Foraging and dispersal	Remnant, regrowth and non- remnant	All REs	Due to the species' aerial nature, the airspace above the entire Project Area may be utilised by the species. As such, the entire Project Area is considered to support habitat.	21,002.1
Australian painted snipe (Rostratula australis)  Shallow terrestrial freshwater (occasionally	Seasonal	Remnant	11.3.27f	Mapped habitat includes all waterbodies (i.e. farm	1,354.7
brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use other 'moist areas' such as inundated or waterlogged grasslands (including those that support gilgai), saltmarsh, dams, rice crops, sewage farms and bore drains. Dominant vegetation in occupied wetlands may include one of more of these elements: grass (e.g. canegrass Eragrostis australasica), sedge, and nardoo (Marsilea sp.), in sward or tussock form; clumps of rushes or reeds; samphire dwarf shrubland; and open-shrubland of lignum (Duma spp.), river cooba (belalie) Acacia stenophylla.	breeding, foraging and dispersal	and non- remnant		dams and Dawson River offstream) and select areas of non-remnant vegetation containing gilgai. For the purposes of this mapping, only waterbodies ≥0.5 ha or any smaller waterbody that extends beyond Project Area bounds have been considered viable and mapped. This is due to the brownfield nature of the site and the species highly secretive behaviour and preference for concealing habitats as per the National Recovery Plan. The species is not known to utilise major rivers and as such habitat associated with the Dawson River is excluded.	
Dry sclerophyll forests, woodlands and scrub that support suitable refuge microhabitat including but not limited to, large hollow logs, cavities or burrows under large fallen trees, tree stumps, logs, stick-raked piles, large rocks and rock piles, dense ground-covering vegetation, and deeply eroded gullies, rabbit warrens, tunnels and sinkholes.	Breeding and foraging	Remnant and regrowth	All REs	Based on the findings of the field survey program to date, only patches in remnant condition are likely to support necessary microhabitat. However, a conservative approach to habitat mapping has been adopted with no areas excluded on the basis of vegetation condition or microhabitat field data. Refuge microhabitat including burrow opportunities are a key habitat resource for the species and therefore the patch must contain such to be considered habitat. As the presence of microhabitat features may change over time, any area proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will complete targeted searches for colonies / latrines	2,205.9

Habitat Definition	Utilisation	Vegetation Condition	Associated REs3F3F <sup>1</sup>	Mapping Approach and Field Data Considerations	Extent (ha) within Project Area
				and collect quantitative data regarding microhabitat presence.  The only areas excluded as habitat were patches on creek lines which are likely to regularly become inundated (high risk of flooding burrows).	
Any patch of potential breeding and foraging habitat that has been subject to field assessment (effort appropriate to site size and inclusive of targeted yakka skink search transects / diurnal searches) and determined to not contain any potential burrows or latrine sites.	Not habitat	-	-	This habitat category has not been applied to the mapping produced as part of this assessment, noting that some field survey data is >5 years old. This definition will be relevant to all future field scout assessments, which will be completed by a qualified ecologist and be focused to discrete sites within the wider Project Area.	-
Boggomoss snail (Adclarkia dawsonensis)				-	
Riparian woodlands and forest, monospecific stands of Carnarvon fan palm <i>Livistona nitida</i> , open forest fringing ephemeral wetlands on the Dawson River floodplain and artesian mound springs, that support microhabitat including partially buried logs in moist conditions and accumulated leaf litter (including palm fronds) AND occur within the species predicted distribution. Riparian/floodplain woodlands and forests must comprise a 'suitable RE'.	Breeding and foraging	Remnant and regrowth	11.3.2, 11.3.3 & 11.3.25.	As per the habitat definition, the extent of potential habitat has been limited to the species predicted distribution extent included within the SNES (2024) dataset. Although RE 11.3.2 is not known to support the species, it has been conservatively included due to its mapped occurrence along the Dawson River. Until field validation can occur, all patches comprising suitable REs are conservatively considered to contain suitable microhabitat.	159.0

The habitat assessment for each community and species follows the format below:

- Description and status under the EPBC Act.
- Distribution and habitat requirements.
- Threats.
- Occurrence and potential habitat within the Project Area. Including:
  - o Details on presence including field survey results and ALA records.
  - Habitat mapping criteria (including habitat utilisation categories).
  - o Area in hectares of habitat per utilisation category where applicable.
- Habitat critical to the survival of the species.
- Important populations (for species listed as Vulnerable or where otherwise defined).
- Potential Impacts and Key Mitigation Measures.
  - Significant Impact Assessment completed in accordance with the Significant Impact Guidelines 1.1 – Matters of National Environmental Significance (DoE 2013b).

These assessments have been undertaken by suitably qualified ecologists with extensive experience within the Queensland Brigalow Belt bioregion and with the individual MNES. Desktop data considered includes governmental guidelines and databases including SPRAT, Listing Advices, Approved Conservation Advices and referral guidelines.

The 'Occurrence and Potential Habitat' sections for each of the relevant MNES is provided below, except for ornamental snake which is discussed in detail in Section 4.4 of this report. For more information about the habitat mapping rules refer to Section 4.3.2.

### **Brigalow TEC**

A total of 988.8 ha of Brigalow TEC is mapped within the Project Area, including 117.4 ha validated during previous field surveys analogous to REs 11.3.1, 11.4.8 and 11.4.9 (refer to Figure 5). Brigalow TEC has been confirmed at 33 locations across the Project Area by Umwelt in 2019, 2023 and 2024. There are eight RE analogous with this TEC mapped within the Project Area, six of which have been groundtruthed during field surveys. One additional analogous RE (11.9.1) has not yet been subject to field verification, however, is identified as present as per the State RE mapping. See Table 8 for a list of REs.

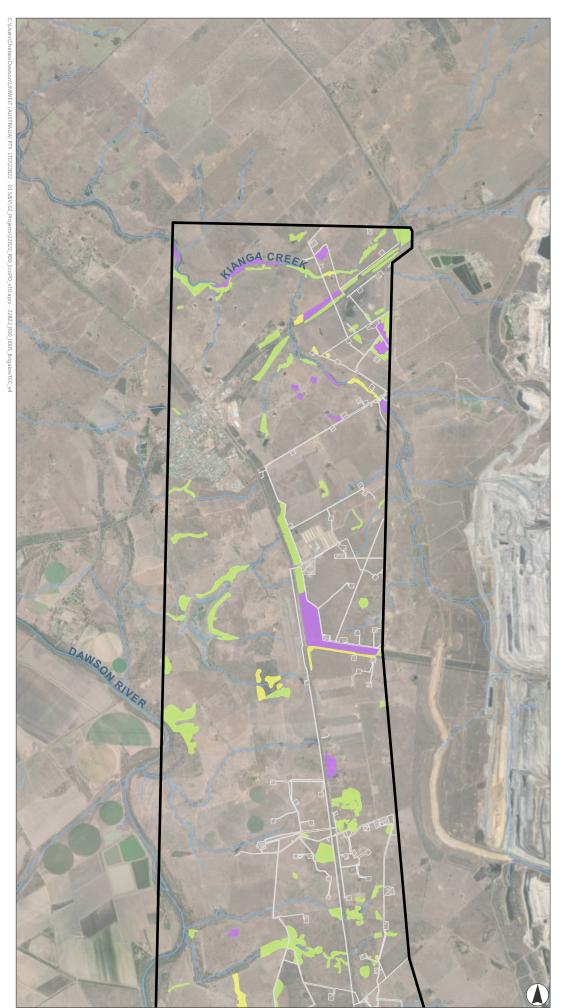
Patch sizes of confirmed Brigalow TEC vary from 0.61 ha to 26.65 ha. Remnant and regrowth vegetation consistent with this TEC is generally sparsely distributed throughout the Project Area, with patches generally small and isolated amongst cleared non-remnant paddocks. However, larger contiguous patches do exist, particularly along roadways such as Theodore Moura Road and in association with the major watercourse Kianga Creek. The condition of this TEC varied across the Project Area, with large remnant patches limited in the landscape but generally of highest quality.

Predicted Brigalow TEC within the Project Area comprises 988.8 ha and is based on State RE mapping of polygons containing REs 11.3.1, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.9.1 and 11.9.5. Field validated Brigalow TEC includes vegetation in both remnant and regrowth condition, and as such mapped Brigalow TEC also includes areas of High-Value Regrowth (HVR). See Table 8 for a list of REs.

Given the broad nature of the mapping rules and the inability to evaluate condition thresholds at a desktop level, it is likely that the true extent of Brigalow TEC within the Project Area is lower than that currently predicted. Several regrowth brigalow patches exist throughout the Project Area that do not meet key condition thresholds to be considered the TEC as per the findings of the field survey program. Generally, these patches did not meet TEC status as total exotic cover exceeded native vegetative cover (all layers combined) and/or patch size was not more than 0.5 ha (Department of the Environment, 2013a). Noncompliant brigalow patches typically comprise open canopies and a dense ground layer of exotic pasture grasses. Given the similar land use and level of disturbance across the properties not field-validated, it is likely that this will be the case for other areas of mapped potential Brigalow TEC.

In unsurveyed sections of the Project Area, vegetation containing an analogous RE with this TEC was conservatively mapped to contain the TEC. Mapped TEC within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, they may only partially contain an analogous RE, they may contain a different RE altogether, or the RE may be dominated by a different tree species and therefore the diagnostic criteria for the TEC may not be met.





# **FIGURE 5A**

# **Brigalow TEC Habitat** Мар

### Legend

Watercourse

Project Area

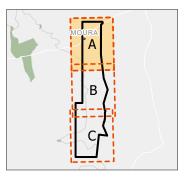
Existing Westside infrastructure

### **Brigalow TEC Habitat**

Analogous RE but not TEC

Confirmed

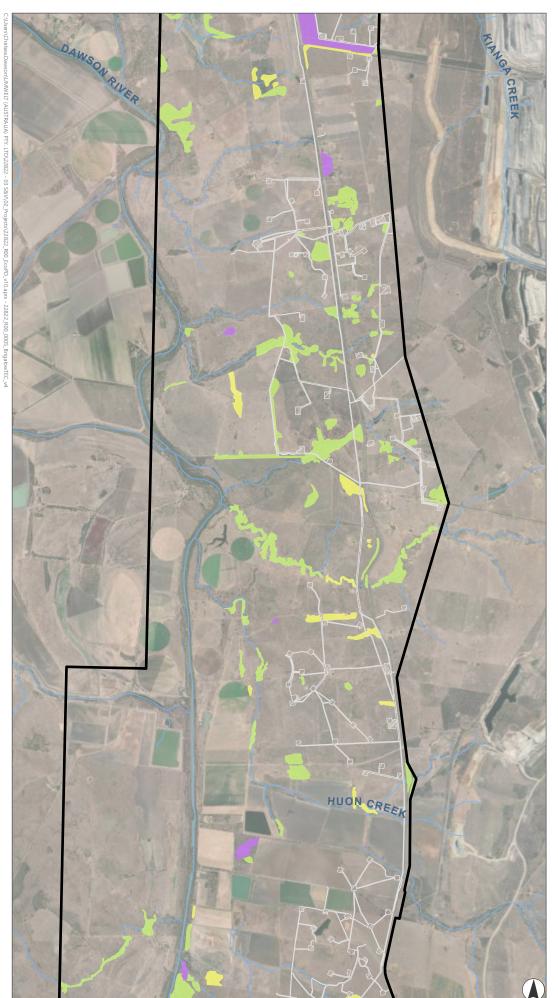
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 5B**

# **Brigalow TEC Habitat** Мар

### Legend

Watercourse

Project Area

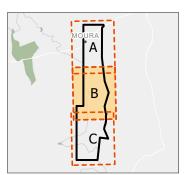
Existing Westside infrastructure

### **Brigalow TEC Habitat**

Analogous RE but not TEC

Confirmed

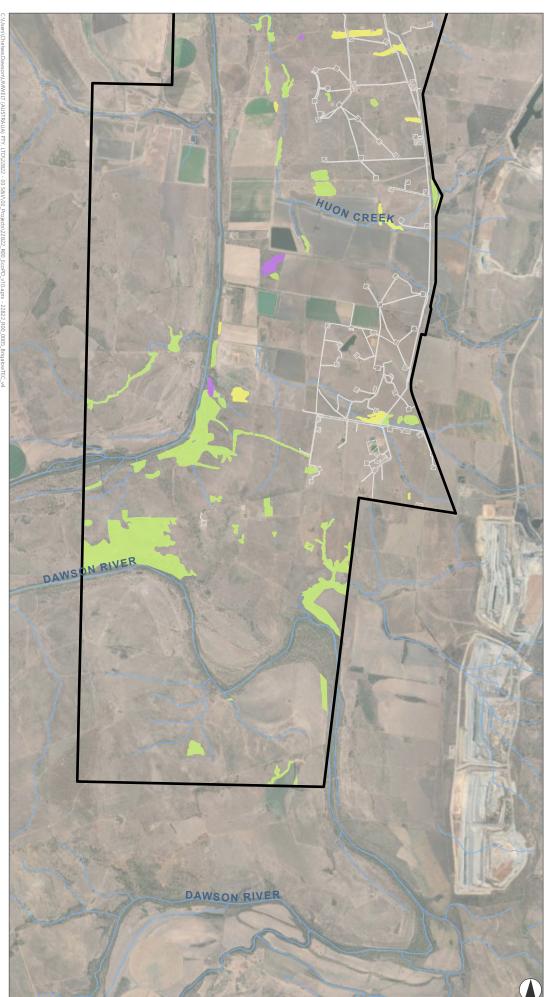
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 5C**

# **Brigalow TEC Habitat** Мар

### Legend

Watercourse

Project Area

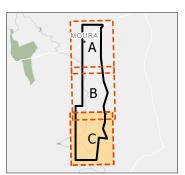
Existing Westside infrastructure

### Brigalow TEC Habitat

Analogous RE but not TEC

Confirmed

Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55

### **Coolibah TEC**

A total of 105.1 ha of Coolibah TEC is mapped within the Project Area, associated with RE 11.3.3 (see Table 8 for a list of REs). Of this area, 24.52 ha was validated during previous field surveys and comprised remnant vegetation (refer to Figure 6). Nonetheless, mapped Coolibah TEC includes areas of HVR to ensure the approach is conservative. Across the Project Area, patches of potential Coolibah TEC are generally limited and small in size. Mapped areas largely coincide with the fringes of the Dawson River and Huon Creek.

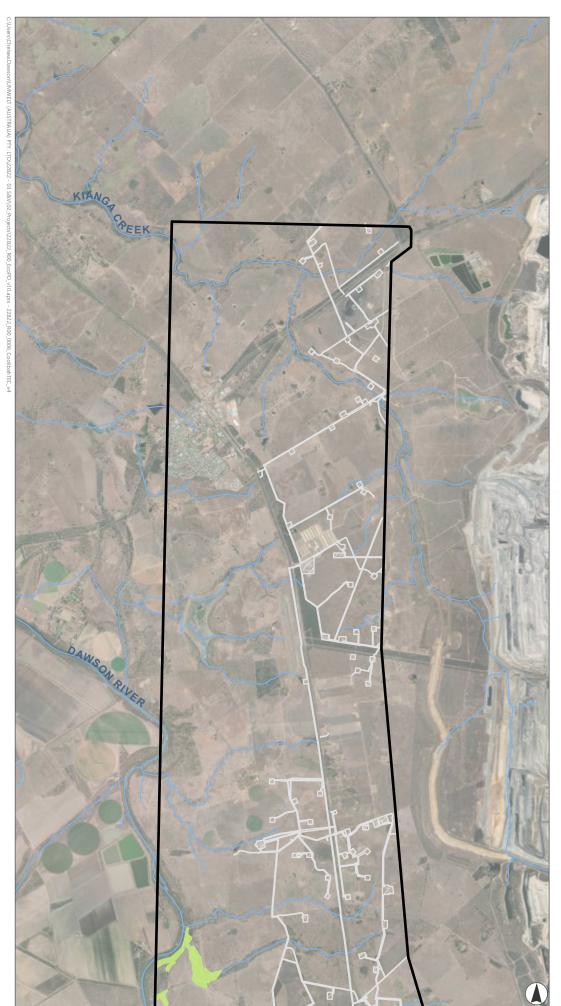
Coolibah TEC has been confirmed at one broad area within the Project Area. Two discrete patches (9.8 ha and 14.8 ha) occur along or in proximity to the Dawson River on the associated floodplain within the central Project Area. These patches comprised Eucalyptus coolabah woodland to open woodland analogous to RE 11.3.3 – E. coolabah woodland on alluvial plains (See Table 8 for a list of REs). This community exhibited a high degree of disturbance on the floodplain, particularly from parthenium (*Parthenium hysterophorus\**), a Weed of National Significance.

Three additional patches of vegetation analogous to Coolibah TEC (RE 11.3.3), have been assessed and found to not meet the condition criteria of the TEC, as they were either below the minimum patch size threshold (<5 ha) (one patch), present as regrowth patches where tree canopy present did not contain mature or hollow-bearing trees of the minimum diameter at breast height threshold (≥30 cm), or had a ground layer dominated by exotic grass such as *Megathyrsus maximus*\*.

Given the broad nature of the mapping rules and the inability to evaluate condition thresholds at a desktop level, it is possible that the true extent of Coolibah TEC within the Project Area is lower than that currently predicted. As described above, some areas of RE 11.3.3 assessed during the field surveys were found to not meet TEC status (See Table 7 for a list of REs). Given the similar land use and level of disturbance across the properties not field-validated, it is possible that other areas of potential Coolibah TEC will not meet TEC status. See Table 7 for a list of REs.

In unsurveyed parts of the Project Area, vegetation containing an analogous RE (See Table 7 for a list of REs) with this TEC was conservatively mapped to contain the TEC. Mapped TEC within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, they may only partially contain an analogous RE, they may contain a different RE altogether, or the RE may be dominated by a different tree species and therefore the diagnostic criteria for the TEC may not be met.





# **FIGURE 6A**

# Coolibah TEC Habitat Мар

### Legend

Watercourse

Project Area

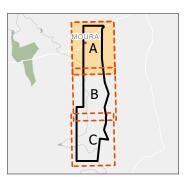
Existing Westside infrastructure

# Coolibah TEC Habitat

Analogous RE but not TEC

Confirmed

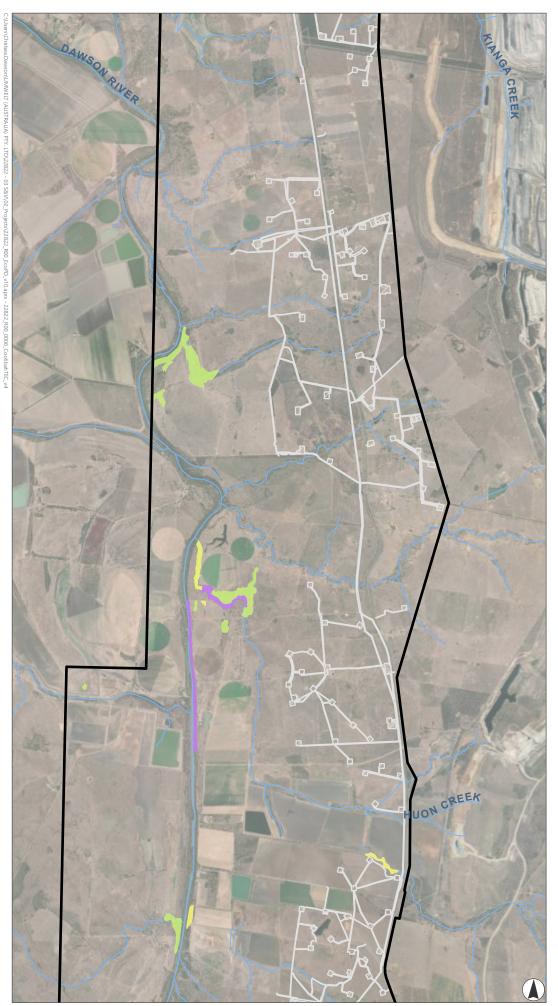
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 6B**

# Coolibah TEC Habitat Мар

### Legend

Watercourse

Project Area

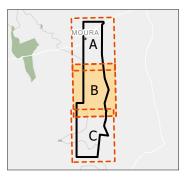
Existing Westside infrastructure

### Coolibah TEC Habitat

Analogous RE but not TEC

Confirmed

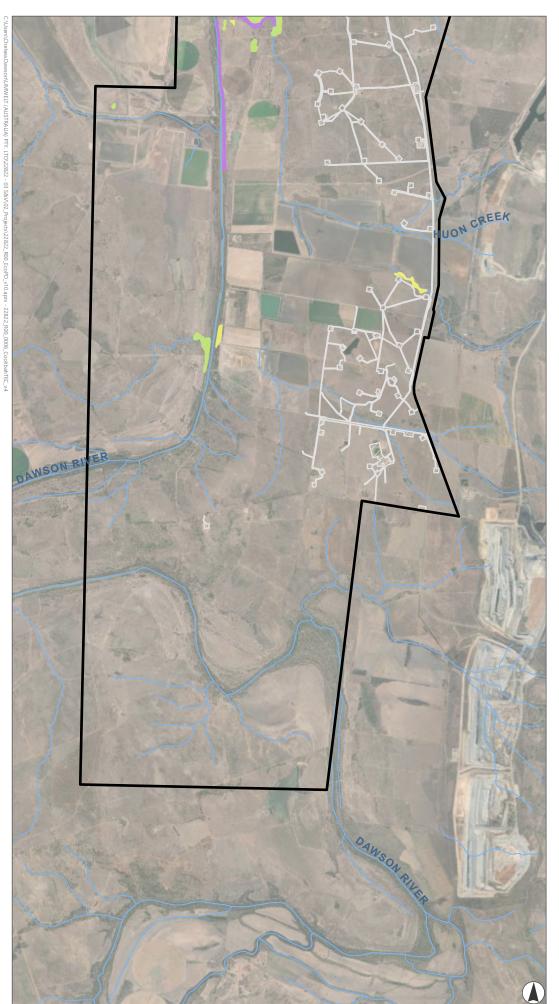
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 6C**

# Coolibah TEC Habitat Мар

### Legend

Watercourse

Project Area

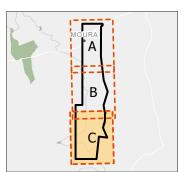
Existing Westside infrastructure

### Coolibah TEC Habitat

Analogous RE but not TEC

Confirmed

Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55

### **Poplar Box TEC**

A total of 705.0 ha of potential Poplar Box TEC is mapped within the Project Area. Poplar Box TEC is considered to have a high likelihood of occurrence within the Project Area due to the presence of analogous REs containing E. populnea (REs 11.3.2, 11.3.17, 11.4.12, 11.4.7) (refer to Figure 7) (See Table 7 for a list of REs).

Where assessed, patches have not met TEC status either due to *E. populnea* not dominating the canopy (one area associated with RE 11.4.7) or did not meet condition criteria due to a combination of patch size and ground species composition.

The mapping of this community utilised a conservative approach that assumes presence. It is considered likely that the extent of modelled Poplar Box TEC is over-estimated within the Project Area. Woodlands dominated by *E. populnea* have been infrequently observed during field surveys within the main Project Area extent, generally as open patches along roadsides. Furthermore, based on field survey data collected to date, areas associated with RE 11.4.7 are more likely to be dominated by brigalow than poplar box. However, large portions of the riparian vegetation associated with the Dawson River may comprise RE 11.3.2 as per the State RE mapping. Mapped TEC within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, the area has potential to contain an analogous RE (or may contain a different RE altogether). See Table 7 for a list of REs.

### Xerothamnella herbacea

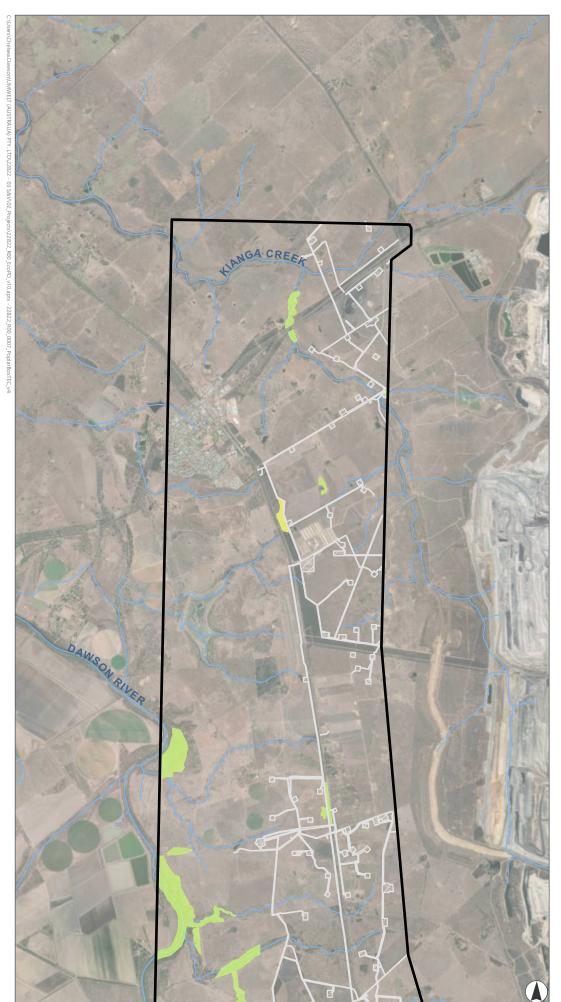
This species is known to the Project Area and has been recorded five times during the September 2019 Umwelt field survey in areas associated with Kianga Creek. Recorded locations within the Project Area comprise brigalow (*Acacia harpophylla*) woodlands in remnant and regrowth condition analogous to RE 11.3.1 (refer to Figure 8).

Records on ALA inside the Project Area include a cluster dated 2015 and 2022 along the Dawson Highway, and records dated 2014 and 2017 along Kianga Creek. Outside the Project Area, records dated 2010, 2017 and 2018 are scattered both upstream and downstream of Kianga Creek, one record from 2015 occurs off Moura Baralaba Road.

A total of 1,076.8 ha of suitable habitat is identified within the Project Area, including two small patches of known habitat (combined 1.84 ha). Mapped habitat includes all polygons containing RE 11.3.1, 11.3.17, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.9.1 and 11.9.5. See Table 7 or a list of REs.

The extent of suitable habitat for *Xerothamnella herbacea* within the Project Area is likely to be overstated in the current mapping. Mapped habitat conservatively includes areas of HVR; however, it is likely these areas will be too degraded as a result of exotic perennial grass incursion or poor soil moisture from the thinned canopy. Mapped habitat within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, they may only partially contain an analogous RE (or may contain a different RE altogether). All areas proposed for clearing will be subject to assessment (site scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and potentially occurring MNES). If the species is recorded, the patch containing will be habitat. As areas are field verified, a decision will be made as to whether the vegetation meets the definition of suitable habitat, and the hierarchy of constraints will be followed.





# **FIGURE 7A**

# Poplar Box Woodland TEC Habitat Map

### Legend

Watercourse

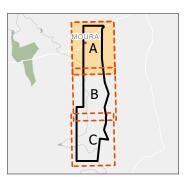
Project Area

Existing Westside infrastructure

Poplar Box Woodland TEC Habitat

Analogous RE but not TEC

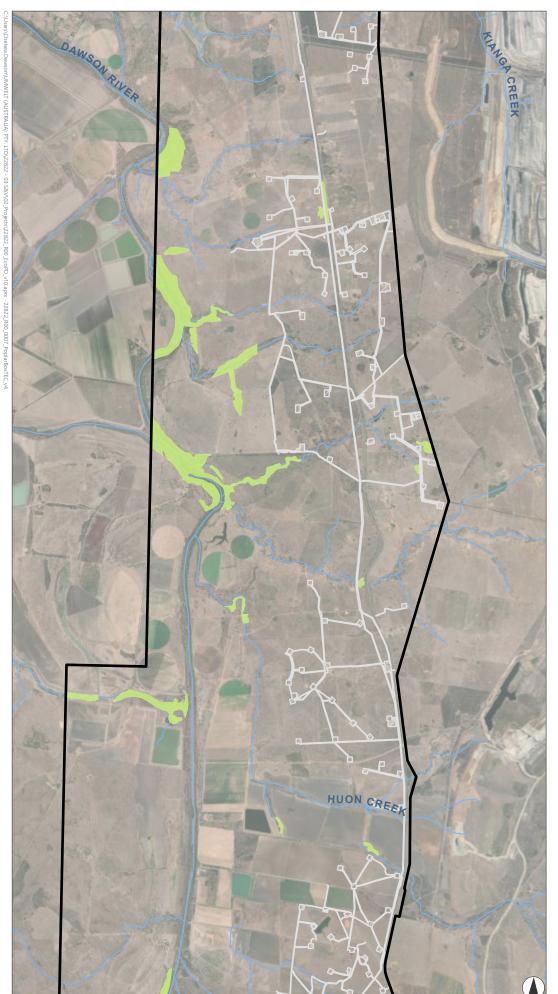
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 7B**

# Poplar Box Woodland TEC Habitat Map

### Legend

Watercourse

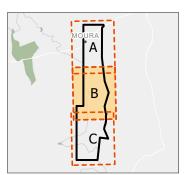
Project Area

Existing Westside infrastructure

Poplar Box Woodland TEC Habitat

Analogous RE but not TEC

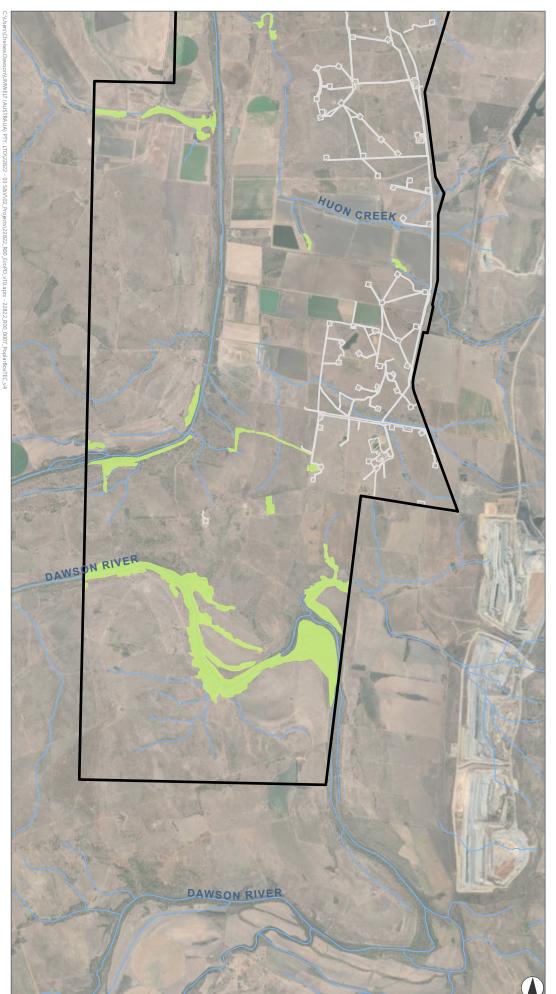
Potential



Kilometres

Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 7C**

# Poplar Box Woodland TEC Habitat Map

### Legend

Watercourse

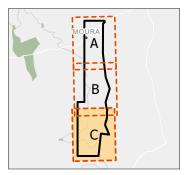
Project Area

Existing Westside infrastructure

Poplar Box Woodland TEC Habitat

Analogous RE but not TEC

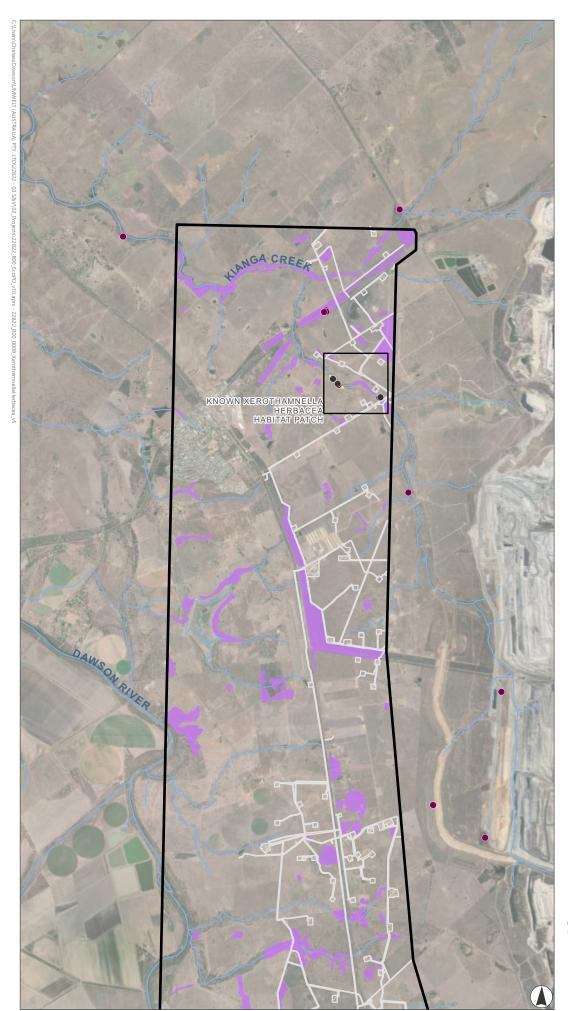
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





### **FIGURE 8A**

# Xerothamnella herbacea Habitat and Records

### Legend

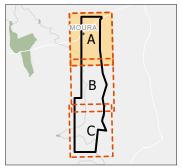
- Umwelt Records of Xerothamnella herbacea
- ALA Records of Xerothamnella herbacea
- Watercourse
- Project Area
  - Existing Westside infrastructure
- Xerothemnella herbacea habitat

### mapping

Known

Potential





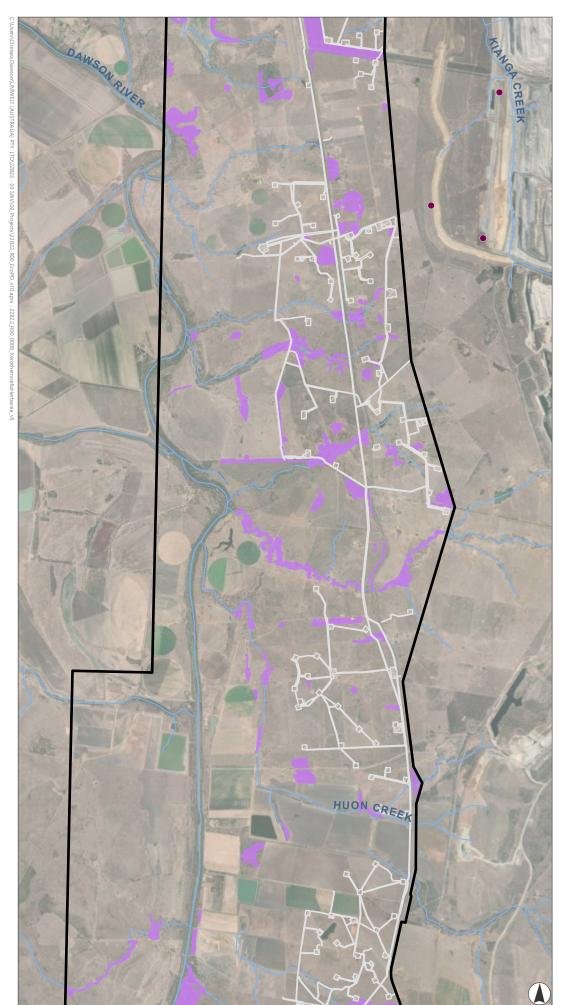
Kilometres

Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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# **FIGURE 8B**

# Xerothamnella herbacea Habitat and Records

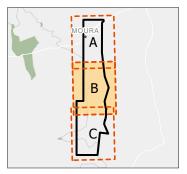
### Legend

- Umwelt Records of Xerothamnella herbacea
- ALA Records of Xerothamnella herbacea
- Watercourse
- Project Area
  - Existing Westside infrastructure

Xerothemnella herbacea habitat mapping

Potential

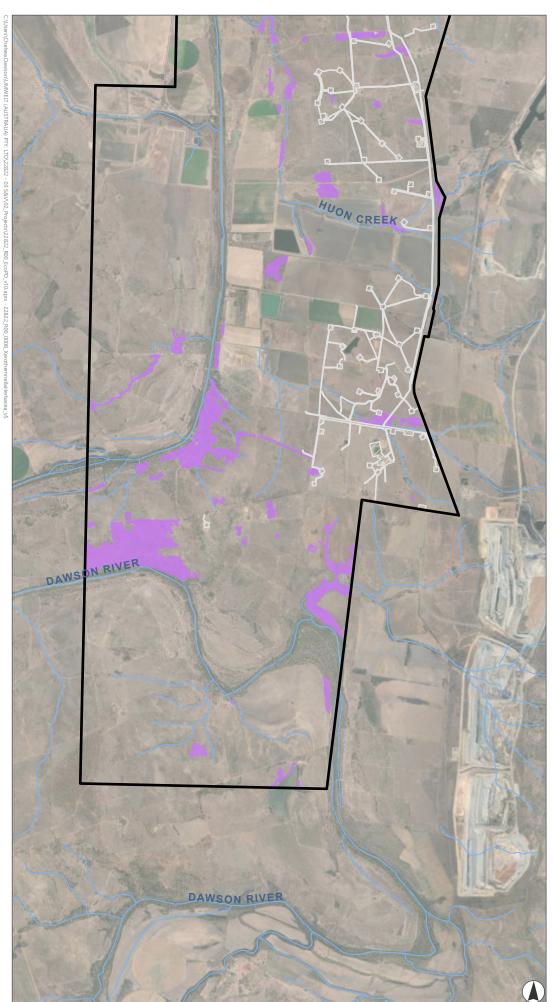






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





### **FIGURE 8C**

# Xerothamnella herbacea Habitat and Records

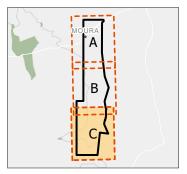
### Legend

- Umwelt Records of Xerothamnella herbacea
- ALA Records of Xerothamnella herbacea
- Watercourse
- Project Area
  - Existing Westside infrastructure

Xerothemnella herbacea habitat mapping

Potential







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

### Solanum dissectum

This species is known to the northern Project Area, recorded once during the September 2019 Umwelt field survey (refer to Figure 9). The record is associated with a small (approximately 0.9 ha in size), isolated patch of remnant woodland dominated by brigalow (*Acacia harpophylla*) with lapunyah (*Eucalyptus thozetiana*) characterised as RE 11.4.9, located west of Kianga Creek. Two records on ALA are found within the Project Area: one dated 2015 and located in the top right corner along the Dawson Highway, and one dated 2017 in the central-right of the Project Area off Theodore Moura Road. Other nearby records include three along Moura Baralaba Road, just north of the Project Area and dated 2014, and one off Gibihi Road dated 2018. A total of 1,076.8 ha of suitable habitat is identified within the Project Area, including the single patch of known habitat (0.9 ha). Mapped habitat includes all polygons containing RE 11.3.1, 11.3.17, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.9.1 and 11.9.5. See Table 7 for a list of REs.

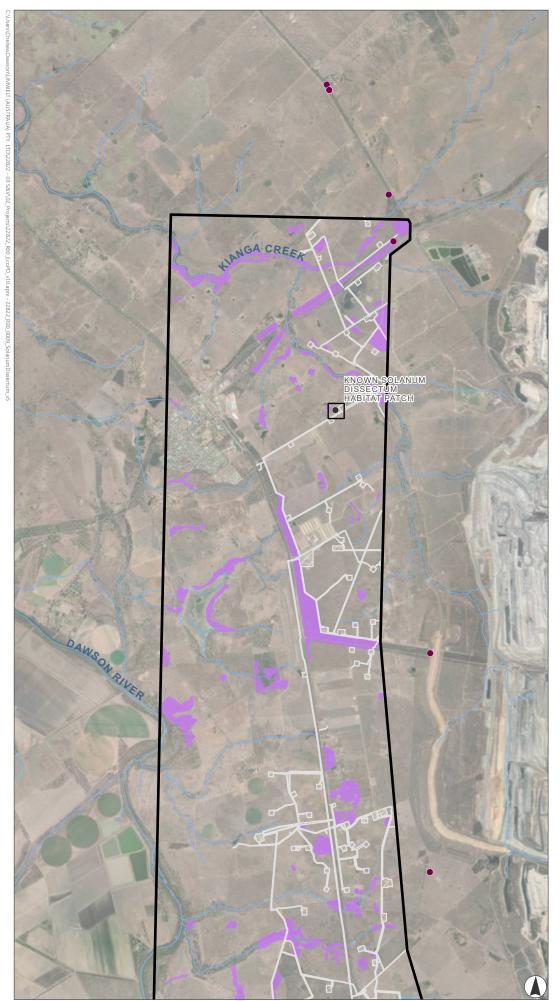
The extent of suitable habitat for *Solanum dissectum* within the Project Area is likely to be overstated in the current mapping. Although likely to be too degraded as a result of exotic perennial grass incursion, mapped habitat conservatively includes areas of HVR. Mapped habitat within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, they may only partially contain an analogous RE (or may contain a different RE altogether). All areas proposed for clearing will be subject to assessment (site scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and potentially occurring MNES). If the species is recorded, the patch containing will be habitat. As areas are field verified, a decision will be made as to whether the vegetation meets the definition of suitable habitat, and the hierarchy of constraints will be followed.

### Solanum johnsonianum

This species is known to the Project Area, recorded by Umwelt seven times within the Gibihi Road reserve during an October 2019 field survey (refer to Figure 10). The species was also recorded within a different section of the Gibihi Road reserve during the June 2023 survey, and during the 2024 field survey in one location north of Nipan River Road on private property. Recorded locations comprise brigalow (*Acacia harpophylla*) woodlands in remnant condition analogous to REs 11.4.8 and 11.4.9 and in regrowth analogous to RE 11.3.1. Recent ALA records (dated 2014, 2015 and 2022) for the species also exist within the far northeastern extent of the Project Area, located immediately north of the Dawson Highway. A historical ALA record (dated 1963) also occurs in the central extent of the Project Area, north of Kianga River Road. A total of 1,076.8 ha of suitable habitat is identified within the Project Area, including 32.7 ha of habitat known to support the species. Mapped habitat includes all polygons containing RE 11.3.1, 11.3.17, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.9.1 and 11.9.5. See Table 7 for a list of REs.

The extent of suitable habitat for *Solanum johnsonianum* within the Project Area is likely to be overstated in the current mapping. Although likely to be too degraded as a result of exotic perennial grass incursion, mapped habitat conservatively includes areas of HVR. Mapped habitat within the Project Area also includes State mapped heterogenous polygons; although the full extent of these areas has been included, they may only partially contain an analogous RE (or may contain a different RE altogether). All areas proposed for clearing will be subject to assessment (site scout) by a suitably qualified ecologist who will assess habitat suitability and complete targeted searches for threatened flora (as well as other known and potentially occurring MNES). If the species is recorded, the patch containing will be habitat. As areas are field verified, a decision will be made as to whether the vegetation meets the definition of suitable habitat, and the hierarchy of constraints will be followed.





### **FIGURE 9A**

# Solanum dissectum Habitat and Records

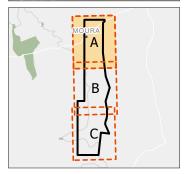
### Legend

- Umwelt Records of Solanum dissectum
- ALA Records of Solanum
- dissectum
- Watercourse
- Project Area
  - Existing Westside infrastructure

Solanum dissectum habitat mapping and records

- Known
- Potential

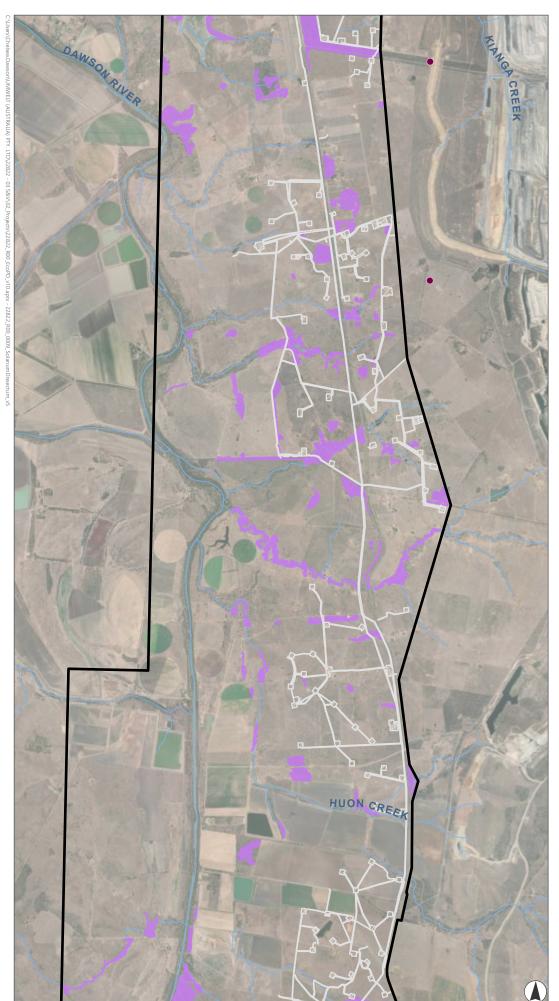






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 9B**

# Solanum dissectum Habitat and Records

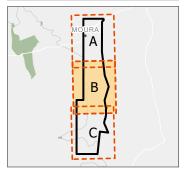
### Legend

- Umwelt Records of Solanum dissectum
- ALA Records of Solanum dissectum
- Watercourse
- Project Area
  - Existing Westside infrastructure

Solanum dissectum habitat mapping and records

Potential

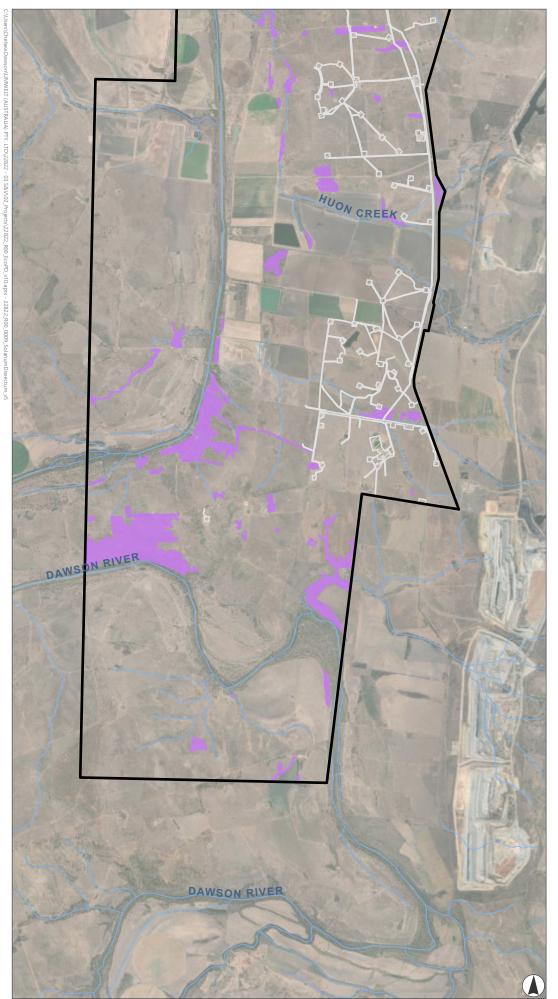






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 9C**

# Solanum dissectum Habitat and Records

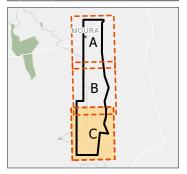
### Legend

- Umwelt Records of Solanum dissectum
- ALA Records of Solanum dissectum
- Watercourse
- Project Area
  - Existing Westside infrastructure

Solanum dissectum habitat mapping and records

Potential







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)



# MANGA CREE

# **FIGURE 10A**

# Solanum johnsonianum Habitat and Records

### Legend

- Umwelt Records of Solanum johnsonianum
- ALA Records of Solanum johnsonianum

Watercourse

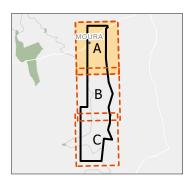
Project Area

Existing Westside infrastructure

Solanum johnsonianum habitat mapping and records

Known

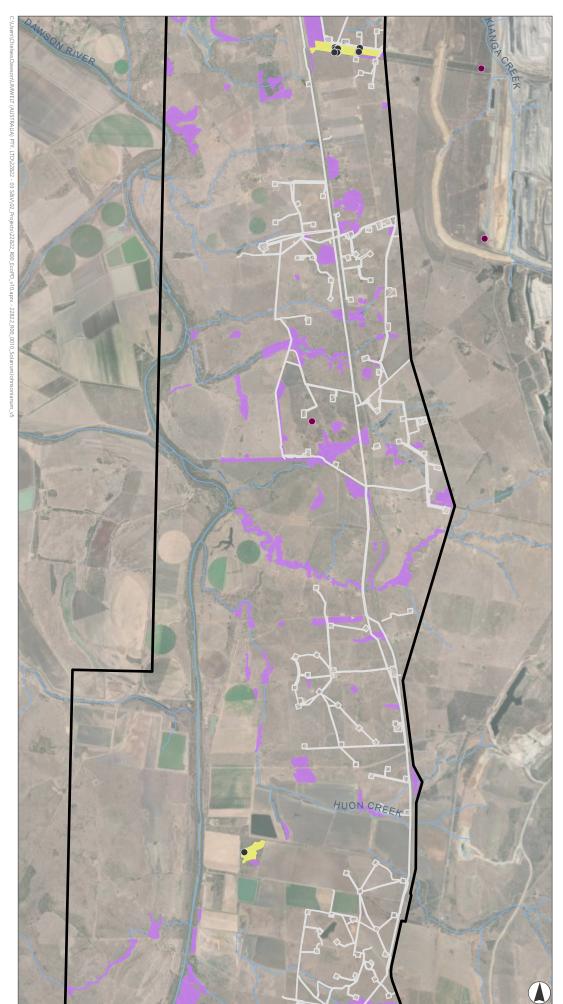
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 10B

# Solanum johnsonianum Habitat and Records

### Legend

- Umwelt Records of Solanum johnsonianum
- ALA Records of Solanum johnsonianum

Watercourse

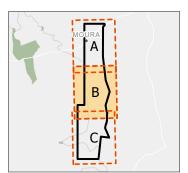
Project Area

Existing Westside infrastructure

Solanum johnsonianum habitat mapping and records

Known

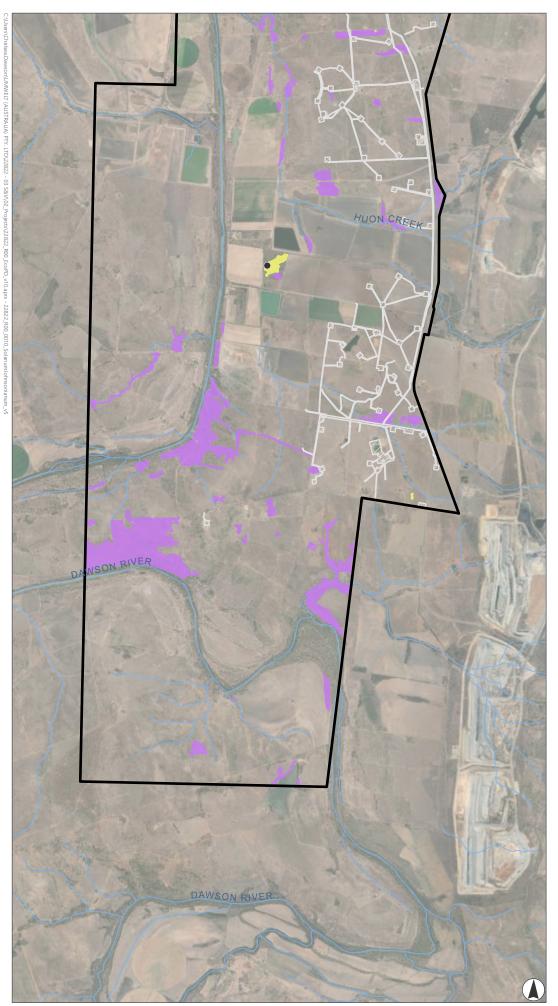
Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 10C**

# Solanum johnsonianum Habitat and Records

### Legend

Umwelt Records of Solanum johnsonianum

Watercourse

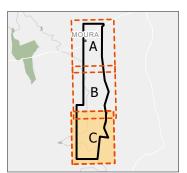
Project Area

Existing Westside infrastructure

Solanum johnsonianum habitat mapping and records

Known

Potential





Scale 1:80,000 at A4 GDA2020 MGA Zone 55

### Squatter pigeon (southern)

The squatter pigeon (southern) (*Geophaps scripta scripta*) was not recorded during the field survey program. It is considered to have a moderate likelihood of occurrence within the Project Area, with the presence of suitable habitat indicated by both State mapping and field survey findings (refer to Figure 11). No ALA records occur within the desktop search extent. The nearest ALA record of the subspecies (dated 2001) occurs approximately 34 km to the south-west of the Project Area within Theodore State Forest. Several records of the subspecies occur within the State Forest area. Six records of the species (i.e. *Geophaps scripta*) occur within 20 km, including one within the Project Area. The record located within the Project Area is sourced from ALA via the Historical Bird Atas managed by BirdLife Australia, is undated and has a 10 km spatial uncertainty. There is potential for these records to represent the squatter pigeon (southern). For the purposes of this assessment the subspecies is presumed present

A total of 4,676.7 ha of suitable habitat is mapped within the Project Area including 1,577.2 ha of breeding, 44.6 ha of foraging and 3,055.0 ha of dispersal habitat. Potential breeding and foraging habitat are associated with remnant and regrowth areas of REs 11.3.1, 11.3.17, 11.3.2, 11.3.25, 11.3.3, 11.3.4, 11.3.6, 11.5.2 and 11.5.2a. See Table 7 for a list of REs. No land zone 7 communities occur within the Project Area as per the State mapping and field survey findings. Dispersal habitat comprises remaining mapped REs in regrowth and remnant condition, as well as select areas of non-remnant (i.e. those less than 100 m in width which may connect to suitable water sources or areas of breeding or foraging habitat). Perennial watercourses, farm dams and other agricultural water sources and lacustrine wetlands occur commonly in the wider area and may be suitable for the squatter pigeon (southern) despite generally being modified.

### Australian painted snipe

The Australian painted snipe (*Rostratula australis*) was not recorded during the field survey program. It is considered to have a moderate likelihood of occurrence within the Project Area, primarily due to the presence of suitable habitat which is supported by both State mapping and the findings of the field survey program. The species habitat is represented on Figure 12.

The Project Area occurs within the species 'may occur' distribution extent as per SPRAT. Areas of 'likely to occur' distribution occur to the south and to the east. No ALA records occur within the desktop search extent. The nearest ALA record (dated 2000) occurs approximately 35 km to the south-east near the Dawson River. The record has been sourced from WildNet (Queensland Wildlife Data), has 999 m spatial uncertainty and is associated with the 'Lagoona' locality. Two additional records occur further south; the next closest is undated and has been generalised by 10 km while the third is an OZCAM record from 1977.

A review of eBird and the species' 'range map' confirms the species rarity in the region, with no areas of presence identified in the wider region surrounding the Project Area. The nearest area of occurrence as per the map occurs >100 km east near the township of Rockhampton. This suggests the species' presence within the Project Area is likely to be sporadic and opportunistic in nature, with periods of absence potentially common. Nonetheless, for the purposes of this assessment the species is conservatively presumed present.

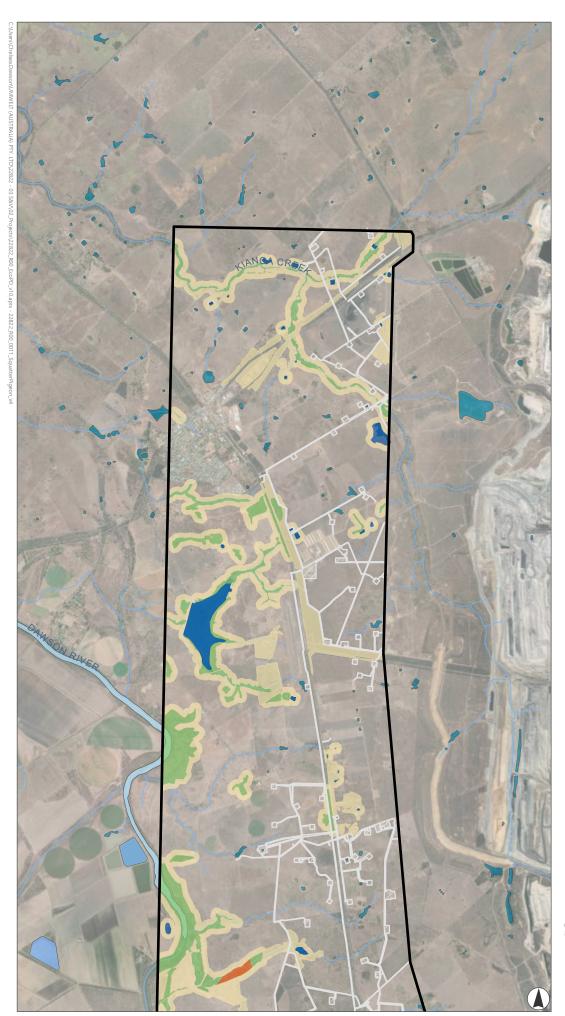
A total of 1,354.7 ha of seasonal breeding, foraging and dispersal habitat is mapped within the Project Area. The Project Area may provide habitat for the species during periods of high rainfall, comprising modified claypans that support gilgai formations and farm dams. Native ground-layer vegetation is rare at farm dams, but does occur occasionally within gilgai, fringing the perimeter in a loose band of individual plants that are

otherwise surrounded by exotic grass. Farm dams were commonly found to have margins dominated by bare ground that were heavily impacted by cattle pugging. Broadly, shelter opportunities for the species are primarily limited to areas of exotic grass that have not been grazed recently. When inundated, potential habitat within the Project Area is conservatively considered suitable for breeding, foraging and dispersal purposes, noting that the species' specific habitat requirements are not well understood. The presence of suitable habitat is however dependent on climatic conditions and is thus temporary. Given this, the brownfield nature of the site and the lack of dense and tall wetland vegetation cover, habitat likely provides a 'stop-over' site, unsuitable for refuge.

Significant historical modification of the landscape in which the Project Area exists has occurred for agriculture and mining, including broadscale clearing and changes to the hydrological regime. Preferred shallow wetland habitat is absent from the Project Area including lakes and swamps. Identified potential habitat within the Project Area is used actively for agricultural purposes including cattle grazing and cropping, and as described above is largely temporary. Use of these areas by cattle and other exotic fauna (including those that may actively prey upon the Australian painted snipe) during the dry season likely intensifies as water becomes limited in the landscape, leading to increased pressures. It is considered likely that the combination of compounding threatening processes, at times renders the habitat unsuitable.

The species is highly mobile and movement patterns are thought to be nomadic, indicating that habitats may not be utilised consistently over space and time. Potential habitat within the Project Area is unlikely to be preferentially used by the species, as when it is present (i.e. during the wet season), habitat availability across the species' core range is at its greatest. Noting this, and the absence of records in the region, it is considered likely that only a very small number of dispersing individuals may occupy the Project Area at any time, with habitat being of low relative importance to the species.





### **FIGURE 11A**

Squatter pigeon (southern) (Geophaps scripta scripta) Habitat and Records

### Legend

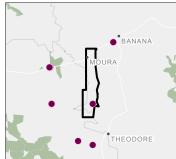
- ALA Records of Squatter Pigeon (southern)
  - Watercourse
- Project Area
  - Existing Westside infrastructure

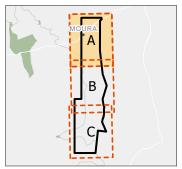
### Squatter Pigeon (southern) habitat mapping

- Breeding
- Dispersal
- Foraging
- Potential water source

### **DoR Reservoirs**

- Flood Irrigation Storage
- Rural Water Storage
- Town Water Storage





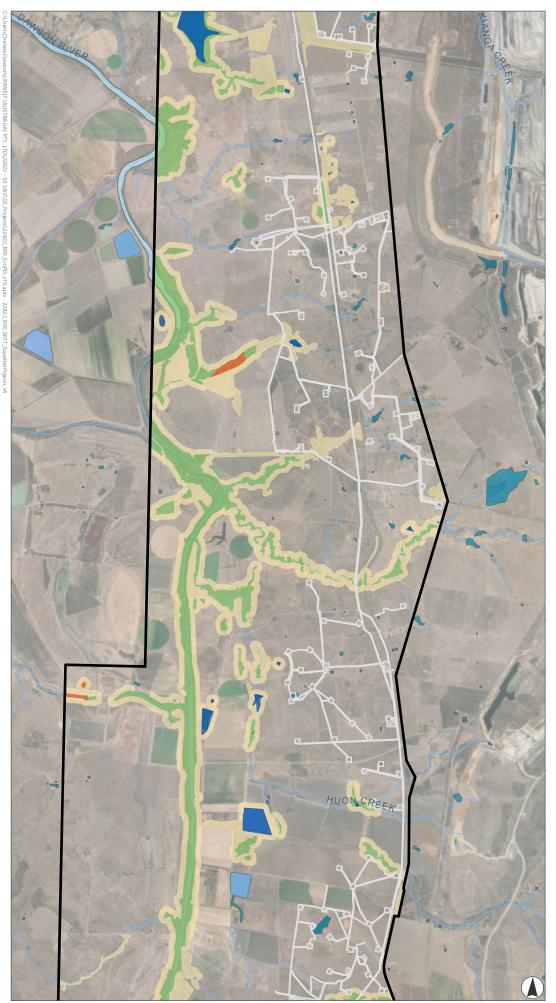


Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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# FIGURE 11B

Squatter pigeon (southern) (Geophaps scripta scripta) Habitat and Records

### Legend

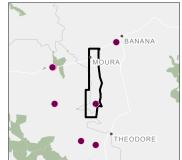
- ALA Records of Squatter Pigeon (southern)
  - Watercourse
- Project Area
  - Existing Westside infrastructure

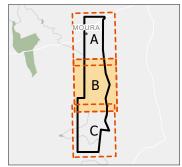
### Squatter Pigeon (southern) habitat mapping

- Breeding
- Dispersal
- Foraging
- Potential water source

### **DoR Reservoirs**

- Flood Irrigation Storage
- Rural Water Storage
- Town Water Storage





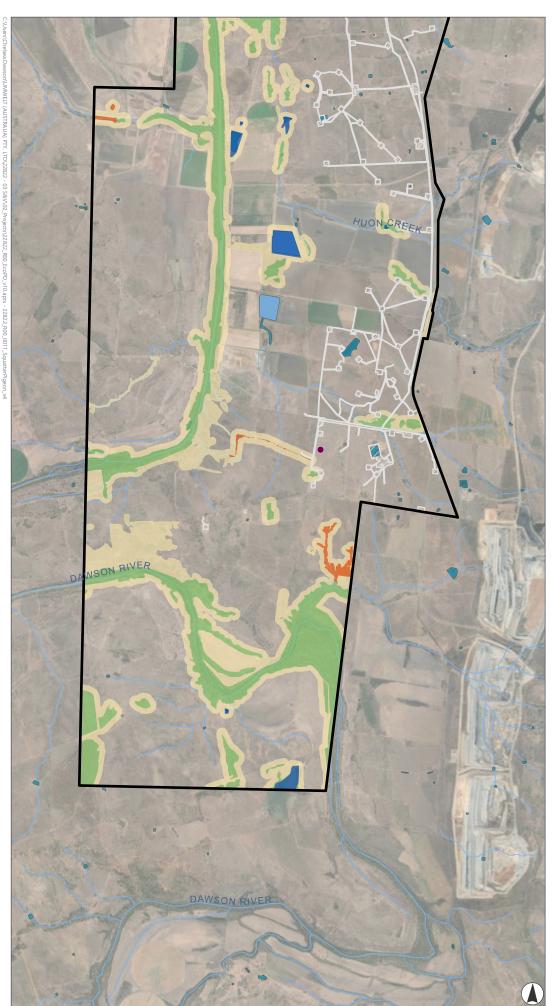


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# FIGURE 11C

Squatter pigeon (southern) (Geophaps scripta scripta) Habitat and Records

### Legend

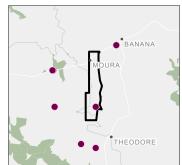
- ALA Records of Squatter Pigeon (southern)
  - Watercourse
- Project Area
  - Existing Westside infrastructure

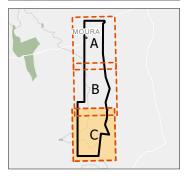
### Squatter Pigeon (southern) habitat mapping

- Breeding
- Dispersal
- Foraging
- Potential water source

### **DoR Reservoirs**

- Flood Irrigation Storage
- Rural Water Storage
- Town Water Storage





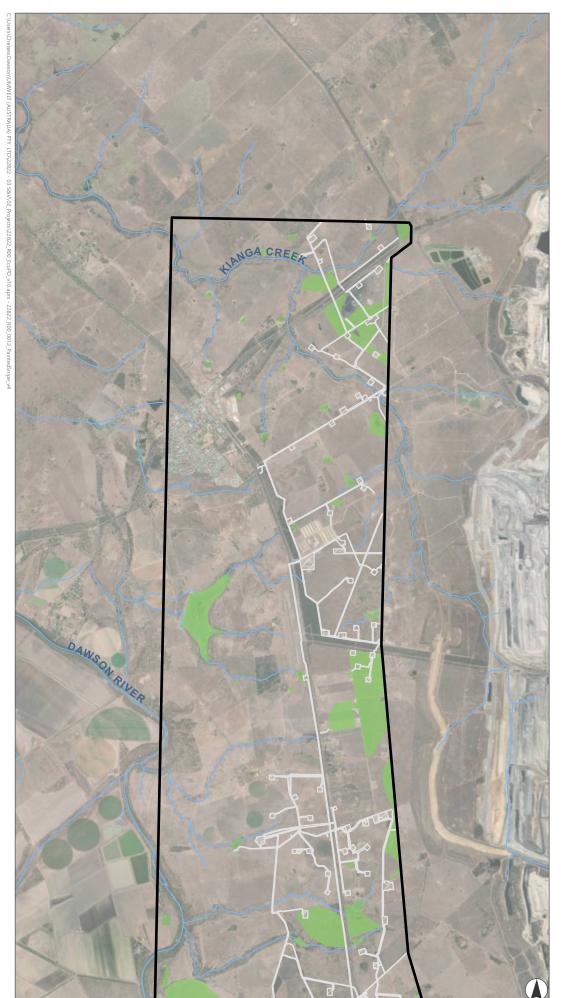


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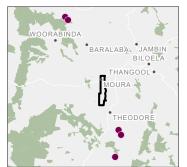
### FIGURE 12A

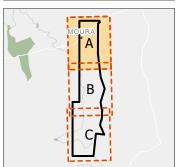
# Australian painted snipe (Rostratula australis) Habitat and Records

- ALA Records of Australian Painted Snipe
  - Watercourse
- Project Area
  - Existing Westside infrastructure

### Australian Painted Snipe Habitat

Seasonal breeding, foraging and







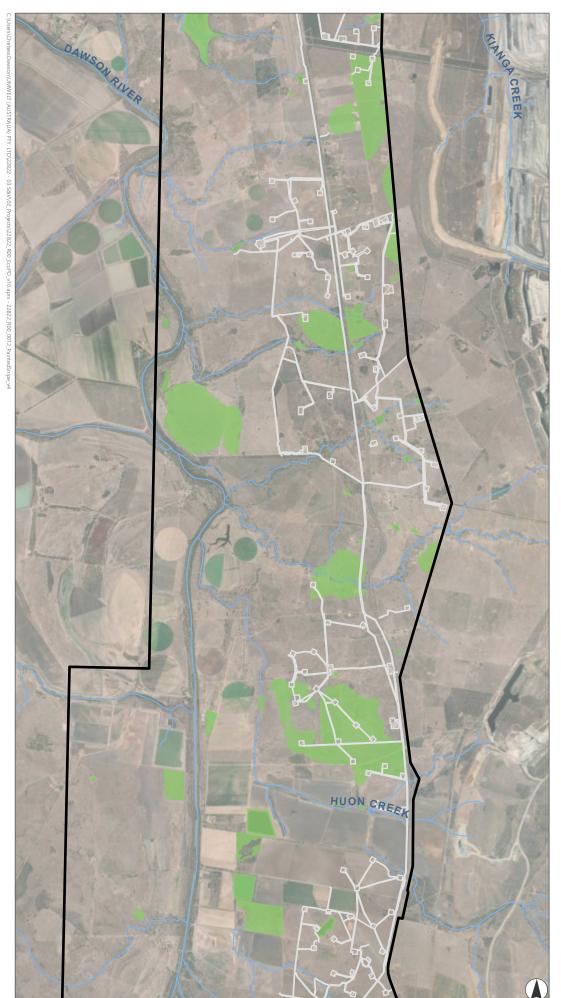
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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





### FIGURE 12B

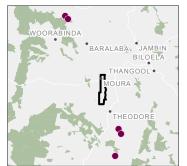
# Australian painted snipe (Rostratula australis) Habitat and Records

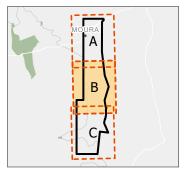
### Legend

- ALA Records of Australian Painted Snipe
  - Watercourse
- Project Area
  - Existing Westside infrastructure

### Australian Painted Snipe Habitat

Seasonal breeding, foraging and

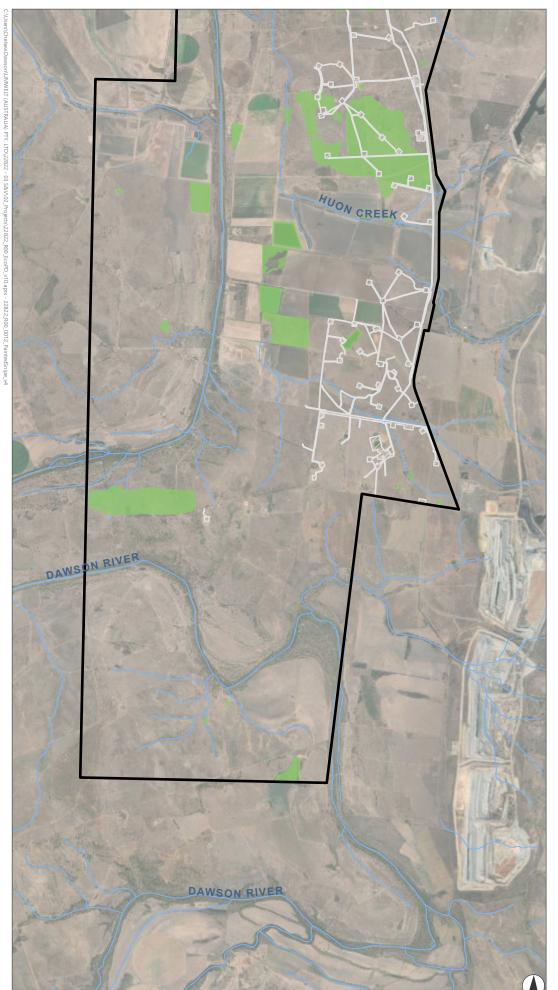






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





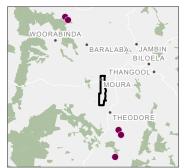
### FIGURE 12C

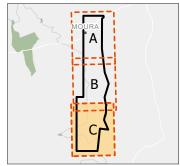
# Australian painted snipe (Rostratula australis) Habitat and Records

- ALA Records of Australian Painted Snipe
  - Watercourse
- Project Area
  - Existing Westside infrastructure

### Australian Painted Snipe Habitat

Seasonal breeding, foraging and







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)

### **Painted honeyeater**

The painted honeyeater (*Grantiella* picta) was not recorded during the field survey program. It is conservatively considered to have a moderate likelihood of occurrence within the Project Area, primarily due to the presence of suitable habitat, indicated by both State mapping and field survey findings (refer to Figure 13).

The Project Area is located in the north-eastern extent of the species mapped distribution (within the 'may occur' category), between 24º 30' and 24º 42'. Records of the species in the region are rare and none occur within the desktop search extent. The closest ALA record (dated 2017) is located approximately 28 km south of the Project Area along the Leichardt Highway. This record sourced from BirdLife Australia was supported with a 'unusual record report form' given the species' previous absence from the wider area. The species was not detected during surveys for any of the other identified projects in the region that have been referred in the last decade, including the Banana Range Wind Farm, which occurs closer to areas of with public records (see Section 6.2.2). A review of eBird and the species' 'range map' confirms the species rarity in the region, with presence exclusively limited to the Biloela area northeast of the Project Area (eBird, 2025). This suggests the species' occurrence within the Project Area is likely to be sporadic and opportunistic in nature, with periods of absence potentially common. Nonetheless, for the purposes of this assessment the species is presumed present albeit rare.

The painted honeyeater relies heavily on mistletoe for life-cycle requirements and prefers those from the genus *Amyema*. Mistletoe presence is highly variable across the Project Area, with the findings of the field survey program determining it was absent in many of the patches assessed but occasional to common in others. At least two species of mistletoe are present and occasionally occurred together in the same patch, including *Amyema quandang* and *Lysiana subfalcata* (Photo 7). Only one of these is a preferred species for the painted honeyeater. A range of REs were found confirmed to support mistletoe in at least one location including RE 11.3.1, 11.3.4, 11.3.25, 11.4.3, 11.4.8 and 11.9.2. Grey mistletoe was primarily recorded within areas of RE 11.4.8.

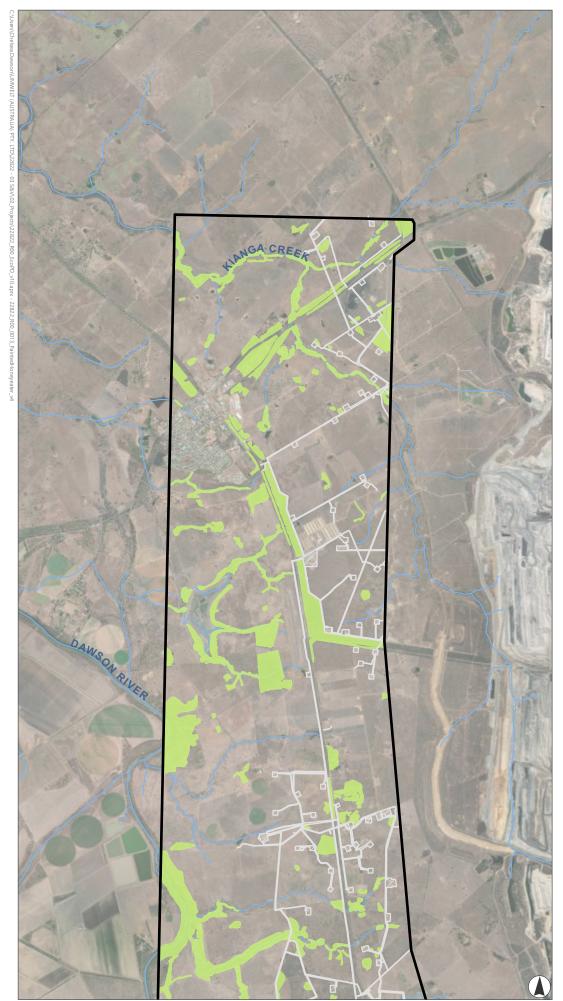
The painted honeyeater is highly mobile and nomadic, likely moving in response to the presence and abundance of flowering mistletoe. Mistletoe is a parasitic plant and as such its presence fluctuates in response to the health of its host plant, which is influenced by a range of environmental conditions. Seeds are dispersed by a variety of bird species that forage upon it, including common species such as the mistletoe bird (*Dicaeum hirundinaceum*). Under ideal conditions, one species of mistletoe can grow from a seed to a mature fruiting plant in less than 9 months (Watson, 2019).



Photograph 7: Flowering Lysiana subfalcata, within a patch of RE 11.4.8 in the northern Project Area

A total of 2,555.4 ha of potential painted honeyeater habitat suitable breeding, foraging and dispersal purposes is mapped within the Project Area. Potential habitat includes woodland ecosystems, as well as riparian woodlands and Acacia scrubs in regrowth and remnant condition, analogous to REs 11.3.1, 11.3.2,11.3.3, 11.3.4, 11.3.6, 11.3.17, 11.3.25, 11.3.27f, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.4.12, 11.5.2, 11.9.1, 11.9.2, 11.9.5, 11.9.7, 11.9.10. Although mistletoe was generally rare across the Project Area, all areas of suitable vegetation have been conservatively considered to be suitable for breeding and foraging.





### FIGURE 13A

# Painted honeyeater (Grantiella picta) Habitat and Records

### Legend

ALA Records of Painted Honeyeater

Watercourse

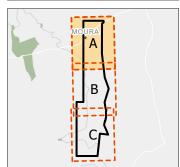
Project Area

Existing Westside infrastructure

Painted Honeyeaeter Habitat PaintedHon

Foraging and dispersal







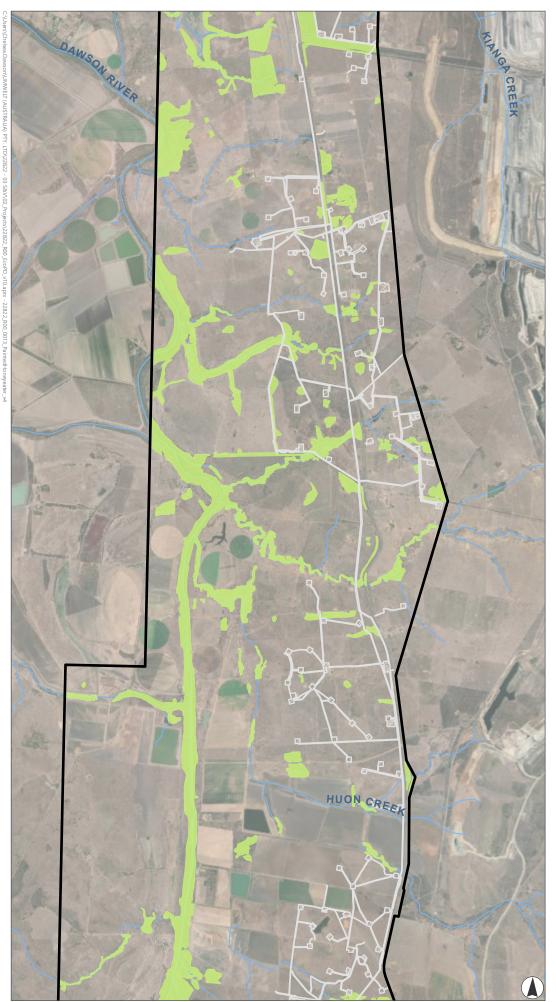
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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





### FIGURE 13B

Painted honeyeater (Grantiella picta) Habitat and Records

### Legend

ALA Records of Painted Honeyeater

Watercourse

Project Area

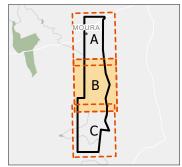
Existing Westside infrastructure

Painted Honeyeaeter Habitat

PaintedHon

Foraging and dispersal

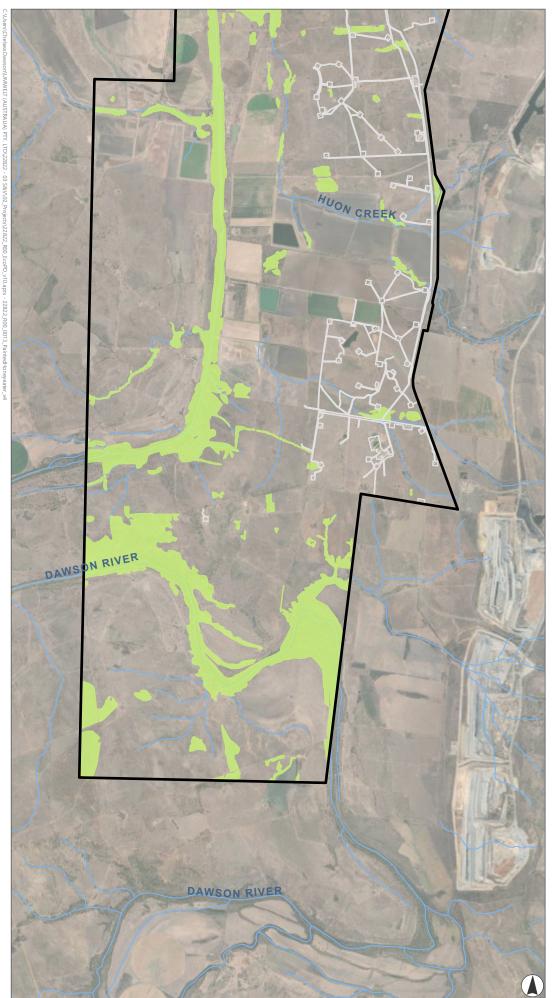






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 13C

Painted honeyeater (Grantiella picta) Habitat and Records

#### Legend

ALA Records of Painted Honeyeater

Watercourse

Project Area

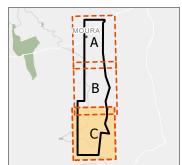
Existing Westside infrastructure

Painted Honeyeaeter Habitat

PaintedHon

Foraging and dispersal







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)

#### Koala

The koala (*Phascolarctos cinereus*) was not recorded during the field survey program. It is considered to have a high likelihood of occurrence within the Project Area (refer to Figure 14) and is presumed present for the purposes of this assessment. There is an undated ALA record of koala in the township of Moura, which is located within the north-western Project Area. This record has been sourced from WildNet's (Queensland Wildlife Data) Historical Fauna Database, is unconfirmed and has 1.8 km spatial uncertainty. Nonetheless, there are numerous records from the surrounding region, including records in functionally connected habitat associated with the riparian zone of the Dawson River. Of the records within 20 km, the most recent records are from 1997, with the majority from the 1980s.

Records of the species within the WildNet (2024) database are also present and it is likely many of these are the same identified by ALA. A total of 14 WildNet records occur within 20 km of the Project Area, with dates ranging from 1970 to 1997, however all but one record dated 1992 are considered unconfirmed. The spatial uncertainty ranges from 150 m to 9,000 m. As per aerial imagery and State RE mapping, most of these records were likely associated with remnant or regrowth alluvial woodland communities, which in many places has since been cleared for cropping.

Potential habitat which is suitable to support the ecological requirements of the species occurs throughout the Project Area. With the exception of habitat associated with the riparian zone of the Dawson River, potential habitat is highly fragmented and exists as disjunct patches in a heavily modified landscape. Habitat which is suitable for the species breeding and foraging requirements include woodlands in remnant and HVR condition which contain Locally Important Koala Trees (LIKTs). LIKTs for the Brigalow Belt bioregion are defined in Table 3 of the reference source, *A review of koala habitat assessment criteria and methods* (DCCEEW, 2022). This includes watercourse vegetation on alluvial soils, woodlands on moderately fertile and low fertile soils with koala food trees and acacia-dominated areas with emergent koala food trees.

Although they may also be used for breeding and foraging purposes, select areas of eucalypt forest and woodland on alluvial within the Project Area have the potential to provide future climate refugia for the species. Given the prevalence of agriculture, surface water flows associated with non-perennial watercourses and drainage lines within the main Project Area extent have been substantially modified as a result of historical land use change and clearing. The Dawson River is the only perennial water feature within the Project Area and therefore the only water source likely to provide a reliable resource throughout the year. Water from the Dawson River is periodically diverted to the Offstream Storage by the Moura weir, as described in Section 6.1.5 of the MNES Assessment Report (Attachment A). Areas of climate refugia habitat are thus restricted to communities associated with the Dawson River and the Offstream Storage.

The Project Area is interspersed with disjunct patches of *Acacia* dominated woodlands which do not support LIKTs. Although these areas would not contribute substantially to foraging resources, they provide ancillary habitat functions such as shelter for thermoregulation and refuge from predators when dispersing.

In addition to these areas, the Project Area is dominated by historically cleared land used for agricultural purposes including both cattle grazing and intensive cropping. It is recognised that most of this non-remnant vegetation has the potential to provide a safe intervening ground for the koala to move across the landscape, between habitat patches. These areas, identified as dispersal habitat, are largely dominated by cleared exotic pasture but may contain rare shrubland areas, sporadic small patches of trees and/or individual paddock trees. The mapping of dispersal habitat is considered conservative as a number of

potential barriers to the species' movement are also present including highways, roads, irrigation channels and barbed wire fences.

### **Detailed Description of Dispersal Habitat**

Potential habitat for the koala identified as suitable for dispersal only largely aligns with the exotic pasture and other non-remnant vegetation habitat type described in Section 6.5.6 of the MNES Assessment Report (Attachment A). The habitat description states that canopy cover and shrub cover is typically sparse to absent. This statement is supported by the findings of the habitat quality survey completed in 2024, which included five BioCondition assessments in representative areas of koala dispersal habitat. Across these five sites, the average canopy cover is 0.5% and the average shrub cover is 1%. Typical tree and/or shrub species that may occur as scattered individuals or clumps of 2-3 individuals include *Atalaya hemiglauca*, *Acacia harpophylla*, *Acacia salicina*, *Carrisa ovata*, *Citrus glauca* and *Grevillia striata*.

To assist in further characterising koala dispersal habitat within the Project Area, particularly the level of vegetative cover supported, a review and analysis of two publicly available vegetation cover datasets was completed. This included the DCCEEW *National Forest and Sparse Woody Vegetation Data* (Version 6.0, 2021 Release) and the Queensland *Statewide Landcover and Trees Study (SLATS) 2022 - woody vegetation extent* mapping was undertaken.

The SLATS 2022 data is the most current version of the mapping available and was published on 12 June 2024. This dataset shows the presence/absence (two categories) of woody vegetation throughout Queensland. The scale of the woody extent dataset is intended to capture features visible at a nominal map scale of 1:10,000: stands of woody vegetation greater than 0.5 ha with a canopy density greater than 10% crown cover will be classified as woody. A minimum width of 20 m applies to linear features. The DCCEEW National Forest and Sparse Woody Vegetation Data is similar to SLATS, however it uses three categories of vegetation instead of two: non-woody areas <5% cover, sparse woody vegetation 5-19% and forests (or woody vegetation) >20% cover. For forests, the mapping has incorporated requirements for vegetation height (minimum 2 m tall) and patch size (minimum 0.2 ha).

The SLATS 2022 Woody extent layer was clipped to areas identified as koala dispersal habitat within the Project Area. Of the total extent of dispersal habitat, 1,676.9 ha or 10.3% was identified as containing woody vegetation (i.e. minimum 10% cover which could be canopy or shrub) leaving 17,227.2 ha as non-woody. These areas of vegetative cover within the exotic grassland occur sporadically across the Project Area (Figure 14). As the DCCEEW *National Forest and Sparse Woody Vegetation Data* is a raster file, analysis was limited to overlaying the image with the koala dispersal habitat mapping (see Figure 9.14 of the MNES Assessment Report (Attachment A)).

Based on the findings of the field survey program, the areas devoid of vegetation cover (i.e. non-woody) that comprise potential koala dispersal habitat support grassland dominated by exotic pasture grasses such as *Cenchrus ciliaris* (see Photo 8 below). Cattle grazing is considered the dominant agriculture within the Project Area.



Photograph 8: Representative non-woody koala dispersal habitat

Some areas of 'woody vegetation' identified by the SLATS mapping have been interrogated during the field survey program, resulting in field data that provides insights into the vegetation structure and composition. For example, near the eastern boundary of the central Project Area and adjacent to Theodore Moura Rd, several patches of woody vegetation categorised as dispersal habitat comprise *Citrus glauca* shrubland to open shrubland up to 3 m (see Photo 8). This species is a hardy shrub, sometimes tree, that has spiny stems with irregularly spaced thorns. Within the Project Area it frequently occurs as sporadic dense thickets, with branches extending from near the base. For this reason, it is highly unlikely to be utilised by koala while dispersing across the landscape.

Near the western boundary of the central Project Area, one patch of woody vegetation categorised as dispersal habitat comprises monotypic *Acacia salicina* open shrubland to 3 m (see Photo 10 left) while another woody patch in this broader area includes *Acacia harpophylla* shrubs to 4 m (see Photo 10 right). These areas do not comprise an RE based on both vegetation composition and structure. Furthermore, all field-validated areas of non-remnant vegetation with shrubs were confirmed to have a discontinuous canopy, with shrubs sporadic across the landscape and often clumped.

Finally, in several parts of the Project Area, patches of woody vegetation identified in the SLATS mapping are confirmed to have been recently cleared by the landholder (see Photo 11). These cleared patches range in size from 0.6 ha to 5.9 ha. As most areas of koala dispersal habitat comprise Category X vegetation under the Qld *Vegetation Management Act 1999* (Qld) (VM Act), these areas are generally exempt from clearing permits. To maintain the quality of the grazing habitat, landholders in this region will clear woody vegetation regularly.

As shown in Figure 9.14 of the MNES Assessment Report (Attachment A), the DCCEEW (2021) *National Forest and Sparse Woody Vegetation Data* identifies very few areas of potential koala dispersal habitat to support sparse woody or woody vegetation. It is also likely that recent clearing is unlikely to have been captured in this dataset. Based on these findings, it is considered likely that dispersal habitat within the

Project Area conservatively supports an average shrub or low tree cover of <5%. Most of the mapped dispersal habitat supports no canopy or shrub cover (>90% of the mapped extent).

Despite the overall lack of habitat opportunities within these areas, Westside have adopted mitigation measures relevant to this habitat categorisation that will ensure habitat continues to provide existing functions. These are discussed in Section 6.0.



Photograph 9: Citrus glauca shrubland



Photograph 10: Acacia-dominated open shrublands



Photograph 11: Areas of mapped woody vegetation that have been recently cleared, including in the southern
Project Area (left) and in the central east Project Area (right

Limitations with the SLATS dataset should be noted and may also explain why recently cleared areas are captured. As described in the mapping's metadata, no distinction was made between native and non-native vegetation; woody vegetation such as woody weeds and horticultural crops are included as woody in the final classification. The Project Area is known to support extensive cropping area of the exotic *Leucaena leucocephala\** and the inclusion of these areas in the SLATS dataset is unknown. Furthermore, the data set was generated from imagery acquired from Earth-I UK with a specified positional accuracy of 10 m (90% confidence). However, it is likely that imagery used to inform such mapping is as old as 2017, as the source states "A set of pan-sharpened, pre-processed image mosaics acquired between April and November 2017 over Queensland at a resolution of 80cm was purchased from Earth-I UK".

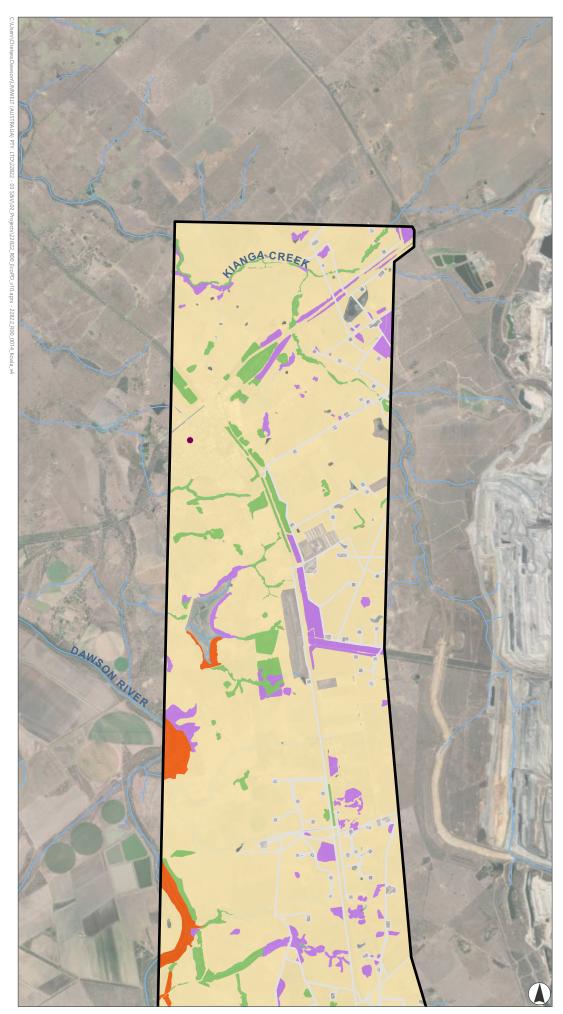
The presence and extent of habitat for all MNES across the Project Area is considered likely (as evident between field surveys completed for the project) to change over time as a result of ongoing agricultural practices. The site scout process allows for a dynamic assessment of habitat presence and ensures data relied upon to determine impacts is current and reflective of the true on-ground conditions.

#### White-throated needletail

The white-throated needletail (*Hirundapus caudacutus*) was not recorded during the field survey program. It is considered to have a moderate likelihood of occurring within the Project Area (refer to Figure 15) and is presumed present, for at least part of the period in which it occurs within Australia. This species has not been recorded within the Project area during the field surveys, however the Project Area occurs within the species 'may occur' distribution extent as per SPRAT.

This species has broad habitat requirements given its aerial nature and only occurs in Australia during its non-breeding season. As such, the entire Project Area may provide suitable habitat. Three ALA records of the species occur within the desktop search extent (one undated, one from 2014 and the other from 2009); two of which are located to the west of the Project Area along the Dawson River (the undated and the 2014 record), with the 2009 record occurring in proximity to the locality of Banana. According to eBird, the species may utilise the Project Area occasionally during its pre- and post-breeding migration to and from Australia (eBird Australia, 2025). The entire Project Area (21,002.1 ha) is mapped as potential habitat suitable for foraging and dispersal, including remnant, regrowth and non-remnant vegetation as well as developed areas.





# **FIGURE 14A**

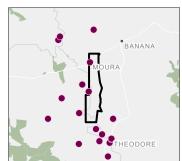
# Koala (Phascolarctos cinereus) Habitat and Records

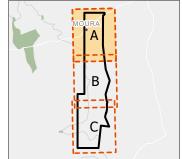
### Legend

- ALA Records of Koala
  - Watercourse
- Project Area
- Existing Westside infrastructure

#### Koala Habitat

- Breeding and foraging
- Climate refugia
- Dispersal
- Shelter vegetation







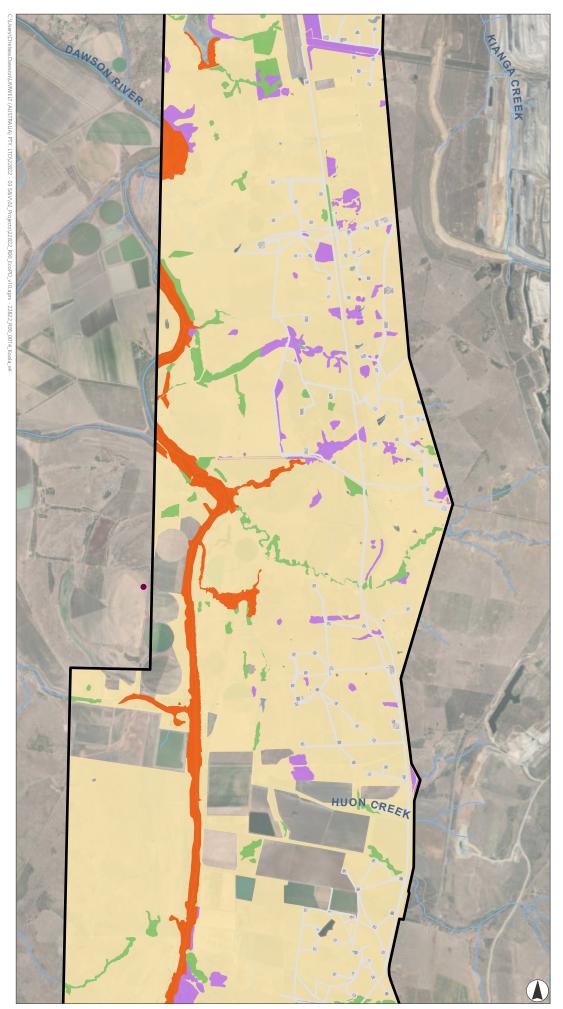
Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





# FIGURE 14B

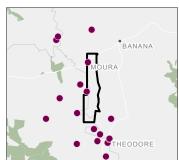
# Koala (Phascolarctos cinereus) Habitat and Records

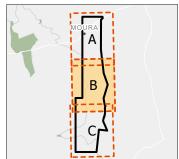
### Legend

- ALA Records of Koala
- Watercourse
- Project Area
- Existing Westside infrastructure

#### Koala Habitat

- Breeding and foraging
- Climate refugia
- Dispersal
- Shelter vegetation

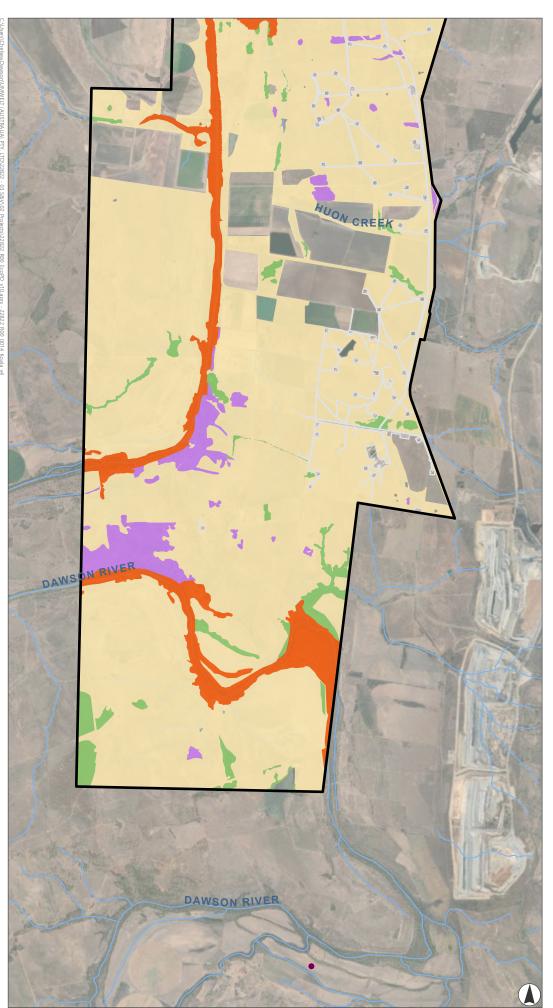






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 14C

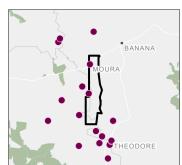
# Koala (Phascolarctos cinereus) Habitat and Records

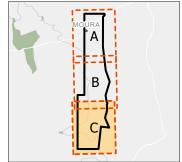
### Legend

- ALA Records of Koala
- Watercourse
- Project Area
- Existing Westside infrastructure

#### Koala Habitat

- Breeding and foraging
- Climate refugia
- Dispersal
- Shelter vegetation

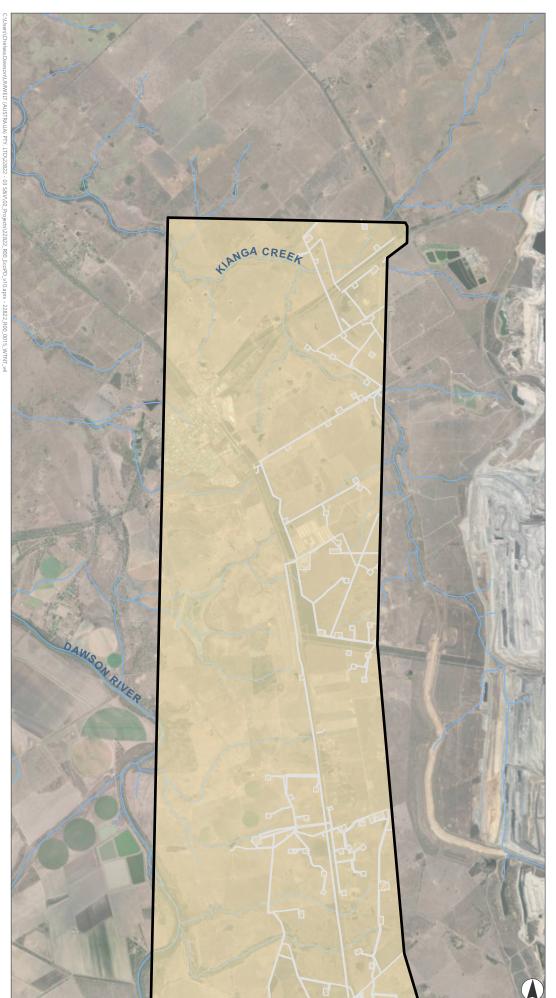






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 15A**

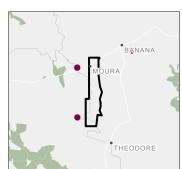
# White-throated needletail (Hirundapus caudacutus) Habitat and Records

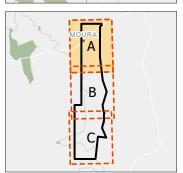
#### Legend

- ALA Records of White-throated Needletail
- Watercourse
- Project Area
  - Existing Westside infrastructure

# White-throated Needletail habitat

Foraging and dispersal







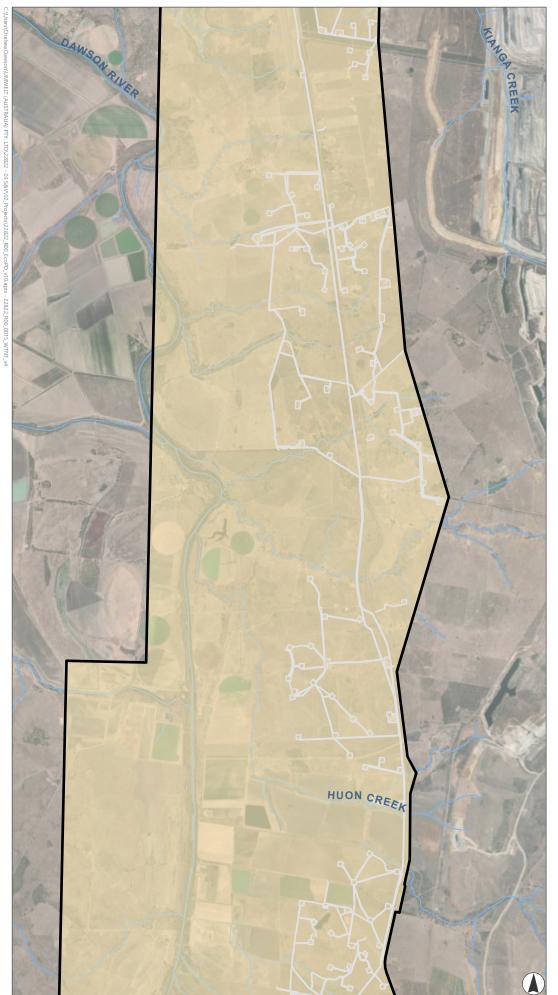
Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





# FIGURE 15B

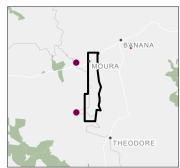
# White-throated needletail (Hirundapus caudacutus) Habitat and Records

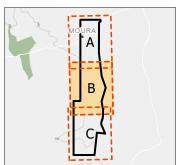
#### Legend

- ALA Records of White-throated Needletail
  - Watercourse
- Project Area
- Existing Westside infrastructure

# White-throated Needletail habitat

Foraging and dispersal

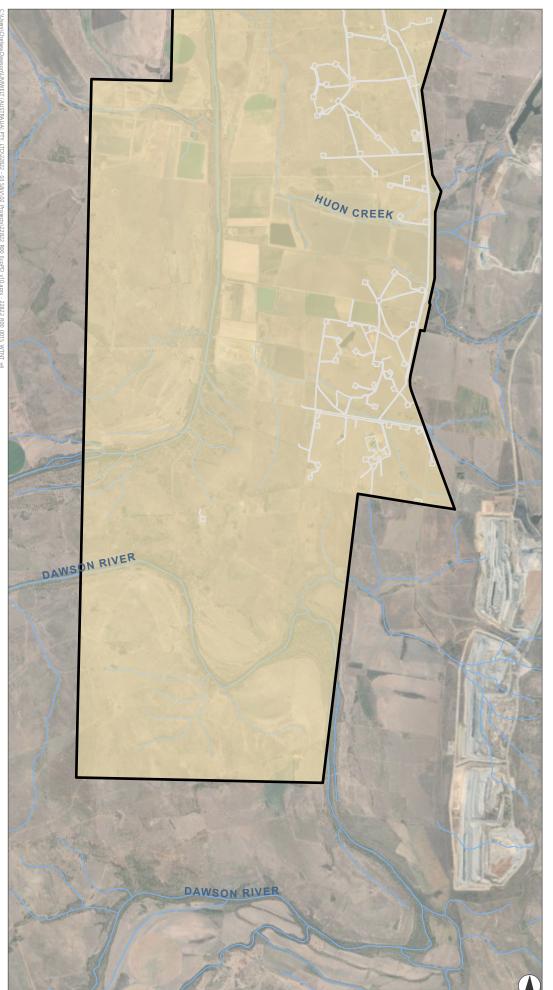






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 15C

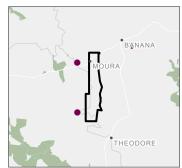
# White-throated needletail (Hirundapus caudacutus) Habitat and Records

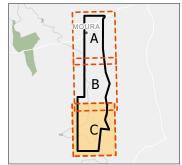
### Legend

- ALA Records of White-throated Needletail
  - Watercourse
- Project Area
  - Existing Westside infrastructure

#### White-throated Needletail habitat mapping

Foraging and dispersal







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)

#### Yakka skink

The yakka skink (*Egernia rugosa*) was not recorded during the field survey program. No potential burrow sites or latrines were detected either, despite the approximately 68.5 person hours of active diurnal searches between 2019 and 2024. Potentially suitable woodland habitat occurs within the Project Area. However, habitat surveyed to date is marginally suitable due to the hard clay-based soils (unsuitable for burrows) and lacking refuge microhabitat.

The Project Area occurs primarily within the species 'may occur' distribution extent. The far north-eastern extent of the Project Area occurs within the species 'likely to occur' extent. The species was not detected during surveys for any of the other identified projects in the region that have been referred in the last decade, including the Banana Range Wind Farm, which occurs closer to the nearby 'likely to occur' extent of the species distribution (see Section 6.2.2).

One ALA record from 1975 occurs within the desktop search extent, located to the northeast of the Project Area near the locality of Banana. The record is associated with OZCAM and the associated location has been generalised by 2 km. However, as the GPS location provided is not precise (-24.5, 150.1) and therefore it is considered possible that the spatial uncertainty is greater. The next nearest record (dated 1955) is located approximately 47 km to the north-east. The species is conservatively considered to have a moderate likelihood of occurrence within the Project Area, noting it is secretive and rare, and detailed field surveys have not yet been completed across all areas that may be impacted by the Project.

A total of 2,205.9 ha of suitable habitat is mapped within the Project Area, including forests and woodlands analogous to REs 11.3.1, 11.3.17, 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.4.12, 11.4.3, 11.4.7, 11.4.8, 11.4.9, 11.4.9a, 11.5.2, 11.5.2a, 11.9.1, 11.9.10, 11.9.2, 11.9.5 and 11.9.7 (refer to Figure 16).

Ground layer microhabitat was assessed at habitat assessment sites throughout the field survey program. Large logs which the species is thought to prefer were often rare as were burrowing opportunities, particularly in areas of land zone 9. No areas were found to contain large rocks, rabbit warrens or rock piles. Given the current mapping of potential yakka skink habitat within the Project Area has not excluded any areas based on microhabitat, it is considered highly likely it overstates the true availability of habitat. Furthermore, cattle grazing activities are ongoing throughout the Project Area and are likely to continue to reduce the availability of microhabitat.

### **Greater glider (southern and central)**

The greater glider (southern and central) (*Petauroides Volans*) was not recorded during the field survey program. It is considered to have a high likelihood of occurring within the Project Area and is presumed present for the purposes of the assessment. The Project Area occurs within the species 'likely to occur' distribution extent as per SPRAT.

The species was recorded during surveys completed for three identified projects in the region surrounding the Project Area that have been referred in the last decade, including the Banana Range Wind Farm, Theodore Wind Farm and the Dawson West Mining Project.

Six ALA records (undated) associated with OZCAM occurs within the desktop search extent, located immediately west and south-east of the Project Area near the Dawson River and Castle Creek, respectively. Records of the species within the WildNet (Queensland Wildlife Data) database are also present. A total of

11 WildNet records occur within 20 km of the Project Area, including one unconfirmed, with dates ranging from 1992 to 2012.

The location of the 11 WildNet records was reviewed against State mapping to gain possible inferences about the species habitat preferences in the local area. By using GIS to intersect the records with the State RE mapping, it was determined that records were associated with homogenous polygons of RE 11.3.4, heterogenous polygons of RE 11.3.2/11.3.25 and non-remnant vegetation. Further investigation determined that all records were associated with the Dawson River itself or a tributary including Roundstone Creek, Castle Creek and unnamed watercourses. The locality description of one of the records (dated 2000 and verified) includes reference to an ephemeral wetland in the locality description. While it is acknowledged that greater gliders (southern and central) utilise a variety of eucalypt woodland communities on a range of substrates, it is hypothesised that in this region, the species may predominantly be supported by alluvial and riparian communities as they generally exhibit the greatest levels of connectivity.

Potential habitat for the greater glider (southern and central) within the Project Area was identified through a three-step process that first required a review of the field-verified vegetation community descriptions to determine what areas comprised eucalypt woodlands or forests. Then, these areas were analysed to determine whether they met the habitat definition. This required consideration of the dominant canopy species and a cross-check against the list of habitat and potential habitat REs as developed by the authors of the Guide (Eyre et. al 2022). The final step was an assessment of patch size, connectivity to other areas of habitat and landscape context. Consideration of the species known habitat utilisation in the local area based on the analysis of records as described above was also considered.

Of the 21 REs mapped within the Project Area (Table 6.2), five are identified by the Guide as habitat or potential habitat including REs 11.3.4, 11.3.25, 11.4.8, 11.5.2 and 11.9.2. Although the REDD short description indicates RE 11.4.8 is dominated by a eucalypt, findings from the field survey program determined that within the Project Area this community was consistently dominated by Acacia harpophylla. As this community does not comprise a eucalypt forest or woodland, it does not meet the definition of habitat for the species. Four REs are therefore considered to comprise potential greater glider (southern and central) habitat within the Project Area. No non-remnant communities recorded within the Project Area to date have comprised eucalypt woodland or forest.



Photograph 12: Representative image of RE 11.4.8 within the Project Area

As described above, another key consideration in the mapping of potential greater glider (southern and central) habitat for the purposes of this impact assessment was connectivity. The Project Area is brownfield and highly developed, with the dominant land use agriculture. To facilitate such land use, significant historical land clearing has occurred across the majority of the site with many patches of vegetation now surrounded by cleared land or part of loose habitat corridors with frequent gaps.

For the purposes of this assessment, a 'corridor' refers to a series of habitat patches (any combination of 'denning' and 'foraging and dispersal' patches) that are separated by distances the species is capable of gliding across, based on its glide angle (40°) and the height of the vegetation.

As tree height data is not consistently available, patch/corridor size and connectivity was assessed using recent aerial imagery and a conservative maximum glide distance of 100 m. Literature on the species maximum glide distance varies significantly, from 40 m (Qld Government, 2024), 75 m (Taylor & Goldingay, 2009) and 100 m (McCarthy & Lindenmayer, 1999 in Norman and Macke, 2024). As such, subsequent site scouts will assess connectivity using tree height data specific to the location and the known gliding angle.

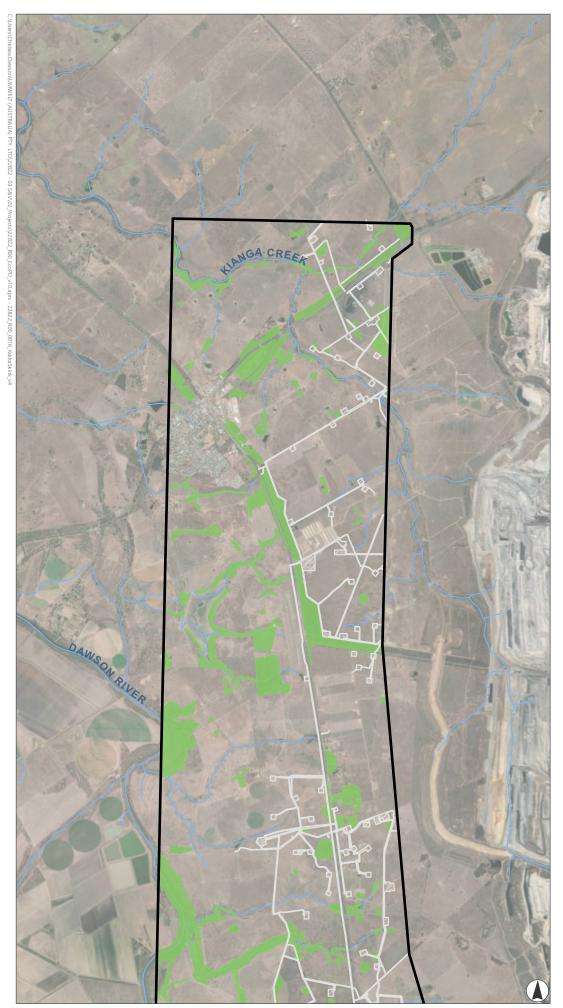
The patch was considered isolated (and thus not part of a corridor) if it was separated from habitat by 100 m or greater at the narrowest point, or surrounded by vegetation that does not meet the habitat definition (either utilisation category). The species is not known to utilise other habitat for any part of their lifecycle including dispersal. This includes brigalow woodlands and non-remnant vegetation with isolated trees. As such, some patches that comprise habitat or potential REs have not been mapped as potential habitat (Refer to Figure 9.18 in the MNES Assessment Report (Attachment A)).

After the Dawson River, Kianga Creek in the north of the Project Area is the next highest stream order watercourse. This watercourse is narrow and ephemeral and as a result have been subject to a greater degree of modification than the Dawson River, including exposure to cattle grazing and vegetation clearing to facilitate crossings and fence lines. Kianga Creek supports a riparian corridor of disjunct linear patches that vary in width (30 - 150 m) and frequently comprise brigalow-dominated vegetation. The patches are mostly separated by gaps 100 m wide or less. Whilst some fauna movement opportunities are provided, the Kianga Creek habitat corridor is unlikely to support the greater glider (southern and central) since brigalow communities are not known to support the species.

Patch size is likely to influence greater glider occupancy of habitat. Simulations suggest that habitat patches as small as 3 ha can contribute to the persistence of greater gliders, depending on the characteristics of landscape context (McCarthy and Lindenmayer 1999 in Eyre et al., 2022). Individual home ranges are typically relatively small (1–4 ha) but may reach up to 11 ha in hollow-limited environments (Smith et al. 2007). Greater gliders have been found in habitat patches <10 ha in some fragmented and remnant forest patches in the southern part of their geographic range (Pope et al. 2004; Lindenmayer 2002), but may require larger habitat patches in Queensland (Eyre 2006). As such, a minimum patch/corridor size of 3 ha has been considered appropriate given field survey data indicates the majority of the Project Area is a hollow-limited environment (the only exception being the Dawson River riparian zone).

A total of 1,187.1 ha of potential greater glider (southern and central) habitat is mapped within the Project Area comprising vegetation in both remnant and regrowth condition (Figure 17). Accurate tree size and height data for the Project Area is limited; the majority of field survey scopes did not allow for this level of detail to be captured and were completed prior to the latest Conservation Advice being published. As such, a conservative approach to the mapping has been undertaken that currently considers all identified habitat within the Project Area to be suitable for denning purposes. All areas proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability in consideration of tree DBH and height (>30 cm DBH and >10 m height).





# **FIGURE 16A**

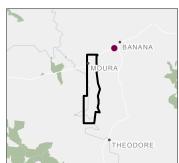
# Yakka skink (Egernia rugosa) Habitat and Records

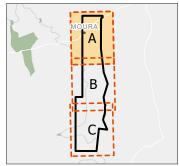
### Legend

- ALA Records of Yakka skink
- Watercourse
- Project Area
- Existing Westside infrastructure

#### Yakka skink habitat mapping

Breeding and foraging





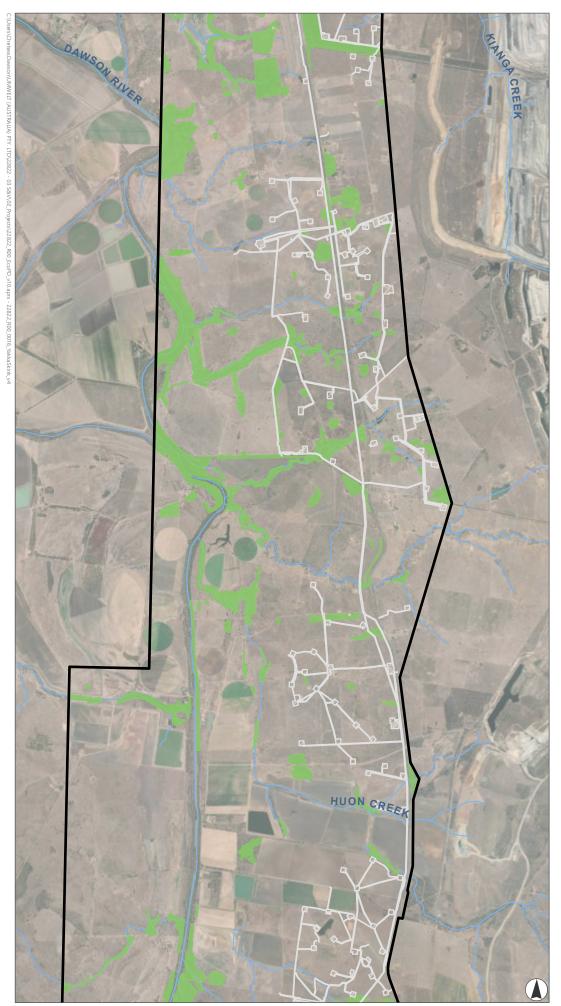


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# FIGURE 16B

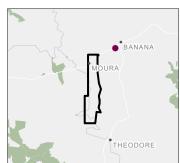
Yakka skink (Egernia rugosa) Habitat and Records

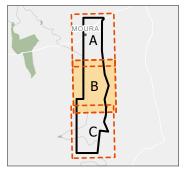
### Legend

- ALA Records of Yakka skink
- Watercourse
- Project Area
- Existing Westside infrastructure

#### Yakka skink habitat mapping

Breeding and foraging

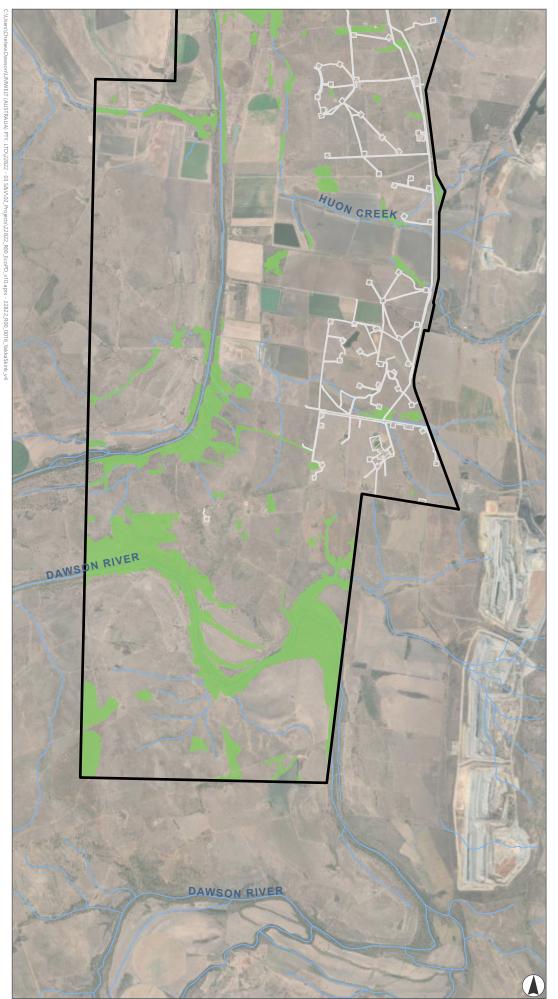






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 16C

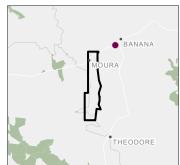
Yakka skink (Egernia rugosa) Habitat and Records

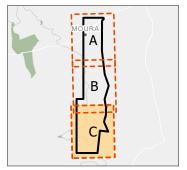
### Legend

- ALA Records of Yakka skink
- Watercourse
- Project Area
- Existing Westside infrastructure

#### Yakka skink habitat mapping

Breeding and foraging



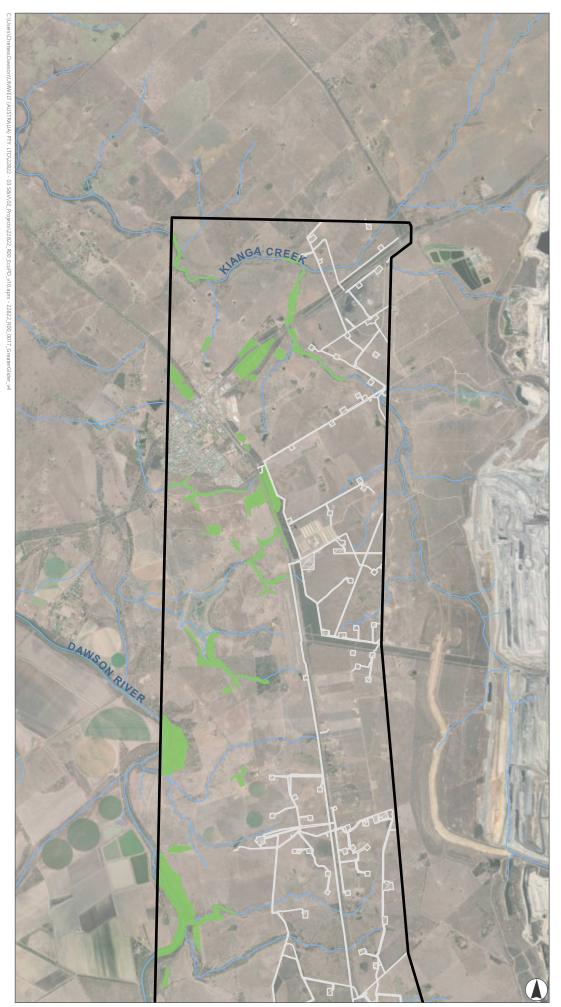




Scale 1:80,000 at A4 GDA2020 MGA Zone 55

Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





# **FIGURE 17A**

Greater glider (southern and central) (Petauroides volans) Habitat and Records

#### Legend

ALA Records of Greater glider (southern and central)

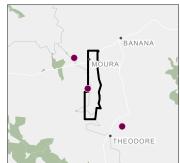
Watercourse

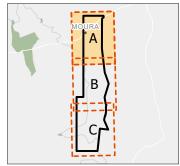
Project Area

Existing Westside infrastructure

Greater glider (southern and central) Habitat

Denning

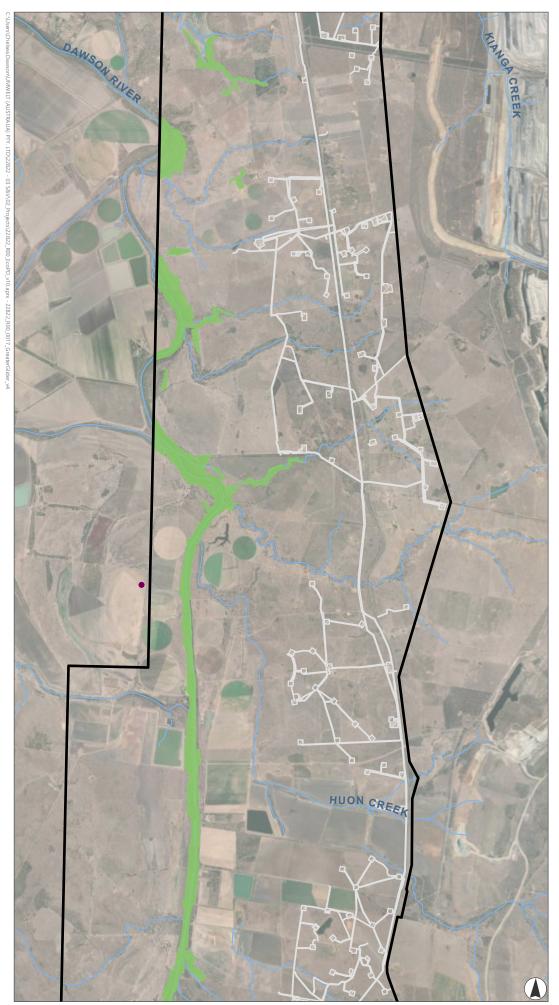






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 17B

Greater glider (southern and central) (Petauroides volans) Habitat and Records

#### Legend

ALA Records of Greater glider (southern and central)

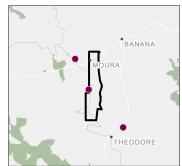
Watercourse

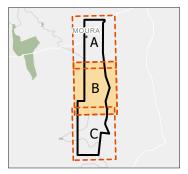
Project Area

Existing Westside infrastructure

Greater glider (southern and central) Habitat

Denning

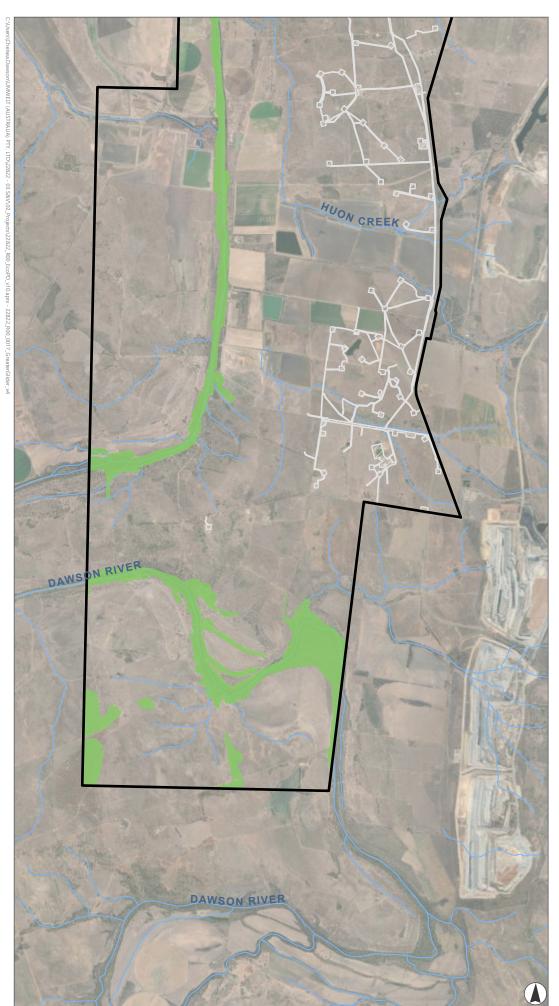






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 17C

Greater glider (southern and central) (Petauroides volans) Habitat and Records

#### Legend

ALA Records of Greater glider (southern and central)

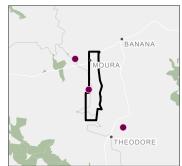
Watercourse

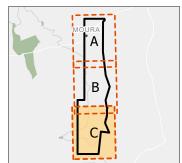
Project Area

Existing Westside infrastructure

Greater glider (southern and central) Habitat

Denning







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

### Yellow-bellied glider (south-eastern)

The yellow-bellied glider (south-eastern) (*Petaurus australis australis*) was not recorded during the field survey program. It is conservatively considered to have a moderate likelihood of occurring within the Project Area (refer to Figure 18). The Project Area occurs within the subspecies 'may occur' distribution extent as per SPRAT.

An ALA record from 1929 occurs within the southern Project Area along the Dawson River, however this record is reported to have a 54 km spatial uncertainty and the region has undergone large scale land clearing since that time (Q Imagery, 2024). This record has been sourced from WildNet's (Queensland Wildlife Data) Historical Fauna Database and is considered unconfirmed, however the reported locality provided is the 'mid-lower Dawson River'. Another ALA record occurs 7 km south of the Project Area along the Dawson River (undated with 9 km spatial uncertainty). The low spatial accuracy of these records leaves some uncertainty as to their true location along the Dawson River, if in this location at all. Nonetheless, for the purposes of this assessment the species is presumed present.

Potential habitat for the yellow-bellied glider (south-eastern) within the Project Area was identified through a two-step process that first involved a review of mapped vegetation composition and structure followed by patch size (and shape / configuration, as necessary). Only patches that were 50 ha or greater were considered viable for the subspecies', noting their large home ranges, territorial nature and inability to persist in narrow linear fragments. Through this process, described further below, it was determined that potential habitat for the subspecies within the Project Area is limited to the riparian corridor along the Dawson River.

Of the 21 REs mapped within the Project Area, 13 are eucalypt-dominated woodlands including REs 11.3.2, 11.3.3, 11.3.4, 11.3.6, 11.3.17, 11.3.25, 11.3.27f, 11.4.7, 11.4.12, 11.5.2, 11.9.2, 11.9.7 and 11.9.10. Although the Regional Ecosystem Description Database short description indicates RE 11.4.8 is also dominated by a eucalypt, findings from the field survey program determined that within the Project Area this community was consistently dominated by *Acacia harpophylla*. From this list of 13 REs, a further 10 were excluded because they were neither dominated by a smooth or half-bark eucalypt species or floristically diverse based on field data (REs 11.3.2, 11.3.3, 11.3.6, 11.3.17, 11.3.27f, 11.4.7, 11.4.12, 11.9.2, 11.9.7, 11.9.10). Therefore, three REs mapped within the Project Area are identified as suitable for the subspecies: RE 11.3.25, 11.3.4 and 11.5.2.

A total of 1,039.4 ha of potential yellow-bellied glider (south-eastern) habitat is mapped within the Project Area comprising vegetation in remnant condition. All habitat is conservatively considered suitable for denning, foraging and dispersal purposes. The extent of yellow-bellied glider (south-eastern) habitat within the Project Area is mapped habitat is shown on Figure 18.

Where it has been assessed during the field survey, riparian vegetation on the Dawson River is associated with RE 11.3.25 and is dominated by *Eucalyptus tereticornis*, with the only other eucalypt present being *Corymbia tessellaris* which occurs sporadically on the upper banks. Elsewhere, the river and adjacent flats support RE 11.3.2 (*Eucalyptus populnea* woodland) as per the State RE mapping. These areas have been mapped as potential habitat as they form the riparian corridor and are considered more likely to comprise RE 11.3.25. Although *E. tereticornis* is a known sap tree species, *C. tessellaris* and *E. populnea* are not. As such, it is noted that mapped potential habitat may only be marginally suitable given the species requires a

level of floristic diversity that supports a year-round food supply and is unlikely to persist in forests dominated by only one or two tree species.

Petaurus australis australis is not one of the 134 threatened and priority fauna species that has modelling available in the Potential habitat models – fauna 2022 – Queensland GIS data package (DES, 2022). However, Petaurus australis unnamed subsp. has been modelled and the entire Project Area is mapped as <10% suitable, with only areas in northern Queensland mapped as potentially suitable.

#### White-throated snapping turtle

The white-throated snapping turtle (*Elseya albagula*) was not recorded during the field survey program, however targeted surveys were not completed. It has a high likelihood of occurring within the Project Area (refer to Figure 19) and is presumed present for the purposes of the assessment. The Project Area occurs primarily within the species 'may occur' distribution extent however the Dawson River occurs within the species 'likely to occur' extent. The Project Area occurs primarily within the species 'may occur' distribution extent however the Dawson River occurs within the species 'likely to occur' extent.

Three ALA records occur within the desktop search extent, including one from 2009 (OZCAM) which is located within the south-western Project Area along the Dawson River. Both of the other records identified are also associated with the Dawson River, dated 2002 and 2007.

As the Dawson River is the only perennial watercourse within the Project Area, it is the only watercourse that is considered suitable for the species. All other watercourses present within the Project Area are narrow, highly ephemeral and generally highly modified as a result of grazing and historical clearing.

A total of 523.9 ha of potential white-throated snapping turtle habitat is mapped within the Project Area comprising vegetation associated with the Dawson River. With the field data available, distinct areas of habitat utilisation by the species cannot be determined. As such, all areas are considered suitable for breeding and foraging purposes.

It is noted that two weirs occur along the Dawson River, one to the north and one to the south, which may have impounded the habitat area contained between. Although the Moura weir (completed in 1946), located to the north-east of the Project Area along the Dawson River, has a vertical-slot fishways installed, it is not clear if turtles are able or willing to use such devices to move upstream or downstream. It is unclear if the weir south of the Project Area (the Dawson River weir completed in 1930) has any fish passage devices installed.

Installation of the weirs is likely to have severely restricted turtle dispersal (i.e. created a barrier to gene flow) and isolated the population, potentially impacting its viability with less resilience to stochastic events. Although potential habitat is largely isolated and impacted by a known threatening process, it is noted that the species can be abundant in and successfully breed from impoundment areas. As such, any population present is considered viable

The Dawson River, primarily located within the western extent of the Project Area, occurs within the species 'likely to occur' extent. Suitable habitat for the species within the Project Area is limited to the Dawson River, with all other watercourses present within the Project Area narrow and highly ephemeral. Although the Moura weir (completed in 1946), located to the north-east of the Project Area along the Dawson River, has a vertical-slot fishways installed, it is not clear if turtles are able or willing to use such devices to move

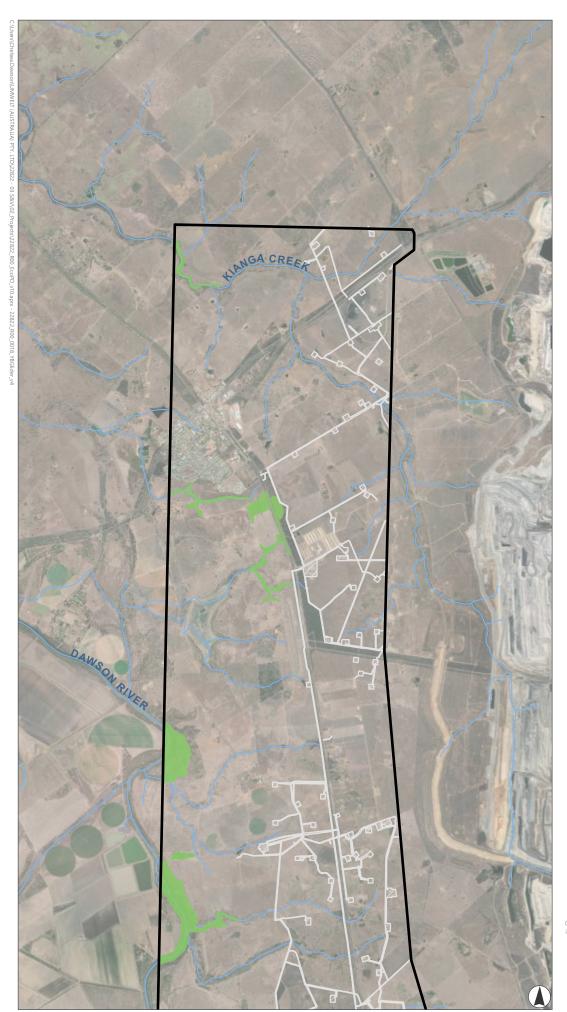
upstream or downstream. It is also noted that another weir occurs along the Dawson River south of the Project Area (the Dawson River weir completed in 1930). Since their installation, these weirs may have limited the species' ability to disperse and exchange genetic information.

The National Recovery Plan for the White-throated Snapping Turtle (Department of Agriculture, Water and the Environment, 2020) notes that habitat critical to the survival of the species is defined as:

- Parts of riverine systems with permanent water, including pools, within the species' distribution that contain shelter and refuges (e.g. bank overhangs, overhanging riparian vegetation, macrophyte beds, moderate to high densities of submerged boulders and/or log jams).
- All currently known and new aggregated nesting sites (all nesting sites should be considered to be part of an aggregation unless it can be demonstrated otherwise).

While detailed field validation has not been undertaken throughout the Dawson River to determine the presence of permanent water and shelter vegetation, it is conservatively assumed that all mapped habitat within the Project Area meets the definition for habitat critical to the survival of the species.





# **FIGURE 18A**

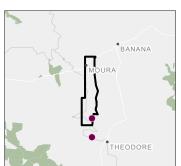
Yellow-bellied glider (south-eastern) (Petaurus australis australis) Habitat and Records

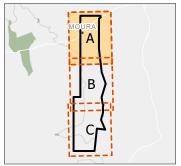
### Legend

- ALA Records of Yellow-bellied glider (south-eastern)
  - Watercourse
- Project Area
  - Existing Westside infrastructure

Yellow-bellied glider (southeastern) habitat mapping

Denning, foraging and dispersal





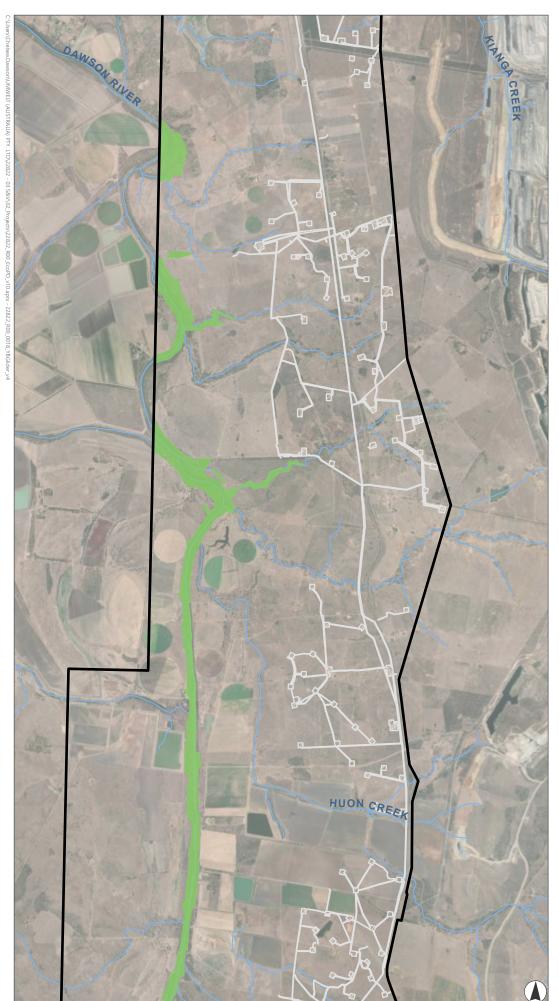


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# FIGURE 18B

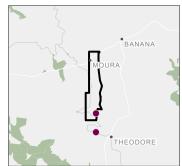
Yellow-bellied glider (south-eastern) (Petaurus australis australis) Habitat and Records

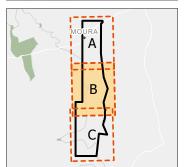
### Legend

- ALA Records of Yellow-bellied glider (south-eastern)
  - Watercourse
- Project Area
- Existing Westside infrastructure

Yellow-bellied glider (southeastern) habitat mapping

Denning, foraging and dispersal

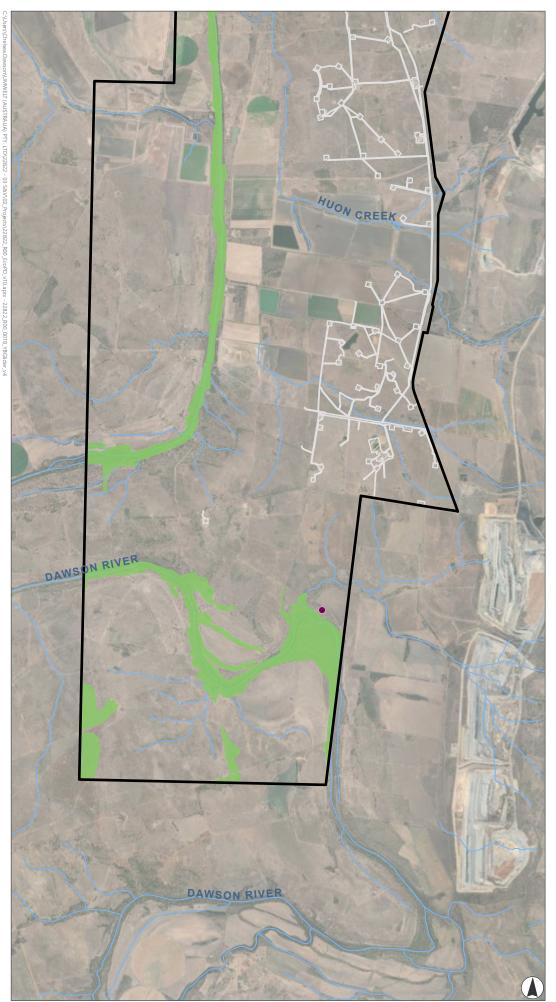






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# **FIGURE 18C**

Yellow-bellied glider (south-eastern) (Petaurus australis australis) Habitat and Records

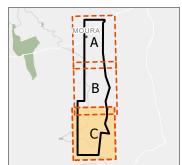
### Legend

- ALA Records of Yellow-bellied glider (south-eastern)
  - Watercourse
- Project Area
  - Existing Westside infrastructure

Yellow-bellied glider (southeastern) habitat mapping

Denning, foraging and dispersal

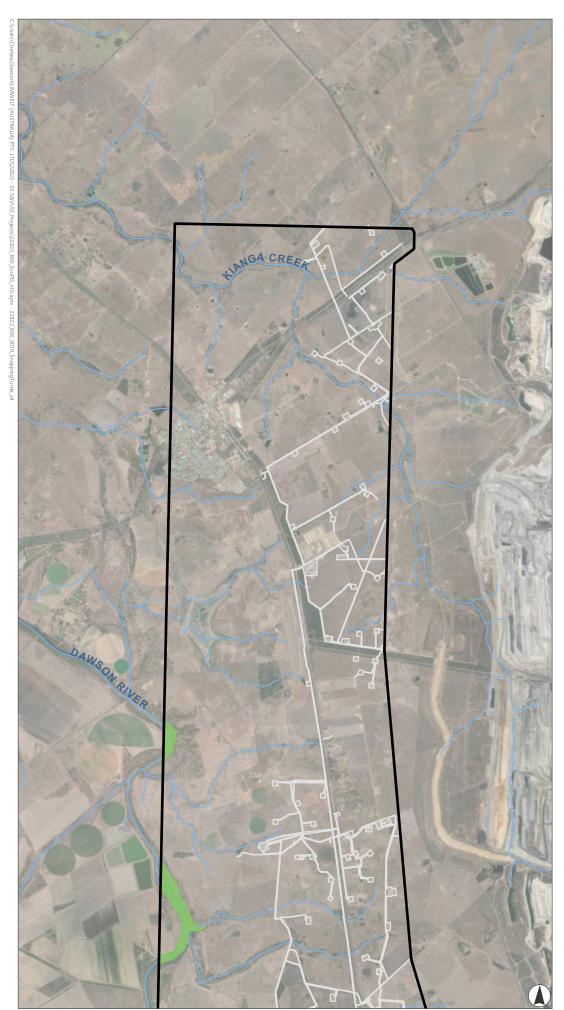






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# **FIGURE 19A**

White-throated snapping turtle (Elseya albagula) Habitat and Records

### Legend

ALA Records of White-throated Snapping Turtle

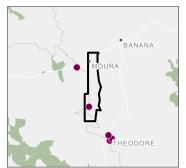
Watercourse

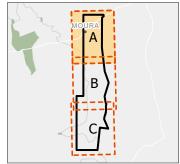
Project Area

Existing Westside infrastructure

White-throated snapping turtle Habitat

Breeding, foraging and dispersal





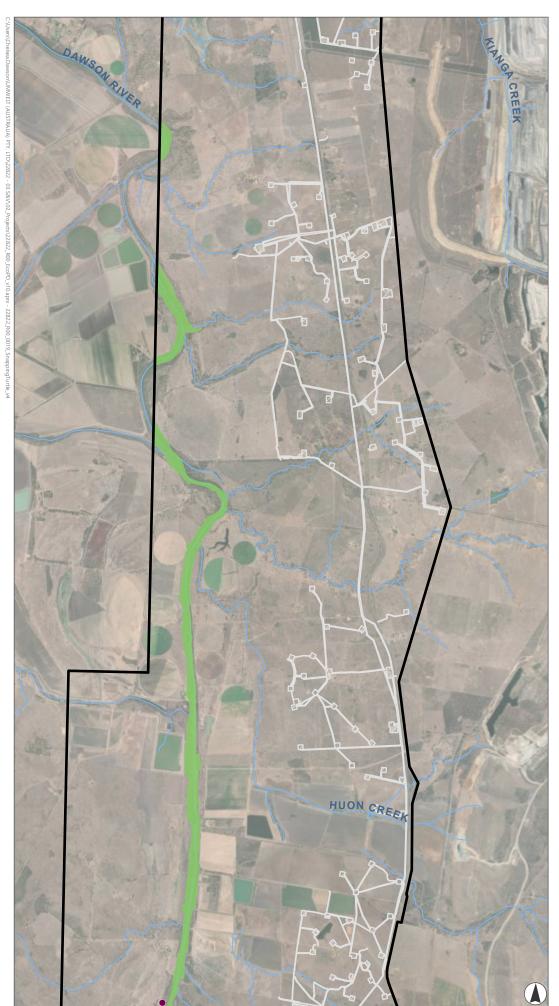


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# FIGURE 19B

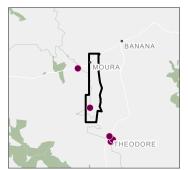
White-throated snapping turtle (Elseya albagula) Habitat and Records

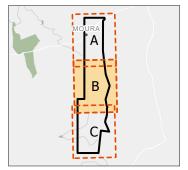
### Legend

- ALA Records of White-throated Snapping Turtle
  - Watercourse
- Project Area
  - Existing Westside infrastructure

#### White-throated snapping turtle Habitat

Breeding, foraging and dispersal

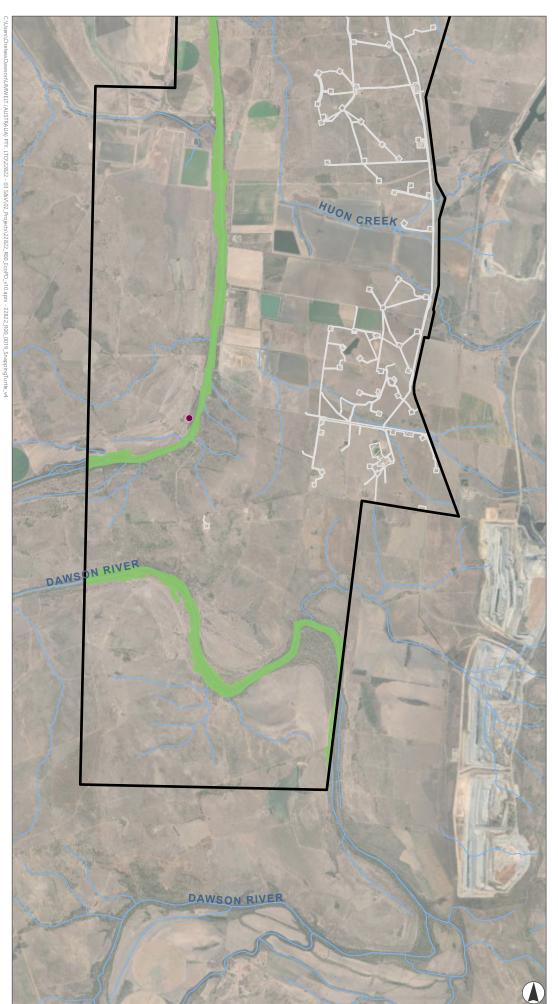






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 19C

White-throated snapping turtle (Elseya albagula) Habitat and Records

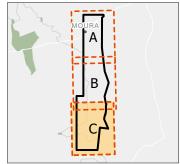
### Legend

- ALA Records of White-throated Snapping Turtle
  - Watercourse
- Project Area
  - Existing Westside infrastructure

#### White-throated snapping turtle Habitat

Breeding, foraging and dispersal







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### **Fitzroy River turtle**

The Fitzroy River turtle (*Rheodytes leukops*) was not recorded during the field survey program, however targeted surveys were not completed. It is considered to have a high likelihood of occurring within the Project Area (refer to Figure 20) and is presumed present for the purposes of the assessment. The Project Area occurs primarily within the species 'likely to occur' distribution extent. One ALA record from 2009 occurs within the desktop search extent, associated with the Dawson River. However, due to sensitivity concerns, the coordinates of this record have been generalised by 2 km by Qld DEHP. An additional record occurs approximately 25 km south-west (dates 2000 and generalised to 2 km). It should be noted that majority of species records occur north (approximately 50 km) in association with the Fitzroy River.

The Fitzroy River turtle is only found in the drainage system of the Fitzroy River, Qld. Known sites include Boolburra, Gainsford, Glenroy Crossing, Theodore, Baralaba, the Mackenzie River, the Connors River, Duaringa, Marlborough Creek, and Gogango (Department of the Environment, Water, 2008).

The Fitzroy River turtle is found in 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 Ribbonweed (*Vallisneria sp.*) beds. Common riparian vegetation associated with the Fitzroy River turtle includes blue gums (*Eucalyptus tereticornis*), river oaks (*Casuarina cunninghamiana*), weeping bottlebrushes (*Callistemon viminalis*) and paperbarks (*Melaleuca linariifolia*).

Turtles often associate with logs in deeper water and may sit on the downstream side or under rocks in fast flowing riffles. To be able to breathe in these fast-flowing habitats, the Fitzroy River turtle has adapted to be able to breathe bimodally, using either its lungs or its cloaca.

Suitable habitat for the species within the Project Area is limited to the Dawson River where deep permanent pools occur, with all other watercourses very narrow and ephemeral in nature (unlikely to be suitable). All other watercourses within the Project Area are unsuitable due to their narrow and highly ephemeral nature. Although the Moura weir (completed in 1946), located to the north-east of the Project Area along the Dawson River, has a vertical-slot fishways installed, it is not clear if turtles are able or willing to use such devices to move upstream or downstream. It is also noted that another weir occurs along the Dawson River south of the Project Area (the Dawson River weir completed in 1930). Since their installation, these weirs may have limited the species' ability to disperse and exchange genetic information. It is assumed that like the white-throated snapping turtle, any population present is considered viable despite potential habitat being impounded and functionally isolated.

A total of 523.9 ha of potential Fitzroy River turtle habitat is mapped within the Project Area comprising vegetation associated with the Dawson River. With the field data available, distinct areas of habitat utilisation by the species cannot be determined. As such, all areas are considered suitable for breeding and foraging purposes.

#### **Boggomoss snail**

The Boggomoss snail (*Adclarkia dawsonensis*) was not recorded during the field survey program, however targeted surveys were not completed. It has been conservatively considered to have a moderate likelihood of occurring within the Project Area (refer to Figure 21). The species is known from only six discreet locations between Taroom and Theodore, connected by the Dawson River. This species was not recorded in the Project area during the field surveys. For the purposes of this assessment the species is presumed present.

Only a portion of the far southern extent of the Project Area occurs within the species mapped 'may occur' distribution extent, which is north of the known population at the Isla-Delusion crossing. However, the Dawson River continues north and traverses the length of the western Project Area. The species is known to be highly sensitive to impacts that may result in altered hydrology. The Project Area has been subject to extensive land use change and broadscale clearing as evident on historical aerial imagery. Furthermore, two weirs occur along the Dawson River immediately north-west of the Project Area (the Moura weir, completed in 1946) and immediately south of the Project Area (the Dawson River Weir, completed in 1930). These factors are likely to have resulted in reduced or altered surface water regimes in many places, potentially rendering habitat unsuitable or marginal in places that would have otherwise been suitable. Altered surface water flows, especially along the Dawson River, are also likely to have reduced the chances of flood events and recolonisation. Other threats such as grazing and weeds are also common across the Project Area. Potential habitat for the species within the Project Area is therefore confined to areas that align with the predicted distribution of the species.

Four ALA records occur at four locations to the southeast of the Project Area near Theodore, ranging between 9-12 km away. Of these four records, the most recent and closest to the Project Area is dated 2009 and has a 500 m spatial uncertainty. As no survey effort specific to the species has occurred in Project Area, the precautionary principle has been applied, and the species has been presumed present in association with the Dawson River and floodplains containing woody vegetation.

A total of 159.0 ha of potential Boggomoss snail habitat is mapped within the Project Area comprising woodlands on alluvial in remnant and regrowth condition analogous to REs 11.3.2, 11.3.3, 11.3.4 and 11.3.25. All habitat is conservatively considered suitable for breeding and foraging purposes.





# **FIGURE 20A**

# Fitzroy River turtle (Rheodytes leukops) Habitat and Records

### Legend

ALA Records of Fitzroy River Turtle

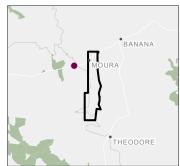
Watercourse

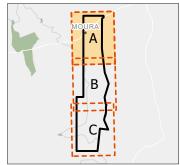
Project Area

Existing Westside infrastructure

Fitzroy River Turtle habitat

Breeding, foraging and dispersal





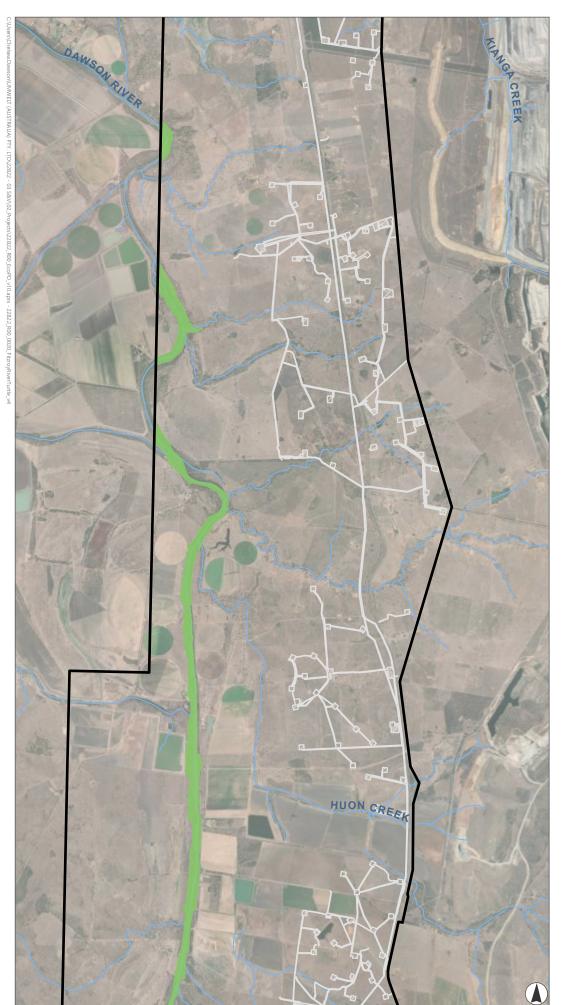


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# FIGURE 20B

# Fitzroy River turtle (Rheodytes leukops) Habitat and Records

### Legend

ALA Records of Fitzroy River Turtle

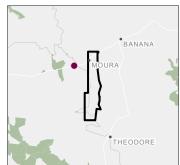
Watercourse

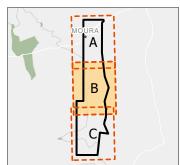
Project Area

Existing Westside infrastructure

Fitzroy River Turtle habitat

Breeding, foraging and dispersal

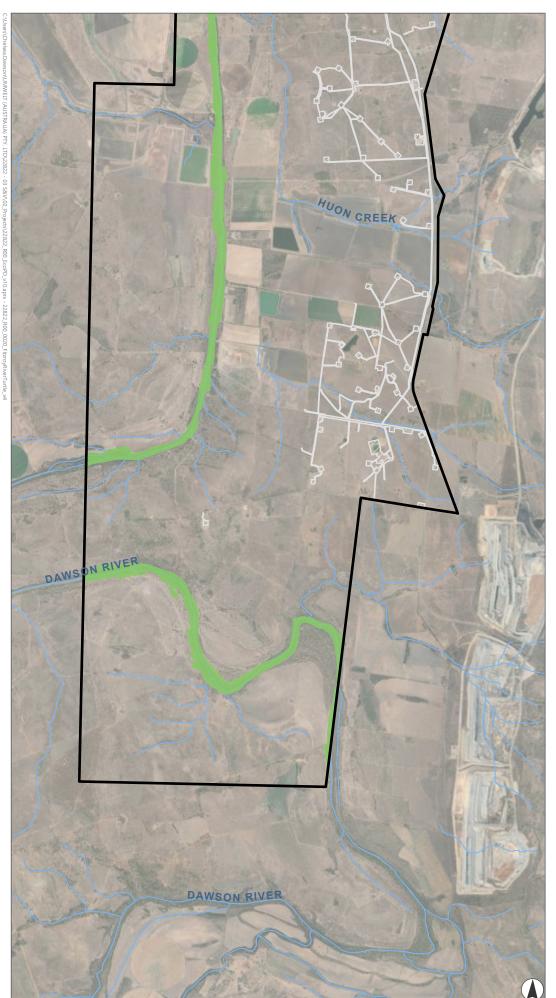






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# **FIGURE 20C**

# Fitzroy River turtle (Rheodytes leukops) Habitat and Records

### Legend

ALA Records of Fitzroy River Turtle

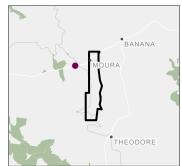
Watercourse

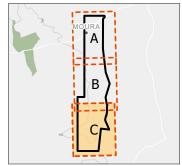
Project Area

Existing Westside infrastructure

Fitzroy River Turtle habitat

Breeding, foraging and dispersal

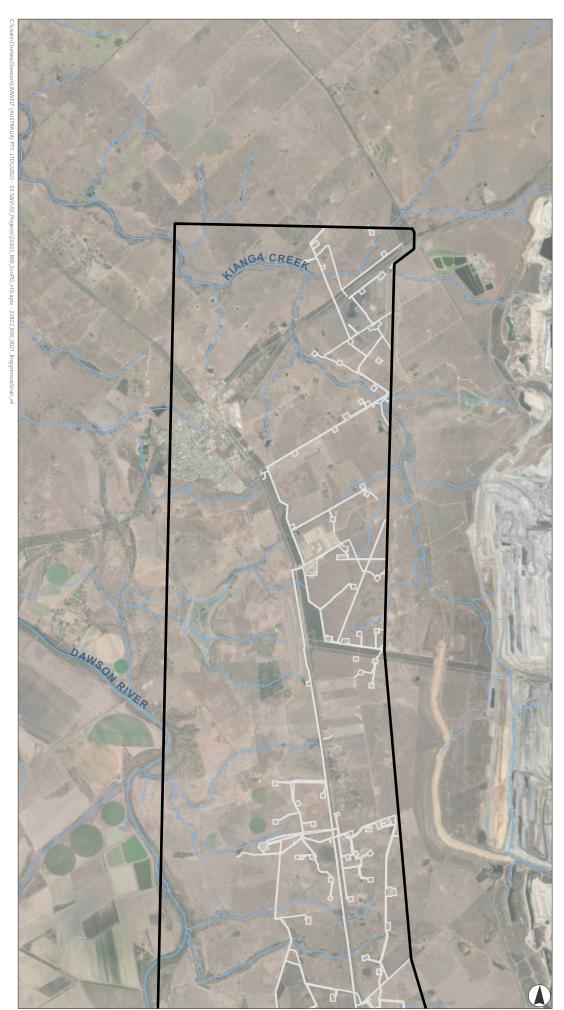






Scale 1:80,000 at A4 GDA2020 MGA Zone 55





# FIGURE 21A

# Boggomoss snail (Adclarkia dawsonensis) Habitat and Records

#### Legend

ALA Records of Boggomoss Snail

Weir

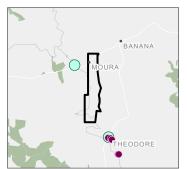
Watercourse

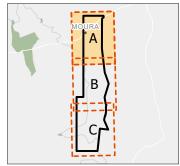
Project Area

Existing Westside infrastructure

## **Boggomoss Snail Habitat**

Breeding and foraging







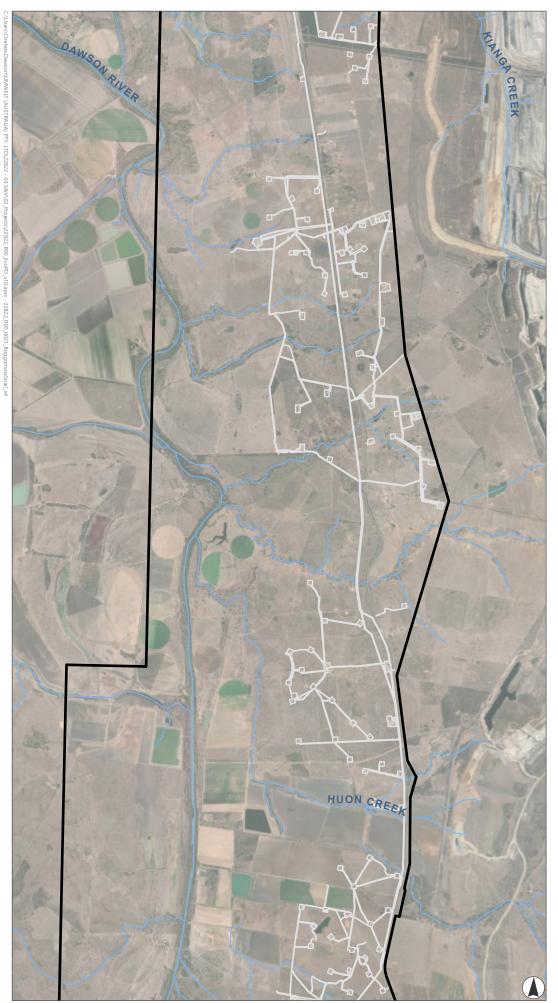
Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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# FIGURE 21B

# Boggomoss snail (Adclarkia dawsonensis) Habitat and Records

#### Legend

ALA Records of Boggomoss Snail

Weir

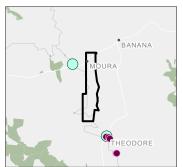
Watercourse

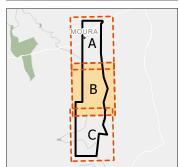
Project Area

Existing Westside infrastructure

## **Boggomoss Snail Habitat**

Breeding and foraging





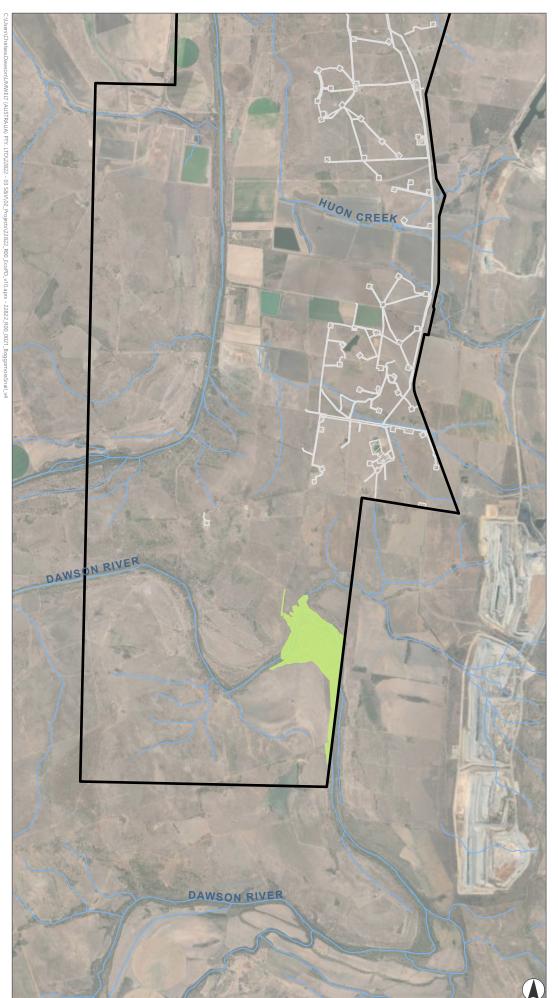


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# FIGURE 21C

# Boggomoss snail (Adclarkia dawsonensis) Habitat and Records

#### Legend

ALA Records of Boggomoss Snail

Weir

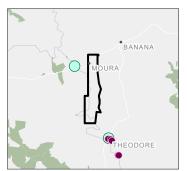
Watercourse

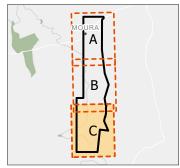
Project Area

Existing Westside infrastructure

## **Boggomoss Snail Habitat**

Breeding and foraging







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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)

# 4.3.2. Habitat Mapping & Records

2.1.2	Provide detailed mapping of suitable habitat (within, adjacent to and, where
	relevant, downstream of the project) for all listed threatened species and
	communities.

Detailed habitat mapping has been developed for each of the 18 MNES relevant to the Project Area. Habitat mapping has been informed by the outcome of the habitat assessments undertaken as per RFI item 2.1.1. Habitat mapping considers both vegetation community classification as well as availability of required microhabitat features. For MNES with patch size (i.e. TECs) or connectivity requirements, a review of aerial imagery and State mapping in areas immediately adjacent to the Project Area was also completed to ensure areas of potential MNES were not discounted erroneously. Each habitat map displays potential habitat within the Project Area (including habitat utilisation categories), and any known species records identified during field surveys or available via public databases (i.e. Atlas of Living Australia) or published literature.

The full suite of habitat mapping for all relevant MNES is provided in Section 4.3.1 and Section 9.0 of the MNES Assessment Report (Attachment A). This includes habitat mapping for the following species which are known or potentially occurring (moderate and high likelihood of occurrence):

- Brigalow (Acacia harpophylla dominant and co-dominant) threatened ecological community;
- Coolibah Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions threatened ecological community;
- Poplar Box Grassy Woodland on Alluvial Plains threatened ecological community;
- Solanum johnsonianum;
- Solanum dissectum;
- Xerothamnella herbacea;
- Australian painted snipe (Rostratula australis);
- Painted honeyeater (Grantiella picta);
- Squatter pigeon (southern) (Geophaps scripta scripta);
- White-throated needletail (Hirundapus caudacutus);
- Ornamental snake (Denisonia maculata);
- Yakka skink (Egernia rugosa);
- Koala (Phascolarctos cinereus);
- Greater glider (southern and central) (Petauroides volans);
- Yellow-bellied glider (south-eastern) (Petaurus australis australis);

- White-throated snapping turtle (Elseya albagula);
- Fitzroy River turtle (Rheodytes leukops); and
- Boggomoss snail (Adclarkia dawsonensis).

This mapping also includes relevant species records within or near the Project Area. The closest record of each species to the Project Area has been summarised below in Table 11.

Table 11: Closest Species Record to the Project Area

Species	Location	Distance to the Project Area	Date Recorded	Habitat Description
Solanum dissectum	Recorded at one location within the Project Area	NA	Umwelt 2019	Remnant woodland of <i>Acacia</i> harpophylla and <i>Eucalyptus thozetiana</i> characterised as RE 11.4.9.
Solanum johnsonianum	Recorded within the Project Area in several locations	NA	Umwelt 2019, 2023 and 2024	Brigalow (Acacia harpophylla) woodlands in remnant condition analogous to REs 11.4.8 and 11.4.9 and in regrowth vegetation analogous to RE 11.3.1.
Xerothamnella herbacea	Recorded in two locations within the Project Area	NA	Umwelt 2019	Acacia harpophylla woodlands in remnant and regrowth condition analogous to RE 11.3.1.
Squatter pigeon (southern) (Geophaps scripta scripta)	Cluster of records around -24.954, 149.5996 150 m spatial uncertainty	~38 km southwest from the bottom of the Project Area	2001-2014	Within the Theodore State Forest. Eucalyptus open forest.
Australian painted snipe (Rostratula australis)	-25.1447, 150.172 999 m spatial uncertainty	~35 km south- east from the bottom of the Project Area	2000	Inland aquatic - freshwater, salt lakes, lagoons.
Painted honeyeater (Grantiella picta)	-25.1197, 150.0656  Unknown coordinate precision	~28 km south	2017	Cleared, non-native vegetation, buildings.
Ornamental snake (Denisonia maculata)	Recorded within the Project Area in several locations	NA	Umwelt 2020	Non-remnant gilgai habitat.
Koala (Phascolarctos cinereus)	-24.5734, 149.9719 1,800 m spatial uncertainty	Within the Project Area in the township of Moura	Undated	Regrowth, modified native vegetation.

Species	Location	Distance to the Project Area	Date Recorded	Habitat Description
White-throated needletail	-24.8222, 149.9106	~5 km west of the Project Area	2014	Cleared, non-native vegetation, buildings.
(Hirundapus caudacutus)	300 m spatial uncertainty			
Yakka skink (Egernia rugosa)	-24.5, 150.1	~10 km east from the top of the	1975	Cleared, non-native vegetation, buildings.
	2,000 m spatial uncertainty	Project Area		
Greater glider (central and	-24.716, 149.966	<1 km from the western boundary	Undated	Cleared, non-native vegetation, buildings.
southern) (Petauroides volans)	Unknown coordinate precision	of the Project Area		
Yellow-bellied glider (south- eastern)	-24.8317, 150.0011	Within the Project Area along the	1929	Regrowth, modified native vegetation.
(Petaurus australis australis)	54 km spatial uncertainty	Dawson River		
White-throated snapping turtle	-24.7947, 149.9722	Within the Project Area within the	2009	Eucalyptus woodlands.
(Elseya albagula)	500 m spatial uncertainty	Dawson River		
Fitzroy River turtle	-24.6, 149.9	~7 km west of the	2009	Cleared, non-native vegetation,
(Rheodytes leukops)	Coordinates have been generalised to 2 km by Qld DEHP	Project Area		buildings.
Boggomoss snail	-24.9411, 150.0654	~10 km south-	2009	Regrowth, modified native vegetation.
(Adclarkia dawsonensis)	500 m spatial uncertainty	east from the bottom of the Project Area		

<sup>&</sup>lt;sup>1</sup>Other than Umwelt records, habitat description is taken from 'vegetation types – present' on ALA.

Additional information on habitat definitions and habitat mapping rules is provided below in response to RFI 2.1.3.

2.1.3	Provide the habitat definitions and habitat mapping rules used for generating
	the potential habitat maps for relevant listed threatened species and
	communities.

The methodology undertaken to map habitat for each of the relevant Project Area MNES is described in Section 4.4.2 of the MNES Assessment Report (Attachment A). Habitat mapping rules used are outlined in Table 12 below. The habitat definitions provided reflect the latest species-specific literature and governmental guidance documents including but not limited to:

- Project RFI dated 5 August 2022 (RFI 2.2.3 which includes a definition for ornamental snake (Denisonia maculata) habitat)
- Assessment of Seasonal Habitat Characteristics as Predictors of Habitat Suitability for the Threatened Ornamental Snake (Veary 2011)
- A Review of Koala Habitat Assessment Criteria and Methods (Youngentob, Marsh & Skewes 2021)
- Guide to greater glider habitat in Queensland (Eyre, Smith, et al., 2022)
- Approved Conservation Advice for Egernia rugosa (Yakka Skink) (Department of the Environment, 2014)
- Approved Conservation Advice for Rostratula australis (Australian painted snipe) (Department of Sustainability Environment Water Population and Communities, 2013)
- Approved Conservation Advice for Xerothamnella herbacea (Department of the Environment Water Heritage and the Arts, 2008b)
- Conservation Advice Elseya albagula White-throated snapping turtle (Threatened Species Scientific Committee, 2014b)
- Conservation Advice *Grantiella picta* painted honeyeater (Threatened Species Scientific Committee, 2015b)
- Conservation Advice for *Phascolarctos cinereus* (Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory (Department of Agriculture Water and the Environment, 2022c)
- Conservation Advice for *Petaurus australis australis* (yellow-bellied glider (south-eastern))
   (Department of Agriculture Water and the Environment, 2022a)
- Conservation Advice for *Petauroides volans* (greater glider (southern and central)) (DAWE, 2022b)
- Conservation Advice Geophaps scripta scripta squatter pigeon (southern) (Threatened Species Scientific Committee, 2015a)
- Conservation Advice Hirundapus caudacutus White-throated Needletail (Threatened Species Scientific Committee, 2019a)

- Conservation Advice for *Rheodytes leukops* (Fitzroy River turtle) (Department of Climate Change Energy the Environment and Water, 2024a)
- Conservation Advice Solanum dissectum (Threatened Species Scientific Committee, 2016a)
- Conservation Advice Solanum johnsonianum (Threatened Species Scientific Committee, 2016b)
- National Recovery Plan for the Painted Honeyeater (Grantiella picta) (DAWE, 2021)
- National Recovery Plan for the White-throated Snapping Turtle (Elseya albagula) (DAWE, 2020)
- Recovery plan for the Boggomoss snail *Adclarkia dawsonensis* (Department of Environment and Heritage Protection, 2017)
- Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (Department of Climate Change, Energy, the Environment and Water, 2023a)
- Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment, 2015).

Table 12: MNES habitat mapping rules (known and potentially occurring)

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
Brigalow (Acacia harpophylla dominant and co-	dominant) ec	ological community (Briga	low TEC)	
The Brigalow ecological community is characterised by the presence of Brigalow (Acacia harpophylla) as one of the three most abundant tree species. Brigalow is usually either dominant in the tree layer or codominant with other species such as Casuarina cristata (Belah), other species of Acacia, or species of Eucalyptus. The ecological community has a considerable range of vegetation structure and composition united by a suite of species that tend to occur on acidic and salty clay soils.	-	Approved Conservation Advice for the Brigalow (Acacia harpophylla dominant and co- dominant) ecological community (Department of the Environment, 2013a).	The listed ecological community is limited to patches that meet the key diagnostic characteristics and condition thresholds outlined in the Conservation Advice (Department of the Environment, 2013a).	As described in the communities Approved Conservation Advice (Department of the Environment, 2013a), there are several additional considerations (Section 1.7.5, pg 7) that should be taken into account when applying the key diagnostic characteristics and condition thresholds. Judgement of whether an EPBC-protected ecological community is present at a particular site should focus on how an area meets the description, particularly the key diagnostic characteristics for the national ecological community. Areas that contain existing infrastructure are not part of the listed ecological community.
Coolibah – Black Box Woodlands of the Darling I	Riverine Plain	s and the Brigalow Belt So	uth Bioregions (Coolibah TE	EC)
The Coolibah ecological community represents occurrences of one type of semi-arid to humid subtropical woodland where <i>Eucalyptus coolabah</i> subsp. <i>coolabah</i> (Coolibah) and/or <i>Eucalyptus largiflorens</i> (Black Box) are the dominant canopy species and where the understorey tends to be grassy.	-	Commonwealth Listing Advice on Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions (Threatened Species Scientific Committee, 2011).	The listed ecological community is limited to patches that meet the description, key diagnostic characteristics and the condition thresholds outlined in the Commonwealth Listing Advice (Threatened Species Scientific Committee, 2011).	As described in the communities Listing Advice (Threatened Species Scientific Committee, 2011), there are several additional considerations (pg 9) that should be taken into account when applying the condition thresholds.
Poplar Box Grassy Woodland on Alluvial Plains (	Poplar Box TI	EC)		
The Poplar Box ecological community is typically a grassy woodland with a canopy dominated by <i>Eucalyptus populnea</i> and understorey mostly of grasses and other herbs.	-	Conservation Advice (including listing advice) for the Poplar Box Grassy Woodland	The listed ecological community is limited to patches that meet the key diagnostic	As described in the communities Conservation Advice (Threatened Species Scientific Committee, 2011), the additional factors noted in Section 3.2.3

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
The ecological community mostly occurs in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin.		on Alluvial Plains (Department of the Environment and Energy, 2019).	characteristics and condition thresholds outlined in the Conservation Advice (Department of the Environment and Energy, 2019).	(pg 19) and critical areas noted in Section 3.3 (pg 16) also should be taken into consideration.
Xerothamnella herbacea				
Open forests and woodland habitats where brigalow ( <i>Acacia harpophylla</i> ) dominates or codominates on heavy soils. Often in leaf litter and is associated with gilgais.	Suitable habitat	Approved Conservation Advice for Xerothamnella herbacea (Department	-	Habitat requirements are supported by known records of the species across its distribution.
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat	of the Environment Water Heritage and the Arts, 2008b).		
Solanum dissectum				
Open forests and woodland habitat where brigalow ( <i>Acacia harpophylla</i> ) and/ or lapunyah ( <i>Eucalyptus thozetiana</i> ) characterise the dominant vegetation types on solodic clay soils.	Suitable habitat	Conservation Advice Solanum dissectum (Threatened Species Scientific Committee,	-	Habitat requirements are supported by known records of the species across its distribution.
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat	2016b).		
Solanum johnsonianum				
Open forest and woodland habitats where brigalow (Acacia harpophylla) dominates or codominates on heavy cracking clay soils. Other associated species include lapunyah (Eucalyptus thozetiana) with and understory of wilga (Geijera parviflora).	Suitable habitat	Conservation Advice Solanum johnsonianum (Threatened Species Scientific Committee, 2016d).	-	Habitat requirements are supported by known records of the species across its distribution.
Any patch of vegetation confirmed via field survey to contain the species.	Known habitat			
Ornamental snake (Denisonia maculata)				

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
Vegetation, generally comprising woodlands and open forests but also non-remnant areas associated with 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains) that support key refuge microhabitat (i.e. network of soil cracks including deep cracks). Also includes fringing riparian vegetation along watercourses where substitute refuge microhabitat is supported (ground timber and exposed roots). Vegetation functionally connected to moist areas or watercourses that have low-levels, absent or 'impacted' refuge microhabitat may also be suitable if the areas provide temporary foraging opportunities (i.e. support frog habitat) and/or facilitate movement to other areas of suitable habitat.  Vegetation that is not associated with or connected to 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains). Frog habitat is not supported, and area does not facilitate movement to other areas of suitable habitat.  This includes vegetation that has been subject to recent land use change or earthworks (i.e. cropping, tilling or ploughing).	Not habitat	Approved Conservation Advice for Denisonia maculata (Ornamental Snake) (Threatened Species Scientific Committee, 2014a) and Denisonia maculata in Species Profile and Threats Database (SPRAT) (Department of the Environment, 2025).	Moist areas are defined as environments that generally support ponds of surface water for extended periods. During the dry season, the presence of wetland indicator species may be used to make this assessment. Impacted microhabitat includes soil cracks that are compromised by high levels of exotic vegetation incursion (i.e. high biomass grass incursion or weed species) or cattle grazing activities (which would compact soil cracks and breakdown timber). Movement of individuals is not facilitated if vegetation contains hard barriers in the ground layer that are not easily navigated, or is associated with watercourses/drainage lines with very steep banks including severely eroded or undercut.	The ornamental snake can be found on floodplains, undulating clay pans and along the margins of swamps, lakes and watercourses. It also occurs on adjoining areas of elevated ground and has been recorded in woodlands and open woodlands of coolabah, poplar box, and brigalow, and in fringing vegetation along watercourses (WWF-Australia/QMDC, 2008 in Threatened Species Scientific Committee, 2014a). They feed almost exclusively on frogs (Threatened Species Scientific Committee, 2014a) and therefore only persist in areas that support habitat for frogs too. As described on the species SPRAT profile (2025), ornamental snakes are nocturnally active, sheltering during the day under fallen timber, rocks, bark and in deep soil cracks. The species is probably active year round with the exception of the cooler months, with peak activity likely to be early summer through to the wet season. During dry times, the snake can remain inactive in suitable shelter sites for months (Agnew 2010 pers. comm.; DSEWPaC 2011m; Shine 1983). The species is ground-dwelling and not known to utilise trees at any time.
Koala (Phascolarctos cinereus)				
Eucalypt forests or woodlands on alluvial associated with permanent water features	Climate refugia	Conservation Advice for Phascolarctos cinereus	Brigalow Belt Locally important koala tree	Koalas may survive in refuge areas where microclimates such as deep gullies, caves, cliffs or

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
(dams, wetlands and/or watercourses) that are resilient to drying conditions, likely to provide a cooler refuge during periods of bushfire and heatwaves.		(Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory (Department of Agriculture Water and the Environment, 2022c) and A review of koala habitat assessment criteria and methods (Youngentob, Marsh and Skewes, 2021).	3, pg 42, of Youngentob, Marsh and Skewes (2021).  Brigalow Belt Ancillary habitat tree species as listed in Table 4, pg 43, of Youngentob, Marsh and Skewes (2021).  Ko die of An Wi bri wh wa the do tree de	dense vegetation provide refuge from heat, and perennial water results in leaf-water content remaining high (Runge et al. 2021a in Department of Agriculture Water and the Environment, 2022b). Surface water availability may be an important ancillary habitat element of refugia (Youngentob, Marsh and Skewes, 2021).
Any forest or woodland that contains Brigalow Belt 'locally important koala trees' (LIKTs, as described by Youngentob, Marsh and Skewes, (2021)) that is not climate refugia.	Breeding and foraging			Koalas are tree-dwelling, obligate folivores (leaf eaters) with a highly specialised diet. The koala's diet is defined by the availability and palatability of a limited variety of <i>Eucalyptus</i> , <i>Corymbia</i> and <i>Angophora</i> species (Department of Agriculture Water and the Environment, 2022c). Koala browsing preferences show regional differences which are influenced by the chemical profiles and water content of different target food leaves. In the Youngentob, Marsh and Skewes (2021) document, region-specific, locally important koala tree species that can be used as a starting point to determine whether an area could be habitat for the EPBC Act-listed koala, are identified.
Any forest or woodland community which does not contain LIKTs and may or may not contain Brigalow Belt 'ancillary habitat trees' (as described by Youngentob, Marsh and Skewes, (2021)).	Shelter			Research suggests that koalas may seek out certain trees, including non-eucalypts, for specific thermal properties that provide shade or offer cooler or warmer surface temperatures to help the koala thermoregulate (Ellis et al. 2010 and Briscoe et al. 2014 in Youngentob, Marsh and Skewes, 2021). Patches of native forest or woodland can act as stepping stones and provide a corridor of connectivity between larger habitat patches (Youngentob, Marsh and Skewes, 2021). In describing ancillary habitat trees, Youngentob, Marsh and Skewes (2021) state "[a]lthough, these species do not constitute habitat in the absence of LIKT, they are thought to make an important and potentially necessary contribution to koala habitat

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
				in many regions. For this reason, we have also included a separate table for each KMB (region) that includes ancillary habitat trees that are unlikely to be preferred browse trees, but are likely to make important contributions to koala habitat based on documented koala use in peerreviewed literature, SEPP (SEPP 2021), and/or direct feedback (Appendix A)".
Vegetation that provides a safe intervening ground for the species to move across the landscape (i.e. free from impediments), particularly to and from areas of potential breeding and foraging habitat. This includes non-remnant shrublands and grasslands, which generally support sporadic small stands of trees and/or individual paddock trees. Excludes areas containing infrastructure, active mining areas, cropping, farm dams and other water bodies as well as areas that are physically inaccessible (e.g. exclusion fencing is present).	Dispersal		Impediment is defined as a natural or artificial landscape feature that interferes with the safe movement of koalas across a landscape, such as roadways (Youngentob, Marsh and Skewes, 2021).  When defining a patch of dispersal habitat, the immediate area/s comprising the impediment should be excluded.	Scattered trees can provide essential shelter and food to help koalas move more safely for longer distances across the landscape during dispersal. Walking on the ground is how koalas typically travel between trees, so the ground itself forms an essential component of koala habitat, without which movement between trees would be hindered or impossible (Youngentob, Marsh and Skewes, 2021). The safety or hostility of this matrix also contributes to the overall quality of habitat (Department of Agriculture Water and the Environment, 2022d).
Painted honeyeater (Grantiella picta)	l			
Woodlands, forests and riparian woodlands dominated by species from the genera Eucalyptus, Acacia, Melaleuca, Casuarina and/or Callitris, that support mistletoe.	Foraging and dispersal	Conservation Advice Grantiella picta painted honeyeater (Threatened Species Scientific Committee, 2015b) and National Recovery Plan for the Painted Honeyeater (Grantiella picta) (Department of Agriculture, Water and	-	The greatest concentrations and almost all records of painted honeyeater breeding come from south of 26°S, on inland slopes of the Great Dividing Range between the Grampians, Victoria and Roma, Queensland (Higgins et al. 2001 in Department of Agriculture, Water and the Environment, 2021). The Project Area occurs between 24°30′ degrees and 24°40′ degrees. As such, all areas of potential habitat that are subsequently confirmed to contain mistletoe are

abitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
		the Environment, 2021).		considered suitable for foraging and dispersal purposes only.
quatter pigeon (southern) ( <i>Geophaps scripta</i>	scripta)			
ny remnant or regrowth open-forest to parse, open-woodland or scrub dominated by ucalyptus, Corymbia, Acacia or Callitris pecies, on sandy, gravelly or loamy soils with atchy perennial tussock grasses or a mix of erennial tussock grasses and low shrubs and orbs (including but not limited to areas napped as Queensland land zones 3, 5 or 7) and within 1 km of a permanent or seasonal vater source with gently sloping banks.  In yremnant or regrowth open-forest to parse, open-woodland or scrub dominated by ucalyptus, Corymbia, Acacia or Callitris pecies, on sandy, gravelly or loamy soils with atchy perennial tussock grasses or a mix of erennial tussock grasses and low shrubs and orbs (including but not limited to areas napped as Queensland land zones 3, 5 or 7) and within 3 km of a permanent or seasonal vater source with gently sloping banks.  In y forest or woodland occurring between atches of breeding or foraging habitat that accilitates movement between patches of reeding habitat, foraging habitat and/or wate ources, and areas of cleared land with cattered trees less than 100 m wide linking reas of suitable breeding and/or foraging abitat.	Foraging  Dispersal	Conservation Advice Geophaps scripta scripta squatter pigeon (southern) (Threatened Species Scientific Committee, 2015a) and Geophaps scripta scripta in Species Profile and Threats Database (SPRAT) (Department of the Environment, 2025).	Water sources include farm dams, lacustrine wetlands and watercourses with a stream order of 2 or higher.	The subspecies' SPRAT (2025) profile states:  Soil landscapes are good indicators of where natural, foraging and breeding habitats for the subspecies occur (Squatter Pigeon Workshop 2011). Well-draining, gravelly, sandy or loamy soils support the open-forest to woodland communities with patchy, tussock-grassy understories that support the subspecies' foraging and breeding requirements.  Breeding habitat and foraging habitat occurs within 1 km and 3 km of a suitable waterbody respectively (Squatter Pigeon Workshop 2011).  The Squatter Pigeon (southern) is known to access suitable waterbodies to drink on a daily basis. The subspecies prefers to drink where there is gently sloping, bare ground on which to approach and stand at the water's edge.  Where scattered trees still occur, and the distance of cleared land between remnant trees or patches of habitat does not exceed 100 m, individuals may be found foraging in, or moving across modified or degraded environments (Squatter Pigeon Workshop 2011).

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
Eucalypt forests and woodlands (patches or corridors ≥3 ha) that support potential hollowbearing trees, comprising habitat or potential habitat regional ecosystems (REs), OR REs dominated or co-dominated by the primary associated canopy species (listed below) as per Eyre, Smith, et al. (2022). Eucalypt forests and woodlands that support potential hollow bearing trees but do not align with an RE (i.e. non-remnant communities) may also comprise habitat where dominated by <i>Corymbia intermedia</i> , <i>Corymbia citriodora</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus portuensis</i> , <i>Eucalyptus moluccana</i> and/or <i>Eucalyptus crebra</i> .  Eucalypt forests and woodlands (patches or corridors ≥3 ha) with a canopy height >10 m that do not support potential hollow-bearing trees, comprising habitat or potential habitat regional ecosystems (REs), OR REs dominated or co-dominated by the primary associated canopy species (listed below) as per Eyre,	Denning  Foraging and dispersal	Primary Reference/s  Conservation Advice for Petauroides volans (greater glider (southern and central)) (Department of Climate Change, Energy, the Environment and Water, 2022a) and the Guide to greater glider habitat in Queensland (Eyre, Smith, et al., 2022).	Potential hollow-bearing trees refers to both live and dead trees of any genera that are ≥30 cm DBH (Department of Climate Change, Energy, the Environment and Water, 2022a).  Habitat and potential habitat REs are those determined by (Eyre, Smith, et al., 2022).  A corridor refers to a series of habitat patches (any combination of 'denning' and 'foraging and dispersal' patches) that are separated by distances the species is capable of gliding across, based on its glide angle	The greater glider (southern and central) is largely restricted to eucalypt forests and woodlands of eastern Australia (Department of Climate Change, Energy, the Environment and Water, 2022a). The Guide to greater glider habitat in Queensland (Eyre, Smith, et al., 2022) provides a detailed assessment of the species' habitat requirements in Qld specifically, based on quantitative and qualitative data including expert opinion. As detailed in the guide, habitat and potential habitat was categorised using the Qld RE framework. From this, six tree species were identified as dominant or co-dominant species to the majority of greater glider habitat.  They use gliding locomotion to move between trees and are dependent on tree cover for movement through their home ranges. Wakefield (1970) states that the glide angle for this species is approximately 40° based on extensive field observations. The species is known to be very clumsy when moving along the ground and highly
Smith, et al. (2022). Eucalypt forests and woodlands that do not align with an RE (i.e. non-remnant communities) may also comprise habitat where dominated by <i>Corymbia intermedia</i> , <i>Corymbia citriodora</i> , <i>Eucalyptus tereticornis</i> , <i>Eucalyptus portuensis</i> , <i>Eucalyptus moluccana</i> and/or <i>Eucalyptus crebra</i> .  Foraging and dispersal habitat (individual patch or corridor) must occur within gliding distance (calculated based on known glide angle and tree height, or 100 m if not able to calculate accurately) of denning habitat, given the species' reliance on hollow-bearing trees to shelter during the day.			the vegetation. In determining if a corridor is present, potential habitat outside of the Project Area must be considered. Where these areas cannot be field validated, the precautionary principle should apply.  sugge a tree factor unlike wood facilit Durin hollov sirve breas	vulnerable to terrestrial predators (Fleay 1947), suggesting there is a strong preference to land on a tree trunk. Noting this, the glide angle and other factors (such as the fact that launch points are unlikely to be the very top of the tree), low woodlands (i.e. canopy 10 m or less) do not facilitate movement.  During the day, the species shelters in tree hollows, with a particular preference for large hollows (diameter >10 cm) in large, old trees.  Multiple dens are used by an individual. Tree hollows can be difficult to detect in ground-based surveys. The presence of trees with diameter at breast height >30 cm can be used as a proxy measure for tree hollows used by greater gliders

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
				in Queensland (Eyre et al. 2021 in Department of Climate Change, Energy, the Environment and Water, 2022a).  Patch size is likely to influence greater glider occupancy of habitat. Simulations suggest that habitat patches as small as 3 ha can contribute to the persistence of greater gliders, depending on the characteristics of landscape context (McCarthy and Lindenmayer 1999 in Eyre et al., 2022). Individual home ranges are typically relatively small (1–4 ha) but may reach up to 11 ha in hollow-limited environments (Smith et al. 2007). Greater gliders have been found in habitat patches <10 ha in some fragmented and remnant forest patches in the southern part of their geographic range (Pope et al. 2004; Lindenmayer 2002), but may require larger habitat patches in Queensland (Eyre 2006). As such, a minimum patch/corridor size of 3 ha has been considered appropriate given field survey data indicates the majority of the Project Area is a hollow-limited environment (the only exception being the
				Dawson River riparian zone).
Yellow-bellied glider (south-eastern) (Petaurus o	australis aust	ralis)		
Floristically diverse, mature eucalypt woodlands and forests dominated by smoothbarks or half-barks, comprising patches or corridors ≥50 ha, that may support (now or in the future) large hollow-bearing trees.	Denning, foraging and dispersal	Conservation Advice for Petaurus australis australis (yellow-bellied glider (south-eastern)) (Department of Agriculture Water and the Environment, 2022a).	A corridor refers to a series of patches that are separated by distances the subspecies is capable of gliding across, based on its glide ratio (2:1) and the height of the vegetation. In determining if a corridor is present, potential habitat outside of the Project Area must be	The subspecies has specific habitat requirements and occupies a large and exclusive home range of approximately 50-65 ha. Due to these large home ranges, large areas of forests are required to maintain subpopulation viability (Department of Agriculture Water and the Environment, 2022a). The subspecies has very low dispersal capabilities over spaces larger than its gliding distance. Management should be informed by average gliding performance (25.2 m), and it is suggested a glide ratio (horizontal distance/height dropped) of 2.0 should be used to estimate gliding distance

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
			considered. Where these areas cannot be field validated, the precautionary principle should apply.	(Goldingay 2014 in Department of Agriculture Water and the Environment, 2022a). There is no evidence that indicates the subspecies may utilise other vegetation communities or habitat types for any part of their life-cycle including dispersal. Smooth-barked eucalypts are important due to the range of foraging substrates (and therefore food resources) they provide. They also require some level of floristic diversity to provide a yearround food supply, and they are unlikely to persist in forests dominated by only one or two tree species (Kavanagh 1987a in Department of Agriculture Water and the Environment, 2022a). During the day, they shelter in hollows found in large, old trees, usually more than one metre in diameter (Kambouris et al. 2013).
White-throated snapping turtle (Elseya albagula	and Fitzroy	River turtle (Rheodytes le	ukops)	
Permanent waters of rivers and streams with deep pools that may be permanently or periodically inter-connected by shallow riffles.	Breeding and foraging	Conservation Advice Elseya albagula White- throated snapping turtle (Threatened Species Scientific Committee, 2014b), National Recovery Plan for the White Throated Snapping Turtle (Department of Agriculture, Water and the Environment, 2020) and Conservation Advice for Rheodytes leukops (Fitzroy River turtle) (Department of Climate Change Energy	-	Though both species are apparently capable of moving across relatively short distances of dry riverine habitat at least in seasonally favourable conditions (e.g. during rainy weather), neither species is known to use ephemeral, non-flowing lacustrine habitat such as swamps and billabongs, or farm dams (Hamann et al. 2007 and Limpus et al. 2011a in GHD, 2016).

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
		the Environment and Water, 2024a).		
White-throated needletail (Hirundapus caudacu	ıtus)			
Includes a range of habitats, although more often over wooded areas, where it is almost exclusively aerial.	Foraging and dispersal	Conservation Advice Hirundapus caudacutus White-throated Needletail (Threatened Species Scientific Committee, 2019) and Draft referral guideline for 14 birds listed as migratory species under the EPBC Act (Department of the Environment, 2015).	-	The species does not breed in Australia. Although they occur over most types of habitat, they are recorded most often above wooded areas, including open forest and rainforest, and may also fly below the canopy between trees or in clearings (Higgins 1999 in Threatened Species Scientific Committee, 2019).
Australian painted snipe (Rostratula australis)				
Shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use other 'moist areas' such as inundated or waterlogged grasslands (including those that support gilgai), saltmarsh, dams, rice crops, sewage farms and bore drains. Dominant vegetation in occupied wetlands may include one of more of these elements: grass (e.g. canegrass <i>Eragrostis australasica</i> ), sedge, and nardoo ( <i>Marsilea</i> ), in sward or tussock form; clumps of rushes or reeds; samphire dwarf shrubland; and open-shrubland of lignum ( <i>Duma</i> spp.), river cooba (belalie) <i>Acacia stenophylla</i> .	Seasonal breeding, foraging and dispersal	Approved Conservation Advice for Rostratula australis (Australian painted snipe) (Department of Sustainability Environment Water Population and Communities, 2013) and National Recovery Plan for the Australian Painted Snipe (Rostratula australis) (Department of Climate Change, Energy, the Environment and Water, 2022b).	Moist areas are defined as environments that generally support ponds of surface water for extended periods. During the dry season, the presence of wetland indicator species may be used to make this assessment.	Due to the highly secretive behaviour and concealing habitats commonly used, the specific habitat requirements of the Australian Painted Snipe are much less well known than for most other Australian waterbirds (Department of Climate Change, Energy, the Environment and Water, 2022b). The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. It can use modified habitats that are flooded, such as low-lying woodlands converted to grazing pasture, rice farms, sewage farms, dams, bores and irrigation schemes (Marchant and Higgins 1993 in Department of Climate Change, Energy, the Environment and Water, 2022b). Nest records are all, or nearly all, from or near small islands in freshwater wetlands, with a combination of very shallow water, exposed mud,

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
				dense low cover and sometimes some tall dense cover (Rogers et al. 2005 in (Department of Climate Change, Energy, the Environment and Water, 2022b).
Yakka skink ( <i>Egernia rugosa</i> )				
Dry sclerophyll forests, woodlands and scrub that support suitable refuge microhabitat including but not limited to, large hollow logs, cavities or burrows under large fallen trees, tree stumps, logs, stick-raked piles, large rocks and rock piles, dense ground-covering vegetation, and deeply eroded gullies, rabbit warrens, tunnels and sinkholes.  Any patch of potential breeding and foraging habitat (as described above) that has been subject to field assessment (effort appropriate to site size and inclusive of targeted yakka skink search transects / diurnal searches) and determined to not contain any potential burrows or latrine sites.	Breeding and foraging  Not habitat	Approved Conservation Advice for Egernia rugosa (Yakka Skink) (Department of the Environment, 2014) and Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (Department of Climate Change, Energy, the Environment and Water, 2023a).	Latrine sites refer to communal defection sites. Should there be any uncertainty, photo vouchers including burrows (macro and microhabitat) and latrine sites, should be forwarded to the Queensland museum for positive identification and databasing of the record (Department of Sustainability, Environment, Water, 2011).	Colonies of presumably related individuals share a system of burrows dug under or between partly buried rocks or logs (especially very large logs, if available), into old root tracts or at the base of large trees or stumps (QMDC 2008 in Department of Sustainability, Environment, Water, 2011). They may also utilise old rabbit warrens, deep gullies and tunnel erosion and sinkholes. Burrows around artificial structures such as under sheds, loading ramps and stick-raked piles are also common.  Ehmann (1992) and Wilson and Knowles (1987) report that the yakka skink, like several related species, has communal defecation sites near permanent burrows. They are extremely secretive and seldom venture far from shelter sites, where they retreat to at the first sign of disturbance (Department of the Environment, 2014). Searching for burrow systems and communal defecation sites is the most reliable method of detection.  Given the yakka skink's longevity (up to 20 years), low fecundity (2-5 years to sexual maturity), high site-fidelity, and that populations are highly fragmented, this species may be prone to localised extinctions (Department of Climate Change, Energy, the Environment and Water, 2023a).

Habitat Definition	Utilisation	Primary Reference/s	Key Criteria / Terms	Explanatory Notes
Riparian woodlands and forest, monospecific stands of Carnarvon fan palm <i>Livistona nitida</i> , open forest fringing ephemeral wetlands on the Dawson River floodplain and artesian mound springs, that support microhabitat including partially buried logs in moist conditions and accumulated leaf litter (including palm fronds) AND occur within the species predicted distribution.  Riparian/floodplain woodlands and forests must comprise a 'suitable regional ecosystem (RE)'.	Breeding and foraging	Recovery plan for the Boggomoss snail Adclarkia dawsonensis (Department of Environment and Heritage Protection, 2017) and Adclarkia dawsonensis in Species Profile and Threats Database (SPRAT) (Department of the Environment, 2025b). There is no approved Conservation Advice for this species.	The species predicted distribution extent is based on the DCCEEW Species of National Significance (SNES) dataset (2024). Distributions are conservative as they have been generalised to a 1 km grid resolution (0.01°) (or ~10km for species classed as sensitive by respective States and Territories). Suitable REs (SPRAT, 2025) include: 11.3.3, 11.3.4, 11.3.25, 11.3.27, 11.3.36.	The Boggomoss snail's geographic distribution is precarious for the survival of the species and is very restricted. The species is only known from two sites on the Dawson River in south-eastern Queensland. The likelihood of Boggomoss Snails occurring elsewhere is low, as most of the suitable habitat in the area has been surveyed without any other evidence of occurrence of the snail being located (Threatened Species Scientific Committee, 2003).  The species SPRAT profile (2025) states that within the broad habitat types the species has been found in five REs as described under the Queensland Vegetation Management Framework, including RE 11.3.3, 11.3.4, 11.3.25, 11.3.27, 11.3.36. The Boggomoss snail microhabitat has a critical requirement for deep, moist litter and fallen timber which provides food, shelter and egg-laying sites.

2.1.4	Attach all relevant ecological surveys referenced in the referral and preliminary
	documentation as supporting documents to the preliminary documentation.

As described in 4.3.2, significant field survey effort has been completed across the Project Area and adjacent. The details of all relevant field surveys completed to support the Project are outlined in Section 4.3 of the MNES Assessment Report (Attachment A). Details of historic studies which have been reviewed in the context of updated threatened species and community listings are also detailed in Section 4.1.2.2 of the MNES Assessment Report (Attachment A). A summary of the historic studies and Project specific studies are summarised below in Table 13.

Table 13: Summary of Ecological Studies

Survey Timing	Surveyor	Summary	Survey Effort
August 2013	Niche Environment and Heritage	Undertook an ecological assessment of four proposed exploration drill sites within the nearby Belvedere Coal Project lease area, situated approximately 10 km north of the Dawson Highway midway between Moura and Banana, between Kianga and Banana Creeks.	Two days
June 2016	Arris Pty Ltd	Undertook an ecological site assessment for Moura Central "De-Bottlenecking" Pipeline project situated near the Project Area. A field survey was undertaken along the proposed pipeline route,  10 km south of Moura on Theodore Baralaba Road.	One day
January 2017	Arris Pty Ltd	Undertook a desktop ecology assessment of the planned 2017 Development Sites within the Project Area. The assessments focused on groups of wells in the Hillview/Pretty Plains Gas Fields, Moura Central Gas Fields and Dawson River Gas Fields.	-
July 2017	Arris Pty Ltd	Undertook a field survey as part of the 2017 2D Seismic Campaign within the Project Area. The field survey was conducted within the Hills/Lang Gas Fields, Dawson River Gas Fields, and the southern portion of the Moura Central Gas Field.	Four days
November 2017	Arris Pty Ltd	Undertook a field survey of the 2018 Wells Program Area within the Project Area. The survey was undertaken across four sections: the Hillview/Pretty Plains Gas Fields, Moura Central Gas Fields, Nipan Gas Fields and the Dawson River Gas Fields.	Two days
August 2018	Arris Pty Ltd	Undertook a field survey to assess vegetation and fauna as part of the 2018 Seismic Campaign, which proposed seismic activities within the northern section of the Project Area (Hillview, Pretty Plains, Moura Central and Nipan Gas Fields), some areas within the proposed Mungi North and	Three days

		Mungi West petroleum lease applications and mining lease co-development.	
February 2019	Arris Pty Ltd	Undertook a desktop ecology assessment of the Project Area as part of the Westside 2019 Program. The area assessed extends from 4.5 km north of Moura to 25 km South of Moura on the Theodore Baralaba Road.	-
October 2019	Umwelt	Undertook an ecology assessment as part of an EA amendment application for the Project Area. The survey effort focused on properties that supported representative habitat of the broader petroleum lease, with properties identified as being a potential location for petroleum activities being preferentially targeted.	Four days
November 2019	Otto Agribusiness	Undertook a flora survey targeting threatened flora at the "Shady Acres" property on Lot 3 SP122581.	Three days
November 2019	Umwelt	Undertook an ecology assessment of the proposed Meridian Trunk Line Phase 2. The survey followed the proposed alignment with a 25 m buffer either side.	Two days
November 2019	Umwelt	Undertook an ecology assessment of the proposed Moura Central Processing Plant to Hillview Processing Plant pipeline. The survey followed the proposed pipeline with a 25 m buffer either side.	Three days
December 2019	Eco Logical Australia	Undertook an ecological assessment at locations of proposed CSG infrastructure within the Project Area. The survey effort focused on properties to be significantly disturbed by the proposed infrastructure with a 25 m buffer either side.	Five days
December 2019	Otto Agribusiness	Undertook a flora survey targeting threatened flora at the "Burrawarra" property on Lot 2 SP122581.	Three days
February 2020	Otto Agribusiness	Undertook a flora survey targeting threatened flora at the "Oakdale" property on Lot 47 DW143.	Six days
March 2020	Eco Logical Australia	Undertook an ecological assessment at locations of proposed CSG infrastructure within the Project Area. The assessment focused on proposed infrastructure items MN74, MTLPH_3 and PP16. A 25 m buffer was applied to MTLPH_3 and PP16, with a wider survey area applied to MN74 as provided by Westside.	Three days
March 2020	Umwelt	Undertook an ecological assessment for the Project targeting ornamental snake. Survey effort comprised both day and night work.	Five days

March 2021	Umwelt	Undertook an ecological assessment of a PTD area associated with the Project Area. The survey followed the proposed PTD area with a 25 m buffer either side.	Two days
July 2022	Eco Logical Australia	Undertook an ecological assessment at locations of proposed CSG infrastructure on Waddington Park and Sunshine Plains properties within the Project Area.	Three days
August 2022	Eco Logical Australia	Undertook an ecological assessment at locations of proposed CSG infrastructure on Badminton and Kulcaway properties within the Project Area.	Four days
March 2023	Greentape Solutions	Undertook an ecological assessment at locations of proposed CSG infrastructure on one private property within the Project Area.	Two days
June 2023	Umwelt	Undertook a targeted ornamental snake habitat survey, focusing on properties that supported representative habitat of the broader area in line with the previous targeted survey. Also completed during this survey was an assessment of two proposed CSG infrastructure locations within the Project Area (one road reserve, one within a private property).	Five days
April 2024	28 South	Undertook an ecological assessment at locations of proposed CSG infrastructure on several properties within the Project Area.	Nine days
	Umwelt	Surveyed habitat quality at representative locations within the Project Area to inform the Project's offset area management plan.	Five days

2.1.5 Identify and describe known historical records of the listed threatened species and ecological communities in the broader region. All known records must be supported by an appropriate source (i.e., Commonwealth and State databases, published research, publicly available survey reports, etc.), the year of the record and a description of the habitat in which the record was identified.

To inform the likelihood of occurrence assessment, a detailed review of publicly available records was completed for every MNES identified during the desktop assessment as a potential occurrence within the Project Area. As described in the response to RFI 2.1.1, the list of MNES subject to the likelihood assessment was determined using the PMST search tool and incorporated a 10 km search extent radius from the Project Area (the desktop search extent). ALA was the primary database reviewed.

In the likelihood of occurrence assessment (Appendix B of the MNES Assessment Report (Attachment A)) and within each MNESs habitat assessment (Section 4.3.1 and Section 9.0 of the MNES Assessment Report (Attachment A)) the following is described for each MNES:

 The presence and abundance of record/s (including historical and unconfirmed) within the desktop search extent. Where one or several records are present, details provided include location relative to the Project Area (direction and distance from in km), date/s, information source (where available) and level of spatial uncertainty.

The nearest record (including historical and unconfirmed) location and associated details
including location relative to the Project Area (direction and distance from in km), date,
information source (where available) and level of spatial uncertainty.

Additional commentary regarding the habitat supported at the record location was also provided where this information was included in the record details or could be gleaned from aerial imagery or State mapping. Excluding TECs, the ALA record locations are shown on each of the MNES habitat maps included in Section 9.0 of the MNES Assessment Report (Attachment A).

# 4.4. Species-specific Information: Ornamental Snake

2.2.1	Provide the definitions used for high, medium and low suitability habitat.
	Discuss how these definitions align with the habitat definitions provided in the
	SPRAT profile, Conservation Advise and Draft Referral guidelines for the
	nationally listed Brigalow Belt reptiles (2011).

The ornamental snake is known to the Project Area, with both desktop and field records of the species available. The assessment of ALA records during the desktop assessment phase of the ecological assessment identified several records from the Project region of ornamental snakes. One record (date of 1983) was found on the eastern edge of the Project Area, 200 m south of Gibihi Road (10 km spatial uncertainty). The location of this historic record features gilgai formation as well as proximity to a continuous stand of brigalow (*Acacia harpophylla*).

Following consultation with DCCEEW and further review of the existing scientific literature, it was determined that due to the species' cryptic nature, distinct patterns of habitat utilisation for life-cycle processes are not known. Therefore, habitat has been categorised differently to the other fauna MNES, with 'suitable habitat' and 'not habitat' categories used instead.

A total of 5,570.89 ha of suitable habitat is mapped within the Project Area (refer to Figure 22). Over half of the total area of predicted habitat has been subject to targeted ornamental snake field assessments and is considered field validated.

# **Ornamental Snake - Suitable habitat definition**

The extent within the Project area totals 5,570.89. Vegetation, generally comprising woodlands and open forests but also non-remnant, associated with moist areas (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains) that support key refuge microhabitat (i.e. network of soil cracks including deep cracks). Also includes fringing riparian vegetation along watercourses where substitute refuge microhabitat is supported (ground timber and exposed roots).

Vegetation functionally connected to moist areas or watercourses that have low-levels, absent or impacted2 refuge microhabitat may also be suitable if the areas provide temporary foraging opportunities (i.e. support frog habitat) and/or facilitate movement to other areas of suitable habitat.).

#### Ornamental Snake - Not habitat definition

The extent within the Project Area totals 18,748.40 ha. Vegetation that is not associated with or connected to 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains). Frog habitat is not supported, and area does not facilitate movement to other areas of suitable habitat.

2.2.2	A discussion of vegetation composition and structure on relevant land zones (i.e. riparian vegetation, gilgai mounds and depressions, Brigalow TEC, cracking clay soils and microhabitat features).
2.2.3	If not already included - Habitat mapping rules for the Ornamental Snake should be expanded to include floodplains, undulating clay pans and along the margins of swamps, lakes and watercourses. It also occurs on adjoining areas of elevated ground and has been recorded in woodlands and open woodlands of coolabah, poplar box, and brigalow, and in fringing vegetation along watercourses. Is known to prefer woodlands and open forests associated with moist areas, particularly gilgais and depressions, but also lake margins and wetlands.

As discussed in response to RFI 2.2.1 above, Westside have updated habitat mapping for the ornamental snake to align with the above habitat definition provided by DCCEEW. To ensure the Project's MNES assessment demonstrates a comprehensive understanding of habitat requirements for the ornamental snake, the following available resources were also reviewed to inform the species habitat requirements:

- Approved Conservation Advice for *Denisonia maculata* (Ornamental Snake) (DoE 2014b)
- Assessment of Seasonal Habitat Characteristics as Predictors of Habitat Suitability for the Threatened Ornamental Snake (Veary 2011; unpublished for Australian Coal Association Research Program Project, Footprints Environmental Consultants 2011)
- Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (DSEWPC 2011c)
- Species Profile and Threats Database Denisonia maculata Ornamental Snake (DCCEEW 2024c).

A summary of the species' ecology including distribution and habitat is provided below.

The ornamental snake is known only from within the drainage system of the Fitzroy and Dawson Rivers in Queensland. It can be found floodplains, undulating clay pans and along the margins of swamps, lakes and watercourses. It also occurs on adjoining areas of elevated ground and has been recorded in woodlands and open woodlands of coolabah, poplar box, and brigalow, and in fringing vegetation along watercourses. Is known to prefer woodlands and open forests associated with moist areas, particularly gilgais and depressions, but also lake margins and wetlands (DCCEEW 2024c). The ornamental snake feeds almost exclusively on frogs.

As per SPRAT, the ornamental snake's preferred habitat is within, or close to, habitat that is favoured by its prey - frogs. The species is known to prefer woodlands and open forests associated with moist areas, particularly gilgai (melon-hole) mounds and depressions in Queensland Land Zone 4, but also lake margins and wetlands. Habitat is likely to be found in brigalow (*Acacia harpophylla*), gidgee (*Acacia* 

*cambagei*), blackwood (*Acacia argyrodendron*) or coolibah (*Eucalyptus coolabah*)-dominated vegetation communities, or pure grassland associated with gilgais.

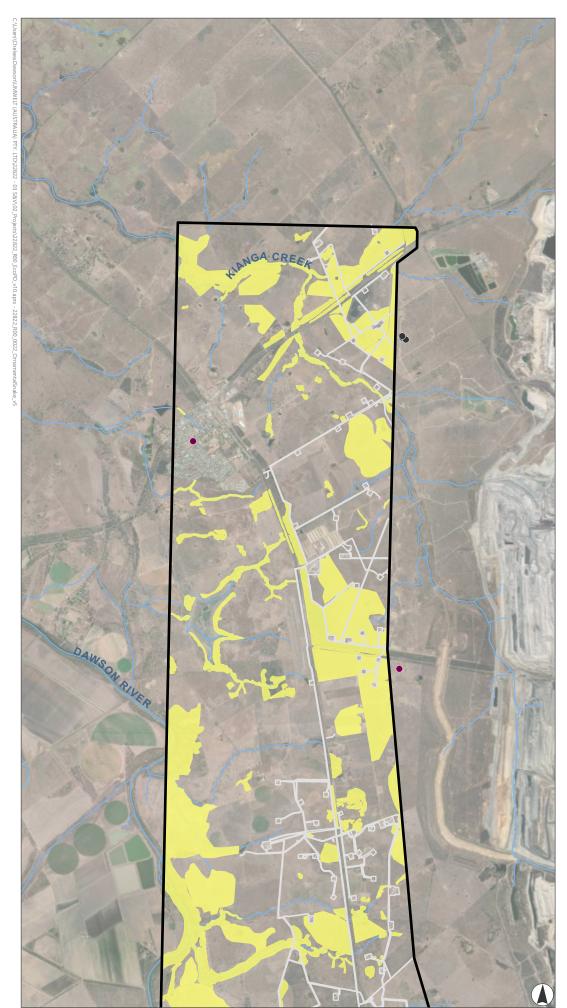
The species is nocturnally active, sheltering during the day under fallen timber, rocks, bark and in deep soil cracks. The species is probably active year-round with the exception of the cooler months, with peak activity likely to be early summer through to the wet season. During dry times, the snake can remain inactive in suitable shelter sites for months (Department of Climate Change Energy the Environment and Water, 2022). During dry times, the snake can remain inactive in suitable shelter sites for months (Department of Climate Change Energy the Environment and Water, 2022). Tracking completed as part of Veary 2011 found an individual moved a total of 54 m from the point of release over 5 tracking events during a 5 month period.

The mapping of suitable habitat for the ornamental snake within the Project Area was also reviewed by comparing to the DESI habitat suitability model for the species. As per the DESI model results, the likelihood of areas within the Project Area that contain suitable habitat for the species ranges from <10% to 30-40%. Areas of 10-20% likelihood or <10% likelihood dominate the Project Area, particularly in the western and southern extents. The highest likelihood areas are limited to the north-eastern Project Area, while areas of 20-30% likelihood occur in the central Project Area. As described earlier, the species was recorded once within the Project Area during a spotlight search in 2020. This area of habitat confirmed to support the species aligns with an area mostly predicted to be 30-40% suitable, providing a degree of model validity.

Potential habitat mapping generally aligns with the DESI identified suitable areas however also captures several additional areas considered <10% likely to be suitable. In accordance with the habitat definition, suitable habitat includes fringing riparian vegetation along watercourses. However, many of these areas as per the DESI habitat suitability model are <10% likely to be suitable. Some areas that are potentially suitable as per the DESI model have also been excluded from the Project's mapping. Many of these areas have been ground-truthed and are no longer suitable for ornamental snake due to significant agricultural activities (ongoing cropping, tilling or blade ploughing).

The extent of suitable habitat mapped within the Project Area is overall considered conservative, owing to the broad nature of the suitable habitat definition and the lack of knowledge on this species, as identified by the Action Plan for Australian Reptiles (Cogger et. al, 1993). This species is subject to a multitude of threatening processes, several of which are ongoing within the Project Area and are likely to have compounding deleterious effects on the population present. Historical land clearing and hydrological modification, ongoing grazing and high population levels of the cane toad, are all likely to have reduced habitat suitability.





# **FIGURE 22A**

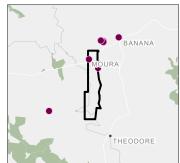
# Ornamental snake (Denisonia maculata) Habitat and Records

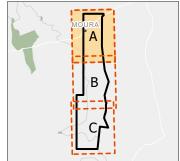
#### Legend

- Umwelt Records of Ornamental
- ALA Records of Ornamental snake
- Watercourse
- Project Area
  - Existing Westside infrastructure

#### Ornamental snake habitat mapping

Suitable habitat







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

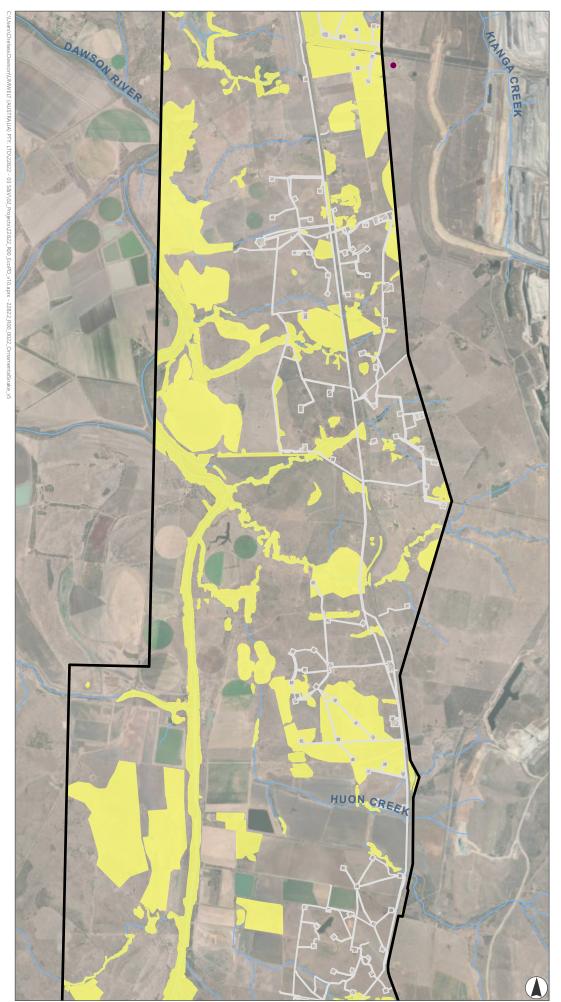
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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





# FIGURE 22B

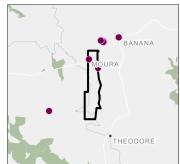
# Ornamental snake (Denisonia maculata) Habitat and Records

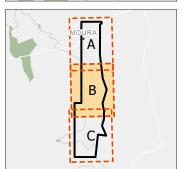
#### Legend

- Umwelt Records of Ornamental
- ALA Records of Ornamental snake
- Watercourse
- Project Area
  - Existing Westside infrastructure

#### Ornamental snake habitat mapping

Suitable habitat





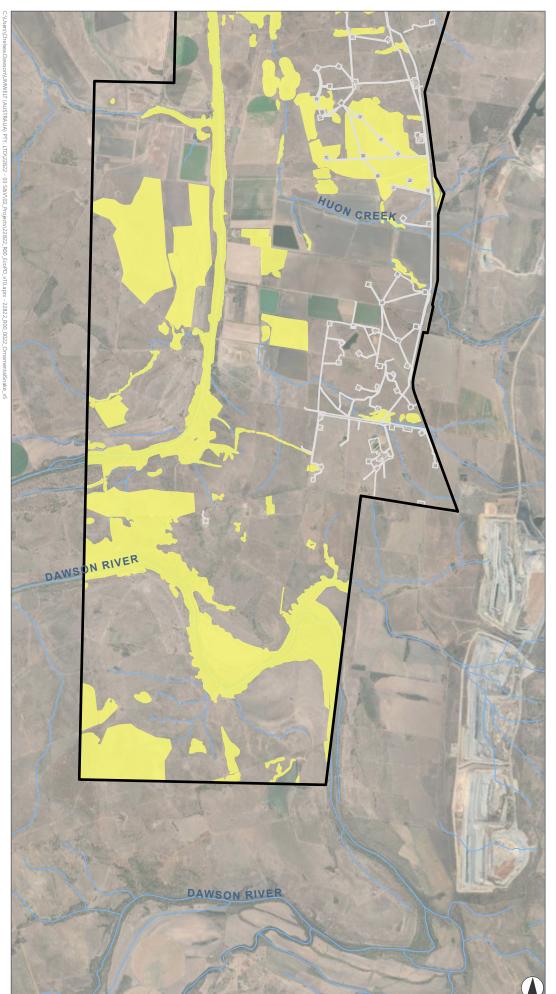


Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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# **FIGURE 22C**

# Ornamental snake (Denisonia maculata) Habitat and Records

#### Legend

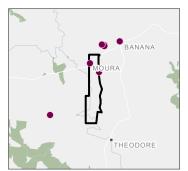
Umwelt Records of Ornamental snake

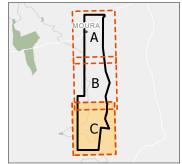
Watercourse Project Area

Existing Westside infrastructure

Ornamental snake habitat mapping

Suitable habitat







Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)

2.2.4	Details and locations (including a map) of known food sources (i.e. frog
	species).

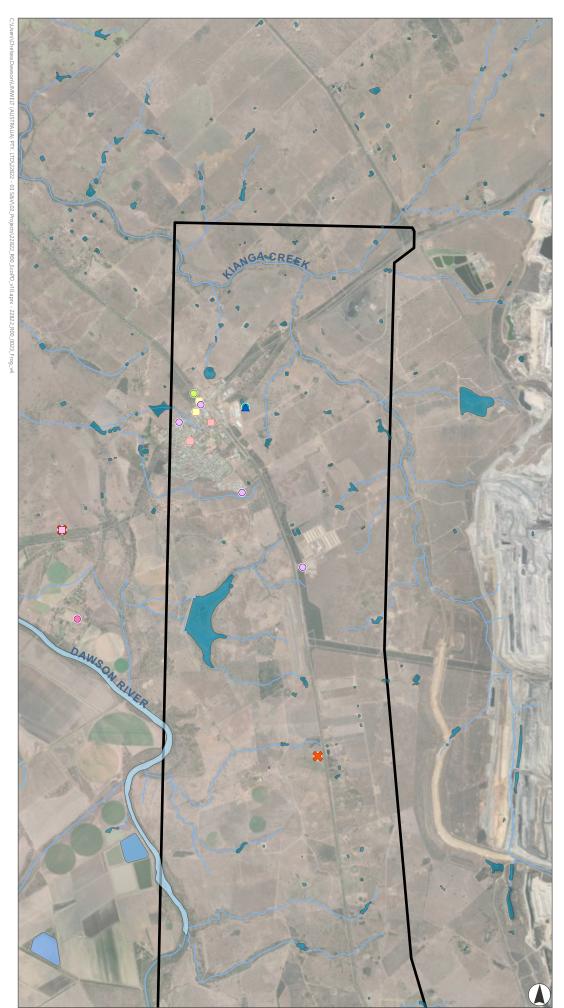
Frogs from four genera comprise 95% of the ornamental snake's diet with 10 species most commonly recorded within suitable habitat for this species (Shine, 1983). These generally include *Cyclorana*, *Limnodynastes*, *Litoria*, and *Platyplectrum*, all of which are found within the Project region (refer to Figure 23). The most commonly occurring recorded frog species present where ornamental snake occur (DCCEEW 2024c) are:

- Salmon-striped frog (Limnodynastes salmini)
- Short-footed frog (C. breviceps)
- Wide-mouthed frog (C. novaehollandiae)
- Water-holding frog (C. platycephala)
- Spotted marsh frog (L. tasmaniensis)
- Green tree frog (Litoria caerulea)
- Floodplain frog (*L. inermis*)
- Broad-palmed rocket-frog (L. latopalmata)
- Desert tree frog (Litoria rubella)
- Ornate burrowing frog (Platyplectrum ornatum).

Ornamental snakes require specialised habitat features such as surface water and aquatic vegetation to hunt frogs within suitable gilgai habitat (DCCEEW 2024c). If the area is ephemeral and has the ability to hold water for more than a week, it also potentially hosts frogs. These areas mostly occur in moist areas of floodplains, clay pans, near waterbodies (dams, swamps and lakes) and along watercourses, though woodland or open forest associated with gilgai formations are preferred. These snakes are heavily reliant on the presence of habitat features that support prey abundance. During targeted ornamental snake surveys, nine frog species were observed that may form prey for the species. Eight of these species (green tree frog, green striped-frog, broad-palmed rocket-frog, ornate burrowing frog, salmon-striped frog, spotted marsh frog, desert tree frog and wide-mouth frog) detected are included in the above list of commonly occurring frog species in ornamental snake habitat. It has therefore been assumed these provide prey for the species.

During the 2020 survey, an ornamental snake was actively observed preying on green-striped frog, confirming this species as food resource in the Project Area. A map of frog records that may provide ornamental snake food sources is provided below in Figure 23.





## **FIGURE 23A**

# Potential Frog Habitat and Records

# Legend

Watercourse

Project Area

#### **DoR Reservoirs**

Flood Irrigation Storage

Rural Water Storage

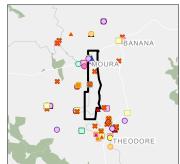
Town Water Storage

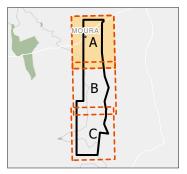
#### **ALA Record of Frogs**

- Eastern Dwarf Tree Frog (Litoria fallax)
- O Green Tree Frog (Litoria caerulea)
- Little Red Tree Frog (Litoria rubella)
- Northern Banjo Frog (*Limnodynastes terraereginae*)
- Ornate Burrowing Frog (Platyplectrum ornatum)
- Peron's Tree Frog (*Litoria peronii*)
- Salmon Striped Frog (*Limnodynastes* salmini)
- Striped Marsh Frog (*Limnodynastes* peronii)
- Wide-mouthed Frog (Cyclorana novaehollandiae)

#### **ALA Record of Cane Toads**

Cane Toad (Rhinella marina)





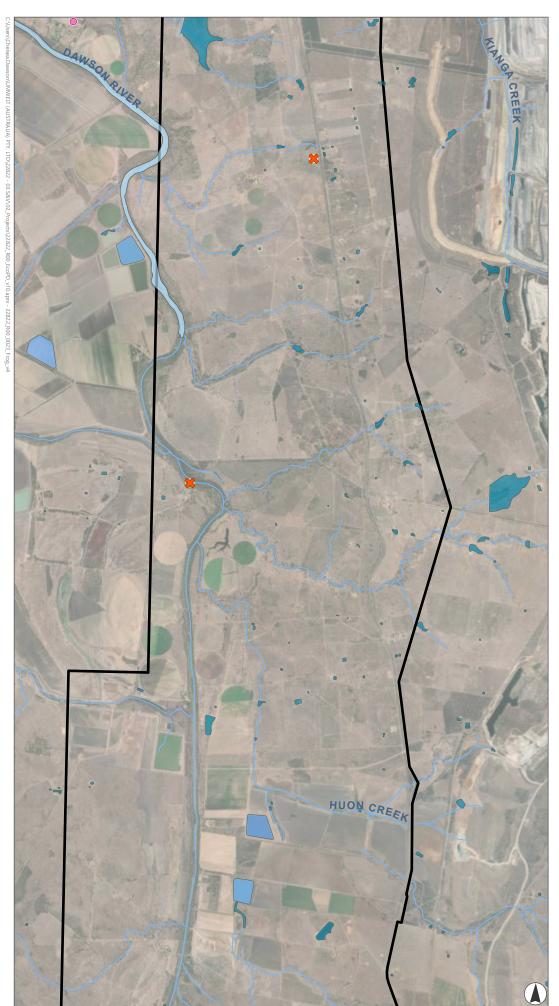


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# FIGURE 23B

# Potential Frog Habitat and Records

## Legend

Watercourse

Project Area

## DoR Reservoirs

Flood Irrigation Storage

Rural Water Storage

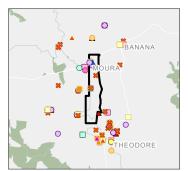
Town Water Storage

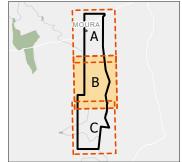
#### **ALA Record of Frogs**

- Broad-palmed Frog
- Bumpy Rocket Frog
- Little Red Tree Frog (Litoria rubella)
- Ornate Burrowing Frog (Platyplectrum ornatum)
- Salmon Striped Frog (Limnodynastes
- Striped Burrowing Frog
- Wilcox's Frog

#### **ALA Record of Cane Toads**

Cane Toad (Rhinella marina)





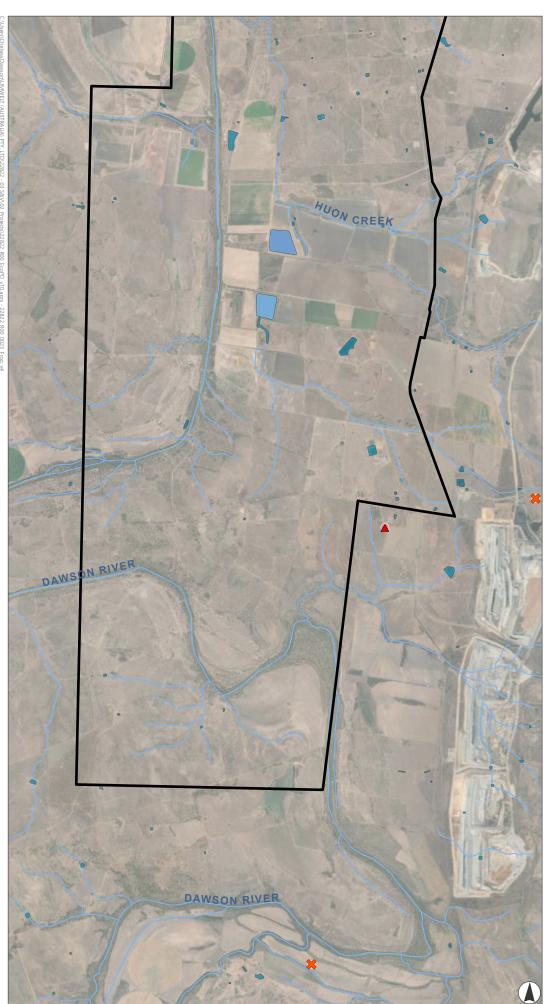


Scale 1:80,000 at A4 GDA2020 MGA Zone 55

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# FIGURE 23C

# Potential Frog Habitat and Records

# Legend

Watercourse

Project Area

**DoR Reservoirs** 

Flood Irrigation Storage

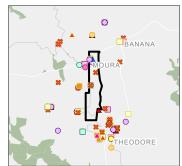
Rural Water Storage Town Water Storage

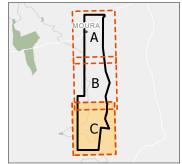
**ALA Record of Frogs** 

▲ Striped Burrowing Frog

**ALA Record of Cane Toads** 

Cane Toad (Rhinella marina)







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2.2.5	A discussion of habitat use requirements (e.g. shelter/refuge, foraging,
	dispersal, etc.), including consideration of known important habitat and
	suitable habitats.

The ornamental snake habitat mapping rules associated with the Project Area are outlined in Table 14 below. Habitat mapping categories are based on utilisation and consider the ecology of the species including lifecycle requirements. A total of 4,849.2 ha of ornamental snake habitat is mapped within the Project Area, occupying approximately 23%. Over half of the total area of mapped habitat has been subject to targeted ornamental snake field assessments and is considered field validated.

Table 14: Ornamental snake habitat within the Project Area.

Habitat Utilisation	Habitat Definition	Extent within the Project Area (ha)
Suitable Habitat	Vegetation, generally comprising woodlands and open forests but also non-remnant, associated with moist areas¹ (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains) that support key refuge microhabitat (i.e. network of soil cracks including deep cracks). Also includes fringing riparian vegetation along watercourses where substitute refuge microhabitat is supported (ground timber and exposed roots). Vegetation functionally connected to moist areas or watercourses that have low-levels, absent or impacted² refuge microhabitat may also be suitable if the areas provide temporary foraging opportunities (i.e. support frog habitat) and/or facilitate movement to other areas of suitable habitat.	4,849.2
Not Habitat	Vegetation that is not associated with or connected to 'moist areas' (gilgai and depressions, undulating claypans, lake margins, wetlands and floodplains). Frog habitat is not supported, and area does not facilitate movement to other areas of suitable habitat.	16,152.9

<sup>1:</sup> Moist areas are defined as environments that generally support shallow ponds of surface water for extended periods. During the dry season, the presence of wetland indicator species may be used to make this assessment.

Ecological field surveys have been conducted within the Project Area between 2019 and 2024 to identify and characterise MNES values supported including ornamental snake habitat. Habitat and species data has been obtained progressively under a variety of seasonal conditions to refine the understanding of species, including habitat presence, extent and quality within the Project Area. This information along with confirmed records has been used to make inferences regarding the species use of these areas. The targeted nocturnal survey conducted in 2020 occurred during a period of suitable species detection (warm humid nights, following rainfall). During this survey, four individuals were detected within a patch of regrowth brigalow containing abundant gilgai formations immediately adjacent to the north-eastern boundary of the Project Area (see response to RFI 2.2.2 and 2.2.3 for further information). No other observations of the species were made, despite other areas of ornamental snake habitat being spotlighted during the same survey event (including within the Dawson River).

Important habitat for the ornamental snake is defined in the *Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles* (DSEWPC 2011c), as "gilgai depressions and mounds" with "connectivity between gilgais and other suitable habitats also important". Based on this definition, all suitable habitat is important habitat for the species.

<sup>2:</sup> Impacted microhabitat includes soil cracks that are compromised by high levels of exotic vegetation incursion (i.e. high biomass grass incursion or weed species) or severe cattle grazing activities (which would compact soil cracks and breakdown timber).

The maximum disturbance limit of 16.0 ha will account for all cumulative impacts to the species habitat, which is likely to comprise incremental, small impacts to discrete areas (that may eventually add up to 16.0 ha). As described above, 4,849.2 ha of suitable habitat has been identified within the Project Area and a maximum of 16.0 ha may be directly impacted by the Project (i.e. 0.3% of available habitat). The Constraints Protocol (Attachment B) (summarised in Section 5) will be implemented to further validate the presence and extent of ornamental snake habitat within the Project Area, in line with objectives of informing Project design (avoid, minimise, mitigate and manage) and keeping accurate records of impacts.

A suite of species-specific measures have been developed to further minimise and mitigate impacts (direct, indirect and cumulative) across the life of the Project, including:

- Ornamental snake individuals and habitat within the proposed infrastructure location will be
  identified and mapped by a suitably qualified ecologist during the site scouts completed as part
  of the Assess Project execution phase. The presence and extent of ornamental snake habitat
  within 30 m of the infrastructure location should also be assessed during the site scouts. Where
  this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings
  are supported by the MNES mapping (i.e. potential habitat mapped).
- Direct impacts to ornamental snake suitable habitat are permitted only to a cumulative maximum disturbance limit of 16.0 ha. Direct impacts to potential ornamental snake habitat will be avoided to the maximum extent possible.
- Where clearing is proposed for areas of ornamental snake suitable habitat, a fauna spottercatcher must be present. The fauna spotter-catcher will attempt to relocate any ornamental snake individuals that may occur within areas of potential habitat to be cleared to nearby areas of suitable habitat to be retained. This will be done by:
  - Searching for individuals via spotlighting surveys at night. This could be completed the night before works are planned, or at any time within three months of clearing works if conditions are suitable i.e. following rain.
  - Searching for individuals immediately prior to clearing within surface microhabitat such as fallen timber and deep litter piles.
  - Any ornamental snakes captured will be moved at least 100 metres away from the
    proposed clearing locations. The chances of relocated ornamental snake/s returning to
    areas of habitat to be cleared are considered low as radio tracking studies completed by
    Veary (2011) indicate that the species moves only short distances during late summer
    and winter, and even shorter distances in summer. The species was tracked by Veary
    (2011) and found to move a total of 54 m from the point of release during a 5-month
    period.
- Where clearing is proposed within or adjacent to ornamental snake suitable habitat (, active erosion and sediment control measures will be implemented to mitigate potential habitat degradation.
- Micro-siting of proposed infrastructure will preferentially avoid larger/deeper gilgai or areas with deep soil cracks and fallen timber.

- The period of time that trenches and other excavations are open will be minimised, particularly in areas where the species has been recorded and in mapped suitable habitat.
- Surface water pipelines design will consider the dispersal requirements of the ornamental snake and be preferentially collocated with access tracks (new or existing) to minimise creating barriers to movement. Where the pipeline is not raised off the ground, egress points that allow ornamental snakes to safely move over or under the pipelines, will be installed (minimum frequency of 1 egress point per 100 m of pipeline).
- To reduce the potential for direct mortality, all vehicles and pedestrians will remain within designated access tracks in areas of ornamental snake habitat.
- To minimise the chances of collision, in known ornamental snake occurrence areas within the Project Area, speed limits will be reduced to 40 km/hr or less and signage will be installed that indicates species presence.
- Larger, discrete surface microhabitat features such as fallen timber and surface rocks will be
  relocated to adjacent areas of undisturbed habitat prior to clearing. The fauna spotter-catcher
  will identify these items prior to clearing and relocation will be supported by machinery as
  required.
- If an ornamental snake is killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.
- All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species within areas of habitat.

The precautionary principle was applied in the assessment of significant impacts on all relevant MNES (detailed in full in Section 9.0 of the MNES Assessment Report (Attachment A)). Despite the implementation of the Constraints Protocol (Attachment B) and mitigation measures detailed above, the findings of the assessments determined that Project-related impacts on the ornamental snake may potentially be significant. To compensate for residual impacts on this species as a result of the Project, offsets under the EPBC Act may be required. Based on this finding, an Offset Area Management Plan (Attachment D) has been developed to support the PD.

## 5. CONSTRAINTS PROTOCOL

Westside has developed the Constraints Protocol (Attachment B). The Constraints Protocol (Attachment B) identifies and plans for the Environmental Constraints of the Project and creates a field development Protocol for PL94. It can be found in full within Attachment B.

The Project Area is subject to multiple constraints that lend to the uncertainty of the locations of wells and associated infrastructure over the life of the project. To maintain flexibility and minimise impacts to sensitive receivers (Landowner, community, environment, and cultural heritage sites) Westside employs a gated process for its field development planning to manage constraints and avoid impacts (both direct and indirect). The Constraints Protocol (Attachment B) will be applied throughout the life of the Project and will ensure the gas field development takes place in accordance with the outlined maximum MNES disturbance limits, and commitments outlined in supporting documentation including the Significant Species Management Plan, Environmental Management Plan, Underground Water Impact Report, and Ecology Assessments.

The Constraints Protocol (Attachment B) is utilised when the Westside Project Execution Process is activated by a concept or proposed project. Figure 24 provides an overview of the Westside Project Execution Process. This process provides a thorough assessment of all the relevant constraints, risks, and opportunities from the inception of a project to the execution of the project. MNES are included as one of the constraints and risks assessed in the Westside Project Execution Process. Hold points or 'gates' occur at the end of each phase, allowing for re-assessment of risks and opportunities as well as compliance before the next phase in the process can begin.

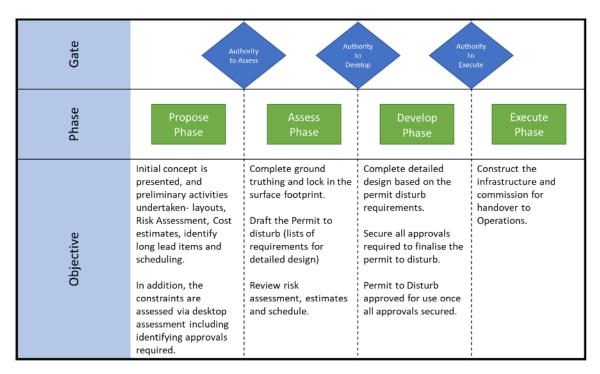


Figure 24: High-level gated process (Westside Project Execution Process)

Westside will adopt the hierarchy of management principles when planning for and implementing new petroleum activities within the Project Area that may result in land disturbance. In order of preference, Westside will seek to:

- Avoidance avoid direct and indirect adverse environmental impacts to MNES values.
- Minimisation minimise direct and indirect adverse environmental impacts to MNES values where disturbance to MNES habitat cannot reasonably and practically be avoided.
- Mitigation mitigation and management measures for both direct and indirect impacts to MNES values for the Project in accordance with the Significant Species Management Plan.
- Rehabilitation actively rehabilitate all disturbed areas in accordance with the PL94 EA (EPPG00783713) and Rehabilitation Management Plan.
- Offset where significant residual impacts to MNES, as assessed by a Suitably Qualified Ecologist, occur, the impact will be offset in accordance with the approved Offset Strategy.

The Constraints Protocol (Attachment B) is a management plan that provides a framework to implement this management hierarchy. It will be implemented by Westside throughout the life of the Project. Within the Project Area, the Protocol will dictate which activities are permissible and guide infrastructure siting to:

- Prioritise locations for development that do not support MNES habitat.
- Avoid or minimise disturbance to MNES habitat to the maximum extent practicable.
- Ensure ongoing compliance with maximum disturbance limits for identified MNES habitat.

## **5.1.** Propose Phase

Initial consideration of MNES habitat (one of several potential on-ground constraints) within the Project Area during the Propose phase will occur via desktop review of the MNES habitat mapping produced as part of the Project's MNES Assessment (Attachment A). As described, MNES habitat mapping has been developed for the Project Area using habitat mapping rules informed by the latest species' information including DCCEEW guidance documents including approved Conservation Advice documents. The mapping applies the precautionary principle noting that field validation has not been practicable across the full extent of the Project Area at this time. Areas of MNES habitat will be grouped into constraint categories, as detailed under RFI 3.2.

Areas of avoidance are aligned to the hierarchy of constraints. For example, no-go areas must be avoided first, followed by high constraint areas, then moderate constraint areas, in respective order. Following ground-truthing of ecological values via the site scout, Project design will be re-assessed.

In addition to MNES constraints, it is acknowledged that there are other constraints outside the scope of this assessment that must also be considered during infrastructure siting. These constraints include landholder agreements, constructability restrictions, presence of sensitive receptors and cultural heritage (indigenous) requirements. The development needs will be balanced against all constraints, including the implementation of the Protocol, while ensuring that activities are compliant with all legal obligations.

## 5.2. Assess Phase

During the Assess phase, MNES habitat mapping will be subject to further ground-truthing via site scouts which will be completed by a suitably qualified ecologist. The site scout will consider the full list of known and potentially occurring MNES within the Project Area as outlined in this report. As necessary, the MNES mapping will be updated to reflect the findings of the site scout. At each site scout location, the MNES habitat assignments and constraint categories boundaries will be updated should:

- Any threatened species or community (listed under the EPBC Act at the time of the decision on the referral – 30 June 2022) not already addressed in Section 4.3.1 found to be present within the Project Area. Constraint category should be changed to 'no-go'.
- New areas of MNES habitat or alternate habitat utilisation categories for a relevant MNES are identified from site scout surveys.
- MNES habitat is identified not to be present during site scout surveys. Constraint category should be changed to 'low'.

If additional suitable habitat is identified, it will be avoided pursuant to the constraints hierarchy outlined in below under RFI 3.2.

The final number, size and location of infrastructure developed progressively over the life of the Project will be influenced by the location of the gas resources identified through ongoing exploration and appraisal activities. Field development will also account for the constraints associated with environmental, land access and cultural heritage values, as detailed in the Protocol.

3.1	Pre-disturbance surveys must be supervised by a suitably qualified person and
	undertaken in accordance with the department's survey guidelines in effect at
	the time of the survey or other equivalent survey methodology.
	Clarification is required regarding the pre-clearance survey procedures and
	efforts.

As part of the Assess Execution phase, site scouts undertaken by Westside are undertaken by a team of Westside representatives, the landowner, and at least one suitably qualified ecologist to assess the areas identified from desktop studies for the feasibility of construction and siting of the proposed infrastructure.

The site scouts are completed prior to any disturbance in that location and provide an opportunity to complete a contemporary assessment of the presence and extent of environmental values including MNES. The findings of the site scouts are utilised to refine and/or 'micro-site' the proposed design (where required) to avoid or minimise impacts to environmental values and confirm compliance with relevant regulatory conditions. The area subject to ecological assessment as part of the site scout will include the proposed infrastructure location plus a 30 m buffer. The proposed infrastructure location is defined as the maximum spatial extent of Project-related work including equipment laydowns, vegetation clearing and other ground disturbance.

The ecological methods to be employed during the site scout are based upon information obtained during the desktop assessment, which include:

- Ground-truthing of REs (remnant and HVR) in accordance with the Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland (version 7.0) (Neldner, et al., 2023) using a combination of tertiary and quaternary level vegetation assessments.
- Identification of TECs in accordance with approved conservation advice from the Threatened Species Scientific Committee for each TEC.
- Species-specific habitat assessments to determine species habitat availability throughout the study area.
- Searches for direct and indirect signs of Endangered, Vulnerable or Near Threatened flora and fauna listed under the *Nature Conservation Act 1992* and/or threatened or migratory species listed under the EPBC Act.
- Identification of areas of disturbance by type and severity.
- Baseline weed surveys to record the presence and general abundance of weed species.

The ecological site scout's general methodology is presented in Appendix B of the Constraints Protocol (Attachment B) and summarised in Table 15. The use of habitat assessments allows the presence of suitable habitat to be used as a surrogate for species presence. Habitat assessments are recommended by State and Commonwealth survey guidelines for threatened species.

Table 15: Summary of Field Scout Ecology Assessment Methodology

Survey Type	Survey Summary	
Regional Ecosystem Assessment	All vegetation within and immediately surrounding each proposed infrastructure footprint will be assessed, including the extent, classification and extent of ground-truth vegetation communities in accordance with the latest version of the Methodology for surveying and mapping regional ecosystems and vegetation communities in Queensland (Nelder et al. 2023). Where necessary, this will include tertiary and quaternary vegetation assessments, however it is likely that quaternary assessments will suffice in most situations, due to the assessments previously undertaken.	
Threatened Ecological Community Assessments	<ul> <li>Threatened Ecological Community assessments will be undertaken to confirm the presence and condition of TECs identified as known or potential to occur in the Project Area, namely:</li> <li>Brigalow (Acacia harpophylla dominant and co-dominant) – Endangered;</li> <li>Coolibah (Black box woodlands of the Darling Riverine Plains and the Brigalov Belt South Region) – Endangered; and</li> <li>Poplar Box Grassy Woodland on Alluvial Plains – Endangered.</li> <li>The results of the vegetation community verification will assist with determining whether or not an analogous RE is present as well as the assessment against the community description and other condition thresholds.</li> </ul>	

# Targeted Threatened Flora Surveys

Searches for flora species listed threatened under the NC Act or EPBC Act will be completed in areas of potential habitat. These surveys shall be conducted by a suitably qualified person using the random meander method, as detailed by Cropper (1993). All threatened flora species and the locations of all individuals will be recorded, and specimens collected of any unknown individuals, or if the species needs to be further confirmed by the Queensland Herbarium.

Where a threatened flora species is detected, a population survey shall be undertaken to determine the extent and density of the population.

## Fauna Habitat Assessment

Fauna habitat baseline assessments have been conducted across the Project Area from 2019 to 2024 to enable known, likely and potentially present MNES to be identified and a comprehensive Project impact assessment has been completed (Umwelt 2025).

Future site scouts will undertake habitat assessments to characterise the presence, extent and value of habitat for known and potentially occurring MNES (see Appendix A). Habitat assessments should follow guidance outlined by Eyre et al. (2022), and record information on the location, landform, vegetation structure, regional ecosystem, and disturbance characteristics of sites in a standardised manner. The presence and abundance of microhabitat is also critical and may be a determining factor in determining potential utilisation of an area, in terms of breeding, shelter, roosting, foraging and dispersal.

Data collected as part of the habitat assessments will be used to map MNES habitat based on the habitat definitions outlined in Appendix A. Micro-habitat features that must be recorded include:

- Potential hollow-bearing trees;
- Brigalow Belt locally important koala food trees and ancillary trees;
- Koala dispersal trees;
- Hollow logs and log piles;
- Gilgai;
- Soil cracks / cracking clay;
- Native grass tussocks or the approximate cover of native species in the ground layer;
- Mistletoes;
- Potential animal breeding places such as nests;
- Potential yakka skink burrows and communal defecation sites; and
- Watercourses, wetlands and dams (including proximity).

Any other significant habitat features, or values present, such as dense leaf litter, decorticating bark, coarse woody debris, dense grass/shrub shelter, seeding grass cover, fruiting plants, nectar and pollen producing plants and arboreal termitaria, should also be recorded where it helps characterise habitat.

# Active Threatened Fauna Surveys

Active fauna surveys of all known, likely or potential threatened fauna species will be conducted where suitable potential habitat is mapped or found to be present within or immediately adjacent the proposed disturbance footprint. If any sedentary and limited mobility fauna species is recorded outside of its mapped potential habitat, additional surveys will be undertaken where habitat aligns with the habitat in which the new record was found to occur. These areas of new habitat will be added to the species habitat mapping and used to update the constraint layers. Habitat mapping rules will also be reviewed and updated.

The active searches will be in accordance with relevant survey guidelines in effect at the time of the survey or other equivalent survey methodology considering the fact that no known, likely or potential species will be considered absent due to non-detection (i.e. all known, likely and potentially present MNES fauna will be assumed to be present). Should an unexpected threatened species that was a listed MNES threatened species at the time of the decision on the referral (30 June 2022) be identified during the pre-clearance surveys, Westside's Constraints Protocol and its commitments equally apply.

Although it was not specifically stated in Westside's earlier version of the Environmental Constraints Planning and Field Development Protocol for PL94, pre-clearance surveys undertaken by Westside have previously been and will continue to be undertaken with the on-ground assistance of a suitably qualified ecologists and undertaken in accordance with the Department's relevant survey guidelines. Westside have now updated the Constraints Protocol (Attachment B) to reflect this.

3.2	Constraints categories are required to be well defined for assessment.	

Constraint Categories are summarised below in Table 16 and Table 17. They are detailed in the Constraints Protocol (Attachment B). Areas of avoidance are aligned to the hierarchy of constraints. For example, no-go areas must be avoided first, followed by high constraint areas, then moderate constraint areas, in respective order. Following ground-truthing of ecological values via the site scout, Project design will be re-assessed in accordance with Table 17.

These constraint categories are generally defined based on the sensitivity of the environment and the presence of MNES.

Reflective of the constraints planning categories, Westside has developed an indicative constraints map for the Project Area that is underpinned by the MNES mapping completed as part of the MNES Assessment (Attachment A). Figure 25 is the current indicative map of the constraints categories across the Project Area. As future site scouts are undertaken (as described in Table 15) this mapping will change to incorporate ground-truthed data.

The constrain planning utilises activities types to restrict activities in certain constraint areas. The activity types are expanded upon below, as per Westside's Constraints Protocol and Environmental Authority (EPPG00783713):

#### Low Impact Petroleum Activity

Means authorised resource activities which do not result in the clearing of native vegetation, cause disruption to soil profiles through earthworks or excavation or result in significant disturbance to land which cannot be rehabilitated immediately using hand tools after the activity is completed. Examples of such activities include but are not necessarily limited to soil surveys (excluding test pits), topographic surveys, cadastral surveys and ecological surveys, may include installation of monitoring equipment provided that it is within the meaning of low

impact and traversing land by car or foot via existing access tracks or routes or in such a way that does not result in permanent damage to vegetation.

Essential Petroleum Activities

Activities including well pads, pipelines, access track to access pipelines and well pads.

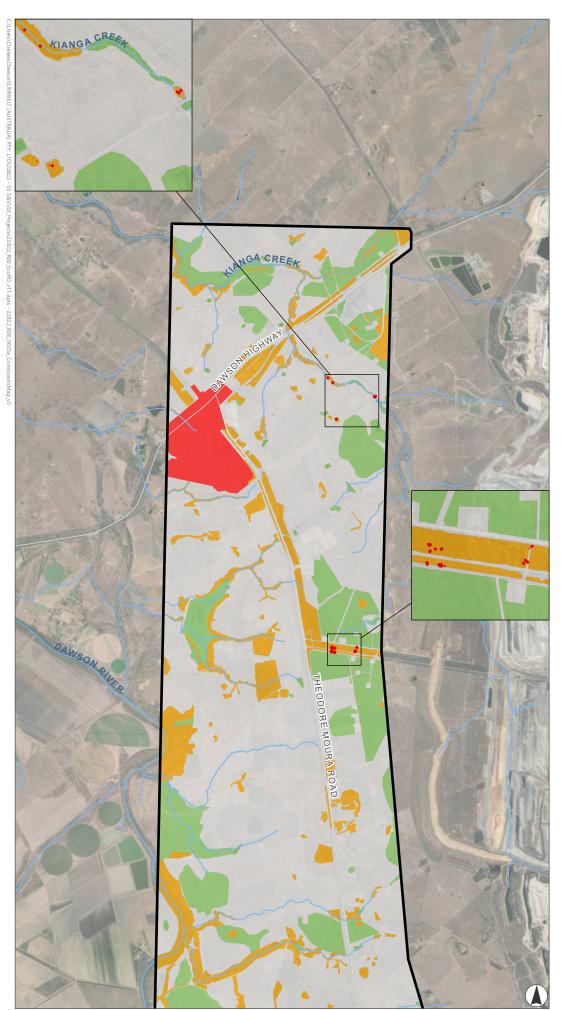
All Petroleum Activities

Activities including well pads, camps, water treatment facilities, gas compression facilities, laydown yards and dams and other ancillary infrastructure and activities.

As per Table 16, the following activity types are permitted within the following constraint areas:

- No-go area
  - Permitted: No activities permitted
  - O Not permitted:
    - Low Impact Petroleum Activity
    - Essential Petroleum Activities
    - All Petroleum Activities
- High constraint area
  - Permitted:
    - Low Impact Petroleum Activity
  - Not permitted:
    - Essential Petroleum Activities
    - All Petroleum Activities
- Moderate constraint area
  - Permitted
    - Low Impact Petroleum Activity
    - Essential Petroleum Activities
  - o Not permitted:
    - All Petroleum Activities
- Low constraint area
  - o Permitted:
    - Low Impact Petroleum Activity
    - Essential Petroleum Activities
    - All Petroleum Activities





## **FIGURE 25A**

## **PL94 MNES Constraints** Map – Preliminary Documentation

#### Legend

Watercourse

Roads

Project Area

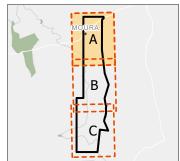
Constraints

No-Go Areas

High

Moderate

Low







Scale 1:80,000 at A4 GDA 1994 MGA Zone 55

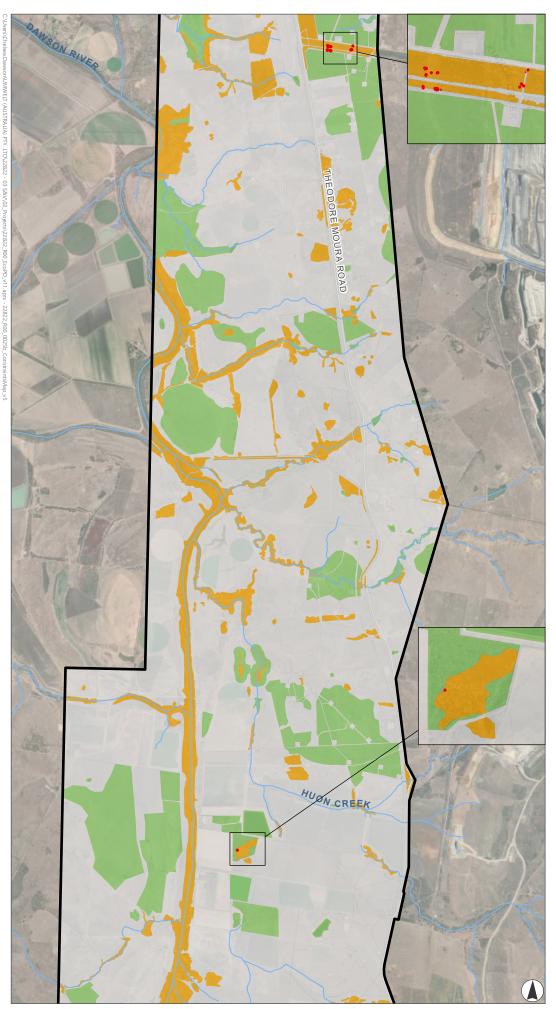
GDA 1994 MGA ZONE 55

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Image Source: ESRI Basemap (2023) | Data Source: Umwelt (2024), DNRM (2023)





## FIGURE 25B

## **PL94 MNES Constraints** Map – Preliminary Documentation

#### Legend

Watercourse

Roads

Project Area

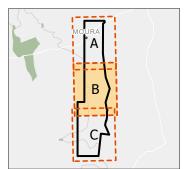
Constraints

No-Go Areas

High

Moderate

Low





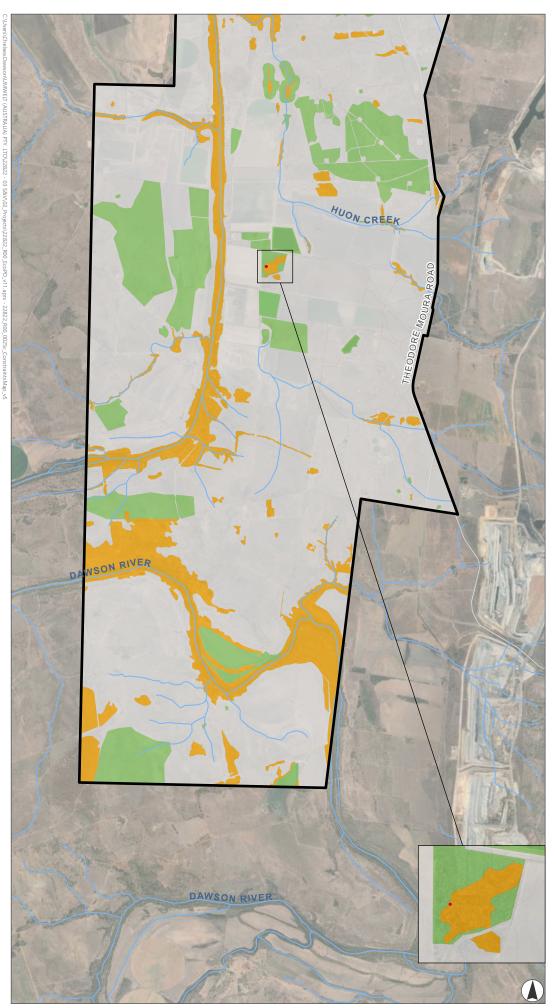


Scale 1:80,000 at A4 GDA 1994 MGA Zone 55

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## **FIGURE 25C**

## **PL94 MNES Constraints** Map – Preliminary Documentation

#### Legend

Watercourse

Roads

Project Area

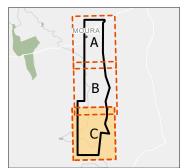
Constraints

No-Go Areas

High

Moderate

Low







Scale 1:80,000 at A4 GDA 1994 MGA Zone 55

CDA 1994 MICA 2016 55

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Table 16: Constraint categories and permitted development

Constraint Category	Low Impact Petroleum Activity	Essential Petroleum Activities	All Petroleum Activities
Example of Activities	Survey with no ground disturbance	Well pads, pipelines, access tracks	Well pads, camps, water treatment facilities, gas compression facilities, laydown yards, dams
No-go area	No	No	No
High constraint area	Yes	No	No
Moderate constraint area	Yes	Yes	No
Low constraint area	Yes	Yes	Yes

Table 17: Project Area constraints categories

Constraint Category	Constraint	Mitigation Measure	Activities Permitted
No-go area	<ul> <li>Township of Moura</li> <li>Areas that have been identified as no-go due to Cultural Heritage exclusion/conservation zones.</li> <li>Confirmed individuals of Xerothamnella herbacea, Solanum dissectum, Solanum johnsonianum including 5 m buffer zone.</li> <li>Boggomoss snail habitat that has been confirmed via site scout.</li> </ul>	Avoid	No activities
High constraint area	<ul> <li>Confirmed or potential breeding, foraging or dispersal habitat for the MNES listed in Table 19 having 0.0 ha impact. Includes critically endangered MNES.</li> <li>The Dawson River.</li> </ul>	Minimise	Low     Impact     Petroleum     Activity
Moderate constraint area	Watercourses and wetlands.     Habitat categories for MNES (excluding dispersal habitat for koala and squatter pigeon (southern)) listed in Table 19 with cumulative maximum disturbance limits >0.0 ha. Direct impacts permitted up to the cumulative maximum disturbance limit only.	Minimise Mitigate Remediation and rehabilitation Offset	<ul> <li>Low         <ul> <li>Impact</li> <li>Petroleum</li> <li>Activity</li> </ul> </li> <li>Essential         <ul> <li>Petroleum</li> <li>Activities</li> </ul> </li> </ul>

Constraint	Constraint	Mitigation	Activities
Category		Measure	Permitted
Low constraint area	<ul> <li>Dispersal habitat for koala and squatter pigeon (southern). Direct impacts permitted up to the cumulative maximum disturbance limit only.</li> <li>All other environmental constraints not defined in other constraint area categories (non MNES).</li> </ul>	Minimise  Remediation and rehabilitation	<ul> <li>Low         <ul> <li>Impact</li> <li>Petroleum</li> <li>Activity</li> </ul> </li> <li>Essential         <ul> <li>Petroleum</li> <li>Activities</li> </ul> </li> <li>All         <ul> <li>Petroleum</li> <li>Activities</li> </ul> </li> </ul>

3.3	Provide clarification on the reporting that will be required to remain consistent	
	with the constraints protocol and the thresholds which have been used to	
	determine if activities are approved to proceed.	

Westside documents the environmental constraints along with all other constraints in a 'Permit to Disturb' (PTD) document, which from an environmental perspective, formally documents:

- The proposed infrastructure complies with relevant environmental approvals.
- Site-specific or construction-related environmental considerations.
- Any clearing that contributes to a disturbance limit for any MNES values.

The 'PTD' includes all the relevant information to construct the infrastructure compliantly. The `PTD' is issued to all relevant internal stakeholders and contractors prior to any significant land disturbance activities being undertaken. A copy of the permit to disturb is included in the Appendix C of the Constraints Protocol (Attachment B).

Any direct and indirect disturbance to MNES values from authorised resource activities will be documented with an annual report prepared and submitted to the department that will include:

- Description of the works undertaken.
- Records to demonstrate compliance with legislative conditions.
- Description of the disturbance area and its pre-disturbance values.
- How the disturbance area reduces the maximum disturbance limits for the MNES value.

Westside will notify the department of any changes and subsequent updates to the "No-Go" or "High" constraint categories in the constraints mapping shown in Figure 25, based on the site surveys (undertaken in accordance with applicable guidelines), 10 business days prior to any clearance activities. If changes are made to the moderate constraint category shown in Figure 25, based on the site surveys (undertaken in accordance with applicable guidelines), this will be reported in an annual compliance report.

Disturbance information will be regularly updated in the Westside GIS to allow accurate tracking of the cumulative disturbance against the maximum disturbance limits set in Section 6.2.1.

3.4	Clarification and discussion are required regarding avoidance and mitigation strategies of the potential impacts of habitat fragmentation under the
	constraints protocol.

Landscape connectivity, particularly within the Project Area, is largely limited to narrow tracts of roadside vegetation and riparian corridors. Of particular importance is the Dawson River and the associated riparian and floodplain vegetation communities, which was largely untouched during the agricultural development of the Project Area and region. No direct impacts as a result of the Project will be permitted to the Dawson River and its associated Riparian Protection Zone.

Across most of the Project Area, habitat is fragmented and/or isolated comprising small patches or narrow habitat corridors with several breaks, surrounded by historically cleared exotic pasture. These areas of cleared land are likely impassable for many fauna species that require some vegetative cover to disperse safely. For ground-dwelling fauna and particularly larger-bodied mammals, a variety of physical barriers or impediments to movement are also present within the Project Area, reflecting its brownfield nature.

It is noted that many patches captured in the Project's refined vegetation and habitat map are not included in the State RE mapping, either due to patch size/shape (too small or too narrow in width for adopted scale) and/or vegetation age (cleared within the last 15 years). These added areas are likely to have low habitat functionality, with patch viability highly compromised by edge effects and other disturbances. Nonetheless, these habitat fragments may facilitate access and provide 'stepping-stone' opportunities to State-mapped significant areas for a range of highly mobile species including some listed threatened and migratory species, who are able to traverse non-remnant landscapes (i.e. squatter pigeon (southern) and koala). Nonetheless, habitat fragments may facilitate access and provide 'stepping-stone' opportunities to intact areas of habitat including the Dawson River, for a range of highly mobile species including some listed threatened and migratory species, who are able to traverse non-remnant landscapes (i.e. squatter pigeon (southern) and koala).

To ensure patch viability and functionality is maintained at current levels, the siting of Project infrastructure (including wells, gathering infrastructure, tracks and other ancillary infrastructure) within or adjacent to moderate constraint areas must also adhere to the following rules:

- Patches that are 0.5 ha or less must be completely avoided by the Project (no direct impacts permitted).
- Patches that are 1.0 ha or less must not be dissected in a way that creates two or more new patches.
- Direct impacts must not reduce the patch size to less than 0.5 ha OR isolate the patch by more than 50 m to the nearest patch (unless already isolated by more than 50 m).
- Patches >1.0 ha must not be dissected in a way that creates one patch <0.5 ha.

Additional mitigation measures are outlined in the Constraints Protocol (Attachment B) including:

• Ecological assessment to identify boundaries of MNES, and boundaries are to be clearly identified prior to construction.

- As standard practice areas of low constraint (including areas of significant existing disturbance such as existing tracks, rehabbed RoWs and well pad areas) will be utilised foremost to site infrastructure in order to reduce disturbance impacts to MNES.
- Where impacts on a moderate constraint area are unavoidable, Project infrastructure that is linear (i.e. gathering lines, tracks etc) should be sited in a way that impacts patch edges only.
   Where this is not achievable, within linear patches and particularly those on drainage lines, the siting should dissect the patch at a perpendicular angle and preferably intersect at the patches narrowest part to minimise clearing.
- Where potential impacts within a moderate constraint area are identified, right of way (RoW) widths will be reduced to 8 m, or the smallest width possible for safe construction.
- Directional drilling will be implemented to avoid impacts on linear habitat fragments or other MNES habitat types at the Dawson River.
- Co-location of any planned infrastructure with existing infrastructure such as fences, farm or access tracks, or other pipeline corridors will occur.

3.5	Provide clarification and discussion on the significant impact assessment that
	would be undertaken for when the project involves disturbance to areas of
	'low' and 'moderate' suitability habitat.

Westside has updated the habitat suitability rules aimed at aligning our habitat rules with the habitat rules defined by DCCEEW. The 'low', 'moderate', and 'high' suitability habitat definitions previously used have been replaced with 'suitable habitat'. All areas that are to be disturbed follow the process as outlined in the Constraints Protocol (Attachment B) and as such the areas are scouted by a field team including a suitable qualified ecologist before any disturbance activities are undertaken. Any direct impacts to the confirmed suitable habitat are avoided with the exception of koala and squatter pigeon (southern) dispersal habitat.

Any direct and indirect disturbance to MNES values from authorised resource activities will be documented with a report prepared that will include:

- Description and location of the works undertaken.
- Records to demonstrate compliance with legislative conditions.
- Description of the disturbance area and its pre-disturbance values.
- How the disturbance area reduces the maximum disturbance limits for the MNES value.

As detailed in Section 6.3 and 7.2.1, impacts associated with fragmentation have been considered with a method proposed to ensure patch viability and functionality is maintained at current levels.

3.6	As vegetation communities/habitat are clarified and further defined within the	
	project site, update all reports, including the Constraints Protocol, as	
	appropriate.	

Westside will continue to update its GIS mapping and reports/Protocols as each of the vegetation communities and habitats are further refined to include additional information gathered during site surveys as the field development continues.

As part of the site scout surveys, active fauna surveys of all known, likely or potential threatened fauna species will be conducted where suitable potential habitat is mapped or found to be present within the disturbance footprint or within 30 m of the proposed disturbance footprint. If any sedentary and limited mobility fauna species is recorded outside of its mapped potential habitat, additional surveys will be undertaken where habitat aligns with the habitat in which the new record was found to occur. These areas of new habitat will be added to the species habitat mapping and used to update the constraint layers. Habitat mapping rules will also be reviewed and updated.

Westside's GIS system is regularly updated as development activities are undertaken, to include MNES, environmental values, infrastructure locations (pre- and post-construction), land values, well locations, landowner information, rehabilitation status, and other Project relevant information. The updating of the GIS system is a vital and continuous process that Westside undertakes to improve the quality of information and data to be utilised as the field continues to develop. As previously noted, Westside will notify the department of any changes and subsequent updates to the "No-Go" or "High" constraint categories in the constraints mapping shown in Figure 25 (above), based on the site surveys (undertaken in accordance with applicable guidelines), 10 business days prior to any clearance activities

## **6. IMPACT ASSESSMENT**

As per the RFI dated 5 August 2022, the Project is considered likely to have impacts on listed threatened species and communities. A detailed assessment of potential impacts on MNES as a result of the Project's construction, operation, maintenance, decommissioning, and rehabilitation is provided in the MNES Assessment Report (Attachment A). This assessment considered impacts that may be direct, indirect and consequential.

No direct impacts to MNES were anticipated based on the Project details available at the time of the referral (2021/9117). However, since the controlled action decision, Project planning and design has progressed and some vegetation clearing within mapped MNES habitat is now considered possible.

As outlined in the RFI, the department considers the Project may result in, but is not limited to, the following impacts:

- Increased risk of vehicle strike;
- Vegetation clearing and loss of habitat;
- Increase light and noise pollution; and
- Habitat degrading processes such as weed invasion.

## 6.1. Listed Threatened Species and Communities

4.1.1	An assessment of the likely impacts associated with the vegetation clearance,
	construction, operational, maintenance and decommissioning components of
	the project.

Potential Project impacts on ecological values supported by the Project Area including MNES are outlined in Section 7.0 of the MNES Assessment Report (Attachment A). This section discusses potential impacts respective to the three main phases of the Project, noting potential impacts on MNES may occur during all:

- Construction phase;
- Operation and maintenance phase; and
- Decommissioning and rehabilitation phase.

A summary of the activities relating to each Project phase and the anticipated duration of the disturbance associated with these activities is summarised below in Table 18. The greatest risk of potential impact on MNES values from the Project will occur during the construction phase. The construction activities to support the installation of gas wells, associated distribution gathering lines and access tracks will involve vegetation clearing, trenching or excavation and ground reinstatement. Project development within the Project Area will occur progressively over time, with only discrete and relatively small locations within the wider area disturbed at one time. Furthermore, as the Project Area is a brownfield site, operation and maintenance activities as well as decommissioning and rehabilitation activities are ongoing and levels of disturbance associated with such activities are unlikely to change substantially.

Table 18: Description of Required Activities for each Project Phase

Work Stage	Description of Activities	Duration of Disturbance <sup>1</sup>			
Construction	Construction				
Site preparation	Vegetation clearing.	Permanent			
	Topsoil stripping.	Medium-term / Permanent			
	Construction of temporary site compounds including temporary fencing as required.	Medium-term			
	Installation of hardstands.	Short-term / Life of Project			
	Stockpiling.	Medium-term			
Installation of	Excavation.	Temporary			
electrical and communication	Trenching.	Temporary			
lines	Installation of electrical or communications infrastructure.	Life of Project			
Installation of gas	Excavation.	Temporary			
and water gathering pipelines	Trenching.	Temporary			
	Directional drilling.	Short-term			
	Installation of underground pipeline infrastructure.	Temporary			
Upgrades to gas compression facilities	Installation of new connections. Part replacements as necessary.	Life of Project			
Road works	Construction of permanent access roads and road upgrades.	Permanent			
Well pad	Ground excavation and drilling.	Life of Project			
construction	Erection of well pad components.	Life of Project			
Fencing	Establish permanent fencing where strictly required.	Life of Project			
	Establish temporary fauna exclusion fencing around laydown areas.	Short-term			
Reinstate ground surfaces	Ensure ground surfaces immediately post-construction are safe and stable.	Short-term			
Rehabilitation	Restoration of disturbed areas, including revegetation where required.	Temporary			
Operation and main	tenance				
Well operation		Life of Project			

Work Stage	Description of Activities Duration of Disturba		
Processing plant operation	Well and processing operations resulting in increased activity levels (vehicles, personnel), noise and light.		
Water treatment plant			
Maintenance of ancillary infrastructure areas	Ongoing vehicle movement along established access tracks and ground-slashing and pruning in required areas.	Medium-term	
Vegetation maintenance in operational areas	Ongoing vegetation (primarily slashing and pruning) maintenance for safe operation and access as well as fire safety.	Life of Project	
Decommissioning an	d rehabilitation		
Removal of well head components and supporting ancillary infrastructure	De-energising well infrastructure, removal of well components, disposal of oils, lubricants and coolants, removing site services.	Short-term	
Revegetation	Restoration of disturbed areas, including revegetation where required.	Temporary	

<sup>1 &#</sup>x27;Temporary' indicates days to months, 'short-term' indicates up to 2 years, 'medium-term' indicates from 2 years to 10 years, 'long term' indicates from 11 years to 20 years, 'life of Project' indicates the impact will last the life of the action and 'permanent' indicates the impact will remain past the life of the Project.

All impacts have been considered in the context of the MNES' susceptibility to such impacts. To understand potential risk profiles for each relevant MNES, a review of key threats (as identified by SPRAT or the species' Conservation Advice) and any relevant threat abatement plans was completed. MNES specific impacts have been identified in the significant impact assessment provided in Section 9.0 of the MNES Assessment Report (Attachment A).

## 6.2. Direct and Indirect Impacts

4.1.2	Include the direct and indirect loss and/or disturbance of MNES individuals and
	habitat as a result of the proposed action. This must include the quality of the
	habitat impacted and quantification of the individuals and habitat area (in
	hectares) to be impacted.

## 6.2.1. Direct Impacts

Direct and indirect loss and/or disturbance to MNES individuals and habitat is discussed in detail in Section 7.0 of the MNES Assessment Report (Attachment A). For each relevant MNES, a discussion on the presence, absence and likely density of populations is presented in Section 9.0 of the MNES Assessment Report (Attachment A). However, quantifying the number of individuals that may be impacted requires long-term studies to achieve realistic counts which is not feasible at this stage of the Project given the uncertainty in the location of infrastructure and the scale of the Project Area. It should be noted however that 14 ecological surveys have been conducted by suitably-qualified ecological consultants over 6 years, within a range of seasons and a significant dataset has been analysed to reach the conclusions presented in the MNES Assessment Report (Attachment A).

Potential habitat has been modelled for each relevant MNES based on extensive ground-truthing and analysis of desktop data in consideration of departmental guidance. In order to proactively manage potential direct impacts on MNES and apply the hierarchy of management principles, Westside have developed maximum disturbance limits for the MNES relevant to the Project (Table 19). These limits are cumulative over the life of the Project. At the time of this assessment not all areas within the Project Area had been field validated. However, a conservative and precautionary approach was implemented in the mapping of potential MNES habitat. Additionally, Project works will not be permissible in areas that have not already been field validated until site scouts have been completed and the findings documented and reviewed. In the rare event that a greater extent of habitat supporting potential MNES is identified through the site scouts, the Project will be designed to ensure compliance with the proposed maximum disturbance limits. The process will be managed through the Constraints Protocol (Attachment B).

Following the identification of a potential development site and the subsequent site scout, the predicted impacts on MNES will be reviewed against the maximum disturbance limits. If MNES identified as unlikely to occur at the time of this assessment are identified, direct impacts on such will not be permissible. Where a limit of 0.0 ha is identified to known or potentially occurring species or community, no direct impacts on that value are permissible, and therefore will be avoided. For clearing that is essential for identified MNES, the clearing will not exceed the specified maximum disturbance limits. In all instances, regardless of whether a limit has been specified for a MNES, avoidance will be prioritised, wherever possible. Since migratory species are not a relevant controlling provision for the Project as per the controlled action decision, no disturbance limits have been set for migratory species habitat.

The final number, size and location of infrastructure developed progressively over the life of the Project will be influenced by the location of the gas resources identified through ongoing exploration and appraisal activities. Field development will also account for the constraints associated with environmental, land access and cultural heritage values, as detailed in the Constraints Protocol (Attachment B)

The potential MNES habitat within the Project Area that may be impacted generally consists of small, fragmented patches, which are likely to be already disturbed due to historical clearing and thinning, exotic weeds and cattle grazing. Connectivity across the Project Area is already significantly compromised in many places. However, the Project has the potential to facilitate further fragmentation of these patches via vegetation clearing, as required namely for the construction of the linear components of the Project.

Vegetation clearing can fragment and disconnect vegetation communities, creating or further isolating patches which can impact on the success of seed dispersal, species recruitment and ultimately the long-term viability and persistence of a vegetation community within the landscape. Creating isolated patches and barriers for fauna movement which can impact on species recruitment, genetic flow and ultimately the long-term viability and persistence of fauna populations within the landscape. Importantly, the riparian corridor of the Dawson River contains most of the remnant vegetation in the Project Area, which will not be directly impacted by any Project works. Direct impacts to Koala climate refugia habitat are also not permitted, ensuring the continuation of important habitat for the species in the wider area.

The ecological and conservation value of large patches of vegetation is well accepted. Large patches are needed by many species to maintain viable populations and studies on edge effects have shown that only large reserves can provide high quality "interior" habitat. However, contemporary research is continuing to demonstrate that small patches can be valuable for biodiversity conservation too. These areas may provide complementary value and form an important part of the landscape matrix. In a 2002 study by Fischer and Lindenmayer, it was found that in two different Australian landscapes, relatively small patches contributed strongly to bird species richness. Even patches as small as 1 ha were used by a large proportion of species.

Habitat mapping presented in this report has conservatively assumed that patches 0.5 ha or larger may comprise viable MNES habitat, even where isolated in the landscape. This is a conservative size threshold, with the Qld DES Environmental offset landscape connectivity assessment tool ('the tool') only investigating impacts on patches 1 ha or larger (referred to as 'core' areas). The tool also assumes that edge effects influence up to 50 m from the patch boundary; as such, many small patches particularly if linear in shape can be completely edge-affected. The landscape fragmentation analysis used by this tool is adapted from the Landscape Fragmentation Tool developed by Jason Parent in 2009, with support from Centre for Land Use Education and Research and the Department of Natural Resources and the Environment, at the University of Connecticut. The Landscape Fragmentation Tool approach is based on the procedure developed by Vogt et al (2007). The core thresholds are based on minimum viable forest patch size research.

The underlying principles of the tool's tests for impacts on connectivity have been used to develop patch viability and functionality mitigation and management measures. As the Project does not have a defined footprint, these measures will ensure potential impacts are appropriately considered when siting infrastructure.

Table 19: Project Maximum Disturbance Limits to MNES

MNES	Likelihood of Occurrence	Project Area Habitat Utilisation Categories	Total within Project Area (ha)	Direct Impacts Permissible	Cumulative maximum disturbance limit (ha / no. of individuals)
TEC					
Brigalow TEC	Known	-	988.8	Yes	0.9
Coolibah TEC	Known	-	105.1	No	0.0
Poplar Box TEC	High	-	705.0	No	0.0
Flora					
Xerothamnella herbacea	Known	-	1,076.8	Potential habitat only	1.0 ha potential habitat / 0 confirmed individuals
Solanum dissectum	Known	-	1,076.8	Potential habitat only	1.0 ha potential habitat / 0 confirmed individuals
Solanum johnsonianum	Known	-	1,076.8	Potential habitat only	1.0 ha potential habitat / 0 confirmed individuals
Fauna					
Squatter pigeon (southern)	Moderate	Breeding	1,577.2	Yes	1.0
(Geophaps scripta scripta)		Foraging	44.6	Yes	1.0
		Dispersal	3,055.0	Yes	40.0
Ornamental snake (Denisonia maculata)	Known	Suitable habitat	4,849.2	Yes	16.0

MNES	Likelihood of Occurrence	Project Area Habitat Utilisation Categories	Total within Project Area (ha)	Direct Impacts Permissible	Cumulative maximum disturbance limit (ha / no. of individuals)
Koala ( <i>Phascolarctos</i>	High	Climate refugia	948.6	No	0.0
cinereus)		Breeding and foraging	801.0	Yes	2.0
		Shelter	800.3	Yes	6.9
		Dispersal	16,297.0	Yes	400.0
Painted honeyeater (Grantiella picta)	Moderate	Foraging and dispersal	2,555.4	Yes	6.9
Australian painted snipe (Rostratula australis)	Moderate	Seasonal breeding, foraging and dispersal	1,354.7	Yes	6.0
Greater glider (southern and central) ( <i>Petauroides volans</i> )	High	Denning	1,187.1	No	0.0
		Foraging and dispersal <sup>2</sup>	0.0	Yes	2.0
White-throated snapping turtle (Elseya albagula)	High	Breeding, foraging and dispersal	523.9	No	0.0
Fitzroy River turtle (Rheodytes leukops)	High	Breeding, foraging and dispersal	523.9	No	0.0

<sup>&</sup>lt;sup>2</sup> This habitat category was unable to be accurately mapped for the purposes of this assessment with the data available. A conservative approach to the mapping has been undertaken that currently considers all identified habitat within the Project Area to be suitable for denning purposes, although it is noted many of the areas identified as denning are most likely foraging and dispersal only. All areas proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability in consideration of tree DBH and height (>30 cm DBH and >10 m height).

MNES	Likelihood of Occurrence	Project Area Habitat Utilisation Categories	Total within Project Area (ha)	Direct Impacts Permissible	Cumulative maximum disturbance limit (ha / no. of individuals)
White-throated needletail (Hirundapus caudacutus)	Moderate	Foraging and dispersal	21,002.1	NA	No limit <sup>3</sup>
Yellow-bellied glider (south- eastern) (Petaurus australis australis)	Moderate	Denning, foraging and dispersal	1,039.4	No	0.0
Yakka skink ( <i>Egernia</i> rugosa)	Moderate	Breeding, foraging and dispersal	2,205.9	No	0.0
Boggomoss snail (Adclarkia dawsonensis)	Moderate	Breeding, foraging and dispersal	159.0	No	0.0

<sup>&</sup>lt;sup>3</sup> This species is a non-breeding migrant to Australia and is mostly aerial, foraging on the wing and moving with weather systems. Based on the species ecology, no clearing limit has been applied.

## 6.2.2. Indirect Impacts

Potential foreseeable indirect impacts on MNES as a result of the Project have been identified for all Project phases, with the greatest extent of indirect impacts expected to be associated with the construction phase. The MNES Assessment Report (Attachment A) provides a detailed discussion on indirect impacts related to the construction phase (presented in Section 7.1.2), with the potential for indirect impacts in the operation and maintenance phase and decommissioning and rehabilitation phase presented in Sections 7.2 and 7.3, respectively. A summary of the risks of indirect impacts associated with the construction phase of the Project is presented in Table 20. This table outlines the indirect impact and the relevant MNES which may be impacted, describes the impact and provides the expected frequency, duration and magnitude of the impact.

Potential direct and indirect impacts on MNES associated with the operation phase of the Project are considered to be minor. Coal seam gas extraction will be the main activity that occurs during this phase of the Project that may pose risk to MNES communities and habitat. As part of the gas extraction process, wells are drilled through the coal seams and the water pressure is reduced by extracting some of the water. This groundwater extraction may affect the quality and reduce the quantity of groundwater in adjacent aquifers that may be used for town water supply, irrigation, or by springs and other ecosystems. Environmental impacts may also occur from the storage and disposal of extracted groundwater and the effects of chemicals used in drilling.

To understand the nature and extent of potential impacts on groundwater during operation of the Project, a groundwater impact assessment was prepared for the Project by KCB Australia in 2021. The assessment considered the potential impact to water resources and water-dependent assets under the EPBC Act with reference to relevant assessment guidelines including 'Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources', 'Significant impact guidelines 1.1 – Matters of National Environmental Significance' and the Independent Expert Scientific Committee on Coal Seam Gas and Large Coal Mining Development (the IESC) information guidelines. KCB Australia (2021) concluded that the proposed development of the Project will not have a significant impact on water resources. No discernible impacts to potential terrestrial GDEs are predicted, based on the limited drawdown predicted in the hydrostratigraphic units that could provide groundwater to the potential GDEs.

Westside have also completed a produced water storage risk assessment for the Project that considers potential impacts to surface water and groundwater as a result of an unplanned release, which was provided to DCCEEW in 2022. With proposed controls in place, all of which are contained within Project management plans and systems, the residual risk of impact on the surrounding environment was considered low. The beneficial use of produced water including for dust suppression and irrigation is strictly managed via Westside's Produced Water Management Plan (MSG-GN00-HS-PLN-002), ensuring there is a low risk of potential indirect impacts on MNES.

The use, storage, transport and disposal of chemicals, fuels and other pollutants may also be required at times during the operation of the Project. Project activities that utilise chemicals, fuels and other pollutants will be carefully planned and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive receptors and environments present in the vicinity and the potential for indirect impacts on such values. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. Other

activities that will occur during this phase are limited to periodic inspection and/or maintenance in the same area previously disturbed during construction.

Similar to the operational phase of the Project, decommissioning and rehabilitation activities are also considered to have only minor and temporary impacts on MNES values as they will be completed progressively until the Project's closure. Other than for surface rehabilitation, no ground disturbance will occur as subsurface components of the gathering network will remain in-situ. Any ground disturbance required will be restricted to existing infrastructure locations (i.e. areas previously disturbed during construction).

Temporary and localised increases in noise and potentially dust may occur but will be managed using the same methods used during construction. Traversing vehicles required to complete decommissioning or rehabilitation activities may inadvertently introduce weeds and potentially collide with ground dwelling MNES resulting in injury or mortality. Any impacts would be mitigated through implementation of the Environmental Management Plan (EMP) and specific controls like weed hygiene procedures and site speed limits.

#### **Chemical Risk**

The Project involves natural gas extraction which involves the use of chemicals for drilling. These chemicals pose a risk to the environment and MNES through contamination caused by spillage, misuse and accidents. The chemicals present their potential risk through the combined mixture of:

- Chemical additives;
- Anthropogenic chemicals; and
- Geogenic constituents (from analytical data).

#### As present in:

- Chemical product transportation and storage at well sites; and
- Make up water / fluid used for drilling.

A Chemical risk assessment was conducted by Environmental Health and Safety (EHS) Support for the Meridian CSG Field Project. This risk assessment was submitted with the referral (EHS, 2021).

The drilling chemicals that were assessed include:

- Potassium chloride
- Diethanolamine
- Sodium carbonate
- Sodium erythorbate
- Tetrakis (hydroxymethyl) phosphonium sulphate
- Xanthan gum
- Tributyl tetradecyl phosphonium chloride

The Chemical risk assessment came to the following conclusions:

- Some shallow groundwater resources are known to exist, but these are not used extensively, and many are saline precluding beneficial uses.
- In terms of the development of the Project the potential for impacts from chemicals are limited to the use of drilling chemicals which during the process of establishing gas well casings will come in contact with the aquifer matrix. Hydraulic fracturing is not proposed and the management of chemicals at surface is not considered (based on the magnitude of management controls) to be a significant source of impact to groundwater.
- Modelling has demonstrated that potential exceedances of water quality criteria (under low seepage velocity conditions) are confined to the immediate vicinity of the well (<3 m). The modelled scenarios are based on losses of half a barrel of drilling fluid (79.5 litres) per saturated thickness of formation, which rarely occur. Losses of larger volumes of drilling mud will not increase the lateral extent of solute transport as partitioning from the mud into the aqueous phase is a rate limiting step but will result in constituents persisting longer in groundwater in the vicinity of the well.</p>
- Drilling processes are conducted in accordance with international best practices and are
  designed to prevent fluid losses into the formation and ultimately the establishment of the
  casing which provides protection for aquifer systems during subsequent phases of
  commissioning and operation. Further in the process of establishing casing, the hole is flushed
  further reducing the mass of drilling fluids in the subsurface. In addition, physical and chemical
  processes within groundwater and interaction with aquifer media are likely to mitigate any
  constituent concentrations in groundwater.
- Based on the nature of the fate and transport modelling assessment, the additional natural
  attenuation processes of constituents not accounted for in the assessment and the protective
  measures adopted within by Westside will ensure that deleterious impacts from drilling fluid
  losses are highly unlikely.

Management Plans within Attachment C detail the management measures Westside will employ to reduce the risk of environmental contamination. These include the Environmental Management Plan, the Produced Water Management Plan and the Significant Species Management Plan.

Project activities that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity, especially 'no-go' and high constraint areas, and the potential for contamination. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. Measures relating to chemicals, fuels and other pollutants outlined in the EMP will be implemented to ensure potential indirect impacts on the species and its habitat are managed effectively. Other management measures include water quality monitoring, and annual tank seepage monitoring.

Based on the findings of the Chemical Risk Assessment and the suite of controls in place, as documented in the Project management plans described above, there is a low residual risk of impacts on MNES as a result of Project us of chemicals and other pollutants.

Table 20: MNES at Risk of Indirect Impacts Associated with the Construction Phase

Indirect Impact	Relevant MNES	Potential Impact	Frequency	Duration	Magnitude
Edge effects causing habitat degradation	TECs	Habitat degradation could result in areas within the Project Area dropping below required condition thresholds to meet TEC status.	Infrequent – substantial cleared areas within the Project Area which will allow for siting to occur	Permanent – throughout lifetime of infrastructure and post rehabilitation.	Localised / low – will only effect edges of habitat. Most habitat within the Project
	Threatened flora species	Threatened flora and fauna species can be affected by edge effects due to:	away from existing habitat.		Area is already highly impacted by edge effects.
	Threatened fauna species	Modification of microclimate where new edges are created due to greater penetration of light and wind into the vegetation.			
		<ul> <li>Physical disturbance to vegetation at the edge. Ongoing damage to the edge of vegetation may occur due to grazing and weed control of road edges and vehicle use.</li> <li>Similarly, unsealed tracks can facilitate an increase incident of fire regimes.</li> </ul>			
		<ul> <li>Changes to soil properties including compaction of the soil, less organic matter and increased erodibility.</li> </ul>			
		<ul> <li>Introduction of weeds and pathogens through mud and dirt which falls off vehicles.</li> </ul>			
		<ul> <li>Exacerbation of the impact of aggressive exclusion of birds from woodland and forest habitat by noisy miners which are present within the Project Area. This is a</li> </ul>			

Indirect Impact	Relevant MNES	Potential Impact	Frequency	Duration	Magnitude
		Key Threatening Process under the EPBC Act.			
Weed and pest	TECs	Encroachment of exotic pasture grass	Infrequent / periodic -	Temporary – outbreaks	Localised, but could
incursion	Project is highly unlikely to lead to increased pest animal populations, increased access by ungulates such as	and more incidence of high intensity fires within the TEC or retained threatened flora habitat. Although the Project is highly unlikely to lead to increased pest animal populations, increased access by ungulates such as feral pigs, horses and cattle, could lead to further trampling, overgrazing and damage to the understorey and recruiting potential of the TECs and threatened flora species potentially	fluctuate seasonally and with land management practices or breaches in general construction Protocols (weed washdowns etc.).	addressed via general land management obligations under State laws.	extend to the broader Project Area if unmanaged. Magnitude also considered low given existing condition of habitat is already impacted by weeds and pests.
Koala	Any potential increase in dingo or wild dog populations as a result of the Project could threaten the local koala population. However, as above it is considered unlikely the Project will lead to a notable increase in pest populations.				

Indirect Impact	Relevant MNES	Potential Impact	Frequency	Duration	Magnitude
	Yakka skink	Individuals utilising the Project Area will be highly susceptible to an increase in pest predator species such as feral cats, cane toads and foxes. As above, it is considered highly unlikely the Project will lead to a notable increase in pest populations.			
	Boggomoss snail	Individuals utilising the Project Area will be highly susceptible to an increase in pest predator species such as feral cats, cane toads, foxes, house mouse and feral rats. Additionally, feral pigs effectively root up the ground searching for food, including snails. As above, it is considered highly unlikely the Project will lead to a notable increase in pest populations.  Weeds have the potential to alter both the lower shrub layer and consequent litter as well as contributing to an increased fuel load.			
	Australian painted snipe	Quality and availability of foraging resources are directly related to			
	Ornamental snake	condition of aquatic habitat and therefore increased weed incursion could impact on species habitat in the Project Area. These species are also high susceptible to predation however the Project is considered highly unlikely to lead to a notable increase in pest populations.			
	Fitzroy River turtle				

Indirect Impact	Relevant MNES	Potential Impact	Frequency	Duration	Magnitude
	White-throated snapping turtle	Weeds can cause infestations at nest sites making it more difficult for turtles to access their preferred nesting sites. Eggs and hatchlings may also be threatened by fox, feral pig, feral cat and dog predation however the Project is considered highly unlikely to lead to a notable increase in pest populations.			
	Painted honeyeater	Predation by invasive species (e.g. black rats) is noted as a threat to the species however the Project is considered highly unlikely to lead to a notable increase in pest populations.			
	Greater glider (central and southern)	Predation by feral cats and foxes are noted as threats to both species however the Project is considered			
	Yellow-bellied glider (south-eastern)	highly unlikely to lead to a notable increase in pest populations.			
Erosion,	Fitzroy River turtle	Increasing turbidity and sedimentation	Infrequent / periodic -	Temporary – limited to once off incident or	Localised / low – will
sedimentation and reduced water quality	White-throated snapping turtle	respiration. Pollution of water and soil by surrounding land uses may also pose a threat to populations.  Quality and availability of foraging resources are directly related to	fluctuate seasonally and with land management practices or breaches in general construction Protocols.	rectified through seasonal inundation diluting to background levels given the ephemeral nature of	only effect immediate area. Most habitat within the Project Area is already highly impacted by erosion and reduced water quality.
	Australian painted snipe			most waterbodies.	
	Ornamental snake	condition of aquatic habitat and therefore any reduction in water			

Indirect Impact	Relevant MNES	Potential Impact	Frequency	Duration	Magnitude
		quality could impact on species habitat in the Project Area.			
	Greater glider (southern and central)	Although unlikely, erosion and alteration of riparian zones may lead to the loss of canopy vegetation.  These trees may contain hollows which are necessary for the breeding of arboreal mammals. Trees may also be important for maintaining shelter and connectivity along the watercourse.			
	Yellow-bellied glider (south-eastern)				
Elevated dust	TECs	Extended periods of dust deposition	Infrequent – associated	Temporary – Potential	Localised / low – will
	Threatened flora	could threaten the health and viability of potentially present individuals and vegetation communities. The implementation of dust management as deemed necessary and in response to conditions will limit the chances of construction dust having an adverse impact on vegetation.	with breaches in general construction Protocols. Frequency is likely to be higher within the access road corridor.	impacts rectified through active management or through natural processes such as rainfall.	only effect immediate area.
Noise and light disturbance	Nocturnal MNES	Increased lighting within or adjacent to potential habitat within the Project Area could increase the success of predation by visual predators (including exotic pests) or could alter foraging and breeding behaviours. Construction noise or vibration during the day may disturb denning or roosting individuals and negatively affect circadian rhythms.	Occasional – minimal night work however noise, light and vibration as a result of construction works have the potential to disrupt fauna species.	Temporary – construction will occur in discreet areas over a period of 30 years.	Localised – restricted to the confined worksite.

## 6.3. Habitat Fragmentation

4.1.3	An assessment of the impacts of habitat fragmentation in the proposed action
	area and surrounding areas, including consideration of species' movement
	patterns.

Habitat fragmentation occurs primarily as a result of clearing of vegetation and habitat which may dissect and disconnect vegetation communities, reducing the size of patches or potentially isolating them, which can impact on the success of seed dispersal, species recruitment and ultimately the long-term viability and persistence of flora species or communities within the landscape. Clearing may also result in reduced fauna movement opportunities, leading to reduced species recruitment, genetic flow and ultimately affect the long-term viability and persistence of fauna populations within the landscape.

Historic (broad scale land clearing) and current land use practices (agricultural, mining and coal seam gas) have diminished the connectivity value of most of the Project Area both at the local and landscape scale. These land use practices have resulted in a landscape which is predominantly non-remnant paddock dominated by exotic grasses, interspersed with disjunct patches of native vegetation of varying quality and size. The distance between vegetation patches also varies, however separation of up to 3 km is common throughout. A variety of potential barriers to fauna movement also exist within the Project Area, including irrigation channels, roads, a railway and security fencing.

Relative to the Project Area and surrounds, landscape connectivity is largely limited to the Dawson River (a major and perennial watercourse) and the associated riparian and floodplain vegetation communities which have remained (Figure 26). Field survey findings, as well as aerial imagery and state mapping, indicate that the river supports relatively untouched, mature and intact riparian woodlands. The average width of the Dawson River riparian zone is 250 m (125 m either side of the river). In many locations however, the total corridor width inclusive of flanking floodplain communities is substantially wider, including greater than 1 km in the southern Project Area where the river bends. Across the eastern Project Area, most of the narrow linear areas of habitat associated with drainage lines that have persisted within the agricultural landscape exhibit some degree of connectivity to the Dawson River. West of the southern Project Area, the river also meanders towards the Dawson Range, potentially providing a point of connection at the Highworth Bend Conservation Park to the identified terrestrial corridor that is otherwise isolated by cleared agricultural land.

Listed species which are likely to utilise this riparian zone for lifecycle requirements and/or as a dispersal pathway include koala, greater glider (southern and central), yellow-bellied glider, Boggomoss snail, white-throated snapping turtle, squatter pigeon (southern) and ornamental snake. Some of these values, including the gliders, turtles and the Boggomoss snail, are not expected to occur anywhere else within the Project Area and are likely to be highly sensitive to disturbance including fragmentation. This riparian corridor has been recognised as a significant biodiversity feature and as such a commitment not to undertake any clearing in this area has been made. This is demonstrated by the adoption of maximum disturbance limits of 0.0 ha for the gliders, turtles and Boggomoss snail. As such the Project will not result in habitat fragmentation of this riparian corridor.

Habitat supported by the Project Area outside of the Dawson River generally comprises small, disconnected or isolated patches. As such, habitat fragmentation impacts as a result of the Project are anticipated to be low although it is noted risks of these impacts will vary across the Project Area depending on the type of

infrastructure proposed, the habitat present at a location and the ability to avoid and minimise direct impact through design and micro-siting.

Disturbance areas for production wells range from 1 ha to 2 ha during construction and 0.6 ha to 1.0 ha during operation. Permanent fences would be installed around the smaller (operation) area for safety and security. Although this shape and scale of clearing may present a minor disruption to movement to fauna in some circumstances, well pads would not pose a barrier to movement for MNES species which are known to occur or have the potential to be present within the Project Area. Linear clearing will be required for the construction of gas and water gathering pipelines as well as roads and access tracks. Clearing widths for such infrastructure will generally be between 8 - 20 m and 3 - 6 m, respectively.

Areas of pre-existing disturbance and other low constraint (koala dispersal habitat, squatter pigeon (southern) dispersal habitat and areas not identified as MNES habitat) will be utilised to site infrastructure to the maximum extent practicable to reduce disturbance impacts to other MNES. However, the maintenance of koala habitat functionality within areas of dispersal habitat to be impacted will also be a key consideration. As part of site scouts, the presence and extent of koala dispersal trees (recognised as a plant of any genera that has a tree diameter that is equal to or greater than 10 cm when measured at 1.3 m above the ground (referred as >10 cm diameter breast height (DBH)) will be assessed as it is acknowledged that these trees are the primary habitat resource within these areas. Of the 400 ha limit for dispersal habitat, 1% (or 4 ha) may comprise koala dispersal trees measured by canopy cover. This loss of koala dispersal tree cover as a result of the Project will be so minor, and so evenly distributed across the Project Area that it is considered highly unlikely habitat function will be disrupted.

Where use of low constraint areas is not safe or feasible, disturbance of moderate constraint areas will only occur where no other feasible construction options exist and in accordance with cumulative disturbance limits (refer to Table 19) and patch viability siting rules (see dot points below). This decision must be documented, sufficiently justified and approved by Westside. The siting of Project infrastructure (including wells, gathering infrastructure, tracks and other ancillary infrastructure) within or adjacent to moderate constraint areas must adhere to the following rules:

- Patches that are 0.5 ha or less must be completely avoided by the Project (no direct impacts permitted).
- Patches that are 1.0 ha or less must not be dissected in a way that creates two or more new patches.
- Direct impacts must not reduce the patch size to less than 0.5 ha OR isolate the patch by more than 50 m to the nearest patch (unless already isolated by more than 50 m).
- Patches >1.0 ha must not be dissected in a way that creates one patch <0.5 ha.</li>

After construction, gas and water gathering pipelines will be buried at a minimum of 750 mm beneath the surface and topsoil would be reinstated to the natural contour. As such, no hard barriers to movement would be created (i.e. fences, above ground structures) and the ground would represent a safe intervening matrix for dispersing fauna including, but not limited to, koala, squatter pigeon (southern) and ornamental snake.

Squatter pigeon (southern) are known to regularly utilise disturbed areas such as tracks and non-remnant roadside vegetation, so it is unlikely that this level of fragmentation would have any material impact on how

the species utilises the habitat. Once constructed, no impact to koala dispersal is expected from this level of habitat fragmentation given the species is highly mobile and able to disperse across broad areas of non-remnant vegetation.

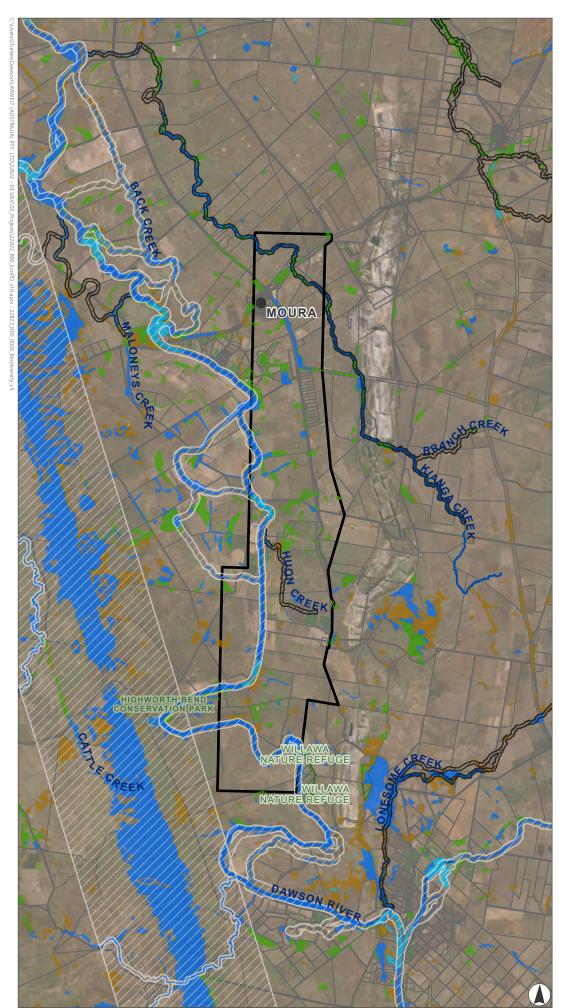
Ornamental snake is a smaller bodied species and is unlikely to move across large areas of completely cleared habitat due to predation risk and the requirement to stay near water (and prey species) for survival. However, they are known from previously cleared areas that are dominated by exotic grass, highlighting the species' ability to utilise fragmented landscapes. As such it is expected that the narrow clearing widths which would result from Project activities are unlikely to present a barrier to movement for the species.

Project activities are considered unlikely to affect the threatened flora's ability to continue to exchange genetic material between individuals and reproduce at the local site scale. The maximum clearing limits for all flora species is 1.0 ha and the siting of infrastructure will aim to minimise fragmentation of potential habitat as much as possible (i.e. clear edges rather than dissect habitat patches) to maintain core patch and population viability. With suitable avoidance, minimisation and mitigation in place, Project activities are unlikely to create a barrier to seed dispersal or vegetative reproduction.

During construction, the installation of water and gas gathering pipelines will require deep trenching throughout. During this period, some severance of fauna dispersal pathways is likely for some small bodied species (e.g. ornamental snake). Heightened activity during construction may also create a temporary barrier or deter some species from dispersing through the area. However, these impacts would be temporary and restricted to the area of construction, which would be staged. Furthermore, surface profiles will be returned to preconstruction levels for the operational phase.

To limit increases in fragmentation, habitat would be assessed and mitigation measures, outlined in the MNES Assessment Report (Attachment A) and Constraints Protocol (Attachment B) would be applied to avoid or minimise impacts. The MNES Assessment Report (Attachment A) addresses and discusses the impacts of habitat fragmentation in the context of individual species and communities in further detail.





#### FIGURE 26

## **Biodiversity Planning Assessment Mapping**

#### Legend

- Major Watercourse
- Project Area (Petroleum Lease 94)
- Cadastre
- ✓ Nature Refuge
- Protected Areas

#### **Statewide Biodiversity Corridors**

- ZZ Regional

## Biodiversity Planning Assessment - Brigalow Belt

- - State Habitat for EVNT taxa
  - State
- Regional
- Local or Other Values





Scale 1:250,000 at A4 GDA2020 MGA Zone 55

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## 6.4. Impact Duration

4.1.4	An assessment of the likely duration of impacts to MNES as a result of the	
	proposed action.	

As described previously, the most significant impacts would occur to MNES during the construction phase where the clearance of vegetation and habitat and associated land disturbance activities are required. Impacts from vegetation clearing are considered to be permanent where authorised activities will be ongoing throughout the life of the Project and beyond where they are intended to be utilised by the landholder or overlapping tenure holder, for example access tracks. Impacts are also likely to be irreversible to habitat for a number of MNES species such as ornamental snake and Australian painted snipe, which rely on habitat features which are unlikely to be suitably recovered through rehabilitation efforts (i.e. gilgai and soil cracks; wetlands).

All other disturbed areas, once they are no longer required for on-going authorised resource activities, would be subject to rehabilitation efforts within 12 months as per the Project's EA (EPPG00783713). As such, for temporary works such as clearing, excavation and trenching for gas and water gathering pipelines, transitional rehabilitation efforts would commence approximately 12 months after clearing. Whereas for infrastructure that would be required throughout the life of the Project such as well pads, rehabilitation would not commence until post-decommissioning. Section 7.0 of the MNES Assessment Report (Attachment A) provides a description of activities proposed for each phase of the Project and duration of the disturbance from temporary to permanent. This is also provided above in Table 17 of Section 6.2.

The transitional and final rehabilitation requirements are stipulated in the Project's Rehabilitation Management Plan and EA, which, if successful, would contribute to progressively restoring habitat to a condition which can be utilised by the relevant MNES. The time required to restore habitat to such condition will vary depending on the relevant species. For example, re-establishing ground cover that aligns with the pre-disturbed vegetation and provides dispersal habitat for squatter pigeon (southern) may take as little as three months. However, for rehabilitated areas to provide habitat for koala shelter habitat or breeding and foraging habitat, or painted honeyeater habitat for example, timeframes are likely 10-20 years. Timeframes will however vary significantly based on a range of factors including the extent of resources committed to rehabilitation success, soil suitability, indirect impacts and climatic conditions.

The duration, frequency and magnitude of indirect impacts to MNES including edge effects, weed and pest incursion, erosion, sedimentation and reduced water quality, and elevated noise, dust and light disturbance have been discussed in detail in Table 20, Section 6.2.2.

4.1.5	A discussion of whether the impacts are likely to be repeated, for example as	
	part of maintenance.	

The nature of gas field development involves development of gathering lines and pipelines, construction of wells and production of gas and abstraction of groundwater as the Project progresses in stages across the Project Area. The Project development cycle generally repeats for each well; however, the location of the Project activity and associated impacts changes.

As discussed in Section 7.0 of the MNES Assessment Report (Attachment A), the main direct impacts associated with construction (i.e. vegetation clearing and habitat fragmentation) are unlikely to be repeated as part of the operation and maintenance phase or decommissioning and rehabilitation phase of the Project. The exception to this is infrastructure locations that are operational or in use throughout the life of the Project, for example access tracks and well pads. In these locations, periodic maintenance activities will be necessary. They will predominantly comprise grass slashing and pruning and will be conducted as required for safe access and operation of infrastructure and decommissioning activities. In consultation with the landholder, the majority of Project infrastructure components, except for well heads, are anticipated to be left in situ at Project completion, allowing the avoidance of new ground disturbance.

It is not anticipated that operation, maintenance, decommissioning or rehabilitation activities will require clearing of previously undisturbed areas.

4.1.6	A discussion of whether any impacts are likely to be unknown, unpredictable
	or irreversible.

Potential Project impacts are generally known, predictable or reversible through implementation of mitigation, management and rehabilitation measures – refer to the Environmental Management Plan and Rehabilitation Plan (Attachment C). This reflects the nature of the Project Area (already containing a coal seam gas project) and the fact that numerous Projects of similar scale and extent have been successfully developed and mitigations suitably implemented to minimise impacts.

Potential impacts on MNES may arise throughout all phases of the Project. However, the most significant impacts to MNES generally occur during construction phase activities which require the clearance of vegetation and habitat. As the Project design and layout is currently unknown and subject to change as new information is gathered, the exact extent of vegetation clearance is not able to be predicted at this time. However, upper cumulative direct impact thresholds for each MNES have been provided, demonstrating the commitment to avoidance and minimisation. Fulfillment of these commitments will be actively managed via the Constraints Protocol (Attachment B). Several additional measures are also proposed to ensure impacts on vegetation and habitat are appropriately managed, as described in Section 8.2.1 of the MNES Assessment Report (Attachment A).

Westside is experienced in the development, operation and maintenance of a gas field development and is a registered suitable operator for carrying out Environmentally Relevant Activities under the Queensland EP Act. Westside operates in accordance with industry recognised standards and under mature management

systems. Development is proactively planned in a way that considers the environment (as well as other constraints) and manages potential impacts in compliance with legislative requirements and approvals.

In the event monitoring identifies new or unplanned impacts, updated information will feed into the understanding of site conditions via GIS to inform location of MNES values identified in constraint mapping and preferred infrastructure siting. Adaptive management processes integrate monitoring into the implementation of avoidance, mitigation and management measures in the Management Plans (Attachment C).

# 6.5. Environmental Impact Obligations

4.1.7	Justification, with supporting evidence, how the proposed action will not be inconsistent with:
	<ul> <li>Australia's obligations under the Biodiversity Convention, the Convention on Conservation of Nature in the South Pacific (Apia Convention), and the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES); and a recovery plan or threat abatement plan.</li> </ul>

Westside supports the full range of domestic measures Australia has adopted for improved conservation and tighter restrictions on the trade of CITES-listed species. The Project does not involve international trade in wildlife and does not threaten wild populations of plants and animals.

# 7. AVOIDANCE, MITIGATION, AND MANAGEMENT MEASURES

Westside's Constraints Protocol (Attachment B) will ensure that during the development of the Project Area, Westside will plan and design project infrastructure to avoid, minimise and mitigate impacts to the MNES values identified within the Project Area. The Constraints Protocol (Attachment B) will be the key process for the avoidance, minimisation, and mitigation of any impacts to these MNES.

Westside also has another number of additional Management Plans (Attachment C) that are used to ensure that the risks to MNES are managed during the construction, operation, maintenance, and decommissioning these include:

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

These management plans are presented as final plans to be approved and conditioned for implementation with construction.

# 7.1. Hierarchy of Environmental Management Principles

Westside follows a hierarchy of environmental management principles for the location of planned petroleum activities:

- Avoidance avoid direct and indirect adverse environmental impacts to MNES values.
- Minimisation minimise direct and indirect adverse environmental impacts to MNES values where disturbance to MNES cannot reasonably and practically be avoided.
- Mitigation mitigation and management measures for both direct and indirect impacts to MNES values for the Project in accordance with the Significant Species Management Plan
- Rehabilitation actively rehabilitate all disturbed areas in accordance with the PL94 EA (EPPG00783713) and Rehabilitation Management Plan
- Offset (only where required) provide suitable offsets for areas of impact that result in significant residual impact to MNES.

## 7.1.1. Avoidance

Proposed petroleum infrastructure locations will avoid significant impacts on MNES values by utilising the following measures:

- Redesigning the proposed petroleum infrastructure;
- Relocating the proposed petroleum infrastructure;
- Utilising areas of existing significant disturbance; and
- Utilising pad drilling with horizontal wells.

#### 7.1.2. Minimisation

Disturbances will be minimised within habitats with broad habitat extents (e.g. squatter pigeon and migratory species).

Minimisation of disturbance will include the following measures:

- Pipeline right of ways widths no greater than 18 meters
- Multi-well pads with horizontal wells utilised to minimise disturbances (maximum 2.5 hectares
- Non-linear infrastructure excluded from watercourses
- Utilise areas of existing significant disturbances.

The micro-siting of Project infrastructure will also maximise opportunities to minimise impacts to the following habitat resources which may be important to Project MNES:

- Koala dispersal habitat proposed for clearing will prioritise the retention of koala dispersal trees (highest priority) followed by any native woody vegetation (next highest priority).
- Brigalow Belt Locally important koala trees, as defined in *A review of koala habitat assessment criteria and methods* (Youngentob, Marsh and Skewes, 2021) (within areas of koala breeding and foraging habitat to be cleared).
- Brigalow Belt ancillary koala trees, as defined in A review of koala habitat assessment criteria and methods (Youngentob, Marsh and Skewes, 2021) (within areas of koala shelter habitat to be cleared).
- Within squatter pigeon (southern) dispersal habitat, mature trees that may provide shelter from aerial predators (including koala dispersal trees).
- Within greater glider (southern and central) foraging and dispersal habitat to be cleared, the tallest trees present within the assessed area, that may provide gliding launch points.
- Within painted honeyeater foraging and dispersal habitat to be cleared, trees containing the painted honeyeater's preferred mistletoe, which are from the genus *Amyema*.

## 7.1.3. Mitigation

Where avoidance cannot be achieved Westside will undertake both minimisation and mitigation measures to reduce both direct and indirect impacts to MNES and other environmental values. Mitigation measures are set out in Table 22.

### 7.1.4. Rehabilitation

All disturbances will be rehabilitated in accordance with the PL94 Rehabilitation Management Plan and the rehabilitation conditions set out in the PL94 EA (EPPG00783713). The time frame for rehabilitation works to be undertaken is determined by the type of infrastructure that is built.

### 7.1.5. Offset

Where significant residual impacts to MNES, as assessed by a Suitably Qualified Ecologist, occur the impact will be offset in accordance with the approved Offset Management Plan.

Westside has developed a table of management measures to be undertaken to avoid, mitigate and manage potential impacts to MNES communities and species.

## 7.2. Assessment Requirements

## 7.2.1. Summary of Management Measures

5.1	A detailed summary of measures proposed to be undertaken by the proponent
	to avoid, mitigate and manage relevant impacts of the proposed action on
	relevant MNES.

#### **General Management Measures**

General mitigation measures are included in Table 21.

Table 21: General Avoidance, Mitigation and Management Measures

#### **MNES**

#### **Threatened Ecological Communities**

- Areas of pre-existing disturbance (as defined in the Project's EA) and low constraint (koala dispersal habitat, squatter pigeon (southern) dispersal habitat and areas not identified as MNES habitat) will be utilised to site infrastructure to the maximum extent practicable to reduce disturbance impacts to other MNES (in accordance with the maximum disturbance limits identified in Table 19). Where use of these areas is not safe or feasible, disturbance of moderate constraint areas will only occur where no other feasible construction options exist and in accordance with cumulative disturbance limits and patch viability siting rules (see dot point below). This decision must be documented, sufficiently justified and approved by Westside.
- To ensure patch viability and functionality is maintained at current levels, the siting of Project infrastructure (including wells, gathering infrastructure, tracks and other ancillary infrastructure) within or adjacent to moderate constraint areas must also adhere to the following rules:
  - Patches that are 0.5 ha or less must be completed avoided by the Project (no direct impacts permitted).
  - Patches that are 1.0 ha or less must not be dissected in a way that creates two new patches.
  - Direct impacts must not reduce the patch size to less than 0.5 ha OR isolate the patch by more than 50 m to the nearest patch (unless already isolated by more than 50 m).
  - Patches >1.0 ha must not be dissected in a way that creates one patch <0.5 ha.
- Siting of full sized well pads will aim to avoid moderate constraint areas to the greatest extent practical. However, if full sized well pads are required within a moderate constraint area (even if only partially within), a 'minimal disturbance' approach will be utilised (i.e. topsoil strip for purpose of site levelling, but avoidance of importation of fill or significant compaction).
- When siting Project infrastructure within a wider low constraint area that contains patches of moderate constraint, existing breaks between patches will be utilised as much as practicable to minimise increases in habitat fragmentation.
- Where impacts on a moderate constraint area are unavoidable, Project infrastructure that is linear (i.e. gathering lines, tracks etc) should be sited in a way that impacts patch edges only. Where this is not achievable, within linear patches and particularly those on drainage lines, the siting should dissect the patch at a perpendicular angle and preferably intersect at the patches narrowest part to minimise clearing.
- · Where potential impacts within a moderate constraint area are identified, right of way (RoW) widths will be

reduced to 8 m, or the smallest width possible for safe construction. Within low constraint areas (i.e. no MNES), RoW widths may be 15 m or more.

- In consultation with the relevant stakeholders, proposed Project infrastructure will be co-located to the greatest extent possible with existing infrastructure such as fences, farm or access tracks, or other pipeline corridors.
- Priority will be given to utilising and/or upgrading existing tracks within the Project Area over creating new
  access tracks. Where upgrades are required in proximity to a constraint area (excluding low), disturbance on
  either side of the existing track will be limited to the greatest extent practicable to minimise any potential
  indirect impacts such as dust. Additionally, track upgrades will include improvements to waterway crossings
  where necessary.
- No direct impacts are permitted to the Dawson River including the associated riparian vegetation. This reflects the maximum disturbance limits of 0.0 ha for several potentially occurring MNES at this location including, but not limited to, the white-throated snapping turtle, Fitzroy River turtle, greater glider (southern and central) and yellow-bellied glider (south-eastern).
- Any directional drilling works will be strictly planned and controlled to ensure no unintended impacts on MNES
  occur including compromising groundwater, surface water or landform stability and integrity. Where direction
  drilling is planned to avoid a watercourse and the associated riparian vegetation, the drilling launch and receipt
  points (and associated area of any land disturbance including clearing) will occur outside the feature's Riparian
  Protection Zone (RPZ) as defined by the VM Act. The level of protection afforded is dependent on the stream
  order:
  - RPZ includes 10 m from the defining bank of a stream order 1 or 2 watercourse
  - RPZ includes 25 m from the defining bank of a stream order 3 or 4 watercourse
  - RPZ includes 50 m from the defining bank of a stream order 5 or higher watercourse

#### **Biodiversity**

- Prior to any significant disturbance to land, a suitably qualified ecologist will assess the proposed infrastructure
  location (and a 30 m buffer where permitted) via a site scout to determine presence, or potential presence of
  MNES habitat and/or key habitat features. The proposed infrastructure location is defined as the maximum
  spatial extent of Project-related work including equipment laydowns, vegetation clearing and other ground
  disturbance. Identification of MNES will be conducted in accordance with habitat rules provided in the MNES
  Assessment Report (Attachment A).
- If a threatened flora or fauna species listed under the EPBC Act at the time of the controlled action decision (30 June 2022) is identified in the proposed infrastructure location during construction activities including vegetation clearing, all works must temporarily cease until the individual (if an animal) leaves the area of its own accord or is relocated by a suitably qualified spotter-catcher. Threatened flora individuals/populations must be completed avoided via micro siting as per the Protocol.
- During the site scouts, any potential animal breeding places will be searched for. If located, details on the
  relevant species or fauna group will be collected as well as the Global Positioning System location. Where there
  is the potential that an active breeding place will be tampered with as part of Project activities, this will only be
  done in accordance with an approved low-risk and/or high-risk DESI Species Management Plan (SMP)
  (depending on the species to be impacted) in accordance with the Qld Nature Conservation (Animals)
  Regulation 2020.

- Following the completion of each site scout, the ecology assessment report produced will include:
  - · Methods (including survey effort) and results of the site scout
  - An assessment of predicted changes (if any) to habitat functionality, specifically as it relates to koala dispersal habitat (i.e. due to loss of potential dispersal trees) and painted honeyeater foraging and dispersal habitat (i.e. due to loss of mistletoe)
  - Predicted direct and indirect impacts to MNES individuals and/or habitat (including habitat located adjacent to proposed impact area) and an assessment of compliance with relevant regulatory conditions
  - Recommendations to maximise the avoidance of MNES.
- Following clearing, the actual extent of direct impacts to MNES will be determined and added to the
  cumulative disturbance totals to be compared to the approved maximum disturbance limits outlined in the
  Project's EPBC Act approval. The cumulative disturbance area totals per MNES will be tracked in Westside's GIS
  to be included in compliance reporting, as required.
- Where Project activities are planned within 50 m or less of MNES habitat (including no-go, high and moderate constraint areas), exclusion zones will be demarcated around the MNES habitat to be protected to avoid unauthorised disturbance and access. This will be done with temporary fencing and/or signage as necessary and will be removed at the conclusion of the activity.
- Prior to site entry, all personnel planning to complete work within the Project Area will attend a Westside site
  induction and be made aware of the sensitive receptors, including but not limited to MNES, that may be
  present within or near the work area. The site environment officer may provide informal training on the
  identification of MNES if necessary. Daily toolbox meetings will be held and will include discussion on any
  recent MNES fauna sightings, to increase vigilance and minimise accidental interactions.
- Prior to site entry, any personnel planning to complete night work or use tracks in proximity to areas confirmed to contain ornamental snake (*Denisonia maculata*) habitat will be briefed on the species by the site environment officer. The briefing should highlight what the species looks like, it's peak activity periods (at night and after rainfall) and the fact that it is venomous. Any sightings of the species should be reported to the site environment office to ensure vigilance is highest in areas of known occupation.
- A suitably qualified fauna spotter-catcher will be present during all Project activities that require ground
  disturbance or clearing in MNES habitat, with the exception of areas mapped exclusively as koala dispersal
  habitat and/or squatter pigeon (southern) dispersal habitat. A spotter-catcher is considered unnecessary in
  these specific areas of habitat noting the linear nature of the infrastructure location and the low chances an
  individual will be present given such habitat is generally widely available. If any information becomes available
  to suggest recent occupation of the area (i.e. recent sighting), a spotter-catcher will be required.
- If present, terrestrial habitat features (tree hollows, potential dens, surface rocks and fallen logs) will be inspected by the fauna spotter-catcher prior to any significant disturbance using work platforms, inspection cameras, or other methods deemed safe and suitable. Habitat features/trees will be marked using appropriate paint or flagging tape.
- Immediately prior to any clearing of MNES habitat, the fauna spotter-catcher will mark larger, discrete and
  movable microhabitat features such as coarse woody debris and fallen logs to identify them for relocation to
  adjacent or nearby areas of undisturbed suitable habitat. Translocation of small items may occur by hand,
  while larger items will be moved using excavators or other machinery under the direct supervision of the fauna
  spotter-catcher and may be stockpiled first. It is acknowledged that not all microhabitat or all types of

microhabitat (i.e. litter and soil cracks) will be able to be relocated.

- Outside of public areas, vehicle movement within the Project Area will be only via approved access tracks with speed limits imposed (40 km/hr on private property). The requirement to enter and traverse the Project Area will be minimised and limited to those required for essential Project activities. Changes to speed limits and access will be promptly communicated to all site personnel via email notifications, toolbox talks and notices in common areas.
- Topsoil will be managed in a manner that preserves its biological and chemical properties (condition E2 of the Project's EA), as per the IECA Best Practice Erosion and Sediment Control document. Topsoil collected as part of site establishment activities will be used during the rehabilitation phase in accordance with the Westside Rehabilitation Management Plan (Attachment C).
- Construction and maintenance of linear infrastructure must be conducted in accordance with the following preference: when no water is present, in times of no flow, in times of flow but in a way that does not impede low flow. Construction works will be prioritised during the dry season, to minimise the amount of water present during construction activities.
- Pipeline trenches must be backfilled and topsoils reinstated within three months after pipe laying (condition E6 of the Project's EA). Prior to backfilling, excavations or trenches will be inspected for the presence of fauna, and evidence of burrowing fauna or breeding places. If present, the fauna will be relocated, or the breeding place will be managed in accordance with an approved SMP.
- Infrastructure will be sited in a manner that minimises impacts to natural flow regimes. Backfilled, reinstated and revegetated pipeline trenches and RoWs must be re-profiled to original contours and established drainage lines (condition E8 of the Project's EA).
- Any open excavation will be checked for trapped fauna in the early morning (typically within one hour of dawn
  or as advised by the fauna spotter catcher) and at the end of each day (within one hour of dusk or as advised
  by the fauna spotter catcher). If required, fauna will be relocated by a suitably qualified spotter-catcher. Fauna
  egress such as trench ladders, ramps, sticks, ropes and moist hessian sacks at regular intervals (or similar) will
  be utilised where trenches or excavations are anticipated to remain open for extended periods. This will help
  trapped fauna escape and/or survive until removed by a fauna spotter-catcher.
- The open ends of welded pipeline sections will be plugged at the end of each day using 'night caps' or similar to prevent the ingress of fauna.
- On the advice of a suitably qualified ecologist, signage which includes information such as wildlife presence will be installed on private roads and tracks to mitigate potential collisions.

### Weed, Pest and Disease Management

- The Westside Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) and the Weed Management Procedure (WCL-0000-HS-PRC-034) are currently implemented to manage weed spread and incursion risks and pests within the Project Area. These documents will continue to be implemented across the life of the Project.
- The presence and abundance of weed species listed under the *Biosecurity Act 2014* and/or that are WONS will be identified during ecological site scouts and opportunistically by all personnel accessing the Project Area.
- All personnel accessing the Project Area will be made aware of significant weed species (these may be listed species or ones of key concern to landholders) known to the Project Area via toolbox meetings and notices in

the common areas of the site office. The site environment officer may provide informal training on the identification of weed species if necessary.

- Construction activities, including vegetation clearing and soil movement, will work from areas with fewer weed species/smaller infestations towards areas where there is a greater abundance of weeds, to minimise potential for spread.
- All equipment and vehicles will be free of organic matter that may contain weed reproductive material and have appropriate weed hygiene declarations prior to arriving on site.
- Any Project equipment sourced from international origins will be subject to State and Commonwealth quarantine protocols.
- The siting of stockpile areas, spills dumps, refuse areas and vehicle parking areas will be within areas already cleared or proposed to be cleared to minimise feral animal occurrences.
- Rehabilitation of all significantly disturbed land will be done in accordance with the Project's EA and Rehabilitation Management Plan (Attachment C). Rehabilitation includes the use of native groundcover species wherever landholder seed mix is not requested.
- Ongoing, routine monitoring will be implemented throughout the life of the Project to ensure early detection
  of new areas of weed, pathogen and pest spread or incursion, identify previously unrecorded invasive species,
  and assess the efficacy of prescribed control measures. Specifications of the type and frequency of monitoring
  are defined in the Biosecurity Management Plan (WCL-0000-HS-PLN-010-010).
- Pest populations across the Project Area and surrounds are likely high given the developed nature of the landscape, including mining, urban and agricultural areas. Nonetheless, feral animal control programs will be conducted by a suitably qualified contractor, as required and in consultation with the relevant landholders.

#### **Other Indirect Measures**

- Land that has been significantly disturbed by the authorised resource activities must be managed to ensure that mass movement, gully erosion, rill erosion, sheet erosion and tunnel erosion do not occur on that land (condition E3 of the Project's EA).
- All Project activities will preferentially be completed during daylight hours.
- Night works or vehicle movements within or adjacent to areas of MNES will be avoided as standard practice. Where night works are required, lights will be directed to minimise light spill into adjacent habitats.
- Dust suppression measures will be implemented as required i.e. on high wind days (winds above 20 km/hr) during dry periods. The frequency and intensity of produced water used for dust suppression will be managed in accordance with the Produced Water Management Plan (Attachment C).
- Speed limits will be imposed throughout the Project Area, informed by appropriate signage as required. Should Westside personnel or contractors fail to comply with speed limits, this will be recorded and corrective action taken as deemed appropriate by the site supervisor.
- Internal roads will be maintained so that natural drainage patterns and catchments retain their predisturbance flow regime.
- Noise-related impacts on sensitive receivers as a result of Project activities (including blasting) will be managed

via the Noise Management Plan (WCL-0000-HS-PLN-009). Noise limits specific to time periods are included which are consistent with the Project's EA. Although measures are specific to minimising impacts on people, it is likely these will also benefit fauna including listed threatened and/or migratory species.

- Noise mitigation measures will be implemented during noise-generating Project activities, such as drilling campaigns, in accordance with the Noise Management Plan (WCL-0000-HS-PLN-009).
- Erosion and sediment control devices will be implemented in accordance with International Erosion Control
  Association Best Practice Erosion and Sediment Control documents during construction to minimise the risk of
  potential sedimentation to sensitive receptors including areas of MNES habitat. Relevant measures may be
  captured in the Project's EMP or a dedicated plan.
- Construction of linear infrastructure requiring a watercourse crossing will be undertaken in accordance with the Accepted development requirements for operational work that is constructing or raising waterway barrier works under the *Fisheries Act 1994* and *Planning Act 2016*.
- Beneficial use of produced water in accordance with the water quality limits under the Project's EA and beneficial use approvals under the *Waste Reduction and Recycling Act 2011* (e.g. Australian and New Zealand Environmental Conservation Council water quality limits for irrigation).
- Chemicals and fuels stored, must be effectively contained and where relevant, meet Australian Standards, where such a standard is applicable (condition E4 of the Project's EA).
- The use, transport and disposal of chemicals, fuels and other pollutants will be carefully considered and strictly controlled via Project management plans including the EMP. Contingencies are in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately.

#### **MNES Specific Management Measures**

Mitigation and management measures specific to the known and potentially occurring MNES within the Project Area are set out in Table 22.

Table 22: PL94 Avoidance, Mitigation and Management Measures for Relevant MNES

MNES	Approach	Additional Mitigation and Management Measures	
Identified and po	Identified and potential TECs		
Brigalow (Acacia harpophylla dominant and co-dominant)  Coolibah — Black box woodlands of the Darling Riverine Plains and the Brigalow Belt South Region  Poplar Box Grassy Woodland on Alluvial Plains TEC	<ul> <li>Avoidance of Direct Impacts</li> <li>Site scout surveys will be undertaken to confirm the absence of these TECs from the PL94 Development Area.</li> <li>Direct disturbance to Brigalow TECs for the project is limited to the maximum disturbance limits in Table 19.</li> <li>No direct impacts to Coolibah TEC or Poplar Box Woodland TEC will be permissible at any time throughout the life of the Project.</li> <li>Coolibah TECs and Poplar Box Woodland TECs are identified as 'no-go' areas.</li> <li>Minimise Indirect Impacts</li> <li>Development will avoid disturbance to areas directly adjacent to TECs as standard practice.</li> <li>Minimising disturbance within fringe areas of TECs</li> <li>Locations of prior significant disturbance will be utilised</li> <li>Rehabilitate disturbances</li> </ul>	<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>TECs within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. The presence and extent of TECs within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential TEC mapped).</li> <li>Direct impacts to Brigalow TEC will occur on the edges of patches only, and/or utilise existing gaps and breaks. No patches will be dissected, however where existing gaps are already present these may be widened, provided cumulative maximum disturbance limits for the TEC are adhered to.</li> <li>No stockpiling of construction materials including excavated soil will occur in areas identified as TEC.</li> <li>Clearing works will maintain a vegetation 'exclusion zone' of 5 m or more around areas of TEC to ensure suitable micro-climatic conditions are maintained and weed incursion risks are reduced.</li> <li>The extent of Project-related construction work (including equipment laydown and other non-clearing activities) proposed to occur within 5 m of a confirmed or potential TEC will be demarcated using flagging tape, barricade webbing or similar, to avoid accidental clearing outside the approved disturbance area.</li> <li>Confirmed and potential TEC areas adjacent to Project construction activities will be inspected by a suitably qualified ecologist prior to commencement and at completion of works, in accordance with the methods outlined in the Significant Species Management Plan (Attachment C).</li> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species.</li></ul>	

MNES	Approach	Additional Mitigation and Management Measures
Identified Threa	tened flora species	
Xerothamnella herbacea Solanum dissectum	Avoidance of Direct Impacts     Site scout surveys will be undertaken for populations of threatened flora species and Project infrastructure will avoid disturbance to identified	<ul> <li>Threatened flora individuals/populations and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. The presence and extent of threatened flora populations and habitat within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> </ul>
Solanum johnsonianum	populations.  No direct disturbance to	<ul> <li>No direct impacts to any threatened flora plants listed under the EPBC Act will be permissible at any time throughout the life of the Project. Areas known to support threatened flora listed under the EPBC Act adjacent to Project construction activities will be monitored by a suitably qualified ecologist in accordance with the frequency and method provided in the Significant Species Management Plan (Attachment C).</li> <li>Where a plant is identified to potentially be a species' listed under the EPBC Act, but formal identification cannot be made at the time, the plants will be assumed to be the threatened species and managed</li> </ul>
		<ul> <li>accordingly until proper identification occur.</li> <li>Direct impacts to potential habitat for the relevant threatened flora species (i.e. meets the habitat definition but did not contain any individuals or populations) are only permitted to a cumulative maximum disturbance limit of 1.0 ha. Direct impacts to potential threatened flora habitat will be avoided to the maximum extent possible.</li> </ul>
		<ul> <li>The extent of Project-related construction work (including equipment laydown and other non-clearing activities) proposed to occur within 5 m of threatened flora habitat will be demarcated using flagging tape, barricade webbing or similar, to avoid accidental clearing outside the approved disturbance area.</li> </ul>
		<ul> <li>The siting of Project infrastructure will aim to minimise fragmentation of potential habitat as much as possible (i.e. clear edges rather than dissect patches) to maintain core patch and population viability.</li> <li>No stockpiling of construction materials including excavated soil will occur in areas identified as</li> </ul>
		<ul> <li>A vegetation 'exclusion zone' of 5 m will be established around identified locations of threatened flora species to ensure suitable micro-climatic conditions are maintained and weed incursion risks are reduced. The known threatened flora location, inclusive of the exclusion zone, will be considered a 'nogo' zone to mitigate any occurrence of accidental damage or death as a result of trampling etc. Given the very small size of the plants (forbs) and root system characteristics (<i>Xerothamnella herbacea</i> able to root at the nodes that contact the soil while both <i>Solanum</i> spp. rhizomatous and may benefit from some disturbance), a 5 m exclusion zone is considered sufficient.</li> </ul>

MNES	Approach	Additional Mitigation and Management Measures
		<ul> <li>Patches confirmed to contain threatened flora individuals/populations and associated 'no-go' zones, adjacent to Project construction activities will be inspected by a suitably qualified ecologist prior to commencement and at completion of works, to ensure no unintentional indirect impacts have occurred in accordance with the methods outlined in the Significant Species Management Plan (Attachment C).</li> <li>In the unlikely event that threatened flora plant listed under the EPBC Act is damaged, removed or killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.</li> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species within areas of habitat.</li> <li>If landholder seed mix is not requested, rehabilitation works in areas adjacent to threatened flora habitat will prioritise the use of native species, to reduce increased incursion of weed species and/or exotic grass species (i.e. buffel grass) within the area. Rehabilitation will be undertaken in accordance with the Rehabilitation Management Plan (Attachment C).</li> </ul>
Identified threa	tened fauna species	
Ornamental Snake	Avoidance of Direct Impacts  Direct impacts to ornamental snake suitable habitat are permitted only to a cumulative maximum disturbance limit of 16.0 ha. Direct impacts to potential ornamental snake habitat will be avoided to the maximum extent possible.  Suitable habitat for ornamental snake has been identified as 'moderate constraint' areas.  Disturbance to suitable habitat for ornamental will not cause the fragmentation of important habitat.  Minimise Impacts  Locations of prior significant disturbance will be utilised	<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>Ornamental snake individuals and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. The presence and extent of ornamental snake habitat within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> <li>Where clearing is proposed for ornamental snake suitable habitat, a fauna spotter-catcher must be present. The fauna spotter-catcher will attempt to relocate any ornamental snake individuals that may occur within areas of suitable habitat to be cleared to nearby areas of suitable habitat. This will be done by:         <ul> <li>Searching for individuals via spotlighting surveys at night. This could be completed the night before works are planned, or at any time within three months of clearing works if conditions are suitable i.e. following rain</li> <li>Searching for individuals immediately prior to clearing within surface microhabitat such as fallen timber and deep litter piles.</li> <li>Any ornamental snakes captured will be relocated at least 100 m away. The chances of relocated ornamental snake/s returning to areas of habitat to be cleared are considered low as radio tracking studies completed by Veary (2011) indicate that the species moves only short distances during late summer and winter, and even shorter distances in</li> </ul> </li> </ul>

MNES	Approach	Additional Mitigation and Management Measures
	Rehabilitate disturbances	<ul> <li>where clearing is proposed within or adjacent ornamental snake suitable habitat, active erosion and sediment control measures will be implemented to mitigate potential habitat degradation.</li> <li>The period of time that trenches and other excavations are open will be minimised, particularly in areas where the species has been recorded and in mapped suitable habitat.</li> <li>Surface water pipeline design will consider the dispersal requirements of the ornamental snake and be preferentially collocated with access tracks (new or existing) to minimise creating barriers to movement. Where the pipeline is not raised off the ground, egress points that allow ornamental snakes to safely move over or under the pipelines, will be installed (minimum frequency of 1 egress point per 100 m of pipeline).</li> <li>To minimise the chances of collision, in known ornamental snake occurrence areas within the Project Area, speed limits will be reduced to 40 km/hr or less and signage will be installed that indicates species presence.</li> <li>Larger, discrete surface microhabitat features such as fallen timber and surface rocks will be relocated to adjacent areas of undisturbed habitat prior to clearing, where safe and practical. As described in Section 8.2.1 of the MNES Assessment Report, the fauna spotter-catcher will identify these items prior to clearing and relocation will be supported by machinery as required.</li> <li>If an ornamental snake is killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.</li> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species within areas of habitat.</li> </ul>

MNES	Approach	Additional Mitigation and Management Measures	
Potential M	otential MNES (not identified by surveys)		
Koala	<ul> <li>Avoidance of Direct Impacts</li> <li>No direct impacts to koala habitat categorised as climate refugia will be permissible at any time throughout the life of the Project.</li> <li>Direct impacts to koala breeding and foraging habitat are permitted only to a cumulative maximum disturbance limit of 2.0 ha. Direct impacts to koala shelter habitat and dispersal habitat are permitted only to a cumulative maximum disturbance limit of 6.9 ha and 400.0 ha, respectively. Of the 400 ha limit for dispersal habitat, 1% (or 4 ha) may comprise koala dispersal trees measured by canopy cover.</li> </ul>	<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>Koala individuals and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. The presence and extent of koala habitat (breeding and foraging) within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> <li>During the site scouts, the presence and extent (measured by canopy cover) of koala dispersal trees (recognised as a plant of any genera that has a tree diameter that is equal to or greater than 10 cm when measured at 1.3 m above the ground (referred as &gt;10 cm DBH)) within areas of koala dispersal habitat with be assessed as part of habitat verification and mapping. This data will be used to provide guidance on micro-siting and inform the site-specific determination of impacts to dispersal habitat (including area of dispersal tree cover loss predicted). The subsequent site scout ecology report will detail the findings and include an assessment of predicted residual changes to koala dispersal capacity as a result of the Project, relative to the baseline. No functional loss of koala dispersal habitat will be permitted.</li> <li>As the majority of the Project Area is mapped as koala dispersal habitat, impacts on the species are largely unavoidable. Siting of infrastructure will preferentially retain breeding and foraging habitat over shelter and dispersal habitat.</li> <li>The micro-siting of Project infrastructure within areas of koala dispersal habitat proposed for clearing will prioritise the retention of koala dispersal trees (highest priority) followed by any native woody vegetation.</li> <li>Within areas of koala breeding and foraging habitat to be cleared, micro-siting will aim to maximise t</li></ul>	

MNES	Approach	Additional Mitigation and Management Measures
		<ul> <li>Where clearing is proposed for areas of koala habitat (breeding and foraging and shelter habitat categories), a fauna spotter-catcher must be present. Prior to vegetation clearing commencing, the fauna spotter-catcher will include canopy searches for koalas. If a koala is located during clearing activities:</li> <li>The individual must not be forcibly relocated.</li> </ul>
		<ul> <li>Any tree which houses a koala as well as any tree with a crown that overlaps that tree will not be cleared until the koala vacates the tree on its own volition.</li> <li>Allow a clearing buffer surrounding the tree, equal to the height of the tree or deemed suitable by the fauna spotter-catcher.</li> </ul>
		<ul> <li>Any injured koala (and fauna in general) should be transported to a vet or recognised wildlife carer.</li> <li>Requirements for koalas subject to handling to be examined and if suspected of Chlamydia infection will be taken to a predesignated veterinarian/wildlife care facility for treatment prior to release.</li> <li>To reduce the potential for direct mortality, all vehicles and pedestrians will remain within designated</li> </ul>
		<ul> <li>access tracks in areas of koala habitat.</li> <li>To minimise the chances of collision, in known koala occurrence areas, speed limits (in private areas) will be reduced to 40 km/hr or less and signage will be installed that indicates species presence. It is noted that the species is currently considered a potential occurrence and is not known to the Project</li> </ul>
		<ul> <li>Area.</li> <li>If a koala is sighted within the Project Area, the details of this observation will be communicated via the daily toolbox and on notices in the common areas of the site office in order to increase vigilance in the area and compliance with enforced speed limits.</li> <li>In the unlikely event that a koala is killed as a result of Project activities, DCCEEW will be notified</li> </ul>
		<ul> <li>within a maximum period of 2 business days.</li> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species within areas of habitat.</li> </ul>

MNES	Approach	Additional Mitigation and Management Measures
Greater glider (southern and central)	Avoidance of Direct Impacts  No direct impacts to greater glider denning habitat (maximum disturbance limit of 0.0 ha).  Direct impacts to greater glider foraging and dispersal habitat are permitted to a cumulative maximum disturbance limit of 2.0 ha.  Minimise Impacts  Rehabilitate disturbances	<ul> <li>When clearing greater glider (southern and central) foraging and dispersal habitat, micro-siting will aim to retain the tallest trees present within the assessed area, to ensure availability of gliding launch points is retained.</li> <li>During the site scouts, ecologists will assess tree height and size relative to known glide angle to determine if an area meets the habitat definition and how habitat exists functionally in the landscape (i.e. as an isolated patch or as a habitat corridor). This data will also be used to determine if proposed infrastructure siting is in accordance with the below measure that specifies that clearing must not create gaps within a habitat corridor that are impassable.</li> <li>Where clearing is proposed within a greater glider (southern and central) habitat corridor, as defined in the MNES habitat criteria, site scout data collected by a qualified ecologist will be used to understand how much wider existing gaps can be made. Clearing required for construction of the Project will not create gaps in the habitat corridor that are too great for the species to glide across based on known glide ratios (i.e. turn the corridor into two isolated patches or corridors, thereby reducing habitat connectivity within the Project Area). Refer Appendix A Habitat Descriptions, for full definition, as well as the following clarification:         <ul> <li>Foraging and dispersal habitat (individual patch or corridor) must occur within gliding distance (calculated based on known glide angle (40°) and tree height, or 100 m if not able to calculate accurately) of denning habitat, given the species' reliance on hollow-bearing trees to shelter during the day.</li> </ul> </li> </ul>
Avoidance of Direct Impacts  • Direct impacts to squatter pigeon (southern) breeding habitat and foraging habitat are permitted only to a cumulative maximum disturbance limit of 1.0 ha. Direct impacts to squatter pigeon (southern) dispersal habitat are permitted only to a cumulative maximum disturbance limit of 40.0 ha. Direct impacts to potential squatter pigeon (southern) habitat will be avoided to the maximum extent possible.		<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>Squatter pigeon (southern) and Australian painted snipe individuals, nests and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. Nest locations should be recorded and mapped. The presence and extent of squatter pigeon (southern) and Australian painted snipe habitat within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> <li>Where clearing is proposed for areas of squatter pigeon (southern) or Australian painted snipe habitat (all utilisation categories), a fauna spotter-catcher must be present.</li> <li>Immediately prior to clearing any squatter pigeon (southern) or Australian painted snipe habitat, the fauna spotter-catcher will complete flushing transects to encourage the movement of individuals out of</li> </ul>

MNES Approach	Additional Mitigation and Management Measures
Direct impacts to Australian painted snipe seasonal breeding, foraging and dispersal habitat are permitted only to a cumulative maximum disturbance limit of 6.0 ha. Direct impacts to potential Australian painted snipe habitat will be avoided to the maximum extent possible.      Where clearing is proposed within squatter pigeon (southern) dispersal habitat, micro-siting efforts will aim to retain mature trees that may provide shelter from aerial predators.      Avoidance of disturbance to breeding and foraging habitat for the Australian painted snipe.      Minimise Impacts      Minimise Impacts      Minimise Impacts      Rehabilitate disturbances	<ul> <li>As both the squatter pigeon (southern) and Australian painted snipe nests on the ground and is at high risk of direct mortality, potential nests should also be searched for by the fauna spotter-catcher immediately prior to clearing potential habitat, with any located demarcated.</li> <li>If a squatter pigeon (southern) nest is located and the area is not already identified as breeding habitat, work will temporarily cease. The Protocol will identify the next steps, including but not limited to, re-categorised the area as breeding habitat and determining if predicted impact areas are within the cumulative disturbance limits for squatter pigeon (southern) breeding habitat.</li> <li>If direct disturbance to a squatter pigeon (southern) or Australian painted snipe nest is required, this will be managed under an approved DESI SMP (high-risk). A minimum 100 m radius exclusion zone (or larger if determined necessary by the fauna spotter-catcher) will be required around active nests.</li> <li>To reduce the potential for crushing of nests or direct mortality, all vehicles and pedestrians will remain within designated access tracks in areas of squatter pigeon (southern) and Australian painted snipe habitat.</li> <li>To minimise the chances of collision, in known squatter pigeon (southern) and Australian painted snipe occurrence areas on private property, speed limits will be reduced to 40 km/hr or less and signage will be installed that indicates subspecies presence. It is noted that both species are currently considered a potential occurrence and are not known to the Project Area.</li> <li>In the unlikely event that a squatter pigeon (southern) or Australian painted snipe is killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.</li> <li>Clearing in and around potential squatter pigeon (southern) and Australian painted snipe water sources (i.e. farm dams and wetlands) will be preferentially avoided. Where clearing is proposed within or adjacent to Australian</li></ul>
	Water extraction activities at any potentially suitable water source for squatter pigeon (southern) or Australian painted snipe will be strictly controlled and monitored to ensure the continuation of the resource. Per waterbody, a single access point will be utilised for water extraction to minimise areas of disturbance and allow potentially occurring individuals to avoid the same area during construction.  All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and
	<ul> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the</li> </ul>

MNES	Approach	Additional Mitigation and Management Measures
		introduction and spread of pest and weed species within areas of habitat
Painted honeyeater	<ul> <li>Avoidance of Direct Impacts</li> <li>Direct impacts to painted honeyeater habitat are permitted only to a cumulative maximum disturbance limit of 6.9 ha.</li> <li>Direct impacts to potential painted honeyeater habitat will be avoided to the maximum extent possible.</li> </ul>	<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>Painted honeyeater individuals and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. Trees or shrubs supporting abundant mistletoe or nest locations should be recorded (including mistletoe genus) and mapped. The presence and extent of painted honeyeater habitat within 200 m1 of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> </ul>
	<ul><li>Minimise Impacts</li><li>Rehabilitate disturbances</li></ul>	• During the site scouts, the diversity and abundance of mistletoe within areas of suitable habitat must be assessed and mapped. This data will inform the assessment by site scouts, regarding the impacts to foraging and dispersal habitat, and specifically any potential changes in habitat functionality. No loss of habitat functionality per patch will be permitted, as determined by a suitably qualified ecologist. This can be measured by:
		<ul> <li>Reduction in relative abundance: A loss of habitat functionality may occur in areas assessed using relative abundance, where there is a change in mistletoe abundance from rare to absent. Depending on the context, a reduction from abundant mistletoe to occasional mistletoe may not impact functionality.</li> </ul>
		<ul> <li>Reduction in individual plants with mistletoe: In areas assessed where individual plants have been mapped, any reduction &gt;10% may impact functionality.</li> </ul>
		• Within areas of painted honeyeater foraging and dispersal habitat that are proposed for clearing, micrositing will preferentially retain trees containing the species preferred mistletoe, which are from the genus <i>Amyema</i> .
		Where clearing is proposed for areas of painted honeyeater habitat, a fauna spotter-catcher must be present.
		• Immediately prior to clearing any painted honeyeater habitat, the fauna spotter-catcher will complete canopy searches to identify any foraging individuals. The movements of any identified individuals should be monitored during the completion of clearing works to ensure they relocate of their own volition.
		• In the unlikely event that a painted honeyeater is killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.
		All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and

MNES	Approach	Additional Mitigation and Management Measures
		Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest.
Yellow-bellied glider (south-eastern)  Yakka skink  Boggomoss snail  Fitzroy River turtle  White-throated snapping turtle	Avoidance of Direct Impacts  No direct disturbance to habitat is proposed for the Project.  Minimise Impacts  Minimising disturbance within areas adjacent.  Rehabilitate disturbances in areas adjacent.	<ul> <li>Mitigation &amp; Management Measures for Indirect Impacts</li> <li>Threatened fauna individuals and habitat within the proposed infrastructure location will be identified and mapped by a suitably qualified ecologist during the site scouts completed as part of the Assess Project execution phase. The presence and extent of threatened fauna habitat within 30 m of the infrastructure location should also be assessed during the site scouts. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped).</li> <li>All areas of potential habitat (excluding Boggomoss snail) will be designated a high constraint area (i.e. only incidental surveys with no ground disturbance permitted) and no direct impacts as a result of the Project will occur (i.e. disturbance limit of 0.0 ha).</li> <li>Boggomoss snail habitat that is confirmed via a site scout will become a no-go constraint area, to minimise mortality risks including accidental trampling.</li> <li>In the unlikely event that a fauna species listed threatened under the EPBC Act is killed as a result of Project activities, DCCEEW will be notified within a maximum period of 2 business days.</li> <li>All requirements within the Westside Weed Management Procedure (WCL-0000-HS-PRC-034) and Biosecurity Management Plan (WCL-0000-HS-PLN-010-010) will be implemented to minimise the introduction and spread of pest and weed species within areas of habitat.</li> <li>Measures outlined in the Westside Noise Management Plan (WCL-0000-HS-PLN-009), Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029) and Weed Management Procedure (WCL-0000-HS-PRC-034) will be implemented to minimise indirect impacts to the species.</li> <li>Project activities in areas adjacent that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the potential for contamination. Contingencies</li></ul>

The Constraints Protocol (Attachment B), and Section 8.0 of the MNES Assessment Report (Attachment A) provides additional information on the measures to be used to avoid, mitigate, and manage any relevant potential impacts on MNES and other environmental values within the Project Area.

Westside also implements several Management Plans (Attachment C) that provide management measures for MNES and environmental values, these include:

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

5.2	The proposed measures must be based on best available practices, appropriate
	standards, evidence of success for other similar actions and supported by
	published scientific evidence.

Westside's avoidance, mitigation, and management measures proposed to minimise impacts to MNES and other environmental values are detailed in the MNES Assessment Report (Attachment A), Constraints Protocol (Attachment B) and the Management Plans (Attachment C). The mitigation measures are based on legislative requirements, State EA (EPPG00783713) conditions, industry standards, and best practice and species-specific guidance.

The avoidance, mitigation, and management measures proposed to be implemented for the Project Area during all development activities are aligned with the departmental and industry recommendations which include:

- Department's SPRAT (DCCEEW 2024c), conservation advice and recovery plans;
- Code of Practice for the construction and abandonment of coal seam gas and petroleum wells, and associated bores in Queensland Version 2 (DNRME 2019b); and
- CSG Water Management Policy Prioritisation Hierarchy (DESI 2023).

All management plans will undergo a thorough review and update process biennially or following a significant incident or non-compliance, starting from the Project initiation date and continuing until completion (i.e. post decommissioning and rehabilitation). Updates will be made as necessary to ensure alignment with circumstances and evolving governmental and industry requirements.

5.3	All proposed measures for MNES must be drafted to meet the 'S.M.A.R.T' principle:
	• S – Specific (what and how)
	<ul> <li>M – Measurable (baseline information, number/value, auditable)</li> </ul>
	<ul> <li>A – Achievable (timeframe, money, personnel)</li> </ul>
	<ul> <li>R – Relevant (conservation advices, recovery plans, threat abatement plans)</li> </ul>
	<ul> <li>T – Time-bound (specific timeframe to complete)</li> </ul>

Westside's avoidance, mitigation, and management measures are detailed in Section 8.0 of the MNES Assessment Report (Attachment A). Westside also has another number of additional management plans that are used to ensure that the risks to MNES are managed during the construction, operation, maintenance, and decommissioning these include:

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

The management plans are developed as project-specific and follow the SMART principles as described in Section 5.2. The plans are specific to the Project, which is developed progressively over time, and includes specific and measurable outcomes where appropriate. Avoidance, mitigation, and management measures are used to determine the location and timing of activities that are undertaken. Management measure identify what and how a measure is carried out. The measures proposed are considered achievable and relevant based on industry practices. Control measures utilise conservation advice or SPRAT advice and any other relevant guidelines or material. Committal language is used throughout these management plans.

We propose that the management measures detailed in this report, are measurable, relevant, and achievable for the activities.

Any changes to management plans will be promptly communicated to all site personnel via email notifications, daily toolbox talks and notices in common areas. Additionally, updated versions will be stored in a designated folder accessible to all relevant team members.

5.4	Include the plans specified above (in approved or draft format) as appendices
	to the preliminary documentation.

The plans specified below are attached in the Management Plans (Attachment C).

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C).

5.5	Details of specific and measurable environmental outcomes to be achieved for
	relevant MNES. All commitments must be drafted using committal language
	(e.g. 'will' and 'must') when describing the proposed measures.

The Management Plans and other assessments developed for the Project detail the requirements involved to avoid, mitigate, and manage impacts to MNES and other environmental values in the Project areas.

General mitigation measures are provided in Table 21 and measures specific to MNES threatened ecological communities and species are provided in Table 22. These measures represent Westside's commitments to avoidance, mitigation, and management measures. The attached documents are drafted to ensure committal language is used when describing the proposed avoidance, mitigation, and management measures.

5.6	Details of the proposed measures to be undertaken to avoid, mitigate and
	manage the relevant impacts of the proposed action, including those required
	through other Commonwealth, State and local government approvals

The Project is already approved at the State level under a Queensland EA EPPG00783713 under the EP Act which allows up to 600 CSG wells. Westside's avoidance, mitigation, and management measures to be implemented for the Project Area align with the EA for the Project (PL94 - EPPG00783713).

The Constraints Protocol (Attachment B) and Section 8.0 of the MNES Assessment Report (Attachment A) provides information on the measures to be used to avoid, mitigate, and manage any relevant potential impacts on MNES and other environmental values within the Project Area. Westside also implements several Management Plans (Attachment C) that provide management measures for MNES and environmental values, these include:

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

5.7	Information on the timing, frequency and duration of the proposed avoidance,
	mitigation, management and monitoring measures, and corrective actions to
	be implemented.

The majority of the major gas processing infrastructure is already in place for the Project and should only require upgrading to increase the capacity of the gas and water processing for the Project. The development of the Project Area is an ongoing process where the location and the timing of the activities are determined by the ongoing appraisal works conducted during the operation of the gas supply infrastructure. As such the timing, frequency, and duration of the avoidance, mitigation, management and monitoring measures, and corrective actions to be implemented are determined by the work schedule, the location of the works, and the activities being undertaken at the locality.

The attached Management Plans (Attachment C) identify the timing, frequency and duration of avoidance, mitigation, management and monitoring measures, and corrective actions wherever possible. The Environmental Management Plan (Attachment C) provides the mitigation and management measures to be implemented across the Project and for all stages of the Project. The Environmental Management Plan (Attachment C) clearly articulates corrective actions which are to be implemented, these are identified in Table 23 below.

**Table 23: Summary Corrective Actions** 

Environmental Value	Corrective Actions
Land	<ul> <li>Should contamination be reported, an investigation to identify the material and cause of contamination will be undertaken and an appropriate management strategy including impact mitigation measures developed</li> </ul>
	<ul> <li>Validation sampling of any remediated area will be used to establish the site as "clean" as per relevant Department of Environment and Science guidelines</li> </ul>
	<ul> <li>Any spillage from storage areas will be reported in the Westside Incident Management System (Donesafe)</li> </ul>
	Other incidents relating to releases to land will be managed through Westside's Incident Management System (Donesafe)
Protected matters	<ul> <li>Incidents relating to biodiversity will be managed according to Westside's incident management system and regulatory requirements.</li> </ul>
Health and Wellbeing and Communities	Where the aquatic and riparian effectiveness monitoring program shows that the EA ground level concentrations are not met, Westside will assess the impacts of the exceedance, take corrective actions and have the assessment certified by a suitably qualified person as required by the EA. The assessment will be submitted to the administering authority within 5 business days from finalisation of the report
	<ul> <li>Other incidents relating to air quality will be managed according to Westside's incident management system (DoneSafe) and regulatory requirements.</li> </ul>
Noise and Vibration	Investigate all non-vexatious vibration complaints expeditiously and respond to the complainant
	<ul> <li>In the event that a complaint is found to be neither frivolous nor vexatious, a noise management plan will be developed quickly</li> </ul>
	Valid complaints about tonal or impulsive or low frequency noise must make

Environmental Value	Corrective Actions
	adjustments to the measured/nuisance noise level as per the EA
	Alternative arrangements with landholders if necessary
	<ul> <li>Initially, vibration complaints will be investigated through a review of blast records to determine if the complainant is in relation to a blast from the site. If it is determined that the complaint correlated to a blast event at the site then a suitably qualified consultant will be engaged to undertake further monitoring and to make recommendations. Monitoring of airblast overpressure and ground vibration will be undertaken at the complainant's residence in accordance with the recommendations stated in the Department of Environment and Science Guideline – Noise and Vibration from Blasting All complaints will be recorded into the site Complaints and Grievances Register</li> </ul>
Groundwater	<ul> <li>Any complaints regarding groundwater impacts potentially caused by Westside operations, will be investigated in accordance with the site Complaints and Grievances Register</li> </ul>
	<ul> <li>Incidents involving surface and/or groundwater will be managed according to Westside's incident management system and regulatory requirements.</li> </ul>
	<ul> <li>An <u>Underground Water Impact Report</u> has been prepared for the Project. This report details the groundwater monitoring requirements for the Project operation:</li> </ul>
	<ul> <li>Groundwater monitoring will be conducted Biannually for all test except water level monitoring, which will be conducted each quarter.</li> </ul>
	<ul> <li>18 different water parameters will be measured with each biannual test.         These tests will identify the following: Electrical conductivity, dissolved solids,         Temperature, Dissolved Oxygen, Alkalinity, Sodium adsorption ratio, Anions,         Silica, Dissolved metals, phosphorus, Ammonia, petroleum hydrocarbons,         BTEX, Polycyclic aromatic hydrocarbons and radioactivity by gamma spectroscopy. This is in line with the EA conditions.     </li> </ul>
	<ul> <li>The three yearly updates of the UWIR and groundwater monitoring program are subject to change throughout the development of PL94. The current UWIR is available at Meridian Gas Project – PL94 Underground Water Impact Report (des.qld.gov.au).</li> </ul>
Dams	Incidents involving dams will be managed according to Westside's incident management system and regulatory requirements.
Community	Complaints will be managed according to Westsides Complaints and Incident Management Plan and regulatory requirements.
Heritage Places and Archaeological Artefacts	Incidents involving cultural heritage will be managed according to Westside's incident management system, the Cultural Heritage Investigation and Management Agreements (CHIMAs) and regulatory requirements.
Waste	Waste related incidents will be managed as per Westside's incident management system and regulatory requirements.
Rehabilitation	A corrective action program to address fail areas of rehabilitation will be developed
	<ul> <li>Incidents involving rehabilitation will be managed according to Westside's incident management system and as per regulatory requirements.</li> </ul>

The Significant Species Management Plan (Attachment C) The Constraints Protocol (Attachment B) provides the avoidance measures proposed to be implemented for the Project. The Rehabilitation Plan (Attachment D) is the Project's plan to deliver the outcomes required at the end of the Project's activities.

5.8	An assessment of the expected or predicted effectiveness of the proposed
	measures.

Westside has been developing and operating the Project Area through the use of the existing site-specific management plans and regulatory approvals. Westside has complied with environmental regulatory conditions. These management plans along with the updated Constraints Protocol (Attachment B), will ensure that the measures to avoid minimise and mitigate impacts to MNES will be adhered to and Westside will continue to comply with regulatory requirements.

5.9	Any statutory or policy basis for the proposed measures, including reference to
	the SPRAT Database and relevant approved conservation advice, recovery plan
	or threat abatement plan, and a discussion on how the proposed measures are
	not inconsistent with relevant plans.

Westside's Management Plans (Attachment C) and Constraints Protocol (Attachment B), the revised and updated habitat rules, and Westside's mitigation and management measures have been developed to ensure the SPRAT Database and relevant approved conservation advice, recovery plan, or threat abatement plans are considered throughout. There are no notable inconsistencies between proposed measures and the relevant plans.

## 7.2.2. Ongoing Management

5.10	Details of ongoing management, including monitoring programs to support an
	adaptive management approach, that validate the effectiveness of the
	proposed measures and overall demonstrate that environmental outcomes
	will be achieved.

Westside's Environmental Management Plans (Attachment C) are the basis of Westside's environmental management system and are applied across the Project Area. The management plans along with registers, databases, and the GIS are used to keep records of and track and manage Westside's environmental outcomes.

Westside's GIS contains different constraints mapping which are reviewed before selecting the siting locations of infrastructure. Site surveys are undertaken to confirm the mapping within the GIS and any discrepancies between the constraints mapping and the ground-truthed data is then amended in the GIS. The siting location may then be altered to ensure that Westside minimises any impacts on MNES or other environmental values which supports an adaptive management approach.

Adaptive management processes integrate monitoring into the implementation of avoidance, mitigation, and management measures in the following management plans:

Constraints Protocol (Attachment B)

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

Monitoring of environmental conditions is undertaken where required and supports an adaptive management approach. Monitoring that may be required would include:

- Surface and groundwater monitoring;
- Weed and pest monitoring;
- Erosion and sediment control monitoring; and
- Rehabilitation monitoring.

#### 7.2.3. Corrective Actions

5.11	Details of tangible, on-ground corrective actions that will be implemented in
	the event the monitoring programs indicate that the environmental outcomes
	have not or will not be achieved.

Adaptive management processes integrate monitoring into the implementation of avoidance, mitigation, and management measures in the following management plans:

- Constraints Protocol (Attachment B)
- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)
- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

A list of the corrective actions from each Environmental Value can be found in Table 23 above. Examples of corrective actions include:

- Upgrading of sediment and erosion controls;
- Weed and pest controls;
- Updating of GIS constraints mapping;
- A new significant impact assessment to determine the level of impact; and
- Implementation of incident investigation findings and corrective actions.

## 7.2.4. Other Considerations

5.12	Details of any measures proposed to be undertaken by Queensland and local
	governments, including the name of the agency responsible for approving each
	measure.

There are no measures proposed to be undertaken by Queensland or local governments. However, it should be noted that regular discussions and consultation between Westside and government and local council agencies are undertaken as required by relevant approvals.

## 8. SIGNIFICANT IMPACT ASSESSMENTS AND OFFSETS

Environmental offsets are measures that compensate for any significant residual impacts of an approved action on the environment. 'For assessments under the EPBC Act, offsets are only required if residual impacts are significant' (*Environment Protection and Biodiversity Conservation Act 1999*, Environmental Offsets Policy (DSEWPC 2012) (2012) p7).

An Offset Area Management Plan (Attachment D) has been prepared for the Project. Redactions throughout the Offset Area Management Plan (Attachment D) are for the purpose of ensuring property specific location details (property name, address and lot on plan) are not made public. No ecologically relevant data has been redacted and a complete (non-redacted) version of the Offset Area Management Plan has been provided to the DCCEEW separately.

Avoidance and minimisation of impacts on protected matters within the Project Area is the primary strategy utilised during the design of the Project development. These areas are identified during the 'propose' and 'assess' phases of the Project Execution Process as described in the Constraints Protocol (Attachment B).

While the Project Area contains a number of protected matters, they are generally highly fragmented with the rest of the Project Area assessed as having limited ecological value due to the previous large-scale clearing for the grazing and agriculture activities in the Moura area.

As described in the Constraints Protocol (Attachment B), the design process will avoid or minimise the impacts to protected matters and utilise the limited ecological value areas and areas of pre-disturbance as to avoid impacts to MNES habitat, with the exception of the maximum disturbance limits for MNES habitat identified in Table 19. Where impacts could occur, they will be designed to ensure impacts to MNES are minimised to the maximum extent possible through:

- Reduction of right-of-way widths.
- Co-location with other infrastructure.
- Preferencing dispersal habitat rather than breeding / foraging.
- Siting infrastructure on edges to minimise risk of fragmentation of habitat.

# 8.1. Significant Impact Assessments

An assessment of the likelihood of residual significant impacts occurring on relevant MNES, after avoidance, mitigation and management measures have been applied.

The MNES Assessment Report (Attachment A) completed a Significant Impact Assessment to determine the likelihood of a residual significant impact occurring as a result of the Project. Desktop information, field validated data and field survey results were used to determine the residual significant impact. A total of 18 MNES were considered known to occur, or to have a moderate or high likelihood of occurring. A copy of the Significant Impact Assessment for these 18 species are included in Table 25 to Table 42 below.

The greatest risk to MNES is during the construction phase because of vegetation clearing (habitat loss), biosecurity risks and disturbance from indirect impacts such as noise, light and dust.

The only species identified as having a Possible Significant Impact was ornamental snake and koala, with a potential disturbance to 16.0 ha ornamental snake suitable habitat and 8.9 ha of koala habitat (breeding and foraging as well as shelter).

A summary of the relevant MNES, species habitat presence within the Project Area, direct impacts and significant impact assessments outcome is provided in Table 24.

Table 24: Summary of Significant Impact Assessment Outcomes

MNES	Common Name	Extent within Project Area (ha)		Cumulative Maximum Disturbance Limit (ha / no. of individuals)	Cumulative Maximum Habitat Loss (%)	SIA outcome
		Category	Amount			
Threatened Eco	logical Commu	inities				
Brigalow TEC	-	-	988.9	0.9	0.09	Unlikely
Coolibah TEC	-	-	105.1	0.0	0.0	Unlikely
Poplar Box TEC	-	-	705.0			Unlikely
Threatened Flor	ra					
Xerothamnella herbacea	-	-	1,076.8	1.0	0.09	Unlikely
Solanum dissectum	-	-	1,076.8	1.0	0.09	Unlikely
Solanum johnsonianum	-	-	1,076.8	1.0	0.09	Unlikely
Threatened Fau	na					
Geophaps	Squatter Pigeon (Southern)	Breeding	1,577.2	1.0	0.1	Unlikely
scripta scripta		Foraging	44.6	1.0	2.2	
		Dispersal	3,055.0	40.0	1.3	
Rostratula australis	Australian painted snipe	Breeding Foraging and Dispersal	1,354,7	6.0	0.4	Not significant

MNES	Common Name	Extent within Project Area (ha)		Cumulative Maximum Disturbance Limit (ha / no. of individuals)	Cumulative Maximum Habitat Loss (%)	SIA outcome
		Category	Amount			
Grantiella picta	Painted honeyeater	Foraging and Dispersal	2,555.4	6.9	0.3	Not significant
Phascolarctos cinereus	Koala	Climate Refugia	948.6	0.0	0.0	Potentially Significant
		Breeding and Foraging	801.0	2.0	0.2	
		Shelter	800.3	6.9	0.9	
		Dispersal	16,297.0	400.0	2.5	Not Significant
Hirundapus caudacutus	White- throated needletail	Breeding Foraging and Dispersal	21,002.1	No limit	N/A	Not significant
Egernia rugosa	Yakka skink	Breeding Foraging and Dispersal	2,205.9	0.0	0.0	Not significant
Petauroides volans	Greater glider (southern and central)	Denning	1,187.1	0.0	0.0	Not significant
		Foraging and dispersal <sup>4</sup>	-	2.0	-	
Petaurus australis australis	Yellow bellied glider (south- eastern)	Breeding Foraging and Dispersal	1,039.4	0.0	0.0	Not significant

<sup>&</sup>lt;sup>4</sup> This habitat category was unable to be accurately mapped for the purposes of this assessment with the data available. A conservative approach to the mapping has been undertaken that currently considers all identified habitat within the Project Area to be suitable for denning purposes, although it is noted many of the areas identified as denning are most likely foraging and dispersal only. All areas proposed for clearing will still be subject to assessment (field scout) by a suitably qualified ecologist who will assess habitat suitability in consideration of tree DBH and height (>30 cm DBH and >10 m height).

MNES	Common Name	on Extent within Project Area (ha)		Cumulative Maximum Disturbance Limit (ha / no. of individuals)	laximum Maximum isturbance Habitat Loss (%) p. of	SIA outcome
		Category	Amount			
Elseya albagula	White- throated snapping turtle	Breeding Foraging and Dispersal	523.9	0.0	0.0	Not significant
Rheodytes leukops	Fitzroy River turtle	Breeding Foraging and Dispersal	523.9	0.0	0.0	Not significant
Adclarkia dawsonensis	Boggomoss snail	Breeding Foraging and Dispersal	159.0	0.0	0.0	Not significant
Denisonia maculata	Ornamental snake	Suitable	4,849.2	16.0	0.3	Potentially Significant

Through the implementation of the Constraints Protocol (Attachment B), any impacts to the ornamental snake suitable habitat will be avoided or minimised in accordance with the maximum disturbance limits. Where impact is required, the impact, which could occur as a result of construction of linear infrastructure, will be located on the edges of habitat and will be located to prioritise dispersal habitat over breeding and foraging habitat. Where significant residual impacts remain, Westside will secure offsets to mitigate impacts in accordance with its Offset Area Management Plan (Attachment D).

## 8.1.1. Brigalow TEC - Significant Impact Assessment

The significant impact assessment for the Brigalow TEC is presented in Table 25 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Brigalow TEC.

Table 25: Significant Impact Assessment - Brigalow TEC

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Reduce the extent of	Brigalow TEC is known to occur within the Project Area, generally comprising	Unlikely
an ecological	narrow and small fragmented patches. A total of 1,234.81 ha of Brigalow TEC	
community?	is mapped within the Project Area, however the majority of identified areas	
	have not yet been verified. Any site proposed for development will be	
	surveyed first by qualified ecologists to confidently identify Brigalow TEC in	
	accordance with the community's key diagnostic and condition criteria. A	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:	TEC	
	maximum disturbance of 0.9 ha will occur within confirmed Brigalow TEC over	
	the life of the Project. Micro-siting of infrastructure will look to retain patch connectivity and maximise the use of existing gaps. It is likely that only the	
	edges of Brigalow TEC patches may need to be cleared, i.e. to widen existing	
	gaps. No patches will be dissected by Project infrastructure, unless existing	
	gaps are already present.	
	Given the extent of historical clearing within the Project Area and ongoing	
	agricultural activities, as well as the generally narrow and small fragmented	
	patches, it is anticipated that all areas of Brigalow TEC present are already	
	impacted by edge effects and somewhat degraded by exotic weeds such as	
	buffel grass (Cenchrus ciliaris*). Nonetheless, potential indirect impacts on	
	the community such as increased weed incursion will be actively managed via	
	Project management plans including but not limited to the SSMP and the	
	EMP. Rehabilitation works in areas adjacent to a TEC will prioritise the use of	
	native species, to reduce increased incursion of weed species within the area.	
	No stockpiling of construction materials including excavated soil will occur in	
	areas identified as TEC.	
	Based on this, it is considered unlikely the Project will reduce the extent of the	
	ecological community.	
Fragment or increase	As described above, Brigalow TEC mapped within the Project Area generally	Unlikely
fragmentation of an	already comprises narrow and small patches with reduced connectivity.	
ecological	Nonetheless, to ensure fragmentation does not occur and/or is not increased	
community, for	as a result of the Project, micro-siting of infrastructure will look to retain	
example by clearing	patch connectivity and maximise the use of existing gaps. It is likely that only	
vegetation for roads	the edges of Brigalow TEC patches may need to be cleared, i.e. to widen	
or transmission	existing gaps. No patches will be dissected by Project infrastructure unless	
lines?	existing gaps are already present. Therefore, the Project is unlikely to increase	
	fragmentation of the ecological community.	
Adversely affect	All areas of Brigalow TEC within the Project Area are conservatively	Unlikely
habitat critical to the	considered to comprise habitat critical to the survival of the ecological	
survival of an	community. The Project is committing to a maximum disturbance of 0.9 ha of	
ecological	Brigalow TEC, which will ensure very little adverse effects on critical habitat.	
community?	This clearing will be conducted over the life of the Project, and in isolated	
	areas, likely on the edge of patches to widen existing gaps.  Mitigation and management measures will limit the scope and severity of any	
	potential indirect impacts on Brigalow TEC as a result of the Project. This	
	includes weed management and erosion and sediment control. No changes to	
	habitat quality are anticipated as a result of the Project with no changes to	
	surface water drainage or grazing pressures predicted. Based on this, adverse	
	impacts to habitat critical to the survival to the TEC are unlikely.	
Modify or destroy	Brigalow TEC is known to occur within the Project Area, generally comprising	Unlikely
abiotic (non-living)	narrow and small fragmented patches. A total of 1,234.81 ha of Brigalow TEC	- /
factors (such as	is mapped within the Project Area, however the majority of identified areas	
water, nutrients or	have not yet been verified. Any site proposed for development will be	
soil) necessary for an	surveyed first by qualified ecologists to confidently identify Brigalow TEC in	
ecological	accordance with the community's key diagnostic and condition criteria. A	
community's	maximum disturbance of 0.9 ha will occur within confirmed Brigalow TEC over	
survival, including	the life of the Project. Micro-siting of infrastructure will look to retain patch	
reduction of	connectivity and maximise the use of existing gaps. It is likely that only the	
groundwater levels,	edges of Brigalow TEC patches may need to be cleared, i.e. to widen existing	
or substantial	gaps. No patches will be dissected by Project infrastructure unless existing	
alteration of surface	gaps are already present.	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
water drainage	Mitigation and management measures will be actively enforced throughout	
patterns?	construction to reduce potential indirect impacts such as erosion and sedimentation, spread of weeds and dust. Rehabilitation works in areas	
	adjacent to a TEC will prioritise the use of native species, to reduce increased	
	incursion of weed species within the area. No stockpiling of construction	
	materials including excavated soil will occur in areas identified as TEC. The	
	Project will not alter the flow of water along drainage lines where some	
	Brigalow TEC occurs or impact on groundwater levels to the extent that	
	vegetation dieback may occur. Furthermore, there is no evidence to suggest	
	this ecological community is reliant on groundwater. As such, it is considered	
	unlikely the Project will modify or destroy abiotic factors necessary for the	
	survival of Brigalow TEC.	
Cause a substantial	Indirect impacts will be actively managed via Project management plans. No	Unlikely
change in the species composition of an	changes to species composition are anticipated as any existing pressures on the community will remain unchanged (i.e. weeds, pests and edge effects).	
occurrence of an	The Project does not involve regular burning or flora or fauna harvesting.	
ecological	The Project does not involve regular burning of nord of fauna narvesting.	
community,		
including causing a		
decline or loss of		
functionally		
important species,		
for example through regular burning or		
flora or fauna		
harvesting?		
Cause a substantial	No changes to the quality or integrity of Brigalow TEC within the Project Area	Unlikely
reduction in the	will occur as a result of Project activities. As described above, it is anticipated	
quality or integrity	that all areas of Brigalow TEC present are already impacted by edge effects	
of an occurrence of	based on the narrow and small fragmented patches present, with invasive	
an ecological	pasture grasses such as buffel grass (Cenchrus ciliaris*) known to occur	
community,	throughout the Project Area. Furthermore, due to the prevalence of anthropogenic disturbance including agricultural practices across the Project	
including, but not limited to:	Area, invasive species including feral pests and livestock species are likely to	
Assisting invasive	be common. No changes to existing grazing pressures are anticipated.	
species, that are	Nonetheless, potential indirect impacts on the community such as increased	
harmful to the listed	disturbance, weed and pest incursion will be actively managed via Project	
ecological	management plans including but not limited to the SSMP, EMP and Westside	
community, to	Weed Management Procedure. These plans also include mitigation and	
become established;	management measures relevant to the storage of chemicals and erosion and	
or causing regular mobilisation of	sediment control.  Many known locations of Brigalow TEC are close to existing operations	
fertilisers, herbicides	including narrow road reserves and windrows. Where Project activities are	
or other chemicals or	proposed in areas adjacent to the community there is an increased risk of	
pollutants into the	indirect impacts on the community. Rehabilitation works in areas adjacent to	
ecological	a TEC will prioritise the use of native species, to reduce increased incursion of	
community which	weed species within the area. Any weed spraying following rehabilitation will	
kill or inhibit the	comprise a targeted spot application by suitably qualified and experienced	
growth of species in	operators, to minimise the accidental death of native species. No stockpiling	
the ecological	of construction materials including excavated soil will occur in areas identified	
community?	as TEC to ensure no accidental smothering of native ground-cover plants.	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
	Based on the above, it is considered highly unlikely the Project will cause a substantial reduction in the quality or integrity of an ecology community.	
Interfere with the recovery of an ecological community?	There is currently no recovery plan for the Brigalow TEC, however the Approved Conservation Advice does list priority conservation actions including research and monitoring priorities and threat reduction/control. Project activities will not interfere with or hinder such actions. The Project will not interfere with the recovery of Brigalow TEC as limited direct impacts are proposed (maximum 0.9 ha), and indirect impacts will be actively managed via Project management plans.	Unlikely

# 8.1.2. Coolabah TEC – Significant Impact Assessment

The significant impact assessment for the TEC is present in Table 26 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Coolibah TEC.

Table 26: Significant Impact Assessment - Coolibah TEC

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Reduce the extent of an ecological community?	Coolibah TEC is known to occur within the Project Area, generally comprising large, connected patches associated with the Dawson River. A total of 108.15 ha of Coolibah TEC is mapped within the Project Area, however the majority of identified areas have not yet been field-verified. Any site proposed for development will be surveyed first by qualified ecologists to confidently identify Coolibah TEC in accordance with the community's key diagnostic and condition criteria. No direct impacts to Coolibah TEC will occur as a result of the Project.  Given the extent of historical clearing within the Project Area and ongoing agricultural activities, it is anticipated that all areas of Coolibah TEC present are already impacted by edge effects and somewhat degraded by exotic weeds such as buffel grass (Cenchrus ciliaris*) and feral animals such as feral pigs (Sus scrofa). Nonetheless, potential indirect impacts on the community such as increased weed incursion will be actively managed via Project management plans including but not limited to the SSMP and the EMP. Rehabilitation works in areas adjacent to a TEC will prioritise the use of native species, to reduce increased incursion of weed species within the area. No stockpiling of construction materials including excavated soil will occur in areas identified as TEC.  Based on this, it is considered unlikely the Project will reduce the extent of the ecological community.	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Fragment or increase fragmentation of an ecological community, for example by clearing vegetation for roads or transmission lines?	The Project Area contains the township of Moura and is largely dominated by agricultural land uses. As such, patches of Coolibah TEC present are likely to be subject to existing low levels of fragmentation as a result of ancillary infrastructure including roads and transmission lines. Nonetheless, to ensure fragmentation does not occur and/or is not increased as a result of the Project, no direct impacts on Coolibah TEC will be permitted, including for linear infrastructure elements. Project infrastructure may be sited in close proximity to Coolibah TEC; however, buffer zones will be maintained wherever possible and care will be taken to manage any potential indirect impacts through the implementation of the SSMP and EMP as well as	Unlikely
	rehabilitation works.	
Adversely affect habitat critical to the survival of an ecological community?	All areas of Coolibah TEC within the Project Area are conservatively considered to comprise habitat critical to the survival of the ecological community. The Project is committing to the complete avoidance of Coolibah TEC, which will ensure no adverse effects on critical habitat. Mitigation and management measures will limit the scope and severity of any potential indirect impacts on Coolibah TEC as a result of the Project. This includes weed management and erosion and sediment control. No changes to habitat quality are anticipated as a result of the Project with no changes to surface water drainage or grazing pressures predicted. Based on this, impacts to habitat critical to the survival to the TEC will be avoided.	Unlikely
Modify or destroy	No direct impacts to Coolibah TEC as a result of the Project will be permitted.	Unlikely
abiotic (non-living)	The Project will be designed to avoid mapped habitat and instead utilise	,
factors (such as	previously disturbed areas, which will limit impacts to the abiotic factors	
water, nutrients or	necessary for the survival of the Coolibah TEC.	
soil) necessary for an	Mitigation and management measures will be actively enforced throughout	
ecological	construction to reduce potential indirect impacts such as erosion and	
community's	sedimentation, spread of weeds and dust. Rehabilitation works in areas	
survival, including	adjacent to a TEC will prioritise the use of native species, to reduce spread of	
reduction of	potential weed species within the area. No stockpiling of construction	
groundwater levels,	materials including excavated soil will occur in areas identified as TEC. The	
or substantial	Project will not alter surface water flows, including along the Dawson River	
alteration of surface	where the community generally occurs, or significantly impact on	
water drainage	groundwater levels. As such, it is considered unlikely the Project will modify or	
patterns?	destroy Coolibah TEC.	
Cause a substantial change in the species composition of an	No direct impacts on Coolibah TEC will occur as a result of the Project and indirect impacts will be actively managed via Project management plans. No changes to species composition are anticipated as any existing pressures on	Unlikely
occurrence of an ecological community, including causing a	the community will remain unchanged (i.e. weeds, pests and edge effects).  The Project does not involve regular burning or flora or fauna harvesting.	
decline or loss of functionally important species,		
for example through		
regular burning or		
flora or fauna		
harvesting?		
Cause a substantial	No changes to the quality or integrity of Coolibah TEC within the Project Area	Unlikely
reduction in the	will occur as a result of Project activities. As described above, it is anticipated	
quality or integrity	that all areas of Coolibah TEC present are already impacted by edge effects,	

EPBC Act Criteria – is there a real chance	Assessment of Significance	Significant Impact?
or possibility that		
the Project will:		
of an occurrence of	with invasive pasture grasses such as buffel grass (Cenchrus ciliaris*) known	
an ecological	to occur throughout the Project Area. Furthermore, due to the prevalence of	
community,	anthropogenic disturbance including agricultural practices across the Project	
including, but not	Area, invasive species including feral pests and livestock species are likely to	
limited to:	be common. No changes to existing grazing pressures are anticipated.	
Assisting invasive	Nonetheless, potential indirect impacts on the community such as increased	
species, that are	disturbance, weed and pest incursion will be actively managed via Project	
harmful to the listed	management plans including but not limited to the SSMP, EMP and Westside	
ecological	Weed Management Procedure. These plans also include mitigation and	
community, to	management measures relevant to the storage of chemicals and erosion and	
become established;	sediment control.	
or causing regular	Where Project activities are proposed in areas adjacent to the community	
mobilisation of	there is an increased risk of indirect impacts on the community. Rehabilitation	
fertilisers, herbicides	works in areas adjacent to a TEC will prioritise the use of native species, to	
or other chemicals or	reduce increased incursion of weed species within the area. Any weed	
pollutants into the	spraying following rehabilitation will comprise a targeted spot application, to	
ecological	minimise the accidental death of native species. No stockpiling of	
community which	construction materials including excavated soil will occur in areas identified as	
kill or inhibit the	TEC to ensure no accidental smothering of native ground-cover plants.	
growth of species in	Based on the above, it is considered highly unlikely the Project will cause a	
the ecological	substantial reduction in the quality or integrity of an ecology community.	
community?		
Interfere with the	There is currently no recovery plan for the Coolibah TEC, however the Listing	Unlikely
recovery of an	Advice for the community states that there should be one. It is acknowledged	
ecological	that the recovery of the ecological community is complex, due to the need for	
community?	a highly adaptive management process and high levels of planning, cross-	
	jurisdictional coordination, co-ordination between managers and support by key stakeholders.	
	The Approved Conservation Advice for the community does outline priority	
	recovery actions. Project activities will not interfere with or hinder such	
	actions. The Project will not interfere with the recovery of Coolibah TEC as	
	avoidance of direct impacts will occur and indirect impacts will be actively	
	managed via Project management plans.	

### 8.1.3. Poplar Box TEC – Significant Impact Assessment

The significant impact assessment for the TEC is present in Table 27 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Poplar Box TEC.

Table 27: Significant Impact Assessment - Poplar Box TEC

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Reduce the extent of	Poplar Box TEC has not been confirmed within the Project Area, however	Unlikely
an ecological	analogous REs are mapped in the Project Area. A total of 734.16 ha of Poplar	
community?	Box TEC is mapped within the Project Area, however these identified areas have not yet been field-verified. Any site proposed for development will be	
	surveyed first by qualified ecologists to confidently identify Poplar Box TEC in	
	accordance with the community's key diagnostic and condition criteria. No	
	direct impacts to Poplar Box TEC will occur as a result of the Project.	
	Given the extent of historical clearing within the Project Area and ongoing	
	agricultural activities, it is anticipated that all areas of Poplar Box TEC present	
	are already impacted by edge effects and somewhat degraded by exotic	
	weeds such as buffel grass (Cenchrus ciliaris*) and feral animals such as feral	
	pigs (Sus scrofa). Nonetheless, potential indirect impacts on the community	
	such as increased weed incursion will be actively managed via Project	
	management plans including but not limited to the SSMP and the EMP.	
	Rehabilitation works in areas adjacent to a TEC will prioritise the use of native	
	species, to reduce increased incursion of weed species within the area. No	
	stockpiling of construction materials including excavated soil will occur in	
	areas identified as TEC.	
	Based on this, it is considered unlikely the Project will reduce the extent of the	
	ecological community.	
Fragment or increase	The Project Area contains the township of Moura and is largely dominated by	Unlikely
fragmentation of an	agricultural land uses. As such, patches of Poplar Box TEC present are likely to	
ecological community, for	be subject to existing low levels of fragmentation as a result of the existing land uses and ancillary infrastructure including roads and transmission lines.	
example by clearing	Nonetheless, to ensure fragmentation does not occur and/or is not increased	
vegetation for roads	as a result of the Project, no direct impacts on Poplar Box TEC will be	
or transmission	permitted, including for linear infrastructure elements. Project infrastructure	
lines?	may be sited in close proximity to Poplar Box TEC; however, buffer zones will	
	be maintained wherever possible and care will be taken to manage any	
	potential indirect impacts.	
	Based on this, it is considered unlikely the Project will fragment or increase	
	fragmentation of the ecological community.	
Adversely affect	All areas of Poplar Box TEC within the Project Area are conservatively	Unlikely
habitat critical to the	considered to comprise habitat critical to the survival of the ecological	
survival of an	community. The Project is committing to the complete avoidance of Poplar	
ecological	Box TEC, which will ensure no adverse effects on critical habitat. Mitigation	
community?	and management measures will limit the scope and severity of any potential	
	indirect impacts on Poplar Box TEC as a result of the Project. This includes weed management and erosion and sediment control. No changes to habitat	
	quality are anticipated as a result of the Project with no changes to surface	
Modify or destroy		Unlikely
		<b>,</b>
water, nutrients or	factors necessary for the survival of the Poplar Box TEC.	
Modify or destroy abiotic (non-living) factors (such as water, nutrients or	water drainage or grazing pressures predicted. Based on this, impacts to habitat critical to the survival to the TEC will be avoided.  No direct impacts to Poplar Box TEC as a result of the Project will be permitted. The Project will be designed to avoid mapped habitat and instead utilise previously disturbed areas, which will limit impacts to the abiotic	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
soil) necessary for an	Mitigation and management measures will be actively enforced throughout	
ecological	construction to reduce potential indirect impacts such as erosion and	
community's	sedimentation, spread of weeds and dust. Rehabilitation works in areas	
survival, including	adjacent to a TEC will prioritise the use of native species, to reduce spread of	
reduction of	potential weed species within the area. No stockpiling of construction	
groundwater levels,	materials including excavated soil will occur in areas identified as TEC. The	
or substantial	Project will not alter surface water flows or significantly impact on	
alteration of surface	groundwater levels. As such, it is considered unlikely the Project will modify or	
water drainage	destroy Poplar Box TEC.	
patterns?	destroy ropidi box ree.	
Cause a substantial	No direct impacts on Poplar Box TEC will occur as a result of the Project and	Unlikely
change in the species	indirect impacts will be actively managed via Project management plans. No	Officery
composition of an	changes to species composition are anticipated as any existing pressures on	
occurrence of an	the community will remain unchanged (i.e. weeds, pests and edge effects).	
ecological	The Project does not involve regular burning or flora or fauna harvesting.	
community,		
including causing a decline or loss of		
functionally		
important species,		
for example through		
regular burning or		
flora or fauna		
harvesting?		
Cause a substantial	No changes to the quality or integrity of Poplar Box TEC within the Project	Unlikely
reduction in the	Area will occur as a result of Project activities. As described above, it is	
quality or integrity	anticipated that all areas of Poplar Box TEC present are already impacted by	
of an occurrence of	edge effects, with invasive pasture grasses such as buffel grass (Cenchrus	
an ecological	ciliaris*) known to occur throughout the Project Area. Furthermore, due to	
community,	the prevalence of anthropogenic disturbance including agricultural practices	
including, but not	across the Project Area, invasive species including feral pests and livestock	
limited to:	species are likely to be common. No changes to existing grazing pressures are	
Assisting invasive	anticipated. Nonetheless, potential indirect impacts on the community such	
species, that are	as increased disturbance, weed and pest incursion will be actively managed	
harmful to the listed	via Project management plans including but not limited to the SSMP, EMP and	
ecological	Westside Weed Management Procedure. These plans also include mitigation	
community, to	and management measures relevant to the storage of chemicals and erosion	
become established;	and sediment control.	
or causing regular	Where Project activities are proposed in areas adjacent to the community	
mobilisation of	there is an increased risk of indirect impacts on the community. Rehabilitation	
fertilisers, herbicides	works in areas adjacent to a TEC will prioritise the use of native species, to	
or other chemicals or	reduce increased incursion of weed species within the area. Any weed	
pollutants into the	spraying following rehabilitation will comprise a targeted spot application, to	
ecological	minimise the accidental death of native species. No stockpiling of	
community which	construction materials including excavated soil will occur in areas identified as	
kill or inhibit the	TEC to ensure no accidental smothering of native ground-cover plants.	
growth of species in	Based on the above, it is considered highly unlikely the Project will cause a	
the ecological	substantial reduction in the quality or integrity of an ecology community.	
community?		

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Interfere with the recovery of an ecological community?	The Conservation Advice notes that a national recovery plan for the Poplar Box TEC is not required, because the priority actions listed in the Conservation Advice are sufficient to provide protection from extinction and guidance on the recovery. The priority actions include: protect, restore, communicate/engage with the public, and research and monitoring. The Project will not interfere with the recovery of Poplar Box TEC as avoidance of direct impacts will occur and indirect impacts will be actively managed via Project management plans.	Unlikely

### 8.1.4. Xerothamnella herbacea – Significant Impact Assessment

The significant impact assessment for the species is present in Table 28 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the *Xerothamnella herbacea*.

Table 28: Significant Impact Assessment - Xerothamnella herbacea

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of a population	X. herbacea is known to the Project Area, previously confirmed by Umwelt during a field survey in areas associated with Kianga Creek in the north. A total of 1,074.9 ha of potential X. herbacea habitat has been mapped within the Project Area, as well as 1.8 ha of confirmed habitat. Additional ecology field surveys will be undertaken in any areas proposed for development as part of the Project to ensure locations containing the species or its habitat are verified.  Direct impacts to any confirmed X. herbacea individual will be avoided, and direct impacts on X. herbacea habitat will be limited to a maximum of 1.0 ha. Indirect impacts will be actively managed via Project management plans including but not limited to the SSMP and the EMP. Clearing works will maintain a vegetation buffer of 5 m or more around identified locations of threatened flora species to maintain suitable micro-climatic conditions. X. herbacea exhibits low to moderate genetic diversity due to its occurrence in an already highly fragmented landscape. The species utilises vegetative reproduction to maintain populations in the medium-term when environmental conditions may be unfavourable. It is also likely that seed dispersal for the species is highly localised. The Project is unlikely to reduce the population's ability to continue to exchange genetic material between individuals and reproduce at the local site scale. Therefore, due to the low maximum disturbance limit, it is unlikely that the Project will lead to a long-term decrease in the size of the population.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Reduce the area of occupancy of the species	The Project Area is located within the northern extent of the species' distribution, and partially within the 'likely to occur' extent of the species distribution. The current area of occupancy is not defined in the Conservation Advice for the species. However, Shapcott et al., (2017a) estimated the total population size in areas of known habitat across its distribution (13 ha) for the species as 6,659 individuals. Additionally, habitat mapping identified 111,842 ha of high-quality habitat for <i>X. herbacea</i> as occurring between Goondiwindi and Banana in the north. A further 2,098,150 ha of medium quality habitat was mapped. Shapcott et al., (2017a) identified that, based on the results of the study, there is potential for new populations to be identified, particularly in the north and west. Therefore, the distribution of <i>X. herbacea</i> may be greater than currently known.  Direct impacts to any confirmed <i>X. herbacea</i> individual will be avoided, and direct impacts on <i>X. herbacea</i> habitat will be limited to a maximum of 1.0 ha.	Unlikely
Fragment an existing population into two or more populations	As such, the species' area of occupancy will not be significantly reduced.  Direct impacts to any confirmed <i>X. herbacea</i> individual will be avoided, and direct impacts on <i>X. herbacea</i> habitat will be limited to a maximum of 1.0 ha. The presence of <i>X. herbacea</i> populations and habitat will be verified in areas proposed for development via ground truthing ecology surveys. The siting of infrastructure will aim to minimise fragmentation of potential habitat as much as possible (i.e. clear edges rather than dissect patches) to maintain core patch and population viability.  Indirect impacts on the species will be actively managed throughout the life of the Project via multiple Project management plans including the SSMP and the EMP. Project activities are considered highly unlikely to affect the population's ability to continue to exchange genetic material between individuals and reproduce at the local site scale. It will not create a barrier to seed dispersal or vegetative reproduction. Therefore, the Project is unlikely to	Unlikely
Adversely affect habitat critical to the survival of a species	fragment the population in two or more populations.  A total of 699.6 ha of known or potential habitat critical to the survival of the species has been identified within the Project Area. Direct impacts to any confirmed <i>X. herbacea</i> individual will be avoided, and direct impacts on <i>X. herbacea</i> habitat will be limited to a maximum of 1.0 ha.  Indirect impacts to critical habitat will be actively managed via Project management plans including but not limited to the SSMP and the EMP.  Clearing works will maintain a vegetation buffer of 5 m or more around identified locations of threatened flora species to maintain suitable microclimatic conditions. The 5 m buffer zone will comprise a 'no-go' constraint category area to ensure the area is not traversed, minimising the potential for accidental disturbance or death to individuals as a result of trampling etc. The species has demonstrated the ability to persist in an already fragmented landscape. Patch size does not appear to be a limiting factor in population viability, as population patch sizes as small as 0.018 ha were recorded in a population at Banana in Shapcott <i>et al.</i> , (2017a). Based on the limited clearing of potential habitat, and the low risk of indirect impacts including edge effects, the Project is considered unlikely to adversely affect habitat critical to the survival of the species.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Disrupt the breeding cycle of a population	Shapcott <i>et al.</i> , (2017a) identified that reproductive timing among populations of <i>X. herbacea</i> was synchronous at a landscape-scale, suggesting that flowering of the species occurs in response to landscape-wide environmental conditions such as temperature. This has been reported to occur at various times throughout the year. When conditions are unfavourable, the species reproduces vegetatively on a micro-scale to ensure persistence of the species in the short to medium-term.  Based on the broad timing of flowering and seeding as well as the species ability to reproduce vegetatively on a micro-scale, the likelihood of potential impacts on breeding arising due to the Project is very low. Direct impacts to any confirmed <i>X. herbacea</i> individual will be avoided, and direct impacts on <i>X. herbacea</i> habitat will be limited to a maximum of 1.0 ha. Therefore, it is unlikely that the Project will disrupt the breeding cycle of a population.	Unlikely
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Direct impacts to any confirmed <i>X. herbacea</i> individual will be avoided, and direct impacts on <i>X. herbacea</i> habitat will be limited to a maximum of 1.0 ha. The species has demonstrated the ability to persist in an already fragmented landscape. Soil moisture has been identified as an important microhabitat for <i>X. herbacea</i> and the Project infrastructure is not expected to substantially alter surface water drainage. In addition to this, a number of good practice environmental management measures will be implemented to avoid and reduce the likelihood of impacts to the species and its habitat. This includes fire, grazing, weed and pest management measures. The Project is therefore considered unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline, particularly when large areas of suitable habitat will remain within and surrounding the Project Area.	Unlikely
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Exotic pasture grasses are considered a recognised threat to the species.  However, these occur relatively commonly across the Project Area including within areas of potential habitat as a result of ongoing agricultural work.  Where Project activities are proposed in areas adjacent to habitat there is an increased risk of invasive species invading and or becoming established.  However, this will be actively managed through the Westside Weed Management Procedure. Therefore, it is unlikely that the Project will result in invasive species that are harmful to X. herbacea becoming established in the species' habitat.	Unlikely
Introduce disease that may cause the species to decline, or	Disease has not been identified as a threat to <i>X. herbacea</i> . Nonetheless, the Project will adhere to relevant biosecurity and hygiene protocols to ensure disease is not introduced.	Unlikely
Interfere with the recovery of the species.	The Conservation Advice identifies a number of regional priority actions to support the recovery of <i>X. herbacea</i> , relevant to key themes including habitat loss, disturbance and modification, invasive weeds, trampling, browsing or grazing, fire and education. Westside are committing to a maximum direct impact on <i>X. herbacea</i> habitat of 1.0 ha, and no direct impacts to any confirmed <i>X. herbacea</i> individual. The risk of invasive species will be managed through the Weed Management Procedure. No changes to grazing threats are expected as a result of the Project. It is therefore considered unlikely the Project will interfere with the recovery of the species.	Unlikely

# 8.1.5. Solanum Dissectum – Significant Impact Assessment

The significant impact assessment for the species is present in Table 29 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on *Solanum dissectum*.

Table 29: Significant Impact Assessment - Solanum dissectum

	Table 27, Significant impact Assessment - Sotunum dissectum	01 161
EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Lead to a long-term	S. dissectum is known to the Project Area, previously confirmed by Umwelt	Unlikely
decrease in the size	during a 2019 field survey. A total of 1,075.9 ha of <i>S. dissectum</i> potential	
of a population	habitat and 0.9 ha of known habitat has been mapped within the Project	
	Area. Additional ecology field surveys will be undertaken in any areas	
	proposed for development as part of the Project to ensure locations	
	containing the species or its habitat are verified.	
	Direct impacts to any confirmed <i>S. dissectum</i> individual will be avoided, and	
	direct impacts on <i>S. dissectum</i> habitat will be limited to a maximum of	
	1.0 ha.	
	Indirect impacts will be actively managed via Project management plans	
	including but not limited to the SSMP and the EMP. It should be noted that	
	given the species is rhizomatous, numbers of genetically distinct individuals	
	may actually be very low. As such, clearing works should maintain a	
	vegetation buffer of 5 m or more around identified locations of threatened	
	flora species to maintain suitable micro-climatic conditions. It is also likely	
	that seed dispersal for the species is highly localised. The Project is unlikely to	
	reduce the population's ability to continue to exchange genetic material	
	between individuals and reproduce at the local site scale.	
	Therefore, due to the low maximum disturbance limit, it is unlikely that the	
	Project will lead to a long-term decrease in the in the size of the population.	
Reduce the area of	The Project Area is located within the southern extent of the species'	Unlikely
occupancy of the	distribution, and partially within the 'likely to occur' extent of the species	· · · · · · · · · · · · · · · · · · ·
species	distribution. The species' area of occupancy is defined in the Conservation	
оросио	Advice as 36 km <sup>2</sup> . It is recognised that populations are severely fragmented.	
	Direct impacts to any confirmed <i>S. dissectum</i> individual will be avoided, and	
	direct impacts on <i>S. dissectum</i> habitat will be limited to a maximum of	
	1.0 ha.	
	As such, the species' area of occupancy is not likely to be reduced.	
Fragment an existing	Direct impacts to any confirmed <i>S. dissectum</i> individual will be avoided, and	Unlikely
population into two	direct impacts to any commed s. dissectum individual will be avoided, and	Officery
or more populations	1.0 ha.	
or more populations	The presence of <i>S. dissectum</i> populations and habitat will be verified in areas	
	proposed for development via ground truthing ecology surveys. The siting of	
	infrastructure will aim to minimise fragmentation of potential habitat as much	
	as possible (i.e. clear edges rather than dissect patches) to maintain core	
	patch and population viability.	
	Indirect impacts on the species will be actively managed throughout the life of	
	the Project via multiple Project management plans including the SSMP and	
	the EMP. Project activities are considered highly unlikely to affect the	
	population's ability to continue to exchange genetic material between	
	individuals and reproduce at the local site scale. It will not create a barrier to	
	seed dispersal or vegetative reproduction. Therefore, the Project is unlikely to	
A 1 1 00 1	fragment the population in two or more populations.	11 11 1
Adversely affect	A total of 314.2 ha of potential habitat critical to the survival of the species	Unlikely
habitat critical to the	has been identified within the Project Area. Direct impacts to any confirmed	
survival of a species		

EPBC Act Criteria – is there a real chance or possibility that	Assessment of Significance	Significant Impact?
the Project will:		
	S. dissectum individual will be avoided, and direct impacts on S. dissectum	
	habitat will be limited to a maximum of 1.0 ha.	
	Indirect impacts to critical habitat will be actively managed via Project	
	management plans including but not limited to the SSMP and the EMP.	
	Clearing works will maintain a vegetation buffer of 5 m or more around	
	identified locations of threatened flora species to maintain suitable micro-	
	climatic conditions. The 5 m buffer zone will comprise a 'no-go' constraint	
	category area to ensure the area is not traversed, minimising the potential for	
	accidental disturbance or death to individuals as a result of trampling etc.	
	The species has demonstrated the ability to persist in an already fragmented	
	landscape. Patch size does not appear to be a limiting factor in population	
	viability. Based on the limited clearing of potential habitat, and the low risk of	
	indirect impacts including edge effects, the Project is considered unlikely to	
	adversely affect habitat critical to the survival of the species.	
Disrupt the breeding	The species is likely to be a resprouting disturbance specialist with bird	Unlikely
cycle of a population	dispersal a likely vector (Threatened Species Scientific Committee, 2016a).	
	Flowering occurs between July and November and fruiting between March	
	and July each year. Based on the relatively broad timing of flowering and	
	seeding, the likelihood of potential impacts on breeding arising due to the	
	Project is considered low. Direct impacts to any confirmed <i>S. dissectum</i>	
	individual will be avoided, and direct impacts on <i>S. dissectum</i> habitat will be	
	limited to a maximum of 1.0 ha. Based on this, the Project is unlikely to reduce the size of pollinator populations to the extent that it disrupts the	
	breeding cycle of a population.	
Modify, destroy,	The species has demonstrated the ability to persist in an already fragmented	Unlikely
remove, isolate or	landscape. No changes to habitat quality are anticipated as a result of the	Officery
decrease the	Project with indirect impacts actively managed and no changes to surface	
availability or quality	water drainage or grazing pressures. Given this, and the limited direct	
of habitat to the	disturbance proposed, no barrier to seed dispersal or vegetative reproduction	
extent that the	will be created that may lead to species decline.	
species is likely to	, ,	
decline		
Result in invasive	Invasion of habitat by exotic pasture grasses us considered a recognised	Unlikely
species that are	threat to the species. However, these grasses occur relatively commonly	
harmful to a	across the Project Area including within areas of potential habitat as a result	
critically endangered	of ongoing agricultural work. Where Project activities are proposed in areas	
or endangered	adjacent to habitat there is an increased risk of invasive species invading and	
species becoming	or becoming established. However, this will be actively managed through the	
established in the	Westside Weed Management Procedure. Therefore, it is unlikely that the	
endangered or	Project will result in invasive species that are harmful to <i>S. dissectum</i>	
critically endangered	becoming established in the species' habitat.	
species' habitat	Dispose has not been identified as a threat to C. dispositive. Nameth days the	Unlikeli
Introduce disease	Disease has not been identified as a threat to <i>S. dissectum</i> . Nonetheless, the	Unlikely
that may cause the	Project will adhere to relevant biosecurity and hygiene protocols to ensure	
species to decline, or	disease is not introduced.	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Interfere with the recovery of the species.	As outlined on SPRAT, a recovery plan is not required for the species given the detail and direction provided in the Conservation Advice. The primary conservation action identified is to "maintain and protect existing populations and protect and enhance habitat to provide potential for reproduction of plants within existing populations". Westside are committing to a maximum direct impact on <i>S. dissectum</i> habitat of 1.0 ha, and no direct impacts to any confirmed <i>S. dissectum</i> individual. Westside will ensure the ongoing enforcement of their Weed Management Procedure to mitigate habitat degradation. It is therefore considered unlikely the Project will interfere with the recovery of the species.	Unlikely

# 8.1.6. Solanum Johnsonianum – Significant Impact Assessment

The significant impact assessment for the species is present in Table 30 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on *Solanum johnsonianum* 

Table 30: Significant Impact Assessment - Solanum johnsonianum

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of a population	S. johnsonianum is known to the Project Area, previously confirmed by Umwelt during a 2019 field survey. A total of 1,044.0 ha of S. johnsonianum potential habitat has been mapped within the Project Area, as well as 32.7 ha of known habitat. Additional ecology field surveys will be undertaken in any areas proposed for development as part of the Project to ensure locations containing the species or its habitat are verified.  Direct impacts to any confirmed S. johnsonianum individual will be avoided, and direct impacts on S. johnsonianum habitat will be limited to a maximum of 1.0 ha.  Indirect impacts will be actively managed via Project management plans including but not limited to the SSMP and the EMP. It should be noted that given the species is rhizomatous, numbers of genetically distinct individuals may actually be very low. As such, clearing works should maintain a vegetation buffer of 5 m or more around identified locations of threatened flora species to maintain suitable micro-climatic conditions. It is also likely that seed dispersal for the species is highly localised. The Project is unlikely to reduce the population's ability to continue to exchange genetic material between individuals and reproduce at the local site scale.  Therefore, due to the low maximum disturbance limit, it is unlikely that the Project will lead to a long-term decrease in the size of the population.	Unlikely
Reduce the area of occupancy of the species	The Project Area is located within the southern extent of the species' distribution, and partially within the 'likely to occur' extent of the species distribution. The species' area of occupancy is defined in the Conservation Advice as 60 km². It is recognised that populations are severely fragmented. Direct impacts to any confirmed <i>S. johnsonianum</i> individual will be avoided, and direct impacts on <i>S. johnsonianum</i> habitat will be limited to a maximum of 1.0 ha.  As such, the species' area of occupancy is not likely to be reduced.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that	Assessment of Significance	Significant Impact?
the Project will: Fragment an existing population into two or more populations	Direct impacts to any confirmed <i>S. johnsonianum</i> individual will be avoided, and direct impacts on <i>S. johnsonianum</i> habitat will be limited to a maximum of 1.0 ha.  The presence of <i>S. johnsonianum</i> populations and habitat will be verified in areas proposed for development via ground truthing ecology surveys. The siting of infrastructure will aim to minimise fragmentation of potential habitat as much as possible (i.e. clear edges rather than dissect patches) to maintain core patch and population viability.  Indirect impacts on the species will be actively managed throughout the life of the Project via multiple Project management plans including the SSMP and the EMP. Project activities are considered highly unlikely to affect the population's ability to continue to exchange genetic material between individuals and reproduce at the local site scale. It will not create a barrier to seed dispersal or vegetative reproduction. Therefore, the Project is unlikely to fragment the population in two or more populations.	Unlikely
Adversely affect habitat critical to the survival of a species	A total of 284.1 ha of habitat critical to the survival of the species has been identified within the Project Area. Direct impacts to any confirmed <i>S. johnsonianum</i> individual will be avoided, and direct impacts on <i>S. johnsonianum</i> habitat will be limited to a maximum of 1.0 ha. Indirect impacts to critical habitat will be actively managed via Project management plans including but not limited to the SSMP and the EMP. Clearing works will maintain a vegetation buffer of 5 m or more around identified locations of threatened flora species to maintain suitable microclimatic conditions. The 5 m buffer zone will comprise a 'no-go' constraint category area to ensure the area is not traversed, minimising the potential for accidental disturbance or death to individuals as a result of trampling etc. The species has demonstrated the ability to persist in an already fragmented landscape. Patch size does not appear to be a limiting factor in population viability. Based on the limited clearing of potential habitat, and the low risk of indirect impacts including edge effects, the Project is considered unlikely to	Unlikely
Disrupt the breeding cycle of a population	adversely affect habitat critical to the survival of the species.  Flowering of <i>S. johnsonianum</i> has been recorded in March to June and between August and September, while fruiting has been recorded in April and May, but possibly extends over a longer period. Based on the relatively broad timing of flowering and seeding, the likelihood of potential impacts on breeding arising due to the Project is considered low. Direct impacts to any confirmed <i>S. johnsonianum</i> individual will be avoided, and direct impacts on <i>S. johnsonianum</i> habitat will be limited to a maximum of 1.0 ha. Based on this, the Project is unlikely to reduce the size of pollinator populations to the extent that it disrupts the breeding cycle of a population.	Unlikely
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The species has demonstrated the ability to persist in an already fragmented landscape. No changes to habitat quality are anticipated as a result of the Project with indirect impacts actively managed and no changes to surface water drainage or grazing pressures. Given this, and the limited direct disturbance proposed, no barrier to seed dispersal or vegetative reproduction will be created that may lead to species decline.	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Result in invasive	Although threats to the species are not well known, invasion of habitat by	Unlikely
species that are	exotic pasture grasses is considered a likely major threat to the species.	
harmful to a	However, these grasses occur relatively commonly across the Project Area	
critically endangered	including within areas of potential habitat as a result of ongoing agricultural	
or endangered	work. Where Project activities are proposed in areas adjacent to habitat there	
species becoming	is an increased risk of invasive species invading and or becoming established.	
established in the	However, this will be actively managed through the Westside Weed	
endangered or	Management Procedure. Therefore, it is unlikely that the Project will result in	
critically endangered	invasive species that are harmful to S. johnsonianum becoming established in	
species' habitat	the species' habitat.	
Introduce disease	Disease has not been identified as a threat to S. johnsonianum. Nonetheless,	Unlikely
that may cause the	the Project will adhere to relevant biosecurity and hygiene protocols to	
species to decline, or	ensure disease is not introduced.	
Interfere with the	As outlined on SPRAT, a recovery plan is not required for the species given the	Unlikely
recovery of the	detail and direction provided in the Conservation Advice. The primary	
species.	conservation action identified is to "maintain and protect existing populations	
	and protect and enhance habitat to provide potential for reproduction of	
	plants within existing populations". Westside are committing to a maximum	
	direct impact on S. johnsonianum habitat of 1.0 ha, and no direct impacts to	
	any confirmed S. johnsonianum individual. Westside will ensure the ongoing	
	enforcement of their Weed Management Procedure to mitigate habitat	
	degradation. It is therefore considered unlikely the Project will interfere with	
	the recovery of the species.	

#### 8.1.7. Squatter Pigeon (Southern) – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 31 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the squatter pigeon (southern).

Table 31: Significant Impact Assessment - Squatter Pigeon (Southern)

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term	Squatter pigeon (southern) is considered a potential occurrence within the	Unlikely
decrease in the size	Project Area. As described in the section above, the Project Area is located	
of an important	within the central extent of the subspecies known distribution where the	
population of a	broader population is genetically considered one population and does not	
species	intersect with any known important populations. As such, any population of	
	squatter pigeon (southern) present within the Project Area is not considered	
	to comprise an important population.	
	Although much of the squatter pigeon (southern) habitat present within the	
	Project Area is likely to be of low or moderate quality as a result of historical	
	and ongoing disturbance, the Project is committing to a maximum clearance	
	of 1.0 ha of breeding and 1.0 ha of foraging habitat which the species may rely	
	on to fulfil its lifecycle. However, a maximum of 40.0 ha of dispersal habitat	
	may be directly impacted, representing a loss of up to 1.3% of total available	
	dispersal habitat. The species dispersal habitat requirements are broad and as	
	such this type of habitat is widely available within the Project Area and region.	
	Additional ecology field surveys will be undertaken in any areas proposed for	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:	development as went of the Dusient to answer leasting containing the answire	
	development as part of the Project to ensure locations containing the species or its habitat are verified.	
	Extraction activities impacting water sources potentially utilised by the	
	species will also be strictly monitored and controlled to ensure resource	
	continuation and minimal disturbance around the bank. This will include	
	defined erosion and sediment controls, as necessary. As the subspecies is	
	predominantly ground-dwelling and known to frequent tracks, there is a risk	
	of mortality during construction as a result of vehicle strike. To manage this	
	risk, speed limits will be strictly enforced (in private areas) and pre-clearance	
	surveys will include flushing for the subspecies in areas of habitat to be	
	cleared. In breeding areas, it will be ensured that vehicles and pedestrians	
	remain on designated tracks to avoid damage to nests. Other potential	
	indirect impacts on the species including habitat degradation via weed and pest incursion will be actively managed via Project management plans	
	including but not limited to the SSMP and EMP.	
	As an important population is not considered present within the Project Area,	
	the Project is highly unlikely to lead to a long-term decrease.	
Reduce the area of	The Project Area does not support an important population of squatter	Unlikely
occupancy of an	pigeon (southern). The squatter pigeon (southern) occurs across a large	
important	portion of eastern Qld. Its area of occupancy was estimated to be 10,000 km <sup>2</sup>	
population	(1,000,000 ha) in 2000. However, it is noted that this estimate may be	
	potentially overstated given the low resolution in the mapping methodology	
	used by the Commonwealth (2 km x 2 km grid).	
	Direct impacts to breeding and foraging habitat are particularly limited (maximum 1.0 ha for each). As detailed above, the population of squatter	
	pigeon (southern) within the Project Area is not considered important.	
	Therefore, the Project is unlikely to reduce the area of occupancy of any	
	population including an important population.	
Fragment an existing	The squatter pigeon (southern) is considered highly mobile and is frequently	Unlikely
important	recorded in highly disturbed and cleared areas, highlighting the subspecies'	
population into two	ability to utilise fragmented landscapes. The siting of infrastructure will	
or more populations	maximise previously cleared areas as well as existing breaks in vegetation, to	
	ensure clearing will not exacerbate habitat fragmentation of dispersal habitat.	
	Trenches left open during construction may create a temporary barrier to	
	movement. As such, other management measures proposed for the species include the regular (each morning and night) checking of open trenches and	
	the implementation of trench ladders, ramps, sticks, ropes and moist hessian	
	sacks to aid in an escape from said trenches. Nonetheless, the population	
	potentially present within the Project Area is not considered an important	
	population. As such, the Project is unlikely to fragment an existing important	
	population into two or more populations.	
Adversely affect	Habitat within the Project Area is not considered critical to the survival of the	Unlikely
habitat critical to the	subspecies as it is unlikely to provide a refuge, is average in quality, and	
survival of a species	subject to ongoing impacts from recognised threatening processes. Potential	
	habitat for squatter pigeon (southern) is likely to occur extensively in the wider local area and potentially be of higher quality. Westside have	
	committed to a cumulative maximum disturbance limit of 1.0 ha for breeding	
	habitat, 1.0 ha for foraging habitat and 40.0 ha for dispersal habitat. Potential	
	indirect impacts will be actively managed via the Project management plans	
	including but not limited to the SSMP and EMP. As such, it is considered	
	unlikely the Project will adversely affect habitat critical to the survival of the	
	species.	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Disrupt the breeding cycle of an important population	Impacts to breeding habitat will be prioritised for avoidance by the Project and the population potentially present within the Project Area is not considered an important population. Pre-clearance surveys undertaken by fauna spotter-catchers will identify and demarcate nests, and if present the area containing the nest will be categorised as breeding habitat and will be preferentially avoided, as per the constraints hierarchy. A maximum of 1.0 ha of potential breeding habitat may be impacted by the Project. To further avoid potential breeding disruption, movement within the Project Area will only be via approved access tracks with enforced speed limits. As such, it is unlikely the Project will disrupt the breeding cycle of an important population.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	As described above, vegetation clearing required for construction of the Project will result in direct impacts to a maximum of 1.0 ha of suitable breeding habitat, 1.0 ha of suitable foraging habitat and 40.0 ha of suitable dispersal habitat. The quantum of breeding, foraging and dispersal habitat that will remain following construction is expected to be sufficient to support any population present. The subspecies is known to utilise fragmented landscapes and important habitat resources (suitable water sources) will be maintained. Potential indirect impacts on the species including habitat degradation via weed and pest incursion will be actively managed via the Project management plans. Therefore, the Project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Unlikely
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Predation and habitat degradation constitute two of the current main threats to this subspecies. Invasive species including the fox ( <i>Vulpes vulpes*</i> ) and cat ( <i>Felis catus*</i> ) are known predators to the squatter pigeon, with invasive weeds such as buffel grass ( <i>Cenchrus ciliaris*</i> ) causing habitat degradation. As the Project Area is largely cleared for agricultural purposes, it is considered likely that many areas already act as conduits for pest movement in the landscape and invasive species are likely common. The Project will employ best practice control methods for invasive pests including responsible waste management to minimise the attraction of predatory fauna/pest species, prohibiting domestic animals within the Project Area, and the implementation of a weed, pest and biosecurity management plan. Based on this, it is unlikely the Project will result in invasive species that are harmful to the squatter pigeon (southern) becoming established.	Unlikely
Introduce disease that may cause the species to decline	There are no known diseases affecting the subspecies. Nonetheless, the Project will follow best practice biosecurity protocols during both construction and operation; therefore, introduction of a disease is unlikely.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Interfere substantially with the recovery of the species	<ul> <li>There is no recovery plan currently in place for the subspecies nor is one considered required. As per SPRAT, the following recovery actions have been recommended based on the approved conservation advice:</li> <li>Identify sub-populations of high conservation priority, especially in the southern part of the squatter pigeon's (southern) range.</li> <li>Protect and rehabilitate areas of vegetation that support important sub-populations.</li> <li>Protect sub-populations of the listed subspecies through the development of covenants, conservation agreements or inclusion in reserve tenure.</li> <li>Develop and implement a stock management plan for key sites.</li> <li>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).</li> <li>Raise awareness of the squatter pigeon (southern) within the local community, particularly among land managers.</li> <li>The Project is highly unlikely to impede any of the above actions. Although clearing will occur within areas of suitable habitat, the majority of the area to be impacted comprises habitat suitable for dispersal only. Construction of the Project is unlikely to change the subspecies utilisation of the Project Area or limit its success in the region. Therefore, the Project is unlikely to interfere with the recovery of the subspecies.</li> </ul>	Unlikely

# 8.1.8. Australian Painted Snipe – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 32 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Australian painted snipe.

Table 32: Significant Impact Assessment - Australian Painted Snipe

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of a population	The Australian painted snipe is inferred to have undergone a severe decline in the number of mature individuals since the 1950s and specifically over the last three generations (~26 years) due to the loss and degradation of its wetland habitat.  This species was not recorded within the Project Area during field surveys and records of the species in the region are rare. Some suitable habitat is present within the Project Area comprising farm dams and modified clay plans with gilgai. Although habitat is highly modified and disturbed, it is considered potentially suitable for seasonal breeding, foraging and dispersal purposes. The Project Area occurs within the 'potential' distribution of the species according to the SPRAT, some distance from known areas of species concentrations such as the Capricorn Coast and the Murry Darling Basin. As such only a small number of individuals at any one time are expected to utilise potential habitat. Moreover, habitat within the Project Area is seasonally dependent (with the exception of larger farm dams) and thus temporary in nature. Identified Project Area habitat is likely to be most suitable for the species at the peak of the wet season. However, during this time habitat in	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:	the region is also likely to be widely available providing any individuals that	
	the region is also likely to be widely available, providing any individuals that may be in the region a range of options. Habitat within the Project Area is	
	highly unlikely to be preferred.	
	A maximum of 6.0 ha of potential breeding, foraging and dispersal habitat	
	(gilgai and/or farm dams) may be directly impacted via vegetation clearing in	
	the waterbody edges. Indirect impacts include increased activity and noise,	
	increased weed incursion, erosion and sedimentation at waterbodies and	
	potential changes in hydrology due to water extraction activities. However,	
	these will be temporary and as the Project will be constructed in phases,	
	impacts will be localised. Furthermore, indirect impacts on the species and its	
	habitat will be actively managed via Project management plans including the EMP and SSMP. As per Westside's Permit to Disturb process, site scouts will	
	be completed by qualified ecologists prior to any disturbance to ensure	
	suitable habitat is identified and the species is surveyed for (searches for	
	individuals and any potential nests). Therefore, no Project related activities	
	are considered likely to lead to a long-term decrease in the size of a	
	population.	
Reduce the area of	This species' area of occupancy was estimated by (Garnett, Szabo and Dutson,	Unlikely
occupancy of the	2011) to be 2,000 km² and decreasing. The area of occupancy has	
species	undoubtedly declined as approximately 50% of wetlands in Australia have	
	been removed since European settlement.  The Project Area does not contain the species preferred shallow terrestrial	
	wetland habitat. However, farm dams and areas of gilgai within the Project	
	Area are present and are conservatively considered potentially suitable for	
	seasonal breeding, foraging and dispersal. A maximum of 6.0 ha of suitable	
	habitat will be directly impacted over the life of the Project. However, the	
	Project will be staged ensuring direct impacts are limited to a small discrete	
	portion of the Project Area at any given time. Water	
	extraction activities will be strictly controlled and monitored in liaison with	
	the landholder to ensure habitat is retained and the condition unchanged. No waterbodies will be completed drained.	
	This species is nomadic and is likely to readily move to areas of suitable	
	habitat at any time. The Project Area does not occur at the limit of the species	
	distribution nor near a known concentration of the species. As such the	
	Project is unlikely to reduce the area of occupancy of the species.	
Fragment an existing	No existing population is known from the Project Area and it is likely that	Unlikely
population into two	utilisation would be intermittent and opportunistic for transitory individuals	
or more populations	during optimal conditions (after rain events). The species is also highly mobile	
	and the Project will not result in the creation of barriers to movement within or between habitat for the species. As construction of the Project will occur in	
	phases, direct and indirect impacts at one time will be localised to only a small	
	area within the Project Area. This will allow potentially present individuals to	
	relocate to other areas of suitable habitat within the Project Area or outside.	
	Therefore, it is unlikely the Project will fragment an existing population into	
	two or more populations.	
Adversely affect	As the Project Area contains areas potentially suitable for seasonal foraging	Unlikely
habitat critical to the	and breeding, these areas (farm dams and the gilgai) are conservatively	
survival of a species	considered to meet the definition of habitat critical to the survival of the species. The species is highly secretive and requires shelter, which typically	
	comprises low wetland vegetation including grass, sedges, rushes or reeds.	
	Identified habitat is predominantly non-remnant vegetation that is dominated	
	by exotic grass with very limited native vegetation. Use of these areas by	

EPBC Act Criteria – is there a real chance	Assessment of Significance	Significant Impact?
or possibility that		impace.
the Project will:		
the Project will:	cattle and other exotic fauna (including those that may actively prey upon the Australian painted snipe) during the dry season likely intensifies as water becomes limited in the landscape, leading to increased pressures. Based on the findings of the field survey, shelter opportunities for the species within Project Area habitat are primarily limited to areas of exotic grass that have not been grazed recently. Given this, the brownfield nature of the site and the lack of dense and tall wetland vegetation cover, habitat is considered to provide a 'stop-over' site, unsuitable for longer term refuge.  The species is highly mobile and movement patterns are thought to be nomadic, indicating that habitats may not be utilised consistently over space and time. Although it meets the definition of habitat critical to the survival of the species, habitat within the Project Area is unlikely to be preferentially used by the species, as when it is present (i.e. during the wet season), habitat availability across the species' core range is at its greatest. Noting this, and the absence of records in the region, it is considered likely that only a very small number of dispersing individuals may occupy the Project Area at any time, with habitat being of low relative importance to the species.  A maximum of 6.0 ha of habitat critical to the survival of the species may be lost over the life of the Project. The overall loss of this habitat will lead to a 0.4% reduction in available habitat, which is likely to be inconsequential to the species given potential habitat is likely widely available in the wider area during the wet season (extensive areas of gilgai visible on aerial imagery including north and west of the Project Area). As the Project will be constructed in phases, both direct and indirect impacts will be localised to a small portion of the Project Area. Water extraction activities will be strictly controlled and monitored in liaison with the landholder to ensure habitat continuation. Furthermore, indirect impacts on the s	
	impact habitat critical to the survival of the Australian painted snipe.	
Disrupt the breeding cycle of a population	The Australian painted snipe may breed at any time throughout the year in response to favourable wetland conditions, rather than during a particular season. Although the Project Area contains potentially suitable breeding habitat, due to its disturbed nature and lack of preferred dense shelter vegetation, it is unlikely provide breeding habitat during the dry season (no areas with vegetative islands and flooded fringing vegetation). Under ideal climatic conditions (following an above average wet season), water availability in the landscape will be high and the area of available of Australian painted snipe breeding habitat may be substantial. As construction of the Project will occur in phases, direct and indirect impacts at one time will be localised to only a small area within the Project Area. The remainder of the Project Area will still provide suitable breeding habitat for the species, for any individuals looking to build a nest. If an active Australian painted snipe nest is discovered within the zone to be impacted, the active breeding place will be managed under a DESI SMP (high-risk), including an exclusion zone around the nest (minimum 100 m wide). As such, the Project is unlikely to disrupt the breeding cycle of a population.	Unlikely
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the	No existing population is known from the Project Area and it is likely that utilisation would be sporadic and opportunistic for transitory individuals during optimal conditions (after rain events). The species is also highly mobile and may utilise other habitat areas in the local landscape as climatic conditions or environmental pressures change. Direct impacts are anticipated	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will: extent that the	to accur to come areas of coasonal broading, foraging and dispossal habitat	
species is likely to	to occur to some areas of seasonal breeding, foraging and dispersal habitat over the life of the Project (a maximum of 6.0 ha). Water extraction activities	
decline	will be strictly controlled and monitored in liaison with the landholder to	
	ensure habitat continuation. Per waterbody, a single access point will be	
	utilised for water extraction to minimise areas of disturbance and allow	
	potentially occurring individuals to avoid the same area during construction.	
	Measures targeted to erosion and sediment control, potential contamination	
	and pests will also be implemented during construction to ensure indirect	
	impacts that may lead to habitat degradation or increased threat levels to the	
	species are managed.	
	As such the Project is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of the habitat to the extent that the species is likely	
	to decline.	
Result in invasive	The replacement of endemic wetland vegetation by invasive, noxious weeds	Unlikely
species that are	has been identified as a threat to the Australian painted snipe. However, the	33.,
harmful to a	Project is unlikely to exacerbate invasive species beyond current levels. Weed	
critically endangered	and pest management controls will be developed to mitigate and manage the	
or endangered	potential spread of pest flora and fauna species.	
species becoming		
established in the		
endangered or critically endangered		
species' habitat		
Introduce disease	Disease has not been identified as a threat to the Australia painted snipe.	Unlikely
that may cause the	Weed and pest management controls for the Project will ensure best practice	,
species to decline, or	site hygiene measures.	
Interfere with the	The National Recovery Plan for the Australian Painted Snipe (Department of	Unlikely
recovery of the	Climate Change, Energy, the Environment and Water, 2022b) lists the	
species.	following objectives to achieve the aim of a positive population trend by 2032:	
	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.	
	<ul> <li>Undertake research to improve knowledge of the habitat requirements, biology and behaviour of Australian Painted Snipe.</li> </ul>	
	Engage community stakeholders to improve awareness of the conservation of Australian Painted Snipe.	
	Coordinate, review and report on recovery progress.	
	The Australian painted snipe is not known to occur within the Project Area or	
	surrounding region. The Project Area occurs within the 'may occur' extent of	
	the species distribution on SPRAT. As the species is nomadic, predicting	
	utilisation of any area is difficult. However, the Project Area does not occur	
	near any known concentration of the species and records in the region are	
	rare. Furthermore, potential habitat occurs within a brownfield location	
	where it is subject to a variety of ongoing threatening processes. On this basis, the species is likely to only utilise the habitat during the wet season on a	
	transitory and temporary basis. Based on the above, the Project is unlikely to	
	interfere with the recovery of the species.	
		l

### 8.1.9. Painted Honeyeater – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 33 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the painted honeyeater.

Table 33: Significant Impact Assessment - Painted Honeyeater

	Table 33, Significant impact Assessment - Fainted Honeyeater	01 45
EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Lead to a long-term	The painted honeyeater was not recorded during the field survey program	Unlikely
decrease in the size	and has been rarely recorded in the wider region. It has been conservatively	
of an important	assessed as having a moderate likelihood of occurrence within the Project	
population of a	Area, primarily due to the presence of potential habitat suitable for foraging	
species	and dispersal. The species is nomadic. In the non-breeding season, birds show	
	up in random areas outside their core habitat (usually in association with	
	fruiting mistletoes) either singly or in small groups. Since this species typically	
	breeds south of Roma in Qld, breeding habitat is not considered supported by	
	the Project Area.	
	The Project may result in direct impacts via vegetation clearing to a	
	cumulative maximum of 6.9 ha of foraging and dispersal habitat. Project	
	development will occur in phases and as such only a portion of the Project	
	Area may be disturbed at one time. Several mitigation measures are in place	
	to ensure habitat to be retained within the Project Area remains viable for the	
	species, with functionality to remain consistent with baseline levels.	
	Visitation by the species to the Project Area is likely to occur sporadically,	
	during winter when the painted honeyeater is more likely to be found in the	
	north of its distribution. Any population utilising the Project Area is not	
	considered an important population, as the species comprises one population	
	across its range. The risk of mortality during construction or operation and the	
	Project (largely comprising underground infrastructure) is considered very low	
	given the species likely rare presence and high mobility. Further, the Project	
	will not result in a barrier to movement for the species.	
	Indirect impacts on the species as a result of the Project are expected to be	
	limited. The Project is highly unlikely to increase or introduce pests as many	
	are known to occur already and existing conduits for movement are present.	
	Given the potential absence or infrequent use of the Project Area by this	
	species as well as the implementation of Project management plans including	
	the EMP and SSMP, a long-term decrease in the size of a population is unlikely	
Dadwa the	to result from the Project.	1.11211
Reduce the area of	The area of occupancy for the species is estimated to be 1,000 km² (Garnett,	Unlikely
occupancy of an	Szabo and Dutson, 2011). Habitat mapping within the Project Area has	
important	identified a total of 2,829.25 ha of potential foraging and dispersal habitat, of	
population	which only 6.9 ha will be directly impacted via vegetation clearing. This	
	species is highly nomadic and the landscape in which the Project Area occurs	
	is already highly disturbed and fragmented, and direct impacts are likely to be	
	focused to the edges of habitat patches where disturbance is already likely to	
	be high. No significant changes to the relative abundance of mistletoe pee	
	habitat patch or corridor, as determined by the suitably qualified ecologist,	
	will be permissible. Given the extent of habitat in the region and the relatively	
	small amount of habitat being impacted within the Project Area, it is	
	considered unlikely the Project will reduce the area of occupancy of any local	
	or important population. Based on this, Project works are considered unlikely	
	to materially reduce the availability or quality of habitat for the species to the	
	point where the species' extent of occupancy would be reduced.	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Fragment an existing	The painted honeyeater is a highly mobile species which undergoes large	Unlikely
important	movements that are likely seasonal. Potential habitat within the Project Area	
population into two	is highly fragmented as a result of historical clearing and agricultural practices,	
or more populations	and connectivity is limited to riparian corridors and areas of roadside	
	vegetation. The Project will maximise the use of existing cleared areas to	
	minimise further habitat fragmentation. No significant patch isolation will	
	occur indicating that landscape connectivity overall will be maintained, and no	
	barriers to movement for the species will occur. Given the ability for this	
	species to readily disperse across the landscape, vegetation clearance	
	associated with the Project is unlikely to present barriers to this species local	
	movement, to the extent that it fragments any population of this species	
	within the Project Area.	
Adversely affect	Potential habitat supported by the Project Area meets the definition of	Unlikely
habitat critical to the	habitat critical to the survival of the species, as described in the MNES Report.	
survival of a species	However, habitat is highly fragmented and often comprises small and narrow	
	patches or corridors. It is likely that not all mapped areas of habitat contain	
	the important mistletoe required to support the species. The Project Area	
	occurs wholly within the 'may occur' extent of the species distribution and is	
	not located near a KBA or any location the species is known to frequently or	
	consistently occur. Painted honeyeater presence within the Project Area and	
	wider region is rare and indicates visitation is sporadic and opportunistic. The	
	significant nature and extent of historical modification within the region for	
	agriculture is likely to have significantly reduced the availability of habitat and	
	the value of habitat patches that have persisted (predominantly small, fragmented patches). This suggests that although habitat within the Project	
	Area may meet the definition of habitat critical, its relative importance to the	
	species is likely very low as its use is rare.	
	Direct impacts will be permissible to a cumulative maximum area of 6.9 ha of	
	foraging and dispersal habitat. During the site scouts, the diversity and	
	abundance of mistletoe within areas of suitable habitat must be assessed and	
	mapped. This data will inform the assessment by site scouts, regarding the	
	impacts to foraging and dispersal habitat, and specifically any potential	
	changes in habitat functionality. To ensure habitat functionality is maintained	
	in retained habitat, no significant changes to the relative abundance of	
	mistletoe per habitat patch or corridor, as determined by the suitably	
	qualified ecologist, will be permissible. Wherever possible, clearing will be	
	avoided and trees containing mistletoe will be retained.	
	The direct impact to potential habitat will occur over the life of the Project,	
	and likely in small, isolated areas, i.e. patch edges rather than removing or	
	dissecting patches. This small magnitude of habitat loss is unlikely to be	
	considered an 'adverse effect' on habitat critical as per the Conservation	
	Advice, particularly when considering the measures in place to maintain	
Diamont the L	habitat function for the species.	11-11-1
Disrupt the breeding	The Project Area is not situated within the primary known breeding area of	Unlikely
cycle of an	the species which is on the inland slopes of the Great Dividing Range, south of	
important	Roma. Potential habitat supported by the Project Area is therefore not	
population	suitable for breeding and no impacts on breeding individuals will occur. The species is highly mobile and nomadic; foraging and dispersal activities	
	completed within the non-breeding season are not known to be a limiting	
	factor to breeding timing or success. Given the potential absence or	
	infrequent use of the Project Area by this species, the Project is unlikely to	
	disrupt the breeding cycle of a population.	
	aistrapt the biccuming cycle of a population.	

there a real chance or possibility that the Project will:  Modify, destroy, castroy, castroy or solute or decrease the away aulability or quality or quali	EPBC Act Criteria – is	Assessment of Significance	Significant
Modify, destroy, remove or solate or decrease the availability or quality of patients in invasive species that are harmful to a vulnerable species that are harmful to a vulnerable species that are species that are harmful to a vulnerable species that are harmful to a vulnerable species that are species to the vulnerable species that are species to the vulnerable species that are harm cause the species of the project will employ best practice control methods for invasive periods. The Project will employ be species and the implementation of a weed, pest and bibitat by the recovery of the species of the project and palpit to the everland project and palpit to the everland project and palpit to the own and apply techniques to measure species that are harm cause the species of the project and palpit to the vulnerable species becoming established in the vulnerable species that are harmful to a vulnerable species of the project and palpit to the vulnerable species of the project will employ best practice control methods for invasive periods. The Project will employ best practice control methods for invasive periods. The Project will employ best practice control methods for invasive becoming established or exacerbated.  Introduce disease that may cause the species of the project will employ best practice control methods for invasive periods. The Project will employ best practice control methods for invasive periods. The Project will employ best practice to the species during plague periods. The Project will employ best practice control methods for invasive periods. The project will employ best practice control methods for invasive periods. The project will employ best practice control methods for invasive periods. The project will employ best practice control methods for invasive periods. The project will employ best practice control methods for invasive periods. The project will employ best practice of the project will employ best practice of the project will employ best practice of the project will employ best practi	there a real chance		
Although potential habitat within the Project Area is critical to the survival of the species, habitat is already fragmented and likely to be highly disturbed by exotic grass and cattle grazing. Wherever possible, clearing will be avoided and trees containing mistletoe will be retained. Clearing will be avoided and trees containing mistletoe will be retained. Clearing will only be concluded as strictly necessary.  A maximum of 6.9 ha of foraging and dispersal habitat will be directly maced as a result of the Project. The breeding, foraging and dispersal habitat with similar characteristics, quality and condition occurs widely within the region.  It is recognised that potential indirect impacts on habitat that will be retained may occur as a result of the Project including habitat degradation from increased dust, edge effects, weeds and temporary altered hydrology. Indirect impacts will be actively managed via Project management plans and include measures such as erosion and sediment control, dust suppression and weed and pest management.  Given potential absence or infrequent use of the Project Area by this species as well as the high mobility of the species, it is unlikely that the Project will alter habitat to the extent where the species is lively to decline.  Predation by black rat is considered to be a threat to the species (Threatened Species Scientific Committee, 2015b). Although not observed during field anmulation of a vulnerable species of the species of the project will employ be ty practice control methods for invasive pests including responsible waste management to minimise the attraction of predatory fauna/pest species and the implementation of a weed, pest and biosecurity management plan. Based on this, it is unlikely the Project will result in invasive species that are harmful to the painted honeyeater becoming established or exacerbated.  Introduction of a disease is unlikely.  A National Recovery Plan for the Painted Honeyeater was published in 2021. Six missurbategies are detailed:  A Protect	or possibility that		
the species, habitat is already fragmented and likely to be highly disturbed by exotic grass and cattle grazing. Wherever possible, clearing will be avoided and trees containing mistletoe will be retained. Clearing will be worlded to conducted as strictly necessary.  And trees containing mistletoe will be retained. Clearing will only be conducted as strictly necessary.  And the species is likely to decline  The species is likely to decline  Abitat is not considered highly unique or important for refuge and habitat with similar characteristics, quality and condition occurs widely within the region.  It is recognised that potential indirect impacts on habitat that will be retained may occur as a result of the Project including habitat degradation from increased dust, edge effects, weeds and temporary altered hydrology. Indirect impacts will be actively managed via Project management plans and include measures such as erosion and sediment control, dust suppression and weed and pest management.  Given potential absence or infrequent use of the Project Area by this species as well as at the high mobility of the species, it is unlikely that the Project will alter habitat to the extent where the species is likely to decline.  Prodation by black rat is considered to be a threat to the species. Threatened species Scientific Committee, 2015b). Although not observed during field surveys, black rat may occur in the area with numbers fluctuating according to sease that may can alter any occur in the area with numbers fluctuating according to serve the species to decline  Introduce disease  Introduce disease  Introduce disease  Introduce disease  Interfere  As a such as the project will employ best practice control methods for invasive pests including responsible waste management to minimise the attraction of projects. The Project will result in invasive species and remarkful to the painted honeyeater becoming established or exacerbated.  Introduce disease  Introduce disease  Introduce disease  As minimized that the species	the Project will:		
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unlikely to interfere substantially with the recovery of the species.		Project will not result in disruptions to breeding cycles and existing threats to the species are unlikely to be increased. As such, the Project is considered	

#### 8.1.10. Ornamental Snake – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 34 below. In summary, the assessment found that the Project has the potential to result in a significant impact on the ornamental snake, primarily due to the removal of habitat critical to the survival /important habitat above the high-risk significant impact threshold amount of 2 ha as stipulated in the Draft Referral guidelines for the nationally listed Brigalow Belt reptiles (Department of Climate Change, Energy, the Environment and Water, 2023a).

Table 34: Significant Impact Assessment - Ornamental Snake

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of an important population of a species	The ornamental snake is known to occur within the northern Project Area, confirmed during targeted surveys which employed spotlighting in accordance with the Commonwealth survey guidance for the species. The Project Area is located within the southern extent of the species known distribution, within a 'likely to occur' area, and several species records occur in the region. As described above, all potential habitat for the species identified within the Project Area is considered to meet the definition of important habitat. As such, the Project Area is likely to support an important population.  A total of 4,849.2ha of suitable habitat is mapped within the Project Area. Approximately half of the ornamental snake habitat present within the Project Area is considered poor quality due to presence of known threats associated with non-remnant vegetation, as a result of historical and ongoing disturbance from cattle grazing and pastural grass incursion. Cane toads also occur commonly across the Project Area. Westside have committed to a maximum cumulative direct impact of 16.0 ha of suitable habitat. Relative to the amount of habitat that will remain, this loss of habitat is considered very minor. Potential indirect impacts on the species including habitat degradation via weed and pest incursion, erosion or sedimentation will be actively managed via Project management plans including but not limited to the SSMP and EMP. Searches for individuals will be conducted by a suitably qualified fauna spotter-catcher in areas of habitat to be cleared, minimising the chances of mortality. No changes in prey availability are anticipated as a result of the Project and prey species (frogs) are persisting in the current modified landscape. Based on the <i>Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles</i> , alteration of water quality or quantity affecting four or more hectares of important paligai or riparian habitat has a high risk of significant impacts on ornamental snake. Additionally, the clearing of two o	Possible

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Reduce the area of occupancy of an important population	'Area of occupancy' is defined as the area within a species 'extent of occurrence' which is occupied by that species. An important population of ornamental snake is assessed as occurring within the Project Area. Whilst the species is threatened by ongoing habitat destruction, the species has persisted in the landscape of the Project Area throughout times of broad scale land clearing practices, and ongoing agricultural pressures. The removal of up to 16.0 ha of suitable habitat is considered unlikely to reduce the area of occupancy of the species and does not occur at the outer extent of the species extent of occurrence (records). Therefore, the Project is unlikely to reduce the area of occupancy of an important population of ornamental snake.	Unlikely
Fragment an existing important population into two or more populations	The ornamental snake's dispersal abilities are not well known. However, existing information on the species (Veary 2011, for example) does indicate that individuals are unlikely to complete large local movements or move outside of mapped habitat (noting their reliance on the presence of appropriate refuge and prey). The siting of infrastructure will maximise opportunities for co-location with other infrastructure and preferentially use areas that are not identified as suitable habitat. All efforts will be made to site infrastructure in a way that does not dissect habitat patches. Surface water pipelines will be preferentially collocated with access tracks (new or existing) to minimise creating barriers to movement. Surface water pipelines design will consider the dispersal requirements of the ornamental snake; where the pipeline is not raised off the ground, egress points that allow safe movement over or under the pipelines will be installed.  The species is known from previously cleared areas that are dominated by exotic grass and subject to grazing, as well as areas that contain existing linear infrastructure highlighting the species' ability to utilise fragmented landscapes. Additionally, the majority of proposed Project impacts will be linear in nature, which the species will likely be capable of traversing particularly during periods of inundation. Based on the above, the Project is considered unlikely to further fragment an existing important population.	Unlikely
Adversely affect habitat critical to the survival of a species	The Draft Referral Guidelines for the Nationally Listed Brigalow Belt Reptiles states that clearing two or more hectares of important habitat is considered to have a 'high risk of significant impact'. The Project Area is considered to support important habitat for the species, which for the purposes of this assessment is considered the same as habitat critical for the survival of the species. As a result of the Project, a maximum of 16.0 ha of suitable habitat will be directly impacted via vegetation clearing resulting in the loss of approximately 0.33% (16.0 ha) of habitat available within the Project Area. While all the habitat within the Project Area is considered to be important habitat, it should be noted that the majority of these areas are already highly fragmented, impacted by exotic species and in non-remnant condition. Nonetheless, the Project may adversely affect habitat critical to the survival of the species. To minimise and mitigate Project impacts to the species, species-specific mitigation measures are proposed.	Possible

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:	The species has live hirths and as such does not require a specific broading	Unlikely
Disrupt the breeding cycle of an	The species has live births and as such does not require a specific breeding 'place' such as a nest or den. Young are independent from birth. Nonetheless,	Unlikely
important	important habitat for the species within the Project Area is likely to be utilised	
population	for breeding and foraging purposes at suitable times of the year. The Project	
	has a preference to minimise impacts to areas that support deep gilgai as	
	these may support larger numbers of individuals. A maximum of 16.0 ha of	
	suitable habitat will be affected by the Project, however this represents only a	
	very small amount of the total habitat available within the Project Area	
	(0.33%). As such, it is unlikely the Project will disrupt the breeding cycle of an	
	important population.	
Modify, destroy,	A total of 4,849.2 ha of ornamental snake suitable habitat is mapped within	Unlikely
remove or isolate or decrease the	the Project Area comprising areas of remnant, HVR and non-remnant	
availability or quality	vegetation. As described above, especially where habitat comprises regrowth or non-remnant vegetation, habitat is degraded as a result of historical	
of habitat to the	clearing, cattle grazing, weeds and pests. Regardless of this, the Project is	
extent that the	committed to the minimisation of impacts on the species to the greatest	
species is likely to	extent possible, with a maximum of 16.0 ha of suitable habitat to be affected.	
decline	This loss of habitat is likely to affects a relatively small population in degraded	
	habitat and is unlikely to trigger the species as a whole to decline in response.	
Result in invasive	Contact with cane toads ( <i>Rhinella marina*</i> ), predation by feral species and	Unlikely
species that are	habitat degradation from overgrazing of stock and invasive weeds are	
harmful to a	recognised threats to the species as per the species' SPRAT profile. Invasive	
vulnerable species	species including the cane toad ( <i>Rhinella marina</i> *) are present across the	
becoming established in the	Project Area and likely common. Invasive weeds such as buffel grass (Cenchrus ciliaris*) also occur extensively and are common, including within	
vulnerable species'	areas of potential habitat as described in the sections above. As the Project	
habitat	Area is largely cleared for agricultural purposes, it is considered likely that	
	many areas already act as conduits for pest movement. The Project will	
	employ best practice control methods for invasive pests including responsible	
	waste management to minimise the attraction of predatory fauna/pest	
	species and the implementation of a weed, pest and biosecurity management	
	plan. Based on this, it is unlikely the Project will result in invasive species that	
	are harmful to the ornamental snake becoming established or exacerbated.	
Introduce disease	There are no known diseases affecting the species. Nonetheless, the Project	Unlikely
that may cause the species to decline	will follow best practice biosecurity protocols during both construction and operation; therefore, introduction of a disease is unlikely.	
species to decime	All requirements within the Westside Weed Management Procedure and	
	Biosecurity Management Plan will be implemented to minimise the	
	introduction and spread of pest and weed species.	
Interfere	A recovery plan for the Qld Brigalow Belt Reptiles, including the ornamental	Unlikely
substantially with	snake, was drafted by WWF-Australia in 2006 (Richardson, 2006). Several	
the recovery of the	actions are identified which generally apply to the following themes:	
species	community and government involvement, further research, incentivizing	
	landowners and developing land-management guidelines and fire. There is	
	also the Action Plan for Australian Reptiles (Cogger <i>et al.</i> , 1993), which	
	acknowledges that more research into the species is needed in order to	
	define objectives and actions to assist recovery.	
	The species is known to the Project Area and included in the SSMP, ensuring Project personnel are aware of the species, it's habitat and general	
	sensitivities. The Project is highly unlikely to impede any recovery or research	
	actions relevant to the species.	
	1	l

### 8.1.11. Koala – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 35 below. In summary, the assessment found that the Project has the potential to result in a significant impact on the koala.

Table 35: Significant Impact Assessment - Koala

EDDC Act Cuitouio	Assessment of Circificance	Ciamificant
EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		11 11 1
Lead to a long-term	No koalas or evidence of koala presence was identified during the field	Unlikely
decrease in the size	surveys and the most recent publicly available record in the area is from 1997.	
of a population	Although presence of the species cannot be definitively ruled out, if koalas	
	were to utilise the Project Area, it is likely that this would be limited to a small	
	number of transient individuals, such as males dispersing during the breeding	
	season. This is primarily due to the paucity of recent records in the area and	
	the existing threats that occur including severe habitat fragmentation, and the	
	presence of significant barriers to movement i.e. the adjacent Moura Mine.	
	The majority of the Project Area is considered to support a matrix of potential	
	habitat. However, the vast majority is suitable for dispersal only and does not	
	contain habitat elements necessary for the breeding, foraging, refuge or	
	shelter requirements of the species. The habitat of the greatest value is	
	mapped as climate refugia which includes eucalypt forests and woodlands in	
	the riparian zone of the Dawson River. The habitat supported by the Dawson	
	River includes numerous LIKTs and REs known to support the species and may	
	also comprise an important dispersal corridor which could contribute to gene	
	flow at the metapopulation scale. The ecological significance of this habitat	
	type is recognised and as a result, it will be completely avoided (i.e. 0.0 ha limit).	
	Breeding and foraging habitat is present throughout the Project Area,	
	primarily in disjunct patches in a highly fragmented landscape, although in	
	some locations this is connected to climate refugia habitat. This habitat type	
	contains LIKTs and presents the next highest value habitat for the species	
	behind climate refugia. Although habitat may provide the resources necessary	
	for the species ecological requirements, it is not considered highly unique or	
	important given that patches are typically small and disconnected. This	
	habitat will be avoided as a priority; however, a maximum of 2.0 ha of	
	breeding and foraging habitat may be directly impacted over the life of the	
	Project. Shelter habitat exists primarily as fragmented patches of vegetation	
	surrounded by highly modified paddocks (dispersal habitat) and is more	
	common that breeding and foraging habitat. This habitat is not considered to	
	be of high value as it does not contain preferred foraging species, but may	
	provide ancillary habitat functions such as thermoregulation and temporary	
	refuge from predators for dispersing animals. A maximum of 6.9 ha of this	
	habitat may be impacted by the Project.	
	Habitat suitable for dispersal comprises historically cleared, exotic grassland	
	that is frequently devoid of trees. The micro-siting of Project infrastructure	
	within areas of koala dispersal habitat proposed for clearing will prioritise the	
	retention of koala dispersal trees (highest priority) followed by any native	
	woody vegetation. Of the 400 ha limit for dispersal habitat, 1% (or 4 ha) may	
	comprise koala dispersal trees measured by canopy cover. During the site	
	scouts, ecologists will assess the presence and extent (measured by canopy	
	cover) of koala dispersal trees (i.e. a plant of any genera that has a tree	
	diameter that is equal to or greater than 10 cm when measured at 1.3 m	
	above the ground (referred as >10 cm DBH)) within areas of dispersal habitat.	
	The loss of koala dispersal tree cover as a result of the Project will be so	

hig of I Ind Iim are Du the imp inc	nor, and so evenly distributed across the Project Area that it is considered shly unlikely habitat function will be disrupted (ensuring no functional loss habitat despite some vegetation clearing).  direct impacts on the species as a result of the Project are expected to be nited. The Project is highly unlikely to increase or introduce pests as many expected to occur already and existing conduits for movement are present. The to an increase in activity onsite during the construction period especially, a risk of vehicle strikes will be increased. The Project EMP and SSMP will be plemented and include a suite of koala specific mitigation measures cluding speed limits. The species likely occurs a low density population and exercise the use of the Project Area at any one time is likely limited to a very	
are Du the imp inc the	e known to occur already and existing conduits for movement are present. e to an increase in activity onsite during the construction period especially, e risk of vehicle strikes will be increased. The Project EMP and SSMP will be plemented and include a suite of koala specific mitigation measures cluding speed limits. The species likely occurs a low density population and	
	all number of individuals. Noting this, the low magnitude of habitat loss as	
Reduce the area of As	ell as the implementation of species-specific mitigation measures, a long- rm decrease in the size of a population is unlikely to result from the Project. stated in the species' Conservation Advice, the area of occupancy (the area thin the species' distribution that is occupied by the species) for the koala is	Unlikely
population  est occoma The the ren gra wo me exp At me ma hal and dis red hal ma	thin the species' distribution that is occupied by the species) for the koala is timated at 19,428 km² and is contracting. It is noted that the area of cupancy may be potentially overstated given the low resolution in the apping methodology used by the Commonwealth (2 km x 2 km grid). We koala is widespread across Qld and the Project Area is not located near the limit of the species distribution. Although the Project would result in the moval of up to 408.9 ha of habitat (of which 400 ha is predominantly exotic assland suitable for dispersal only), the area of occupancy of the species ould not be reduced by the Project, based on the Commonwealth's mapping ethodology – i.e. the 2 km x 2 km grids encompassing the Project would be pected to remain occupied if the species is present.  The affiner scale, the area of occupancy of any local population or etapopulation is highly unlikely to be reduced, also noting that individual ales have been known to travel distances of up to 20 km. The highest value bitat present (climate refugia) will be completely avoided and the nature discale of clearing within breeding and foraging habitat, shelter habitat and repersal habitat will not result in a significant change in habitat function or duction in carrying capacity. It is expected that the quantum of potential bitat that will remain in the Project Area and surrounding region would sintain the current level of metapopulation processes. Based on this, be open that for the species to the extent that the area of occupancy	
Fragment an existing The	e species is considered highly mobile and known to readily move across ared areas (Youngentob, Marsh and Skewes, 2021). Koalas, particularly	Unlikely
or more populations  subtained in the su	badult males, have been recorded to disperse across distances of up to 20 in (Norman et al., 2019).  bitat within Project Area is already highly fragmented (with the exception the Dawson River riparian corridor) due to historical clearing and ricultural practices. Several existing barriers to movement are present both itside of the Project Area (include the Dawson Mine to the east) and within the Project Area, including numerous roads and highways, irrigation channels, indicated intensive use areas some of which have exclusion fencing.  It is vegetation clearing will occur within the riparian vegetation of the Dawson ver (which may be used as a key movement corridor) and use of existing	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
	ground surfaces will be reinstated and fencing will only be constructed around	
	well pads which will occur in discrete locations. As a priority, any isolated mature trees within dispersal habitat will be retained. As such, no significant	
	patch isolation will occur indicating that landscape connectivity, would not be	
	reduced from the current condition.	
	During construction, increased vehicle activity and ground excavations may	
	present temporary barriers to movement. The risk of entrapment and	
	collision will be actively managed via the EMP.	
	Given the ability for this species to readily disperse across non-remnant areas,	
	vegetation clearance associated with the Project is unlikely to present	
	significant barriers to this species local movement, to the extent that it	
	fragments any population of this species within the Project Area.	
Adversely affect habitat critical to the	Potential habitat comprising climate refugia, breeding and foraging and	Possible
survival of a species	shelter broadly meet the definition of habitat critical to the survival of the species. While the Project Area is not known to support a population of the	
survivar or a species	species, the Conservation Advice includes currently 'unoccupied' areas in the	
	definition of habitat critical to the survival of the species.	
	Climate refugia mapped in associated with the riparian zone of the Dawson	
	River provides the highest value habitat for the species, with large, connected	
	areas, numerous LIKT dominated communities and a potential dispersal	
	corridor at the landscape scale. The ecological value of this habitat is	
	recognised and hence a commitment of 0.0 ha of impact has been made. Only	
	directional drilling would be permitted within the riparian corridor, meaning the key movement corridor and habitat refuge for the species would be	
	retained.	
	Although, habitat critical to the survival of the species would be preferentially	
	avoided, a maximum of 2.0 ha of breeding and foraging habitat and 6.9 ha of	
	shelter habitat may be impacted as a result of the Project. This impact will	
	occur over the life of the Project, and likely in small, isolated areas, i.e. patch	
	edges rather than removing or dissecting patches.	
	Although the magnitude of habitat loss is very low, it is noted that habitat of	
	this nature across the local area has been significantly reduced as a result of historical clearing. It is unclear to what extent the species is relying on the	
	presence of these areas to maintain foraging opportunities. As such, it is	
	considered possible that this loss of critical habitat may have an adverse	
	impact on the species in the local region.	
Disrupt the breeding	No population of this species is known to occur within the Project Area, and if	Unlikely
cycle of a population	present individuals are expected to occur in very low densities. Male koalas	
	are known to disperse large distances during the breeding season in search of	
	a mate. The shape and scale of clearing would not create barriers to movement that would hinder this dispersal.	
	Further, construction works will be completed during daylight hours wherever	
	possible which will minimise impacts from construction light and noise (i.e.	
	masking male koala calls during the breeding season). Given the potential	
	absence or infrequent use of the Project Area by this species, the Project is	
	unlikely to disrupt the breeding cycle of a population.	
Modify, destroy,	The species has very broad habitat requirements and can inhabit vegetation in	Unlikely
remove or isolate or decrease the	varying condition, including non-remnant. A maximum of 2.0 ha of breeding and foraging habitat, 6.9 ha of shelter habitat, and 400.0 ha of dispersal	
availability or quality	habitat could be directly impacted as a result of the Project. The breeding and	
of habitat to the	foraging habitat is not considered highly unique or important for refuge and	
extent that the	habitat with similar characteristics, quality and condition occurs widely within	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
species is likely to decline	the region. It also occurs primarily as disjunct patches in a highly fragmented landscape with significant dispersal barriers present. Identified dispersal habitat is considered to be of low value to the species, given the significant presence of threats and impediments. Habitat features that may be important for movement such as individual paddock trees are rare and often comprise small regrowth trees that would not offer thermoregulation. As a priority, any isolated mature trees within the dispersal habitat will be retained. The area of tree canopy that may be lost as a result of clearing within dispersal habitat (4 ha) is such a low percentage of available habitat and will be so evenly dispersed across the final impact area that it will not affect the functional value of the habitat to the koala. Therefore, any project works in this area is likely to have a negligible impact on the species as the Project will not create any barriers to movement and habitat will be immediately reinstated immediately following construction ensuring movement continues to be facilitated.  Clearing will only be conducted as strictly necessary. Climate refugia habitat which is likely to be of greatest value to the species will be strictly avoided. Micro-siting of infrastructure in breeding and foraging and shelter habitat will aim to retain large trees and maximise the use of existing gaps. It is recognised that potential indirect impacts on habitat that will be retained may occur as a result of the Project including habitat degradation from increased dust, edge effects, weeds and temporary altered hydrology. Indirect impacts will be actively managed via Project management plans and include measures such as erosion and sediment control, dust suppression and weed and pest management.  The local population is likely to be low-density with individuals utilising the Project Area infrequently. Given this, the avoidance of climate refugia habitat and minimisation of impacts to other habitat types, and the suite of mitigation measures, i	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	A number of exotic fauna species were identified within the Project Area during the field surveys. Although wild dog was not recorded during field surveys, the species is expected to occur within the Project Area and surrounding region. As the Project Area is largely cleared for agricultural purposes, it is considered likely that many areas already act as conduits for pest movement. The Project will employ best practice control methods for invasive pests including responsible waste management to minimise the attraction of predatory fauna/pest species and the implementation of a weed, pest and biosecurity management plan. Based on this, it is unlikely the Project will result in populations of invasive species that are harmful to the koala becoming established or exacerbated.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Introduce disease that may cause the species to decline	Chlamydia and Koala Retrovirus (KoRV) are known threats to the species. The Project will follow best practice construction and operational methods; therefore, introduction of a disease is unlikely.  Chlamydia and KoRV are known threats to the species. Chlamydia and KoRV are found in most koalas and many live with the infections and never show outward signs of illness or suffer measurable reproductive consequences (Youngentob, Marsh and Skewes, 2021). These common pathogens can progress to clinical disease when influenced by factors that cause chronic stress, including habitat loss. Chronic stress to koalas is also thought to increase their susceptibility to contracting disease as their immune systems can be negatively impacted. Where chronic stress is widespread in a population, for example in marginal habitat or urban areas, it is possible that loss of fertility due to disease and reduced recruitment due to habitat fragmentation could cause populations to decline (Department of Agriculture Water and the Environment, 2022d).  No koalas are known from the Project Area and habitat is typically of low value, with the exception of the Dawson River riparian zone and some larger patches which contain LIKTS. The extent of koala habitat that would remain would retain its ecological function and provide opportunities for koalas to seek refuge from disturbance during construction. Should an unwell koala be identified during clearing works, it will be handled appropriately by a qualified spotter-catcher and taken to a predesignated veterinarian/wildlife care facility for treatment prior to release. Best practice biosecurity measures will also be implemented through the Biosecurity Management Plan. Further, Project works are unlikely to lead to new pathways to disease dispersal into the Project Area for any individuals which may carry the disease.  Based on the above, it is considered highly unlikely that Project activities are of the magnitude that would result in a population level decline from introduction or exacerbati	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Interfere substantially with the recovery of the species	A National Recovery Plan for the Koala was published in 2022. The goal of the Recovery Plan is to stop the trend of decline in population size by having resilient, connected and genetically healthy metapopulations across its range and to increase the extent, quality and connectivity of habitat occupied. In meeting this goal, four main objectives are detailed:	Unlikely
	<ul> <li>Stabilise and then increase the area of occupancy and size of populations that are declining.</li> <li>Maintain or increase the area of occupancy and size of populations that are stable.</li> <li>Metapopulation processes are maintained or improved.</li> </ul>	
	<ul> <li>Partners, communities and individuals have a greater role and capability in koala monitoring, conservation and management.</li> <li>There is limited information available about the koala population viability and trend within the Moura region. While it is likely only a portion of the local population may utilise the mapped habitat, the Project is unlikely to alter overall population numbers, dynamics or occupancy areas. Recognised threats to the species are also unlikely to be significantly increased or exacerbated by the Project. Based on this, the Project is unlikely to interfere</li> </ul>	
	substantially with the recovery of the species.	

# 8.1.12. White-throated Needletail – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 36 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the white-throated needletail.

Table 36: Significant Impact Assessment - White-throated Needletail

EPBC Act Criteria – is there a real chance	Assessment of Significance	Significant Impact?
or possibility that		
the Project will:		
Lead to a long-term	A long-term decrease in the size of a white-throated needletail population is	Unlikely
decrease in the size	unlikely given Project activities will be collocated with existing disturbance.	
of an important	Direct impacts will occur to foraging and dispersal habitat only (fly-over	
population of a	foraging).	
species	Indirect impacts on the species as a result of the Project are expected to be	
	limited. The Project is highly unlikely to increase or introduce pests as many	
	are known to occur already and existing conduits for movement are present.	
Reduce the area of	Project activities will be collocated with existing disturbance, and direct	Unlikely
occupancy of an	impacts will occur to foraging and dispersal habitat only (fly-over foraging).	
important	Therefore, it is unlikely that the Project will result in a reduction of the area of	
population	occupancy of an important population.	
Fragment an existing	It is unlikely that the Project will result in the fragmentation of an existing	Unlikely
important	important population; Project activities will be collocated with existing	
population into two	disturbance and direct impacts will occur to foraging and dispersal habitat	
or more populations	only (fly-over foraging).	
Adversely affect	As roosting habitat is considered absent from the Project Area, no areas of	Unlikely
habitat critical to the	modelled habitat are considered critical to the survival of the species.	
survival of a species		

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Disrupt the breeding cycle of an important population	This species is a non-breeding migrant to Australia. As the species forages predominantly on insects, foraging resources are widely available and are not a limitation to building sufficient energy reserves required for their return migration to breeding grounds.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The species is mostly aerial and individuals are only likely to utilise the Project Area temporarily while on migration south or north. The species is known to utilise fragmented landscapes and will occur over cleared areas. The Project will not lead to the further degradation of retained habitat, as potential indirect impacts such as edge effects, and weeds and pests will be actively managed via Project management plans. The Project will not increase the use of pesticides which may reduce the availability of prey.	Unlikely
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Invasive species are not known to be a threat to the white-throated needletail. Nonetheless, the Project will employ best practice control methods for weeds and pests and with the successful implementation of the proposed mitigation measures it is unlikely to introduce or exacerbate weeds or pests beyond existing levels.	Unlikely
Introduce disease that may cause the species to decline	There are no known diseases affecting the species. The Project will employ appropriate biosecurity protocols during construction and operation; therefore, introduction of a disease that may cause the species to decline is unlikely.	Unlikely
Interfere substantially with the recovery of the species	As identified in the SPRAT, a Recovery Plan for the white-throated needletail is not required as the necessary information is provided in the species' Conservation Advice (Threatened Species Scientific Committee, 2019). This document identifies the primary conservation actions for the species as the protection of breeding habitat in East Asia.	Unlikely

# 8.1.13. Yakka Skink – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 37 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the yakka skink.

Table 37: Significant Impact Assessment - Yakka Skink

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term	The yakka skink, nor any signs of yakka skink such as potential latrines or	Unlikely
decrease in the size	burrows, have been recorded during the field survey program. It is considered	
of an important	possible that the species has become locally extinct, given the extensive	
population of a	agricultural development that has occurred and the detrimental biological	
species	characteristics of the species including high site fidelity and low fecundity.	
	However, to ensure a conservative approach to future assessments that	
	ensure the species is surveyed for and considered, the species has been	
	determined to have a moderate likelihood of occurrence. Potentially suitable	
	woodland habitat occurs within the Project Area. However, habitat surveyed	
	to date is marginally suitable due to the hard clay-based soils (unsuitable for	
	burrows) and lacking refuge microhabitat. A long-term decrease in the size of	

EPBC Act Criteria – is there a real chance or possibility that	Assessment of Significance	Significant Impact?
the Project will:		
	a yakka skink population is unlikely given Project activities will be collocated with existing disturbance and suitable breeding and foraging habitat will be avoided during the design of the Project.  Indirect impacts on the species as a result of the Project are expected to be limited. The Project is highly unlikely to increase or introduce pests as many are known to occur already and existing conduits for movement are present. Nonetheless, potential indirect impacts on the species' and its habitat will be actively managed via Project management plans.	
Reduce the area of occupancy of an important population	The yakka skink has a relatively large distribution. While any population that may occur within the Project Area would constitute an important population, to date no evidence of presence has been recorded. Further, the Project Area does not occur near any known populations nor the limit of the species range. Project activities will be collocated with existing disturbance, and all areas of breeding and foraging habitat will be avoided (maximum disturbance limit of 0.0 ha). Therefore, it is unlikely that the Project will result in a reduction of the area of occupancy of an important population.	Unlikely
Fragment an existing important population into two or more populations	Suitable habitat supported by the Project Area generally exhibits very low levels of connectivity. It is unlikely that the Project will result in the fragmentation of an existing important population; Project activities will be collocated with existing disturbance. Breeding and foraging habitat will be avoided by Project (maximum disturbance limit of 0.0 ha).	Unlikely
Adversely affect habitat critical to the survival of a species	There is no Recovery Plan for this species and as such no habitat critical to the survival of the yakka skink has been defined. However, 'important habitat' has been identified within the Project Area which is considered to be a surrogate for habitat critical to the survival of this species. No direct impacts will be permitted to areas of breeding and foraging habitat.	Unlikely
Disrupt the breeding cycle of an important population	No specific breeding habitat or breeding season is known for the yakka skink. However, as this species' births live young and they live in colonies in burrows, it is expected that these burrow systems are used as breeding places. No potential burrows (or latrine sites which often occur adjacent to the burrow) have been identified within the Project Area to date. The species exhibits a high site fidelity, so is unlikely to leave any burrow site of its own volition. Therefore, all future site scouts will ensure the species and indirect signs of the species (latrine sites and burrows) are searched for by a qualified ecologist. No direct impacts will be permitted to areas of breeding and foraging habitat, and indirect impacts will be managed via Project management plans.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	While no direct impacts will occur to breeding and foraging habitat, it is acknowledged that the results of habitat clearance within the Project Area may indirectly impact the species. Future site scouts will ensure that the presence and extent of potential habitat is assessed within a minimum of 30 m of the infrastructure location, to ensure habitat that may be adjacent to impacts is considered. Where this cannot be completed (i.e. land access restrictions), presence will be assumed if such findings are supported by the MNES mapping (i.e. potential habitat mapped). As described above, no potential burrows or latrine sites have been identified to date and it is considered possible that the species is locally extinct.  Edge effects are not expected to be amplified significantly and light spill and increased noise are expected to be temporary and localised. The nature and scale of indirect impact is considered to be minimal in the context of available suitable habitat within the Project Area and the staged and discrete nature of	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
	the development. Potential impacts will be actively managed via the Project's management plans.	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Predation by red fox and feral cat have been identified as a threat to the yakka skink. The Project Area is already severely fragmented with existing conduits for movement, and therefore it is considered unlikely that clearing required for construction of the Project will significantly exacerbate the movement of exotic predators. The Project will employ best practice control methods for weeds and pests and is unlikely to introduce or exacerbate weeds or pests beyond existing levels.	Unlikely
Introduce disease that may cause the species to decline	Disease has not been listed as a threat to this species. However, weed and pest management for the Project will ensure best practice site hygiene measures.	Unlikely
Interfere substantially with the recovery of the species	The Project will have minimal impact to the primary conservation actions as stipulated in the Conservation Advice, since the species and its habitat will be considered as part of all future site scouts and there will be no direct impacts to suitable habitat.	Unlikely

#### 8.1.14. Greater Glider (Central and Southern) – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 38 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the greater glider (southern and central). The species listing status at the time of the Project's original referral (Vulnerable) has been considered in the below assessment, particularly as it pertains to the severity of impacts on habitat critical to the survival of the species. Broadly speaking, Critically Endangered or Endangered MNES are considered most vulnerable to exacerbation or synergistic impacts associated with threatening processes, given they are likely to comprise small populations less resilient to stochastic events. Although the listing status of Vulnerable was used, the assessment of potential impacts was informed by the latest literature on the species including the Conservation Advice, which was updated in response to the listing change in 2022.

Table 38: Significant Impact Assessment - Greater Glider (Central and Southern)

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of an important population of a species	The greater glider (southern and central) was not recorded during the field surveys, however, is known from the wider region based on records from other ecological surveys and public records. Any individuals present within the Project Area may comprise an important population.  Based on field survey findings and State mapping, the Project Area supports suitable habitat. The primary habitat identified to date is associated with the riparian zone of the Dawson River, which was confirmed during the field survey program to support key habitat features (hollow-bearing trees) that are otherwise limited in the wider Project Area. Mapped habitat identified across the remainder of the Project Area largely comprises narrow linear patches that form loose habitat corridors with frequent gaps. Field survey findings indicate that riparian habitat on other mapped watercourses within the Project Area is frequently interspersed by areas of brigalow woodland, which are not known to be utilised by the species. A conservative approach to	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance or possibility that		Impact?
the Project will:		
	the habitat mapping has been undertaken, noting that all proposed infrastructure locations (and areas within 30 m) will be subject to assessment by a qualified ecologist. Potential habitat will be assessed in consideration of the habitat mapping criteria that include requirements relating to tree height, patch size and connectivity.  All areas identified as suitable for denning will be strictly avoided (maximum disturbance limit of 0.0 ha). Direct impacts as a result of vegetation clearing required for the Project may be required to habitat suitable for foraging and dispersal purposes, to a maximum disturbance limit of 2.0 ha. The siting of Project infrastructure (including wells, gathering infrastructure, tracks and other ancillary infrastructure) within or adjacent to foraging and dispersal habitat will adhere to patch viability and functionality rules (described in the MNES Report). These measures will ensure that habitat functionality for the species is maintained and habitat fragmentation is not significantly exacerbated. Therefore, the quantum of foraging and dispersal habitat that will be retained will be sufficient to maintain any population present. Indirect impacts on the species as a result of the Project are expected to be limited. Populations of pest species which may predate on the greater glider (southern and central) (i.e. feral cat and red fox) are likely to be already established in the Project Area and the best practice pest management measures will be enforced as defined in the Biosecurity Management Plan (WCL-0000-HS-PLN-010-010). Construction activities and ongoing vehicle use within the Project Area may increase the ignition potential of vegetation, although bushfire attributable to the Project area, noise disturbance would	
	be elevated, however works will occur primarily during the day. All greater glider (southern and central) denning habitat will be avoided (i.e. where the	
	species is likely to shelter during the day), hence disturbance would be limited	
	to areas only utilised periodically at night.  Given the above, a long-term decrease in the size of a greater glider (southern	
	and central) population is unlikely.	
Reduce the area of	It is considered highly likely that any local population present, which would	Unlikely
occupancy of an	constitute an important population, is predominantly confined to the Dawson	
important population	River corridor where high quality, connected habitat is supported. No direct impacts will occur to confirmed denning habitat, including along the Dawson River. Although directional drilling may occur underneath, entry and exit points will occur well outside of the riparian zone and construction will be subject to detailed planning. The risks associated with directional drilling are considered low as they are frequently employed on CSG projects to manoeuvre around watercourses.	
	As described above, no direct impacts will be permitted to areas of denning habitat, confirmed via the site scout process. Direct impacts may occur to habitat suitable for foraging and dispersal purposes, to a maximum disturbance limit of 2.0 ha. However, such habitat is likely to be widely available (relative to habitat suitable for denning) and used only temporarily by individuals while moving between areas of habitat. With the maintenance of habitat connectivity in line with baseline levels, this loss of habitat is likely to have a very minor impact on the species. Furthermore, the Project Area is not located near the limit of the species range, nor will it create any barriers to movement. Therefore, it is unlikely that the Project will result in a reduction in the area of occupancy of an important population.	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Fragment an existing	As described above, up to 2.0 ha of habitat suitable for foraging and dispersal	Unlikely
important	purposes only may be cleared across the life of the Project. Such habitat does	
population into two	not contain hollow-bearing trees, which the species is dependent on, and is	
or more populations	therefore likely to be used only temporarily. Project works will be staged,	
	ensuring impacts are limited to small discrete areas at a time. The siting of	
	Project infrastructure will follow the Permit to Disturb process including strict	
	rules regarding patch viability and functionality. Where clearing is proposed	
	within a greater glider (southern and central) habitat corridor, as defined in	
	the MNES habitat criteria, site scout data collected by a qualified ecologist will	
	be used to understand how much wider existing gaps can be made. Clearing	
	required for construction of the Project will not create gaps in the habitat	
	corridor that are too great for the species to glide across (i.e. turn the corridor	
	into two isolated patches or corridors). These measures will ensure that	
	habitat functionality for the species is maintained and habitat fragmentation	
	is not significantly exacerbated. The quantum of foraging and dispersal	
	habitat that will be retained will be sufficient to maintain any population present. Project infrastructure will not create any barriers to movement.	
	Noting this and the detailed site scout process that will be undertaken prior to	
	any disturbance, it is considered unlikely the Project will fragment an existing	
	important population into two or more.	
Adversely affect	All potential habitat that is confirmed to meet the habitat definition during	Unlikely
habitat critical to the	future site scouts will be considered habitat critical to the survival of the	Offlikely
survival of a species	species. Although habitat suitable for foraging and dispersal lacks hollow-	
survivar or a species	bearing trees, these areas provide important linkage to areas that do contain	
	such resources and may be important to maintain individual home ranges.	
	No direct impacts will be permitted to areas of denning habitat, confirmed via	
	the site scout process. Direct impacts may occur to habitat suitable for	
	foraging and dispersal purposes, to a maximum disturbance limit of 2.0 ha.	
	The siting of Project infrastructure will follow the Permit to Disturb process	
	including strict rules regarding patch viability and functionality. Micro-siting of	
	Project infrastructure will aim to retain the tallest trees present within the	
	assessed area, to ensure availability of gliding launch points is retained.	
	Additionally, where clearing is proposed within a greater glider (southern and	
	central) habitat corridor, as defined in the MNES habitat criteria, site scout	
	data collected by a qualified ecologist will be used to understand how much	
	wider existing gaps can be made. Clearing required for construction of the	
	Project will not create gaps in the habitat corridor that are too great for the	
	species to glide across (i.e. turn the corridor into two isolated patches or	
	corridors).	
	These measures will ensure that habitat functionality for the species is	
	maintained, and habitat fragmentation is not significantly exacerbated. Given	
	the linear and staged nature of the Project, this habitat loss will be	
	incremental and limited to very small areas per location comprising patch	
	edges. Construction will be limited to small discrete portions of the Project	
	Area at any one time, minimising disturbance. The quantum of foraging and dispersal habitat that will be retained will be sufficient to maintain any	
	population present.	
	This magnitude of habitat loss is considered very minor, particularly noting	
	that high quality habitat areas such as the Dawson River corridor, which are	
	likely to be preferentially used, will be completely avoided. Overall, the	
	project is considered unlikely to have an adverse impact on habitat critical to	
	the survival of the species, given the strict mitigation and management	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
	measures in place that consider the species biological characteristics and known habitat preferences.	
Disrupt the breeding cycle of an important population	The species is reliant on hollow-bearing trees for breeding and has a low reproductive rate. Females give birth to a single young between March – June (McKay, 2008). No direct impacts will be permitted to confirmed greater glider (southern and central) denning habitat (i.e. where the species is likely to shelter during the day).  Habitat suitable for denning will be marked as a 'high constraint' area and therefore only walk-over activities will be permitted (surveys with no ground disturbance). Potential indirect impacts on the species are expected to be low, however will be managed nonetheless via the Project management plans. Overall, the Project is considered highly unlikely to disrupt the breeding cycle of a greater glider (southern and central) population, noting habitat supporting hollow-bearing trees will be completed avoided.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	While no direct impacts will occur to denning habitat, the results of habitat clearance within the Project Area (including to areas of foraging and dispersal) may indirectly impact the species via increased incidence of feral cat/red fox and increased noise, light and dust. Pest species which may predate on greater glider (southern and central) such as red fox and feral cat, are likely established throughout the Project Area. Predation by these species is likely limited as greater gliders (southern and central) would only be susceptible to attack when they come to the ground, which is uncommon.  Greater gliders are known to come to ground after they have been displaced by bushfires, which suggest that fire-predation interactions may amplify this threat to the species. Bushfire can also lead to significant population decline as a result of lethal heating or suffocation from smoke, or indirectly from loss of habitat features and resources.  Edge effects are not expected to be amplified significantly as the Project Area is already highly fragmented and weed species are established throughout. Light spill and increased noise are expected to be temporary and localised and increased noise and light would be separated from areas potentially occupied by greater glider (southern and central) given that no construction works will occur in this habitat.  The scale of indirect impact is considered to be minimal given the current condition of the Project Area and the presence and extent of existing threats. Nevertheless, potential impacts will be actively managed via the Project's management plans. Indirect impacts on the species are anticipated to be minor with the implementation of the strict infrastructure siting rules and the suite of mitigation and management measures, it is unlikely that the species would decline.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Stomach contents analysis of red fox and feral cat has demonstrated that these species are known to consume the greater glider (southern and central), albeit rarely. In these instances, it is unknown if they were killed by these species or consumed as carrion. Populations of both of these species are likely already established throughout the Project Area.  The risk presented by these species is minimal as greater gliders (southern and central) are only susceptible to attack when they come to the ground. The species is rarely found on the ground; however, they have been recorded in rare circumstances to disperse over the ground when there is a barrier to gliding and have also been recorded on the ground during drought or extreme heat or when displaced by bushfire.  With the successful implementation of mitigation measures, the overall risk of invasive species establishment or exacerbation within the Project Area is minor and an increase in predatory interactions with greater glider (southern and central) is likely to be negligible.	Unlikely
Introduce disease that may cause the species to decline	The species is not known to be vulnerable to disease directly. Phytophthora root fungus ( <i>Phytophthora cinnamomi</i> ) has the potential to indirectly impact the species via the infection of eucalyptus trees. No signs of phytophthora root fungus were observed during field surveys. The Project will implement appropriate biosecurity protocols; therefore, the introduction of a disease that may cause the species to decline is unlikely.	Unlikely
Interfere substantially with the recovery of the species	There is no adopted or made Recovery Plan for this species. Clearing and logging activities, current burning regimes and the impacts of climate change are a major threat to large hollow-bearing trees upon which the species relies. The Project will be designed to preferentially utilise previously disturbed areas and full avoidance of habitat suitable for denning (and thus relied upon for the long-term persistence of the species) has been committed to. As such, the Project is unlikely to interfere with the recovery of the species.	Unlikely

### 8.1.15. Yellow-bellied Glider (South-Eastern) – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 39 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the yellow-bellied glider (south-eastern).

Table 39: Significant Impact Assessment - Yellow-bellied Glider (Central and Southern)

	Significant impact Assessment - Tellow-bettled Glider (Central and Southern)	c::c:
EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
Lead to a long-term	The yellow-bellied glider (south-eastern) was not recorded during the field	Unlikely
decrease in the size	surveys; however, the Project Area does support some suitable habitat	
of an important	associated with the riparian zone of the Dawson River. All habitat patches will	
population of a	be avoided in design with a disturbance limit of 0.0 ha.	
species	Indirect impacts on the species as a result of the Project are expected to be	
	limited. Habitat fragmentation would not be exacerbated as clearing will not	
	occur within suitable habitat. Populations of pest species which may predate	
	on the species (i.e. feral cat and red fox) are likely to be already established in	
	the Project Area and the best practice pest management measures will be	
	enforced as defined in the Biosecurity Management Plan (WCL-0000-HS-PLN-	
	010-010). Construction activities and ongoing vehicle use within the Project	
	Area may increase the ignition potential of vegetation, although bushfire	
	attributable to the Project would be managed via the EMP. As a result of	
	increased activity in the Project area, noise disturbance would be elevated,	
	however all yellow-bellied glider (south-eastern) habitat would be avoided,	
	hence disturbance would be limited to areas outside of mapped suitable	
	habitat.	
	Given the above, a long-term decrease in the size of a yellow-bellied glider	
- I II	(south-eastern) population is unlikely.	
Reduce the area of	Project activities will be collocated with existing disturbance, and mapped	Unlikely
occupancy of an	habitat including eucalypt woodlands/forests will be avoided during the	
important	design of the Project, therefore it is unlikely that the Project will result in a	
population	reduction of the area of occupancy of an important population.	I Indiilealee
Fragment an existing	It is unlikely that the Project will result in the fragmentation of an existing	Unlikely
important	important population; Project activities will be collocated with existing	
population into two	disturbance and mapped habitat including eucalypt woodlands/forests will be avoided during the design of the Project.	
or more populations		Halikalı
Adversely affect habitat critical to the	While areas of eucalypt woodland/forest with small and large hollows are present within the Project Area, and this is considered to be critical for the	Unlikely
survival of a species	survival of the species, no direct impacts will occur within mapped habitat.	
_		Unlikoly
Disrupt the breeding cycle of an	Breeding is reliant on hollow-bearing trees. Mapped habitat including eucalypt woodlands/forests will be avoided during the design of the Project.	Unlikely
important	Habitat will be marked as a 'high constraint' area and therefore only walk-	
population	over activities will occur (surveys with no ground disturbance). This is unlikely	
population	to disrupt the breeding of yellow-bellied gliders (south-eastern).	
Modify, destroy,	While no direct impacts will occur to mapped habitat, the results of habitat	Unlikely
remove or isolate or	clearance within the Project Area may indirectly impact the species, such as:	Olinkely
decrease the	the potential for increased incidence of feral cat/red fox and increased noise,	
availability or quality	light and dust. Pest species which may predate on yellow-bellied glider	
of habitat to the	(south-eastern) such as red fox and feral cat, are likely established throughout	
extent that the	the Project Area.	
species is likely to	Yellow-bellied gliders (south-eastern) are known to come to ground after they	
decline	have been displaced by bushfires, which suggest that fire-predation	
	interactions may amplify this threat to the species. Bushfire can also lead to	
	significant population decline as a result of lethal heating or suffocation from	
	smoke, or indirectly from loss of habitat features and resources.	
	Simone, or maneetly from 1005 of habitat features and resources.	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
the Hoject will.	Edge effects are not expected to be amplified significantly as the Project Area is already highly fragmented and weed species are established throughout. Light spill and increased noise are expected to be temporary and localised and increased noise and light would be separated from areas potentially occupied by yellow-bellied gliders (south-eastern) given that no construction works will occur in this habitat.  The scale of indirect impact is considered to be minimal given the current condition of the Project Area and the existing threats. Nevertheless, potential impacts will be actively managed via the Project's management plans. Given that no direct impacts to habitat will occur, indirect impacts would be minor and with the implementation of the suite of mitigation measures and management plans, it is unlikely that the species would decline.	
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Yellow-bellied gliders (south-eastern) have been found in the scats of red foxes. Previously, it was thought that these predators cannot climb into the canopy where gliders are found, so it was assumed they were eating already dead animals. However, video evidence from 2017 shows that foxes can and do climb trees (Department of Agriculture Water and the Environment, 2022a), meaning that some predation on living gliders may occur.  With the successful implementation of mitigation measures, the overall risk of invasive species establishment within the Project Area is unlikely to be exacerbated and an increase in predatory interactions with yellow-bellied glider (south-eastern) is likely to be negligible.	Unlikely
Introduce disease that may cause the species to decline	The species is not known to be vulnerable to disease directly. Phytophthora root fungus ( <i>Phytophthora cinnamomi</i> ) has the potential to indirectly impact the species via the infection of eucalyptus trees. No signs of phytophthora root fungus were observed during field surveys. The Project will implement appropriate biosecurity protocols therefore, introduction of a disease that may cause the species to decline is unlikely.	Unlikely
Interfere substantially with the recovery of the species	There is no adopted or made Recovery Plan for this species. Clearing and logging activities, current burning regimes and the impacts of climate change are a major threat to large hollow-bearing trees upon which the species relies. The Project will be designed to utilise previously disturbed areas and avoid disturbance to mapped habitat including eucalypt woodlands/forests. As such, the Project is unlikely to interfere with the recovery of the species.	Unlikely

### 8.1.16. White-throated Snapping Turtle – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 40 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the white-throated snapping turtle.

Table 40: Significant Impact Assessment - White-throated Snapping Turtle

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term	No direct impacts on suitable habitat will be permitted at any time (maximum	Unlikely
decrease in the size	disturbance limit of 0.0 ha). To maximise the avoidance of potential habitat	
of a population	for the species, Westside have committed to no clearing within the Dawson	
	River corridor and its associated RPZ.	
	The risk of indirect impacts on the species as a result of the Project are	
	considered very low. Any use of HDD under the Dawson River will be strictly	

EPBC Act Criteria – is there a real chance or possibility that	Assessment of Significance	Significant Impact?
the Project will:	planned and controlled to ensure no unintended impacts on MNES including compromising groundwater, surface water or landform stability and integrity. Directional drilling, should it be required, will occur completely underneath potential habitat and will not have any effect on the surface above. The drilling launch and receipt points will occur within low constraint areas, outside the Dawson River RPZ.  The potential for indirect impacts such as a reduced water quality, erosion and sedimentation and an increase in weeds and pests, is considered to be low and will be actively managed via Project management plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP. Project activities that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity, including threatened turtle habitat, and the potential for contamination. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. Therefore, a long-term decrease in the size of a population is	
Reduce the area of occupancy of the species	unlikely.  Westside have committed to no clearing within the Dawson River and within 50 m of the Dawson River where floodplain woody vegetation is present.  Therefore, the Project is unlikely to reduce the area of occupancy for the species.	Unlikely
Fragment an existing population into two or more populations	westside have committed to no clearing within the Dawson River and within 50 m of the Dawson River where floodplain woody vegetation is present. No barriers to turtle movement will occur as a result of the Project, and no changes to surface water quality or surface water levels are expected. Therefore, the Project will not fragment an existing population.	Unlikely
Adversely affect habitat critical to the survival of a species	While the habitat within the Project Area is considered to be critical to the survival of the species, only directional drilling will occur under the Dawson River with no vegetation clearing to occur within the Dawson River and within 50 m of the Dawson River where floodplain woody vegetation is present. Directional drilling, should it be required, will occur completely underneath potential habitat and will not have any effect on the surface above. The drilling launch and receipt points will occur within adjacent low constraint areas. No direct impacts on suitable habitat will be permitted (maximum disturbance limit of 0.0 ha).  The potential for indirect impacts such as a reduced water quality, erosion, sedimentation, contamination and an increase in weeds and pests, is considered to be low and will be actively managed via Project management plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP. Project activities that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity, including threatened turtle habitat, and the potential for contamination. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. As such, the Project will not adversely affect habitat critical to the survival of the species.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Disrupt the breeding cycle of a population	All suitable habitat along the Dawson River, including the banks, is marked as a 'high constraint area' where only incidental walk-over activities are permitted (surveys with no ground disturbance). Given the brownfield nature of the wider Project Area, the Project is considered highly unlikely to introduce or increase the presence of exotic predators that may prey upon turtle eggs. The Project is unlikely to impact the breeding cycle of the white-throated snapping turtle.	Unlikely
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	While no direct impacts will occur to mapped habitat, the results of habitat clearance within the Project Area may indirectly impact the species, such as: potential for greater incursion of invasive predators such as the red fox and feral cat. Pest species which may predate on the species are likely already well established within the Project Area. Edge effects are not expected to be amplified significantly and light spill and increased noise are expected to be temporary and localised. The scale of indirect impact is considered to be minimal in the context of available suitable habitat within the Project Area and adjacent habitat. Potential impacts will be actively managed via the Project's management plans.	Unlikely
Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Predation of eggs and hatchlings by fox, feral cat, dogs and feral pigs have been identified as a threat to the white-throated snapping turtle. The Project Area is already severely fragmented with existing conduits for movement, and therefore it is considered unlikely that clearing required for construction of the Project will significantly exacerbate the movement of exotic predators. Additionally, dense aquatic weeds in the river and weeds on riverbanks can alienate nesting habitat from the breeding turtles. The Project will employ best practice control methods for weeds and pests and is unlikely to introduce or exacerbate weeds or pests beyond existing levels.	Unlikely
Introduce disease that may cause the species to decline, or	Disease has not been listed as a threat to this species. However, weed and pest management for the Project will ensure best practice site hygiene measures.	Unlikely
Interfere with the recovery of the species.	<ul> <li>A National Recovery Plan for the White-throated Snapping Turtle was prepared in 2020 (Department of Agriculture, Water and the Environment, 2020), and lists the following objectives:         <ul> <li>ensure a self-sustaining healthy population structure in all catchments in which the white-throated snapping turtle occurs</li> </ul> </li> <li>enhance the condition of habitat across the white-throated snapping turtle's range to maximise survival and reproductive success.</li> <li>The Project is unlikely to interfere with the recovery of the species.</li> </ul>	Unlikely

#### 8.1.17. Fitzroy River Turtle – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 41 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Fitzroy River turtle. The species listing status at the time of the Project's original referral (Vulnerable) has been considered in the below assessment, particularly as it pertains to the severity of impacts on habitat critical to the survival of the species. Broadly speaking, Critically Endangered or Endangered MNES are considered most vulnerable to exacerbation or synergistic impacts associated with threatening processes, given they are likely to comprise small populations less resilient to stochastic events. Although the listing status of Vulnerable was used, the assessment of potential impacts was informed by the latest literature on the species including the Conservation Advice, which was updated in response to the listing change in 2024.

Table 41: Significant Impact Assessment - Fitzroy River Turtle

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of an important population of a species	In line with the species recently published Conservation Advice, any subpopulation of Fitzroy River turtle that may occur within the Project Area is considered to comprise an important population. No direct impacts on suitable habitat will be permitted at any time (maximum disturbance limit of 0.0 ha). To maximise the avoidance of potential habitat for the species, Westside have committed to no clearing within the Dawson River corridor, including within the RPZ. The risk of unintentional impacts on the species are considered very low. Any use of HDD under the Dawson River will be strictly planned and controlled to ensure no unintended impacts on MNES including compromising groundwater, surface water or landform stability and integrity. Directional drilling, should it be required, will occur completely underneath potential habitat and will not have any effect on the surface above. The drilling launch and receipt points will occur within low constraint areas, outside the Dawson River RPZ.  The risk of indirect impacts such as a reduced water quality, erosion and sedimentation and an increase in weeds and pests, are considered very low and will be actively managed via Project management plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP. Project activities that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity, including threatened turtle habitat, and the potential for contamination. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. Therefore, a long-term decrease in the size of an important population is unlikely.	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance or possibility that		Impact?
the Project will:		
Reduce the area of occupancy of an important population	It is acknowledged that one of the main factors in the species' uplisting from Vulnerable to Endangered in 2024 was its restricted Area of Occupancy. Westside acknowledge the sensitive nature of the species and its habitat, which is subject to a range of threatening processes, and have committed to complete avoidance of direct impacts (maximum disturbance limit of 0.0 ha). No clearing within the Dawson River and its RPZ will be permitted. The Dawson River and associated riparian habitat is considered a high constraint area, which means that only incidental walk-over surveys with no ground-disturbance will be permitted within. As described above, any use of HDD under the Dawson River will be strictly planned and controlled to ensure no unintended impacts on MNES including compromising groundwater, surface water or landform stability and integrity. Directional drilling, should it be required, will occur completely underneath potential habitat and will not have any effect on the surface above. Erosion and sediment control devices will be implemented in accordance with IECA Best Practice Erosion and Sediment Control documents during construction to minimise the risk of potential sedimentation to sensitive receptors including areas of threatened turtle habitat.  Project activities will not result in the exacerbation of recognised threats to the species including nest predation by native and introduced predators. Key management measures in place to ensure this include ongoing, routine biosecurity monitoring and feral pest control programs (described further in the Project's Biosecurity Management Plan (WCL-0000-HS-PLN-010-010)). Any subpopulation of Fitzroy River turtle that may occur within the Project Area is considered to comprise an important population. However, based on the above, the Project is unlikely to reduce the area of occupancy for an	Unlikely
Fragment an existing important population into two or more populations	important population.  Westside have committed to complete avoidance of direct impacts on suitable habitat for the Fitzroy River turtle (maximum disturbance limit of 0.0 ha). Westside have committed to no clearing within the Dawson River corridor, including within the RPZ. The Project does not involve the construction of any dams or weirs in potential habitat. No barriers to turtle movement will occur as a result of the Project, and no changes to surface water quality or surface water levels are expected. Therefore, the Project will	Unlikely
Adversely affect habitat critical to the survival of a species	not fragment an existing important population.  Suitable habitat for the species within the Project Area is considered to meet the definition of habitat critical to the survival of the species. No direct impacts to suitable habitat will be permitted during any phase of the Project (maximum disturbance limit of 0.0 ha). Where necessary, directional drilling may be required underneath the Dawson River to connect Project infrastructure. Directional drilling, should it be required, will occur completely underneath potential habitat and will not have any material effect on the surface above. The drilling launch and receipt points will occur within adjacent low constraint areas, but outside of the Dawson River's RPZ. Erosion and sediment control devices will be implemented in accordance with IECA Best Practice Erosion and Sediment Control documents during construction to minimise the risk of potential sedimentation to sensitive receptors including areas of threatened turtle habitat.  The potential for indirect impacts such as a reduced water quality, erosion, sedimentation, contamination and an increase in weeds and pests, is considered to be low and will be actively managed via Project management plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
	PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP. Project activities that utilise chemicals, fuels and other pollutants will be carefully planned for and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity, including threatened turtle habitat, and the potential for contamination. Contingencies will be in place to ensure any accidental release or spill is immediately detected and managed, with corrective actions taken immediately. The Project will not adversely affect habitat critical to the survival of the species.	
Disrupt the breeding cycle of an important population	Any subpopulation of Fitzroy River turtle that may occur within the Project Area is considered to comprise an important population. All suitable habitat along the Dawson River, including the banks and associated riparian vegetation, is marked as a 'high constraint area' where only incidental walkover activities are permitted (surveys with no ground disturbance). No direct impacts to suitable habitat are permitted at any time during the Project (maximum disturbance limit of 0.0 ha). Given the brownfield nature of the wider Project Area, pest species which may predate on the species are likely already well established within the Project Area. The Project is considered highly unlikely to introduce or increase the presence of exotic predators that may prey upon turtle eggs. Nonetheless, the Project will employ several management measures to ensure risks are managed including completing ongoing, routine biosecurity monitoring and feral pest control programs (described further in the Project's Biosecurity Management Plan (WCL-0000-HS-PLN-010-010)). The Project is unlikely to impact the breeding cycle of an important population of Fitzroy River turtles.	Unlikely
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	While no direct impacts will occur to mapped habitat, the results of habitat clearance within the Project Area may indirectly impact the species, such as: potential for greater incursion of invasive predators such as the red fox and feral cat. Pest species which may predate on the species are likely already well established within the Project Area. Edge effects are not expected to be amplified significantly and light spill and increased noise are expected to be temporary and localised, particularly noting riparian habitat supported by the Dawson River will be completed avoided.  The magnitude of any indirect impact is considered to be minimal in the context of available suitable habitat within the Project Area and adjacent. Nonetheless, potential indirect impacts such as a reduced water quality, erosion, sedimentation, contamination and an increase in weeds and pests will be actively managed via Project management plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP. Therefore, the Project is unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.	Unlikely

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Predation of eggs and hatchlings by fox, feral cat, dogs and feral pigs have been identified as a key threat to the Fitzroy River turtle. The Project Area comprises predominantly cleared land that is already severely fragmented with existing conduits for movement. No direct impacts to suitable habitat are permitted at any time during the Project (maximum disturbance limit of 0.0 ha). Siting of the Project will maximise the use of disturbed areas and look to co-locate with existing infrastructure. It is therefore considered unlikely that clearing required for construction of the Project will significantly exacerbate exotic predator populations or facilitate the movement of such predators into new areas. The Project will employ best practice control methods for weeds and pests and is unlikely to introduce or exacerbate weeds or pests beyond existing levels.	Unlikely
Introduce disease that may cause the species to decline	Disease has not been listed as a threat to this species. However, weed and pest management for the Project will ensure best practice site hygiene measures.	Unlikely
Interfere substantially with the recovery of the species	<ul> <li>At the time of this assessment, the SPRAT notes that 'a recovery plan is not required'.</li> <li>However, the following recovery actions are recommended:</li> <li>Maintain nesting banks used by the turtles and protect turtle nests from predation and disturbance.</li> <li>Improve recruitment of hatchlings into the population.</li> <li>Maintain stream flow and connectivity of turtle populations between impoundments.</li> <li>Improve water quality in the lower Fitzroy River catchment.</li> <li>Boat owners should look out for turtles floating at the surface and 'go slow for those below' to give turtles time to get out of the way of oncoming boats.</li> <li>Based on the above recovery actions, the Project is unlikely to interfere substantially with the recovery of the species.</li> </ul>	Unlikely

### 8.1.18. Boggomoss Snail – Significant Impact Assessment

The significant impact assessment for this species is presented in Table 42 below. In summary, the assessment found that the Project is unlikely to result in a significant impact on the Boggomoss snail.

Table 42: Significant Impact Assessment - Boggomoss Snail

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Lead to a long-term decrease in the size of a population	The Boggomoss snail is not known to occur within the Project Area. Given the broadscale nature of historical modification both within the Project Area and wider region, it is considered highly likely that the species does not occur. However, given it has not been subject to targeted surveys, it has been conservatively considered a potential occurrence. Potential habitat for the species is limited to the far southern extent of the Project Area where the Dawson River occurs, in accordance with the species' mapped distribution. Relative to the size of the Project Area, only a very small amount of potential	Unlikely

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that the Project will:		
the Project Will.	habitat has been identified and it is considered possible that no Project	
	activities will occur in this general area at any time.	
	No direct impacts on suitable habitat will be permitted at any time (maximum	
	disturbance limit of 0.0 ha). To maximise the avoidance of potential habitat	
	for the species, Westside have committed to no clearing within the Dawson	
	River corridor, including within the RPZ. Boggomoss snail habitat that is	
	confirmed via a site scout will become a no-go constraint area, to minimise	
	mortality risks including accidental trampling.	
	The risk of indirect impacts on the species are considered very low. Any use of HDD will be strictly planned and controlled to ensure no unintended impacts	
	on MNES will occur including compromising groundwater, surface water or	
	landform stability and integrity. Directional drilling, should it be required, will	
	occur completely underneath potential habitat and will not have any effect on	
	the surface above. Potential indirect impacts associated with reduced water	
	quality, erosion and sedimentation and an increase in weeds and pests, is	
	considered to be low and will be actively managed via Project management	
	plans such as the Erosion and Sediment Control Procedure (WCL-0000-HS-	
	PRC-029), Weed Management Procedure (WCL-0000-HS-PRC-034) and EMP.	
	Project activities that utilise chemicals, fuels and other pollutants will be	
	carefully planned for and follow strict industry-standard protocols. Specific	
	consideration will be given to the location of sensitive environmental values	
	present in the vicinity, including threatened turtle habitat, and the potential	
	for contamination. Contingencies will be in place to ensure any accidental	
	release or spill is immediately detected and managed, with corrective actions taken immediately.	
	Therefore, a long-term decrease in the size of a population is unlikely.	
Reduce the area of	No direct impacts on the species as a result of the Project are permitted.	Unlikely
occupancy of the	Westside have committed to no clearing within the Dawson River and its	,
species	associated RPZ. Directional drilling, should it be required, will occur	
Fragment an existing	completely underneath potential habitat and will not have any effect on the	Unlikely
population into two	surface above. No significant changes in hydrology (surface water or	
or more populations	groundwater) are expected to occur as a result from the Project. Boggomoss	
	snail habitat that is confirmed via a site scout will become a no-go constraint	
	area, to minimise mortality risks including accidental trampling. The risk of	
	indirect impacts on the species and its habitat are very low and will be actively managed via Project management plans. As no direct impacts are proposed,	
	the Project will not fragment a population of the snail nor reduce its area of	
	occupancy.	
Adversely affect	While the habitat identified within the Project Area is considered to be critical	Unlikely
habitat critical to the	to the survival of the species, only directional drilling will occur under the	,
survival of a species	Dawson River with no vegetation clearing to occur within the Dawson River	
	and its RPZ. The Project will not adversely affect habitat critical to the survival	
	of the species as no direct impacts to habitat are permissible.	
	The risk of indirect impacts on the species are considered very low. Any use of	
	HDD will be strictly planned and controlled to ensure no unintended impacts	
	on MNES including Boggomoss snail habitat will occur including compromising groundwater, surface water or landform stability and integrity. Potential	
	indirect impacts associated with reduced water quality, erosion and	
	sedimentation and an increase in weeds and pests, is considered to be low	
	and will be actively managed via Project management plans such as the	
	Erosion and Sediment Control Procedure (WCL-0000-HS-PRC-029), Weed	
	Management Procedure (WCL-0000-HS-PRC-034) and EMP. Project activities	

EPBC Act Criteria – is	Assessment of Significance	Significant
there a real chance		Impact?
or possibility that		
the Project will:		
	that utilise chemicals, fuels and other pollutants will be carefully planned for	
	and follow strict industry-standard protocols. Specific consideration will be given to the location of sensitive environmental values present in the vicinity,	
	including threatened turtle habitat, and the potential for contamination.	
	Contingencies will be in place to ensure any accidental release or spill is	
	immediately detected and managed, with corrective actions taken	
	immediately. Therefore, a long-term decrease in the size of a population is	
	unlikely.	
Disrupt the breeding	All suitable habitat along the Dawson River, including the banks, is currently	Unlikely
cycle of a population	considered to comprise a 'high constraint area' where only walk-over	· · · · · · · · · · · · · · · · · · ·
	activities are permitted (surveys with no ground disturbance). However,	
	Boggomoss snail habitat that is confirmed via a site scout will become a no-go	
	constraint area, to minimise mortality risks to the species including accidental	
	trampling. As no direct impacts on suitable habitat are permitted and indirect	
	impacts on the species are anticipated to be very minor, the Project is unlikely	
	to impact the breeding cycle of the Boggomoss snail.	
Modify, destroy,	Potential habitat for the species is limited to the far southern extent of the	Unlikely
remove, isolate or	Project Area where the Dawson River occurs, in accordance with the species'	
decrease the	mapped distribution. Relative to the size of the Project Area, only a very small	
availability or quality	amount of potential habitat has been identified and it is considered possible	
of habitat to the	that no Project activities will occur in this area at any time. Boggomoss snail	
extent that the	habitat that is confirmed via a site scout will become a no-go constraint area,	
species is likely to	to minimise mortality risks including accidental trampling. To maximise the	
decline	avoidance of potential habitat for the species, Westside have committed to	
	no clearing within the Dawson River corridor, including within the RPZ.  The risk of indirect impacts on the species are considered very low. Any use of	
	HDD will be strictly planned and controlled to ensure no unintended impacts	
	on MNES including Boggomoss snail habitat will occur including compromising	
	groundwater, surface water or landform stability and integrity. No significant	
	changes in hydrology (surface water or groundwater) are expected as a result	
	of the Project.	
	Potential indirect impacts will be actively managed via Project management	
	plans. As such, the Project is unlikely to modify, destroy, remove, isolate or	
	decrease the availability or quality of habitat to the extent that the species is	
	likely to decline.	
Result in invasive	Cattle and associated grazing practices are known to impact the species via	Unlikely
species that are	direct trampling, or degradation of habitat via compacting soils and associated	
harmful to a	fallen woody debris in which the species inhabits. Additionally, invasive weeds	
critically endangered	degrade species habitat.	
or endangered	Due to ongoing grazing practices in the Project Area and the Project Area	
species becoming	comprising predominantly of non-remnant land (>95% of the Project Area),	
established in the endangered or	cattle impacts and exotic species a prevalent in the landscape.  To reduce indirect impacts of the potential for weed infestations to occur as a	
critically endangered	result of the Project, Westside will implement a Weed Management	
species' habitat	Procedure. As such, it is not anticipated that the Project will result in an	
species Habitat	invasive species that are harmful to the species or species habitat becoming	
	established within Boggomoss snail habitat.	
Introduce disease	Disease has not been listed as a threat to this species. However, weed and	Unlikely
that may cause the	pest management for the Project will ensure best practice site hygiene	- ,
species to decline, or	measures.	

EPBC Act Criteria – is there a real chance or possibility that the Project will:	Assessment of Significance	Significant Impact?
Interfere with the recovery of the species.	A Recovery Plan has been prepared for the species that lists the following key threats (Department of Environment and Heritage Protection, 2017):  Land clearing  Fire  Grazing  Weed infestation  Earthwork  Changes to hydrology.  As no direct impacts to areas of Boggomoss snail habitat (or areas immediately adjacent) are permitted, the Project is unlikely to interfere substantially with the recovery of the species. Additionally, no significant changes in hydrology are anticipated. Indirect impacts are considered very unlikely but will be actively managed via Project management plans regardless.	Unlikely

6.2	A summary of the proposed environmental offset and key commitments to achieve a
	conservation gain for each protected matter.

#### 8.2. Offset Area Overview

As previously stated, the project has the potential to result in a significant impact to:

- 16.0 ha of ornamental snake suitable habitat; and
- 2.0 ha and 6.9 ha of koala breeding and shelter habitat, respectively.

Offsets for the ornamental snake and koala will be fulfilled using direct land-based offsets, the Project plans to acquit 163.58% and 401.85%, respectively of the MNES offset requirements. A suitable Offset Property has been identified, it is called Clements Creek and is approximately 60 km west of Marlborough and 135 km west-north-west of Rockhampton in Central Queensland. The Offset Area will be managed to improve the condition and viability of habitat for the MNES offset values. An Offset Area Management Plan (Attachment D) has been prepared for the Project.

The property is 3,680 ha, however part of it is unsuitable for offsetting. Large tracks of the property support remnant and non-remnant vegetation – including open Coolabah woodlands and brigalow forest on alluvium. The Offset Area is bordered to the west by the Isaac River and associated tributaries and is dissected east to west by Clive Creek and Clements Creek which flow into the Isaac River. The rivers and tributaries support narrow riparian forests dominated by River red gum with Melaleuca species. Palustrine freshwater wetlands occur within depressions in the Coolibah and brigalow forests and woodlands. There is evidence of historic logging, wildfires and non-native pests.

Within the areas described above, an offset area of 104.77 ha has been selected. The offset area is comprised of RE 11.3.3 which is described as Eucalyptus coolabah woodland to open woodland. A secondary

tree or shrub layer may occur, including *E. populnea*, *Melaleuca bracteata*, *Acacia stenophylla*, *Alectryon oleifolius*, *Terminalia oblongata* (in the north), *Acacia pendula*, *A. cambagei* and *Duma florulenta*. The Habitat scores were determined to be 4.97 for the ornamental snake and 2.69 for the koala after the assessment.

Table 43 below provides a summary of the Project impact and the Project offset area values.

Table 43: Summarised Project Impact

MNES	EPBC status	area	Impact site quality (- /10)	Impact quantum		Offset Area	start	without	with offset	Offset quantum and % of liability provided
Habitat for ornamental snake	VUL	16.0	5	18 N	Creek	104.77 ha, comprising of: AU1 – 26.55 ha RE 11.3.1 AU3 – 4.26 ha	5	5	7	163.58%
Habitat for koala	END	8.9	3	12 69	Clements	RE 11.3.27f AU4 – 9.83 ha RE 11.3.3 AU5 – 64.14 ha RE 11.3.3	6	6	8	401.85%

### 8.3. Priority Management Actions

A set of priority management actions for the ornamental snake and koala are listed in Table 44. These are further discussed in Section 5.6 of the Offset Area Management Plan (Attachment D). Specific and detailed management actions have been developed that address these key threats to each MNES, and are described in detail in Section 6 of the Offset Area Management Plan (Attachment D).

Table 44: Priority Management Actions

Threat	Management Action		
Ornamental Snake			
Clearing and degradation of habitat	Past broad scale land clearing is a legacy threat that is now prohibited under this plan.		
	On the offset site, no forestry or timber harvesting activities will be authorised to be undertaken during the period of the declared area. Forestry and native timber harvesting practices in the offset is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.		
Destruction of wetland habitat by feral pigs	Major damage to the environment/habitat occurs when large numbers of animals congregate in the area. Feral animals will be monitored and controlled as described in Table 25 of the Offset Area Management Plan (Attachment D).		
Inappropriate grazing practices	Grazing will not be permitted during the wet season; ground cover levels will be monitored and managed. Appropriate stocking densities will be utilised. Stock will be grazed in the offset areas for fuel reduction purposes during September to January, or until the wet season starts, to avoid soil pugging.		

Threat	Management Action		
Predation by feral pest animals	The offset management actions will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs, foxes and pigs) within the offset areas in accordance with the Biosecurity Act.		
Koala			
Clearing and degradation of habitat	No forestry or timber harvesting activities will be authorised to be undertaken during the period of the declared area.		
	Forestry and native timber harvesting practices in the offset is considered a potential threat to the quality of the vegetation community and habitat due to a reduction in cover and fragmentation of habitat.		
Predation by feral pest animals	The offset management actions will minimise the presence of feral animals and control of existing populations of feral animals (feral cats, dogs, foxes and pigs) within the offset areas in accordance with the Biosecurity Act.		
Increased mortality due to vehicle strikes and dogs	Access will be restricted. The proposed offset area is on a privately owned agricultural property with access to the area restricted to the landholders. Access to the offset area property is restricted by boundary fencing to prohibit access to the offset area. Therefore, impacts to resident koala populations arising from car strikes are unlikely.		
Climate change driven processes and drivers	Protecting these areas from native timber harvesting and fire will add significant value to the area by improving the condition of the habitat for koala. As the offset area borders the Isaac River that contains permanent water, and contains watercourses of various stream orders, the area provides higher quality habitat and moisture source for fauna during extended periods of hot and/or dry weather.		
Koala retrovirus and chlamydia	There is no known treatment for disease which is prevalent in the populations naturally. The establishment of the offset area which adjoins the landscape corridors, as well as buffers and increases in extent and condition of the habitat may act to reduce some of the environmental stresses that are thought to accentuate the diseases.		

#### 8.4. Monitoring and Reporting

The offsets area monitoring methods are provided in Table 30 of the Offset Area Management Plan (Attachment D). Habitat quality monitoring is to be undertaken in Years 5, 10, 15 and 20 to assess comparative changes in habitat condition against baseline data collected on the offset site, as well as attainment and maintenance of the offset completion criteria (see Section 8 of the Offset Area Management Plan (Attachment D)). Further, the monitoring will measure changes resulting from the management actions and variability due to climatic conditions. This will inform the nature and frequency of management actions required and if trigger levels are breached, the use of corrective actions to bring the offset back into compliance.

Westside will provide a Compliance Report annually for each 12-month period following the date of the approval, for the period of the approval. Offset Area Reports describing the progress of the offset area over the relevant 12-month period will be part of those reports until the completion criteria are achieved or the end of the EPBC approval, whichever comes first.

Westside or a suitably qualified person appointed by Westside will undertake quarterly inspections of the offset area to observe and record dry matter, pest plants, accessibility (i.e. condition of fencing), evidence of fire and evidence of pest animal incursion. The inspection records will serve as the primary data source for the annual Offset Area Report.

#### 8.5. Offset Principles

The EPBC Act Environmental Offsets Policy sets out eight key overarching principles to determine the suitability of offsets. Table 45 outlines each of the policy principles and how it has been considered in the Offset Area Management Plan (Attachment D), with a reference to the relevant section.

Table 45: EPBC Act Environmental Offset Policy principles

Policy principle	Comment
Suitable offsets must deliver an overall conservation outcome that improves or maintains the viability of the protected matters.	The offsets will deliver a conservation outcome by providing habitat for the ornamental snake and koala. The habitat will be managed to improve the habitat values for the species, and the offset area will be secured as a declared area under the VM Act to ensure legal protection of the offset area. An additional legally binding mechanism (e.g. conservation covenant) will be established within 5 years of commencement of the implementation of the OAMP.
	The proponent will legally secure the offset areas in perpetuity through the use of a declared area for the offset, followed by an additional mechanism such as a conservation covenant. Thus, the ecological benefits to the species from the implementation of the Offset Area Management Plan will result in a permanent change to the legal status of the vegetation/habitat which will be protected under the EPBC Act as MNES habitat, by being mapped under the VM Act as remnant vegetation and the NC Act as habitat for a protected species. Conservation covenants are registered to the title of the property under the Land Title Act 1994 (Qld) (LT Act).
	Additionally, the completion criteria and the 'with offset' non-native species attribute (provided in <i>Appendix A</i> of the Offset Area Management Plan (Attachment D)) establishes the acceptable limits to non-native species in the offset area. These will be achieved as a requirement of the Offset Area Management Plan (Attachment D).

Policy principle	Comment
Suitable offsets must be built around direct offsets but may include other compensatory measures.	100% of the action's MNES offset obligations for the ornamental snake and koala will be acquitted by the proposed direct land-based offset.
Suitable offsets must be in proportion to the level of statutory protection that applies to the protected matter.	The status of the ornamental snake species has been taken into account by the offset assessment guide that has been used to calculate the offset area requirements. The ornamental snake is listed as vulnerable under the EPBC Act. The koala is listed as endangered under the EPBC Act.
Suitable offsets must be of a size and scale proportionate to the residual impacts on the protected matter.	The extent of the offset has been calculated using ecological reports that include both flora and fauna surveys, for both the impact and offset sites to inform inputs into the offset assessment guide ( <b>OAG</b> ).  The inputs to the OAGs for the protected matter impacted are detailed in Section 5.7 and Section 5.8 of the Offset Area Management Plan (Attachment D).
Suitable offsets must effectively account for and manage the risks of the offset not succeeding.	The risks associated with the offsets have been assessed (Table 26 and Table 27 Offset Area Management Plan (Attachment D)) and mitigation and appropriate management actions proposed in the offset area management measures shown in Table 25 of the Offset Area Management Plan (Attachment D). In addition, uncertainty, and therefore risk, associated with averted loss and net gain in habitat quality were addressed by applying the offset assessment guide.
Suitable offsets must be additional to what is already required, determined by law or planning regulations, or agreed to under other	Vegetation clearing as a native forest practice, or a forest practice, the use of fire to manage regrowth, and grazing on the offset site is not currently prohibited by legal mechanisms at either the local, state or Australian government legislative level. See Section 6 and Section 9 of the Offset Area Management Plan (Attachment D).
schemes or programs.	The offset areas are zoned rural and have previously been used for timber harvesting and cattle grazing. Areas of the offset properties have been subject to vegetation clearing <sup>5</sup> under the land management practices of previous owners over the last 3 decades. The current regulated vegetation will be secured via a declared area that has its head of power under the VM Act. This threat will be removed from the offset sites. See Section 11 of the Offset Area Management Plan (Attachment D) for further detail.
	The offset area is not subject to other schemes or programs. The offset area is being rehabilitated from intensive grazing. The <i>Biosecurity Act 2014</i> (Biosecurity Act) has a baseline duty of care for weed and pest animal control as detailed in Table 29 of the Offset Area Management Plan (Attachment D). All of the management actions detailed in Table 25 of the Offset Area Management Plan (Attachment D) inclusive are beyond the requirements of the Biosecurity Act.
Suitable offsets must be efficient, timely, transparent, scientifically robust and reasonable	The proposed offsets will be efficient and timely as the offset will be secured and implementation commenced before any disturbance to MNES habitat as a result of the commencement of the Project. The offset's scale and suitability is transparent, and the offsets are based on the terrestrial ecology reports prepared by suitably qualified ecologists for the impact and offset sites (Umwelt, 2024; Lyngco 2023, 2024, Earthtrade, 2024); They have been prepared using the EPBC Act OAG inputs and calculators. Refer to Section 3 for further detailed application of the OAG.
Suitable offsets must have transparent governance arrangements including being	The offset sites were surveyed in August 2023, December 2023 and February 2024, providing the baseline habitat quality assessment. These scores were compared

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<sup>&</sup>lt;sup>5</sup> Vegetation Management Act 1999, Schedule dictionary

Policy principle	Comment
able to be readily measured, monitored, audited and enforced.	against the relevant BioCondition benchmarks for each regional ecosystem (RE). <sup>6</sup> Habitat quality assessments were conducted in accordance with the <i>Terrestrial Habitat Quality Version 1.3, 2020</i> (Queensland Department of Environment and Science (DES)) which involved collecting spatial data; and conducting in situ vegetation surveys, assessing site condition, spatial context as well as targeted species habitat criteria (refer to Lyngco 2023-2024, Earthtrade 2024). Future habitat assessment measurements will be conducted in accordance with the Offset Area Management Plan (Attachment D) during its implementation phase.  Monitoring and reporting are detailed in the Offset Area Management Measures outlined in Table 25 of the Offset Area Management Plan (Attachment D), and the monitoring schedule and reporting schedule are shown in Table 30 and Table 31 of the Offset Area Management Plan (Attachment D). The offset will be protected from clearing and secured via a declared area that has its head of power under the VM Act. Refer to Section 11 of the Offset Area Management Plan (Attachment D) for further detail.

#### 8.6. Commitments Made in the Offset Area Management Plan

This section summarises the commitments made throughout the Offset Area Management Plan (Attachment D) to achieve ecological benefit(s) for the relevant MNES. These ecological benefits will be achieved through the integrated implementation of many elements of the Offset Area Management Plan. Additional commitments are also made in alignment with the principles of the EPBC Act. Table 46 below lists each of these commitments and provides references to the sections in the Offset Area Management Plan (Attachment D) where these commitments are detailed.

Westside commits to commence implementing the OAMP at the commencement of the action.

Westside commit to securing the offsets by declaring them as an area of high conservation value under section 19F of the VM Act within 12 months of the action commencing. Once this has been registered on the title, the offset areas will be mapped as a category A area on the property map of assessable vegetation (**PMAV**). An area mapped as category A on a PMAV is described as an 'area subject to compliance notices, offsets and voluntary declarations'.

To secure the declared area on the title of the property, the property owners will complete and submit a request for a declared area form, and a declared area management plan form immediately after the preliminary documentation has been approved by DCCEEW. Both of these forms are requirements of the Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development so that the legally binding mechanism may be lodged on the title of the property.

It is noted that the timeframe for completion of registration is subject to the relevant regulatory processes. The approved Offset Area Management Plan will be attached to the legal mechanism used to secure the offset. Westside will provide written evidence to DCCEEW within two weeks of the conservation mechanism being registered.

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<sup>&</sup>lt;sup>6</sup> Benchmarks are quantitative values derived from data collected from field-based reference sites for each site condition attribute assessed in BioCondition

Westside commits to avoiding any direct impacts to MNES before the legally binding mechanism is fully secured, with the exception of the following species habitat:

- squatter pigeon (southern) dispersal habitat; and
- koala dispersal habitat.

The approval holder commits to registering an additional legally binding mechanism (e.g. conservation covenant) within 5 years of commencement of the implementation of the OAMP.

Table 46: Environmental Offset Commitments

Commitments of the Offset Area Management Plan	Offset Area Management Plan Section or Comment
The approval holder commits to the implementation of this OAMP at project commencement	Section 11 of the Offset Area Management Plan (Attachment D)  The offset for the Project will be implemented consistent with the EPBC Act Environmental Offset Policy and the approval conditions for the Project. The approval holder commits to the implementation of this OAMP prior to commencement of the Project, until the expiry of the EPBC approval.
The approval holder commits to the implementation of the Offset Area Management Plan (Attachment D) until the expiry of the EPBC approval.	Summary Section and Section 13 of the Offset Area Management Plan (Attachment D).  Westside commits to registering a legally binding conservation mechanism to provide long-term protection to the offset area within 12 months of the action commencing. It is noted that the period taken for the registration to be completed is subject to the timeframes of the regulatory agency. The approval holder will provide DCCEEW with written evidence demonstrating that the offset area at Clements Creek has been legally secured within 2 weeks of its registration
The approval holder commits to registering a legally binding mechanism within 12 months of commencing the action to provide long-term protection to the offset area/s in advance of any proposed disturbance to MNES habitat as a result of the commencement of the Project.	Section 11 of the Offset Area Management Plan (Attachment D)  The offsets will be secured by being declared as an area of high conservation value under section 19F of the VM Act within 12 months of the action commencing. Once this has been registered on the title, the offset areas will be mapped as a category A area on the property map of assessable vegetation (PMAV). An area mapped as category A on a PMAV is described as an 'area subject to compliance notices, offsets and voluntary declarations'.  To secure the declared area on the title of the property, the property owners will complete and submit a request for a declared area management plan form immediately after the preliminary documentation has been approved by DCCEEW. Both of these forms are requirements of the Queensland Department of Natural Resources and Mines, Manufacturing, and Regional and Rural Development so that the legally binding mechanism may be lodged on the title of the property.  It is noted that the period taken for the registration to be completed is subject to the timeframes of the regulatory agency. The approved Offset Area Management Plan (OAMP) will be attached to the legal mechanism used to legally secure the environmental offset. Westside will provide

Commitments of the Offset Area Management Plan	Offset Area Management Plan Section or Comment
	Management and monitoring of the offset area will be undertaken in accordance with commitments in the approved OAMP.
	The offset will initially be secured by being declared as an area of high conservation value under section 19F of the VM Act. An additional legally binding mechanism such as a conservation covenant will be registered within 5 years of the commencement of the implementation of the OAMP. The declared area will remain in place as the legally securing mechanism for the offset area. The declared area and approved OAMP will ensure the offset completion criteria are attained, and then maintained for the period of the EPBC Act approval. Statutory protection of the offset area is maintained under the VM Act, NC Act and EPBC Act (or subsequent legislation). This statutory protection mitigates the risk of development applications, broadscale clearing, and zoning changes (currently zoned rural). Conservation covenants are registered to the title of the property under the Land Title Act 1994.
The approval holder commits to registering a legally binding mechanism (e.g. conservation covenant) within 5 years of commencement of the implementation of the OAMP	Section 11 of the Offset Area Management Plan (Attachment D)  The approval holder will register a legally binding mechanism (e.g. conservation covenant) within 5 years of commencement of the implementation of the OAMP to ensure long-term protection of the offset area. This mechanism will be consistent with the requirements of the EPBC Act Environmental Offset Policy and relevant state legislation.
The approval holder commits to avoiding any direct impacts to MNES before the legally binding mechanism is fully secured, with the exception of the following species habitat:  • Squatter pigeon (southern) dispersal habitat; and  • Koala dispersal habitat	Section 11 of the Offset Area Management Plan (Attachment D) The approval holder will not directly impact any MNES before the legally binding mechanism is fully secured, except for Squatter pigeon (southern) dispersal habitat and Koala dispersal habitat.
Evidence of the legally binding mechanism will be provided to the Department within 2 weeks of being registered.	Section 11 of the Offset Area Management Plan (Attachment D)  The approved OAMP will be attached to the legal mechanism used to legally secure the environmental offset. Westside will provide written evidence to DCCEEW within 2 weeks of the mechanism to legally secure the environmental offset having been registered.
The approval holder commits to undertaking the management actions as described in <i>Section 6</i> and Table 25 of the Offset Area Management Plan (Attachment D).	Section 6 of the Offset Area Management Plan (Attachment D). This section provides the detail of the implementation, timing, and the parties responsible for undertaking the management actions, as well as triggers for corrective actions to be taken. Implementation of the OAMP will occur prior to the commencement of the Project.

Commitments of the Offset Area Management Plan	Offset Area Management Plan Section or Comment
The approval holder will provide an annual report on implementation of the management actions described in the Offset Area Management Plan (Attachment D) to the Department by 31 August. This report will cover the previous financial year.	Section 10 of the Offset Area Management Plan (Attachment D).  Westside, its successors or assigns, will provide a Compliance Report annually for each 12- month period following the date of the approval, for the period of the approval. Offset Area Reports describing the progress of the offset area over the relevant 12-month period will be part of those reports until the completion criteria are achieved or the end of the EPBC approval, whichever comes first.
The approval holder will seek approval if the wishes to carry out any activity otherwise than in accordance with the Offset Area Management Plan.	Section 12 of the Offset Area Management Plan (Attachment D).  If Westside wishes to carry out any activity otherwise than in accordance with the Offset Area Management Plan, the approval holder will submit to the Department for the Minister's written approval a revised version of the Offset Area Management Plan. The varied activity will not commence until the Minister has approved the varied Offset Area Management Plan in writing. If the Minister approves the revised Offset Area Management Plan, that Offset Area Management Plan will be implemented in place of the Offset Area Management Plan (Attachment D) originally approved.
If the Minister requests that Westside make specified revisions to the Offset Area Management Plan, Westside will develop and submit the revised Offset Area Management Plan for the Minister's written approval.	Section 12 of the Offset Area Management Plan (Attachment D).  Westside will implement the revised Offset Area Management Plan. Unless the Minister has approved the revised Offset Area Management Plan, then Westside will continue to implement the Offset Area Management Plan originally approved.
This Offset Area Management Plan will be submitted electronically to the Department and will be published on Westside's website within 2 weeks of the Minister approving the Offset Area Management Plan in writing. The Offset Area Management Plan will remain on Westside's website until the expiry date of the approval.	Section 12 of the Offset Area Management Plan (Attachment D).

6.3 If an offset area has not been nominated, include a draft OMS as an appendix to the PD. The draft OMS must meet the information requirements set out in Appendix B.1.

An Offset Area Management Plan is provided as Attachment D to this PD. Refer to RFI 6.4 below for further information.

Where offset area/s have been nominated, include a draft OAMP as an appendix to the PD. The draft OAMP must meet the information requirements set out in Appendix B.2, and must be prepared by a suitably qualified ecologist and in accordance with the department's Environmental Management Plan Guidelines (2014), available at:

www.environment.gov.au/epbc/publications/environmental-management-planguidelines

The Offset Area Management Plan is attached as Attachment D to this PD. The Offset Area Management Plan meets the requirements set out in the MNES Assessment Report (Attachment A) and has been prepared by a suitably qualified ecologist and in accordance with DCCEEW's Environmental Management Plan Guidelines (DCCEEW 2024b). Further information can be found in Section 2 of the Offset Area Management Plan (Attachment D).

### 9. ECOLOGICALLY SUSTAINABLE DEVELOPMENT (ESD)

7.1 A description of how the proposed action meets the principles of ESD, as defined in section 3A of the EPBC Act. The following principles are principles of ecologically sustainable development:

- (a) decision-making processes should effectively integrate both long-term and short-term economic, environmental, social and equitable considerations;
- (b) if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation;
- (c) the principle of inter-generational equity—that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations;
- (d) the conservation of biological diversity and ecological integrity should be a fundamental consideration in decision-making;
- (e) improved valuation, pricing and incentive mechanisms should be promoted.

Through the adoption of responsible practices that fulfill Westside's social license whilst minimising the impacts on the surrounding ecosystem. Westside has drawn from and adapted mature governance frameworks and management systems to establish proven operating arrangements, which respond to the principles of ecologically sustainable development (ESD). Westside's exploration, development, and operations activities align with the ESD principles as identified below.

Ecologically sustainable development refers to using, conserving, and enhancing the community's resources so that ecological processes are maintained and the total quality of life, both now and in the future, can be increased. There are five principles of ecologically sustainable development:

- Integration principle;
- Precautionary principle;
- Principle of inter-generational equity;
- Conservation of biological diversity and ecological integrity; and
- Improved valuation and pricing of environmental resources.

It is impossible to construct major infrastructure, such as this Project, without causing environmental, social and/or economic impacts (beneficial and adverse). During Project development, the principles of ecologically sustainable development were used as a guide to identify potential impacts and develop mitigation measures that afford equal weighting to environmental, social and economic opportunities and constraints.

#### 9.1. Integration Principle

The integration principle involves integrating many of the competing elements of ESD to achieve the best outcomes for society as a whole. ESD at a broad scale refers to the elements of social, economic and environmental impact, but integration should also focus on the integration of long-term and short-term outcomes.

Within the planning and design of the Project Westside has established a system and culture that ensures the integration of social, environmental and economic considerations. This is embedded primarily by the company's purpose, values and strategic direction.

Gas development is an essential step in defining a potential future commercial resource that can generate sustainable, long-term social and economic benefits to the local community, to the Moura region generally, and more broadly into the rest of Queensland and Australia. Westside's activities aim to contribute to the economic growth of the region while ensuring environmental sustainability for future generations.

As a gas producer, Westside operates across a variety of environments in Queensland and provides positive short-term social benefits to regional communities. These short-term social benefits are combined with the long-term benefits that stem from the economic injections from Westside's commitment to prioritising local employment and local procurement of goods and materials. Westside is deeply committed and driven by their connection to regional Queensland, this demonstrates their initiative in forming mutually beneficial relationships with all stakeholders, including community, landholders, Traditional Owners and customers. Westside obtains cultural heritage clearances and native title through open engagement with the traditional owners of the land. Westside has negotiated Cultural Heritage Management Plans with the traditional owners to ensure the cultural values are protected for years to come.

To develop and maintain relationships with the other stakeholders, Westside has a strong focus on quality and delivery, a culture of compliance and is committed to meeting their expectations. To support Westside's ambition to deliver positive outcomes, Westside stages project definition and investment such that feasibility, consultation and design requirements are assessed and adjusted as required against the economic, environment, climate and social considerations, for sustainable outcomes. Westside ensures each step of the process is given due care and attention, and Stakeholder engagement and approval applications commence only once the expectations of economic, planning and least-impact design are met.

Development of the resource fulfils the need for reliable and cost-effective energy in the short term on Australia's east coast. In addition, the reserves in place can generate sustainable, long-term benefits for the local community, to Australia and all in between.

Beyond royalty payments to the Queensland Government (as the owner of the natural resource), and payments to Native Title Holders (as per our Cultural Heritage Management Plan) and host landowners (as per Access and Compensation Agreements), Westside seeks to maximise broad-based local participation in education, training, employment and enterprise opportunities engendered by its presence.

#### 9.2. Precautionary Principle

The precautionary principle is defined in Section 391 of the EPBC Act as:

Precautionary principle is that lack of full scientific certainty should not be used as a reason for postponing a measure to prevent degradation of the environment where there are threats of serious or irreversible environmental damage.

The Minister must consider the precautionary principle in making decisions to the extent that the decision is consistent with other provisions under the EPBC Act.

Westside will implement management and mitigation measures where there is a lack of or perceived lack of evidence that what they are proposing will not cause an adverse impact.

Westside upholds the Precautionary Principle and prioritises environmental protection through an independent, science-informed risk management process throughout all project phases. Westside's approach evolves over time to ensure continual improvement and adaptation to changing circumstances.

During the initial project select stage, Westside conducts a thorough constraints analysis to identify environmentally sensitive areas and those not suitable for development. This analysis informs project design, allowing Westside to prioritise the avoidance of sensitive areas wherever possible. In cases where complete avoidance is not feasible, robust management and mitigation measures are implemented to minimise impacts and scientific uncertainty.

As the Project progresses to the define stage, Westside further reduces risk variation and uncertainty by increasing technical confidence through on-the-ground mapping, surveys, and testing conducted by independent experts. This includes rigorous assessments of biodiversity, flora and fauna, and groundwater, adhering to industry standards and best practices.

Westside also utilises advanced modelling techniques to predict system responses and potential impacts on groundwater, surface water, and ambient conditions. These models are developed by specialist resources and align with regulatory requirements to ensure compliance and environmental stewardship.

Westside also considers the precautionary principle at all stages of project development, from preliminary design to decommissioning and rehabilitation. This involves assuming worst-case scenarios, identifying impacts, and implementing mitigation measures within a continuous improvement framework.

During the project execution stage, Westside finalises plans and implements adequate controls and operating procedures to minimise potential variations during construction, operation, and closure. This includes the utilisation of the Constraints Protocol (Attachment B), which outlines risk assessments, plans, controls, responsibilities, and assurance measures to coordinate and manage field activities across the project life cycle. The Constraints Protocol (Attachment B) integrates relevant legislative obligations, such as the EPBC Act and heritage considerations, ensuring that environmental impacts are effectively managed and mitigated. This includes project commitments identified in project approval documentation, such as the:

- Environmental Management Plan (Attachment C)
- Significant Species Management Plan (Attachment C)

- Produced water Management Plan (Attachment C)
- Rehabilitation Management Plan (Attachment C)

The Constraints Protocol (Attachment B) will ensure gas field development takes place in accordance with the outlined maximum MNES disturbance limits and commitments outlined in management plans. It also prioritises the avoidance or minimisation of disturbance to environmentally sensitive areas, implementing management and mitigation measures as needed. This approach reflects Westside's commitment to environmental stewardship and sustainable project development, ensuring that impacts are effectively managed and reduced throughout the project life cycle.

#### 9.3. Inter-generational Equity Principle

The inter-generational equity principle is that the present generation should ensure that the health, diversity and productivity of the environment is maintained or enhanced for the benefit of future generations.

Westside is committed to upholding the Inter-generational equity Principle, supporting the health, diversity and productivity of the environment for present and future generations. Our approach has been detailed in the above sections and the below provides an additional scope of information.

Westside works closely with local landholders and associated stakeholders and regularly communicates with the community through its land liaison team and local management. This demonstrates how Westside continues to conduct its operations with a view to maintaining a long and collaborative relationship with the owners and occupiers of the land.

Recognising the importance of minimising environmental impacts, Westside implements measures to conserve environmental values, including crucial habitats and groundwater resources, for existing and future generations. Westside plans to implement progressive rehabilitation efforts aim to ensure sites are left safe, stable, and non-polluting - minimising long-term impacts on environmentally sensitive areas and crucial habitats.

Moreover, Westside actively contributes to the transition to a low-carbon energy future. Through the beneficial use of CSG water for irrigation and improved pastures, they reduce pressure on water resources and benefit the local community. Their commitment to reducing emissions and improving air quality aligns with the vision to decarbonise and supporting the transition to renewable energy sources.

#### 9.4. Biodiversity and Ecological Integrity Principle

The biodiversity and ecological integrity principle is associated with the conservation of biological diversity and ecological integrity and how it should be a fundamental consideration in decision-making. It considered that the activities that are subject to the Project do not constitute threats of serious or irreversible environmental damage and there is no impact on the conservation of biological diversity and ecological integrity. This is documented in this PD and is managed through the Constraints Protocol (Attachment B) to ensure decisions made avoid or minimise impacts on environmental values, cultural heritage values, and community values.

With that said, Westside generally applies an independent, robust, science-informed risk management and execution process at every stage of the project lifecycle. This includes a formal environmental management system, integrating health, safety, and environmental considerations into decision-making processes.

Utilising a risk management process consisting of front-line management, continual risk monitoring and improvement, and assurance. Westside ensures proactive management of activities and performance, continual risk monitoring and improvement, and comprehensive assurance measures. By adopting this model, Westside mitigate potential risks to the environment and safeguard ecological integrity for future generations.

Westside implements progressive rehabilitation. This involves reducing the construction footprint to the operational footprint. The areas that have been progressively rehabilitated can be handed back for the original land use. Progressive rehabilitation reduces the rehabilitation liability at the end of project life. In operations to date Westside has successfully rehabilitated areas of impact to better than pre-existing conditions, exceeding the requirements of our operating licence.

Complying with the Queensland, and Commonwealth legislation and industry best practice to reduce the risk to the environment and communities to an acceptable level. In doing so, not only should the risks associated with the CSG industry be minimised to an acceptable level, but in some instances, they can be avoided altogether.

### 9.5. Valuation and Incentive Principle

The valuation and incentive principle is associated with promoting improved valuation, pricing and incentive mechanisms. Westside supports this principle and considers that there is a place for natural gas in Australia's clean-energy future as articulated by Australia's gas industry peak bodies in their joint Gas Vision 2050 statement released in 2020 (APAG 2020). Furthermore, the Future Gas Strategy released by the Commonwealth Department of Industry, Science and Resources explains the role for gas as Australia reaches net zero by 2050 noting gas will play an important role.

Westside has implemented a number of incentives, including:

- Ongoing focus on efficient use of resources to minimise waste;
- Significant investment in improvements to well design and construction is ongoing in order to continue to reduce the footprint of Westside's field operations;

- Excess treated water is given back to some landholders within our operating area to be used within their farming operations; and
- Westside minimises the use of fuel flare and venting using an established system to bring wells online as quickly as possible.

Additionally, Westside conducts comprehensive assessments to quantify the environmental value of the areas where it operates. This includes evaluating the ecosystem services provided by the land, such as water purification and habitat provision for biodiversity. They also assess the social benefits from the Project, focusing on job creation, local economic development and dialog with the community to understand their priorities and concerns.

#### 10. ECONOMIC AND SOCIAL MATTERS

8.1	An analysis of the economic and social impacts of the action, both positive and
	negative.

The Project will be an extension of activities that are currently being undertaken on PL94 and will form part of Westside's ongoing operations, which contribute to the local, regional, and State economies through employment and other economic contributions such as payment of land compensation, rates and rents, local and regional procurement, use of service industries and payment of royalties and taxes.

Westside is a key contributor to the economic vitality of Moura and the Banana Shire, with an average annual expenditure exceeding \$4 million. In the year 2023-2024, this expenditure increased to \$6.7 million. This increase highlights its substantial economic footprint in the region. As the project progresses, we anticipate continuing re-growth in this financial investment, thereby boosting economic activity in the region.

Individual landowners will continue to receive payments of compensation from Westside for access to private land to conduct activities and the Project will see increased payments as a result of the increased activities and more landholders receiving compensation.

Westside anticipates that various contract roles will be engaged through third-party vendors across drilling and completion activities, including workovers, well drilling, gathering and water infrastructure. These roles can span several years during construction, gradually scaling back over the gas field development period.

Between 2020-2023, the current Project also delivered 54 PJ of gas to the market, including the domestic market through domestic gas sales agreements and the Stage 2 Development will deliver additional gas to the market. The Greater Meridian permits are the closest producing gas fields to the LNG export facilities in Gladstone, and that with recent pipeline issues Westside was able to assist the market to maintain critical infrastructure.

All proposed activities are assessed and planned using Westside's Constraints Protocol (Attachment B). Westside does not anticipate that the Project will have a negative economic or social impact. Westside is committed to aiming toward the Project limiting any adverse economic or social repercussions. However, such repercussions may occur to an unavoidable yet manageable degree, through the following:

- Road traffic and loads. The additional vehicle movements required for the Project may intensify road
  related impacts. For example, dirt roads with increased traffic movement may receive greater wear,
  and release larger amounts of dust, while sealed roads my deteriorate faster. The additional traffic
  may cause increased noise through certain hours of the day, and the increased vehicle movements
  may be noticeable to pedestrians and other road users;
- Local services and local and regional labour skills may experience changes caused by greater use or
  increase reliance. The extent of the impacts may not be fully anticipated by the local community and
  may be partially unexpected which may impact the local community in a negative way but may also
  benefit some members of the community; and

 Residential, commercial and industrial property markets may also be impacted through a change in property prices. This impact may benefit some members of the community, while disadvantaging others.

In addition to the mandatory requirements embedded in legislation and the land access framework, the Constraints Protocol (Attachment B) gives early consideration to potential co-existence matters such as existing/competing land uses, landholder preferences, noise/visual amenity impacts, future property plans, urban development and potential impacts to landholders, cultural heritage parties, the community, and the environment.

Westside considers that this process goes over and above the mandatory requirements and ensures that potential future impacts from development are considered in the early stages of planning so that any potential issues are avoided, mitigated, or minimised.

8.2 Details of any public consultation activities undertaken and their outcomes.

#### **Public Consultation – Shire and Broader Community**

Westside has liaised with the local government, the Banana Shire Council (BSC), to understand how best to minimise the community impacts and maximise benefits at a local level from the Project. There have been a number of teleconferences, face-to-face meetings, phone calls, and emails exchanged. Some key points of discussion are summarised below:

- Local Spend Discussed the possibility of Westside contributing more to the annual Coal & Country
  Festival in terms of funding and volunteering. As a result of these discussions, in 2022 Westside
  significantly increased its funding and volunteering support and was one of the two platinum
  sponsors for the event. Westside sponsored this event again in 2023 and 2024.
- Employment BSC has shared the results of their latest round of community engagement to provide
  an understanding of the topics that concern Moura residents. The key focus areas were full-time
  employment, training and upskilling for locals, and finding opportunities for local youth. Westside
  employs locals and works closely with the community and local suppliers, and as its projects develop
  it is naturally expected that this will increase.
- Social Performance Westside has discussed with the Council future community/social performance
  plans such as willingness to engage with schools/Science Technology Engineering & Mathematics
  programs, further participation in local events and communication information sessions. As
  development activities progress, Westside is interested in running various school and educational
  tours/excursions.

Westside has consistently held public information sessions regarding developments within the Project Area. Each August, as part of the annual Coal & Country Festival, Westside maintains a strong presence through volunteering and runs a Westside-specific trade stall. This provides an important opportunity for community members to engage directly with Westside personnel. These interactions help foster positive relationships with community members and provide a dedicated team to discuss development in the community.

Other information sessions are attended by a cross-section of Westside personnel from planning & development, land access & approvals, geology, and production engineering so that the engagement is valuable and informative to those attending.

In general, these engagements are positive and provide an opportunity for landholders and interested members of the community to gain an understanding of Westside's activities and connect with staff.

The CSG industry has been present in various forms in the Moura community since the 1970s and an industry in the region since the early 2000s. The mining sector, including CSG exploration and development, is a part of the social fabric of Moura and the surrounding region. Westside actively engages with the community by sponsoring various local initiatives. Recent contributions include donations to the Banana & District Community Association in September 2024 and the Moura Playgroup in April 2024. In total, Westside sponsors and donates to over twenty community-based organisations annually, while also encouraging employees to volunteer their time for charities and fundraising events, such as at the local Returned and Services Leagues club barbecues.

The residents of Moura live near the Dawson Mine, and it is a prominent feature of the community. The mine tragedies in 1975, 1986, and 1994 are defining moments in the community, even today. As such, the community has a pragmatic and well-understood relationship with the historical risks and opportunities of resource development.

The current EA allows up to 600 CSG wells, this roughly coincides with the Project plan as it is represented in this Referral, even though it was not amended for this Project. On 4 November 2019, Westside submitted an application to amend the Environmental Authority for PL94 for the increased well count. This application was considered a 'major amendment' under the EP Act and therefore public notification was required. This process allowed the public to make submissions about the application during the applicable submission period, which in this instance ran from 9 December 2019 to 20 January 2020. To facilitate the public consultation process for the increased activities, the public notice was published on Westside's website and n a local newspaper, Central Telegraph, on 6 December 2019. No submissions were received.

#### **Public Consultation - Landholders**

Since 2010, Westside has consistently engaged with Moura landholders regarding both approved and planned development activities that directly or indirectly affect their properties and land use. This consultation process includes providing detailed information on proposed well locations, associated gathering systems, and planned drilling operations for individual properties as well as the broader development area.

Westside employs a dedicated Land Access team based in Moura responsible for managing relationships and negotiations with landholders. These employees serve as the primary point of contact, ensuring open and transparent communication regarding Westside's activities, development plans, and proposed timelines. Through this ongoing engagement, the Land Access team has successfully negotiated numerous access agreements with all primary landowners involved in the current development.

Engagement with landholders regarding the Stage 2 development has been ongoing since 2019 and continues as Westside progresses with its current development activities. The Land Access team have regular meetings with the landholders to provide updates on the field development and discuss any concerns regarding specific landholder issues.

In June 2023, the Chief Operating Officer met with the primary landholders located within the Project Area to discuss previous, current, and future development activities. This included an overview of the proposed development, the number of wells, and the necessary infrastructure required to support the Project.

As the Project progresses, Westside will continue to actively engage with all landholders to provide timely development updates and negotiate the required land access agreements.

8.3 Details of any consultation with Indigenous stakeholders.

Indigenous engagement

Identify existing or potential native title rights and interests, including any areas and objects that are of particular significance to Indigenous peoples and communities, possibly impacted by the proposed action and the potential for managing those impacts.

Describe any Indigenous consultation that has been undertaken, or will be undertaken, in relation to the proposed action and their outcomes.

The department considers that best practice consultation, in accordance with the Guidance for proponents on best practice Indigenous engagement for environmental assessments under the EPBC Act (2016) includes:

- identifying and acknowledging all relevant affected Indigenous peoples and communities;
- committing to early engagement;
- building trust through early and ongoing communication for the duration of the project, including approvals, implementation and future management;
- setting appropriate timeframes for consultation; and
- demonstrating cultural awareness.

Describe any state requirements for approval or conditions that apply, or that the proponent reasonably believes are likely to apply, to the proposed action with regards to Indigenous peoples and communities.

The traditional owners within the Project Area are the Gaangalu Nation People (GNP). Westside has a long-standing and collaborative relationship with the GNP.

Westside has demonstrated its duty of care under the Aboriginal Cultural Heritage Act 2003 (Qld) by developing voluntary Cultural Heritage Investigation and Management Agreements (CHIMAs) with the GNP for the PL94 and the PL94 Sublease areas, as well as for broader parts of the field. The CHIMAs have been approved as Cultural Heritage Management Plans under the Aboriginal Cultural Heritage Act 2003 (Qld).

Under the CHIMAs, Westside has agreed not to undertake any project activities involving ground disturbance unless a 'Work Program Notice' is issued through the relevant Coordinating Committees that have been appointed to administer the CHIMAs. Nominated GNP personnel then physically inspect any new field areas for Cultural Heritage artefacts along with a Westside Land Access team member.

The CHIMAs provide an efficient and workable means by which the parties to the agreements can protect and manage Aboriginal Cultural Heritage in a culturally appropriate manner while complying with all necessary legislative requirements.

Westside meets with the GNP regularly to discuss ongoing and future activities. Westside continues to engage with the GNP in good faith, sharing development plans with the group and respecting their special role as the custodians and knowledge holders of the land on which it operates.

8.4	Projected economic costs and benefits of the project, including the basis for their estimate through cost/benefit analysis or similar studies.

The vision for Moura in 2031 as outlined in the 2017-2027 Moura and District Place Based Plan as well as the Banana Shire Community Plan 2017 – 2027 is to have 'strong and positive ties to both the mining and rural sectors and provide a sustainable economic and social base that enables growth in business and light-to-medium industry sectors' (Banana Shire Council 2017). Westside believes the Project will help the BSC deliver this vision for the community.

The Place-Based Plan states that its future direction includes "encouraging a shift from barracks/single man quarters to having resource workers live in Moura" to "help increase the population of the town and improve the economy".

A key feature of Westside's operations in the Moura community is that it does not use camps for the housing of staff. Westside currently rents 13 properties in Moura and regularly uses local businesses in Moura and the surrounding area to supply household furniture and equipment for the rental properties.

Two of the local accommodation providers in Moura also host large contingents of travelling workers who often attend the site in addition to the abovementioned staff and contractors. Westside will continue to utilise local accommodation providers for this purpose. Discussions with the motel and caravan park operators in Moura revealed that the primary driver of the motel and caravan park industry in Moura is the resources industry with an estimated 80-95% of their business coming from the resources industry.

Westside is committed to utilising and supporting local services. In 2023-2024, Westside's annual spend within Moura and the BSC increased to \$6.7 million. This figure will increase significantly as Westside continues to develop the Project. The total local spend estimate for an average operational year as the Project develops is expected to be \$10 to \$15 million.

Westside uses local tradespeople such as plumbers, electricians and mechanics and as activities increase, there will be a higher demand for these services. Westside has a fleet of 35 vehicles that are predominantly serviced and repaired in Moura with the occasional trip to Biloela for specialist services.

Westside patronises local businesses such as IGA, Mitre 10, the pharmacy, cafés, hotels, and motels and uses local suppliers in Moura and surrounding areas for personal protective equipment and logo embroidery. It is expected that these services will see an increase in spending as the Stage 1 develops into the Project (Stage 2).

The Project will see additional gas be available to the market. Westside's investment in the region is anticipated to produce an additional 250 PJ of gas over the duration of the development.

8.5	Employment opportunities expected to be generated by the project (including
	construction and operational phases).

As of the date of this response, Westside employs 9 staff who permanently reside in the Moura area and 2 others who live within the Banana Shire. In addition to this, Westside employs a further 30 staff and contractors as part of its workforce who live in Moura while on shift. This represents 75% of Westside's total field-based workforce. As Westside continues to develop its Project, these figures are expected to increase.

Additionally, Westside extends its reach within the broader Banana Shire, with 5 individuals contributing to the workforce from neighbouring areas. This localised approach not only bolsters regional employment but also fosters a sense of community engagement and support.

Furthermore, the Project relies on a diverse workforce, comprising 45 dedicated staff and up to 50 contractors who play integral roles in various aspects of operations. While these individuals may not permanently reside in the immediate vicinity, a significant portion choose to temporarily reside in Moura during their shifts, thereby strengthening ties with the local community. This collaborative arrangement underscores Westside's emphasis on maximising local involvement and benefiting from the wealth of talent within the region.

As Westside continues to advance its Project, with plans for expansion and increased operational capacity, these employment figures are expected to experience significant growth. Westside estimates that 100 to 300 new jobs, including contractors and third party services, will be created through the life of the Project. Such growth not only signifies continued economic development but also underscores Westside's commitment to fostering sustainable employment opportunities and prosperity within the local community.

# 11. ENVIRONMENTAL RECORD OF THE PERSON PROPOSING TO TAKE THE ACTION

Include details of any past or present proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:	
9.1	the person proposing to take the action
9.2	for an action for which a person has applied for a permit, the person making the application;
9.3	if the person is a body corporate—the history of its executive officers in relation to environmental matters; and
9.4	if the person is a body corporate that is a subsidiary of another body or company (the parent body)—the history in relation to environmental matters of the parent body and its executive officers.

Westside is the person proposing to take the action.

Westside is a registered Suitable Operator (RSO004439) under the EP Act and holds the Environmental Authority (EPPG00783713) over the PL94 tenure. Westside has an approved Underground Water Impact Report for the PL94 tenure.

Westside entered into a voluntary Transitional Environmental Program in November 2011, under section 333 of the EP Act to address the transitional arrangements to bring the dam construction standards for PL94 into compliance with new EA conditions introduced through amendments to the EP Act and associated development of policies and guidelines. The Transitional Environmental Program was finalised and approved by the regulator on 19<sup>th</sup> December 2016.

Westside is committed to responsible environmental management. Westside implements a Health, Safety, and Environmental Management System which governs all activities and ensures continual improvement in managing environmental risks. Westside sets objectives and targets that promote the efficient use of resources, minimisation of wastes and emissions, and the prevention of pollution.

Westside strives to comply with all environmental regulations and approval conditions, and promptly report any non-compliance to relevant authorities. Westside encourages its staff to report on environmental performance associated with its activities. To increase its understanding and improve its company-wide performance, Westside maintains a register of all environmental incidents, observations, and good practices.

Neither Westside nor any of its executive officers have been subject to court proceedings under a Commonwealth, State, or Territory law for the protection of the environment or the conservation and sustainable use of natural resources.

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## **Attachment A: MNES Assessment Report**

# Attachment B: Environmental Constraints Planning and Field Development Protocol Petroleum Lease 94

# **Attachment C: Management Plans**

# **Attachment D: Offset Area Management Plan**

# **Attachment E: Protected Matters Search Tool Report**

# **Attachment F: Public Comment register**