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ENVIRONMENTAL CONSULTANTS

Regional Interests Development Approval

Westmoreland Project

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Prepared for Tackle Resources Pty Limited
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1 Introduction

Tackle Resources a wholly owned subsidiary of Laramide Resources Limited (Tackle Resources) applied for Regional Interests Development Approval (RIDA) to the Department of State Development Infrastructure and Planning (DSDIP) on 24 June 2024. The application sought to undertake a resource activity: mining and other resource activities (not petroleum and gas) for the Westmoreland Project in the Gulf Rivers strategic environmental area (SEA).

DSDIP on the 29 November 2024 provided a Further Requirement Notice (D24/189673), due to the application not satisfying the minimum requirements for an amendment application, as detailed in section 226A of the *Environmental Protection Act 1994* (EP Act).

This report provides responses to the Further Requirement Notice.

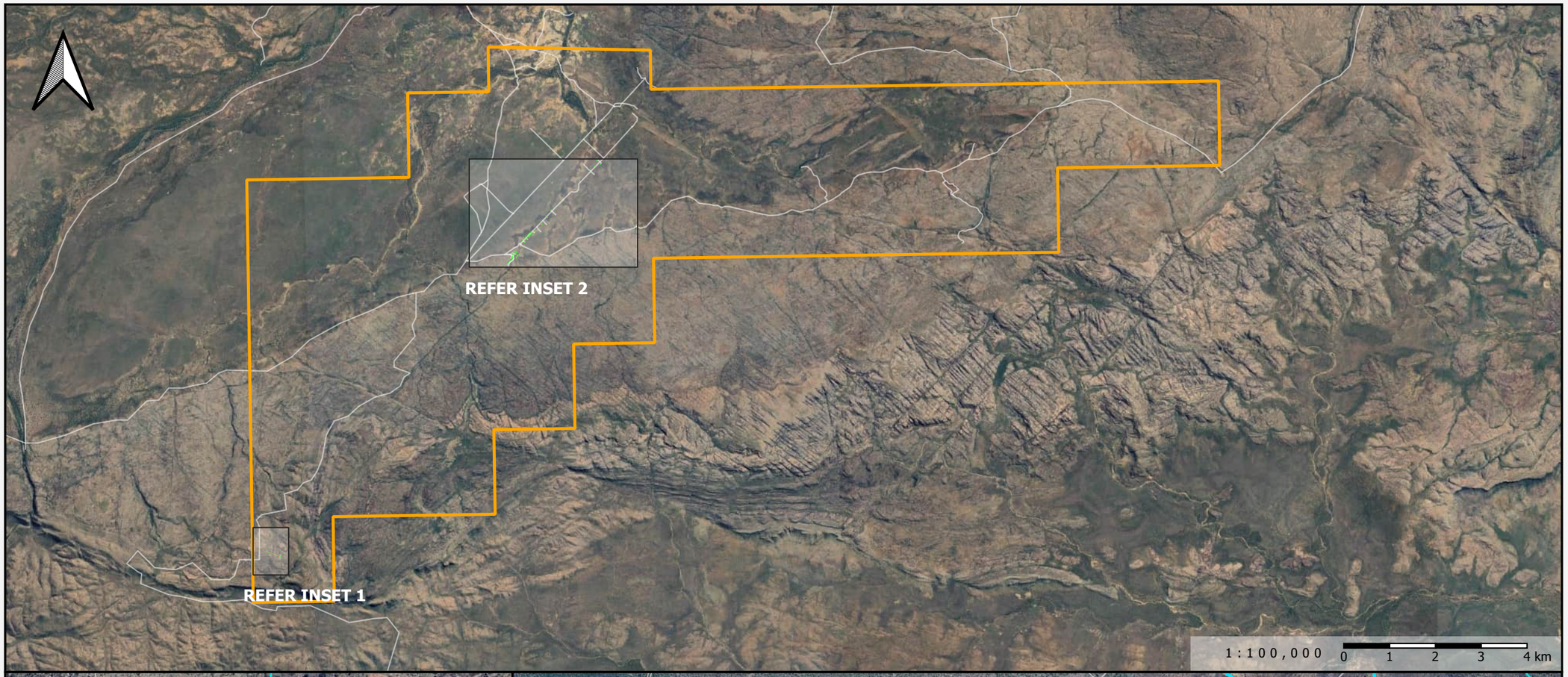
1.1 Description of the Proposed Activity

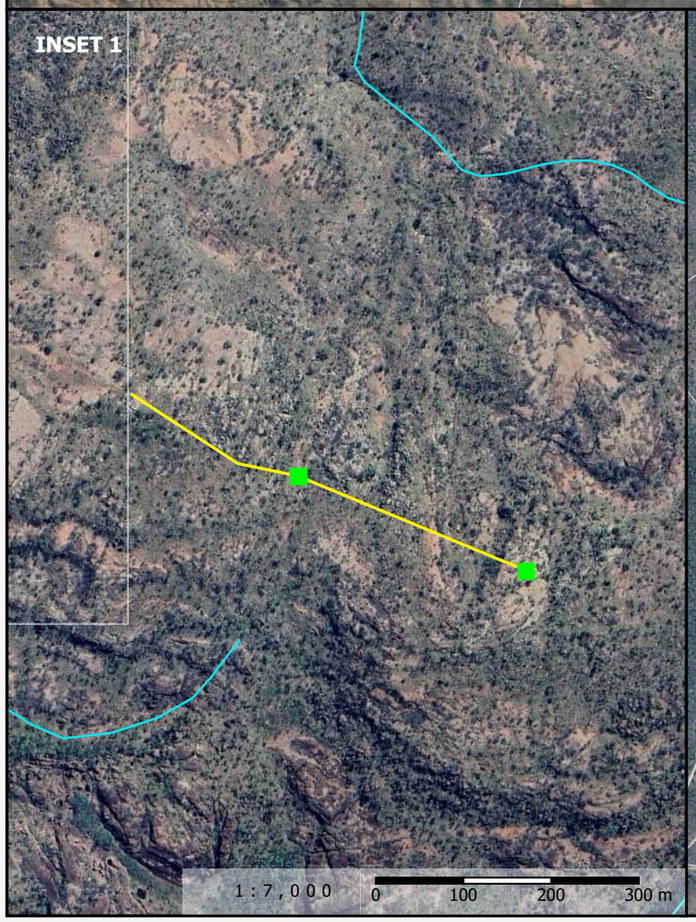
Tackle Resources propose to undertake exploration activities within Exploration Permit – Minerals (EPM) 14558, and MDL 2026 (Application) where several exploration sites are proposed (**Figure 1**). In total 56 drill pads (20m x 20m) and 1.23 km of tracks are proposed to complete the exploration activities.

The disturbance footprint area is summarised in **Table 1** and presented spatially in **Figure 1**.

Table 1 Proposed Disturbance Footprint Areas

Proposed Disturbance Component	Quantity	Area (ha)
Drill Pads	56 pads	2.24
Exploration Access Tracks	1.23 km	0.43
Total		**2.67**





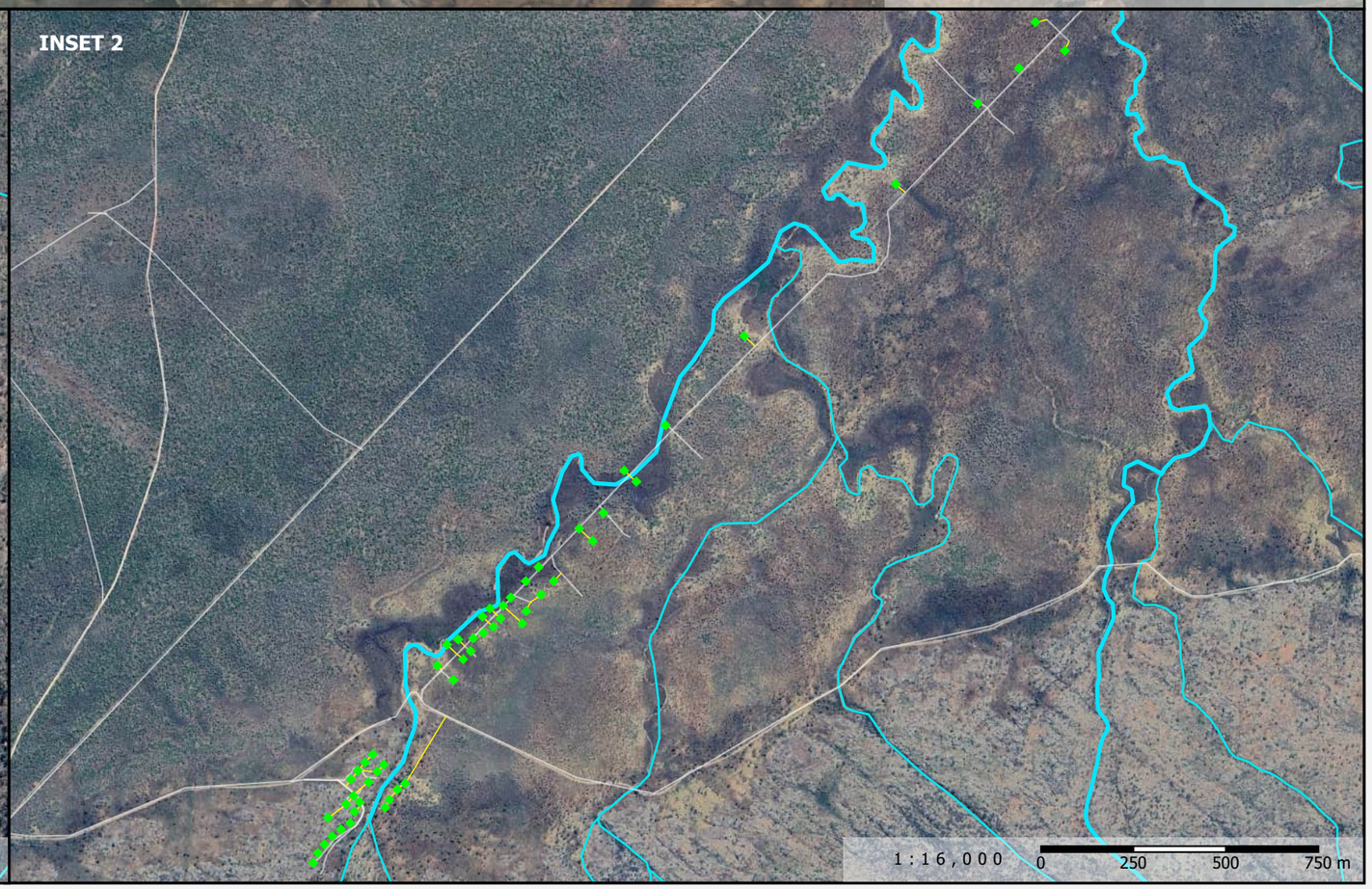


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FIGURE 1: PROJECT LOCATION AND LAYOUT

LEGEND:

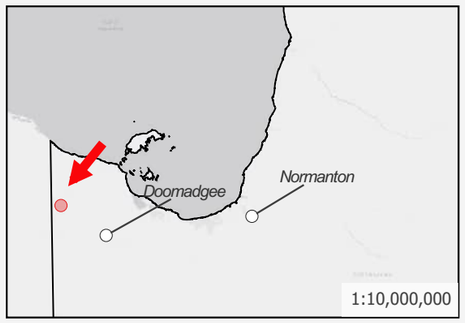
- Existing Access Tracks
- Mineral Development License Application Area

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads



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2 Required Actions

2.1 Item 1 - Groundwater Dependent Ecosystems

a) *Revise the Groundwater Dependent Ecosystem (GDE) assessment to include details of the location of GDE within MDL2026.*

b) *Describe the impacts to GDE as a result of the proposed exploration activities.*

c) *Include information on how 'sump methodology' and associated water will mitigate impacts to GDE.*

d) *Provide a monitoring program specific to the impacts expected as a result of this application.*

2.1.1 Response

Revise the Groundwater Dependent Ecosystem (GDE) assessment to include details of the location of GDE within MDL2026.

The Project is located within the Settlement Creek region which contains known and potential GDEs. The *Groundwater Dependent Ecosystems Atlas* (Bureau of Meteorology, 2024) indicates that two 'Moderate Potential' terrestrial GDEs occur within 100 m of the disturbance footprint. 0.006 ha overlaps one of these terrestrial GDEs **Figure 2**. The attributes associated with the GDE are provided in **Table 2**.

Table 2 Mapped Groundwater Dependent Ecosystems with Potential to Occur

Name	GDE Type	Ecosystem Type	Description
Moderate Potential GDE			
None	Terrestrial GDE	Vegetation	Dry eucalypt woodlands to open-woodlands primarily on sandplains or depositional plains.

Describe the impacts to GDE as a result of the proposed exploration activities.

Impacts to GDE include the following:

- Clearing for drill pads and access tracks will result in 0.006 ha of vegetation clearing within mapped groundwater dependent ecosystems.
- No new drilling is required – existing bores such as Junnagunna will be prioritised for extraction to avoid impacts on shallow systems and GDE (Hydro Element Solutions, 2025).
- No impacts on GDE are expected due to aquifer drawdown. The free-flowing Junnagunna Bore yields 0.87 L/s (equivalent to 75,000 L/day) (Hydro Element Solutions, 2025). Proposed extraction volumes of 300 litres per day for 120 days or 1000 litres per day for 60 days are low are unlikely to stress the aquifer.
- Minor localised drawdowns in connected shallow systems are possible if shallow bores are used. Therefore, monitoring is required to manage risks (Hydro Element Solutions, 2025).

Include information on how 'sump methodology' and associated water will mitigate impacts to GDE.

The sump methodology mitigates impacts to GDE by recirculating the water used during drilling and reducing the requirement for groundwater consumption. Water collected in the sump during drilling is recirculated reducing water use. This is best practice methodology even though groundwater requirements over the drilling program is unlikely to substantially reduce the water table or impact on flora.

Using a sump methodology for exploration drilling involves the establishment of a pit (sump) adjacent to the drill site to collect drilling fluids, cuttings and water required for drilling. Sumps are established on one side of the drill pad using an excavator or front-end loader. Usually 1-2 sumps are excavated (1 x bucket width and deep) and lined with tarpaulins to contain water utilised during drilling diamond core. The sumps are lined to prevent seepage into the ground and subsequent loss of water supply.

The purpose of the drilling fluids used is to temporarily coat the drill hole surface and prevent loss in water supply down hole. This ensures water is efficiently recirculated and contained to the sump and hole being drilled. Note that the drilling fluids are biodegradable and do not pose an environmental risk to groundwater or surface water.

Following exploration activities all drill holes, drill pads and associated sumps are rehabilitated as required by the Code of Environmental Compliance for Exploration and Mineral Development Projects. Due to the high evaporation rates in the region, drill water remaining in sumps typically evaporates within two to three weeks. Temporary fencing will be installed to prevents access by cattle. Once dry the sump is rehabilitated with stockpiled subsoil and topsoil.

Provide a monitoring program specific to the impacts expected as a result of this application.

Groundwater monitoring will occur throughout and involve the following:

- Routine monitoring of the groundwater level will be implemented at existing bores (frequently during extraction periods) (Hydro Element Solutions, 2025).
- Ground water for drilling activities will be sourced from Junnagunna Bore. The volume of water required for each drill hole will range from 300 L to 1,000 L per day over the course of the drilling program. These volumes are unlikely to substantially reduce the water table and any minor reduction in the water table will be temporary. Impacts to groundwater dependent flora species will therefore be negligible and not detectable.
- Drawdown thresholds will be maintained in shallow aquifers (e.g. <0.5 to 1 m) to minimise potential GDE impacts. Thresholds are points if reached, extraction stops (Hydro Element Solutions, 2025).
- If not already in place, consider installing a dedicated shallow monitoring bore in or adjacent to GDE areas to track potential drawdown impact during extraction within the shallow aquifer (Hydro Element Solutions, 2025).
- Undertake visual monitoring of riparian and GDE vegetation near extraction areas. Cease or modify pumping if signs of stress or impacts are observed (Hydro Element Solutions, 2025).
- Maintain accurate records of daily extraction volumes, bore water levels, and field observations (Hydro Element Solutions, 2025).

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FIGURE 2: GROUND-WATER DEPENDENT ECOSYSTEMS

0 100 200 300 400 m
1:9,000

LEGEND:

- Existing Access Tracks

Proposed Disturbance Footprint

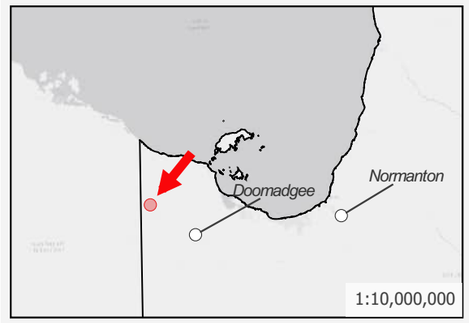
- Exploration Access
- Drill Pads

Terrestrial Groundwater Dependent Ecosystems

- Moderate potential

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4



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2.2 Item 2 – Flora survey and fauna occurrence mapping survey

- *Provide the results of the flora survey, including:*
  - *An ecological report; and*
  - *Spatial information that depicts the extent of the regional ecosystem.*
- *Provide the results of the fauna occurrence mapping, including:*
  - *An ecological assessment, which considers the impacts of proposed exploration disturbance on fauna species and vegetation that forms habitat for the identified fauna species; and*
  - *Spatial information that depicts the occurrence of endangered or vulnerable fauna species*

2.2.1 Response

An ecological assessment which considers the impacts of proposed exploration disturbance on fauna species and vegetation is detailed in the *Westmoreland Uranium Project - Exploration - Ecological Assessment Report* (Terra Solutions, 2025) (**Appendix A)**. The field verified regional ecosystems are spatially represented in **Figure 3** and **Figure 4**. The occurrence of conservation significant fauna records is shown in **Figure 5**.

The *Queensland Environmental Offsets Policy – Significant Residual Impact Guidelines* (DEHP, 2014) provides criteria for assessing whether an activity will result in a significant residual impact on a Matters State Environmental Significance (MSES) relating to conservation significant fauna species. Significant Residual Impact Assessments (SRIA) were conducted for vulnerable and endangered fauna species assessed as potentially or likely occurring in the disturbance footprint.

The SRIA's for conservation significant species are provided in the following tables:

- Ghost bat (*Macroderma gigas*) (NC Act – endangered) – Table 3.
- Orange leaf-nosed bat (*Rhinonicteris aurantia*) (NC Act – vulnerable) – Table 4.
- Grey falcon (*Falco hypoleucos*) (NC Act – vulnerable) – Table 5

- Northern blue-tongued skink (*Tiliqua scincoides intermedia*) (NC Act – critically endangered) – Table 6.

Table 3 Significant Residual Impact Assessment for the Ghost bat

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. Caves and roosts are unlikely to be impacted by habitat disturbance. The extent of habitat to be disturbed is ≤ 2.67 ha of potential foraging habitat. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of the ghost bat due to the small scale of disturbance (2.67 ha).
Fragment an existing population	There are no known permanent maternity roosts within the MDL. Foraging habitat is mostly continuous and undisturbed, and the clearing footprint will not affect the mobility of individuals or populations. The population is unlikely to be fragmented by proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the proposed works will not be a barrier to dispersal of this species.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species such as the feral cat are confirmed present in the MDL. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further increase access by feral cats.
Introduce disease that may cause the population to decline	A potential herpes type virus appears to be affecting the Mt Etna population of Ghost bat (TSSC, 2016c). The introduction of this disease is unlikely to result from the proposed disturbance.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. There are no known colonies occurring in the area. Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The presence of ecologically significant locations for the ghost bat within the Project area is unknown, though are likely to be present within the MDL. No potentially suitable roosting habitat (including those suitable as maternity roosts) are proposed to be cleared or disturbed.

Table 4 Significant Residual Impact Assessment for the Orange Leaf-nosed Bat

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. Caves and roosts are unlikely to be impacted by habitat disturbance. The extent of habitat to be disturbed is ≤ 2.67 ha of potential foraging habitat. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of the orange leaf-nosed bat due to the small scale of disturbance (2.67 ha).
Fragment an existing population	Foraging habitat is mostly continuous and undisturbed, and the clearing footprint will not affect the mobility of individuals or populations. As a flying, nocturnal mammal, the population is unlikely to be fragmented by the proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the proposed works will not be a barrier to dispersal of this species.

Criteria	Assessment
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species such as the feral cat are confirmed present in the MDL. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further facilitate access by feral cats.
Introduce disease that may cause the population to decline	No diseases are known to impact this species. As the works will not involve human access to caves/roost sites it is unlikely to result in an increased risk of disease introduction.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. Proposed works are unlikely to interfere with recovery of the species as impacts are likely to be minor to negligible.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The presence of ecologically significant locations for the orange leaf-nosed bat is unknown, though are likely to be present within the MDL outside of the proposed Disturbance Footprint. No potentially suitable roosting habitat are proposed to be cleared or disturbed.

Table 5 Significant Residual Impact Assessment for the Grey Falcon

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. The Disturbance Footprint may include parts of the foraging range of a grey falcon but does not represent highly suitable habitat or breeding habitat.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of the grey falcon due to the small scale of disturbance (≤2.67 ha).
Fragment an existing population	Falcons are a highly mobile species and the small scale of the proposed disturbance is unlikely to pose any barrier to movements.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the species is highly mobile and unlikely to be inhibited by small-scale clearing.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species, namely the feral cat, are well distributed across the local landscape. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further facilitate access by feral cats.
Introduce disease that may cause the population to decline	No diseases are known to threaten this species.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. Proposed works are unlikely to interfere with general population recovery following extreme events due to its small scale.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The Disturbance Footprint is unlikely to contain ecologically significant locations for the grey falcon. The vegetation communities present are generally low and the riparian community nearby is small in extent and does not host suitably tall nesting trees. Disruption to an ecologically significant location is unlikely.

Table 6 Significant Residual Impact Assessment for the Northern Blue-tongued Skink

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	The extent of habitat to be disturbed is ≤ 2.67 ha. Speed limit requirements will reduce the risk of an increase in road strikes resulting from increased traffic. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence due to the small scale of disturbance (2.67 ha)
Fragment an existing population	Northern blue-tongued skinks have been frequently observed crossing roads and traversing disturbed land. The proposed works are unlikely to pose a barrier to movements. The population is unlikely to be fragmented by proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	Northern blue-tongued skinks have been frequently observed crossing roads and traversing disturbed land. The proposed works are unlikely to pose a barrier to movements.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	The cane toad is the primary threat to this species. Cane toads were detected in the MDL in low quantities. While cane toads are unlikely to occur in the Disturbance Footprint due to the lack of a nearby water source, standing water collected in sumps after use in drilling operations has the potential to provide breeding opportunities to cane toads with the possibility of increasing their local numbers for at least the duration of works. This can be managed by preventing fauna access to

Criteria	Assessment
	drilling wastewater by erecting fences (made of tarpaulin or dampcourse) 600 mm high and at least 300 mm below the ground surface (to prevent burrowing) around the artificial water points.
Introduce disease that may cause the population to decline	No diseases are known to impact this species.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	As the population of northern blue-tongued skinks in the MDL persists within the distribution of the invasive cane toad, it is considered an important population in accordance with the species' Conservation Advice (DCCEEW, 2023b). Sandstone escarpments and outcrops are also likely to constitute habitat critical to the survival of the species due to the shelter they provide. These habitats are present in the Disturbance Footprint and are highly abundant and widespread throughout the MDL. The small scale of proposed disturbance and the abundance of shelter habitat throughout the surrounding landscape makes it unlikely that the proposed works will disrupt and ecologically significant location.

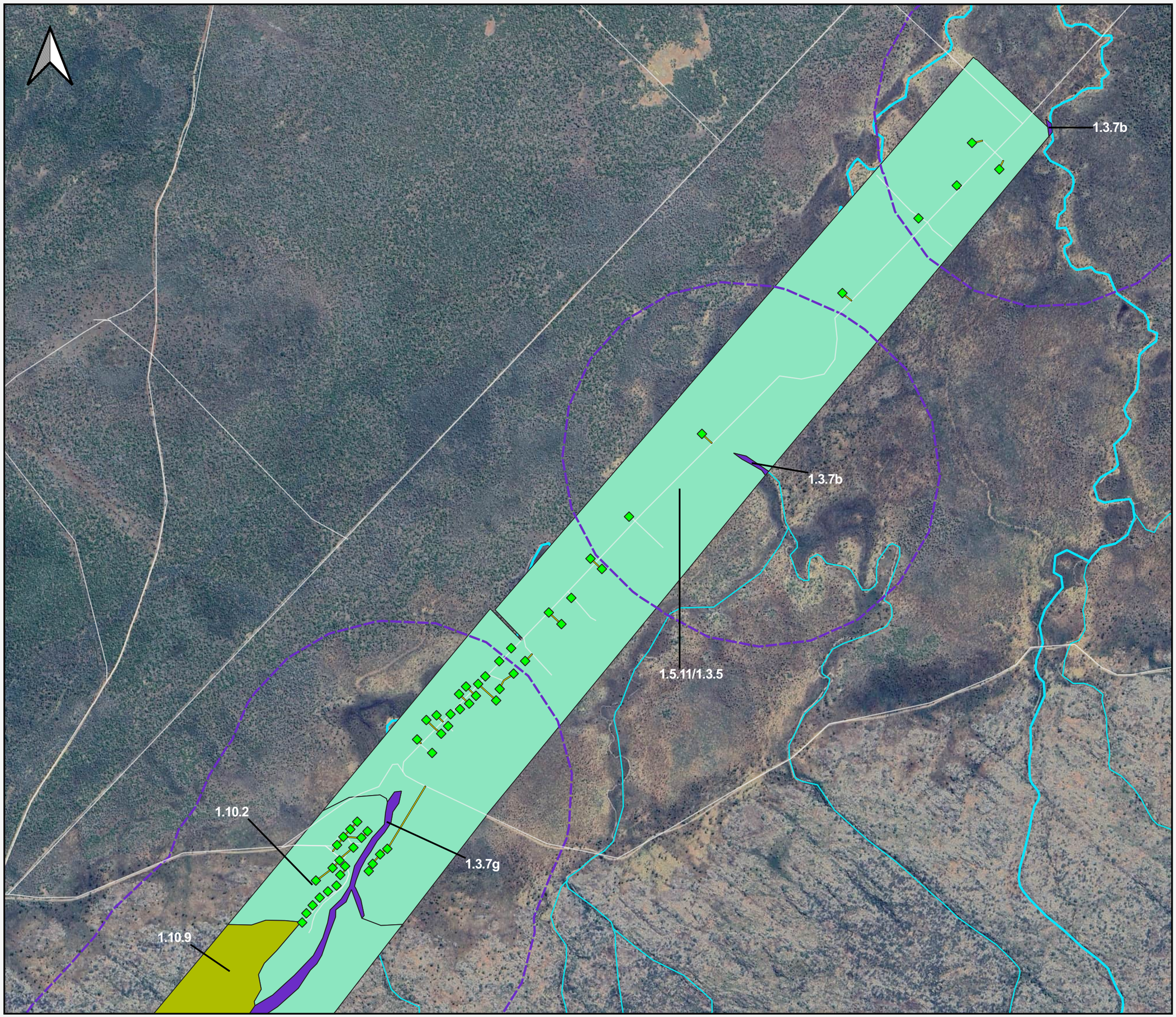

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FIGURE 6: FIELD-VERIFIED REGIONAL ECOSYSTEMS - PART A

0 150 300 450 600 m
1:10,000

LEGEND:

- Existing Access Tracks
- Category B ESA 500 m Buffer

Vegetation Management Watercourses

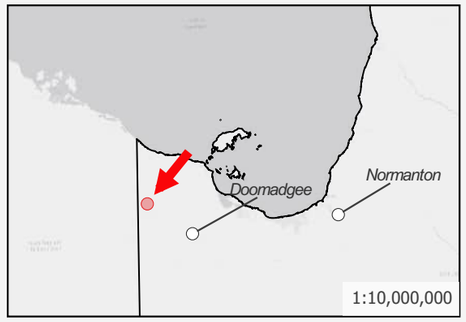
- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads

Field-verified Regional Ecosystems (Biodiversity Status)

- Endangered - Dominant Vegetation
- No concern at present
- Of Concern - Dominant



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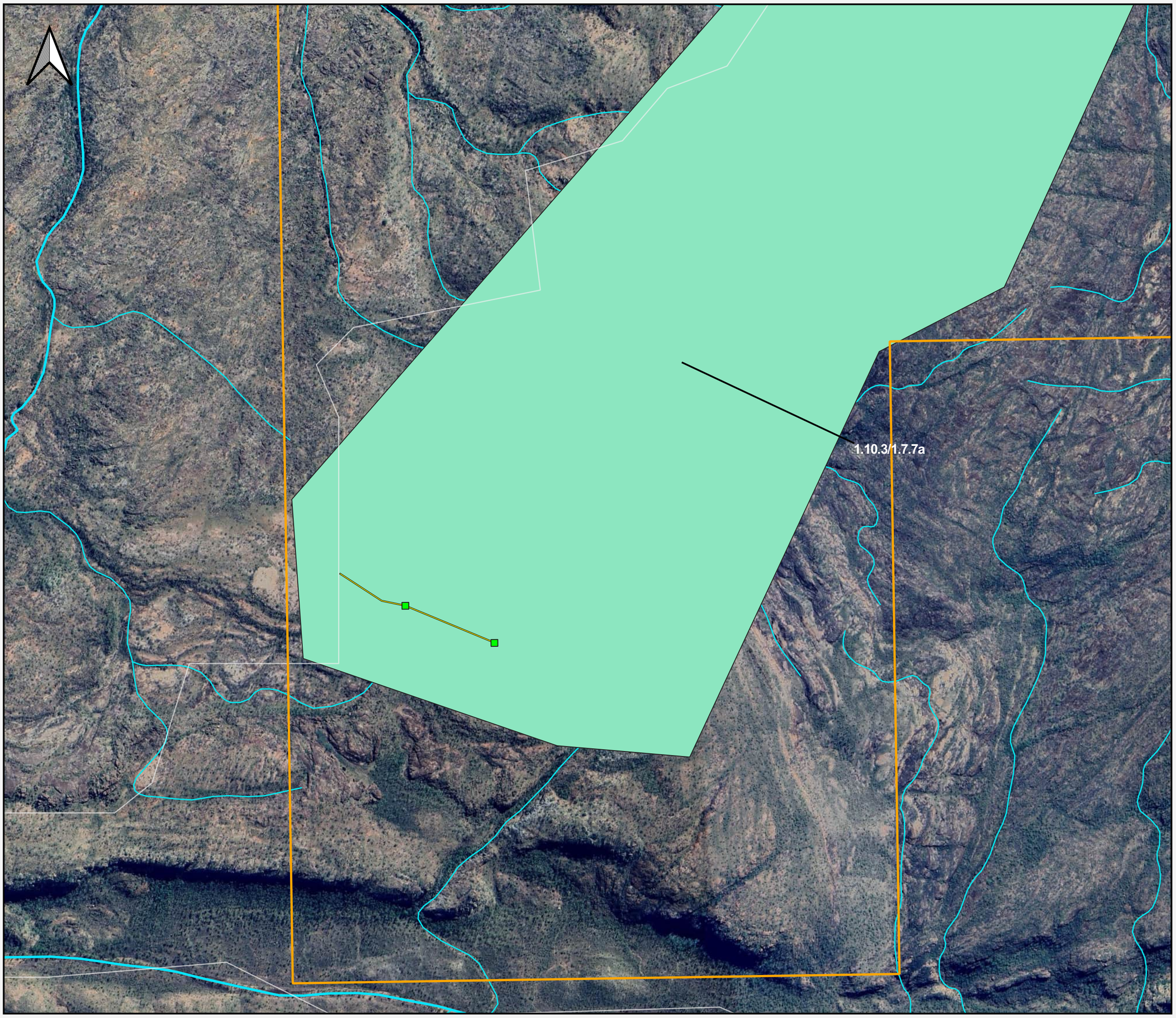

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FIGURE 7: FIELD-VERIFIED REGIONAL ECOSYSTEMS - PART B

0 150 300 450 600 m

1:10,000

LEGEND:

- Existing Access Tracks
- Mineral Development License Application Area

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads

Field-verified Regional Ecosystems (Biodiversity Status)

- No concern at present

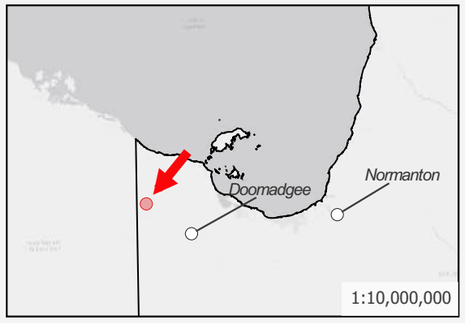

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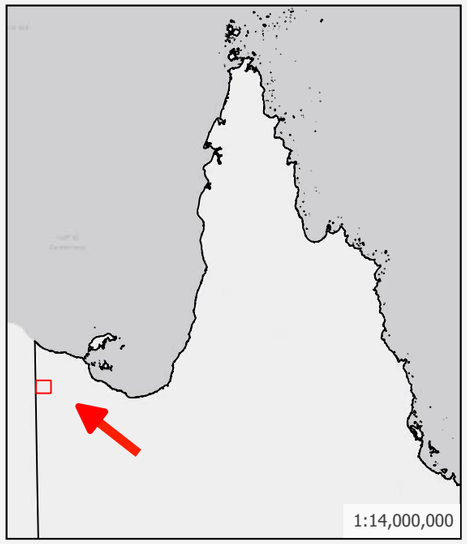
FIGURE 5: CONSERVATION SIGNIFICANT SPECIES RECORDS

0 1 2 3 4 km

1:100,000

LEGEND:

- Historical Records (ALA and WildNet Database)
- Terra Solutions Records (2024)
- Mineral Development License Application Area
- Approximate location of proposed exploration works



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COORDINATE SYSTEM: GDA2020 / MGA zone 54

2.3 Item 3 – Clarify the proposed exploration activities

- *Confirm that the proposed disturbance areas stated in Table 1 – Expected maximum number of drill holes to be completed on MDL2026 are correct and are intended to be assessed as part of the RIDA application.*
- *Ensure that the exploration disturbance extent and level of impact proposed in supporting information aligns with the level of impact proposed to vegetation and fauna species in item 2 of this requirement notice*
- *Clarify whether activities are proposed to be conducted during the dry season or the wet season and provide an assessment of the impacts and mitigation measures to align with the seasonal activities proposed*

2.3.1 Response

Confirm that the proposed disturbance areas stated in Table 1 – Expected maximum number of drill holes to be completed on MDL2026 are correct and are intended to be assessed as part of the RIDA application.

The extent of proposed works has been substantially reduced from the Assessment Application Report (Tackle Resources 2024). In total 56 drill pads (20m x 20m) and 1.23 km of tracks are proposed to complete the exploration activities.

The disturbance footprint area is summarised in Table 7 and presented spatially in Figure 1.

Table 7 Proposed Disturbance Footprint Areas

Proposed Disturbance Component	Quantity	Area (ha)
Drill Pads	56 pads	2.24
Exploration Access Tracks	1.23 km	0.43
Total		**2.67**

Ensure that the exploration disturbance extent and level of impact proposed in supporting information aligns with the level of impact proposed to vegetation and fauna species in item 2 of this requirement notice.

The level of impact proposed in supporting information aligns with the level of impact proposed to vegetation and fauna species in item 2 of the requirement notice.

Clarify whether activities are proposed to be conducted during the dry season or the wet season and provide an assessment of the impacts and mitigation measures to align with the seasonal activities proposed.

The proposed activities will be limited to the dry season due to access constraints experienced during the wet season.

2.4 Item 4 – Riparian vegetation and processes

- *Identify the locations (map and coordinates) of disturbance proposed within riparian areas (this is required in order to demonstrate a cumulative impact will not occur).*
- *Advise the area (ha) of riparian vegetation that requires clearing.*
- *Describe the impacts of vegetation clearing in riparian areas on the environmental attributes of water quality, riparian processes and wildlife corridors. Demonstrate how a widespread or irreversible impact will not result from the proposed activity.*
- *Describe the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes.*

2.4.1 Response

Identify the locations (map and coordinates) of disturbance proposed within riparian areas (this is required in order to demonstrate a cumulative impact will not occur).

The location of disturbance proposed within the riparian areas is provided in **Figure 6**.

Advise the area (ha) of riparian vegetation that requires clearing.

Approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the disturbance footprint, comprised of 0.02 ha on linear infrastructure and 0.364 on non-linear.

Describe the impacts of vegetation clearing in riparian areas on the environmental attributes of water quality, riparian processes and wildlife corridors. Demonstrate how a widespread or irreversible impact will not result from the proposed activity.

Potential impacts to water quality and riparian processes/wildlife corridors are detailed in **Table 8** and **Table 9**. The SRIA determined that a significant residual impact to Regulated Vegetation intersecting a watercourse (**Table 8**) and waterways providing for fish passage (**Table 9)** is unlikely. Impacts to riparian processes and wildlife corridors are expected to be negligible due to the following:

- Works will be limited to the dry season.
- The watercourses are ephemeral and do not contain water during the dry season.
- Clearing of riparian vegetation will be limited to 0.384 ha.
- The crossing will be at bed-level
- Control and management practices identified in **Table 10** will be implemented to reduce the impact on environmental values.

Table 8 Significant Residual Impact Assessment for Regulated Vegetation That Is Intersecting a Watercourse

Relevant Criteria	Assessment	Significance* of Impact
Criteria 1 **For clearing for linear infrastructure:** • greater than 25m wide in a grassland (structural category) regional ecosystem; or • greater than 20m wide in a sparse (structural category) regional ecosystem; or • greater than 10m wide in a dense to mid-dense (structural category) regional ecosystem. **For clearing other than clearing for linear infrastructure:** • Area greater than 5 ha where in a grassland (structural category) regional ecosystem; or • Area greater than 2 ha where in a sparse (structural category) regional ecosystem; or	The proposed clearing width for linear infrastructure (i.e. access tracks) is 3.5 m and will not exceed the 10 m criteria. Clearing for non-linear infrastructure (i.e. drill pads) is 0.364 ha and will not exceed the stipulated 2 ha criteria for sparse structural category regional ecosystems.	Not significant. For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must both be exceeded. In this instance Criteria 1 is not exceeded.

Relevant Criteria	Assessment	Significance* of Impact
• Area greater than 0.5 ha where in a dense to mid-dense (structural category) regional ecosystem.		
Criteria 3 Clearing within 5m of the defining bank.	Clearing will occur within 5 m of the defining bank.	

**Note: For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must be exceeded.*

Table 9 Significant Residual Impact Assessment for the Waterways Providing for Fish Passage

Criteria	Assessment
An action is likely to have a significant impact on a waterway providing for fish passage if there is a real possibility that it will:	
Result in the mortality or injury of fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Mortality and injury of fish is unlikely.
Result in conditions that substantially increase risks to the heath, wellbeing and productivity of fish seeking passage such as through the depletion of fishes energy reserves, stranding, increased predation risks, entrapment or confined schooling behaviour in fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Changes to conditions that increase risks to health, wellbeing and productivity of fish are unlikely.
Reduce the extent, frequency or duration of fish passage previously found at a site	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. The track will not pose any physical barrier to the movement of fish or impact the ability of fish to move across the crossing site.
Substantially modify, destroy or fragment areas of fish habitat (including, but not limited to in-stream vegetation, snags and woody debris, substrate, bank or riffle formations) necessary for the breeding and/or survival of fish	The crossing site has poorly defined to absent banks as the watercourse opens into a wide, relatively flat area of seasonal inundation upstream of the crossing site. Vegetation in the bed of watercourses in the area is generally sparse to absent. Woody and other debris present in the bed at the crossing site will be shifted to the side of the proposed track.
Result in a substantial and measurable change in the hydrological regime of the waterway, for example, a substantial change to the volume, depth, timing, duration and frequency of flows	The banks are poorly defined to absent and the crossing is proposed to be at bed-level. Consequently the hydrological regime of the watercourse will not be changed.
Lead to significant changes in water quality parameters such as temperature, dissolved oxygen, pH and conductivity that provide cues for movement in local fish species.	The crossing is proposed to be at bed-level and will consist of already present bed-material. Undertaking works during the dry season will remove the risk of accidental spills into water. The crossing is unlikely to influence water quality parameters.

Table 10 Proposed control and management practices

Aspect	Control / Management Practice
Water	Tanks and/or sumps of sufficient size will be used to contain water, slurry, sediment and drilling fluids encountered and generated during drilling. Drill holes and fuel stores will be located away from water courses. Hydrocarbon spills will be minimised using liners and drip trays under machinery. Appropriately sized spill-kits available in the event of a spill. Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards.

Aspect	Control / Management Practice
	Hydrocarbons will be stored in lined and bunded areas. Erosion and sediment controls will be installed where erosion is evident or likely to occur. Groundwater monitoring will occur throughout groundwater extraction and involve the following: • Routine monitoring of the groundwater level will be implemented at existing bores (frequently during extraction periods) (Hydro Element Solutions, 2025). • Ground water for drilling activities will be sourced from Junnagunna Bore. The volume of water required for each drill hole will range from 300 L to 1,000 L per day over the course of the drilling program. These volumes are unlikely to substantially reduce the water table and any minor reduction in the water table will be temporary. Impacts to groundwater dependent flora species will therefore be negligible and not detectable. • Drawdown thresholds will be maintained in shallow aquifers (e.g. <0.5 to 1 m) to minimise potential GDE impacts. Thresholds are points if reached, extraction stops (Hydro Element Solutions, 2025). • If not already in place, consider installing a dedicated shallow monitoring bore in or adjacent to GDE areas to track potential drawdown impact during extraction within the shallow aquifer (Hydro Element Solutions, 2025). • Undertake visual monitoring of riparian and GDE vegetation near extraction areas. Cease or modify pumping if signs of stress or impacts are observed (Hydro Element Solutions, 2025). • Maintain accurate records of daily extraction volumes, bore water levels, and field observations (Hydro Element Solutions, 2025).
Groundwater	Drill holes will be securely capped immediately after drilling to protect groundwater. Drill holes will be plugged below ground level at a minimum depth of 0.4 metres and backfilled with soil. Reasonable attempts will be made to recover any equipment from the drill hole. All surface infrastructure will be removed. Fill deposited in the drill hole will not interfere with surface use. Equipment and tools not intended to remain in the hole. Adequate separation of aquifers and other zones, including appropriate barriers (e.g. cement plugs, casing, seals) will be incorporated in drillholes on decommissioning.
Wetlands	Tanks and/or sumps of sufficient size will be used to contain water, slurry, sediment and drilling fluids encountered and generated during drilling. Drill holes and fuel stores will be located away from water courses. Hydrocarbon spills will be minimised using liners and drip trays under machinery. Appropriately sized spill-kits available in the event of a spill. Hazardous substances (including hydrocarbons) will be stored and handled in accordance with relevant Australian Standards. Hydrocarbons will be stored in lined and bunded areas. Erosion and sediment controls will be installed where erosion is evident or likely to occur.
Land	A blade-up approach will be implemented for clearing with no windrows formed. Topsoil and rootstock are to be retained where feasible. Where blade-up techniques cannot be employed, topsoil and vegetation will be stockpiled appropriately for remediation purposes Important vegetation will be avoided during clearing (i.e. hollow-bearing trees, important trees providing fauna habitat and food resources, rock outcrops) Clearing during and immediately after rainfall events will be avoided. Vegetation clearing will be kept to the minimum required to safely traverse vehicles and drill rigs along tracks and drill pads. Employees and contractors will be briefed and inducted with regards to the management of environmental risks in the Project area including weeds, watercourses, threatened species, erosion and cultural heritage. Adherence to onsite speed limits to avoid vehicle collision with wildlife and manage noise and dust emissions that might disturb fauna.

Aspect	Control / Management Practice
	Vehicle hygiene measures will be employed to prevent the introduction and spread of invasive species and pathogens when mobilising vehicles and equipment from one location to another Drill holes and fuel stores will be located away from environmentally significant areas and water courses. Hydrocarbons will be stored in lined and bunded areas. Access through watercourse will comply with the accepted development requirements for bed-level crossings. Fauna access to drilling wastewater (particularly the invasive cane toad) will be prevented by erecting fences (made of tarpaulin or dampcourse) 600 mm high and at least 300 mm below the ground surface (to prevent burrowing) around the artificial water points.
Land Use	Drill pads and drill holes will be contoured to the existing landform.
Air	Existing activities that generate higher dust emissions than exploration drilling is already managed under Tackle Resources existing management procedures. Impacts to air quality associated with exploration will be managed by: • Wet tracks and disturbed areas using water trucks. • The application of mulch to disturbed surface soils. • Adherence to onsite speed limits. • Restrict vehicle movements to defined areas. • Maintaining and operating plant and equipment in accordance with Australian Design Rules and manufacturer's specifications. • Use a blade-up approach to vegetation clearing, and • Cleared vegetation will be mulched and respread over disturbed areas in addition to an appropriate seed mix.
Acoustic	• Adhere to site speed limits. • Plant and equipment are fitted with standard manufacturer's noise control equipment (e.g. original mufflers, engine covers and attenuators). • No unnecessary use of horns, revving or idling of engines or other audible signals on mobile plant or equipment. • Construct and maintain noise barriers where necessary. • No unnecessary revving or idling of engines on mobile and stationary machines and shut down any equipment not in use.
Waste	All waste material including drill hole markers, access markers, flagging tape, wooden stakes and star pickets will be stored securely after use and removed from site. Existing waste management practices will continue to be employed on the site to ensure continued compliance with the Code of Environmental Compliance for Exploration and Mineral Development Projects (EPA 2001). The following principles will be applied: • Waste avoidance and minimisation. • Waste reuse. • Waste recycling. • Energy recovery from waste, and • Waste disposal. Training is provided to staff and contractors with regard to waste management at the site.

Describe the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes.

Proposed control and management practices to reduce the impact on environmental values are provided in **Table 10**.

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FIGURE 6: REGULATED VEGETATION INTERSECTING A WATERCOURSE

0 50 100 150 200 m
1:4,000

LEGEND:

- Existing Access Tracks

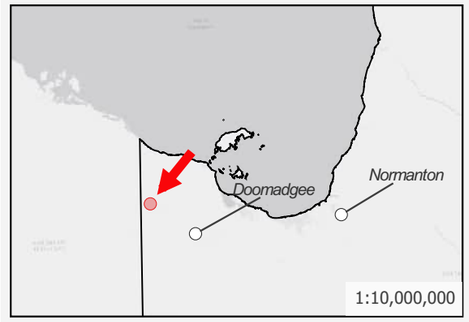
Vegetation Management Watercourses

- Stream Order 2
- Stream Order 3
- Defined Distance Watercourse Buffer

Proposed Disturbance Footprint

- Drill Pads Within Defined Vegetation Management Watercourse Buffers
- Exploration Access
- Drill Pads

fid	HOLE	Coordinates
12	PHB31	-17.498035, 138.122982
14	PHB36	-17.497845, 138.123094
17	PHB43	-17.497597, 138.123301
24	PHB68	-17.494591, 138.124369
25	PHB71	-17.494083, 138.124631
30	PHB89	-17.493963, 138.124914
32	PHB94	-17.493413, 138.125540
34	PHB98	-17.493465, 138.126004
35	PHB101	-17.493216, 138.125734
36	PHB104	-17.493154, 138.126069
39	PHB113	-17.492957, 138.126263
43	PHB121	-17.492225, 138.126984
47	PHB128	-17.489892, 138.129200
48	PHB133	-17.490171, 138.129507
49	PHB135	-17.488801, 138.130275



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DATE: 31/03/2025
AUTHOR: A LEURQUIN
COORDINATE SYSTEM: GDA2020 / MGA zone 54

2.5 Item 5 – Watercourse / waterway crossings

- *Identify the locations (coordinates and map) of proposed watercourse/waterway crossings.*
- *Identify the stream order associated with the crossing*
- *Include information on whether the crossings are a wildlife corridor, and whether the crossings contain vegetation identified as Endangered Regional Ecosystems (ERE) or Matters of State Environmental Significance (MSES).*
- *Describe the impacts of the proposed crossings (specific to this application) on the environmental attributes of riparian processes, wildlife corridors and water quality.*
- *Provide a description of the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes.*

2.5.1 Response

Identify the locations (coordinates and map) of proposed watercourse/waterway crossings.

The extent of proposed waterway crossings has been substantially reduced from the initial application.

The watercourse that traverses adjacent to and through the proposed Disturbance Footprint is mapped as a Moderate Impact (amber) WWBW. It is crossed by one proposed Exploration Access Track and is overlapped by a portion of several drill pads **Figure 6**.

The coordinates of the proposed crossing are -17.4900334,138.1293531.

Include information on whether the crossings are a wildlife corridor, and whether the crossings contain vegetation identified as Endangered Regional Ecosystems (ERE) or Matters of State Environmental Significance (MSES).

Wildlife Corridor

Within the proposed disturbance area there are no functioning wildlife corridors which are characterised by permanent waterholes and springs. However, functional wildlife corridors which are characterised by natural habitat are present within the disturbance footprint.

As previously discussed, only approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the disturbance footprint comprised of 0.02 ha on linear infrastructure and 0.364 on non-linear.

Impacts to riparian processes and wildlife corridors are expected to be negligible due to the following:

- Works will be limited to the dry season.
- The watercourses are ephemeral and do not contain water during the dry season.
- Clearing of riparian vegetation will be limited to 0.384 ha.
- Control and management practices identified in **Table 10** will be implemented to reduce the impact on environmental values.

Endangered Regional Ecosystems

The proposed disturbance area is not located in a Category B Environmentally Sensitive Area under Schedule 19 of the *Environmental Protection Regulation 2019*.

MSES - Regulated Vegetation Intersecting a Watercourse

The *Accepted Development Vegetation Clearing Code - Clearing for Infrastructure* (Department of Resources, 2023) provides riparian protection zones in the form of buffer distances from the defining banks of a watercourse determined by stream order (Table 11).-

Table 11: Riparian Protection Zone Buffers

Stream Order	Riparian Protection Zone*
Stream order 1 or 2	10 metres
Stream order 3 or 4	25 metres
Stream order 5 or more	50 metres

Approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the disturbance footprint comprised of 0.02 ha on linear infrastructure and 0.364 on non-linear.

The SRIA determined that a significant residual impact to Regulated Vegetation intersecting a watercourse is unlikely (**Table 12**).

Table 12: Significant Residual Impact Assessment for Regulated Vegetation That Is Intersecting a Watercourse

Relevant Criteria	Assessment	Significance* of Impact
Criteria 1 **For clearing for linear infrastructure:** • greater than 25m wide in a grassland (structural category) regional ecosystem; or • greater than 20m wide in a sparse (structural category) regional ecosystem; or • greater than 10m wide in a dense to mid-dense (structural category) regional ecosystem. **For clearing other than clearing for linear infrastructure:**	The proposed clearing width for linear infrastructure (i.e. access tracks) is 3.5 m and will not exceed the 10 m criteria. Clearing for non-linear infrastructure (i.e. drill pads) is 0.364 ha and will not exceed the stipulated 2 ha criteria for sparse	Not significant. For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must both be exceeded. In this instance Criteria 1 is not exceeded.

• Area greater than 5 ha where in a grassland (structural category) regional ecosystem; or • Area greater than 2 ha where in a sparse (structural category) regional ecosystem; or • Area greater than 0.5 ha where in a dense to mid-dense (structural category) regional ecosystem.	structural category regional ecosystems.	
Criteria 3 Clearing within 5m of the defining bank.	Clearing will occur within 5 m of the defining bank.	

**Note: For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must be exceeded.*

MSES - Waterways Providing for Fish Passage

The watercourse that traverses adjacent to and through the proposed disturbance footprint is mapped as a Moderate Impact (amber) waterways for waterway barrier works (WWBW). It is crossed by one proposed exploration access track and is overlapped by a portion of several drill pads.

A significant residual impact assessment for WWBW is presented in **Table 13.** The assessment determined that a significant residual impact on waterways providing for fish passage is unlikely.

Table 13: Significant Residual Impact Assessment for the Waterways Providing for Fish Passage

Criteria	Assessment
An action is likely to have a significant impact on a waterway providing for fish passage if there is a real possibility that it will:	
Result in the mortality or injury of fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Mortality and injury of fish is unlikely.
Result in conditions that substantially increase risks to the heath, wellbeing and productivity of fish seeking passage such as through the depletion of fishes energy reserves, stranding, increased predation risks, entrapment or confined schooling behaviour in fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Changes to conditions that increase risks to health, wellbeing and productivity of fish are unlikely.
Reduce the extent, frequency or duration of fish passage previously found at a site	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. The track will not pose any physical barrier to the movement of fish or impact the ability of fish to move across the crossing site.
Substantially modify, destroy or fragment areas of fish habitat (including, but not limited to in-stream vegetation, snags and woody debris, substrate, bank or riffle formations) necessary for the breeding and/or survival of fish	The crossing site has poorly defined to absent banks as the watercourse opens into a wide, relatively flat area of seasonal inundation upstream of the crossing site. Vegetation in the bed of watercourses in the area is generally sparse to absent. Woody and other debris present in the bed at the crossing site will be shifted to the side of the proposed track.
Result in a substantial and measurable change in the hydrological regime of the waterway, for example, a substantial change to the volume, depth, timing, duration and frequency of flows	The banks are poorly defined to absent and the crossing is proposed to be at bed-level. Consequently, the hydrological regime of the watercourse will not be changed.
Lead to significant changes in water quality parameters such as temperature, dissolved oxygen, pH and conductivity that provide cues for movement in local fish species.	The crossing is proposed to be at bed-level and will consist of already present bed-material. Undertaking works during the dry season will remove the risk of accidental spills into water. The crossing is unlikely to influence water quality parameters.

Describe the impacts of the proposed crossings (specific to this application) on the environmental attributes of riparian processes, wildlife corridors and water quality.

Potential impacts to water quality and riparian processes/wildlife corridors are detailed in **Table 12** and **Table 13**. The SRIA determined that a significant residual impact to Regulated Vegetation intersecting a watercourse (Table 8) and waterways providing for fish passage (**Table 13)** is unlikely. Impacts to riparian processes and wildlife corridors are expected to be negligible due to the following:

- Works will be limited to the dry season.
- The watercourses are ephemeral and do not contain water during the dry season.
- Clearing of riparian vegetation will be limited to 0.384 ha.
- Control and management practices identified in **Table 10** will be implemented to reduce the impact on environmental values.

Provide a description of the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes.

Proposed control and management practices to reduce the impact on environmental values are provided in **Table 10**.

2.6 Item 6 – Fauna Habitat

- *Identify the locations (map and co-ordinates) of disturbance proposed within identified wildlife habitat/corridors.*
- *Identify the fauna species and associated habitat that the activities propose to impact.*
- *Include details on how each vulnerable or endangered fauna species use the habitat and wildlife corridors. Consider the different structural and functional elements of the ecosystem that the fauna species rely on when assessing impact.*
- *Provide a description of the impacts of the proposed activity to endangered or vulnerable fauna species and the wildlife habitat / corridors that the species utilise. Ensure the proposed impacts align with any fauna occurrence assessment or on-ground vegetation field assessments.*
- *Clarify if Tackle Resources contemplate fauna no longer utilising an area of habitat occurring as a result of proposed activities.*
- *Describe the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes. Demonstrate and explain how a widespread or irreversible impact will not result from the proposed activity.*

2.6.1 Response

Identify the locations (map and co-ordinates) of disturbance proposed within identified wildlife habitat/corridors.

There are no mapped areas of essential habitat on the essential habitat map for an animal or plant that is endangered or vulnerable wildlife (section 2(3)(b), Schedule 2, *Environmental Offset Regulation 2014* (EO Reg) within the disturbance areas. There are areas of habitat (e.g. foraging, roosting, nesting or breeding habitat) for an animal that is endangered, vulnerable or a special least concern animal (section 6(4), EO Reg).

As detailed in Section 2.2.1, SRIA were conducted for vulnerable and endangered fauna species assessed as potentially or likely occurring in the disturbance footprint.

The SRIA's for threatened species are provided in the following tables:

- Ghost bat (*Macroderma gigas*) (NC Act – endangered) – Table 3.
- Orange leaf-nosed bat (*Rhinonicteris aurantia*) (NC Act – vulnerable) – Table 4.
- Grey falcon (*Falco hypoleucos*) (NC Act – vulnerable) – Table 5

- Northern blue-tongued skink (*Tiliqua scincoides intermedia*) (NC Act – critically endangered) – Table 6.

SRIA determined that significant residual impact was unlikely to occur on conservation significant fauna species that were assessed as potentially or likely to occur.

The conservation significance fauna species habitat is spatially presented in **Figure 3** and **Figure 4**.

Identify the fauna species and associated habitat that the activities propose to impact.

As detailed in Section 2.2.1, SRIA were conducted for vulnerable and endangered fauna species assessed as potentially or likely occurring in the disturbance footprint.

The SRIA's for threatened species are provided in the following tables:

- Ghost bat (*Macroderma gigas*) (NC Act – endangered) – Table 3.
- Orange leaf-nosed bat (*Rhinonicteris aurantia*) (NC Act – vulnerable) – Table 4.
- Grey falcon (*Falco hypoleucos*) (NC Act – vulnerable) – Table 5

Northern blue-tongued skink (*Tiliqua scincoides intermedia*) (NC Act – critically endangered) – Table 6.

SRIA determined that significant residual impact was unlikely to occur on conservation significant fauna species that were assessed as potentially or likely to occur.

Include details on how each vulnerable or endangered fauna species use the habitat and wildlife corridors. Consider the different structural and functional elements of the ecosystem that the fauna species rely on when assessing impact.

As detailed in Section 2.2.1, different structural and functional elements of the ecosystem that fauna species rely on was considered when undertaking the SRIA.

Provide a description of the impacts of the proposed activity to endangered or vulnerable fauna species and the wildlife habitat / corridors that the species utilise. Ensure the proposed impacts align with any fauna occurrence assessment or on-ground vegetation field assessments.

As detailed in Section 2.2.1, SRIA were conducted for vulnerable and endangered fauna species assessed as potentially or likely occurring in the disturbance footprint. The SRIA was undertaken using the on-ground vegetation shown in **Figure 3** and **Figure 4**.

Clarify if Tackle Resources contemplate fauna no longer utilising an area of habitat occurring as a result of proposed activities.

The SRIA undertaken in Section 2.2.1, took into consideration all conservation significant fauna species that were assessed as potentially or likely occurring in the disturbance footprint.

A likelihood of occurrence assessment based on mapped habitat, known records and field data found the following NC and EPBC-listed conservation significant fauna species have potential to occur within the or nearby the disturbance footprint.

- Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act, NC Act).
- Ghost bat (*Macroderma gigas*) – Vulnerable (EPBC Act), Endangered (NC Act).
- Orange leaf-nosed bat (*Rhinonicteris aurantia*) – Vulnerable (NC Act)
- Northern blue-tongued skink (*Tiliqua scincoides*) – Critically Endangered (EPBC Act, NC Act), and

Species ecology profiles and final likelihood of assessment are provided in **Appendix J** of the Ecological Assessment (Terra Solutions 2025).

Describe the mitigation and management strategies proposed to be utilised to reduce impacts to the identified environmental attributes. Demonstrate and explain how a widespread or irreversible impact will not result from the proposed activity.

Proposed control and management practices to reduce the impact on environmental values are provided **Table 10**.

As detailed in Section 2.2.1, SRIA were conducted for vulnerable and endangered fauna species assessed as potentially or likely occurring in the disturbance footprint. SRIA determined that significant residual impact was unlikely to occur on conservation significant fauna species that were assessed as potentially or likely to occur.

Appendix A Westmoreland Uranium Project - Exploration - Ecological Assessment Report (Terra Solutions, 2025)

Terra SOLUTIONS
ENVIRONMENTAL CONSULTANTS

Ecological Assessment Report

Westmoreland Uranium Project – Exploration

Reference No. 202408202408
Prepared for Tackle Resources Pty Limited
31 March 2025

Document Control

Client	Tackle Resources Limited Pty Limited
Document	Ecological Assessment Report
Project Name	Westmoreland Uranium Project
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1 Introduction

1.1 Project Overview

Tackle Resource Pty Limited (Tackle Resources) holds a Mineral Development Licence (MDL 2026, Permit P-EA-100440853) and a Resource Activity Environmental Authority (EA) (Non-Scheduled, Mining Activity, Exploration Permit Mineral – EPSX00066713) over parts of two Exploration Permit Areas (EPM 14558 and EPM 14672) for the Westmoreland Uranium Project (the Project), based in northwest Queensland (Figure 1).

Tackle Resources have proposed to undertake exploration drilling, involving clearing for access tracks and drill pads, within two areas of the MDL.

In accordance with EPSX00066713, the authority holder must comply with each of the Standard Environmental Conditions contained in the *Code of environmental compliance for Exploration and Mineral Development Projects (EM586: January 2001 – Version 0)*. The code also applies to a Mineral Development Licence once approved. Conditions relevant to this ecological investigation of the site are included in Section 2.

In addition to the above approvals, exploration activities within the MDL require a Regional Interests Development Approval (RIDA) for mineral exploration as the site is entirely located within the Gulf River Strategic Environmental Area (SEA). A RIDA Assessment Report was submitted to the Department of Housing, Local Government, Planning and Public Works (DHLGPPW) on 11 June 2024 to gain RIDA approval. DHLGPPW has issued two Requirement Notices for further information in response to the RIDA submission.

To support fulfilment of their EA and RIDA conditions/requirements, Tackle Resources requires Terra Solutions to prepare an Environmental Assessment Report to verify the mapped MSES and ESAs within the exploration areas.

1.2 Scope

The proposed scope of works includes the following tasks:

- Desktop assessment of ecological values and constraints including a review of MNES and MSES within the proposed Disturbance Footprint and surrounds.
- Likelihood of occurrence assessment for Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) in the Disturbance Footprint.
- Ecological assessment (excluding targeted surveys) of the proposed Disturbance Footprint including field-verification of mapped Category B Environmentally Sensitive Areas (ESAs) and habitat assessments for conservation significant fauna.
- Ecological assessment report and recommendations.
- Identification of potential threats to, and impacts on, conservation significant species.

2 Relevant Legislation

The following legislation, policy, guidelines, and guidance documents provided in Table 1 are relevant to identifying the impacts and constraints relevant to the Project and Disturbance Footprint.

Table 1: Relevant Environmental Statutory Considerations

Legislative Act	Brief Description
Commonwealth Legislation	
Environment Protection and Biodiversity Conservation Act 1999	The *Environment Protection and Biodiversity Conservation* (EPBC) *Act 1999* provides a mechanism for assessing the environmental impact of activities and development where "Matters of National Environmental Significance" (MNES) may be significantly affected. The Act identifies eight matters of MNES, which require consideration and analysis, including: • Ramsar wetland of international importance. • World Heritage properties. • National Heritage places. • Commonwealth Marine areas. • Great Barrier Reef Marine Park. • Nationally threatened species and ecological communities. • Nationally listed migratory species, and • Nuclear actions (including uranium mining). Where a project or action is believed to potentially cause a significant impact on a matter of MNES, it is to be referred to the Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) for assessment as to whether the action is a 'controlled action' requiring Commonwealth approval for the proposed action. The EPBC Act processes also allow voluntary referral of a Project to seek confirmation that a Project will not have significant impacts on matters of MNES. Where an action requires Commonwealth approval, a formal assessment process is undertaken in accordance with provisions of relevant legislation.
State Legislation	
Regional Planning Interests Act 2014	Division 2 Purposes and application of Act Purposes and achievement: 1. The purposes of this Act are to: a. identify areas of Queensland that are of regional interest because they contribute, or are likely to contribute, to Queensland's economic, social and environmental prosperity; and b. give effect to the policies about matters of State interest stated in regional plans; and c. manage, including in ways identified in regional plans: i) the impact of resource activities and other regulated activities on areas of regional interest; and ii) the coexistence, in areas of regional interest, of resource activities and other regulated activities with other activities, including, for example, highly productive agricultural activities. 2. To achieve its purposes, this Act provides for a transparent and accountable process for the impact of proposed resource activities and regulated activities on areas of regional interest to be assessed and managed.
Nature Conservation Act 1999	The NC Act aims to conserve nature in Queensland, while allowing for the involvement of Indigenous people in the management of protected areas in which they have an interest under Aboriginal tradition or Island custom. The NC Act provides for the protection of wildlife, including threatened species, and areas of conservation significance. The *Nature Conservation (Animals) Regulation 2020* and the *Nature Conservation (Plants) Regulation 2020* prescribes particular species in accordance with the categories set out in the Act. It is an offence to take protected wildlife without a licence, permit or other authority (section 320). It is also an offence for a person, without a reasonable excuse, to tamper with an animal breeding place

Legislative Act	Brief Description
	being used by a protected animal to incubate or rear offspring (section 335*, Nature Conservation (Animals) Regulation 2020)*.
Environmental Offsets Act 2014	The Environmental Offsets Framework streamlines environmental offsets by providing an outcome-based approach to offsets, removing the complexities and by aligning offsets across all three levels of government. The framework includes: • *Environmental Offsets Act 2014* which coordinates the delivery of environmental offsets across jurisdictions is the overarching legislation for offsets in Queensland. • *Environmental Offsets Regulation 2014* which provides details of the prescribed activities regulated under existing legislation and prescribed environmental matters to which the Act applies, and • Queensland Environmental Offsets Policy which provides a single, consistent, whole-of-government policy for the assessment of offset proposals provided by authority holders to satisfy offset conditions. The Environmental Offsets Policy provides greater flexibility in relation to how offsets can be delivered including: • Financial settlement calculated using the Financial Settlement Offset Calculator. • Land-based offsets. • Offsets delivered as actions in a Direct Benefit Management Plan. • Or a combination of these approaches, and • Where offset conditions specify, staged offsets can also be delivered. The policy also introduces a more strategic approach to offset delivery through the introduction of Strategic Offset Investment Corridors and Direct Benefit Management Plans (DBMP). This more strategic approach is intended to lead to greater benefits for the environment and will provide more opportunities for landholders to receive income in return for voluntarily agreeing to manage their land, or part of their land, as an offset.
Environmental Protection Act 1994	The EP Act protects environmental values through development and implementation of environmental protection policies and regulates environmentally relevant activities (ERAs) as prescribed in the *Environmental Protection Regulation 2019* (EP Regulation). Pursuant to the EP Act, an application for an environmental authority (EA) requires an assessment of the likelihood of impacts from an ERA on environmental values. These can include: • Category A and category B environmentally sensitive areas (ESAs) as defined under Schedule 19 of the *Environmental Protection Regulation 2019* (EP Regulation). • Category C ESAs where defined in a relevant model conditions document or ERA standard, and • Matters of State environmental significance (MSES) as defined in Schedule 2 of the *Environmental Offsets Regulation 2014* (EO Regulation).
Environmental Protection Regulation 2019 (EP Regulation)	Prescribes the detail for processes contained in the EP Act, including a list of 'prescribed ERAs' which are regulated under the EP Act.
Environmental Protection (Water and Wetland Biodiversity) Policy 2019 (EPP Water & Wetlands)	The EPP Water & Wetlands specifies environmental values for waters and wetlands and management goals, water quality guidelines for water to be enhanced or protected.
Fisheries Act 1994 (Fisheries Act)	The *Fisheries Act 1994 (*Fisheries Act*)* provides for the use, conservation, and enhancement of Queensland's fisheries resources by providing for, amongst other things, the protection of fish habitat and marine plants. The Fisheries Act has been integrated into the *Planning Act 2016* (Planning Act) so that development permits under the Planning Act are required for certain operational works that are assessable development under the Planning Act. Operational works relating to Fisheries Act matters that are assessable development under the Planning Act include waterway barrier works and works in a declared fish habitat.

Legislative Act	Brief Description
Vegetation Management Act 1999	The VM Act is the planning initiative underlying regional management of vegetation in Queensland, including clearing of vegetation types, termed Regional Ecosystems (REs). • The RE classification is a hierarchical system formed by a three-part code with the primary subdivision being bioregion, followed by land zone, and then vegetation. The biogeographic region or bioregion is the primary level of classification for biodiversity values in Queensland describing where the RE is found on a state-wide basis. Land Zones are geological and geomorphic categories that describe the major geologies and landforms of Queensland. The system is based primarily on geology, with geologic age considered an important determinant. • The status of REs is based on their pre-clearing and remnant extent, and is gazetted under the Act and listed in the RE Description Database (REDD) maintained by the DES, and • The Act aims to conserve remnant endangered and of concern REs, prevent land degradation and further loss of biodiversity, manage the environmental impacts of clearing vegetation, and reduce the emissions of greenhouse gases. The VMA status of an RE is described in line with the following: - Endangered. An RE that is prescribed under the regulation and has either of the following attributes: ▪ Less than 10% of its pre-clearing extent remaining, and ▪ From 10% to 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha. - Of concern. An RE that is prescribed under the regulation and has either of the following attributes: ▪ From 10% to 30% of its pre-clearing extent remaining, and ▪ More than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is less than 10,000 ha. - Least concern. An RE that is prescribed under the regulation and has more than 30% of its pre-clearing extent remaining and the remnant vegetation remaining is more than 10,000 ha. - The biodiversity status of an RE is classified by DES based on the condition of remnant vegetation. A RE will have a vegetation management status and/or a biodiversity status of endangered, of concern or least concern, and - Essential Habitat. The VMA also has provision for the regulation of essential habitat for species of state significance. Essential habitat (mapped by DES) is vegetation in which a listed species has been known to occur. Clearing or disturbance to areas of essential habitat will require compensatory habitat measures to be developed. For the project development area, core habitat has been used to describe the combination of critical or essential habitat for both national or state listed significant species.

3 Methodology

3.1 Assessment Area

The Assessment Area is the Proposed Disturbance Footprint which occupies 2.67 ha and consists of the following:

- Fifty-six 20m x 20m drill pads
- Approximately 1.23 km of exploration access tracks (3.5 m width).

The Disturbance Footprint area is summarised in Table 2 and presented spatially in Figure 1.

The Assessment also considered MNES and MSES within 100 m of the Disturbance Footprint.

Table 2: Proposed Disturbance Footprint Areas

Proposed Disturbance Component	Quantity	Area (ha)
Drill Pads	56 pads	2.24
Exploration Access Tracks	1.23 km	0.43
Total		2.67

REFER INSET 2

REFER INSET 1

1 : 100,000 0 1 2 3 4 km

INSET 1

1 : 7,000 0 100 200 300 m

INSET 2

1 : 16,000 0 250 500 750 m

Terra SOLUTIONS

FIGURE 1: PROJECT LOCATION AND LAYOUT

LEGEND:

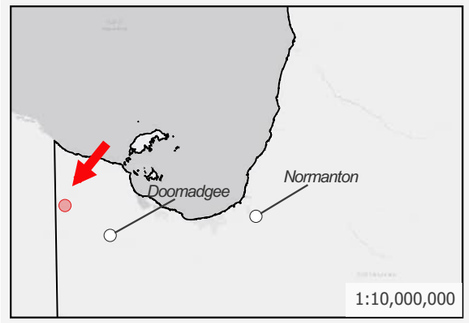
- Existing Access Tracks
- Mineral Development License Application Area

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads



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AUTHOR: A LEURQUIN
COORDINATE SYSTEM: GDA2020 / MGA zone 54

3.2 Desktop Assessment

The desktop assessment included a review of existing background material including, but not limited to, existing environmental assessments, relevant environmental documents, databases, scientific journals, books, technical reports, maps and legislation (Commonwealth and State) to identify the environmental values that potentially occur within the Disturbance Footprint. The review included an assessment of the following information:

- Aerial photograph interpretation (API) to determine the broad categorisation of vegetation within and surrounding the site and to review the extent of historical clearing and land use and any other significant environmental features such as watercourses and wetlands (Queensland Globe, 2025).
- Vegetation mapping including:
    - Regulated vegetation management map -version 7.07.
    - Detailed surface geology
    - Vegetation management regional ecosystems map - version 13.00 (Figure 4 and Figure 5).
    - Vegetation management essential habitat map - version 12.07.
    - Vegetation management wetlands map - version 9.07, and
    - Vegetation management watercourses and drainage feature map (version 7.01).
- Groundwater Dependent Ecosystems Atlas (Bureau of Meteorology, 2024).
- WetlandInfo (DESI, 2016).
- Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool (Appendix A) – 50 km buffer applied to the MDL.
- DETSI WildNet Database of flora and fauna (Appendix B). Searches used a 50 km buffer from a centralised point of the MDL and included all records from all dates available.
- Atlas of Living Australia species records (ALA, 2024).
- Vegetation Management Report for Lot 1 on Plan CP887914 (Appendix C).
- Modelled Potential Habitat Report (Appendix D).
- Department of Agriculture and Fisheries (DAF) Queensland waterways for waterway barrier works (spatial layer).
- State Planning Policy (SPP) Interactive Mapping System (IMS), and
- Department of Regional Development, Manufacturing and Water (DRDMW) Watercourse Identification Map.

Previous ecological reporting undertaken for the Project by Golder (2009) and MET Serve (2011a, 2011b) were also reviewed.

3.3 Field Assessment

3.3.1 Survey Timing & Qualifications

A field assessment of the MDL was undertaken from 26 September – 2 October 2024 by Senior Ecologist Lochlan Jones and Principal Botanist Delwyn Windridge. This included the Proposed Disturbance Areas

Delwyn Windridge is a Botanist/Ecologist and environmental consultant with over 15 years' experience in the environmental sector within Queensland. She is highly experienced in ecological survey and assessment and is a specialist in plant identification and regional ecosystem assessments.

Lochlan Jones is an Ecologist and environmental consultant with over 5 years of experience in field ecological surveys and assessments.

3.3.2 Vegetation Assessment & Regional Ecosystem Mapping

The vegetation assessment consisted of field validation of Category B ESA and mapped 'Of Concern' regional ecosystems (RE) within the proposed exploration areas of the MDL. Effort was given to delineating Endangered and Of Concern vegetation RE's and riparian vegetation. Assessments used quaternary survey methods in accordance with the *Methodology for Survey and Mapping of Regional Ecosystems and Vegetation Communities in Queensland*

(Neldner et al., 2023). Inaccessible areas were assessed via helicopter to supplement on ground-based field data and support subsequent aerial photograph interpretation when mapping vegetation communities.

The following data collected during the tertiary vegetation assessment was used to develop field verified RE mapping:

- Land zone, geology and soil data.
- Comprehensive (dry season) species list by strata and dominance.
- Median height of each stratum, and
- Cover/density of each stratum.

1:25,000 scale mapping was prepared using a combination aerial photograph interpretation, helicopter surveys and tertiary and quaternary assessments of vegetation communities and geological features.

3.3.3 Rapid Habitat Assessments

Rapid habitat assessments were performed at 33 sites across the MDL, including four sites in proximity to the Proposed Disturbance Footprint, to determine habitat suitability for threatened species. A numerical score from 0 - 7 indicating scarcity (lower values) or abundance (higher values) was assigned for the following habitat features:

- Hollow-bearing tree.
- Hollow logs.
- Decorticating bark.
- Coarse litter (>2 cm).
- Fine litter (<2 cm).
- Bare ground.
- Soil cracks.
- Boulders (<2 m).
- Large boulders (>2 m).
- Rock crevices, and
- Exfoliating rock.

Qualitative notes were recorded for the following habitat attributes:

- Shrub layer density.
- Presence of Gouldian finch grass forage species.
- Trees present (i.e. size, dominant species).
- Presence of permanent water.
- Presence of spinifex grass.
- Presence of rainforest or vine-thicket, and
- Other general observations.

3.3.4 Opportunistic Surveys

A variety of methods were employed to search for fauna opportunistically. These included acoustic bird surveys (bird call recognition to detect species), active searches for reptiles (e.g. turning over rocks and logs, scanning potential basking sites with binoculars), and scanning roads for crossing fauna while traversing the site.

3.4 Likelihood of Occurrence Assessment

Following completion of the assessment, a likelihood of occurrence assessment was completed based on the condition and availability of habitat confirmed to be present in the Disturbance Footprint. The likelihood of occurrence assessment utilised the following criteria to determine likelihood for each species.

Unlikely: Negligible or very low probability of occurrence within the Project Area. There are no official records in the search area and habitat on the site is unsuitable or significantly degraded and/or marginal. Includes circumstances where the site is unlikely to occur within the natural range of the species.

Possible: The species has been recorded within the extent of desktop searches and habitat is moderately suitable. This category may apply where a species is genuinely rare (i.e. rarely present even within habitat that is highly suitable in every respect) and suitable habitat in good condition is present; or the species was not recorded within the extent of desktop searches but occurs in the general geographical area and suitable habitat in good condition is present.

Likely: The species has been recorded in habitat adjacent to the project area and habitat within the project area is highly suitable/similar. Includes situations where habitat within the project area is considered highly suitable (but not marginally suitable) and there is ecological connectivity with habitat containing a species record off-site but within the desktop search extent.

Present: Species observed through direct observation within or immediately adjacent to the site.

3.5 Limitations

Whilst the level of assessment is considered suitable for the proposed impact extent, timeframe and rehabilitation efforts, the following limitations of the field survey are noted:

- The scope of the field assessment included the MDL, a substantially larger area than the proposed Disturbance Footprint.
- The scope of the assessment did not include systematic targeted surveys for threatened fauna.
- Night work was out of scope for the assessment. The species recorded will reflect those that are most easily detected during the day and will not include strictly nocturnal species.
- The southernmost drill pads and tracks were inaccessible on foot due to access constraints associated with the cultural heritage exclusion zones. These areas were instead assessed at a broad scale aerially via a helicopter.
- Detection and identification of out-of-season annual plant species was limited due the timing of survey in the late-dry/early wet season. An annual conservation significant species with potential to occur in the Disturbance Footprint, *Trachymene glandulosa*, was out of season at the time of the assessment.

4 Existing Environment

4.1 Matters of Environmental Significance & Environmentally Sensitive Areas

Searches were undertaken Matters of State Environmental Significance (MSES) (Appendix E), Matters of National Environmental Significance (MNES) (Appendix A) and Environmentally Sensitive Areas (ESA) (Appendix L) that are either mapped within the Disturbance Footprint or that have been modelled to occur. A summary of identified matters are presented in Table 3.

Table 3: Desktop Summary of Matters of National & State Environmental Significance

Matter	Description	Site Constraints
Matters of National Environmental Significance (50 km)		
World Heritage Properties	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
National Heritage Properties	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
Wetlands of International Importance (Ramsar Wetlands)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
Great Barrier Reef Marine Park (GBRMP)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
Commonwealth Marine Area	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
Threatened ecological communities (TEC)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
Listed threatened species	23 potentially occurring threatened species consisting of: • No flora species. • Five reptiles. • 11 birds. • Six mammals, and • One shark.	Section 4.6.1 Significant Residual Impact Assessment provided in Section 5.3.
Listed migratory species	17 potentially occurring listed migratory species consisting of: • 15 birds. • One reptile, and • One shark.	Section 4.6.1
Matters of State Environmental Significance		
1a Protected areas - Estates	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
1b Protected areas - Nature refuges	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.

Matter	Description	Site Constraints
1c Protected areas - Special wildlife reserves	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
2 State marine parks – highly protected zones	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
3 Fish habitat areas (A and B areas)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
4. Strategic environmental areas (SEA) – Designated precinct	The Project is located within the Strategic Environmental Area for the Gulf Rivers Strategic Environmental Area designated precinct	An application for a Regional Interest Development Application is in progress.
5 High ecological significance wetlands on the Map of Referable Wetlands	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
6a High Ecological Value (HEV) wetlands	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
6b High Ecological Value (HEV) Watercourses	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
7a Wildlife habitat - Endangered or Vulnerable wildlife	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
7b Wildlife habitat – Special least concern animal	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
8a Regulated Vegetation - Endangered/Of Concern in Category B (remnant)	0.836 ha of Category B 'Of Concern' vegetation is mapped within the Disturbance Footprint (State Mapping).	Section 4.4.1.1 Significant Residual Impact Assessment provided in Section 5.1.1.
8b Regulated Vegetation - Endangered/Of Concern in Category C (regrowth)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
8c Regulated Vegetation - Category R (GBR riverine regrowth)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
8d Regulated Vegetation - Essential habitat	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
8e Regulated Vegetation - intersecting a watercourse	Approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the Disturbance Footprint.	Section 4.4.1.2. Significant Residual Impact Assessment provided in Section 5.1.2.
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
9a Legally secured offset areas- offset register areas	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.

Matter	Description	Site Constraints
9b Legally secured offset areas-vegetation offsets through a Property Map of Assessable Vegetation	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
10. Marine plants	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
11a. Fish waterways for water barrier works (stream)	One crossing.	One crossing present. Approvals unlikely to be necessary with adherence to accepted development requirements. Significant Residual Impact Assessment provided in Section 5.2
11b. Fish waterways for water barrier works (estuaries)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
12. Protected plants (high risk trigger)	None present	Not present, no approvals likely to be necessary and no further assessment undertaken.
13. Connectivity areas	Local area largely intact and well connected.	No approvals likely to be necessary and no further assessment undertaken.
Environmentally Sensitive Areas (ESAs) – Mining Activities		
Category A ESA	None present	No approvals likely to be necessary and no further assessment undertaken.
Category B ESA	Field-verified regional ecosystems with an 'Endangered' biodiversity status occur nearby proposed Disturbance.	Not present in State mapping. Endangered RE 1.3.7g confirmed to occur within 500 m of proposed Disturbance via field-verification.
Category C ESA	Present	MSES present.

4.2 Regional Climate

Climate data for the site was obtained from nearby weather stations: Westmoreland (29069) (1965-2024 daily rainfall data) and Wollogorang (14707) (minimum and maximum daily temperatures 1974-2015). The Westmoreland station is located approximately 19 km northwest of Hells Gate, Queensland and Wollogorang station is located approximately 53 km northwest. The Hells Gate region is seasonally wet-dry with wet conditions from November – March with hot average maximum temperatures in the mid-high thirties and slightly cooler, dry conditions between April – October with average maximum temperatures in the high twenties. Average annual rainfall is 944 mm where rain events tend to be short and intense, commonly resulting in flash flooding (Figure 2).

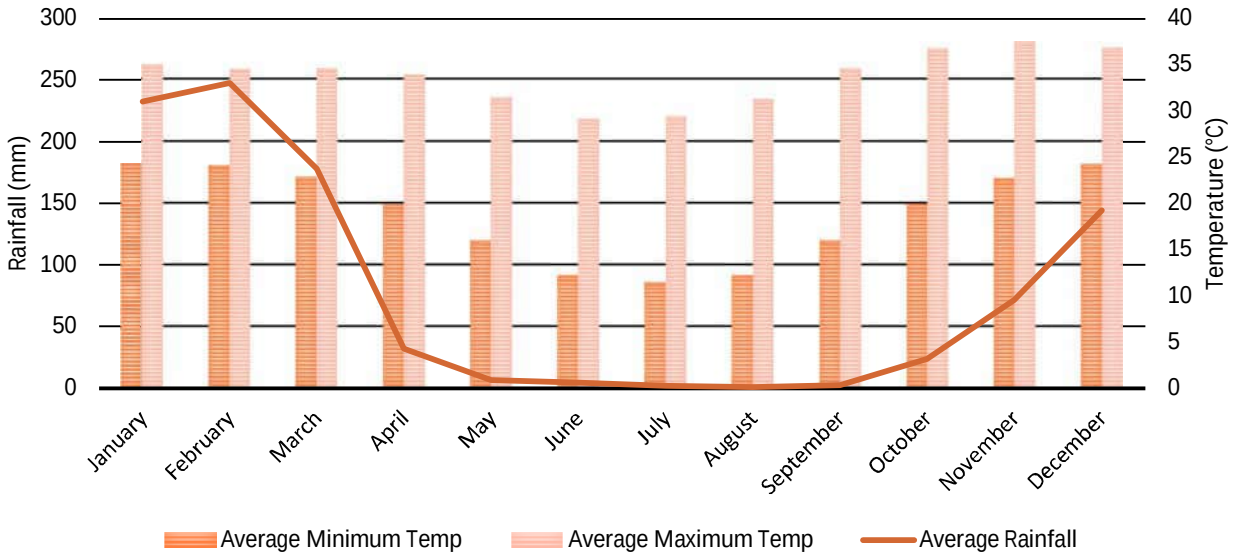

Figure 2: Available Climate Data from Nearby Weather Stations Westmoreland (29069) (1965-2024 Daily Rainfall Data) & Wollogorang (14707) (Minimum and Maximum Daily Temperatures 1974-2015)

4.3 Geology

The *Detailed geology (surface) - Queensland* 1:100,000 mapping indicates that the MDL area is dominated by remnant Paleoproterozoic (circa 1790 Ma (Lagoon Creek Resources Pty Ltd, 2007) sandstone of the Westmoreland Conglomerate. The Westmoreland Conglomerate overlies the Cliffdale Volcanics (1840-1800 Ma) and consists of massive, medium-grained and coarse-grained pebbly and cobbly sandstones. Felsic and quartz intrusions within highly weathered areas of the Westmoreland Conglomerate are mapped as units of the Seigal Volcanics (circa 1680 Ma). Small areas among the Westmoreland Conglomerate are mapped as Mullaman Beds of the late Jurassic, early cretaceous. Areas in the northern half of the MDL area are more recent Pleistocene and Quarternary alluvials.

The Disturbance Footprint occurs over three geological units (Table 4) of which the most predominant are Pleistocene alluvials Qpa-QLD

Table 4: Mapped Detailed Surface Geology of the Disturbance Footprint

Map Symbol	Rock Unit Name	Lithological Summary	Dominant Rock	Rock Type & Age
PLtw/3	Westmoreland Conglomerate/3	Coarse-grained, pebbly and cobbly sandstone with numerous cobble and boulder conglomerate lenses	Arenite-rudite	Stratified unit (including volcanic and metamorphic) Paleoproterozoic (circa 1790 Ma)
PLtw/4	Westmoreland Conglomerate/4	Medium to coarse-grained sandstone with scattered pebbles; conglomerate lenses	Arenite	Stratified unit (including volcanic and metamorphic) Paleoproterozoic (circa 1790 Ma)
Qpa	Qpa-QLD	Clay, silt, sand and gravel; flood-plain alluvium on high terraces	Alluvium	Stratified unit (including volcanic and metamorphic) Pleistocene (10,000 y -2.5 mya)

4.4 Vegetation

4.4.1 Regulated Vegetation

4.4.1.1 Category B Regulated Vegetation

The Disturbance Footprint is mapped as Category B remnant vegetation (Figure 3). Of the total 2.67 hectares, 0.84 ha is mapped as 'of concern' under the *Vegetation Management Act 1999* (VM Act) (Table 5, Map 4.1 of Appendix C). Of concern REs are MSES and impacts to these vegetation communities will an require assessment for significant residual impacts under the EO Act unless classified as exempt under the existing exploration permit.

Table 5: Mapped Regulated Vegetation Within the Disturbance Footprint

Vegetation Category	VM Act Class	Biodiversity Status	Total Area (ha)
Category B	Remnant - Of Concern	Of Concern	0.84
Category B	Remnant - Least Concern	Least Concern	1.83
Total			2.67

4.4.1.2 Regulated Vegetation - Intersecting a Watercourse

Vegetation management watercourse and drainage feature map – Version 7.01 (Figure 3) indicates that Regulated Vegetation – intersecting a watercourse is present within the Disturbance Footprint. Approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the Disturbance Footprint.

4.4.2 Regional Ecosystems

The Regional Ecosystems (RE) classification system describes vegetation communities in a bioregion that show consistent associations with geology, landform and soil (Neldner et al., 2023). The framework uses a three-part code to classify a community firstly by bioregion, then land zone (i.e. geology and landform) and then vegetation community. Vegetation communities are defined by representative species in the ecologically dominant layer (Neldner, V.J. et al., 2019).

The Project Footprint is located within the Northwest Highlands (NWH) bioregion, a geologically complex region that includes eroded sandstone platforms (land zone 10), limestone karsts (land zone 9), dissected metamorphic (land zone 11) and volcanic rocky hills (land zone 12) and associated Cainozoic duricrusts (land zone 7)(DES, 2020).

The *Vegetation management regional ecosystem map – Version 13.00* (Table 6, Figure 3 to Figure 5) indicates that five REs occur within the Disturbance Footprint.

RE 1.10.9: *Acacia spp.* and/or *Calytrix exstipulata* open shrubland on rock pavement, also has a VM Act class and BD status of 'of concern' (RE) and is therefore defined a prescribed regional ecosystem and a Matter of State Environmental Significance (MSES) in accordance with Schedule 2 of the *Environmental Offsets Regulation 2014* (EO Regulation). As this community is mapped as a heterogeneous polygon, broad-scale analysis using multispectral imagery would enable further refinement of the mapping and quantify potential impacts to this community.

Table 6: Mapped RE Polygons Within the Disturbance Footprint

RE	VM Status	Biodiversity Status	Class	Area (ha)
1.10.3x2/1.7.7b	L/L	NC/NC	Remnant	0.227
1.10.9/1.10.2	O/L	OC/NC	Remnant	0.836
1.5.11/1.7.7b	L/L	NC/NC	Remnant	1.603
Total				2.67

Table 7: Descriptions of Regional Ecosystems (V13.00) Mapped Within the Disturbance Footprint (Queensland Herbarium, 2024)

Regional Ecosystem	VM Status	BD Status	Short Description	Description	Special Values
1.5.11	Least concern	No concern at present	*Melaleuca citrolens* and/or *Eucalyptus pruinosa* low open woodland on sandy plains	*Melaleuca citrolens* and/or *Eucalyptus pruinosa* low open woodland often with *Melaleuca viridiflora* and occasional *Melaleuca stenostachya* with a mixed shrub layer of *Petalostigma banksii*, *Carissa lanceolata* and *Acacia spp.* over a ground layer of *Triodia pungens*. Occurs on small tertiary sandplains. Not a Wetland. (BVG1M: 21b).	N/A
1.7.7b	Least concern	No concern at present	*Corymbia capricornia* +/- *Eucalyptus leucophloia* or *E. miniata* low open woodland on silcrete	1.7.7b: *Corymbia capricornia* and/or *Eucalyptus miniata* low open woodland often with *Eucalyptus herbertiana*, *Eucalyptus leucophloia* and/or *Corymbia ferruginea*. *Eucalyptus tetrodonta* may be present in the far north. A second tree layer of *Terminalia canescens* may be present. The shrub layer is mixed and includes *Petalostigma quadriloculare, Grevillea dryandri, Terminalia canescens* and *Acacia calligera*. Ground layer of *Triodia spp.* and tussock grasses. Occurs on silcrete and lateritic surfaces. Not a Wetland. (BVG1M: 19a).	1.7.7: Potential habitat for NCA listed species: *Ipomoea antonschmidii*.
1.10.2	Least concern	No concern at present	*Eucalyptus miniata* woodland on sandstone plateaus	*Eucalyptus miniata* woodland, usually *with Corymbia aspera*, *Eucalyptus herbertiana*, *C. capricornia*, *Owenia vernicosa* and *Acacia plectocarpa subsp. tanumbirinensis*. *Melaleuca spp.* often present where drainage restricted. Triodia spp. understorey. Occurs on plateaus on pre-Cambrian sandstones and conglomerates, and on interbedded acid volcanics; shallow gravels and sands and skeletal soils. Not a Wetland. (BVG1M: 14b).	
1.10.3x2	Least concern	No concern at present	*Corymbia aspera* low open woodland on rocky soils	1.10.3x2: Shrubby low open woodland of *Corymbia capricornia*. Occasional *C. aspera* and *Terminalia aridicola*. Acacias usually prominent. Ground cover of *Triodia spp.* And annual grasses. Occurs on residual plateaus and scarps on horizontal or gently deformed sandstones and conglomerates; skeletal soils, minor shallow sands. Not a Wetland. (BVG1M: 19a).	1.10.3: Potential habitat for NCA listed species: *Solanum carduiforme*.
1.10.9	Of concern	Of concern	*Acacia spp.* and/or *Calytrix exstipulata* open shrubland on rock pavement	*Acacia spp.* and/or *Calytrix exstipulata* open shrubland on rock pavement with emergent *Corymbia aspera* and/or *Eucalyptus herbertiana* and ground layer of *Triodia spp.* Occurs on exposed rock on plateau edges of pre-Cambrian sandstones and conglomerates. Not a Wetland. (BVG1M: 29b).	N/A

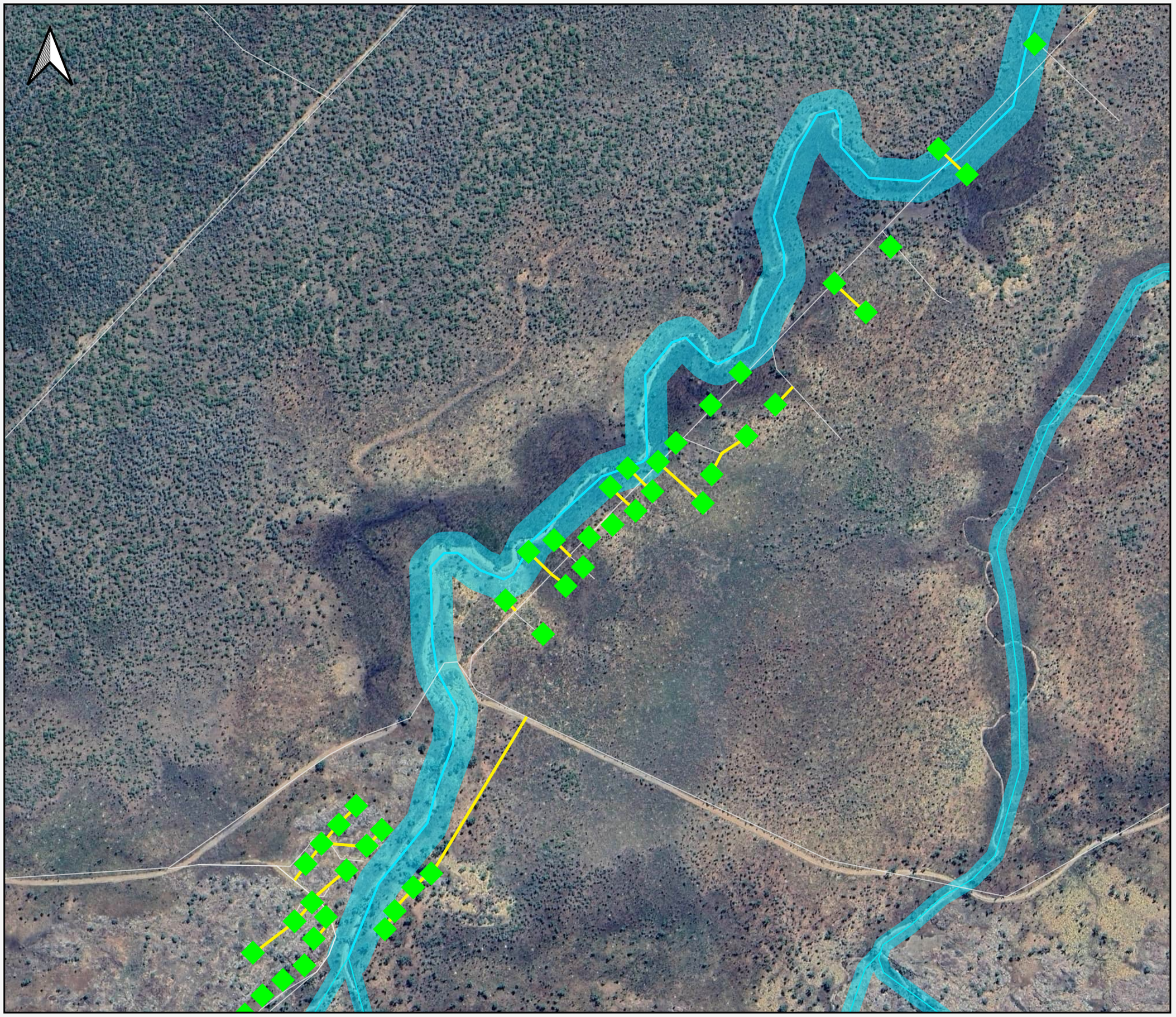

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FIGURE 3: REGULATED VEGETATION INTERSECTING A WATERCOURSE

0 50 100 150 200 m
1:4,000

LEGEND:

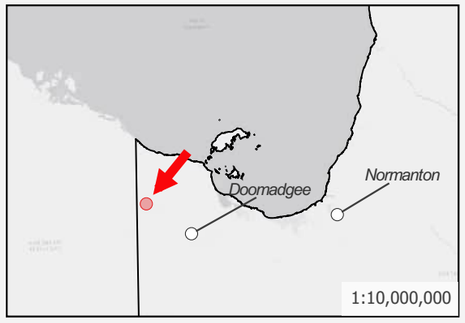
- Existing Access Tracks

Vegetation Management Watercourses

- Stream Order 1-2
- Stream Order 3-4
- Defined Distance Watercourse Buffer

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads



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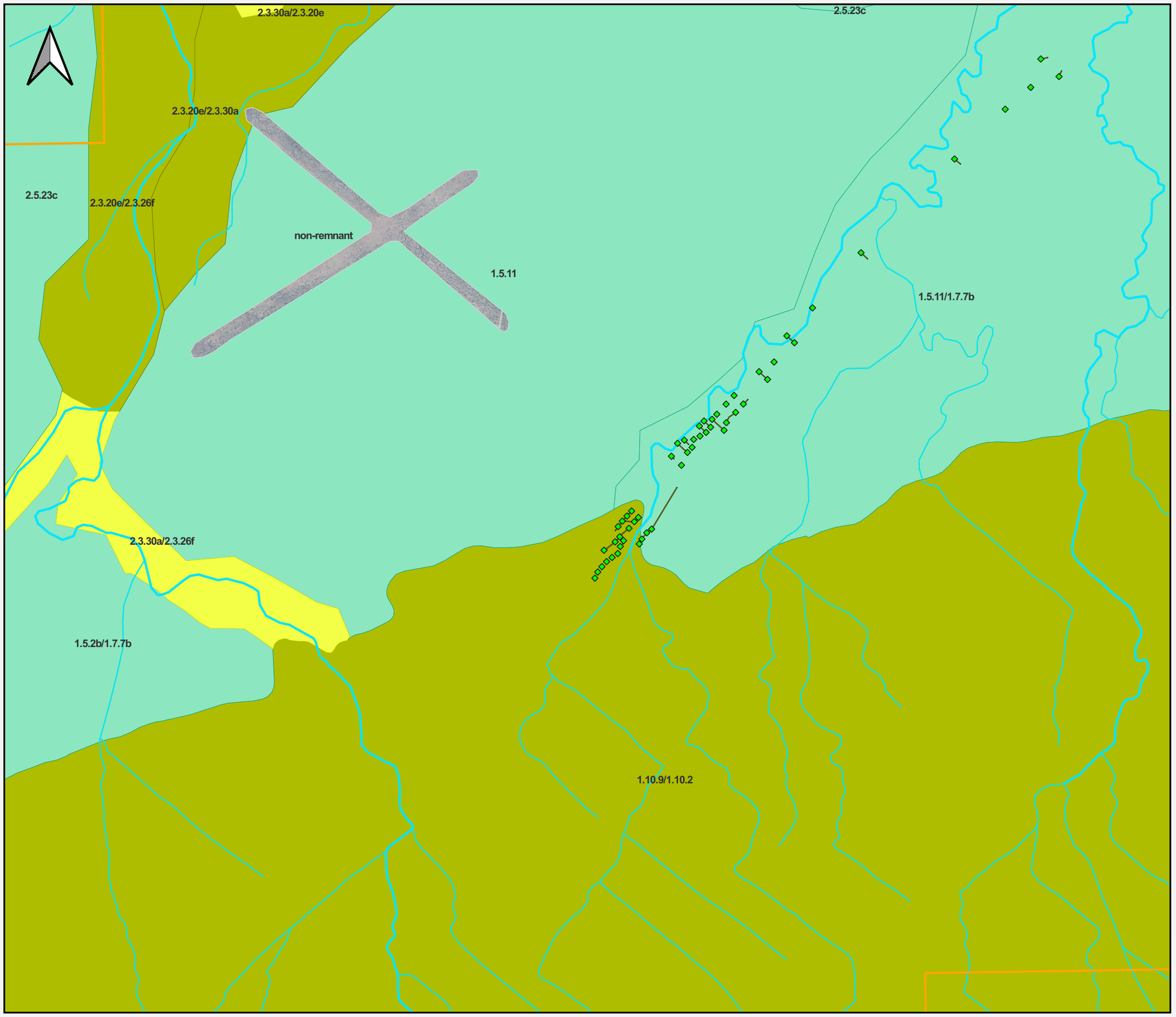

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FIGURE 4: REGIONAL ECOSYSTEM MAPPING (VERSION 13.00) - PART A

0 200 400 600 800 m

1:15,000

LEGEND:

- Mineral Development License Application Area

Proposed Disturbance Footprint

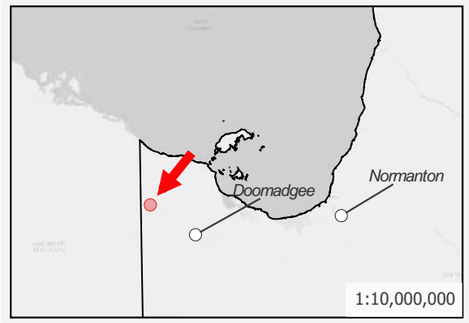
- Exploration Access
- Drill Pads

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4

Vegetation Management Regional Ecosystems (Biodiversity Status)

- Of Concern - Dominant
- Of Concern - Sub-dominant
- No concern at present
- Non-remnant vegetation, cultivated or built environment



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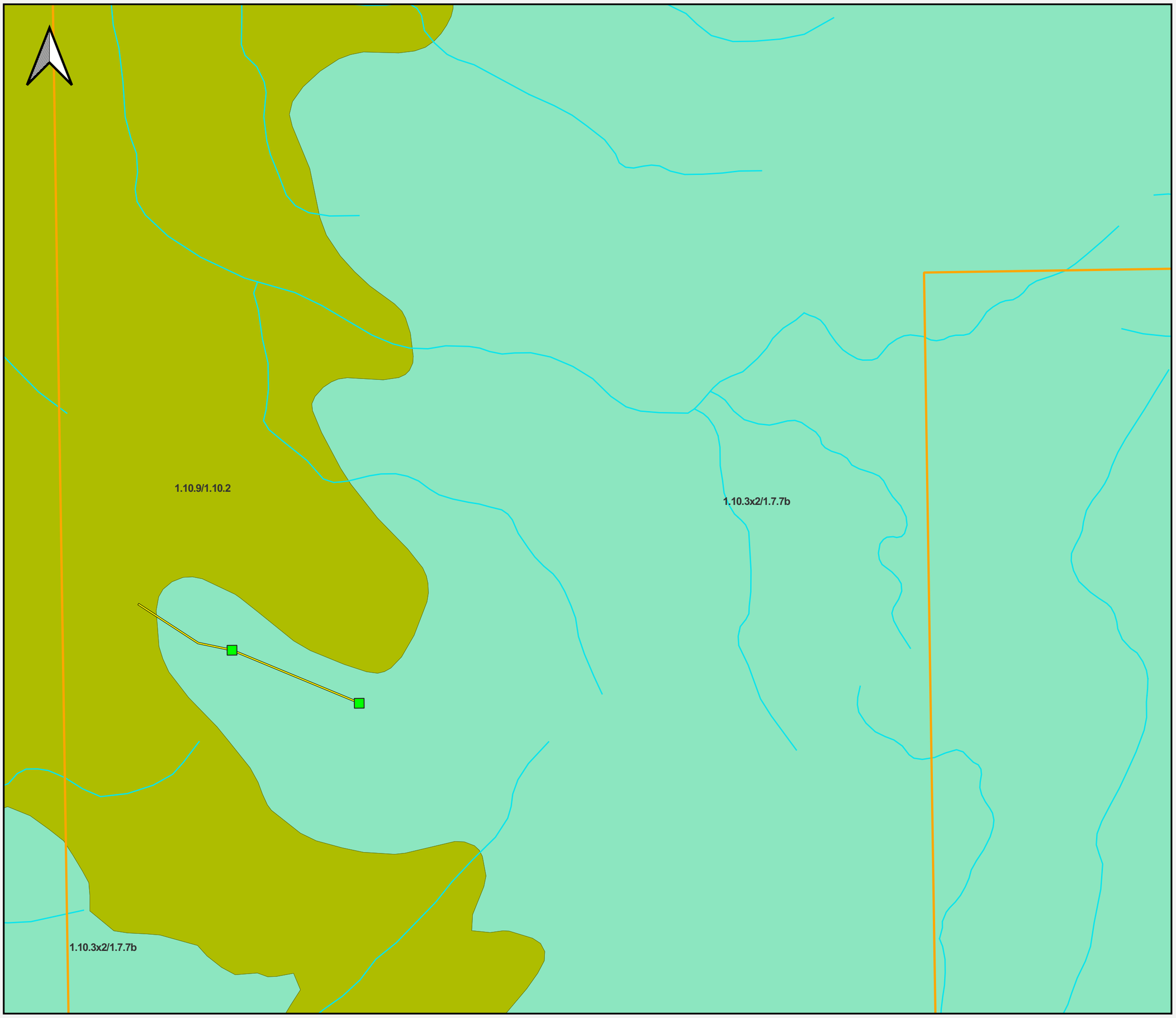


Terra SOLUTIONS

FIGURE 5: REGIONAL ECOSYSTEM MAPPING (VERSION 13.00) - PART B

0 100 200 300 400 m

1:7,000

LEGEND:

- Mineral Development License Application Area

Proposed Disturbance Footprint

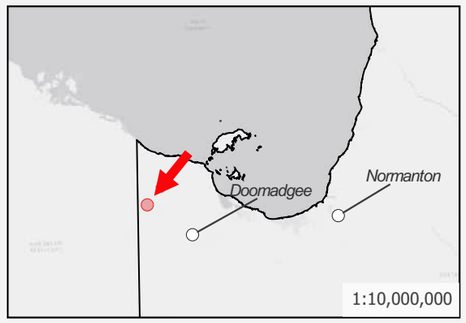
- Exploration Access
- Drill Pads

Vegetation Management Regional Ecosystems (Biodiversity Status)

- Of Concern - Dominant
- No concern at present

Vegetation Management Watercourses

- Stream Order 1 - 2



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4.4.2.1 Field-verified Regional Ecosystems

Table 8 provides a breakdown of the field-verified regional ecosystems within the Disturbance Footprint. As assessments were limited to accessible areas, those vegetation communities that were complex at a large scale were retained as mapped as heterogeneous communities.

The majority of the Disturbance Footprint contained the heterogenous least concern community 1.5.11/1.3.5 and the least concern RE 1.10.2.

The 'Of concern' (Biodiversity Status) RE 1.10.9: *Acacia spp.* and/or *Calytrix exstipulata* open shrubland on rock pavement was confirmed as present (albeit marginally, 0.004 ha) in the Disturbance Footprint. RE 1.10.9 which is also 'of concern' under the VM Act and defined as a prescribed regional ecosystem and a Matter of State Environmental Significance (MSES) in accordance with Schedule 2 of the Environmental Offsets Regulation 2014 (EO Regulations) (see Section 5.1.1).

The riparian community associated with the mapped drainage line that occurs in proximity to the Disturbance Footprint was found to be consistent with the REDD description for RE 1.3.7g, although the RE is reduced in extent to within two to five metres of the high banks. RE 1.3.7 has a *Vegetation Management Act 1999* (VM Act) class of 'least concern' and therefore would not require an offset under the *Environmental Offsets Act 2014* (EO Act). However, RE 1.3.7 has a BD Status of 'Endangered' due to its importance as seasonal water bird habitat, as regional corridors for fauna and due to severe degradation by high total grazing pressure. It is listed as Category B Environmentally Sensitive Area (ESA) under Schedule 19 of the Environmental Protection Regulation 2019 (EP Regulation). While this RE does not overlap the Disturbance Footprint, it has been mapped to better delineate the RE boundaries due to its status as a Category B ESA.

Interrogation of available Satellite imagery was undertaken to assess the importance of this area as seasonal water bird habitat. Whilst other ephemeral water bodies were found to persist in the nearby areas in January, the drainage feature in question was dry indicating that it is unlikely to hold seasonal waterbird habitat value.

Local representation for each of these REs is provided in Table 9 and shown spatially in Figure 6 and Figure 7.

Table 8: Field Verified Regional Ecosystems (90% Confidence) for the Disturbance Footprint

Regional Ecosystem	VM Act Class	BD Status	Percentage	Descriptions*	Total Area (ha)
1.5.11/1.3.5	LC/LC	NC/NC	70/30, 80/20	See RE descriptions	1.646
1.10.2	LC	NC	100	*Eucalyptus miniata* woodland on sandstone plateaus	0.774
1.10.3/1.7.7a	LC/LC	NC/NC	65/35	*Corymbia aspera* low open woodland on rocky soils/See 1.7.7a	0.243
1.10.9	OC	OC	100	*Acacia* spp. and/or *Calytrix exstipulata* open shrubland on rock pavement	0.004
Total					2.667

* REDD – Version 13.1

Table 9: Local Community Representation of Regional Ecosystems

RE	Regional Ecosystem Description	Local Community Representation	Representative Image
1.3.5 VMA – LC. BDS – NC	Variable open woodland to open forest that may include *Corymbia polycarpa*, *Eucalyptus leucophylla*, *C. bella* and *C. grandifolia* over annual and perennial grasses. Associates include *Lysiphyllum cunninghamii, Hakea arborescens, Eucalyptus pruinosa* and *Melaleuca viridiflora*. Occurs on sandy levees associated with major watercourses in the north of the bioregion. Riverine. (BVG1M: 19b).	Common in complex representation around watercourses associated with REs 1.7.7 and 1.10.2 Open mixed Eucalypt woodland surrounding medium to large watercourses on sandy soils. A subcanopy of *Acacia torulosa* present at times and a *Grevillea* and *Acacia* spp. shrub layer commonly thickened closer to watercourse. Grassy ground layer dominated by *Heteropogon contorus* and *Triodia pungens* common T1: (Ht: 9-14 m, median 12 m) Dom.– *Corymbia polycarpa, C. ferruginea, Blakella confertiflora, B. bella.* Ass. – *Eucalyptus camaldulensis.* T2: Dom. – *Acacia torulosa.* Assoc. - *Melaleuca nervosa, Erythrophleum chlorostachys, Lysiphyllum cunninghamii.* Sh: Dom.- *Grevillea refracta, G.pteridifolia, Acacia dimidiata, A tropica, A hammondii.* GL: Dom. *Heteropogon contortus, Triodia pungens.* Ass. – *Panicum seminudum, Schizachyrium fragile.* Sites: LCV	
1.3.7g VMA – LC. BDS – End	1.3.7g: *Eucalyptus camaldulensis* woodland often with *Corymbia capricornia* and *Eucalyptus miniata* with a mixed shrub layer in which *Melaleuca viridiflora* is prominent. Ground layer of tussock grasses and Triodia spp. Occurs on watercourses in gorges in pre-Cambrian sandstone formations. Riverine. (BVG1M: 16a).	Restricted to areas within 1 to several meters of an ephemeral watercourse nearby the Disturbance Footprint within surrounding low, wide sandstone gorge. Very open to semi-closed *Eucalyptus camaldulensis* woodland fringing shallow ephemeral watercourses. Shrub layer typically dense and dominated by Acacia and Grevillea spp. Ground layer sparse to moderate and typically dominated by Arundinella setosa. T1: (Ht: 9-14 m, median 12 m) Dom.- *Eucalyptus camaldulensis.* Ass. *Corymbia capricornia.* T2: *Melaleuca nervosa,* Sh: Dom.- *Grevillea refracta, G.pteridifolia, Acacia neurocarpa, Bossiaea bossiaeoides, Petalostigma quadriloculare.*	

RE	Regional Ecosystem Description	Local Community Representation	Representative Image
		GL: Dom. *Arundinella setosa*	
1.5.11 VMA – LC. BDS – NC	Melaleuca citrolens and/or Eucalyptus pruinosa low open woodland often with Melaleuca viridiflora and occasional Melaleuca stenostachya with a mixed shrub layer of Petalostigma banksii, Carissa lanceolata and Acacia spp. over a ground layer of Triodia pungens. Occurs on small tertiary sandplains. Not a Wetland. (BVG1M: 21b).	Common throughout the area on loose sandy soils often near or in association with 1.5.10a. A low open to semi-open woodland dominated by *Melaleuca* spp. *Eucalyptus pruinosa* commonly present but rarely exceeding canopy height as an emergent. Shrub layer very sparse. Moderate to dense ground layer grassy and dominated by perennial grasses. T1: (Ht: 3.5-8 m, median 6 m) Dominant – *Melaleuca citrolens, M. nervosa, M. viridiflora, Eucalyptus pruinosa, Blakella confertiflora.* Sh: Ass. *Atalaya hemiglauca, Acacia holosericea, A. hammondii, Jacksonia odontocarpa* GL: Dom. *Themeda triandra, Heteropogon contortus.* Ass. - *Triodia pungens. Chrysopogon fallax*	
1.10.2 VMA – LC. BDS – NC	*Eucalyptus miniata* woodland, usually with *Corymbia aspera*, *Eucalyptus herbertiana*, *C. capricornia*, *Owenia vernicosa* and *Acacia plectocarpa* subsp. *tanumbirinensis*. *Melaleuca* spp. often present where drainage restricted. Triodia spp. understorey. Occurs on plateaus on pre-Cambrian sandstones and conglomerates, and on interbedded acid volcanics; shallow gravels and sands and skeletal soils.	Common in complex mixed communities with *Calytrix* shrubland RE 1.10.9 on sandstone pavements and associated conglomerate rubble. Mixed low open woodland dominated by *Eucalyptus miniata* on remnant sandstone with shallow soils and by *Corymbia capricornia* in associated eroded sandstone areas. *Livistona inermis* commonly occurs. *Erythrophleum chlorostachys, Buchanania obovata* and *Gardenia pyriformis* common in the subcanopy. Shrub layer diverse through generally sparse and may have areas of dense occurrence of taller legumes such as *Tephrosia flammea.* Ground layer generally sparse and dominated by *Triodia* spp. T1: (Ht: 6-11 m) Dom. – *Eucalyptus miniata, Corymbia capricornia, C. aspera, E. leucophloia.* Sh: (Ht: 1-3.5 m, median 1.8 m) Dom.- *Grevillea refracta, Acacia multisiliqua, A hammondii, Petalostigma quadriloculare, Tephrosia* spp., *A. asperulacea.*	

RE	Regional Ecosystem Description	Local Community Representation	Representative Image
	Not a Wetland. (BVG1M: 14b).	GL: Dom. *Triodia pungens, T. bitextura, Eriachne ciliata, Cymbopogon procerus, Sida* spp. *Stemodia lythrifolia* and other annual forbs.	
1.10.9 VMA – OC. BDS – OC	Acacia spp. and/or Calytrix exstipulata open shrubland on rock pavement with emergent Corymbia aspera and/or Eucalyptus herbertiana and ground layer of Triodia spp. Occurs on exposed rock on plateau edges of pre-Cambrian sandstones and conglomerates. Not a Wetland. (BVG1M: 29b).	Common in complex mixed communities with *Eucalyptus miniata* woodland RE 1.10.2 on sandstone pavements. Mixed, low open shrubland with *Calytrix, Acacia* spp. dominant. Occasional Eucalypt emergents. Very sparse ground layer dominated by *Triodia bitextura.* E: *Eucalyptus miniata, Corymbia capricornia, C. aspera, E. leucophloia.* Sh: (Ht: 1-3.5 m, median 2.5 m) Dom.-, *Acacia neurocarpa, A hammondii, A. alleniana, Petalostigma quadriloculare, P. banksii, Grevillea refracta, Jacksonia odontocarpa.* GL: Dom. *T. bitextura, Triodia pungens.*	 

Description for RE 1.7.7aand RE 1.10.3 unavailable

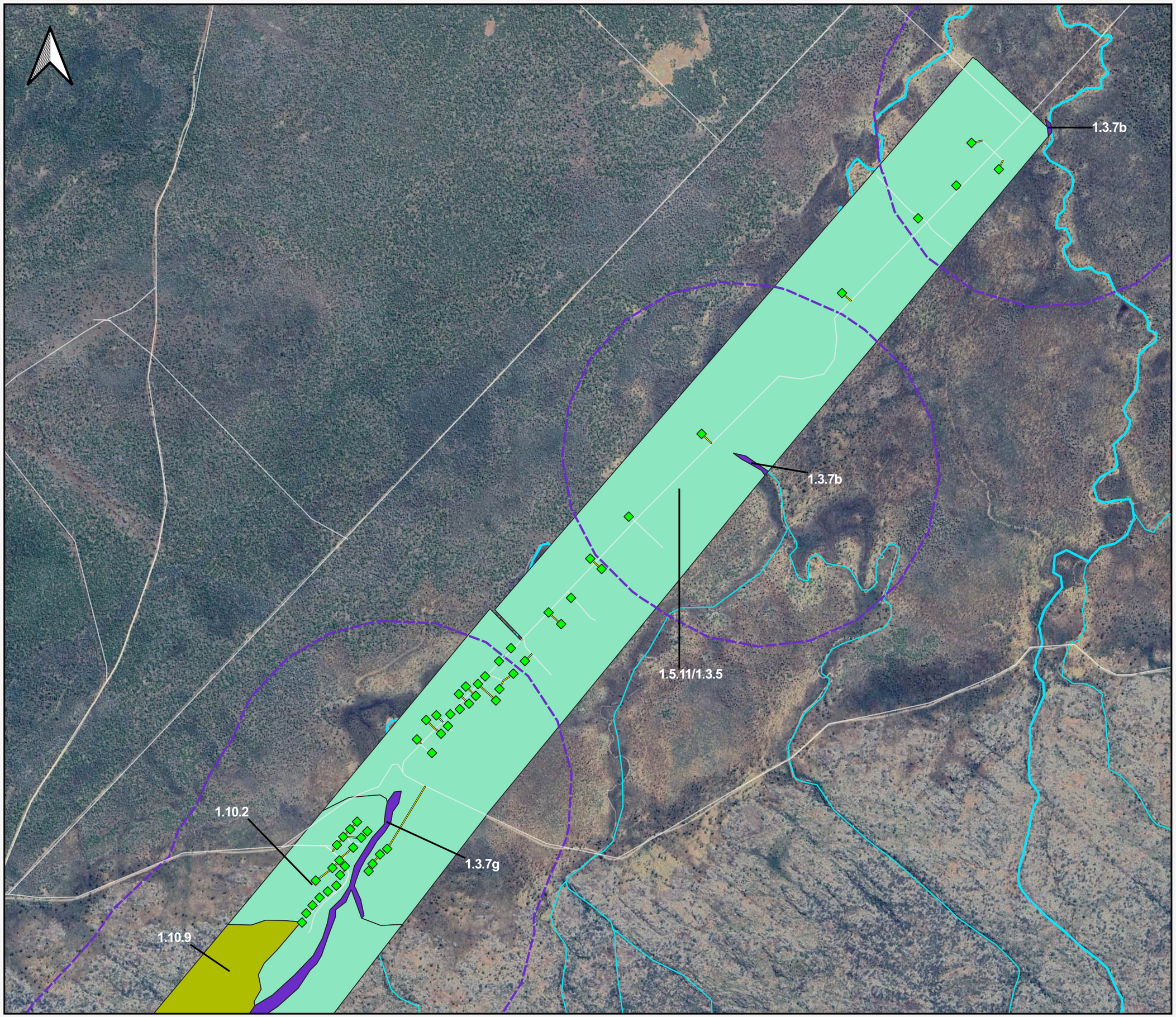

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FIGURE 6: FIELD-VERIFIED REGIONAL ECOSYSTEMS - PART A

0 150 300 450 600 m
1:10,000

LEGEND:

- Existing Access Tracks
- Category B ESA 500 m Buffer

Vegetation Management Watercourses

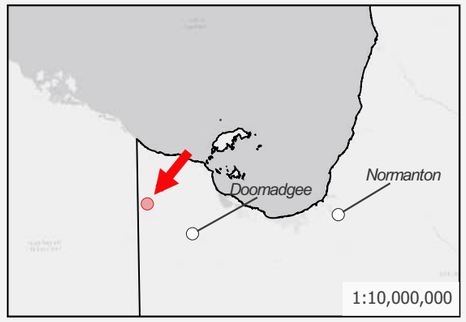
- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads

Field-verified Regional Ecosystems (Biodiversity Status)

- Endangered - Dominant Vegetation
- No concern at present
- Of Concern - Dominant



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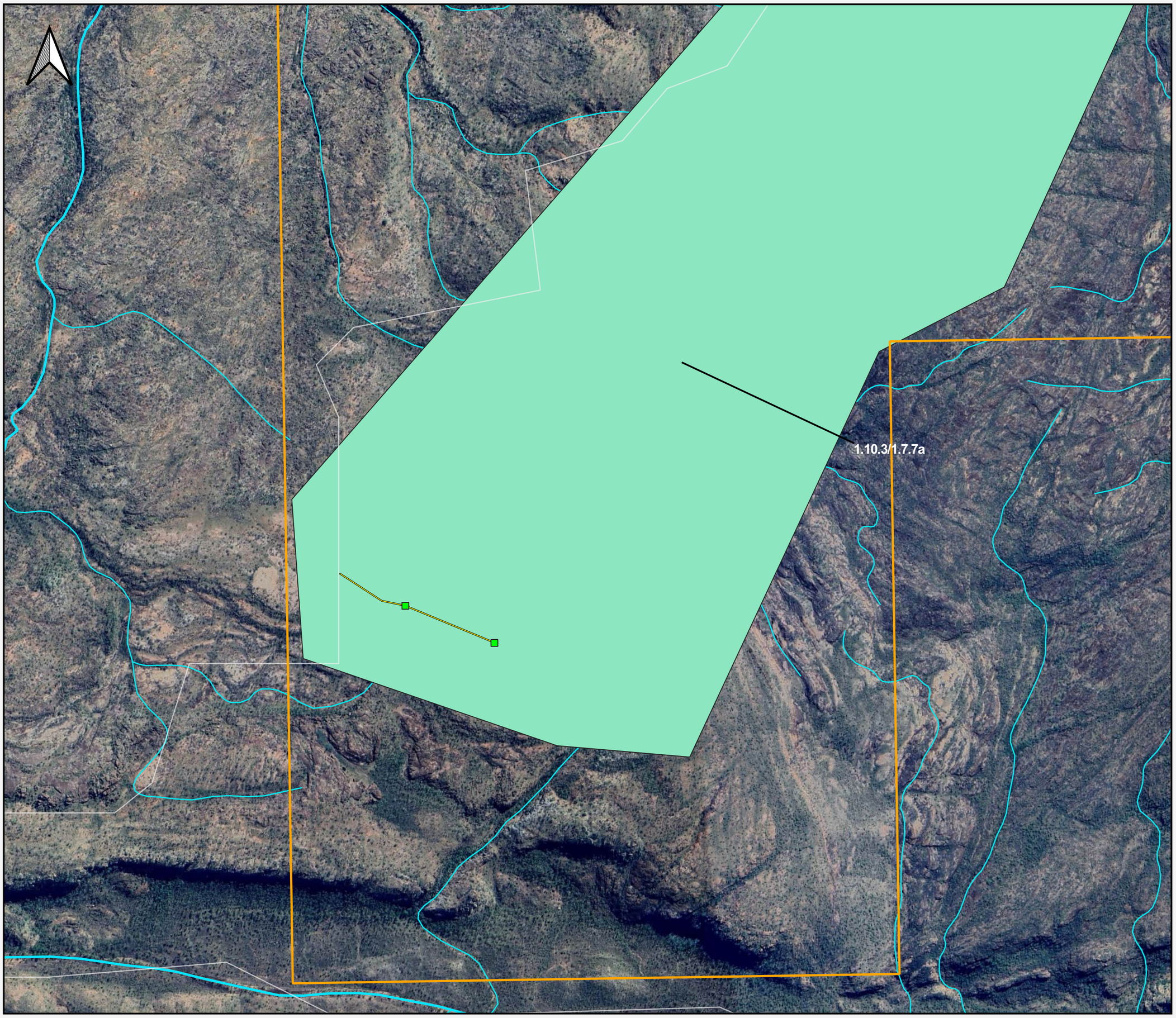

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FIGURE 7: FIELD-VERIFIED REGIONAL ECOSYSTEMS - PART B

0 150 300 450 600 m

1:10,000

LEGEND:

- Existing Access Tracks
- Mineral Development License Application Area

Vegetation Management Watercourses

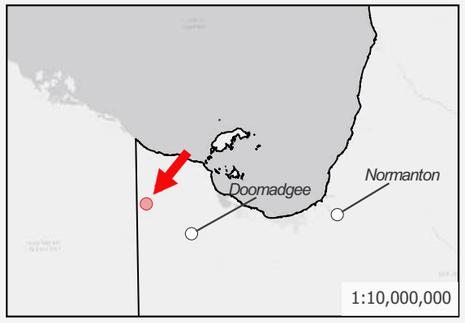
- Stream Order 1 - 2
- Stream Order 3 - 4

Proposed Disturbance Footprint

- Exploration Access
- Drill Pads

Field-verified Regional Ecosystems (Biodiversity Status)

- No concern at present



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4.4.3 Groundwater Dependent Ecosystems

The Project is located withing the Settlement Creek River region which has a number of known and potential Ground Water Dependent Ecosystems (GDE). The *Groundwater Dependent Ecosystems Atlas* (Bureau of Meteorology 2024) indicates that two 'Moderate Potential' terrestrial GDEs occur within 100 m of the Disturbance Footprint. A small area of the Disturbance Footprint (0.006 ha) overlaps one of these terrestrial GDEs (Figure 8). The attributes associated with the GDE are provided in Table 10.

Table 10: Mapped Groundwater Dependent Ecosystems with Potential to Occur

Name	GDE Type	Ecosystem Type	Description
Moderate Potential GDE - From National Assessment			
None	Terrestrial GDE	Vegetation	Dry eucalypt woodlands to open-woodlands primarily on sandplains or depositional plains.

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FIGURE 8: GROUND-WATER DEPENDENT ECOSYSTEMS

0 100 200 300 400 m
1:9,000

LEGEND:

- Existing Access Tracks

Proposed Disturbance Footprint

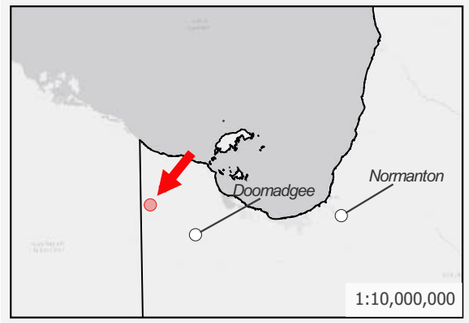
- Exploration Access
- Drill Pads

Terrestrial Groundwater Dependent Ecosystems

- Moderate potential

Vegetation Management Watercourses

- Stream Order 1 - 2
- Stream Order 3 - 4



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4.5 Flora

4.5.1 PMST & Modelled Potential Habitat Search Results

No EPBC listed flora species were modelled to occur within a 50 km buffer using the Protected Matters Search Tool (PMST). Searches using the Protected Matters Search Tool, modelled habitat and RE descriptions returned three listed threatened flora species.

- *Ipomoea antonschmidii*– near threatened (NC Act).
- *Solanum carduiforme* – vulnerable (NC Act), and
- *Trachymene glandulosa* - near threatened (NC Act).

Based on mapped habitat values and historical records, only the *T. glandulosa* and *S. carduiforme* are considered to potentially occur. Species ecology profiles and final likelihood of assessment are provided in Appendix I

4.5.2 Historical Records

One threatened plant record, *Trachymene glandulosa* (Near Threatened under the NC Act), was returned from the WildNet search (Figure 9). The record was made in the sandstone RE 1.10.3 (MET Serve, 2011b) outside of the MDL.

4.5.3 Protected Plants Flora Survey Trigger Areas

No flora survey trigger areas overlap the Disturbance Area or the MDL. A trigger area is mapped approximately 2.7 km west of the MDL and is likely associated with a record of *T. glandulosa*.

4.5.4 Flora Survey Records

The MDL is floristically diverse with 180 species from 45 families being detected within 130 sites (Appendix G). No threated species were detected during the surveys.

As the surveys were conducted toward the latter end of the dry season and within a fraction of the MDL, detection and identification was limited due to seasonal and spatial floristic diversity and it is highly likely that more species will be detected during surveys in the broader MDL during wet season/late wet season surveys. MET Serve detected over 400 species during four seasons and over 480 survey locations.

Not all species detected will occur in the proposed Disturbance Footprint.

4.5.4.1 Exotic Flora

Five exotic flora species were recorded during the vegetation surveys of the MDL. No *Biosecurity Act 2014* (Qld) listed ‘prohibited’ or ‘restricted’ invasive flora species were recorded.

4.5.5 Conservation Significant Flora Habitat

Habitat for both *T. glandulosa* and *S. carduiforme* (sandstone communities REs 1.10.2, 1.10.9 and 1.10.3 – 1.021 ha) occurs within the Disturbance Footprint although neither species was detected during searches of suitable habitats.

4.5.6 Likelihood of Occurrence – Flora

The results of the likelihood of occurrence assessment for conservation significant flora are presented in Table 11. The full likelihood of occurrence assessment is presented in Appendix E.

Table 11: Conservation Significant Flora with Potential to Occur in the Disturbance Footprint

Scientific Name	Common Name	EPBC Act Status	NC Act Status	Likelihood of Occurrence	Justification
Solanum carduiforme	-	-	V	Possible	A record occurs ~60 km south of the MDL. The suitable REs 1.10.3, 1.10.2 and 1.10.9 are present in the Disturbance Footprint.
Trachymene glandulosa	-	-	NT	Possible	A record occurs ~6 km west of the Disturbance Footprint (southernmost drill pads and track). The suitable REs 1.10.3, 1.10.2 and 1.10.9 are present in the Disturbance Footprint.

4.6 Fauna

4.6.1 Conservation Significant Fauna

4.6.1.1 PMST & Modelled Potential Habitat Search Results

The Protected Matters Search Tool returned 24 listed threatened species and 17 migratory species that are modelled to occur, or have suitable habitat, in the search extent (Appendix A). A Modelled Potential Habitat Report generated for the MDL (Appendix D) returned an additional two species that are listed under the NC Act only, purple-crowned fairy-wren (*Malurus coronatus*) and purple-necked rock-wallaby (*Petrogale purpureicollis*).

A likelihood of occurrence assessment based on mapped habitat and known records found the following EPBC-listed EVNT species have potential to occur within the or nearby the Disturbance Footprint.

- Carpentarian grasswren (*Amytornis dorotheae*) - Endangered (EPBC Act, NC Act).
- Gouldian finch (*Chloebia gouldiae*) - Endangered (EPBC Act, NC Act).
- Grey Falcon (*Falco hypoleucos*) - Vulnerable (EPBC Act, NC Act).
- Red goshawk (*Erythrotriorchis radiatus*) - Endangered (EPBC Act, NC Act).
- Northern quoll (*Dasyurus hallucatus*) - Endangered (EPBC Act).
- Ghost bat (*Macroderma gigas*) – Vulnerable ((EPBC Act,), Endangered (NC Act).
- Northern blue-tongued skink (*Tiliqua scincoides*) – Critically Endangered (EPBC Act, NC Act), and
- Mertens' water monitor (*Varanus mertensi*) - Endangered (EPBC Act, NC Act).

All migratory species were considered for further assessment.

Species ecology profiles and final likelihood of assessment are provided in Appendix J.

4.6.1.2 Historical Records

The WildNet Database search report (Appendix B) returned five conservation significant fauna species within 50 km of a central point within the MDL. A search of Atlas of Living Australia (ALA, 2024) returned a further seven species previously recorded in the search extent (Table 12). The locations of records are presented spatially in Figure 9.

Table 12: Summary of Historical EVNT Species Records Within 50 km of the MDL

Common Name	Scientific Name	WildNet Records Within 50 km	ALA Records Within 50 km	Notes
Carpentarian grasswren	*Amytornis dorotheae*	2	30	Two records from 1986 within 4-10 km east and west of the MDL (WildNet).
Carpentarian rock-rat	*Zyzomys palatalis*	-	206	One of the four known Carpentarian rock-rat populations occurs within 50 km of the MDL on Wollogorang.

Common Name	Scientific Name	WildNet Records Within 50 km	ALA Records Within 50 km	Notes
Ghost bat	*Macroderma gigas*	-	4	Four records from a single location approximately 47 km northwest of the MDL.
Gouldian finch	*Chloebia gouldiae*	25	30	Most records are associated with Wollogorang Station, NT to the northwest of the MDL. Contemporary records (2023) occur within 10-15 km of the MDL nearby Hells Gate Roadhouse and Westmoreland Airport. Recorded within the MDL by MET Serve (2011a)
Greater sand plover	*Charadrius leschenaultii*	-	1	Record associated with wetlands on Wollogorang Station approximately 35 km from the MDL.
Grey falcon	*Falco hypoleucus*	2	3	Two records approximately 15-20 km east near the Hells Gate Roadhouse. These records are undated and have a coordinate precision of 10,000 m
Mertens' water monitor	*Varanus mertensi*	5	5	Recorded within 3 km of the Disturbance Footprint at the closest point.
Mitchell's water monitor	*Varanus mitchelli*	-	2	Approximately 46 km southwest of the MDL. The record was made in 1973, pre-dating the arrival of cane toads in the region.
Northern blue-tongued skink	*Tiliqua scincoides* subsp. *intermedia)*	1	-	Recorded within 5 km of the Disturbance Footprint.
Northern quoll	*Dasyurus hallucatus*	-	1	Recorded in RE 1.10.9/1.10.2 which is abundant in the MDL. The record is approximately 4 km from the MDL and connected with contiguous suitable habitat.
Orange Leaf-nosed bat	*Rhinonicteris aurantia*	7	10	Seven records within the MDL collected in 2010 by Met Serve.
Purple-crowned fairy-wren	*Malurus coronatus*	2	-	Two contemporary records approximately 35 km northwest of the MDL.
Purple-necked rock-wallaby	*Petrogale purpureicollis*	1	-	Recorded by Met Serve in 2010. Record was described as being unconfirmed (MET Serve 2011).
Red goshawk	*Erythrotriorchis radiatus*	-	1	Located approximately 50 km south near the Nicholson River.
Sharp-tailed sandpiper	*Calidris acuminata*	-	2	Records associated with a large wetland/lake near the Nicholson River.

4.6.2 Fauna Habitat

4.6.2.1 MSES Wildlife Habitat

MSES wildlife habitat [endangered and vulnerable] mapped pursuant to the NC Act does not occur in or nearby the Disturbance Footprint

4.6.2.2 Essential Habitat

Essential habitat mapped pursuant to the VM Act does not occur in or nearby the Disturbance Footprint.

Terra SOLUTIONS

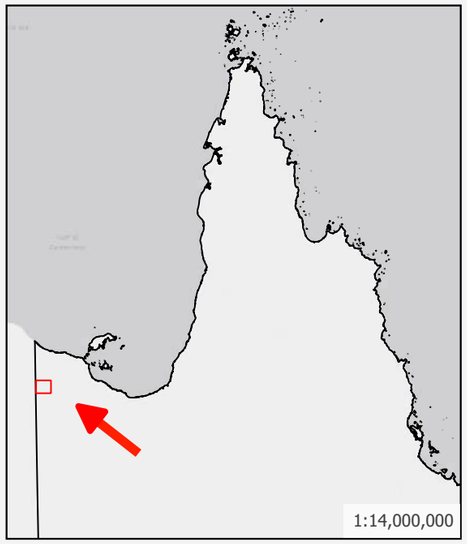
FIGURE 9: CONSERVATION SIGNIFICANT SPECIES RECORDS

0 1 2 3 4 km

1:100,000

LEGEND:

- Historical Records (ALA and WildNet Database)
- Terra Solutions Records (2024)
- Mineral Development License Application Area
- Approximate location of proposed exploration works



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AUTHOR: L Jones
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4.6.3 Field Survey Results

4.6.3.1 Field-verified Fauna Habitat Values

Broadly there are three habitat categories within the Disturbance Footprint: low open woodlands; riparian woodlands; and Sandstone Plateaus, Escarpments and Associated Communities. All habitats within the Disturbance Footprint were in good condition, with minimal to absent degradation from grazing, historical clearing or weed incursion.

Low Open Woodlands

This habitat was represented at the site by the REs 1.5.11 and 1.7.7a. These communities supported a variety of bird life, particularly honeyeaters and granivorous species. Hollow abundance was notably low.

Riparian Woodland

This habitat type was represented by the RE 1.3.5. These communities supported a higher abundance of hollow-bearing trees in comparison to the surrounding low open woodland.

Sandstone Plateaus, Escarpments & Associated Communities

This habitat type was represented by the REs 1.10.2, 1.10.3 and 1.10.9. These communities offered substantial habitat for saxicoline reptile species such as Slater's ring-tailed dragon (*Ctenophorus slateri*). This community contained abundant shelter sites for fauna including rock crevices and overhangs.

4.6.3.2 Fauna Records

96 vertebrate fauna species were recorded during the assessment of the MDL including three amphibians, 74 birds, seven mammals and 12 reptiles (Appendix H).

4.6.3.3 Conservation Significant Fauna

Three conservation significant fauna species were detected during the assessment of the MDL. Two of these species, the northern blue-tongued skink and the short-beaked echidna are considered to possibly occur within the Disturbance Footprint:

- Northern blue-tongued skink (*Tiliqua scincoides* subsp. *intermedia*) – Critically endangered under the EPBC and NC Acts.
- Purple-crowned fairy-wren *(Malurus coronatus)* – Vulnerable under the NC Act, and
- Short-beaked echidna (*Tachyglossus aculeatus*) – Special least concern under the NC Act.

Ghost Bat

Ghost bats were not detected during the field assessment and were not subject to targeted survey methods.

Historical records from 1981 occur within 50 km of the MDL. Churchill et al. (1987), in an investigation of the ten known roost sites of the orange leaf-nosed bat (*Rhinonicteris aurantia*) (consisting of two abandoned mines and eight natural caves), found that seven of the roost sites were also occupied by ghost bats. As roost sites selected by orange-leaf nosed bats are also suitable for ghost bats, previous records of *R. aurantia* within the MDL indicate the potential presence of suitable cave roosts for ghost bats. While no roost sites were found and they are unlikely to occur in the Disturabnce Footprint, several records of orange-leaf nosed bat were made by MET Serve (2011a) within and nearby the MDL (Figure 9). The presence of *R. aurantia* therefore indicates the potential presence of roost habitat for ghost bat in the MDL.

It is noted that the lack of detection of ghost bats by MET Serve (2011a) does not preclude the species' presence in the area. Ghost bats echolocate at low or 'soft' intensity making passive acoustic detection of the species away from suspected or known roost sites unlikely (Ruykys et al., 2024). While ghost bats have a typical foraging distance of up to 25 km (Ruykys et al., 2024), long distance dispersal up to 300 km has been reported (Ottewell et al., 2017). Given the proximity of historical records, the widespread presence of rocky outcrops in the MDL, and the presence of a sympatric, cave-obligate species with similar habitat requirements in the region, the ghost bat is considered likely to occur.

The Disturbance Footprint contains potentially suitable foraging habitat but is not considered to contain roosting or breeding habitat.

Grey Falcon

Grey falcon were not detected during the field assessment. Two historical records (ALA, 2024), both undated and generalised to 10 km by BirdLife Australia, are located nearby Hell's Gate.

The grey falcon is predominantly found in areas where annual rainfall is below 500 mm (TSSC, 2020). Mean annual rainfall near the Study Area is 882.9 mm (Bureau of Meteorology, Westmoreland Station – 29069 (1965 - 2021) with minimum and maximum recorded annual rainfall ranging from 378.3 – 1900.3 mm. In a study of 29 grey falcon breeding sites, Schoenjahn (2013) found only two that occur outside of the 500 mm isohyet (climate recording period 1996 – 2005). All breeding records occurred within the 'hot (persistently dry)' and 'hot (winter drought)' subclasses of the 'desert' and 'grassland' climate classes, respectively, using the Climate Classification of Australia (Stern et al., 2000). The Study Area is located within the 'savannah' subclass of the 'tropical' climate class which is approximately 20 km north of the closest climate class where grey falcon breeding has been recorded. It is likely that the climatic and rainfall conditions in the region are unsuitable for resident breeding pairs but may offer foraging opportunities outside of the breeding season.

Due to the difficulty in detection of grey falcon and the species, at times, ephemeral occupation of an area, targeted survey may be unsuccessful in detecting the species even if present. The grey falcon should be assumed to be present in the region. The Disturbance Footprint contains potentially suitable foraging habitat.

Northern Blue-tongued Skink

The northern blue-tongued skink was detected during the field assessment within 1 km of the Disturbance Footprint (Figure 9, Plate 1). All habitats in the Disturbance Footprint may be utilised by this species and it is considered likely to occur.

The Disturbance Footprint is unlikely to host habitat critical to the survival of the species as defined in the approved conservation advice (DCCEEW, 2023b) but is likely to contain suitable to moderately suitable habitat.

Higher density vegetation communities, habitat nearby water sources, areas of rocky outcrop that offer burrowing and shelter resources, and riparian communities, particularly when they occur in proximity to one another, are likely to be considered habitat critical to the survival of the species in accordance with the species' approved conservation advice (DCCEEW, 2023b).

In the Disturbance Footprint, areas hosting deep rocky shelters and crevices are likely to be considered habitat critical to the survival of the species.

Plate 1: The Northern Blue-tongued Skink (Tiliqua scincoides subsp. intermedia) Recorded During the Field Assessment

Orange Leaf-nosed Bat

Targeted surveys for this species were outside the scope of this assessment, however, ultrasonic acoustic recorders were deployed opportunistically to detect this species. The recorded data has not been analysed at the time of preparation of this report.

MET Serve (2011a) detected this species at several locations within and nearby the MDL (Figure 9). Given the limited historical disturbance within the MDL, it is likely that the species persists within the region.

No caves were detected during the survey and the Disturbance Footprint is unlikely to host a roost site for this species. However, the MDL likely hosts suitable roost caves elsewhere outside of the Disturbance Footprint given the aforementioned records. As such, the Disturbance Footprint may be present within an area that is suitable as foraging habitat. Given the small area of proposed clearing, and the open/sparse nature of the vegetation communities present in the Disturbance Footprint, the impact to foraging habitat is likely to be minor to negligible.

While orange leaf-nosed bats are prone to vacating roosts in response to disturbance, Armstrong (2010) found no effect from short-term mineral exploration drilling undertaken >25 m from the roost entrance and >85 m from a roost of *Rhinonicteris aurantia* (Pilbara form). If a roost is present nearby proposed drilling activity, the level of disturbance and consequent impact on the roost will not be measurable without a process for tracking both exploration activity and bat occupancy (Armstrong, 2010). It is considered unlikely that the proposed exploration works will disturb a roost site.

Short-beaked Echidna

The short-beaked echidna was detected during the survey via the presence of scats. Scats and other signs of echidna presence were widespread throughout the MDL.

Echidnas occupy a broad range of habitats and may occur anywhere within the Disturbance Footprint and surrounds.

4.6.4 Likelihood of Occurrence – Fauna

The results of the likelihood of occurrence assessment for conservation significant fauna undertaken with consideration of the field survey results are presented in Table 13. The full likelihood of occurrence assessment is presented in Appendix J.

Table 13: Conservation Significant Fauna with Potential to Occur in the Disturbance Footprint

Taxa	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Likelihood of Occurrence	Justification
Birds	*Falco hypoleucos*	Grey Falcon	V	V	Possible	Contemporary records occur nearby the MDL. While no suitable nesting habitat is present in or nearby the Disturbance Footprint, it may be used as part of the foraging habitat of a resident bird.
Mammals	*Macroderma gigas*	Ghost bat	V	E	Likely	This species has similar roost requirements to the orange leaf-nosed bat (confirmed present in MDL) with which it is known to cohabitate. Suitable deep cave roosting sites are likely to occur within or nearby the MDL. The Disturbance Footprint and small watercourse nearby may provide occasional foraging habitat.
Mammals	*Rhinonicteris aurantia*	Orange leaf-nosed bat		V	Likely	This species was recorded in the MDL by MET Serve (2011a) less than 2.5km from the Proposed Disturbance Footprint at its closest point. Suitable deep cave roosting

Taxa	Scientific Name	Common Name	EPBC Act Status	NC Act Status	Likelihood of Occurrence	Justification
						sites are likely to occur within or nearby the MDL. The Disturbance Footprint and small watercourse nearby may provide occasional foraging habitat.
Reptiles	*Tiliqua scincoides*	Northern blue-tongued skink	CR	CE	Likely	Recorded in MDL less than 1 km from Disturbance Footprint. Suitable habitat present.

4.6.5 Migratory Fauna Species

No migratory species were detected during the field assessment. A likelihood of occurrence assessment undertaken after the field assessment determined the following species have potential to occur:

- Fork-tailed swift (*Apus pacificus*).
- Red-rumped swallow (*Cecropis daurica*).
- Oriental pratincole (*Glareola maldivarum*).

It is unlikely that an ecologically significant proportion of the population of any of these species occurs in the Disturbance Footprint, or that exploration activities would result in a significant impact.

4.6.6 Exotic Fauna Species

Three invasive fauna species that are Restricted under the *Biosecurity Act 2014* were recorded in the MDL, all of which may also occur in the Disturbance Footprint:

- Feral dog/dingo (Canis lupus familiaris).
- Feral cat (Felis catus), and
- Feral pig (Sus scrofa).

Additionally, the cane toad (*Rhinella marina*) which is an introduced species not listed as a Restricted or Prohibited invasive animals was recorded.

4.7 Wetlands & Watercourses

4.7.1 Waterways for Waterway Barrier Works

Waterways for waterway barrier works (WWBW) are waterways that provide for fish passage in which the construction of a barrier may impact on fisheries resources as defined by the *Fisheries Act 1994.*

Fish passage is an essential requirement for the survival and productivity of many species of Queensland fish. Waterway barriers can inhibit movements of fish into different habitats required for a species' reproductive cycle or for access to critical foraging and shelter habitat. Barriers can also injure fish or damage their habitat.

Waterway crossings must be constructed in accordance with Condition 17 of the Code of environmental compliance for Exploration and Mineral Development Projects January 2001 – Version 0.

The watercourse that traverses adjacent to and through the proposed Disturbance Footprint is mapped as a Moderate Impact (amber) WWBW. It is crossed by one proposed Exploration Access Track and is overlapped by a portion of several drill pads.

4.8 Strategic Environmental Area

The MDL is located within the Gulf Rivers SEA which is identified as an area of regional interest under the RPI Act. The RPI Act restricts the carrying out of resource and regulated activities in SEAs where the activity is not exempt under the provisions of the RPI Act or a regional interests development approval (RIDA) has not been granted.

The required outcome for activities within an SEA as per Sch 2, S14 of the RPI Regulation is:

> *The activity will not result in a widespread or irreversible impact on an environmental attribute of a strategic environmental area.*

4.9 Environmentally Sensitive Areas

RE 1.3.7 has a BD Status of 'Endangered' due to its importance as seasonal water bird habitat and as regional corridors for fauna, and due to severe degradation by high total grazing pressure. It is listed as a Category B ESA under Schedule 19 of the EP Regulation.

Condition A13 of the *Eligibility criteria and standard conditions for exploration and mineral development projects—Version 2* requires that no activities involving machinery are carried out within 500 m of a Category B ESA.

The 500 m Category B buffers are presented in Figure 6. Approximately 2.07 ha of the Disturbance Footprint is located within 500 m (78% of the total Disturbance Footprint area).

It should be noted that a Property Map of Assessable Vegetation (PMAV) has not been sought, and the original regional ecosystem mapping does not show an ERE or other Category B ESA occurring within 500 m of the Disturbance Footprint.

5 Significant Residual Impact Assessments

The *Queensland Environmental Offsets Policy – Significant Residual Impact Guidelines* (DEHP, 2014) provides criteria for assessing whether an activity will result in a significant residual impact on a MSES. The MSES mapped in the Disturbance Footprint, or those that are considered likely to occur, are assessed against these criteria in the following sections.

5.1 Regulated Vegetation

5.1.1 'Of Concern' Regional Ecosystem

The Disturbance Footprint contains 0.84 ha of a heterogenous community (as mapped in Regional Ecosystems Version 13.00) which includes the 'Of Concern' RE 1.10.9. This RE has a structural category of very sparse (Queensland Herbarium, 2024) and the proposed area of disturbance includes 0.075 ha for linear infrastructure and 0.76 ha for non-linear. The significant residual impact assessment determined that a significant residual impact is unlikely to occur Table 14.

Table 14: Significant Residual Impact Assessment for 'Of Concern' Regional Ecosystems

Relevant Criteria	Assessment	Significance* of Impact
Criteria 1 For clearing for linear infrastructure: • greater than 25m wide in a grassland (structural category) regional ecosystem; or • greater than 20m wide in a sparse (structural category) regional ecosystem; or • greater than 10m wide in a dense to mid-dense (structural category) regional ecosystem. For clearing other than clearing for linear infrastructure: • Area greater than 5 ha where in a grassland (structural category) regional ecosystem; or • Area greater than 2 ha where in a sparse (structural category) regional ecosystem; or • Area greater than 0.5 ha where in a dense to mid-dense (structural category) regional ecosystem.	The proposed clearing width for linear infrastructure (i.e. access tracks) is 3.5 m and will not exceed the 10 m criteria. Clearing for non-linear infrastructure (i.e. drill pads) is 0.76 ha and will not exceed the stipulated 2 ha criteria for sparse structural category regional ecosystems.	Not significant. Criteria 1 is not exceeded for linear or non-linear clearing.

5.1.2 Regulated Vegetation Intersecting a Watercourse

The *Accepted Development Vegetation Clearing Code - Clearing for Infrastructure* (Department of Resources, 2023) provides riparian protection zones in the form of buffer distances from the defining banks of a watercourse determined by stream order (Table 15).

Table 15: Riparian Protection Zone Buffers

Stream Order	Riparian Protection Zone*
Stream order 1 or 2	10 metres
Stream order 3 or 4	25 metres

Stream order 5 or more	50 metres

Approximately 0.384 ha of Regulated Vegetation intersecting a watercourse occurs in the Disturbance Footprint comprised of 0.02 ha on linear infrastructure and 0.364 on non-linear.

The SRIA determined that a significant residual impact to Regulated Vegetation intersecting a watercourse is unlikely (Table 16).

Table 16: Significant Residual Impact Assessment for Regulated Vegetation That Is Intersecting a Watercourse

Relevant Criteria	Assessment	Significance* of Impact
Criteria 1 For clearing for linear infrastructure: • greater than 25m wide in a grassland (structural category) regional ecosystem; or • greater than 20m wide in a sparse (structural category) regional ecosystem; or • greater than 10m wide in a dense to mid-dense (structural category) regional ecosystem. For clearing other than clearing for linear infrastructure: • Area greater than 5 ha where in a grassland (structural category) regional ecosystem; or • Area greater than 2 ha where in a sparse (structural category) regional ecosystem; or • Area greater than 0.5 ha where in a dense to mid-dense (structural category) regional ecosystem.	The proposed clearing width for linear infrastructure (i.e. access tracks) is 3.5 m and will not exceed the 10 m criteria. Clearing for non-linear infrastructure (i.e. drill pads) is 0.364 ha and will not exceed the stipulated 2 ha criteria for sparse structural category regional ecosystems.	Not significant. For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must both be exceeded. In this instance Criteria 1 is not exceeded.
Criteria 3 Clearing within 5m of the defining bank.	Clearing will occur within 5 m of the defining bank.	

**Note: For a prescribed activity to have a significant residual impact on a regional ecosystem that is within the defined distance of watercourses, criteria 1 and 3 must be exceeded.*

5.2 Waterways Providing for Fish Passage

A significant residual impact assessment for WWBW is presented in Table 17. The assessment determined that a significant residual impact on waterways providing for fish passage is unlikely.

Table 17: Significant Residual Impact Assessment for the Waterways Providing for Fish Passage

Criteria	Assessment
An action is likely to have a significant impact on a waterway providing for fish passage if there is a real possibility that it will:	
Result in the mortality or injury of fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Mortality and injury of fish is unlikely.
Result in conditions that substantially increase risks to the heath, wellbeing and productivity of fish seeking passage such as through the depletion of fishes energy reserves, stranding, increased predation risks, entrapment or confined schooling behaviour in fish.	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. Changes to conditions that increase risks to health, wellbeing and productivity of fish are unlikely.
Reduce the extent, frequency or duration of fish passage previously found at a site	The watercourse is ephemeral, and works are proposed to be undertaken during the dry season. Furthermore, the crossing is proposed as a bed-level dirt/sand track without the use of imported material. The track will not pose any physical barrier to the movement of fish or impact the ability of fish to move across the crossing site.

Criteria	Assessment
Substantially modify, destroy or fragment areas of fish habitat (including, but not limited to in-stream vegetation, snags and woody debris, substrate, bank or riffle formations) necessary for the breeding and/or survival of fish	The crossing site has poorly defined to absent banks as the watercourse opens into a wide, relatively flat area of seasonal inundation upstream of the crossing site. Vegetation in the bed of watercourses in the area is generally sparse to absent. Woody and other debris present in the bed at the crossing site will be shifted to the side of the proposed track.
Result in a substantial and measurable change in the hydrological regime of the waterway, for example, a substantial change to the volume, depth, timing, duration and frequency of flows	The banks are poorly defined to absent and the crossing is proposed to be at bed-level. Consequently the hydrological regime of the watercourse will not be changed.
Lead to significant changes in water quality parameters such as temperature, dissolved oxygen, pH and conductivity that provide cues for movement in local fish species.	The crossing is proposed to be at bed-level and will consist of already present bed-material. Undertaking works during the dry season will remove the risk of accidental spills into water. The crossing is unlikely to influence water quality parameters.

5.3 Endangered and Vulnerable Wildlife Habitat (Including Essential Habitat)

Significant Residual Impact Assessments were conducted for endangered and vulnerable species assessed as potentially or likely occurring in the Disturbance Footprint (Table 18 and Table 23).

5.3.1 Ghost Bat

Table 18: Significant Residual Impact Assessment for the Ghost bat

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. Caves and roosts are unlikely to be impacted by habitat disturbance. The extent of habitat to be disturbed is ≤ 2.67 ha of potential foraging habitat. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of the ghost bat due to the small scale of disturbance (2.67 ha).
Fragment an existing population	There are no known permanent maternity roosts within the MDL. Foraging habitat is mostly continuous and undisturbed, and the clearing footprint will not affect the mobility of individuals or populations. The population is unlikely to be fragmented by proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the proposed works will not be a barrier to dispersal of this species.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species such as the feral cat are confirmed present in the MDL. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further increase access by feral cats.
Introduce disease that may cause the population to decline	A potential herpes type virus appears to be affecting the Mt Etna population of Ghost bat (TSSC, 2016c). The introduction of this disease is unlikely to result from the proposed disturbance.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. There are no known colonies occurring in the area. Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding,	The presence of ecologically significant locations for the ghost bat within the Project area is unknown, though are likely to be present within the MDL. No

Criteria	Assessment
nesting, migration or resting sites) of a species	potentially suitable roosting habitat (including those suitable as maternity roosts) are proposed to be cleared or disturbed.

5.3.2 *Solanum carduiforme*

Table 19: Significant Residual Impact Assessment for *Solanum carduiforme*

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. The extent of habitat to be disturbed is ≤ 0.243 ha of potentially suitable habitat. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of *Solanum carduiforme* due to the small scale of disturbance (≤ 0.243 ha).
Fragment an existing population	The presence of a population is unknown. The small, fragmented nature of the proposed works is unlikely to pose a barrier to dispersal or colonisation.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur. *Solanum* species are pollinated by wind and insects. Isolated plants near the Disturbance Footpriont are unlikely to be isolated from the local population.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Problematic invasive fauna species, namely the feral pig, are well distributed across the local landscape and are unlikely to be promoted by the proposed works. Biosecurity procedures will be enforced to ensure novel invasive fauna and flora species are not introduced.
Introduce disease that may cause the population to decline	No disease is known to be a significant threat to this species.
Interfere with the recovery of the species	No adopted or made recovery plans are in place. Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The presence of ecologically significant locations for *S. carduiforme* is unknown.

5.3.3 Trachymene glandulosa

Table 20: Significant Residual Impact Assessment for *Trachymene glandulosa*

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. The extent of habitat to be disturbed is ≤ 2.67 ha of potentially suitable habitat which will then be rehabilitated post-use. Long term population level impacts are not likely to result from proposed works. Avoidance measures will be put in place including pre-clearance surveys identifying the presence of the species within the Disturbance Footprint.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of T. glandulosa due to the small scale of disturbance (≤ 2.67 ha).
Fragment an existing population	A local population of *T. glandulosa* would be unlikely to be fragmented by proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur. *Trachymene* species are pollinated by wind and insects. Isolated plants within the project area are unlikely to be isolated from the local population.

Criteria	Assessment
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Problematic invasive fauna species, namely the feral pig, are well distributed across the local landscape and are unlikely to be promoted by the proposed works. Biosecurity procedures will be enforced to ensure novel invasive fauna and flora species are not introduced.
Introduce disease that may cause the population to decline	No disease is known to be a significant threat to this species.
Interfere with the recovery of the species	No adopted or made recovery plans are in place *for this species.* Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The presence of ecologically significant locations for *T. glandulosa* within the Disturbance Footprint and surrounds is unknown. Implementation of mitigation measures, including pre-clearance surveys to identify the presence of this species in the Disturbance Footprint will be undertaken.

5.3.4 Orange Leaf-nosed Bat

Table 21: Significant Residual Impact Assessment for the Orange Leaf-nosed Bat

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. Caves and roosts are unlikely to be impacted by habitat disturbance. The extent of habitat to be disturbed is ≤ 2.67 ha of potential foraging habitat. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of due to the small scale of disturbance (2.67 ha).
Fragment an existing population	Foraging habitat is mostly continuous and undisturbed, and the clearing footprint will not affect the mobility of individuals or populations. As a flying, nocturnal mammal, the population is unlikely to be fragmented by the proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the proposed works will not be a barrier to dispersal of this species.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species such as the feral cat are confirmed present in the MDL. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further facilitate access by feral cats.
Introduce disease that may cause the population to decline	No diseases are known to impact this species. As the works will not involve human access to caves/roost sites it is unlikely to result in a increased risk of disease introduction.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. Proposed works are unlikely to interfere with recovery of the species as impacts are likely to be minor to negligible.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The presence of ecologically significant locations for the orange leaf-nosed bat is unknown, though they are likely to be present within the MDL outside of the proposed Disturbance Footprint. No potentially suitable roosting habitat is proposed to be cleared or disturbed.

5.3.5 Grey Falcon

Table 22: Significant Residual Impact Assessment for the Grey Falcon

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	Unlikely. The Disturbance Footprint may include parts of the foraging range of a grey falcon, but does not represent highly suitable habitat (i.e. supporting a high abundance and diversity of bird prey).
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence of the grey falcon due to the small scale of disturbance (<1.99 ha).
Fragment an existing population	Falcons are highly mobile species and the small scale of the proposed disturbance is unlikely to pose any barrier to movements.
Result in genetically distinct populations forming as a result of habitat isolation	As above, fragmentation leading to genetic isolation is highly unlikely to occur as the species is highly mobile and unlikely to be inhibited by small-scale clearing.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	Potentially problematic invasive fauna species, namely the feral cat, are well distributed across the local landscape. Given the sparse, open nature of the vegetation communities within and around the Disturbance Footprint, the proposed works are unlikely to further facilitate access by feral cats.
Introduce disease that may cause the population to decline	No diseases are known to threaten this species.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species. Proposed works are unlikely to interfere with general population recovery following extreme events due to its small scale.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	The Disturbance Footprint is unlikely to contain ecologically significant locations for the grey falcon. The vegetation communities present are generally low and the riparian community nearby is small in extential and does not host suitably tall nesting trees. Disruption to an ecologically significant location is unlikely.

5.3.6 Northern Blue-tongued Skink

Table 23: Significant Residual Impact Assessment for the Northern Blue-tongued Skink

Criteria	Assessment
An action is likely to have a significant impact on endangered or vulnerable wildlife if the impact on the habitat is likely to:	
Lead to a long-term decrease in the size of a local population	The extent of habitat to be disturbed is ≤ 2.67 ha. Speed limit requirements will reduce the risk of an increase in road strikes resulting from increased traffic. Long term population level impacts are not likely to result from proposed works.
Reduce the extent of occurrence of the species	The proposed works are unlikely to reduce the extent of occurrence due to the small scale of disturbance (2.67 ha)
Fragment an existing population	Northern blue-tongued skinks have been frequently observed crossing roads and traversing disturbed land. The proposed works are unlikely to pose a barrier to movements. The population is unlikely to be fragmented by proposed works.
Result in genetically distinct populations forming as a result of habitat isolation	Northern blue-tongued skinks have been frequently observed crossing roads and traversing disturbed land. The proposed works are unlikely to pose a barrier to movements.
Result in invasive species that are harmful to an endangered or vulnerable species becoming established in the endangered or vulnerable species' habitat	The cane toad is the primary threat to this species. Cane toads were detected in the MDL in low quantities. While cane toads are unlikely to occur in the Disturbance Footprint due to the lack of a nearby water source, standing water collected in sumps after use in drilling operations has the potential to provide breeding opportunities to cane toads with the possibility of increasing their local numbers for at least the duration of works. This can be managed by preventing fauna access to drilling wastewater by erecting fences (made of tarpaulin or dampcourse) 600 mm

Criteria	Assessment
	high and at least 300 mm below the ground surface (to prevent burrowing) around the artificial water points.
Introduce disease that may cause the population to decline	No diseases are known to impact this species.
Interfere with the recovery of the species	There is no adopted or made recovery plan for this species Proposed works are unlikely to interfere with general population recovery following extreme events such as fire.
Cause disruption to ecologically significant locations (breeding, feeding, nesting, migration or resting sites) of a species	As the population of northern blue-tongued skinks in the MDL persists within the distribution of the invasive cane toad, it is considered an important population in accordance with the species' Conservation Advice (DCCEEW, 2023b). Sandstone escarpments and outcrops are also likely to constitute habitat critical to the survival of the species due to the shelter they provide. These habitats are present in the Disturbance Footprint and are highly abundant and widespread throughout the MDL. The small scale of proposed disturbance and the abundance of shelter habitat throughout the surrounding landscape makes it unlikely that the proposed works will disrupt and ecologically significant location.

6 Conclusion

6.1 Summary

The following MNES, MSES and ESAs were confirmed present in the Disturbance Footprint.

- The Project is located within the Strategic Environmental Area for the Gulf Rivers Strategic Environmental Area.
- The Disturbance Footprint contain 0.836 ha of a heterogenous remnant community that includes the 'Of Concern' RE 1.10.9 as per State mapping. Field-verification determined 0.004 ha of this community is present in the Disturbance Footprint. A significant residual impact assessment was undertaken and determined an SRI was unlikely.
- Regulated Vegetation intersecting a watercourse is present in the Disturbance Footprint. A significant residual impact assessment was undertaken and determined an SRI was unlikely.
- A Category B Environmentally Sensitive Areas associated with RE 1.3.7 occurs within 500 m of the proposed Disturbance Footprint. This was determined to be present via RE field-verification in contrast to State mapping which does not map the community at that location. *Eligibility criteria and standard conditions for exploration and mineral development projects – Version 2 (ESR/2016/1985)* applies:

  Condition A13

  - *The holder of the environmental authority must not carry out activities in a category A or B environmentally sensitive area. Activities involving machinery must not be carried out within 1km of a category A environmentally sensitive area or within 500m of category B environmentally sensitive area.*
  - *Prior to carrying out activities in a category C environmentally sensitive area, consult with the relevant administering authority and the Environmental Protection Agency. If it is determined through the consultation that additional conditions are necessary, the holder must comply with those conditions.*
- If exploration is proposed within a 500 m buffer, an application to amend standard condition A13 of the ERA will be required. This amendment would result in a variation condition on the EA authorising exploration activities up to a certain distance from the identified category B ESA. A reduced buffer zone from the ESA should be proposed. This information, as well as details of the proposed exploration activities, would be beneficial to include in a pre-lodgement meeting.
- The Project is located within the Settlement Creek River region which has a number of known and potential Ground Water Dependent Ecosystems (GDE).
- Three conservation significant fauna species were detected during the MDL assessment, two of which are considered likely to occur in the Disturbance Footprint:
  - Likely
    - Northern blue-tongued skink (*Tiliqua scincoides* subsp. *intermedia*) – Critically endangered under the EPBC and NC Acts.
    - Short-beaked echidna (*Tachyglossus aculeatus*) – Special least concern under the NC Act.
  - Unlikely
    -
    - Purple-crowned fairy-wren (*Malurus coronatus*) – Vulnerable under the NC Act, and
- An additional three conservation significant fauna species and two flora have potential to occur in the Disturbance Footprint:
  - Grey Falcon (*Falco hypoleucos*) – Vulnerable under the EPBC and NC Acts.
  - Ghost bat (*Macroderma gigas*) – Endangered under the EPBC and Vulnerable under the NC Act.
  - Orange leaf-nosed bat (*Rhinonicteris aurantia*) – Vulnerable under the NC Act, and
  - *Solanum carduiforme* – Vulnerable under the NC Act, and
  - *Trachymene glandulosa* - near threatened under the NC Act.

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Appendix A
EPBC Protected Matters Search Tool Report

EPBC Act Protected Matters Report

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

Report created: 08-Apr-2024

Summary

Matters of National Environment Significance

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

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	None
Listed Threatened Species:	23
Listed Migratory Species:	17

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at https://www.dcceew.gov.au/parks-heritage/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	1
Regional Forest Agreements:	None
Nationally Important Wetlands:	2
EPBC Act Referrals:	2
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	None
Geological and Bioregional Assessments:	1

Details

Matters of National Environmental Significance

Listed Threatened Species			[Resource Information]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			
Amytornis dorotheae Carpentarian Grasswren [558]	Endangered	Species or species habitat known to occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Erythrotriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat known to occur within area	In feature area
Erythrura gouldiae Gouldian Finch [413]	Endangered	Species or species habitat known to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat known to occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only
Tyto novaehollandiae kimberli Masked Owl (northern) [26048]	Vulnerable	Species or species habitat may occur within area	In feature area
MAMMAL			
Dasyurus hallucatus Northern Quoll, Digul [Gogo-Yimidir], Wijingadda [Dambimangari], Wiminji [Martu] [331]	Endangered	Species or species habitat likely to occur within area	In feature area
Macroderma gigas Ghost Bat [174]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Saccolaimus saccolaimus nudicluniatus Bare-rumped Sheath-tailed Bat, Bare-rumped Sheathtail Bat [66889]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Trichosurus vulpecula arnhemensis Northern Brushtail Possum [83091]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Xeromys myoides Water Mouse, False Water Rat, Yirrkoo [66]	Vulnerable	Species or species habitat likely to occur within area	In buffer area only
Zyzomys palatalis Carpentarian Rock-rat, Aywalirroomoo [25907]	Endangered	Species or species habitat known to occur within area	In buffer area only
REPTILE			
Acanthophis hawkei Plains Death Adder [83821]	Vulnerable	Species or species habitat may occur within area	In feature area
Elseya lavarackorum Gulf Snapping Turtle [67197]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tiliqua scincoides intermedia			
Northern Blue-tongued Skink [89838]	Critically Endangered	Species or species habitat known to occur within area	In feature area
Varanus mertensi			
Mertens' Water Monitor, Mertens's Water Monitor [1568]	Endangered	Species or species habitat known to occur within area	In feature area
Varanus mitchelli			
Mitchell's Water Monitor [1569]	Critically Endangered	Species or species habitat may occur within area	In feature area
SHARK			
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area

Listed Migratory Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus			
Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Marine Species			
Crocodylus porosus			
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area
Pristis pristis			
Freshwater Sawfish, Largetooth Sawfish, River Sawfish, Leichhardt's Sawfish, Northern Sawfish [60756]	Vulnerable	Species or species habitat may occur within area	In feature area
Migratory Terrestrial Species			
Cecropis daurica			
Red-rumped Swallow [80610]		Species or species habitat may occur within area	In buffer area only
Cuculus optatus			
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundo rustica			
Barn Swallow [662]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
[Motacilla cinerea](#) Grey Wagtail [642]		Species or species habitat may occur within area	In feature area
[Motacilla flava](#) Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
[Actitis hypoleucos](#) Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
[Calidris acuminata](#) Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
[Calidris ferruginea](#) Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
[Calidris melanotos](#) Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area
[Charadrius veredus](#) Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area	In feature area
[Glareola maldivarum](#) Oriental Pratincole [840]		Species or species habitat may occur within area	In feature area
[Numenius madagascariensis](#) Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
[Pandion haliaetus](#) Osprey [952]		Breeding known to occur within area	In buffer area only
[Tringa nebularia](#) Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area	In buffer area only

Other Matters Protected by the EPBC Act

Listed Marine Species			[Resource Information]
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Breeding likely to occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat known to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Cecropis daurica as Hirundo daurica Red-rumped Swallow [80610]		Species or species habitat may occur within area overfly marine area	In buffer area only
Chalcites osculans as Chrysococcyx osculans Black-eared Cuckoo [83425]		Species or species habitat known to occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Charadrius veredus Oriental Plover, Oriental Dotterel [882]		Species or species habitat may occur within area overfly marine area	In feature area
Glareola maldivarum Oriental Pratincole [840]		Species or species habitat may occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundo rustica Barn Swallow [662]		Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla cinerea Grey Wagtail [642]		Species or species habitat may occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In buffer area only
Pandion haliaetus Osprey [952]		Breeding known to occur within area	In buffer area only
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Tringa nebularia			
Common Greenshank, Greenshank [832]	Endangered	Species or species habitat may occur within area overfly marine area	In buffer area only
Reptile			
Crocodylus johnstoni			
Freshwater Crocodile, Johnston's Crocodile, Johnstone's Crocodile [1773]		Species or species habitat may occur within area	In feature area
Crocodylus porosus			
Salt-water Crocodile, Estuarine Crocodile [1774]		Species or species habitat likely to occur within area	In feature area

Extra Information

State and Territory Reserves [Resource Information]

Protected Area Name	Reserve Type	State	Buffer Status
Ganalanga-Mindibirrina	Indigenous Protected Area	NT	In buffer area only

Nationally Important Wetlands [Resource Information]

Wetland Name	State	Buffer Status
Marless Lagoon Aggregation	QLD	In buffer area only
Wentworth Aggregation	QLD	In buffer area only

EPBC Act Referrals [Resource Information]

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Controlled action				
Expansion of Existing Redbank Oxide Leach Operations, New Pits, Upgraded Road and Facilities	2008/4260	Controlled Action	Post-Approval	In buffer area only
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area

Geological and Bioregional Assessments [Resource Information]

Name	State	Website	Buffer Status
Isa GBA region	QLD	GBA website	In buffer area only

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact us page.

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Appendix B
WildNet Database Report

Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point
Species: All
Type: Native
Queensland status: Rare and threatened species
Records: All
Date: All
Latitude: -17.4044
Longitude: 138.2141
Distance: 50
Email: anton@terrasolutions.com.au
Date submitted: Wednesday 10 Apr 2024 12:20:58
Date extracted: Wednesday 10 Apr 2024 12:30:02

The number of records retrieved = 9

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Estrildidae	*Chloebia gouldiae*	Gouldian finch		E	E	25
animals	birds	Falconidae	*Falco hypoleucos*	grey falcon		V	V	2
animals	birds	Maluridae	*Amytornis dorotheae*	Carpentarian grasswren		E	E	2
animals	birds	Maluridae	*Malurus coronatus*	purple-crowned fairy-wren		V		2
animals	mammals	Hipposideridae	*Rhinonicteris aurantia*	orange leaf-nosed bat		V		7
animals	mammals	Macropodidae	*Petrogale purpureicollis*	purple-necked rock-wallaby		V		1
animals	reptiles	Scincidae	*Tiliqua scincoides intermedia*	northern bluetongue		CR	CE	1
animals	reptiles	Varanidae	*Varanus mertensi*	Mertens' water monitor		E	E	5
plants	land plants	Araliaceae	*Trachymene glandulosa*			NT		1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992.*
The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999.*
The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).
This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.
This number is output as 999 if it equals or exceeds this value.

Appendix C
Vegetation Management Report

resources.QLD.GOV.AU

Vegetation management report

For Lot: 1 Plan: CP887914
9/20/2024

Queensland Government

This publication has been compiled by Operations Support, Department of Resources.

Recent changes

Updated mapping

Updated vegetation mapping was released on 22 November 2023 and includes the most recent Queensland Herbarium scientific updates to the Regulated Vegetation Management Map, regional ecosystems, essential habitat, wetland and high-value regrowth mapping.

The Department of Environment, Science and Innovation have also updated their koala protection mapping to align with the Queensland Herbarium scientific updates.

The latest version (v10) of the Protected Plants Flora Survey Trigger Map (trigger map) was released on 6 September 2023.

Overview

Based on the lot on plan details you have supplied, this report provides the following detailed information:
Property details - information about the specified Lot on Plan, lot size, local government area, bioregion(s), subregion(s) and catchment(s);

Vegetation management framework - an explanation of the application of the framework and contact details for the Department of Resources who administer the framework;

Vegetation management framework details for the specified Lot on Plan including:

- the vegetation management categories on the property;
- the vegetation management regional ecosystems on the property;
- vegetation management watercourses or drainage features on the property;
- vegetation management wetlands on the property;
- vegetation management essential habitat on the property;
- whether any area management plans are associated with the property;
- whether the property is coastal or non-coastal; and
- whether the property is mapped as Agricultural Land Class A or B;

Protected plant framework - an explanation of the application of the framework and contact details for the Department of Environment, Science and Innovation who administer the framework, including:

- high risk areas on the protected plant flora survey trigger map for the property;

Koala protection framework - an explanation of the application of the framework and contact details for the Department of Environment, Science and Innovation who administer the framework; and

Koala protection framework details for the specified Lot on Plan including:

- the koala district the property is located in;
- koala priority areas on the property;
- core and locally refined koala habitat areas on the property;
- whether the lot is located in an identified koala broad-hectare area; and
- koala habitat regional ecosystems on the property for core koala habitat areas.

This information will assist you to determine your options for managing vegetation under:
- the vegetation management framework, which may include:

- exempt clearing work;
- accepted development vegetation clearing code;
- an area management plan;
- a development approval;

- the protected plant framework, which may include:

- the need to undertake a flora survey;
- exempt clearing;
- a protected plant clearing permit;

- the koala protection framework, which may include:

- exempted development;
- a development approval;
- the need to undertake clearing sequentially and in the presence of a koala spotter.

Other laws

The clearing of native vegetation is regulated by both Queensland and Australian legislation, and some local governments also regulate native vegetation clearing. You may need to obtain an approval or permit under another Act, such as the Commonwealth Government's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Section 8 of this guide provides contact details of other agencies you should confirm requirements with, before commencing vegetation clearing.

Table of Contents

1. Property details

1.1 Tenure and title area

All of the lot, plan, tenure and title area information associated with property Lot: 1 Plan: CP887914 are listed in Table 1.

Table 1: Lot, plan, tenure and title area information for the property

Lot	Plan	Tenure	Property title area (sq metres)
1	CP887914	Lands Lease	2,080,000,000

The tenure of the land may affect whether clearing is considered exempt clearing work or may be carried out under an accepted development vegetation clearing code.

Does the property Lot: 1 Plan: CP887914 have a freehold tenure and is in the Wet Tropics of Queensland World Heritage Area?

No, this property is not located in the Wet Tropics of Queensland World Heritage Area.

1.2 Property location

Table 2 provides a summary of the locations for property Lot: 1 Plan: CP887914, in relation to natural and administrative boundaries.

Table 2: Property location details

Local Government(s)
Burke Shire

Catchment(s)
Settlement
Nicholson

Bioregion(s)	Subregion(s)
Gulf Plains	Doomadgee Plains
Northwest Highlands	McArthur

2. Vegetation management framework (administered by the Department of Resources)

The *Vegetation Management Act 1999* (VMA), the Vegetation Management Regulation 2012, the *Planning Act 2016* and the Planning Regulation 2017, in conjunction with associated policies and codes, form the Vegetation Management Framework.

The VMA does not apply to all land tenures or vegetation types. State forests, national parks, forest reserves and some tenures under the *Forestry Act 1959* and *Nature Conservation Act 1992* are not regulated by the VMA. Managing or clearing vegetation on these tenures may require approvals under these laws.

The following native vegetation is not regulated under the VMA but may require permit(s) under other laws:

- grass or non-woody herbage;
- a plant within a grassland regional ecosystem identified in the Vegetation Management Regional Ecosystem Description Database (VM REDD) as having a grassland structure; and
- a mangrove.

2.1 Exempt clearing work

Exempt clearing work is an activity for which you do not need to notify the Department of Resources or obtain an approval under the vegetation management framework. Exempt clearing work was previously known as exemptions.

In areas that are mapped as Category X (white in colour) on the regulated vegetation management map (see section 4.1), and where the land tenure is freehold, indigenous land and leasehold land for agriculture and grazing purposes, the clearing of vegetation is considered exempt clearing work and does not require notification or development approval under the vegetation management framework. For all other land tenures, contact the Department of Resources before commencing clearing to ensure that the proposed activity is exempt clearing work.

A range of routine property management activities are considered exempt clearing work. A list of exempt clearing work is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/exemptions/.

Exempt clearing work may be affected if the proposed clearing area is subject to development approval conditions, a covenant, an environmental offset, an exchange area, a restoration notice, or an area mapped as Category A. Exempt clearing work may require approval under other Commonwealth, State or Local Government laws, or local government planning schemes. Contact the Department of Resources prior to clearing in any of these areas.

2.2 Accepted development vegetation clearing codes

Some clearing activities can be undertaken under an accepted development vegetation clearing code. The codes can be downloaded at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/codes/

If you intend to clear vegetation under an accepted development vegetation clearing code, you must notify the Department of Resources before commencing. The information in this report will assist you to complete the online notification form.

You can complete the online form at
https://vegetation-apps.dnrm.qld.gov.au

2.3 Area management plans

Area Management Plans (AMP) provide an alternative approval system for vegetation clearing under the vegetation management framework. They list the purposes and clearing conditions that have been approved for the areas covered by the plan. It is not necessary to use an AMP, even when an AMP applies to your property.

On 8 March 2020, AMPs ended for fodder harvesting, managing thickened vegetation and managing encroachment. New notifications cannot be made for these AMPs. You will need to consider options for fodder harvesting, managing thickened vegetation or encroachment under a relevant accepted development vegetation clearing code or apply for a development approval.

New notifications can be made for all other AMPs. These will continue to apply until their nominated end date.

If an Area Management Plan applies to your property for which you can make a new notification, it will be listed in Section 3.6 of this report. Before clearing under one of these AMPs, you must first notify the Department of Resources and then follow the conditions and requirements listed in the AMP.

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/area-management-plans

2.4 Development approvals

If under the vegetation management framework your proposed clearing is not exempt clearing work, or is not permitted under an accepted development vegetation clearing code, or an AMP, you may be able to apply for a development approval. Information on how to apply for a development approval is available at

https://www.qld.gov.au/environment/land/management/vegetation/clearing-approvals/development

2.5. Contact information for the Department of Resources

For further information on the vegetation management framework:

Phone 135VEG (135 834)

Email vegetation@resources.qld.gov.au

Visit https://www.resources.qld.gov.au/?contact=vegetation to submit an online enquiry.

3. Vegetation management framework for Lot: 1 Plan: CP887914

3.1 Vegetation categories

The vegetation categories on your property are shown on the regulated vegetation management map in section 4.1 of this report. A summary of vegetation categories on the subject lot are listed in Table 3. Descriptions for these categories are shown in Table 4.

Table 3: Vegetation categories for subject property

Vegetation category	Area (ha)
Category B	206,938.84
Category C	14.82
Category X	46.10

Table 4: Description of vegetation categories

Category	Colour on Map	Description	Requirements / options under the vegetation management framework
A	red	Compliance areas, environmental offset areas and voluntary declaration areas	Special conditions apply to Category A areas. Before clearing, contact the Department of Resources to confirm any requirements in a Category A area.
B	dark blue	Remnant vegetation areas	Exempt clearing work, or notification and compliance with accepted development vegetation clearing codes, area management plans or development approval.
C	light blue	High-value regrowth areas	Exempt clearing work, or notification and compliance with managing Category C regrowth vegetation accepted development vegetation clearing code.
R	yellow	Regrowth within 50m of a watercourse or drainage feature in the Great Barrier Reef catchment areas	Exempt clearing work, or notification and compliance with managing Category R regrowth accepted development vegetation clearing code or area management plans.
X	white	Clearing on freehold land, indigenous land and leasehold land for agriculture and grazing purposes is considered exempt clearing work under the vegetation management framework. Contact the Department of Resources to clarify whether a development approval is required for other State land tenures.	No permit or notification required on freehold land, indigenous land and leasehold land for agriculture and grazing. A development approval may be required for some State land tenures.

Property Map of Assessable Vegetation (PMAV)

There is no Property Map of Assessable Vegetation (PMAV) present on this property.

3.2 Regional ecosystems

The endangered, of concern and least concern regional ecosystems on your property are shown on the vegetation management supporting map in section 4.2 and are listed in Table 5.

A description of regional ecosystems can be accessed online at
https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/descriptions/

Table 5: Regional ecosystems present on subject property

Regional Ecosystem	VMA Status	Category	Area (Ha)	Short Description	Structure Category
1.10.2	Least concern	B	8,592.03	Eucalyptus miniata woodland on sandstone plateaus	Sparse
1.10.2	Least concern	C	0.34	Eucalyptus miniata woodland on sandstone plateaus	Sparse
1.10.3	Least concern	B	8,329.26	Corymbia aspera low open woodland on rocky soils	Very sparse
1.10.9	Of concern	B	7,009.92	Acacia spp. and/or Calytrix exstipulata open shrubland on rock pavement	Very sparse
1.12.1	Least concern	B	26,032.73	Eucalyptus leucophloia low open woodland on granites	Very sparse
1.12.7	Least concern	B	11,422.09	Terminalia aridicola and Brachychiton collinus low open woodland on torfields	Very sparse
1.3.11	Least concern	B	1,015.40	Eucalyptus chlorophylla open woodland on alluvium	Very sparse
1.3.5	Least concern	B	2,787.10	Corymbia polycarpa, C. bella, C. grandifolia and Eucalyptus chlorophylla in mixed woodlands on sandy levees in the north	Sparse
1.3.7	Least concern	B	528.47	Eucalyptus camaldulensis woodland on channels and levees	Sparse
1.3.9	Of concern	B	17.72	Forest or woodland fringing perennial watercourses and on associated alluvium	Sparse
1.5.1	Least concern	B	832.84	Eucalyptus miniata woodland on red earths on laterised plateaus	Sparse
1.5.11	Least concern	B	11,730.18	Melaleuca citrolens and/or Eucalyptus pruinosa low open woodland on sandy plains	Very sparse
1.5.13	Least concern	B	115.98	Eucalyptus pruinosa low open woodland on older alluvial and residual soils	Very sparse
1.5.2	Least concern	B	6,553.36	Mixed eucalypt woodland on sandy plains	Sparse
1.5.3	Least concern	B	3,446.78	Eucalyptus leucophloia low open woodland to woodland on sandy and gravelly red soils	Very sparse
1.7.5	Least concern	B	173.44	Acacia shirleyi low woodland on lateritic scarps and hills	Sparse
1.7.7	Least concern	B	7,642.83	Corymbia capricornia +/- Eucalyptus leucophloia or E. miniata low open woodland on silcrete	Very sparse

1.7.7	Least concern	C	0.34	Corymbia capricornia +/- Eucalyptus leucophloia or E. miniata low open woodland on silcrete	Very sparse
1.9.7	Of concern	B	22.01	Eucalyptus pruinosa low open woodland on shale hills	Very sparse
2.3.15	Least concern	B	1,338.03	Eucalyptus microtheca woodland to low open woodland with Sarga spp. in seasonally flooded depressions on gleyed podsolics	Sparse
2.3.19	Least concern	B	3,356.79	Eucalyptus tectifica +/- Corymbia confertiflora woodland on old alluvial plains (recent Pleistocene surface)	Sparse
2.3.20	Least concern	B	15,070.02	Corymbia bella, Eucalyptus pruinosa, C. terminalis, Lysiphyllum cunninghamii in mixed woodlands on active levees and alluvial plains in the west	Sparse
2.3.26	Least concern	B	1,900.54	Eucalyptus camaldulensis +/- Melaleuca spp. woodland fringing sandy, seasonal channels	Sparse
2.3.30	Least concern	B	2,670.24	Melaleuca spp. low woodland in seasonally flooded depressions on podsolic soils in the west	Sparse
2.3.42	Least concern	B	5,097.37	Eucalyptus microtheca +/- Excoecaria parvifolia, Lysiphyllum cunninghamii, Melaleuca spp. open woodland on Quaternary alluvial plains with coarse-grained parent material	Very sparse
2.3.50	Least concern	B	141.64	Waterholes, bare sand and rock in the channels of major watercourses	Other
2.3.52	Least concern	B	614.77	Melaleuca spp., Eucalyptus camaldulensis, Lophostemon grandiflorus and Livistona rigida in mixed woodlands fringing major spring-fed watercourses	Sparse
2.3.58	Of concern	B	180.27	Eriachne glauca var. glauca, Oryza australiensis and Eulalia aurea tussock grassland in shallow alluvial depressions in the Doomadgee Plains subregion	Grassland
2.3.61	Least concern	B	83.58	Eucalyptus microtheca woodland in seasonal swamps on active Quaternary alluvial plains	Sparse
2.3.62	Of concern	B	131.02	Eucalyptus camaldulensis +/- Corymbia polycarpa, Melaleuca viridiflora woodland on abandoned stream channels and upper drainage areas in lateritic landscapes	Sparse
2.3.66	Least concern	B	1,403.08	Seasonal swamps (wooded). Eucalyptus microtheca and/or Melaleuca viridiflora low open woodland in closed depressions in the Doomadgee Plains subregion	Very sparse
2.3.66	Least concern	C	0.11	Seasonal swamps (wooded). Eucalyptus microtheca and/or Melaleuca viridiflora low open woodland in closed depressions in the Doomadgee Plains subregion	Very sparse

2.3.69	Least concern	B	65.95	Dichanthium spp., Iseilema spp., Aristida spp. and Brachyachne convergens in mixed tussock grasslands on active Quaternary alluvial deposits derived from coarse-grained parent material in the west	Woody grassland
2.4.1	Least concern	B	444.15	Dichanthium spp., Eulalia aurea, Chrysopogon fallax and Themeda avenacea in mixed tussock grasslands on Tertiary clay plains	Woody grassland
2.5.10	Least concern	B	1,380.38	Corymbia polycarpa, C. grandifolia, Eucalyptus tectifica, E. chlorophylla in mixed woodlands on sand sheets and old alluvial plains in the west	Sparse
2.5.10	Least concern	C	0.34	Corymbia polycarpa, C. grandifolia, Eucalyptus tectifica, E. chlorophylla in mixed woodlands on sand sheets and old alluvial plains in the west	Sparse
2.5.23	Least concern	B	15,860.42	Eucalyptus pruinosa, Lysiphyllum cunninghamii, E. chlorophylla and Corymbia setosa in mixed low open woodlands on sand sheets overlying Tertiary lateritic surfaces	Very sparse
2.5.33	Least concern	B	57,103.60	Melaleuca spp. +/- Eucalyptus pruinosa, Asteromyrtus symphyocarpa, Terminalia canescens low open woodland on sand sheets in the west	Sparse
2.5.33	Least concern	C	13.68	Melaleuca spp. +/- Eucalyptus pruinosa, Asteromyrtus symphyocarpa, Terminalia canescens low open woodland on sand sheets in the west	Sparse
2.7.5	Least concern	B	3,844.86	Terminalia canescens and Corymbia setosa subsp. pedicellaris woodland on dissected plateau margins on skeletal soils	Sparse
non-rem	None	C	less than 0.01	None	None
non-rem	None	X	46.10	None	None

Please note:
1. All area and area derived figures included in this table have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.
2. If Table 5 contains a Category 'plant', please be aware that this refers to 'plantations' such as forestry, and these areas are considered non-remnant under the VMA.

The VMA status of the regional ecosystem (whether it is endangered, of concern or least concern) also determines if any of the following are applicable:

- exempt clearing work;
- accepted development vegetation clearing codes;
- performance outcomes in State Code 16 of the State Development Assessment Provisions (SDAP).

3.3 Watercourses

Vegetation management watercourses and drainage features for this property are shown on the vegetation management supporting map in section 4.2.

3.4 Wetlands

Vegetation management wetlands are present on this property and are shown on the vegetation management supporting map in section 4.2 of this report.

3.5 Essential habitat

Under the VMA, essential habitat for protected wildlife is native wildlife prescribed under the *Nature Conservation Act 1992* (NCA) as critically endangered, endangered, vulnerable or near-threatened wildlife.

Essential habitat for protected wildlife includes suitable habitat on the lot, or where a species has been known to occur up to 1.1 kilometres from a lot on which there is assessable vegetation. These important habitat areas are protected under the VMA.

Any essential habitat on this property will be shown as blue hatching on the vegetation supporting map in section 4.2.

If essential habitat is identified on the lot, information about the protected wildlife species is provided in Table 6 below. The numeric labels on the vegetation management supporting map can be cross referenced with Table 6 to outline the essential habitat factors for that particular species. There may be essential habitat for more than one species on each lot, and areas of Category A, Category B and Category C can be mapped as Essential Habitat.

Essential habitat is compiled from a combination of species habitat models and buffered species records. Regional ecosystem is a mandatory essential habitat factor, unless otherwise stated. Essential habitat, for protected wildlife, means an area of vegetation shown on the Regulated Vegetation Management Map -

1) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database. Essential habitat factors are comprised of - regional ecosystem (mandatory for most species), vegetation community, altitude, soils, position in landscape; or
2) in which the protected wildlife, at any stage of its life cycle, is located.

If there is no essential habitat mapping shown on the vegetation management supporting map for this lot, and there is no table in the sections below, it confirms that there is no essential habitat on the lot.

Category A and/or Category B and/or Category C

Table 6: Essential habitat in Category A and/or Category B and/or Category C

Label	Scientific Name	Common Name	NCA Status	Vegetation Community	Altitude	Soils	Position in Landscape
66	Varanus mertensi	Mertens' water monitor	E	Edges of watercourses and lagoons.	0 - 600m		In or near water.
106	Tiliqua scincoides intermedia	northern bluetongue	CR	No habitat preference. Consider this factor always met where a record occurs.	0m - 500m		No habitat preference. Consider this factor always met where a record occurs.
992	Rhinonicteris aurantia	orange leaf-nosed bat	V	Areas close to home cave including spinifex grassland with scattered Eucalyptus camaldulensis, sclerophyll forest and open woodland, mangroves, deciduous vine thickets/riparian palm forest and possibly open blacksoil plains with tussock grassland; use of deep caves or mines with highly specific microclimate (28-32oC and 85-100% relative humidity) during dry season limits its distibution.		Limestone and sandstone substrates.	
1376	Chloebia gouldiae	Gouldian finch	E	Lightly wooded grassy savannah (e.g. Eucalyptus tectifica, E. brownii, Corymbia latifolia, Erythrophleum chlorostachys), comprising breeding areas - hill woodland (including suitable eucalypts with hollows) on gravelly soils/stony hills with a dense (2m high) understorey of annual grass (Sorghum) and permanent water; and adjacent non-breeding areas â€“ mixed grassy woodland/riparian vegetation on granitic soils of flats near water with high density of perennial grasses (Chrysopogon, Alloteropsis, Triodia & Sorghum). Nest in hollow eucalypt branch, hole in termite mound or rarely in domed nest in small bush 6-14m above ground.	100-450m.		
1564	Amytornis dorotheae	Carpentarian grasswren	E	Among dense large (=mature) spinifex Triodia pungens occasionally with sparse Corymibia dichromophloia & shrub (e.g. acacia) in dissected rocky sandstone ranges and slopes, and in Eucalyptus leucophloia low open woodland with Triodia longiceps/T. modesta and sparse acacia in siltstone ranges and undulating quartzitic plains with rocky creeklines and boulders.	200-400m.	Sandstone, siltsone and quartzitic substrates.	Dissected ranges, slopes and plains.
12516	Trachymene glandulosa		NT	open grassland; low woodland of Eucalyptus spp. with Triodia spp. understorey;	50 to 300 m	sands often shallow	ridge, rocky outcrop, rocky hill slope

Label	Regional Ecosystem (mandatory unless otherwise specified)
66	1.3.6, 1.3.7, 1.3.9, 1.3.13, 1.3.14, 2.10.8, 2.3.16, 2.3.17, 2.3.20, 2.3.24, 2.3.26, 2.3.46, 2.3.50, 2.3.52, 3.3.5, 3.3.9, 3.3.10, 3.3.47, 3.3.50, 3.3.64, 3.3.65, 3.3.66, 4.3.1, 4.3.2, 4.3.3, 4.3.4, 4.3.5, 4.3.8, 4.3.11, 9.3.2, 9.3.13, 10.3.4, 10.3.13, 10.3.14, 10.3.22, 11.3.25
106	1.3.5, 1.3.6, 1.3.7, 1.3.9, 1.3.11, 1.5.2, 1.5.3, 1.5.4, 1.5.11, 1.5.13, 1.7.1, 1.7.5, 1.7.7, 1.9.4, 1.10.2, 1.10.3, 1.10.4, 1.10.9, 1.11.2, 1.11.3, 1.11.4, 1.11.7, 1.11.8, 1.12.1, 2.3.1, 2.3.4, 2.3.11, 2.3.17, 2.3.20, 2.3.26, 2.3.30, 2.3.44, 2.3.50, 2.3.52, 2.3.59, 2.3.69, 2.4.1, 2.4.4, 2.4.5, 2.5.11, 2.5.12, 2.5.32, 2.5.34, 2.5.36, 2.5.37, 2.7.4, 2.9.2, 3.1.1, 3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.1.6, 3.2.1, 3.2.2, 3.2.3, 3.2.5, 3.2.7, 3.2.10, 3.2.12, 3.2.13, 3.2.17, 3.2.18, 3.2.21, 3.2.22, 3.2.24, 3.2.26, 3.2.27, 3.2.30, 3.2.33, 3.3.1, 3.3.5, 3.3.8, 3.3.9, 3.3.10, 3.3.11, 3.3.13, 3.3.16, 3.3.20, 3.3.24, 3.3.31, 3.3.35, 3.3.37, 3.3.38, 3.3.39, 3.3.47, 3.3.48, 3.3.49, 3.3.50, 3.3.51, 3.3.56, 3.3.58, 3.3.59, 3.3.60, 3.3.61, 3.3.64, 3.3.65, 3.3.66, 3.3.67, 3.5.3, 3.5.4, 3.5.5, 3.5.6, 3.5.19, 3.5.21, 3.5.33, 3.5.35, 3.5.36, 3.5.37, 3.5.38, 3.5.39, 3.5.40, 3.5.41, 3.5.42, 3.7.3, 3.9.4, 3.9.5, 3.9.7, 3.10.1, 3.10.5, 3.10.6, 3.10.9, 3.10.15, 3.10.16, 3.10.19, 3.11.1, 3.11.3, 3.11.6, 3.11.7, 3.11.11, 3.11.12, 3.11.13, 3.11.17, 3.11.18, 3.12.10, 3.12.18, 3.12.21, 3.12.45, 3.12.47, 9.3.3, 9.3.14, 9.5.9, 9.5.12, 9.5.13, 9.5.14, 9.11.3, 9.11.25
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1564	1.3.2, 1.3.4, 1.3.5, 1.3.6, 1.3.7, 1.3.8, 1.3.9, 1.3.11, 1.3.12, 1.3.13, 1.3.14, 1.3.15, 1.5.1, 1.5.2, 1.5.3, 1.5.4, 1.5.5, 1.5.6, 1.5.7, 1.5.8, 1.5.9, 1.5.10, 1.5.11, 1.5.12, 1.5.13, 1.15.14, 1.5.15, 1.5.16, 1.5.17, 1.5.18, 1.5.19, 1.6.1, 1.7.1, 1.7.2, 1.7.3, 1.7.4, 1.7.5, 1.7.6, 1.7.7, 1.9.1, 1.9.2, 1.9.3, 1.9.4, 1.9.6, 1.9.7, 1.9.9, 1.9.10, 1.9.13, 1.9.14, 1.10.1, 1.10.2, 1.10.3, 1.10.4, 1.10.7, 1.10.8, 1.10.9, 1.11.1, 1.11.2, 1.11.3, 1.11.4, 1.11.6, 1.11.7, 1.11.8, 1.11.9, 1.11.10, 1.11.11, 1.11.12, 1.11.13, 1.11.14, 1.12.1, 1.12.2, 1.12.3, 1.12.4, 1.12.5, 1.12.6, 1.12.7
12516	1.7.1, 1.7.5, 1.10.2, 1.10.4, 1.10.9, 1.11.2, 1.11.12

3.6 Area Management Plan(s)

Area management plan for the control of pest plants in the Dry Tropics region

3.7 Coastal or non-coastal

For the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP), this property is regarded as*

Non Coastal

*See also Map 4.3

3.8 Agricultural Land Class A or B

The following can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code:

Does this lot contain land that is mapped as Agricultural Land Class A or B in the State Planning Interactive Mapping System?

No Class A

No Class B

Note - This confirms Agricultural Land Classes as per the State Planning Interactive Mapping System only. This response does not include Agricultural Land Classes identified under local government planning schemes. For further information, check the Planning Scheme for your local government area.

See Map 4.4 to identify the location and extent of Class A and/or Class B Agricultural land on Lot: 1 Plan: CP887914.

4. Vegetation management framework maps

Vegetation management maps included in this report may also be requested individually at:
https://www.resources.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form

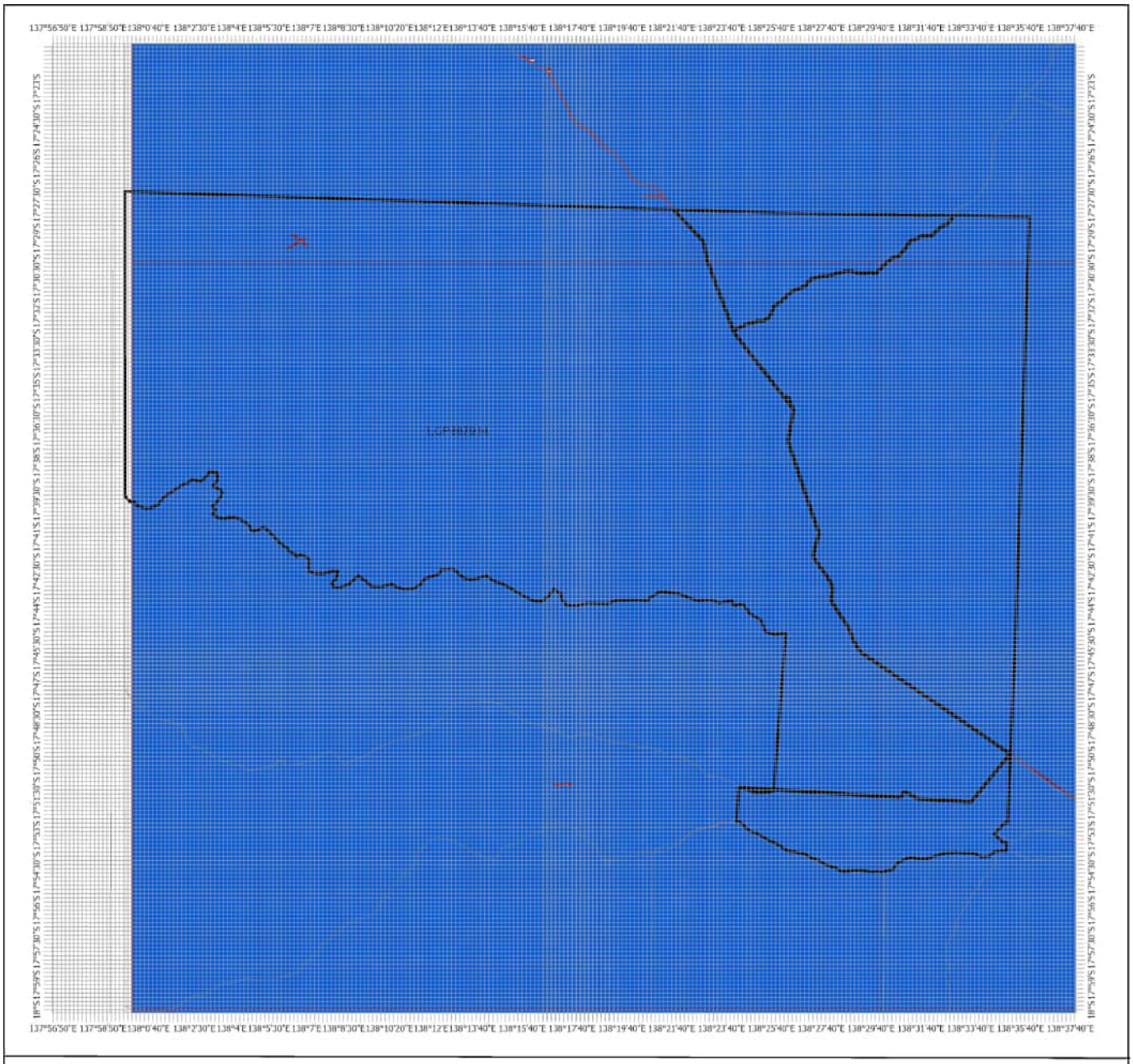
Regulated vegetation management map
The regulated vegetation management map shows vegetation categories needed to determine clearing requirements. These maps are updated monthly to show new property maps of assessable vegetation (PMAV).

Vegetation management supporting map
The vegetation management supporting map provides information on regional ecosystems, wetlands, watercourses and essential habitat.

Coastal/non-coastal map
The coastal/non-coastal map confirms whether the lot, or which parts of the lot, are considered coastal or non-coastal for the purposes of the accepted development vegetation clearing codes and State Code 16 of the State Development Assessment Provisions (SDAP).

Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture
The Agricultural Land Class map confirms the location and extent of land mapped as Agricultural Land Classes A or B as identified on the State Planning Interactive Mapping System. Please note that this map does not include areas identified as Agricultural Land Class A or B in local government planning schemes. This map can be used to identify Agricultural Land Class A or B areas under the "Managing regulated regrowth vegetation" accepted development vegetation clearing code.

4.1 Regulated vegetation management map



Regulated Vegetation Management Map

- Category A area (Vegetation offsets/compliance notices/VDecs)
- Category B area (Remnant vegetation)
- Category C area (High-value regrowth vegetation)
- Category R area (Reef regrowth watercourse vegetation)
- Category X area (Exempt clearing work on Freehold, Indigenous and Leasehold land)
- Water
- Other land parcel boundaries
- Selected Lot and Plan

LOCALITY DIAGRAM

N

0 4,000 8,000 12,000 16,000 20,000 m

This product is displayed in:
GDA2020

Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

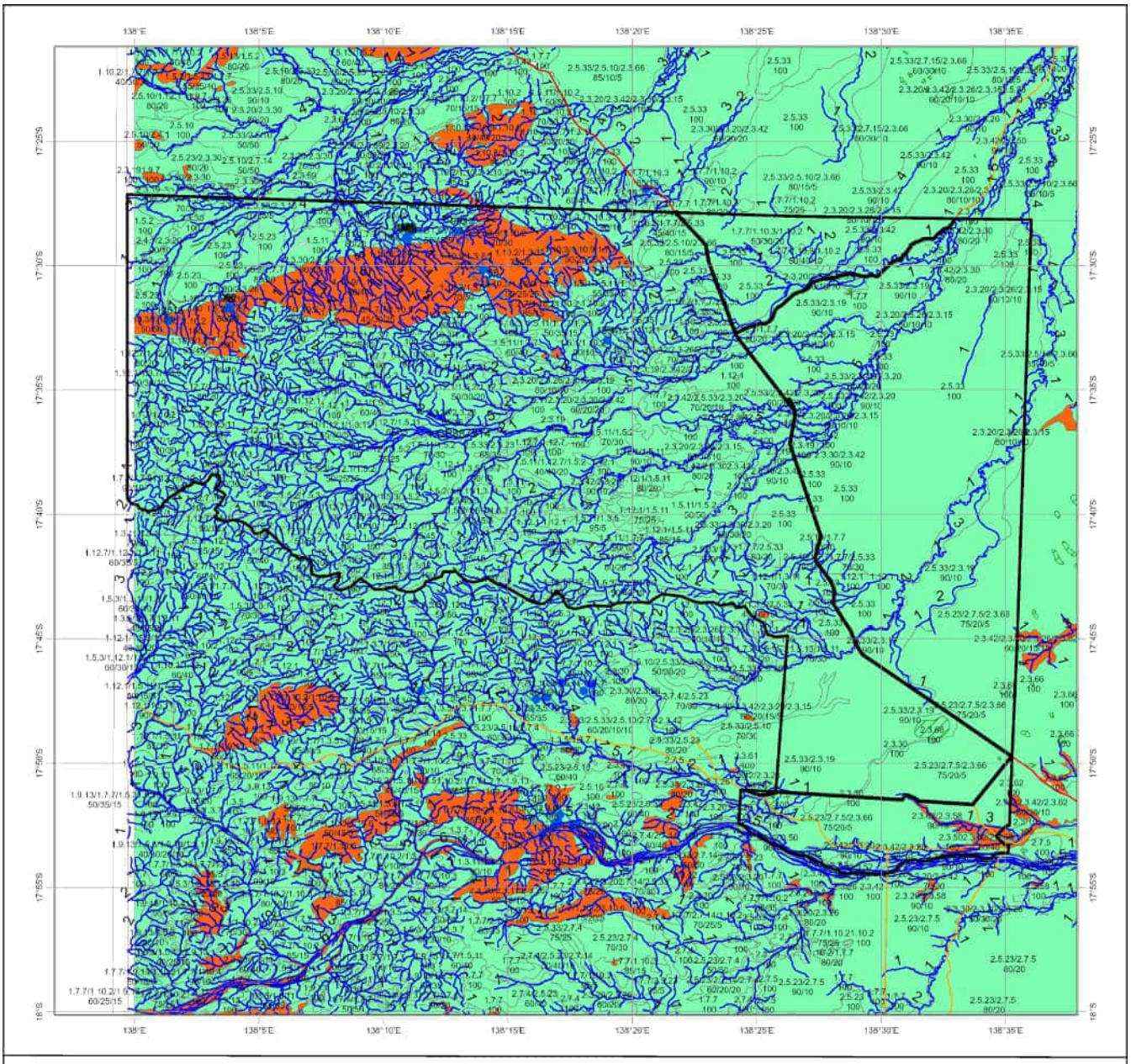
Additional information required for the assessment of vegetation values is provided in the accompanying "Vegetation Management Supporting map". For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the regulated vegetation management map is available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

This map is updated on a monthly basis to ensure new PMAVs are included as they are approved.

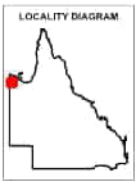
4.2 Vegetation management supporting map



Vegetation Management Supporting Map

- Category A or B area containing endangered regional ecosystems
- Category A or B area containing of concern regional ecosystems
- Category A or B area that is a least concern regional ecosystem
- Category C or R area containing endangered regional ecosystems
- Category C or R area containing of concern regional ecosystems
- Category C or R area that is a least concern regional ecosystem
- Category X area
- Water
- Wetland on the vegetation management wetlands map
- Essential habitat on the essential habitat map
- Essential habitat species record
- Watercourses and drainage features on the vegetation management watercourse and drainage features map (Stream order shown as black number against stream where available)
- Highway
- Connector
- Street/Local Road
- National Parks, State Forest and other reserves
- Other land parcel boundaries
- Selected Lot and Plan

LOCALITY DIAGRAM



N

0 2,500 5,000 7,500 10,000 12,500 m

This product is displayed in: GDA2020

Labels for Essential Habitat are centred on the area of enquiry.

Regional ecosystem linework has been compiled at a scale of 1:100 000, except in designated areas where a compilation scale of 1:50 000 is available. Linework should be used as a guide only. The positional accuracy of RE data mapped at a scale of 1:100 000 is +/- 100 metres.

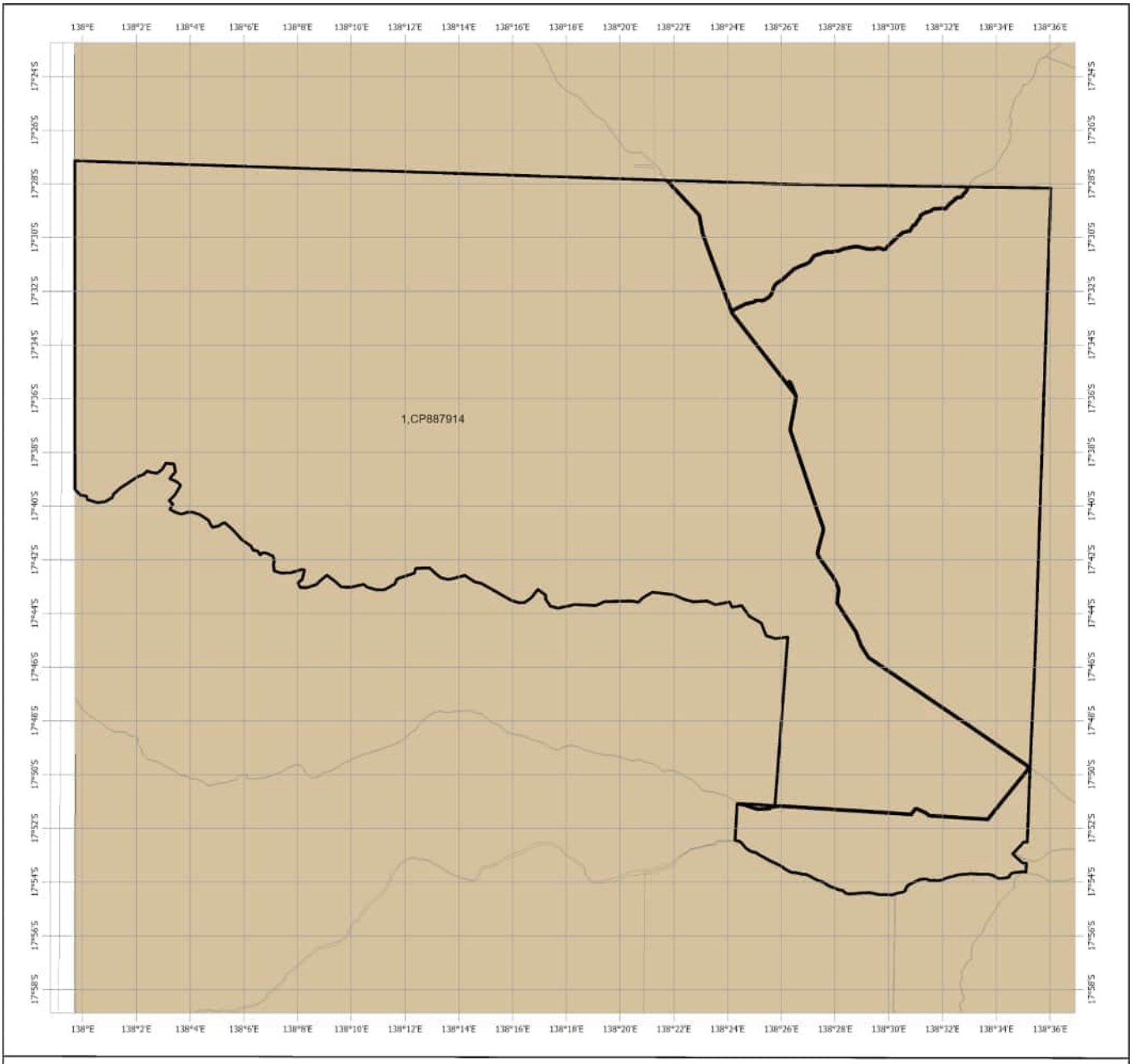
Disclaimer:
While every care is taken to ensure the accuracy of this product, the Department of Resources makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the product being inaccurate or incomplete in any way and for any reason.

Additional information may be required for the purposes of land clearing or assessment of a regional ecosystem map or PMAV applications. For further information go to the web site: www.resources.qld.gov.au or contact the Department of Resources.

Digital data for the vegetation management watercourse and drainage feature map, vegetation management wetlands map, essential habitat map and the vegetation management remnant and regional ecosystem map are available from the Queensland Spatial Portal at http://www.information.qld.gov.au/

Land parcel boundaries are provided as locational aid only.

4.3 Coastal/non-coastal map



Coastal/Non Coastal Map

Coastal
Non Coastal
Other land parcel boundaries
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 3,000 6,000 9,000 12,000 15,000 m

This product is displayed in:
GDA2020

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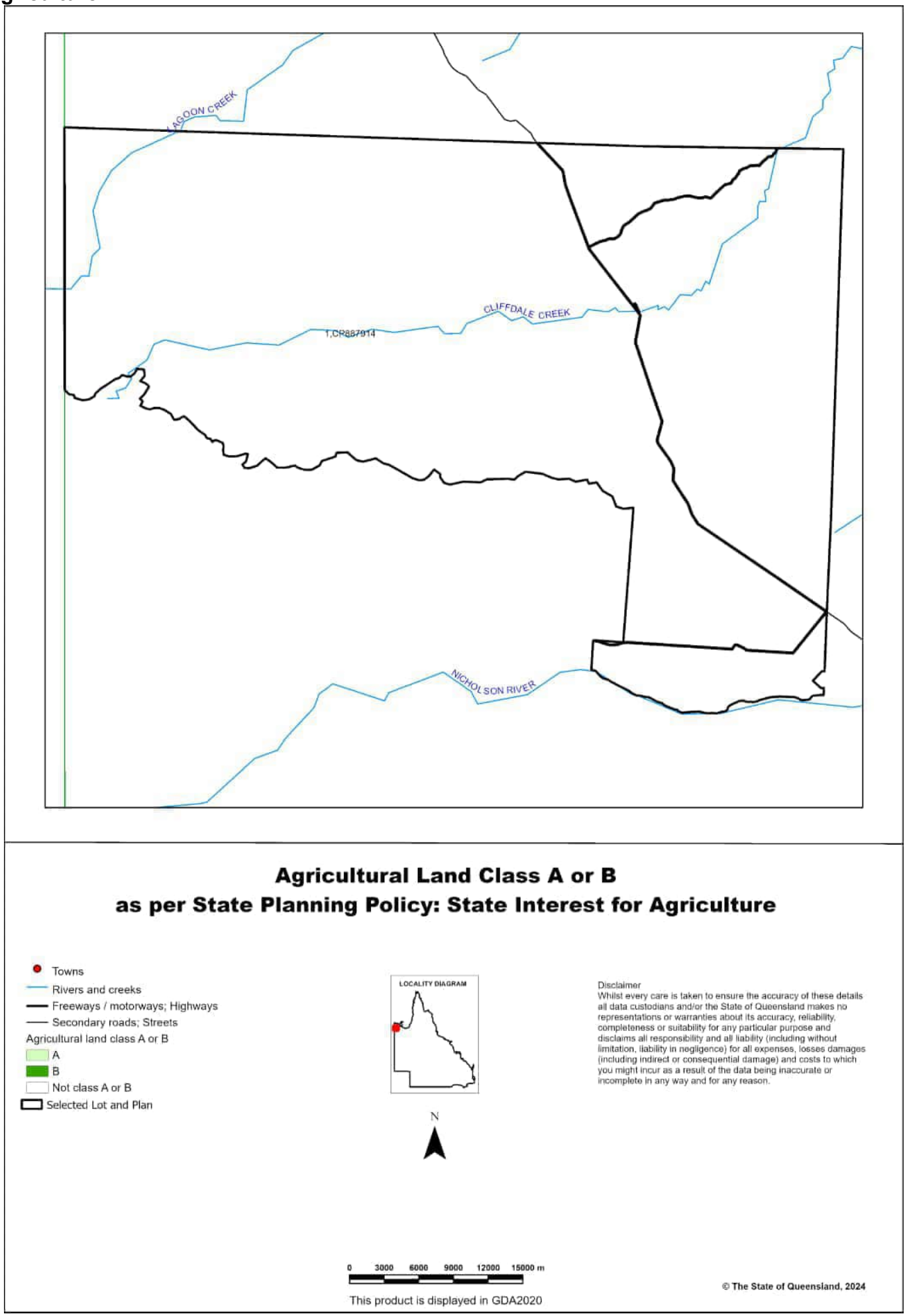
Land parcel boundaries shown are provided as a locational aid only.

4.4 Agricultural Land Class A or B as per State Planning Policy: State Interest for Agriculture



5. Protected plants framework (administered by the Department of Environment, Science and Innovation (DESI))

In Queensland, all plants that are native to Australia are protected plants under the *Nature Conservation Act 1992* (NCA). The NCA regulates the clearing of protected plants 'in the wild' (see Operational policy: When a protected plant in Queensland is considered to be 'in the wild') that are listed as critically endangered, endangered, vulnerable or near threatened under the Act.

Please note that the protected plant clearing framework applies irrespective of the classification of the vegetation under the *Vegetation Management Act 1999* and any approval or exemptions given under another Act, for example, the *Vegetation Management Act 1999* or *Planning Regulation 2017*.

5.1 Clearing in high risk areas on the flora survey trigger map

The flora survey trigger map identifies high-risk areas for threatened and near threatened plants. These are areas where threatened or near threatened plants are known to exist or are likely to exist based on the habitat present. The flora survey trigger map for this property is provided in section 5.5.

If you are proposing to clear an area shown as high risk on the flora survey trigger map, a flora survey of the clearing impact area must be undertaken by a suitably qualified person in accordance with the Flora survey guidelines. The main objective of a flora survey is to locate any threatened or near threatened plants that may be present in the clearing impact area.

If the flora survey identifies that threatened or near threatened plants are not present within the clearing impact area or clearing within 100m of EVNT plants can be avoided, the clearing activity is exempt from a permit. An exempt clearing notification form must be submitted to the Department of Environment, Science and Innovation, with a copy of the flora survey report, at least one week prior to clearing.

If the flora survey identifies that threatened or near threatened plants are present in, or within 100m of, the area to be cleared, a clearing permit is required before any clearing is undertaken. The flora survey report, as well as an impact management report, must be submitted with the clearing permit application form.

5.2 Clearing outside high risk areas on the flora survey trigger map

In an area other than a high risk area, a clearing permit is only required where a person is, or becomes aware that threatened or near threatened plantsare present in, or within 100m of, the area to be cleared. You must keep a copy of the flora survey trigger map for the area subject to clearing for five years from the day the clearing starts. If you do not clear within the 12 month period that the flora survey trigger map was printed, you need to print and check a new flora survey trigger map.

5.3 Exemptions

Many activities are 'exempt' under the protected plant clearing framework, which means that clearing of native plants that are in the wild can be undertaken for these activities with no need for a flora survey or a protected plant clearing permit. The Information sheet - General exemptions for the take of protected plants provides some of these exemptions.

Some exemptions under the NCA are the same as exempt clearing work (formerly known as exemptions) under the *Vegetation Management Act 1999* (i.e. listed in Schedule 21 of the Planning Regulations 2017) while some are different.

5.4 Contact information for DESI

For further information on the protected plants framework:
Phone 1300 130 372 (and select option four)
Email palm@des.qld.gov.au
Visit https://www.qld.gov.au/environment/plants-animals/plants/protected-plants

5.5 Protected plants flora survey trigger map

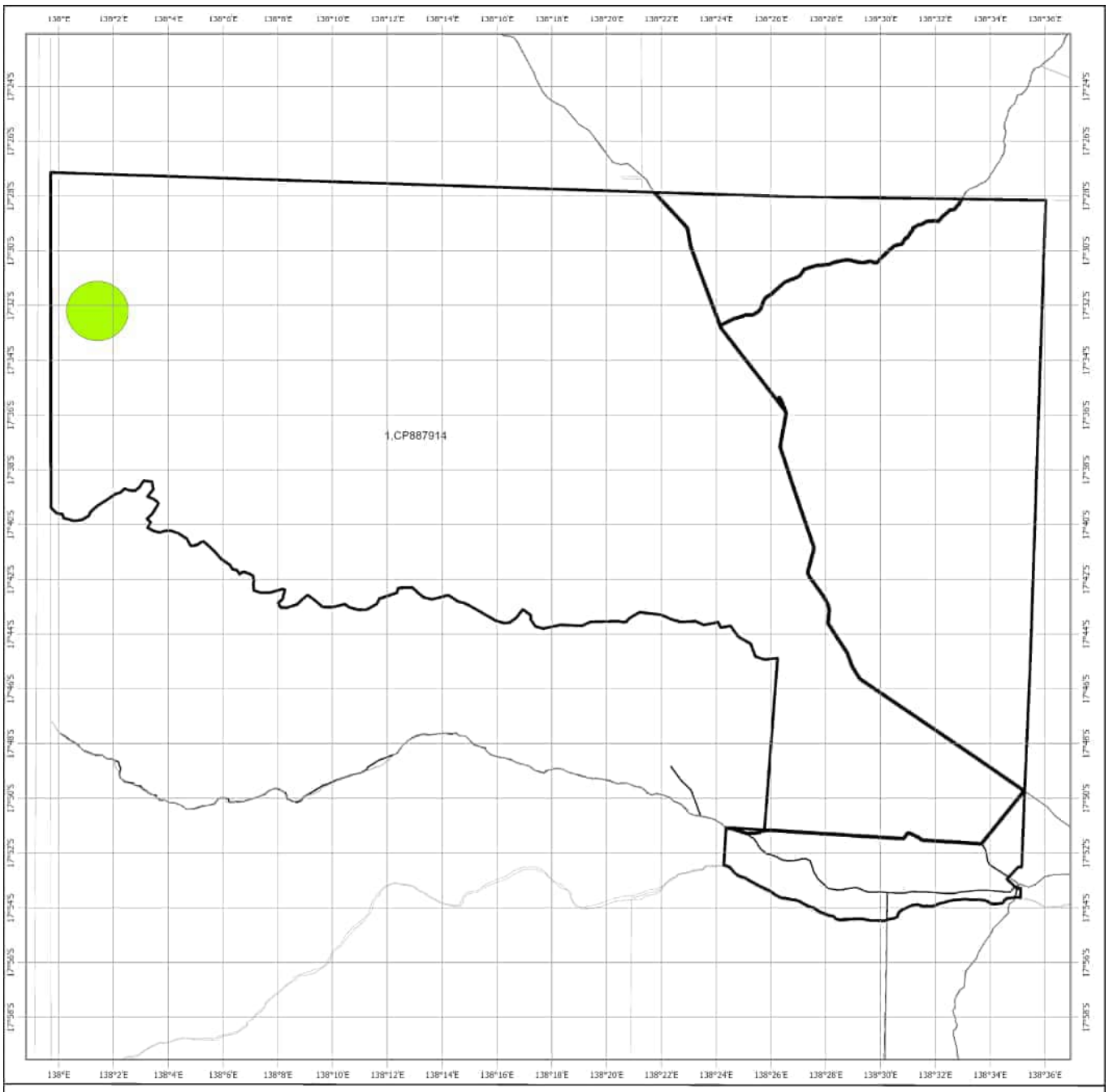
This map included may also be requested individually at: https://apps.des.qld.gov.au/map-request/flora-survey-trigger/.

Updates to the data informing the flora survey trigger map

The flora survey trigger map will be reviewed, and updated if necessary, at least every 12 months to ensure the map reflects the most up-to-date and accurate data available.

Species information

Please note that flora survey trigger maps do not identify species associated with 'high risk areas'. While some species information may be publicly available, for example via the Queensland Spatial Catalogue, the Department of Environment, Science and Innovation does not provide species information on request. Regardless of whether species information is available for a particular high risk area, clearing plants in a high risk area may require a flora survey and/or clearing permit. Please see the Department of Environment, Science and Innovation webpage on the clearing of protected plants for more information.



Protected Plants Flora Survey Trigger Map

High risk area
Other land parcel boundaries
Freeways / motorways / highways
Secondary roads / streets
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 2,500 5,000 7,500 10,000 12,500 m

This product is displayed in:
GDA2020

This map shows areas where particular provisions of the Nature Conservation Act 1992 apply to the clearing of protected plants.

Land parcel boundaries are provided as locational aid only.

This map is produced at a scale relevant to the size of the area selected and should be printed as A4 size in portrait orientation.

For further information or assistance with interpretation of this product, please contact the Department of Environment, Science and Innovation at palm@des.qld.gov.au

Disclaimer: While every care is taken to ensure the accuracy of the data used to generate this product, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaim all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damages) and costs which might be incurred as a consequence of reliance on the data, or as a result of the data being inaccurate or incomplete in any way and for any reason.

6. Koala protection framework (administered by the Department of Environment, Science and Innovation (DESI))

The koala (*Phascolarctos cinereus*) is listed in Queensland as endangered by the Queensland Government under *Nature Conservation Act 1992* and by the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999*.

The Queensland Government's koala protection framework is comprised of the *Nature Conservation Act 1992*, the Nature Conservation (Animals) Regulation 2020, the Nature Conservation (Koala) Conservation Plan 2017, the *Planning Act 2016* and the Planning Regulation 2017.

6.1 Koala mapping

6.1.1 Koala districts

The parts of Queensland where koalas are known to occur has been divided into three koala districts - koala district A, koala district B and koala district C. Each koala district is made up of areas with comparable koala populations (e.g. density, extent and significance of threatening processes affecting the population) which require similar management regimes.

Section 7.1 identifies which koala district your property is located in.

6.1.2 Koala habitat areas

Koala habitat areas are areas of vegetation that have been determined to contain koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water). In order to protect this important koala habitat, clearing controls have been introduced into the Planning Regulation 2017 for development in koala habitat areas.

Please note that koala habitat areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

There are two different categories of koala habitat area (core koala habitat area and locally refined koala habitat), which have been determined using two different methodologies. These methodologies are described in the document Spatial modelling in South East Queensland.

Section 7.2 shows any koala habitat area that exists on your property.

Under the Nature Conservation (Koala) Conservation Plan 2017, an owner of land (or a person acting on the owner's behalf with written consent) can request to make, amend or revoke a koala habitat area determination if they believe, on reasonable grounds, that the existing determination for all or part of their property is incorrect.

More information on requests to make, amend or revoke a koala habitat area determination can be found in the document Guideline - Requests to make, amend or revoke a koala habitat area determination.

The koala habitat area map will be updated at least annually to include any koala habitat areas that have been made, amended or revoked.

Changes to the koala habitat area map which occur between annual updates because of a request to make, amend or revoke a koala habitat area determination can be viewed on the register of approved requests to make, amend or revoke a koala habitat area available at: https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps. The register includes the lot on plan for the change, the date the decision was made and the map issued to the landholder that shows areas determined to be koala habitat areas.

6.1.3 Koala priority areas

Koala priority areas are large, connected areas that have been determined to have the highest likelihood of achieving conservation outcomes for koalas based on the combination of habitat suitability, biophysical variables with known relationships to koala habitat (e.g. landcover, soil, terrain, climate and ground water) and a koala conservation cost benefit analysis.

Conservation efforts will be prioritised in these areas to ensure the conservation of viable koala populations in the wild including a focus on management (e.g. habitat protection, habitat restoration and threat mitigation) and monitoring. This includes a prohibition on clearing in koala habitat areas that are in koala priority areas under the Planning Regulation 2017 (subject to some exemptions).

Please note that koala priority areas only exist in koala district A which is the South East Queensland "Shaping SEQ" Regional Plan area. These areas include the local government areas of Brisbane, Gold Coast, Logan, Lockyer Valley, Ipswich, Moreton Bay, Noosa, Redland, Scenic Rim, Somerset, Sunshine Coast and Toowoomba (urban extent).

Section 7.2 identifies if your property is in a koala priority area.

6.1.4 Identified koala broad-hectare areas

There are seven identified koala broad-hectare areas in SEQ. These are areas of koala habitat that are located in areas committed to meet development targets in the SEQ Regional Plan to accommodate SEQ's growing population including bring-forward Greenfield sites under the Queensland Housing Affordability Strategy and declared master planned areas under the repealed *Sustainable Planning Act 2009* and the repealed *Integrated Planning Act 1997*.

Specific assessment benchmarks apply to development applications for development proposed in identified koala broad-hectare areas to ensure koala conservation measures are incorporated into the proposed development.

Section 7.2 identifies if your property is in an identified koala broad-hectare area.

6.2 Koala habitat planning controls

On 7 February 2020, the Queensland Government introduced new planning controls to the Planning Regulation 2017 to strengthen the protection of koala habitat in South East Queensland (i.e. koala district A).

More information on these planning controls can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

As a high-level summary, the koala habitat planning controls make:

- development that involves interfering with koala habitat (defined below) in an area that is both a koala priority area and a koala habitat area, prohibited development (i.e. development for which a development application cannot be made);
- development that involves interfering with koala habitat (defined below) in an area that is a koala habitat area but is not a koala priority area, assessable development (i.e. development for which development approval is required); and
- development that is for extractive industries where the development involves interfering with koala habitat (defined below) in an area that is both a koala habitat area and a key resource area, assessable development (i.e. development for which development approval is required).

Interfering with koala habitat means:

1. Removing, cutting down, ringbarking, pushing over, poisoning or destroying in anyway, including by burning, flooding or draining native vegetation in a koala habitat area; but
2. Does not include destroying standing vegetation stock or lopping a tree.

However, these planning controls do not apply if the development is exempted development as defined in Schedule 24 of the Planning Regulation 2017. More information on exempted development can be found here:
https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/legislation-policy.

There are also assessment benchmarks that apply to development applications for:

- building works, operational works, material change of use or reconfiguration of a lot where:

  - the local government planning scheme makes the development assessable;
  - the premises includes an area that is both a koala priority area and a koala habitat area; and
  - the development does not involve interfering with koala habitat (defined above); and

- development in identified koala broad-hectare areas.

The Guideline - Assessment Benchmarks in relation to Koala Habitat in South East Queensland assessment benchmarks outlines these assessment benchmarks, the intent of these assessment benchmarks and advice on how proposed development may meet these assessment benchmarks.

6.3 Koala Conservation Plan clearing requirements

Section 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017 prescribes requirements that must be met when clearing koala habitat in koala district A and koala district B.

These clearing requirements are independent to the koala habitat planning controls introduced into the Planning Regulation 2017, which means they must be complied with irrespective of any approvals or exemptions offered under other legislation.

Unlike the clearing controls prescribed in the Planning Regulation 2017 that are to protect koala habitat, the clearing requirements prescribed in the Nature Conservation (Koala) Conservation Plan 2017 are in place to prevent the injury or death of koalas when koala habitat is being cleared.

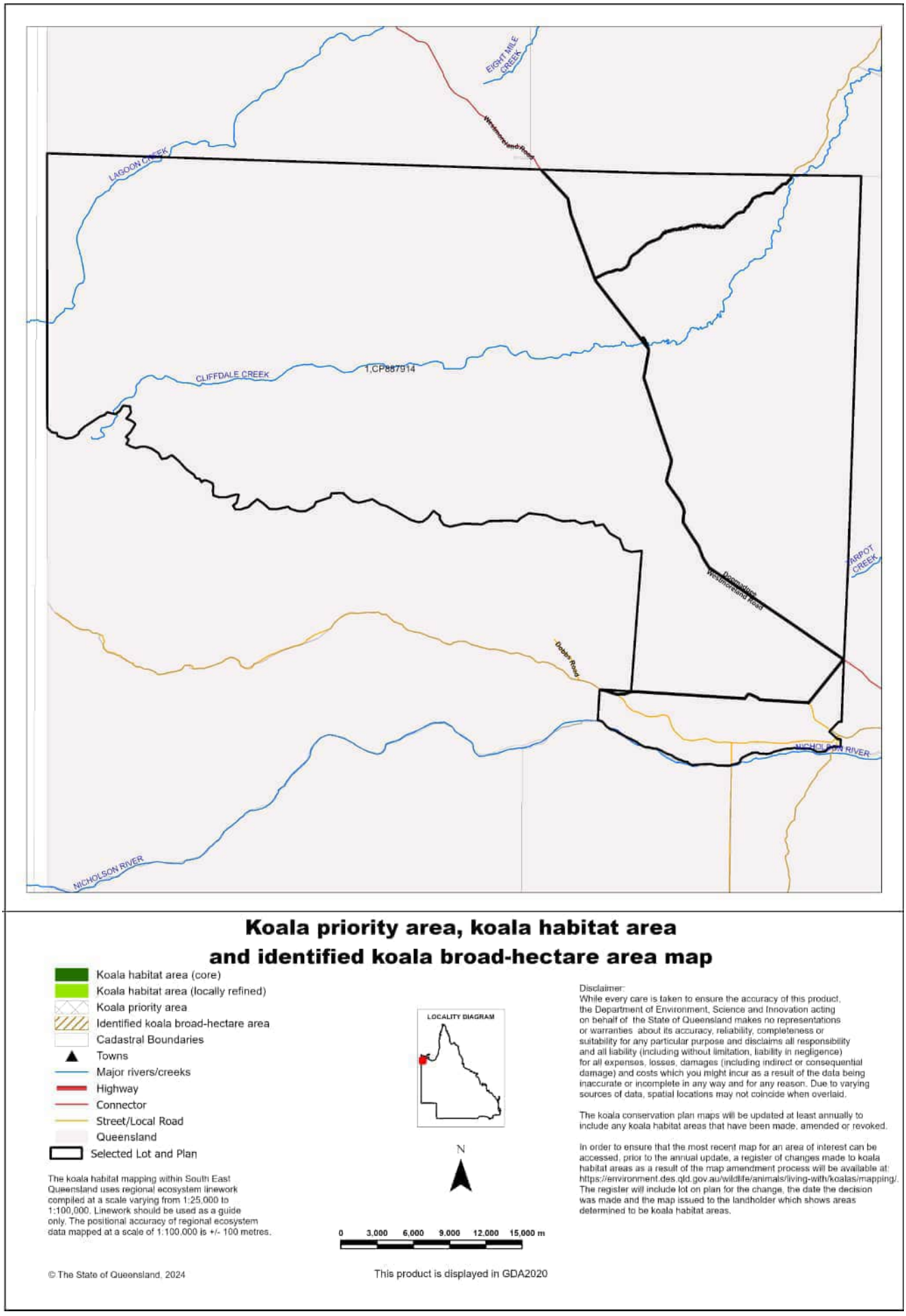
6.4 Contact information for DESI

For further information on the koala protection framework:
Phone 13 QGOV (13 74 68)
Email koala.assessment@des.qld.gov.au
Visit https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping

7. Koala protection framework details for Lot: 1 Plan: CP887914

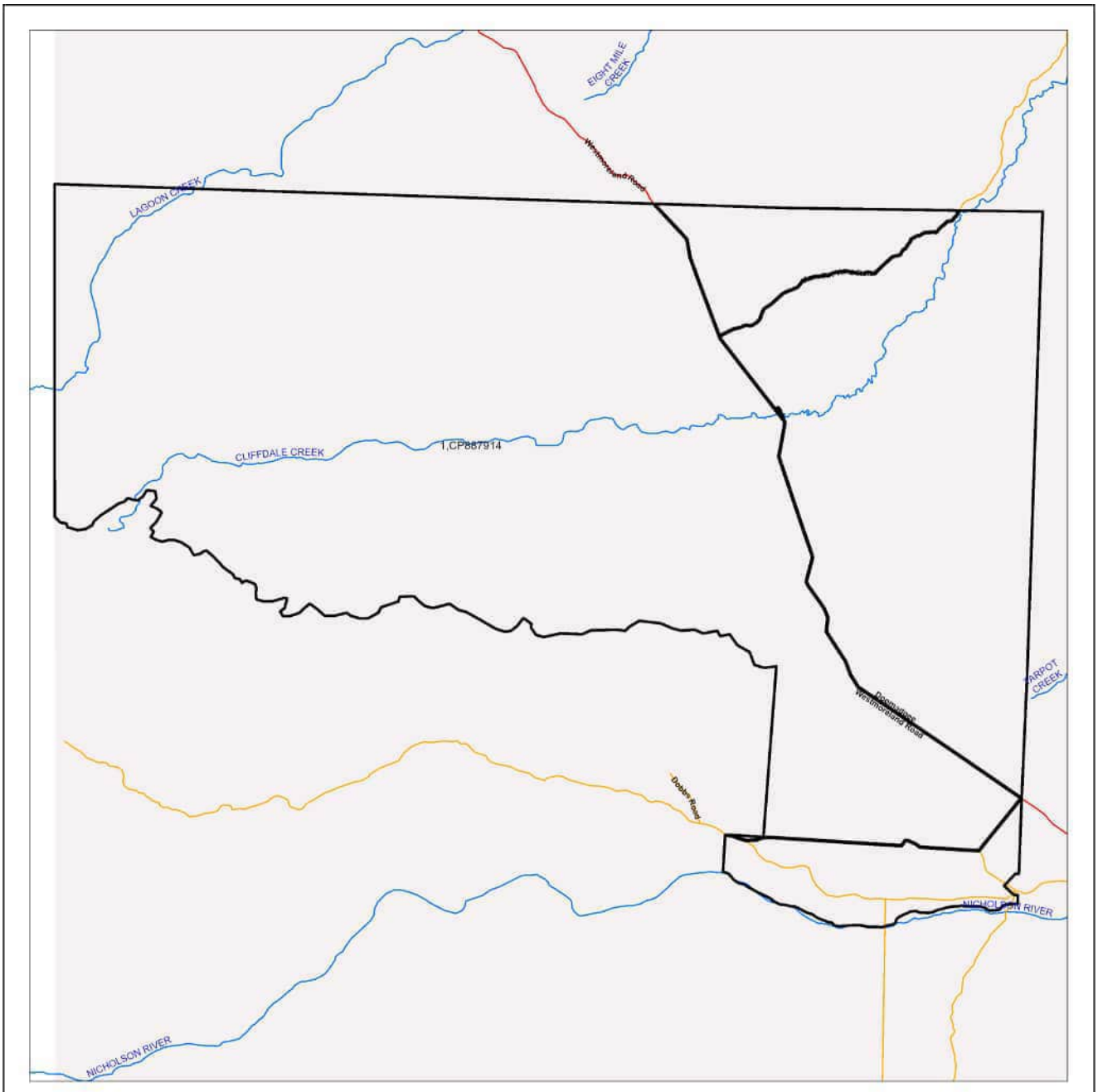
(no results)

7.2 Koala priority area, koala habitat area and identified koala broad-hectare map



Koala priority area, koala habitat area and identified koala broad-hectare area map

7.3 Koala habitat regional ecosystems for core koala habitat areas



Koala habitat regional ecosystems for core koala habitat areas

Koala habitat area (core)
Towns
Highway
Connector
Street/Local Road
Major rivers/creeks
Queensland
Selected Lot and Plan

LOCALITY DIAGRAM

N

0 3,000 6,000 9,000 12,000 15,000 m

The koala habitat mapping within South East Queensland uses regional ecosystem linework compiled at a scale varying from 1:25,000 to 1:100,000. Linework should be used as a guide only. The positional accuracy of regional ecosystem data mapped at a scale of 1:100,000 is +/- 100 metres.

This product is displayed in GDA2020

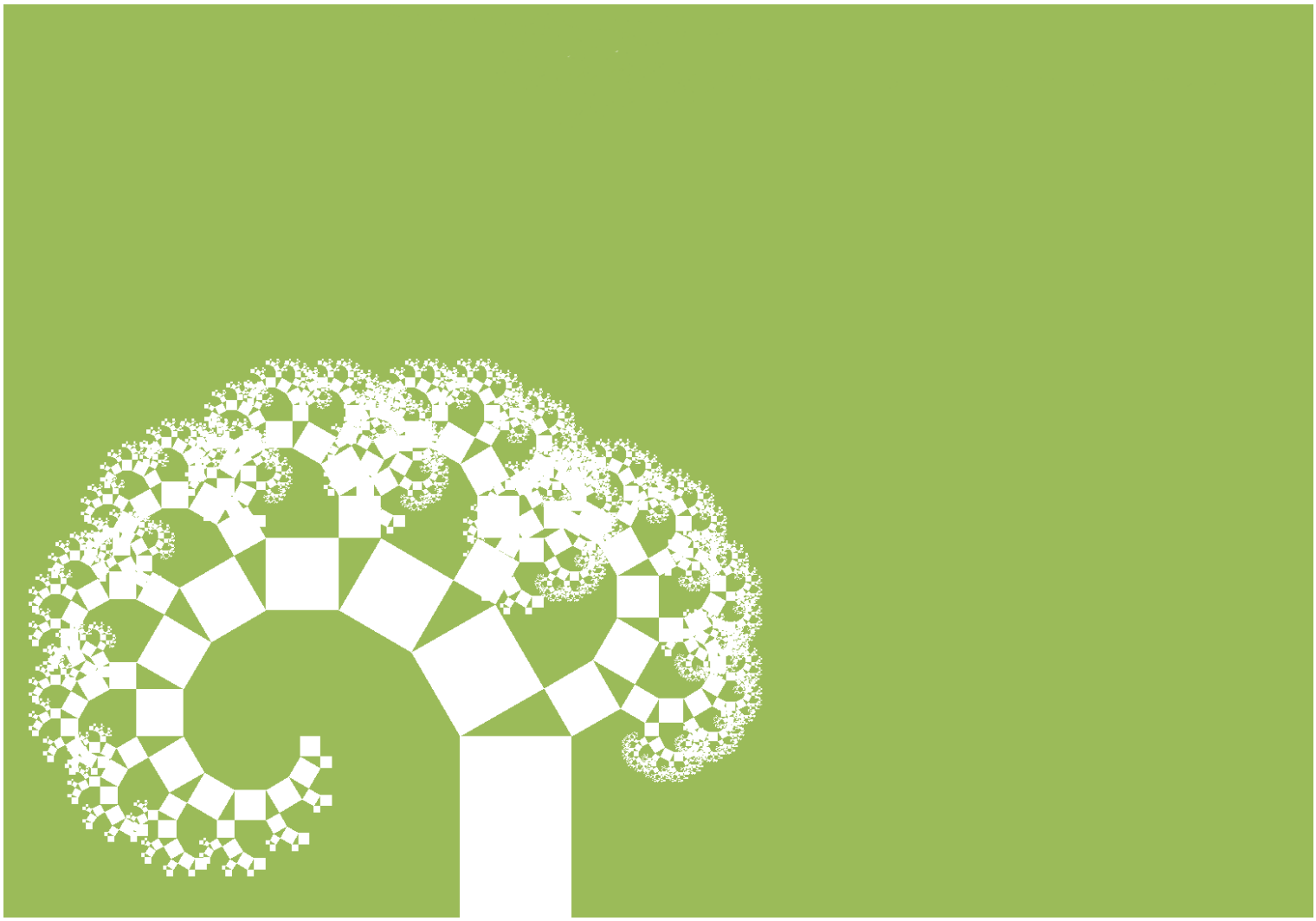
DISCLAIMER:

While every care is taken to ensure the accuracy of this product, the Department of Environment, Science and Innovation acting on behalf of the State of Queensland makes no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which you might incur as a result of the data being inaccurate or incomplete in any way and for any reason.
Due to varying sources of data, spatial locations may not coincide when overlaid.

8. Other relevant legislation contacts list

Activity	Legislation	Agency	Contact details
• Interference with overland flow • Earthworks, significant disturbance	*Water Act 2000* *Soil Conservation Act 1986*	Department of Regional Development, Manufacturing and Water (Queensland Government) Department of Resources (Queensland Government)	Ph: 13 QGOV (13 74 68) www.rdmw.qld.gov.au/ www.resources.qld.gov.au
• Indigenous Cultural Heritage	*Aboriginal Cultural Heritage Act 2003* *Torres Strait Islander Cultural Heritage Act 2003*	Department of Seniors, Disability Services and Aboriginal and Torres Strait Islander Partnerships	Ph: 13 QGOV (13 74 68) www.datsip.qld.gov.au
• Mining and environmentally relevant activities • Infrastructure development (coastal) • Heritage issues	*Environmental Protection Act 1994* *Coastal Protection and Management Act 1995* *Queensland Heritage Act 1992*	Department of Environment, Science and Innovation (Queensland Government)	Ph: 13 QGOV (13 74 68) www.des.qld.gov.au
• Protected plants and protected areas	*Nature Conservation Act 1992*	Department of Environment, Science and Innovation (Queensland Government)	Ph: 1300 130 372 (option 4) palm@des.qld.gov.au www.des.qld.gov.au
• Koala mapping and regulations	*Nature Conservation Act 1992*	Department of Environment, Science and Innovation (Queensland Government)	Ph: 13 QGOV (13 74 68) Koala.assessment@des.qld.gov.au
• Interference with fish passage in a watercourse, mangroves • Forestry activities on State land tenures	*Fisheries Act 1994* *Forestry Act 1959*	Department of Agriculture and Fisheries (Queensland Government)	Ph: 13 QGOV (13 74 68) www.daf.qld.gov.au
• Matters of National Environmental Significance including listed threatened species and ecological communities	*Environment Protection and Biodiversity Conservation Act 1999*	Department of Agriculture, Water and the Environment (Australian Government)	Ph: 1800 803 772 www.environment.gov.au
• Development and planning processes	*Planning Act 2016* *State Development and Public Works Organisation Act 1971*	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) www.dsdmip.qld.gov.au
• Local government requirements	*Local Government Act 2009* *Planning Act 2016*	Department of State Development, Infrastructure, Local Government and Planning (Queensland Government)	Ph: 13 QGOV (13 74 68) Your relevant local government office
• Harvesting timber in the Wet Tropics of Qld World Heritage area	*Wet Tropics World Heritage Protection and Management Act 1993*	Wet Tropics Management Authority	Ph: (07) 4241 0500 https://www.wettropics.gov.au/

Appendix D
Modelled Potential Habitat Report



Potential habitat models Version 2

For the selected area of interest 37734.04ha Custom input

Current as at 29/10/2024

Queensland Government

Introduction

Species lists in this report are derived from Version 2 Maxent pre-clear potential habitat models produced by the Queensland Herbarium and Biodiversity Science Unit (QHBS) for selected NCA listed 'critically endangered', 'endangered', and 'vulnerable' species.

The models utilise records of fauna species occurrence compiled for the purpose of **Biodiversity Planning Assessments** by QHBS, and specimen-backed flora records compiled from the QHBS HERBRECS database. All records have a location precision of better than 2000 m, and all fauna records are less than 50 years old. Models are constrained within an occurrence mask for each species, defined by a buffer of 200 km around a convex hull that encompasses all records. All models are based on seven environmental layers, annual mean temperature, temperature seasonality (coefficient of variation), annual precipitation, mean moisture index of the lowest quarter moisture index, pre-clearing broad vegetation group (1:1M), land zone and taxonomic ruggedness. Climate layers are modelled using Anuclim software on an 83 m digital elevation model. A mask of Queensland's road network is used to down-weight species records collected along roads. Model performance is assessed by comparing the area under the ROC curve (AUC) with the 95th percentile AUC from 1000 null models for each species created by randomly selecting locations from within the minimum convex hull of species presence records. For species with very restricted ranges, model performance is further tested using randomly selected locations from within the species mask. The equal training sensitivity and specificity logistic threshold is applied for each species to convert the model output to a prediction of potential habitat. Any presence records excluded by applying this threshold are incorporated into the output with a 1km buffer applied. The output is clipped to the species mask and simplified using a majority filter algorithm to remove outlying orphan cells in the model output. The resulting shapefile defines the modelled pre-clear potential habitat for selected threatened and priority species. Please consult the full Potential habitat modelling methodology (publications.qld.gov.au) for further details.

Please note, species with fewer than 10 presence records cannot been modelled, and are not included in the species lists below. Additional data sources should be consulted for the known distribution of these species. For those species with models available, their absence from the species lists below does not indicate that habitat is absent from the queried location and conversely, species listed may not currently inhabit the area.

Threatened fauna species

Threatened fauna species modelled to have pre-clear potential habitat within the area of interest Custom input with an area of 37734.04 hectares.

Threatened Species - Fauna

Class	Scientific name	Common name	NCA Status	EPBC Status	Area (ha)
birds	*Amytornis dorotheae*	Carpentarian grasswren	E	E	12,417.49
birds	*Calidris ferruginea*	curlew sandpiper	CR	CE	20.42
birds	*Chloebia gouldiae*	Gouldian finch	E	E	25,219.18
birds	*Erythrotriorchis radiatus*	red goshawk	E	E	4,499.59
birds	*Grantiella picta*	painted honeyeater	V	V	2,486.26
birds	*Malurus coronatus*	purple-crowned fairy-wren	V	None	14,149.22
mammals	*Macroderma gigas*	ghost bat	E	V	9,270.71
mammals	*Petrogale purpureicollis*	purple-necked rock-wallaby	V	None	4,723.59

Threatened flora species

Threatened flora species modelled to have pre-clear potential habitat within the area of interest, with an area of 37734.04 hectares.

Threatened Species - Flora

Class	Scientific name	Common name	NCA Status	EPBC Status	Area (ha)
land plants	*Solanum carduiforme*		V	None	16,963.56

Links

Version 2 Potential habitat models 2022 - access the geodatabase of modelled potential habitat for Queensland's threatened species.

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government, to the maximum extent permitted by law, makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

Appendix E
MSES Report

Queensland Government

Department of Environment, Science and Innovation

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

MDL: 2026

Environmental Reports - General Information

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

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

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

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

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.

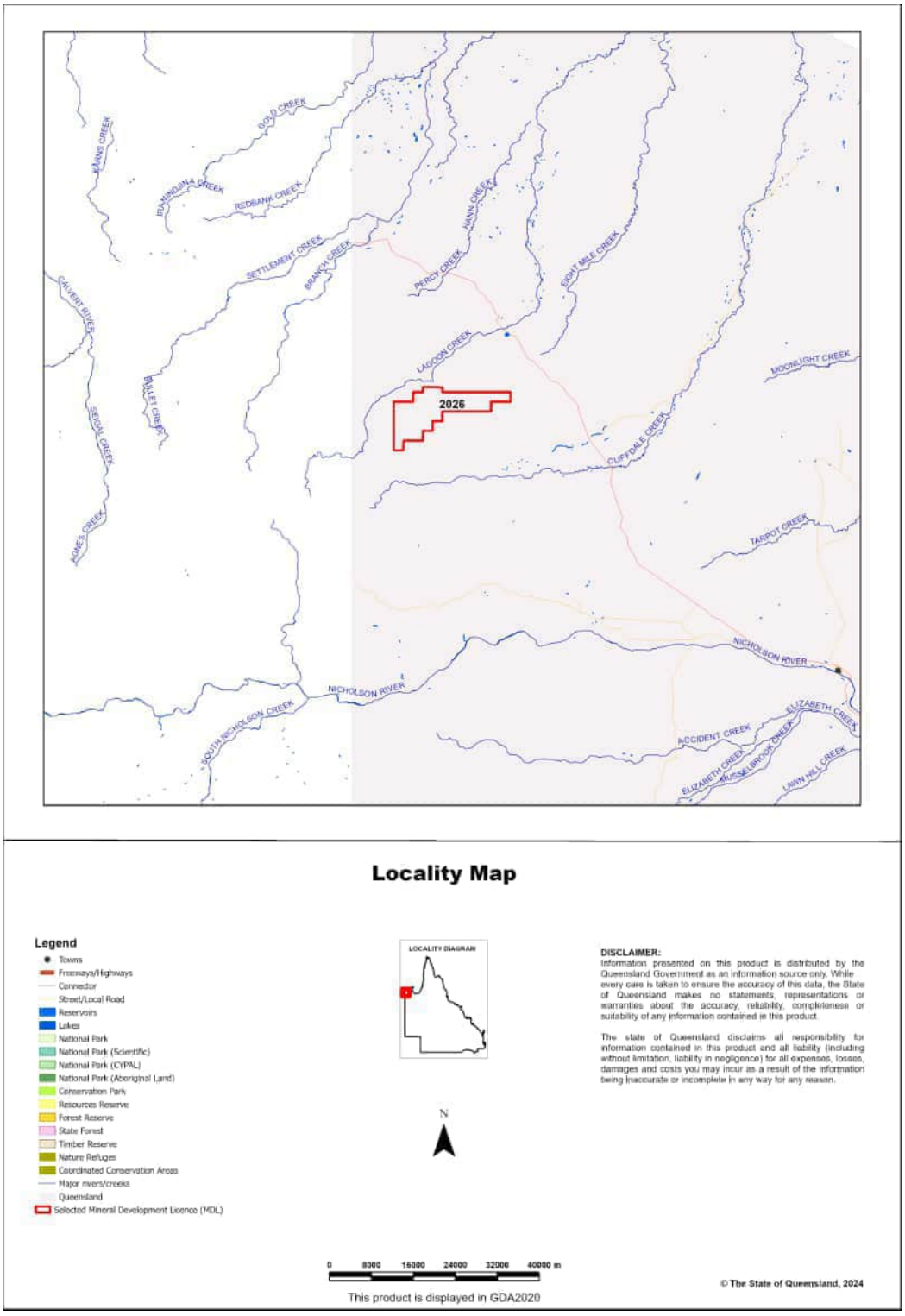
Table of Contents

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI: MDL: 2026, with area 11098.03 ha

Local Government(s)	Catchment(s)	Bioregion(s)	Subregion(s)
Burke Shire	Settlement	Northwest Highlands	McArthur



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992;*

- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the Marine Parks Act 2004 ;

- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;

- *Threatened wildlife under the Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;

- Regulated vegetation under the *Vegetation Management Act 1999* that is:

  - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
  - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
  - Category R areas on the regulated vegetation management map;
  - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
  - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;

- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;

- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;

- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0 ha	0.0%
1b Protected Areas- nature refuges	0 ha	0.0%
1c Protected Areas- special wildlife reserves	0 ha	0.0%
2 State Marine Parks- highly protected zones	0 ha	0.0%
3 Fish habitat areas (A and B areas)	0 ha	0.0%
4 Strategic Environmental Areas (SEA)	0 ha	0.0%
5 High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values	0 ha	0.0%
6a High Ecological Value (HEV) wetlands	0 ha	0.0%
6b High Ecological Value (HEV) waterways	0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	811.77 ha	7.3%
7b Special least concern animals	371.33 ha	3.3%
7c i Koala habitat area - core (SEQ)	0 ha	0.0%
7c ii Koala habitat area - locally refined (SEQ)	0 ha	0.0%
7d Sea turtle nesting areas	0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	4474.61 ha	40.3%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	0 ha	0.0%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0 ha	0.0%
8d Regulated Vegetation - Essential habitat	812.66 ha	7.3%
8e Regulated Vegetation - intersecting a watercourse	263.8 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0 ha	0.0%
9a Legally secured offset areas- offset register areas	0 ha	0.0%
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	0 ha	0.0%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(No results)

1b. Protected Areas - nature refuges

(No results)

1c. Protected Areas - special wildlife reserves

(No results)

2. State Marine Parks - highly protected zones

(No results)

3. Fish habitat areas (A and B areas)

(No results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(No results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

(no results)

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Values are present

7c i. Koala habitat area - core (SEQ)

Not applicable

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
Boronia keysii	Keys boronia	V	None
Calyptorhynchus lathami	Glossy black cockatoo	V	None
Casuarius casuarius johnsonii	Sthn population cassowary	E	None
Crinia tinnula	Wallum froglet	V	None
Denisonia maculata	Ornamental snake	V	None
Euastacus bindal	Mount Elliot crayfish	CR	None
Euastacus binzayedi		CR	None
Euastacus eungella		E	None
Euastacus hystricosus		E	None
Euastacus jagara	Jagara hairy crayfish	CR	None
Euastacus maidae		CR	None
Euastacus monteithorum		E	None
Euastacus robertsi		E	None
Taudactylus pleione	Kroombit tinkerfrog	E	None
Litoria freycineti	Wallum rocketfrog	V	None
Litoria olongburensis	Wallum sedgefrog	V	None
Macadamia integrifolia		V	None
Melaleuca irbyana	swamp tea-tree	E	None
Macadamia ternifolia		V	None
Macadamia tetraphylla	bopple nut	V	None
Petrogale penicillata	brush-tailed rock-wallaby	V	None
Petrogale coenensis	Cape York rock-wallaby	E	None
Petrogale purpureicollis	purple-necked rock-wallaby	V	None
Petrogale sharmani	Sharmans rock-wallaby	V	None
Petrogale xanthopus celeris	yellow-footed rock-wallaby (Qld subspecies)	V	None
Petaurus gracilis	Mahogany Glider	E	None
Petrogale persephone	Proserpine rock-wallaby	E	None
Phascolarctos cinereus	Koala - outside SEQ*	E	None
Pezoporus wallicus wallicus	Eastern ground parrot	V	None
Xeromys myoides	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

Scientific name	Common name	NCA status	EPBC status	Migratory status
Tiliqua scincoides intermedia	northern bluetongue	CR	None	None
Rhinonicteris aurantia	orange leaf-nosed bat	V	None	None
Varanus mertensi	Mertens' water monitor	E	None	None
Chloebia gouldiae	Gouldian finch	E	E	None

Special least concern animal species records

Scientific name	Common name	Migratory status
Tachyglossus aculeatus	short-beaked echidna	None

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

**Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL). Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)*

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

https://www.qld.gov.au/environment/plants-animals/species-list/

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals** and **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

https://environment.ehp.qld.gov.au/regional-ecosystems/

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
1.10.3/1.10.9/1.7.7b	O-subdom	rem_oc
1.10.3/1.7.7b/1.10.9	O-subdom	rem_oc
1.10.9/1.10.2	O-dom	rem_oc
1.10.9/1.3.7g	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)
Not applicable

8c. Regulated Vegetation - Category R (GBR riverine regrowth)
Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland
Not applicable

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

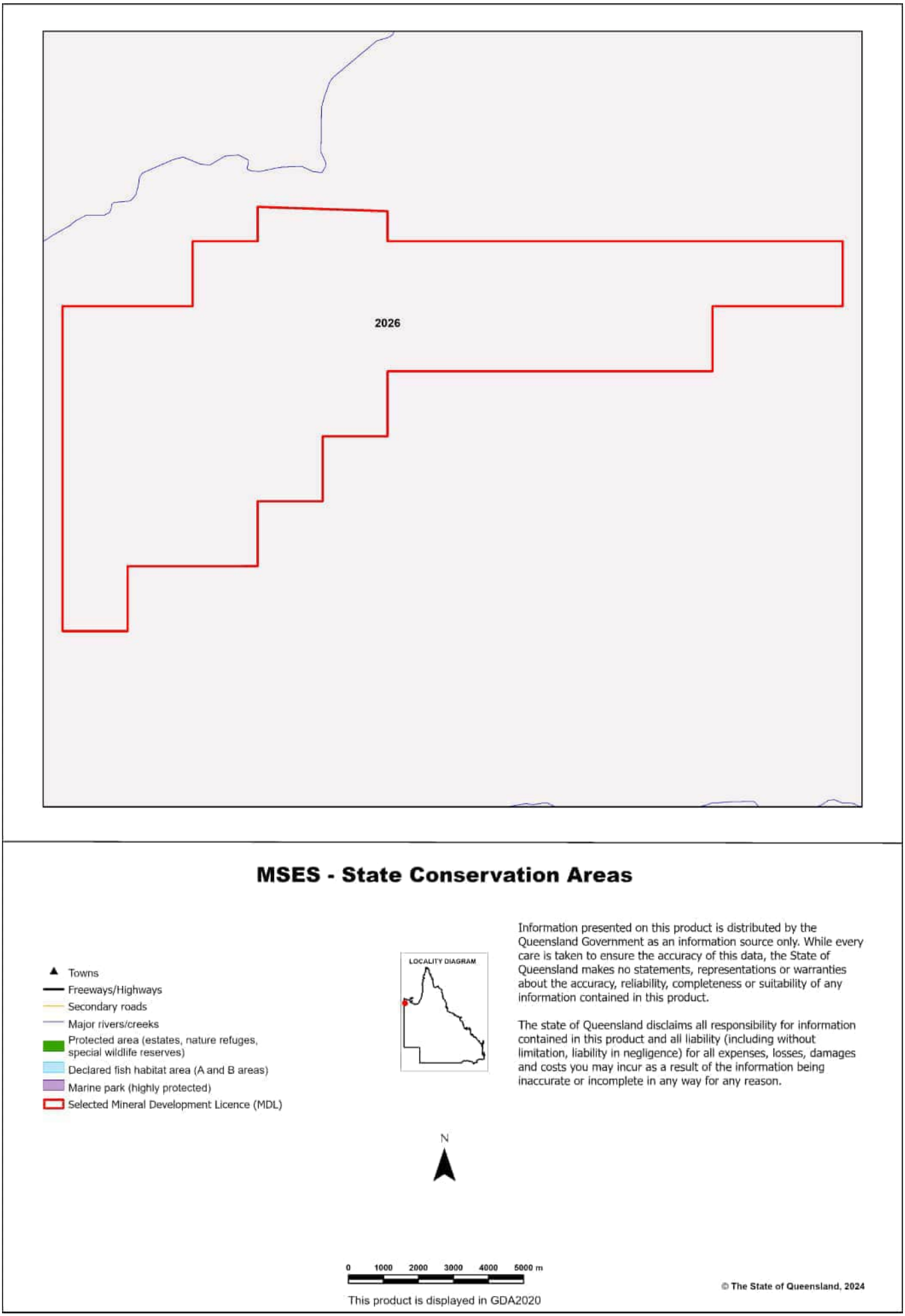
MSES - Offsets

9a. Legally secured offset areas - offset register areas
(No results)

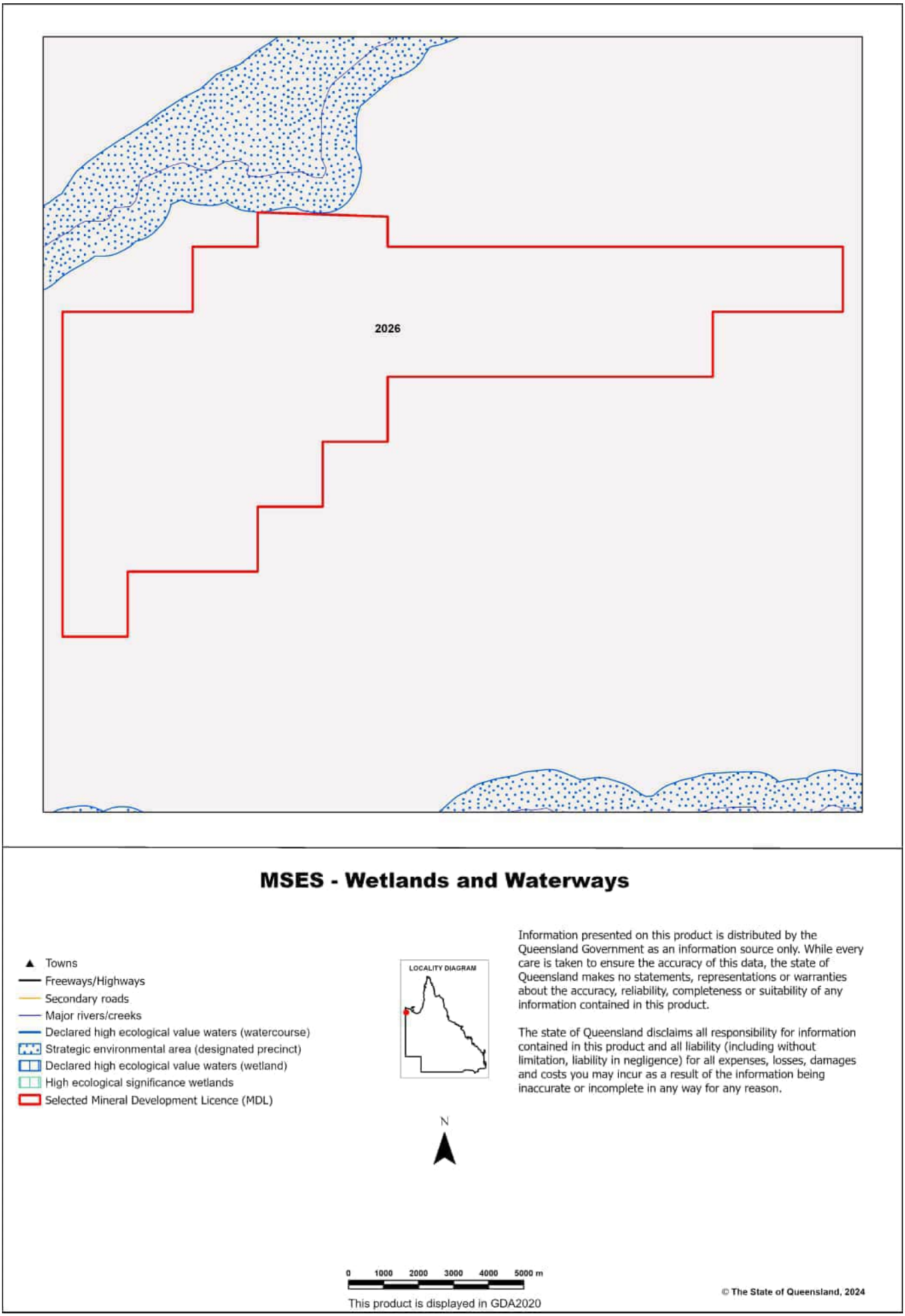
9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation
(No results)

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

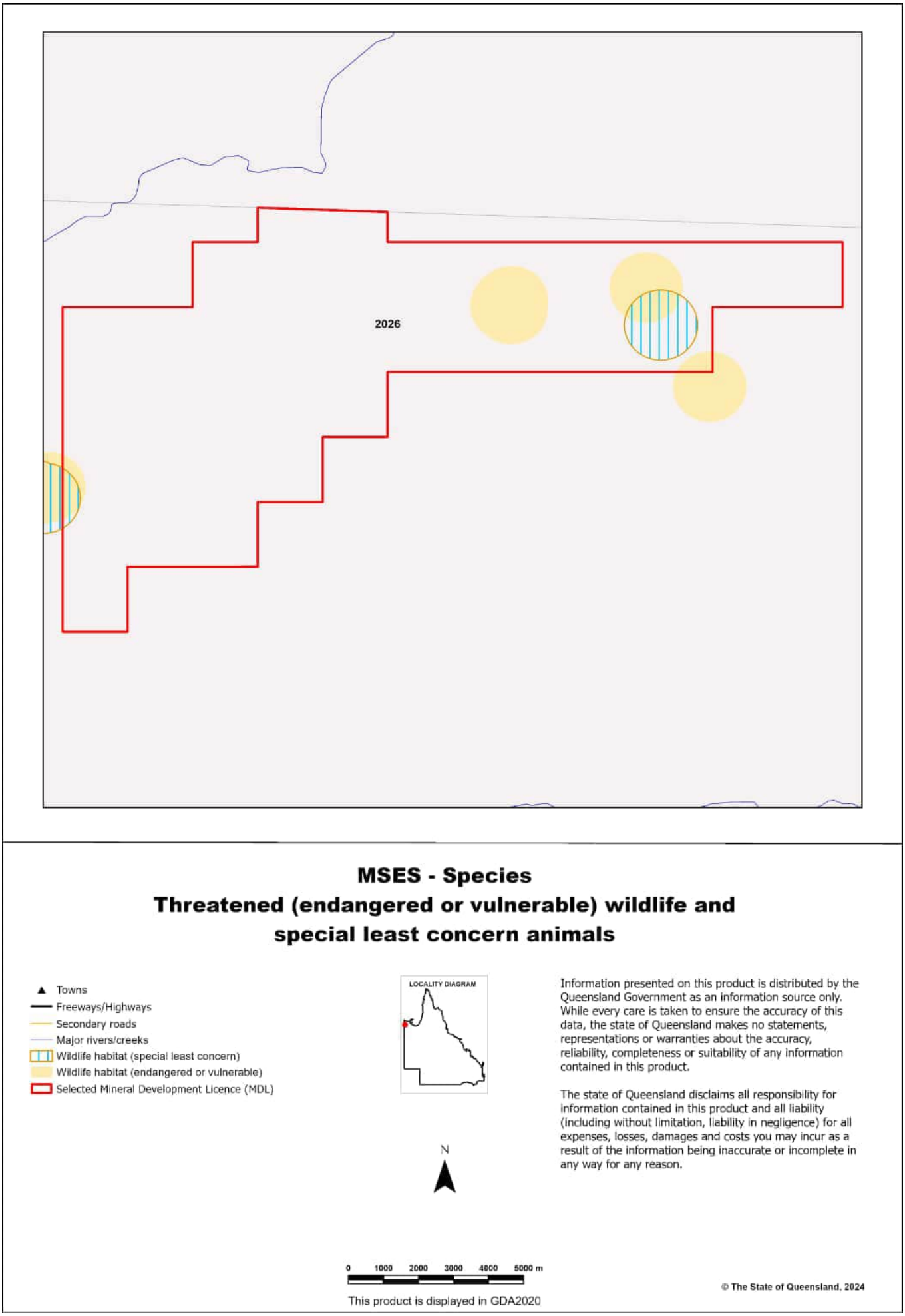
Map 1 - MSES - State Conservation Areas



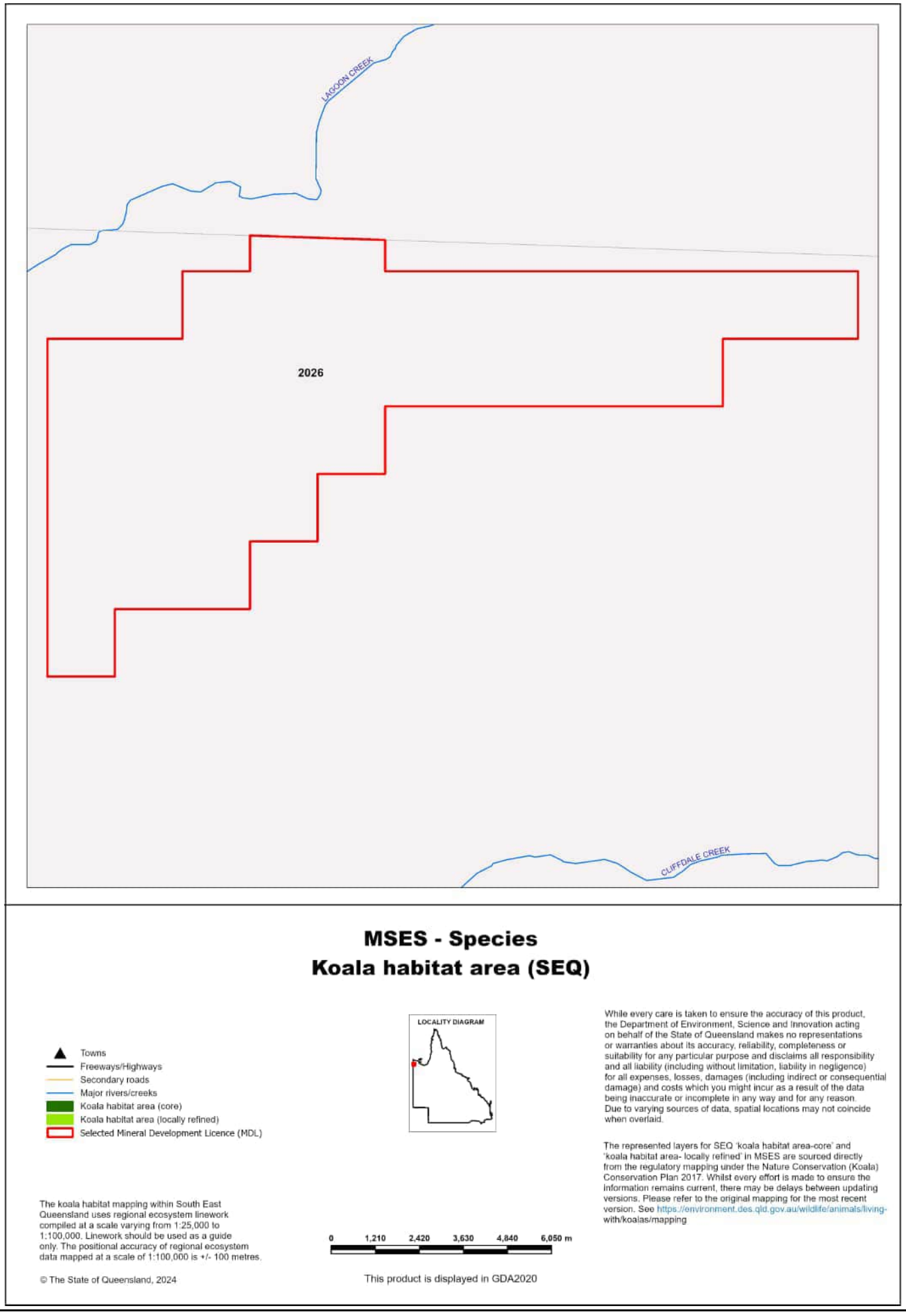
Map 2 - MSES - Wetlands and Waterways



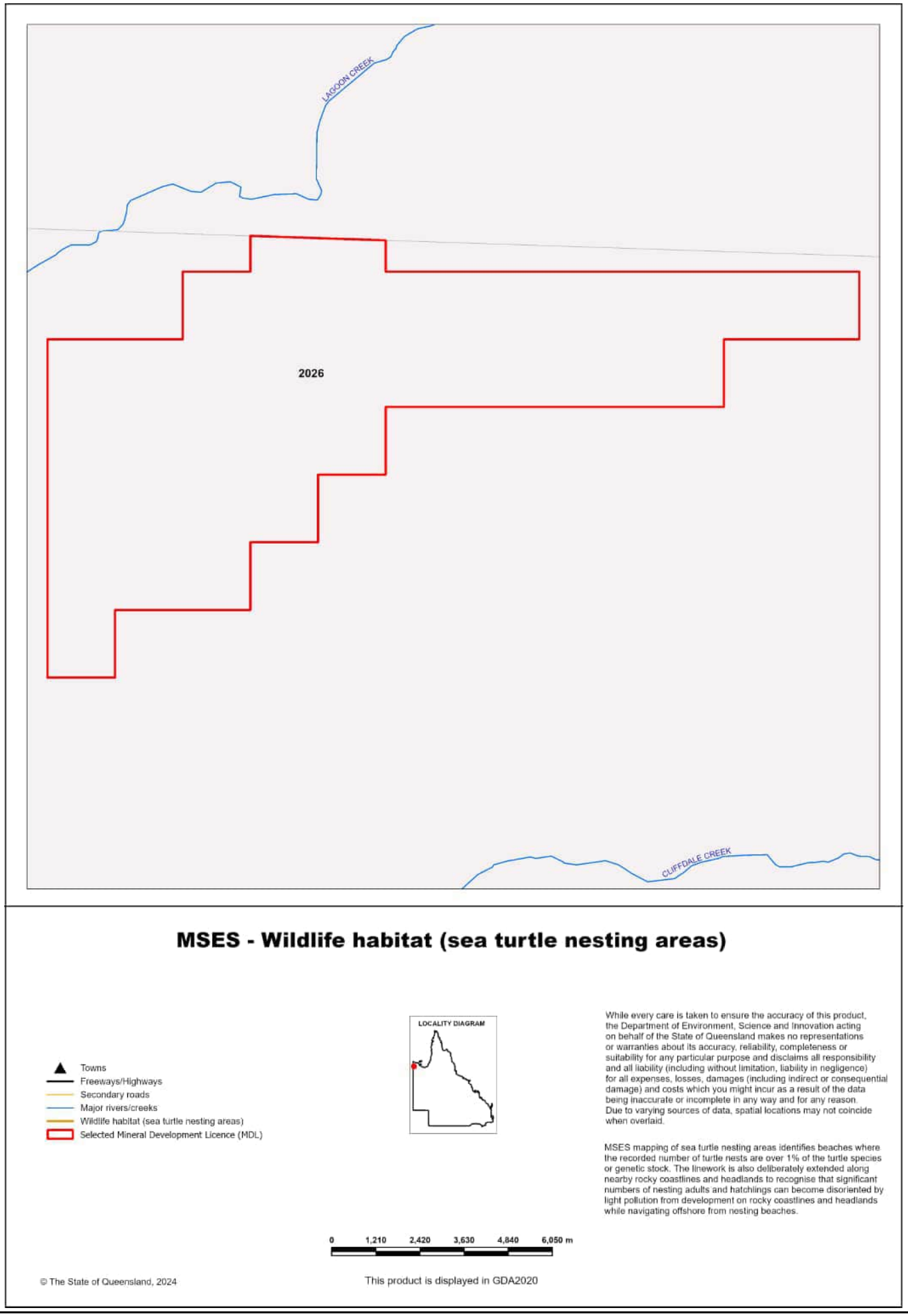
Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



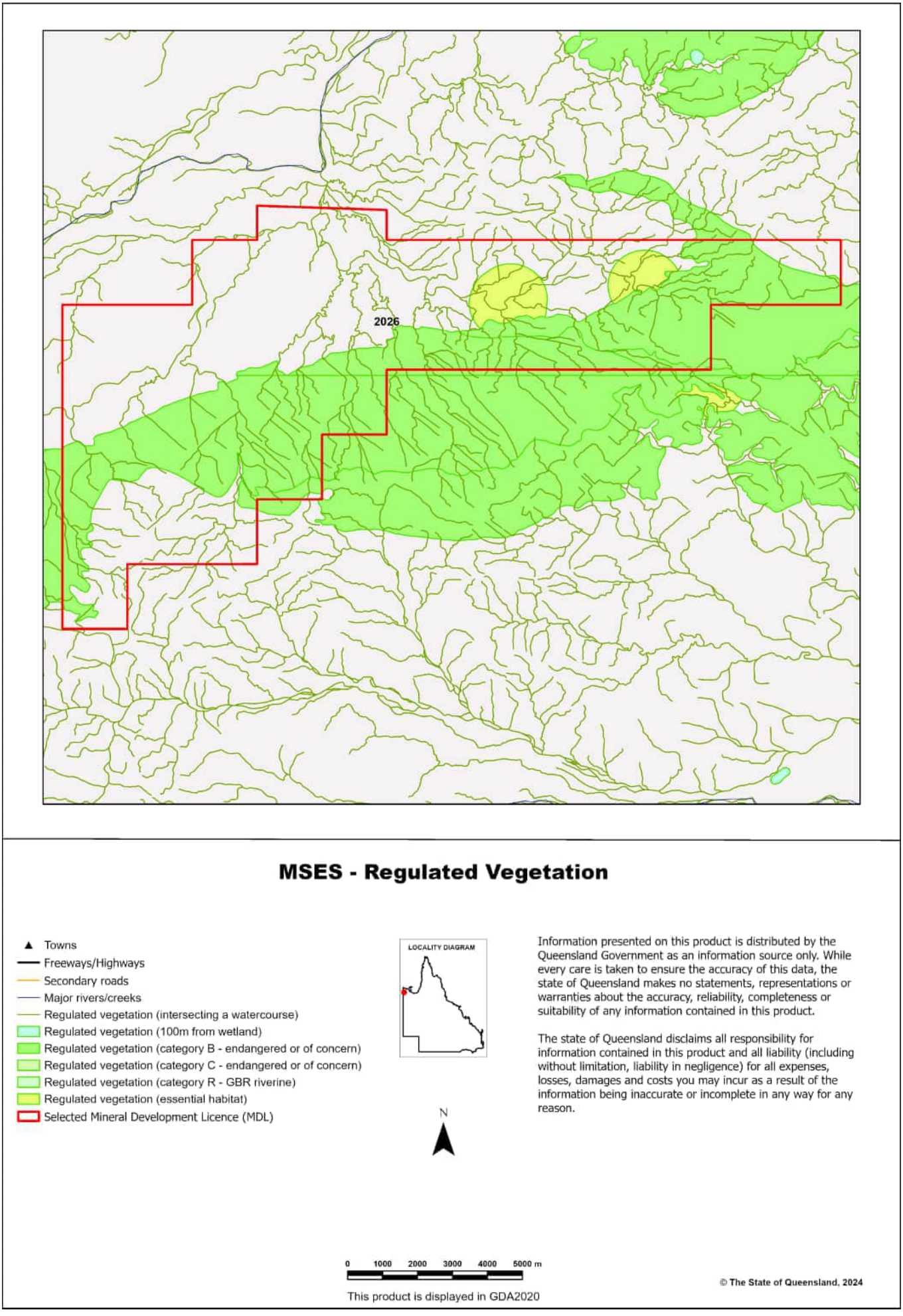
Map 3b - MSES - Species - Koala habitat area (SEQ)



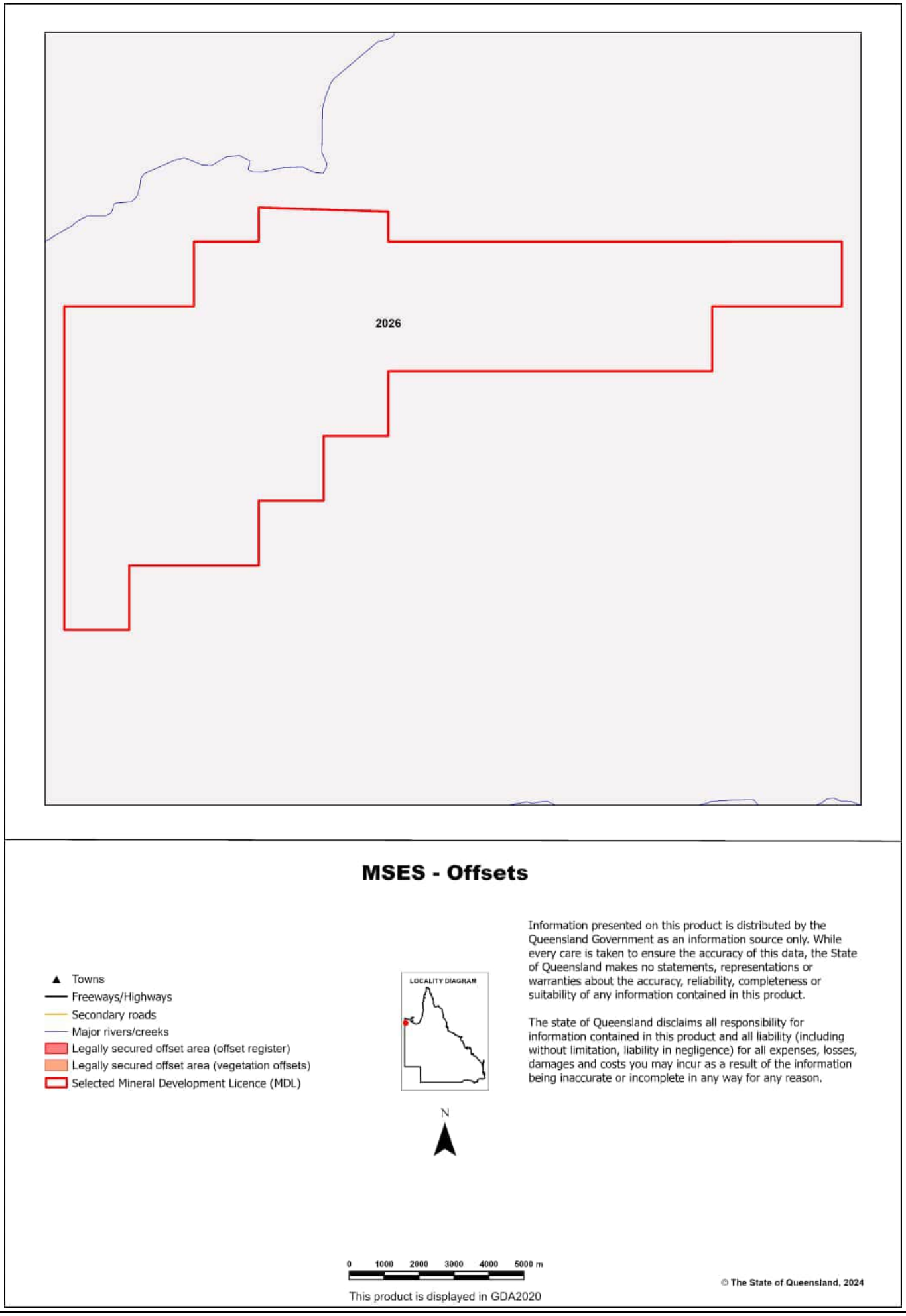
Map 3c - MSES - Species - Wildlife habitat (sea turtle nesting areas)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). Its primary purpose is to support implementation of the SPP biodiversity policy.

MSES mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations.

MSES mapping does not determine whether state or local development assessment is required. For state assessment triggers refer to the Development Assessment Mapping System (DAMS). For local assessment triggers, refer to the relevant local planning scheme.

The Queensland Government's "Method for mapping - matters of state environmental significance can be downloaded from:

http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html .

Appendix 2 - Source Data

The datasets listed below are available on request from:

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

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	**current QSpatial data (http://qspatial.information.qld.gov.au)**
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	-WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DESI	- Department of Environment, Science and Innovation
EP Act	- Environmental Protection Act 1994
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- Nature Conservation Act 1992
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- Vegetation Management Act 1999

Appendix F

Threatened Species Background Ecology Profiles

1 Carpentarian Grasswren (*Amytornis dorotheae*)

Listed as Endangered under the EPBC and NC Acts

1.1 Distribution and Home Range

The Carpentarian grasswren is native to North-western Queensland and far-eastern Northern Territory in the southern section of the Gulf of Carpentaria. Historically, the species occurred from Limmen National Park west of Borroloola to Mt Isa (TSSC, 2016b). The species was originally known from four discrete population units as follows:

- Limmen River/McArthur/Borroloola region
- Calvert Hills/Wollogorang area
- Boodjamulla (Lawn Hill) area
- Mt Isa Region
- Significant contractions in population extents have been observed in recent decades and individuals from the Borroloola subpopulation have not been recorded since 1986 (Harrington & Murphy, 2015; TSSC, 2016b). This subpopulation is now considered to be extinct (Garnett & Baker, 2021; Harrington & Murphy, 2015).

While the dispersal patterns of the Carpentarian grasswren are not well known, Garnett & Baker (2021) propose the species utilises a breeding territory of approximately 2km^2. Presence of continuous suitable habitat likely limits dispersal and recolonisation of previously inhabited areas (TSSC, 2016b).

1.2 Habitat

The Carpentarian grasswren inhabits rocky areas with mature spinifex, the structure of which differs between subpopulations. In the north of its range (Wollogorang and Boodjamulla populations) areas, the species favours highly dissected rocky habitats including escarpments, gorges and outcrops predominantly of sandstone. The southern subpopulation occurs on lower and less dissected habitats in the Mt Isa area including rocky gullies, siltstone ridges and undulating plains (Harrington & Murphy, 2015; Higgins et al., 2001).

Across all subpopulations, the Carpentarian grasswren relies on largely undisturbed, unburnt areas supporting mature spinifex stands.

1.2.1 Habitat Critical to Survival

Habitat critical to survival has not been defined for this species.

1.3 Diet and Foraging Ecology

The Carpentarian grasswren is insectivorous and granivorous. It feeds on the seeds of grasses (including *Panicum, Setaria spp*), sedges and forbs (inc. *Polygala spp*), and make take invertebrates including grasshoppers, spiders, beetles, ants, wasps, weevils. It typically forages on the ground among spinifex stands in pairs or small parties (Higgins et al., 2001).

1.4 Reproduction

The Carpentarian grasswren nests in mature spinifex hummocks and builds a dome-shaped nest from spinifex material and other grasses. In this, it lays 2-3 oval shaped, pinkish-white eggs (Higgins et al., 2001). Breeding ecology is poorly known. Nesting has been recorded in January and September, with most breeding predicted to occur between November and March, after the onset of the wet season. It is also plausible that the species may breed at any time of the year given suitable conditions (Higgins et al., 2001).

1.5 Threats

The primary threatening process affecting the Carpentarian grasswren is the modification of fire regimes leading to the increased frequency and intensity of grass fires. This has a detrimental affect on the mature spinifex communities the Carpentarian grasswren requires for habitat. Modified fire regimes are implicated in the extirpation of the Borroloola subpopulation (Garnett & Baker, 2021; Harrington & Murphy, 2015; Higgins et al., 2001; TSSC, 2016b). The Carpentarian grasswren usually disappears from habitat after significant burns occur, though the species may return after 3-4 years. Recolonisation of previously occupied habitats depends heavily on the regrowth of vegetation and the suitability of adjacent unburnt habitat as refuge (TSSC, 2016b).

Additional known or potential threats to this species include (Garnett & Baker, 2021; TSSC, 2016b):

- Incursion of Buffel grass, promoting and increasing intensity of fires
- Predation by feral cats
- Habitat loss caused by zinc mining
- Altered rainfall patterns

2 Gouldian Finch (Erythrura (Chloebia) gouldiae)

Listed as Endangered under the EPBC and NC Acts

2.1 Distribution and Home Range

The Gouldian finch is distributed from the Cape York Peninsula in Queensland to the Dampier Peninsula in the western Kimberly region of Western Australia. The species is considered to exist as one continuous genetic population across the entirety of its range. In Queensland, the status of the Gouldian finch is not well known, and records appear to be limited to small, scattered populations centred on the Einasleigh Uplands bioregion (Higgins et al., 2006; TSSC, 2016a). Recent records in Queensland have been made in the Georgetown and Forsayth areas (ALA, 2024).

The Gouldian finch is typically considered to be largely sedentary, with banding studies between 1953 and 2003 noting all birds recovered were within 10km of their original banding location (Higgins et al., 2006). However, there is some evidence for greater movement of non-breeding individuals, with records of juveniles moving up to 200km in a few weeks (Garnett & Baker, 2021).

2.2 Habitat

The Gouldian finch typically occurs in grassy, open Eucalypt woodlands where appropriate food grasses are present. It typically occurs on ridges and undulating country close to year-round water sources (Higgins et al., 2006). In the NT and WA, Gouldian finches are known to breed in rocky areas with hollow-bearing Eucalypts (largely *E. brevifolia* and *E. tintinnans*) within 4km of permanent water sources. Non breeding habitats are typically reliant on the availability of food and water sources (TSSC, 2016a).

2.2.1 Habitat Critical to Survival

Because of the limited understanding of habitat utilisation for the Gouldian finch, habitat critical to the survival of the species is unable to be defined. However, TSSC (2016) identifies "*key areas with significant populations of Gouldian finches, where it is assumed the species is likely to persist if threatening processes can be minimised*". These areas are as follows:

- Yinberrie Hills (NT)
- Limmen Gate NP (NT)
- Kakadu NP (NT)
- Bradshaw Field Training Area (NT)
- Newry Stn and Keep River NP (NT)
- Kununurra surrounds (WA)
- Wyndham and surrounds (WA)
- Gibb River Rd locations (WA)
- Kalumburu Rd and surrounds (WA)
- Mornington Wildlife Sanctuary (AWC) (WA)

2.3 Diet and Foraging Ecology

The Gouldian finch is almost exclusively granivorous, typically feeding on the seeds of native grasses on the ground, or from the seed head directly. In the wet season, the species favours perennial grasses, though may switch to favouring annual grasses following the onset of the dry season (Higgins et al., 2006).

The Gouldian finch typically forages in small groups of 4-7, though may occasionally be recorded in much larger groups of 200+ individuals. While feeding, it may associate with other birds including black-faced woodswallows (*Artamus cinereus*) and hooded parrots (*Psephotus dissimilis*) (Higgins et al., 2006). It also associates with other finches and is frequently observed at waterholes with species such as long-tailed (*Poephila acuticauda*), double-barred (*Taeniopygia bichenovii*) and masked finches (*Poephila personata*).

2.4 Reproduction

The Gouldian finch typically nests in tree hollows in Eucalypt woodland, particularly those of *Eucalyptus brevifolia, E. tintinnans* or *E. leucophloia* (Higgins et al., 2006). Breeding has been recorded in all months aside from October, though the breeding season for the species is typically considered to be April – June. Pairs may produce multiple clutches in good years (Higgins et al., 2006; TSSC, 2016a). Clutch size for the Gouldian finch is usually 3-8 eggs, which are slightly glossy white and oval in shape.

2.5 Threats

Known and potential threats to this species include (Garnett & Baker, 2021; TSSC, 2016a):

- Change in vegetation structure via altered fire regimes and overgrazing by cattle or other introduced herbivores
- Reduction in nest hollow availability (via fire or clearing)
- Air-sac mite (*Sternostoma tracheacolum*)
- Breeding habitat loss from clearing for development and mining
- Incursion of non-native and unpalatable grasses.

3 Ghost Bat (Macroderma gigas)

Listed as Vulnerable under the EPBC Act and Endangered under the NC Act.

3.1 Distribution

The ghost bat (*Macroderma gigas*) is endemic to Australia and is Australia's only carnivorous bat. Within Queensland, its distribution is currently limited to four to five distinct populations along the coastline and inland, spanning from the McIlwraith Range in Cape York to Rockhampton (Hourigan, 2011a).

3.2 Habitat

This species is known to inhabit a wide range of habitats, from tropical rainforests, monsoon forests, and vine scrub to open woodlands and arid regions. Radio tracking studies have shown that ghost bats typically forage within an average distance of 1.9 kilometres from their day roosts, covering an area of approximately 61 hectares. They tend to revisit the same foraging areas each night. When hunting, these bats spend most of their time perched on small branches or the main trunk in the mid-to-upper canopy of eucalypt trees, generally at heights of up to three meters above the ground (Hourigan, 2011a).

3.3 Foraging and Diet

Ghost bats are classified as high-order carnivores with a diet consisting of large insects, small mammals, reptiles, birds, and other bats. Unlike some bats, they do not enter a state of torpor, and as a result, they require environmental conditions that can consistently provide an adequate supply of prey throughout the year. Consequently, they are sensitive to changes in foraging habitats that may lead to a reduction in prey availability (Hourigan, 2011a).

Ghost bats employ a surface foraging strategy with two distinct modes. They use vegetation to perch and ambush passing prey, whether on the ground or in the air. Additionally, they glean surfaces like the ground while in flight. Their echolocation calls exhibit considerable variation. When hunting in their foraging areas, they primarily use observation points to spot prey, with occasional sallies to capture prey, often targeting insects on the ground. They are also known to hawk flying insects. Foraging areas are not exclusive, and there may be overlap between the ranges of several individuals (Department of the Environment, 2015).

3.4 Reproduction

Regional populations of ghost bats are centred on permanent maternity roosts, which are genetically isolated from one another. These maternity roosts, which include caves, rock crevices, and disused mine adits (Department of the Environment, 2015), are important gathering places for individuals during the spring and summer (Hourigan, 2011a).

During the non-breeding season in the cooler months, most of the colony disperses, often ranging up to 150 km from the permanent roosts. During this time, ghost bats use various shelters such as caves, rock shelters, overhangs, vertical cracks, and abandoned mines as day roosts. Dispersed groups tend to be small, typically consisting of a single pair (Hourigan, 2011a).

Population genetic studies have revealed a high level of female philopatry, which means that females tend to remain in or return to their birthplace or natal roosts based on mitochondrial DNA markers. Gene flow within regions is primarily facilitated by male movements. Loss of maternity sites containing breeding females can significantly reduce the area of occupancy (Department of the Environment, 2015).

Females generally begin breeding at the age of two to three years. While their longevity in the wild remains unknown, it is likely somewhat less than the maximum recorded lifespan of 22.6 years in captivity. The generation time for ghost bats is typically assumed to be around eight years (Department of the Environment, 2015).

3.5 Threats

- Habitat loss: destruction of, or disturbance to, roost sites
- Collision with fences, especially those with barbed wire

- Disease.

4 Mertens' Water Monitor (*Varanus mertensi*)

Listed as Endangered under the EPBC and NC Acts.

4.1 Distribution and Home Range

Mertens' water monitor is distributed from the Cape York Peninsula and North Queensland to the Dampier Peninsula in the western Kimberley region of Western Australia. It is also known to occur on offshore islands from Groote Eylandt to the western Kimberley. The species may reach far inland in areas where significant habitat is available (ALA, 2024; DCCEEW, 2023c).

Mertens' water monitors have core activity areas and home range, though are not generally considered to be territorial. Home ranges may vary significantly depending on habitat, from as small as 0.03ha to 31.4ha. In addition to this, some individuals appear to be transient or nomadic (DCCEEW, 2023c; Mayes, 2006).

4.2 Habitat

Mertens' water monitor is semi aquatic and rarely moves far from water in most circumstances. It inhabits a variety of aquatic environments, including permanent pools in rocky gorges, billabongs, margins of larger rivers and man-made habitats such as dams and irrigation canals. The species regularly basks on rocks, logs, tree branches and other similar structures adjacent to water (DCCEEW, 2023c).

4.2.1 Habitat Critical to Survival

DCCEEW (2023a) define habitat critical to the survival of Mertens' water monitor as:

- All areas where this species persists following the establishment of cane toads and;
- Areas within its recorded distribution that provide connectivity among remnant subpopulations. Specifically, natural and artificial water bodies that connect remnant subpopulations and have open water, food resources, basking sites, and shelter opportunities. These areas may be temporarily unoccupied due to cane toad impacts. They are sink areas for individuals that are resilient to cane toads to disperse into, breed, and subsequently provide source individuals for additional dispersal and recolonisation events.

4.3 Diet and Foraging Ecology

Mertens' water monitor is an opportunistic predator feeding on a variety of aquatic and terrestrial prey. Freshwater crabs (*Holthusiana sp.*) are the most common prey item consumed by Mertens' water monitor, with fish, reptiles eggs, frogs, mice, water bugs, beetles, spiders and other invertebrates (Mayes, 2006).

Mertens' water monitor has been observed actively hunting fish and crabs underwater, as well as capturing terrestrial prey including frogs, reptiles and insects (Mayes, 2006).

4.4 Reproduction

Merten's water monitor typically lays a clutch of 3-14 eggs in a burrow adjacent to a watercourse between April and June. The eggs are incubated for 9-10 months and hatch around the following wet season (DCCEEW, 2023c).

4.5 Threats

The most significant threat to Mertens' water monitor is the ongoing invasion of the cane toad. The cane toad currently occurs across most of the range for the species and inhabits wetland areas favoured by Mertens' water monitor. This threat is exacerbated by the fact that Mertens' water monitor is highly sensitive to the cane toad toxin. Cane toads are implicated in significant population declines across the majority of the range of Mertens' water monitor (DCCEEW, 2023c).

Other threats to this species include (DCCEEW, 2023):

- Trampling and destruction of waterways and riparian vegetation by cattle and water buffalo

- Predation of eggs by feral pigs
- Habitat loss and modification
- Mining
- Modification of fire regimes
- Dewatering of natural waterbodies

5 Mitchell's Water Monitor (*Varanus mitchelli*)

Listed as Critically Endangered under the EPBC and NC Acts.

5.1 Distribution and Home Range

Mitchell's water monitor is distributed from far NW Queensland in the Boodjamulla and Gregory River areas to the western Kimberley region of Western Australia. Unlike the ecologically similar Mertens' water monitor, Mitchell's water monitor is not known to occur on any offshore islands (DCCEEW, 2023d).

Home range and movement patterns for Mitchell's water monitor are not well known, though it appears to move between habitats seasonally. It is known to utilise more ephemeral habitats including shallow running water in the wet season and may use these connective habitats for dispersal (de Laive et al., 2021; Shine, 1986).

5.2 Habitat

Mitchell's water monitor is semi aquatic and is generally restricted to riparian habitats including wetlands, billabongs, creek lines and gorges (DCCEEW, 2023d; Shine, 1986). In freshwater habitats, Mitchell's water monitor inhabits dense riparian vegetation, particularly those dominated by *Pandanus* and *Melaleuca*. Recent evidence also suggests this species utilises saline habitats such as mangroves and coastal foreshores much more frequently than previously assumed, particularly in the greater Darwin area (de Laive et al., 2021).

Within these habitats, Mitchell's water monitor is largely arboreal and much less aquatic than the superficially similar Mertens' water monitor. It also appears to rely more heavily on crypsis for predator avoidance, and typically ascends trees to flee rather than diving into water (de Laive et al., 2021; Shine, 1986).

5.2.1 Habitat Critical to Survival

DCCEEW (2023b) define habitat critical to the survival of Mitchell's water monitor as:

1. All areas where this species persists following the establishment of cane toads and;
2. Areas within this species' recorded distribution where habitat occurs or can be restored. These areas may be temporarily unoccupied due to cane toad impacts or hold such low densities that this species is undetectable. These areas provide habitat for individuals that are resilient to cane toads to disperse into, breed, and subsequently provide source individuals for additional dispersal and recolonisation events.

5.3 Diet and Foraging Ecology

Mitchell's water monitor is an opportunistic generalist that readily takes both aquatic and terrestrial prey. Aquatic prey, which accounts for around 40% of the monitor's diet, predominantly consists of fish but also includes freshwater crabs (Shine, 1986). Aquatic prey is most often taken during the wet season, with the species consuming a higher proportion of terrestrial prey in the dry season. Terrestrial prey items include terrestrial invertebrates, frogs, reptiles and eggs, small mammals and the eggs and hatchlings of nesting birds (DCCEEW, 2023d; Shine, 1986).

5.4 Reproduction

The reproductive ecology of Mitchell's water monitor is not well known, though the species is typically presumed to lay eggs after the wet season between April and June. Nests and eggs of Mitchell's water monitor in the wild are largely unknown, though eggs of captive specimens have hatched after incubation periods of 5-9 months (DCCEEW, 2023d).

5.5 Threats

The most significant threatening process affecting Mitchell's water monitor is the ongoing invasion of the cane toad across Northern Australia. Extensive declines of this species have been recorded following the arrival of the cane toad, resulting in significant population fragmentation and range contraction. Cane toads are either present or expected to be present across the entirety of the range of Mitchell's water monitor within the decade (DCCEEW, 2023d).

Additional threats to this species include (DCCEEW, 2023d):

- Trampling and destruction of waterways and riparian vegetation by cattle and water buffalo
- Wetland destruction and possible predation of eggs by feral pigs
- Modification of fire regimes
- Urban expansion
- Mining
- Modification of fire regimes
- Inundation of habitat via watercourse modification

6 Northern Blue-tongued Skink (*Tiliqua scincoides intermedia*)

Listed as Critically Endangered under the EPBC and NC Acts

6.1 Distribution and Home Range

The northern blue-tongued skink's distribution extends from Eighty Mile Beach south of Broome, Western Australia to approximately Cloncurry in NW Queensland (DCCEEW, 2023b). The southern edge of the range of this species is bound broadly by the arid climatic zone (ALA, 2024).

The northern blue-tongued skink also inhabits numerous offshore islands from the Gulf of Carpentaria to the western Kimberley (DCCEEW, 2023b).

Individual northern blue-tongued skinks have home ranges typically between 2 and 12 hectares within which they favour discrete patches of suitable microhabitats (DCCEEW, 2023b; S. J. Price-Rees et al., 2014).

6.2 Habitat

The northern blue-tongued skink occurs in a broad range of habitats across its range, from Eucalypt woodland to open grasslands and riparian forests and vine thickets. Within these habitats, the species typically favours areas with available ground cover, which may include patches of denser vegetation, leaf litter and man-made or natural debris (DCCEEW, 2023b).

One study reported that northern blue-tongued skinks spend around 95% of their time within patches of vegetation. These microhabitats are used as refugia in hot and dry conditions and make up around 40% of the home range for each individual (S. J. Price-Rees et al., 2014).

6.2.1 Habitat Critical to Survival

DCCEEW (2023a) define habitat critical to the survival of the northern blue-tongued skink as follows:

1. Areas of dense vegetation that provide cool and moist conditions within otherwise hot, dry, and flammable landscapes that are within the historical distribution of the northern blue-tongue skink are habitat critical to the survival of this species. These areas provide the northern blue-tongue skink with the resources it requires for persistence i.e. food, water and protection from environmental exposure and predation. These areas are likely to have been ubiquitously occupied prior to the arrival of the cane toad. Examples of habitat critical to the survival of the northern blue-tongue skink include, but are not limited to:
   - Rainforests and vine thickets.
   - Riparian forests.
   - Well-vegetated creeks, gorges, and drainage lines.
   - Well-vegetated swamps, soaks, and springs.
   - Dense thickets within floodplains, grasslands, shrublands, savannas and woodlands.
   - Shady thickets in rocky ranges and gorges.
   - Well-watered and well-vegetated gardens.
2. Non-vegetated areas that provide shelter from thermal extremes, fire, and predators are also habitat critical to the survival of the northern blue-tongue skink. These include areas with deep rocky crevices and underground burrows.

Areas of habitat critical to the survival of the northern blue-tongue skink may be occupied, or temporarily unoccupied due to cane toad impacts. Occupied areas provide sheltered locations for subpopulations that are resilient to cane toads to persist and increase in abundance, while temporarily unoccupied areas provide locations for individuals that are cane toad resilient to disperse into, and subsequently provide source populations for additional dispersal and recolonisation events.

6.3 Diet and Foraging Ecology

The northern blue-tongued skink is a generalist omnivore which will take a wide range of prey items including insects, vegetable matter, terrestrial gastropods (slugs and snails), and other invertebrates. It will also eat small vertebrates such as frogs opportunistically (DCCEEW, 2023b; S. Price-Rees et al., 2010).

6.4 Reproduction

Like all members of the *Tiliqua* genus, the northern blue-tongued skink is a livebearer, typically bearing clutches of up to 10 young (DCCEEW, 2023b; Wilson, 2022). The species has a gestation period of 3-4 months before giving birth around the onset of the tropical wet season (December – January).

6.5 Threats

The predominant threatening process affected the northern blue-tongued skink is the ongoing invasion of the cane toad. The cane toad currently occurs across most of the range of the species, and will likely occur over the entirety of its range within the decade (ALA, 2024; DCCEEW, 2023b). Three offshore islands which support populations of the northern blue-tongued skink are quarantined for cane toads. These islands will likely contain the only populations of the northern blue-tongued skink not affected by the cane toad in the future (DCCEEW, 2023b).

Other threats to this species include (DCCEEW, 2023b):

- Degradation of critical habitat by cattle and water buffalo
- Degradation of habitat by feral pigs
- Modified fire regimes
- Post-fire predation by feral cats
- Mining
- Dewatering of natural watercourses
- Inundation of habitat via watercourse modification
- Illegal collection for pet trade
- Traditional hunting

7 Northern Quoll (Dasyurus hallucatus)

Listed as Endangered under the EPBC Act.

7.1 Distribution and Home Range

The northern quoll (*Dasyurus hallucatus*) formerly inhabited a vast expanse in northern Australia, stretching from Western Australia to south-east Queensland (Department of the Environment, 2023).

Female northern quolls occupy home ranges averaging 35 ha with intra-sexually exclusive denning areas. Male northern quolls have similar home ranges outside of the breeding season but disperse more widely during the breeding season to >100 ha, overlapping with the home ranges of several females and other males. It has been observed that northern quolls tend to have smaller home ranges in rocky terrain (Department of the Environment, 2023).

7.2 Habitat

The northern quoll inhabits a variety of environments across their range, including rocky regions, eucalypt forests, rainforests, sandy lowlands, beaches, shrublands, grasslands, and deserts. Northern quolls are also known to occupy non-rocky lowland habitats such as beach scrub communities in central Queensland. Northern quoll habitat generally encompasses some form of rocky area for denning purposes and surrounding vegetated for foraging and dispersal. Rocky habitats are often characterised by high relief, rugged terrain, and the presence of tor fields or caves in lower-lying areas. In eucalypt forests or woodlands, northern quolls benefit from a high structural diversity with large-diameter trees, termite mounds, or hollow logs used for denning. Northern quolls appear to be most abundant in habitats within 150 km of the coast (Department of the Environment, 2023).

Rocky habitats support higher densities and/or longer-lived individuals within the species range, due to more protection from predators, better nutrition, and less exposure to agricultural practices, as well as supporting a higher density of northern quoll dens. Breeding success is enhanced when dens are situated near creek lines (Department of the Environment, 2023).

It is suggested that northern quolls are more likely to be present in high relief areas that have shallower soils, greater cover of boulders, reduced fire impact and were closer to permanent water. The northern quoll has also been recorded in other land systems which comprise sandstone and dolomite hills and ridges, shrublands, sandy plains, clay plans and tussock grasslands and coastal fringes including dunes islands and beaches (Department of the Environment, 2023).

7.3 Diet and Foraging Ecology

Northern quolls are nocturnal omnivores known for their opportunistic feeding habits. They have a diverse diet that includes numerous invertebrates, small mammals, amphibians, reptiles, birds, carrion, and fruits (Department of the Environment, 2023).

7.4 Reproduction

Northern quolls breed once each year exhibiting synchronous reproduction within each year at each site. Northern quolls bear on average seven young which are born after a gestation of 21 to 26 days. Females wean two to three young which become reproductively mature at 11 months. Northern quolls typically have a short lifespan, with most females surviving only one breeding season (Department of the Environment, 2023).

Northern quolls exhibit semelparity, a reproductive strategy where males mate once and die soon after. The mating season typically falls between June and July in Queensland (Moore et al., 2021), during which males invest considerable energy in territorial disputes, fighting with other males and searching for mates. Breeding events are tightly synchronized, with all observed matings happening within a two-week period. At the end of the breeding season following male die-off, the northern quoll population is comprised almost entirely of mature females and their young, with females often having a lifespan of two to three years (Department of the Environment, 2023). This, coupled with the fact that females typically breed only once, renders local populations highly susceptible to extinction (Department of the Environment, 2023).

7.5 Threats

- Habitat loss to agricultural and urban developments
- Predation
  - Feral cats
- Poison from cane toads
- Vegetation changes due to clearing of the understorey for domestic livestock grazing
- Altered fire regimes.

8 Orange Leaf-nosed Bat (*Rhinonicteris aurantia*)

Listed as Vulnerable under the NC Act.

8.1 Distribution and Home Range

The orange leaf-nosed bat occurs along northern Australia, extending from the Pilbara region, across the Top End of Northern Territory and the Gulf of Carpentaria, and into northwestern Queensland close to the NT border (Churchill et al., 1987; Hourigan, 2011b). The population in the Pilbara is relictual and considered to be a distinct form (Hourigan, 2011b). The Pilbara form is listed separately under the EPBC Act as *Rhinonicterus aurantia* (Pilbara form) (TSSC, 2016c).

Within Queensland, the orange leaf-nosed bat has been recorded from nearby Camooweal in the south, to the Nicholson region in the north (Churchill et al., 1987; MET Serve, 2011).

8.2 Habitat

The orange leaf-nosed bat is an obligate cave roosting species, preferencing caves or abandoned mines with unusually high temperature (28-32 °C and up to 36 °C) and humidity (85-100%) (Churchill et al., 1987; Hourigan, 2011b). Natural structure roosts of the Pilbara form have comprised deep underground structures within rocky outcrop (Department of the Environment, 2024b). Roosts located in underground mines have been found in the deepest and most complex structures excavated to mine gold and copper, typically with a horizontal adit rather than a vertical shaft entrance (Department of the Environment, 2024b). Within these mines, roost aggregations formed in the most inaccessible or lowest levels with the highest humidity (Department of the Environment, 2024b).

A key factor in the determination of roost sites is the microclimatic conditions as this species has a poor ability to limit heat and water loss and is unable to enter torpor (Churchill et al., 1987). The sensitivity to heat loss is such that captive animals often do not survive overnight (Churchill et al., 1987).

Habitats the species has been recorded in include spinifex grasslands with scattered eucalypts, coastal mangrove communities, dry open forests, low open woodlands and grasslands interspersed with scattered stands of low eucalypt woodland (Churchill et al., 1987). Foraging has also been recorded in monsoon rainforest, tall open forest, palm forest and various open grassland and sparsely treed habitats (Hourigan, 2011b). Foraging commonly occurs over water and in gorges and gullies (Hourigan, 2011b).

This species is known to share roosts with the ghost bat, *Macroderma gigas,* a conservation significant species listed as Vulnerable under the EPBC Act (Department of the Environment, 2024b).

8.3 Diet and Foraging Ecology

The orange leaf-nosed bat is an aerially foraging, generalist, insectivore (Churchill, 1994).

8.4 Reproduction

Orange leaf-nosed bats reproduce annually with mating occurring in July. A prolonged gestation period of 150 days follows, with pups born in December coinciding with the higher productivity of the wet season. It has been speculated that females become “forest dwellers” during the wet season after parturition (Churchill, 1995), however, there has been no evidence found to support this (Department of the Environment, 2024b). Nonetheless, movements of females rearing young have been observed and it is likely this is to seek other roost sites with more suitable microclimates in which to rear the young.

8.5 Threats

Threats to the Pilbara form have been described in more detail and are likely applicable to the species as a whole. Threats typically involve disturbance to roosts (such as through vibration caused by mining activity) resulting in evacuation of bats. The Department of the Environment identifies the following threats (2024b):

- Forced exodus of roost sites

- Interruption of breeding activity
- Underground mine collapse and flooding
- Mine development
- Blasting in adjacent mine pits and underground workings
- Human entry of roosts
- Roadkills
- Site rehabilitation (i.e. backfilling of shafts and horizontal adits)
- Natural Predators

9 Purple-crowned Fairy-wren (*Malurus coronatus macgillivrayi*)

The purple-crowned fairy-wren is listed as Vulnerable under the NC Act. The nominate subspecies (*Malurus coronatus coronatus*) which occurs in Western Australia and western Northern Territory is also listed as Endangered under the EPBC Act.

9.1 Distribution and Home Range

Two distinct populations of the purple-crowned fairy-wren exist. The eastern population (*Malurus coronatus macgillivrayi*) occurs from the Gregory and lower Leichhardt rivers in north-western Queensland to Limmen/Roper Bar area of eastern NT. The western and nominate subspecies (*Malurus coronatus coronatus*) occurs from the upper Victoria River in the Northern Territory to then upper Fitzroy River in Western Australia (Pizzey & Knight, 2010).

The purple-crowned fairy-wren is territorial and sedentary, with family groups maintaining sections of creek lines permanently. Individuals may disperse to search for mates, though usually only short distances (<2km) (Higgins et al., 2001).

9.2 Habitat

The purple-crowned fairy-wren is restricted almost exclusively to dense riparian vegetation, often within 10m of permanent water. It favours vegetation strips dominated by *Pandanus*, freshwater mangroves (*Barringtonia acutangula*) and canegrass, often with taller emergents including *Eucalyptus camaldulensis*, *Eucalyptus coolabah*, *Melaleuca leucadendron* and *Ficus spp*. The purple-crowned fairy-wren may occasionally occur up to and over 100m from water in denser grasslands (Higgins et al., 2001; TSSC, 2015).

9.2.1 Habitat Critical to Survival

Habitat critical to survival has not been defined for this species.

9.3 Diet and Foraging Ecology

The purple-crowned fairy-wren is almost exclusively insectivorous, typically feeding within the dense riparian vegetation it inhabits. The most common prey items include beetles, ants, wasps, true bugs, grasshoppers, flies and spiders, the proportion of which depends on time of year and availability (Higgins et al., 2001). Feeding occurs most actively in the mornings and afternoons.

9.4 Reproduction

The purple-crowned fairy-wren has been recorded breeding in most months, though highest activity is typically between July and September, when nesting habitat is unlikely to be flooded. The species builds a dome-shaped nest of fine roots, leaves, stems and strips of paperbark, usually in the leaf axils of *Pandanus* trees (Higgins et al., 2001).

9.5 Threats

Threats to this species include (Higgins et al., 2001; TSSC, 2015):

- Degradation of riparian habitat from overgrazing or improper fire management
- Weed incursion in riparian habitats
- Predation by invasive species including the feral cat and black rat
- Increase flood energy due to rangeland degradation
- Climate change leading to the increased frequency of extreme events

10 Red Goshawk (*Erythrotriorchis radiatus*)

Listed as Endangered under the EPBC and NC Acts.

10.1 Distribution and Home Range

Historically, the red goshawk occupied a range extending over much coastal and sub-coastal Australia from northeastern Western Australia to northeastern New South Wales (DCCEEW, 2023a). Since European colonisation, the red goshawk is thought to have been extirpated from approximately 27% of its historical distribution, with the breeding range contracting rapidly since 1980 (DCCEEW, 2023a; MacColl et al., 2023). It is considered to have declined to extinction in New South Wales and to have largely disappeared from south-east Queensland prior to 2010 (DCCEEW, 2023a). Presently, records south of Cape York Peninsula are increasingly rare (noting a lack of survey effort in some areas where it has previously been recorded) (DCCEEW, 2023a).

Breeding is currently known to occur in the Kimberley, Cape York Peninsula and the Tiwi Islands, however, it remains possible breeding still occurs at low densities in the Wet Tropics and Einasleigh Uplands Bioregions (DCCEEW, 2023a). While records are known from far outside of the breeding range, such as in central Australia, these are thought to be dispersive juveniles and non-breeding migrants travelling to southerly ranges (DCCEEW, 2023a).

The Gulf Plains bioregion was previously thought to be a barrier to dispersal but is now known to be readily traversable, indicating that the species consists of a single population (DCCEEW, 2023a). The breeding home range is estimated to be 120 km^2 for the female and 200 km^2 for the male. Foraging ranges between 5 – 10 km have been recorded during provisioning of young (DCCEEW, 2023a; Department of the Environment, 2024a).

10.2 Habitat

Red goshawks occur in tropical and warm-temperate forests and woodlands, often riverine, that support high bird abundance and diversity (Department of the Environment, 2024a). Forest and woodland with a mosaic of vegetation types and permanent water are preferred. Vegetation types known to support red goshawk include eucalypt woodlands, open and tall open forests, swamp sclerophyll forest, rainforest margins and gallery forest. Ecotones between habitat types, or forests/woodlands of intermediate density are preferred to allow for aerial hunting and ambush from cover (Department of the Environment, 2024a).. Therefore, habitats that are too open or too dense are avoided (Department of the Environment, 2024a).

Nesting habitat requires the presence of permanent water within one km and nests and often constructed beside rivers, swamps or pools (Department of the Environment, 2024a).

10.2.1 Habitat Critical to Survival

The approved conservation advice identifies habitat critical to the survival of the species as (DCCEEW, 2023a):

- "Foraging habitat:
  - Coastal and subcoastal tall open forests and woodlands;
  - Tropical savannas traversed by wooded or forested creeks and rivers;
  - Freshwater wetlands and their margins; and
  - Edges of rainforest.
- Breeding habitat:
  - Areas with large, tall trees (>14 m) within proximity to a watercourse (within 2.5 km), that occur within foraging habitat. Particularly important breeding habitat includes:
    - Riparian vegetation supporting tall stands of remnant paperbark trees (*Melaleuca sp.)* with horizontal limbs along watercourses.
    - Tall dry woodlands in proximity to watercourses with Darwin stringybark (Eucalyptus tetrodonta) dominated woodlands the primary breeding habitat across northern Australia.
  - These breeding habitats are often found in areas of topographic ruggedness such as plateaus or gorges where breeding can occur on elevated country in dry woodlands or on lower creek systems.

- Research by Baker-Gabb (2013) demonstrated that breeding success declines when a threshold level of greater than 25% of forest is cleared within 4 km of nesting birds. Debus and Searle (2014) also suggest the removal of actual or potential nest trees is detrimental to their ongoing persistence in an area, particularly as they select for the tallest stands in a given area.

Any breeding or foraging habitat in areas where the species is known or likely to occur and any newly discovered breeding or foraging locations should be considered habitat critical to survival. Areas that are not currently occupied by the species, but which may become suitable in the future, should also be considered habitat critical to survival".

10.3 Diet and Foraging Ecology

The diet of the red goshawk consists predominantly of birds, particularly Psittaciformes and Passeriformes (Department of the Environment, 2024a). Birds are taken on the wing, usually after launching an attack from concealment (either while patrolling in the air or from a perch). Prey is taken to the ground where it is plucked and consumed.

10.4 Reproduction

Red goshawks are considered likely to be monogamous and form solitary breeding pairs that reuse the breeding territory and nest year after year (Department of the Environment, 2024a). Breeding activities are extended, taking place over several months (DCCEEW, 2023a). Courtship begins in April 110-120 days prior to egg-laying, with nest construction beginning 50-70 days prior. The nest is constructed by the male in a tree typically >20 m in height (Department of the Environment, 2024a). The female lays 1-2 eggs between May and October and incubates them for 39-43 days while the male provisions food (Department of the Environment, 2024a).

10.5 Threats

The approved conservation advice identifies the following threats to the red goshawk (DCCEEW, 2023a):

- Land clearing and fragmentation
- Habitat loss and degradation through draining of wetlands
- Habitat degradation caused by domestic livestock grazing
- Fire regimes that cause declines in biodiversity
- Climate change – increased likelihood of extreme weather events (e.g., heatwave, and drought)
- Secondary poisoning (via pesticide use)
- Psittacine beak and feather disease

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Appendix G
List of Flora Species Recorded in MDL

Family	Dominant strata	Confirmed species	1.3.5	1.3.7	1.5.11	1.7.7b	1.12.1x5	1.10.2	1.10.9	1.10.4b	2.3.20e	2.3.26b	2.3.42	2.3.69
Acanthaceae	GL	*Acanthaceae* sp.					*							
Acanthaceae	Sh2	*Achyranthes aspera*										*		
Amaranthaceae	Sh2	*Gomphrena flaccida*	*	*		*			*					
Anacardiaceae	T2	*Buchanania obovata*						*	*					
Apocynaceae	Vine	*Apocynaceae* sp.					*							
Apocynaceae	Sh	*Carissa lanceolata*									*			
Apocynaceae	Sh	*Cynanchum brevipedicellatum*							*					
Apocynaceae	Sh	*Wrightia saligna*							*					
Arecaceae	E	*Livistona inermis*						*	*					
Asteraceae	GL	*Cyanthillium cinereum*			*						*	*		
Asteraceae	GL	*Pterocaulon intermedium*		*							*			
Asteraceae	GL	*Pterocaulon tricholobum*						*						
Bixaceae	T2	*Cochlospermum gregorii*				*		*	*					
Boraginaceae	GL	*Heliotropium amplexicaule*				*		*	*					
Boraginaceae	GL	*Heliotropium* sp.		*								*		
Byttneriaceae	Sh	*Waltheria indica*									*			
Caesalpiniaceae	T2	*Erythrophleum chlorostachys*	*			*	*					*		
Caesalpiniaceae	T3	*Lysiphyllum cunninghamii*									*	*		
Caesalpiniaceae	Sh	*Senna venusta*					*	*	*					
Carophyllaceae	GL	*Polycarpaea corymbosa*					*	*					*	
Celestraceae	Sh	*Denhamia cunninghamiana*						*			*		*	
Chenopodiaceae	Sh2	*Chenopodium sp.*									*			
Chenopodiaceae	Sh2	*Sclerolaena lanicuspis*									*			
Cleomaceae	Sh2	*Arivela limmenensis*				*		*						
Combretaceae	T2	*Terminalia aridicola*									*			
Combretaceae	T2	*Terminalia canescens*			*			*	*			*		
Combretaceae	T1	*Terminalia platyphylla*										*		

Commelinaceae	GL	*Commelina agrostophylla*										*		
Commelinaceae	GL	*Murdannia graminea*			*									
Convolvulaceae	GL	*Convolvulaceae* sp.					*							
Convolvulaceae	GL	*Evolvulus alsinoides*					*							
Cyperaceae	GL	*Cyperus javanicus*										*		
Cyperaceae	GL	*Cyperus* sp.					*							
Cyperaceae	GL	*Fimbristylis* sp.	*											
Cyperaceae	Gl	*Scleria* sp.					*							
Ebenaceae	Sh	*Diospyros humilis*									*			
Eriocaulaceae	GL	*Eriocaulon sp.*		*										
Erythroxylaceae	T2	*Erythroxylum ellipticum*						*					*	
Fabaceae	Sh	*Bossiaea bossiaeoides*				*		*	*					
Fabaceae	Sh2	*Cajanus acutifolius*						*	*					
Fabaceae	Sh2	*Cajanus reticulatus*						*						
Fabaceae	Sh2	*Crotalaria montana* var. *exserta*									*			
Fabaceae	T2	*Jacksonia dilatata*		*		*		*	*					
Fabaceae	Sh	*Jacksonia odontocarpa*	*	*	*	*	*	*						
Fabaceae	GL	*Stylosanthes scabra**			*									
Fabaceae	Sh	*Templetonia hookeri*						*	*					
Fabaceae	Sh	*Tephrosia flammea*					*	*	*					
Fabaceae	Sh	*Tephrosia oblongata*						*	*					
Fabaceae	GL	*Tephrosia* sp.				*		*	*					
Fabaceae	SH2	*Tephrosia* sp. *(hairy)*				*		*	*					
Goodeniacae	GL	*Goodenia redacta*					*	*						
Goodeniacae	Sh2	*Scaevola revoluta*				*		*	*					
Haloragaceae	Sh2	*Gonocarpus leptothecus*					*	*	*					
Lamiaceae	Sh2	*Anisomeles* sp.					*							
Lamiaceae	Sh*	*Mesosphaerum suaveolens**	*											
Lauraceae	Vine	*Cassytha filiformis*				*		*	*					
Malvaceae	Sh	*Hibiscus brachychlaenus*						*	*					
Malvaceae	Sh2	*Malvastrum americanum**									*			

Malvaceae	Sh	*Sida ammophila*				*	*	*	*					
Malvaceae	Sh	*Sida cordifolia**											*	
Malvaceae		*Sida* sp. *(crinkle leaf)*									*	*	*	
Malvaceae	GL	*Sida spinosa**			*									
Meliaceae	T2	*Owenia vernicosa*						*	*					
Mimosaceae	Sh	*Acacia alleniana*				*		*	*					
Mimosaceae	Sh2	*Acacia asperulacea*						*	*					
Mimosaceae	T2	*Acacia aulacocarpa*									*		*	
Mimosaceae	Sh	*Acacia dimidiata*	*			*		*	*					
Mimosaceae	Sh	*Acacia gonoclada*	*	*				*	*					
Mimosaceae	Sh	*Acacia hammondii*	*	*	*	*		*	*	*				
Mimosaceae	T2	*Acacia hemsleyi*										*		
Mimosaceae	Sh	*Acacia holosericea*		*	*			*			*	*	*	
Mimosaceae	Sh	*Acacia humifusa*						*						
Mimosaceae	Sh	*Acacia multisiliqua*						*	*					
Mimosaceae	Sh	*Acacia neurocarpa*				*		*	*					
Mimosaceae	Sh	*Acacia plectocarpa*							*					
Mimosaceae	Sh	*Acacia retivenea*						*						
Mimosaceae	Sh	*Acacia sp.* indet.							*					
Mimosaceae	T2	*Acacia torulosa*	*									*	*	
Mimosaceae	Sh	*Acacia tropica*	*			*		*	*					
Mimosaceae	Sh	*Acacia umbellata*			*				*					
Moraceae	T2	*Ficus aculeata var. aculeata*										*		
Moraceae	Sh	*Ficus cerasicarpa*						*	*					
Myrtaceae	T2	*Blakella* (Corymbia) bella	Dom								CD			
Myrtaceae	E	*Blakella* (Corymbia) *confertiflora*	Dom		*		*				*			*
Myrtaceae	Sh	*Calytrix brownii*			*									
Myrtaceae	Sh	*Calytrix exstipulata*						*	*					
Myrtaceae	T1	*Corymbia aspera*					*	*						
Myrtaceae	T1	*Corymbia capricornia*				Dom	*	*						
Myrtaceae	T1	*Corymbia ferruginea*				SD								

Myrtaceae	T1	*Corymbia polycarpa*	Dom			SD					*		
Myrtaceae	T2	*Corymbia terminalis*								CD			
Myrtaceae	T1	*Eucalyptus camaldulensis*									*		
Myrtaceae	T2	*Eucalyptus chlorophylla*								CD			*
Myrtaceae	T1	*Eucalyptus herbertiana*					*						
Myrtaceae	T1	*Eucalyptus leucophloia*					*	*	*	*			
Myrtaceae	T1	*Eucalyptus microtheca*						*		CD		Dom	
Myrtaceae	T1	*Eucalyptus miniata* (keys to chartaboma)						*	*				
Myrtaceae	E	*Eucalyptus pruinosa*			SD		*			*			
Myrtaceae	T1	*Eucalyptus tectifica*								*		*	
Myrtaceae	T2	*Lophostemon grandiflora*									*		
Myrtaceae	T1	*Melaleuca citrolens*			Dom							*	
Myrtaceae	T1	*Melaleuca fluviatilis*									*		
Myrtaceae	T1	*Melaleuca leucadendra*									*		
Myrtaceae	T2	*Melaleuca nervosa*	*		SD	*				*			
Myrtaceae	T1	*Melaleuca viridiflora*			SD	*			*	*	*		
Myrtaceae	Sh	*Syzygium eucalyptoides*									*	Dom	
Onagraceae	Sh	*Ludwigia octovalvis*			*								
Pandanaceae	T2	*Pandanus spiralis*									*		
Pentapetaceae	Sh2	*Melhania oblongifolia*						*					
Phyllanthaceae	Sh	*Antidesma ghaesembilla*	*							*			
Phyllanthaceae	Sh	*Breynia oblongifolia*								*	*		
Phyllanthaceae	Sh	*Flueggea virosa*									*	*	
Phyllanthaceae	T2/Sh	*Glochidion* sp.								*			
Phyllanthaceae	GL	*Phyllanthus indigoferoides*									*		
Picrodendraceae	T2	*Petalostigma banksii*										*	
Picrodendraceae	T2	*Petalostigma pubescens*					*	*					
Picrodendraceae	Sh	*Petalostigma quadriloculare*						*	*				
Plantaginaceae	Sh2	*Stemodia lythrifolia*						*	*				
Poaceae	GL	*Aristida holathera*							*				
Poaceae	GL	*Aristida hygrometrica*				*		*			*		

Poaceae	GL	*Aristida ingrata*	*						*					
Poaceae	GL	*Aristida* sp.											*	
Poaceae	GL	*Arundinella setosa*					*	*						
Poaceae	GL	*Bothriochloa bladhii*					*				*			
Poaceae	GL	*Bothriochloa ewartiana*			*									
Poaceae	GL	*Chloris inflata**												*
Poaceae	GL	*Chrysopogon elongatus*										*		
Poaceae	GL	*Chrysopogon fallax*			*		*							
Poaceae	GL	*Cymbopogon bombycinus*									*	*		
Poaceae	GL	*Cymbopogon procerus*							*					
Poaceae	GL	*Cynodon dactylon subsp. dactylon*		*								*		
Poaceae	GL	*Digitaria brownii*		*									*	
Poaceae	GL	*Digitaria nematostachya*											*	
Poaceae	GL	*Enneapogon polyphyllus*			*						*	*		
Poaceae	GL	*Enneapogon sp.*							*					
Poaceae	GL	*Eragrostis basedowii*			*						*			
Poaceae	GL	*Eragrostis exigua*									*			
Poaceae	GL	*Eragrostis* sp.			*							*		
Poaceae	GL	*Eragrostis speciosa*												*
Poaceae	GL	*Eragrostis stagnalis*									*	*		
Poaceae	GL	*Eriachne ciliata*			*			*	*					*
Poaceae	GL	*Eriachne* sp. *Larger*					*							
Poaceae	GL	*Eulalia aurea*					*							
Poaceae	GL	*Heteropogon contortus*	*								CD	*	*	
Poaceae	GL	*Ischaemum australe*										*		
Poaceae	GL	*Ophiuros exaltatus*		*								*		
Poaceae	GL	*Oxychloris scariosa*			*							*		
Poaceae	GL	*Panicum seminudum*	*		*							*		
Poaceae	GL	*Panicum* sp.									*	*		
Poaceae	GL	*Sarga plumosum*									*	*		
Poaceae	GL	*Schizachyrium fragile*	*				*							

Poaceae	GL	*Schizachyrium* sp.			*			*					
Poaceae	GL	*Sehima nervosum*									CD		
Poaceae	GL	*Setaria surgens*	*								*		
Poaceae	GL	*Sporobolus australasicus*			*								
Poaceae	GL	*Sporobolus* sp.			*								
Poaceae	GL	*Themeda triandra*			*			*			*		
Poaceae	GL	*Triodia bitextura*			*	*	*	*		*			
Poaceae	GL	*Triodia pungens*	*					*					*
Poaceae	GL	*Xerochloa imberbis*											*
Proteaceae	T2	*Grevillea heliosperma*	*							*			
Proteaceae	Sh	*Grevillea mimosoides*					*						
Proteaceae	Sh	*Grevillea pteridifolia*	*	*	*							*	*
Proteaceae	Sh	*Grevillea refracta subsp. refracta*	*			*		*					
Proteaceae	T2	*Grevillea striata*			*								
Proteaceae	Sh	*Grevillea wickhamii*						*	*				
Proteaceae	T2	*Hakea arborescens*	*								*		
Rhamnaceae	Sh	*Alphitonia excelsa*									*	*	
Rubiaceae	Sh	*Gardenia pyriformis subsp. orientalis*						*	*				
Rubiaceae	GL	*Paranotis mitrasacmoides*							*				
Rubiaceae	Sh	*Psydrax saligna forma saligna*						*					
Rutaceae	Sh	*Boronia lanceolata*		*									
Sapindaceae	Sh	*Atalaya hemiglauca*			*						*		
Sapindaceae	Sh2	*Dodonaea hispidula*	*								*		*
Sapindaceae	Sh	*Dodonaea physocarpa*					*				*		*
Sapindaceae	Sh	*Dodonaea viscosa subsp. mucronata*						*					
Sparmanniaceae	Sh1	*Grewia savannicola*	*									*	
Sparmanniaceae	Sh2	*Triumfetta centralis*	*								*		
Sparmanniaceae	Sh2	*Triumfetta* sp.						*					
Sterculiaceae	T2	*Brachychiton diversifolius* subsp. *diversifolius*									*	*	

Appendix H
List of Fauna Species Recorded in MDL

Taxa	Scientific Name	Common Name	EPBC Status	NCA Status
Birds	*Anhinga novaehollandiae*	Australasian darter	Least Concern	Least Concern
Birds	*Ardeotis australis*	Australian bustard	Least Concern	Least Concern
Birds	*Gymnorhina tibicen*	Australian magpie	Least Concern	Least Concern
Birds	*Pelecanus conspicillatus*	Australian pelican	Least Concern	Least Concern
Birds	*Corvus coronoides*	Australian raven	Least Concern	Least Concern
Birds	*Cissomela pectoralis*	banded honeyeater	Least Concern	Least Concern
Birds	*Ramsayornis fasciatus*	bar-breasted honeyeater	Least Concern	Least Concern
Birds	*Geopelia humeralis*	bar-shouldered dove	Least Concern	Least Concern
Birds	*Milvus migrans*	black kite	Least Concern	Least Concern
Birds	*Coracina novaehollandiae*	black-faced cuckoo-shrike	Least Concern	Least Concern
Birds	*Artamus cinereus*	black-faced woodswallow	Least Concern	Least Concern
Birds	*Ephippiorhynchus asiaticus*	black-necked stork	Least Concern	Least Concern
Birds	*Entomyzon cyanotis*	blue-faced honeyeater	Least Concern	Least Concern
Birds	*Dacelo leachii*	blue-winged kookaburra	Least Concern	Least Concern
Birds	*Falco berigora*	brown falcon	Least Concern	Least Concern
Birds	*Accipiter fasciatus*	brown goshawk	Least Concern	Least Concern
Birds	*Lichmera indistincta*	brown honeyeater	Least Concern	Least Concern
Birds	*Synoicus ypsilophorus*	brown quail	Least Concern	Least Concern
Birds	*Bubulcus ibis*	cattle egret	Least Concern	Least Concern
Birds	*Scythrops novaehollandiae*	channel-billed cuckoo	Least Concern	Least Concern
Birds	*Phaps chalcoptera*	common bronzewing	Least Concern	Least Concern
Birds	*Ocyphaps lophotes*	crested pigeon	Least Concern	Least Concern
Birds	*Neochmia phaeton*	crimson finch	Least Concern	Least Concern
Birds	*Geopelia cuneata*	diamond dove	Least Concern	Least Concern
Birds	*Taeniopygia bichenovii*	double-barred finch	Least Concern	Least Concern
Birds	*Eolophus roseicapilla*	galah	Least Concern	Least Concern
Birds	*Chlamydera nuchalis*	great bowerbird	Least Concern	Least Concern
Birds	*Colluricincla harmonica*	grey shrike-thrush	Least Concern	Least Concern

Birds	*Pomatostomus temporalis*	grey-crowned babbler	Least Concern	Least Concern
Birds	*Ptilotula plumula*	grey-fronted honeyeater	Least Concern	Least Concern
Birds	*Ptilotula keartlandi*	grey-headed honeyeater	Least Concern	Least Concern
Birds	*Coracina maxima*	ground cuckoo-shrike	Least Concern	Least Concern
Birds	*Chalcites basalis*	horsfield's bronze-cuckoo	Least Concern	Least Concern
Birds	*Ardea intermedia*	intermediate egret	Least Concern	Least Concern
Birds	*Myiagra rubecula*	leaden flycatcher	Least Concern	Least Concern
Birds	*Phalacrocorax sulcirostris*	little black cormorant	Least Concern	Least Concern
Birds	*Philemon citreogularis*	little friarbird	Least Concern	Least Concern
Birds	*Microcarbo melanoleucos*	little pied cormorant	Least Concern	Least Concern
Birds	*Artamus minor*	little woodswallow	Least Concern	Least Concern
Birds	*Poephila acuticauda*	long-tailed finch	Least Concern	Least Concern
Birds	*Grallina cyanoleuca*	magpie-lark	Least Concern	Least Concern
Birds	*Vanellus miles*	masked lapwing	Least Concern	Least Concern
Birds	*Dicaeum hirundinaceum*	mistletoebird	Least Concern	Least Concern
Birds	*Falco cenchroides*	nankeen kestrel	Least Concern	Least Concern
Birds	*Nycticorax caledonicus*	nankeen night-heron	Least Concern	Least Concern
Birds	*Oriolus sagittatus*	olive-backed oriole	Least Concern	Least Concern
Birds	*Myiagra nana*	paperbark flycatcher	Least Concern	Least Concern
Birds	*Geopelia placida*	peaceful dove	Least Concern	Least Concern
Birds	*Centropus phasianinus*	pheasant coucal	Least Concern	Least Concern
Birds	*Malurus assimilis*	purple-backed fairy-wren	Least Concern	Least Concern
Birds	*Malurus coronatus*	purple-crowned fairy-wren	Least Concern	Vulnerable
Birds	*Merops ornatus*	rainbow bee-eater	Least Concern	Least Concern
Birds	*Trichoglossus rubritorquis*	red-collared lorikeet	Least Concern	Least Concern
Birds	*Calyptorhynchus banksii*	red-tailed black-cockatoo	Least Concern	Least Concern
Birds	*Pachycephala rufiventris*	rufous whistler	Least Concern	Least Concern
Birds	*Conopophila rufogularis*	rufous-throated honeyeater	Least Concern	Least Concern
Birds	*Colluricincla woodwardi*	sandstone shrike-thrush	Least Concern	Least Concern

Birds	*Philemon argenticeps*	silver-crowned friarbird	Least Concern	Least Concern
Birds	*Geophaps plumifera*	spinifex pigeon	Least Concern	Least Concern
Birds	*Eurostopodus argus*	spotted nightjar	Least Concern	Least Concern
Birds	*Cacatua galerita*	sulphur-crested cockatoo	Least Concern	Least Concern
Birds	*Psitteuteles versicolor*	varied lorikeet	Least Concern	Least Concern
Birds	*Daphoenositta chrysoptera*	varied sittella	Least Concern	Least Concern
Birds	*Smicrornis brevirostris*	weebill	Least Concern	Least Concern
Birds	*Haliastur sphenurus*	whistling kite	Least Concern	Least Concern
Birds	*Coracina papuensis*	white-bellied cuckoo-shrike	Least Concern	Least Concern
Birds	*Artamus superciliosus*	white-browed woodswallow	Least Concern	Least Concern
Birds	*Egretta novaehollandiae*	white-faced heron	Least Concern	Least Concern
Birds	*Stomiopera unicolor*	white-gaped honeyeater	Least Concern	Least Concern
Birds	*Ardea pacifica*	white-necked heron	Least Concern	Least Concern
Birds	*Melithreptus albogularis*	white-throated honeyeater	Least Concern	Least Concern
Birds	*Lalage tricolor*	white-winged triller	Least Concern	Least Concern
Birds	*Rhipidura leucophrys*	willie wagtail	Least Concern	Least Concern
Birds	*Ptilotula flavescens*	yellow-tinted honeyeater	Least Concern	Least Concern
Mammals	*Sus scrofa*	feral pig	Least Concern	Least Concern
Mammals	*Bos taurus*	cattle	Least Concern	Least Concern
Mammals	*Pteropus scapulatus*	little red flying-fox	Least Concern	Least Concern
Mammals	*Notamacropus agilis*	agile wallaby	Least Concern	Least Concern
Mammals	*Osphranter robustus*	common wallaroo	Least Concern	Least Concern
Reptiles	*Diporiphora magna*	yellow-sided two-lined dragon	Least Concern	Least Concern
Reptiles	*Lophognathus horneri*	Horner's dragon	Least Concern	Least Concern
Reptiles	*Gehyra lauta*	Gulf tree gecko	Least Concern	Least Concern
Reptiles	*Ctenophorus slateri*	Slater's ring-tailed dragon	Least Concern	Least Concern
Reptiles	*Varanus panoptes*	yellow-spotted monitor	Least Concern	Least Concern
Reptiles	*Varanus acanthurus*	ridge-tailed monitor	Least Concern	Least Concern
Reptiles	*Cryptoblepharus zoticus*	agile snake-eyed skink	Least Concern	Least Concern

Reptiles	*Notoscincus ornatus*	ornate soil-crevice skink	Least Concern	Least Concern
Reptiles	*Carlia amax*	bauxite rainbow-skink	Least Concern	Least Concern
Mammals	*felis catus*	feral cat	Least Concern	Least Concern
Mammals	*Canis familiaris dingo*	dingo	Least Concern	Least Concern
Reptiles	*Dendralaphis puctulatus*	common tree snake	Least Concern	Least Concern
Reptiles	*Crocodylus johnstoni*	freshwater crocodile	Least Concern	Least Concern
Amphibians	*Rhinella marina*	cane toad	Least Concern	Least Concern
Amphibians	*Litoria inermis*	bumpy rocket frog	Least Concern	Least Concern
Amphibians	*Litoria rothii*	eastern laughing tree frog	Least Concern	Least Concern
Reptiles	*Tiliqua scincoides intermedia*	northern blue-tongued skink	Critically Endangered	Critically Endangered

Appendix I

Threatened Flora Likelihood of Occurrence Assessment

Table 24: Threatened Flora Likelihood of Occurrence Assessment

Species	Common Name	NC Act Status	EPBC Act Status	Habitat	Species Records	Likelihood of Occurrence
Ipomoea antonschmidii	-	NT	-	Collected at locations from north of Mt Isa to the NT-WA border (Williams & Clouten, 2021). This species has been recorded on shallow, red, stoney soils in woodlands of Eucalyptus leucophloia (Johnson, 1986).		Unlikely Suitable habitat is not present in the Disturbance Footprint.
Solanum carduiforme	-	V	-	The species was originally known from a single location in Queensland but due to increased survey effort it is now known from 15 populations in a disjunct distribution from Queensland, the Northern Territory and Western Australia. Nine populations are in conservation estates. In Queensland, the distributional range is 600 km and it occurs in two main areas: Bowthorne, Boodjamulla (Lawn Hill) National Park, and nearby 'Musselbrook' (north-west Queensland) and Cobbold Gorge, Forsayth and Richmond (southern Gulf). At Lawn Hill, in Queensland, the species is known to occur on conglomerate rock formations. All other locations are on sandstone or deeper sandy soil adjacent to sandstone outcrops (TSSC, 2013).		Possible A record occurs ~60 km south of the MDL. The suitable REs 1.10.3, 1.10.2 and 1.10.9 are present in the Disturbance Footprint.
Trachymene glandulosa	-	NT	-	Restricted to the Nicholson River area straddling the QLD/NT border on the Gulf of Carpentaria. Found associated with quartzite hills and sandstone gullies. Type specimen collected on the sandy banks of the Nicholson River (Hart & Henwood, 2006).	Yes (1)	Possible A record occurs ~6 km west of the Disturbance Footprint (southernmost drill pads and track). The suitable REs 1.10.3, 1.10.2 and 1.10.9 are present in the Disturbance Footprint.

1 Conservation status as listed under the Queensland Nature Conservation Act 1992. E: Endangered; V: Vulnerable; NT: Near Threatened
2 Conservation status as listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. CE: Critically Endangered; E: Endangered; V: Vulnerable; M: Migratory
4 Likelihood of occurrence is based on the known distribution and ecological requirements of the species in the context of the site, where Unlikely: No records of the species occurring regionally or suitable habitat does not occur onsite; Possible: Species previously recorded in the vicinity of the site and marginal habitat is present on the site; or species known to occur regionally and preferred habitat is present on the site; Likely: Species previously recorded in the vicinity of the site and suitable habitat present on the site; Confirmed: Species observed through direct observation within or immediately adjacent to the site.

Appendix J

Threatened Fauna Likelihood of Occurrence Assessment

Table 25: Threatened Fauna Likelihood of Occurrence Assessment

Taxa	Species Name	Common Name	NC Act Status	EPBC Act Status	Migratory	Habitat	Records (within 50 km of Centre)	Likelihood of occurrence
Birds	*Amytornis dorotheae*	Carpentarian grasswren	E	E	-	The Carpentarian grasswren is endemic to the southern Gulf of Carpentaria region of northern Australia. Historically the species was known from four separate areas between the Tawallah Range/Limmen Bight River in the Northern Territory and Gunpowder in north-west Queensland; Borroloola, Wollogorang, Boodjamulla and Mt Isa. However, there have been no records of the species in the Borroloola area since 1986 despite several targeted surveys in the last decade. Within the Wollogorang area of the Northern Territory the species now exists as a tiny isolated population approximately 6 km to the west of Calvert Hills Station. Systematic surveys of the Boodjamulla (Lawn Hill) area of Queensland in 2011 recorded the species in very low numbers, with suspected population declines resulting from significant reductions in suitable habitat following extensive fires in 2003, 2006 and 2011. The largest remaining specific population of Carpentarian grasswrens exists in the Mount Isa region of Queensland; however availability of habitat in this region may have been reduced following wildfires in 2012. The Carpentarian grasswren is confined to sandstone outcrops in mature spinifex (*Triodia spp.)* hummock grassland in the northern part of its range, while in the southern part of its range it occupies long-unburnt spinifex with stony areas between the hummocks on which grow a range of short grasses, forbs and patchy low trees and shrubs (TSSC, 2016b).	Yes (2)	Unlikely Disturbance Footprint does not contain suitable habitat (i.e. large sandstone outcrops and slopes with mature *Triodia spp.*)
Birds	*Calidris acuminata*	Sharp-tailed sandpiper	V	V	Migratory (Bonn, CAMBA, JAMBA, ROKAMBA)	During the non-breeding season, approximately 91 percent of the East Asian – Australasian population occurs in Australia and New Zealand. Sharp-tailed sandpipers occur within all states of Australia. They are found mostly in the south-east and are widespread in both inland and coastal locations. The species also occurs in both freshwater and saline habitats. In Queensland, the species is widespread along the coast and is sparsely scattered inland, particularly in central and south-western regions. The species utilises fresh and hypersaline environments, feeding along the edge of water on mudflats, coastal and inland wetlands, and sewage ponds. After rainfall events, the species may also feed on areas of agricultural pasture. The sharp-tailed sandpiper is migratory, breeding in northern Siberia and moving in flocks of less than a thousand individuals to non-breeding areas south of the Equator. Sharp-tailed sandpipers breed from June to August (DCCEEW, 2024a).		Unlikely The Disturbance Footprint does not contain suitable habitat.
Birds	*Calidris ferruginea*	Curlew sandpiper	CE	CE	Migratory (Bonn, CAMBA, JAMBA, ROKAMBA)	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters Invalid source specified.		Unlikely The Disturbance Footprint does not contain suitable habitat.
Birds	*Erythrotriorchis radiatus*	Red goshawk	E	E		The Red goshawk occurs in coastal and sub-coastal areas of tropical and warm temperate Australia. The species prefers wooded and forested lands with a mosaic of vegetation types and densities e.g. ecotones between rainforest and eucalypt forest, gallery forest and woodland, woodland and grassland, cleared land, roads or watercourses. The red goshawk nests in large, often emergent trees. Recent research by Garnett and Baker 2020 has determined the red goshawk has experienced a recent, rapid northward contraction, and is now rarely encountered south of southern Cape York in Queensland. Recent assessment. Recent assessment of the population status and trends indicates the species likely extirpation from the Brigalow Tropical Savanna (Brigalow Belt bioregion) and Queensland Tropical Rainforests (Wet Tropics bioregion) (DCCEEW, 2023a; MacColl et al., 2023).		Unlikely The nearby watercourse does not host tall forest and lacks permanent water. The riparian and surrounding communities lack the density and variety for suitable foraging habitat.
Birds	Chloebia gouldiae	Gouldian finch	E	E		The species is found in northern Australia from Cape York Peninsula through north-west Queensland and the north of the Northern Territory to the Kimberley Region of Western Australia. Genetic analyses of mitochondrial markers provides no evidence for population structuring across the species range and indicates that there is one continuous genetic population in the west, while nuclear markers indicate contemporary gene flow from the Kimberley to the Northern Territory. In Queensland there are no recent breeding records. However, since 2005 birds have been sighted on at least three sites on Cape York Peninsula, on the Atherton Tablelands, and at several sites in and around Boodjamulla National Park. In the Northern Territory there are recent breeding records at well-known sites in the Yinberrie Hills and Newry, as well as at Wollogorang and near Maningrida. In the Kimberley, small breeding populations of up to 120 adults each are known from the east, the centre (Mornington Sanctuary), and west to Dampierland. They nest in tree hollows between April-July (although this period is extended is some years), lay an average clutch of five eggs, and may raise several clutches in a season, with productivity averaging 1.5 fledglings per adult per season. When breeding they use small patches of open woodland, usually on ridges dominated by cavity bearing trees such as white northern gum (Eucalyptus brevifolia) in the west and Territory salmon gum (*E. tintinnans*) in the east, with an understory of grasses such as sorghum (Sarga spp.), *Schizachyrium spp.* and	Yes (25)	Unlikely Gouldian finches have been recorded in the MDL approximately 4.5 km east of the Disturbance Footprint at its closest point. However, the nearby watercourse is small and ephemeral. The Disturbance Footprint is unlikely to support grass resources

						spinifex (*Trodia spp.*), and usually within 2-4 km of perennial waterholes or springs. After breeding they tend to flock and move across the broader landscape, following grass seed resources (TSSC, 2016a).		required by the species.
Birds	*Falco hypoleucos*	Grey Falcon	V	V		Grey Falcon occurs in arid and semi-arid Australia, including the Murray-Darling Basin, Eyre Basin, central Australia and Western Australia. The species is mainly found where annual rainfall is less than 500 mm, except when wet years are followed by drought, when the species might become marginally more widespread. Grey falcon frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses, tussock grassland and open woodland. The species feeds almost exclusively on birds. Breeding occurs from June to November, where eggs are laid in the old nests of other birds (TSSC, 2020).	Yes (2)	Possible Contemporary records occur nearby the MDL. While no suitable nesting habitat is present in or nearby the Disturbance Footprint, it may be used as part of the foraging habitat of a resident bird.
Birds	*Grantiella picta*	Painted honeyeater	V	V		The painted honeyeater is sparsely distributed from south-eastern Australia to north-western Queensland and eastern Northern Territory. The species is most common south of 26°S, especially inland of the Great Dividing Range. The species exhibits seasonal north-south movements and given its dispersive habitat, the species is considered to have a single population. Habitat includes eucalypt forests/woodlands, riparian woodlands of black box and river red gum, box-ironbark-yellow gum woodlands, acacia-dominated woodlands, paperbarks, casuarinas, 69allitris, and trees on farmland or gardens, especially communities with a high number of mistletoes (Department of the Environment, 2015b).		Unlikely Marginally suitable habitat may occur along a nearby ephemeral watercourse. Suitable habitat is not present in the Disturbance Footprint.
Birds	*Malurus coronatus*	Purple-crowned fairy-wren	V	-		Occurs along rivers draining into the south-western and southern Gulf of Carpentaria from Roper River in Northern Territory to the Nicholson River in Queensland; the species appears to have been extirpated from the more easterly Leichardt river. They live along well wooded streams and rivers with a preference for Pandanus spp. or riparian grass for nesting. Cane grass is preferred as a nesting and foraging location in some areas (Garnett & Baker, 2021)	Yes (2)	Unlikely This species was recorded by Terra Solutions during the 2024 assessment within riparian vegetation associated with Lagoon Creek. The Disturbance Footprint does not contain suitable habitat and the nearby watercourse is small, sparsely vegetated and lacks Pandanus or riparian grasses.
Birds	*Numenius madagascariensis*	Far Eastern curlew	E	CE	Migratory (Bonn, CAMBA, JAMBA, ROKAMBA)	Within Australia, the eastern curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern curlews are rarely recorded inland. Eastern curlew does not breed in Australia. In Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Zosteraceae). The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves. The birds are rarely seen on near-coastal lakes or in grassy areas. The eastern curlew roosts during high tide periods on sandy spits, sandbars and islets, especially on beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. The species is carnivorous during the non-breeding season, mainly eating crustaceans (including crabs, shrimps and prawns), small molluscs, as well as some insects (Department of the Environment, 2015c).		Unlikely Disturbance Footprint does not contain suitable habitat.
Birds	*Rostratula australis*	Australian painted snipe	E	E		Painted snipe was historically, and may still be, distributed over most of the continent including some desert regions but due to the secretive habits of the species its full distribution is poorly known. Important areas historically and recently include the Riverina areas of the Murray-Darling Basin, the Channel Country in Queensland and South Australia, and the Capricornia Coast of central Queensland. Recent efforts have also yielded increased records in the Australia's savannah regions and arid inland areas. There is some evidence of seasonal movements between south-eastern Australia and regions further north. Painted snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They can also utilise waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains. Typical sites include those with rank emergent tussocks of grass, sedges, rushes or reeds, or samphire. Breeding requirements are believed to consist of shallow wetlands with areas of bare wet mud and mixed heights of low vegetation including areas where gilgai microrelief is present (DCCEEW, 2022).		Unlikely Disturbance Footprint does not contain suitable habitat.

Birds	*Tringa nebularia*	Common greenshank	E	E	Migratory (Bonn, CAMBA, JAMBA, ROKAMBA)	The species inhabits sheltered coastal habitat with large mudflats, saltmarsh, mangroves or seagrass in bays, harbours, estuaries, deltas and lagoons. Inland freshwater habitats are also used including swamps, lakes, dams, rivers, creeks, waterholes, floodplains, claypans and saltflats. The species is the most widespread wader in Australia (Department of the Environment, 2023h).		Unlikely Disturbance Footprint does not contain suitable habitat.
Birds	*Tyto novaehollandiae* subsp. *kimberli*	Masked owl (northern subspecies)	V	V		The distribution of the masked owl (northern) is very poorly known. Three subpopulations have been suggested: Kimberley, Northern Territory and Cape York. In Queensland, there are historical records from the Normanton region, and from Pascoe, Archer, Chester and Watson Rivers on Cape York Peninsula. The owl occurs along the southern rim of the Gulf of Carpentaria, Cape York Peninsula. and south to Atherton Tablelands and the Einasleigh-Burdekin divide. There is some confusion about where the Queensland southern limit of the subspecies is, with authorities suggesting Mackay or Coomooboolaroo Station (west of Rockhampton) (TSSC, 2015). Additionally, there is insufficient regional Masked Owl records of determinable veracity, and lack of knowledge as to whether Masked Owls occur through the Gulf Plains bioregion which is known to be a dispersal barrier for a number of other species (Jackett et al., 2020). In northern Australia, the Masked Owl has been recorded from riparian forest, rainforest, open forest, Melaleuca swamps and the edges of mangroves, as well as along the margins of sugar cane fields. The main ecological features relevant to management of the Masked Owl (northern) are (i) a large home range (and hence low population density); (ii) requirements for large trees with large hollows for nesting; and (iii) diet largely comprising mammals (TSSC, 2015).		Unlikely Hollows are uncommon to rare along the watercourse and almost completely absent from surrounding communities. Hollows observed were generally small and none were found that were of sufficient size to be suitable for an owl.
Mammals	*Dasyurus hallucatus*	Northern quoll		E		The Northern quoll is known to occur as far south as Gracemere and Mt Morgan, south of Rockhampton, and as far north as Cooktown. It occupies a diversity of habitats including rocky areas, eucalypt forest and woodlands, rainforests, sandy lowlands and beaches, shrubland, grasslands and desert. Habitat encompasses some form of rocky area or hollow logs for denning purposes with surrounding vegetated habitats used for foraging and dispersal (Department of the Environment, 2023e).		Unlikely Sandstone outcrops provide some rocky shelters, however permanent water is absent and the complexity of outcrops in proximity to the Disturbance Footprint is low relative to other areas.
Mammals	*Macroderma gigas*	Ghost bat	E	V		The species' current range is discontinuous, with geographically disjunct colonies occurring in the Pilbara (Armstrong & Anstee 2000; McKenzie & Bullen 2009), Kimberley (including several islands; McKenzie & Bullen 2012), northern Northern Territory (including Groote Eylandt), the Gulf of Carpentaria (Australian Wildlife Conservancy 2010), coastal and near coastal eastern Queensland from Cape York to near Rockhampton (Richards et al., 2008), and western Queensland (including Riversleigh and Cammoweal districts. Only 14 breeding sites are currently known. Roost sites include caves, rock crevices and disused mine adits. In the Hamersley Range in the Pilbara, preferred roosting habitat appears to be caves beneath bluffs of low rounded hills composed of Marra Mamba geology, and larger hills of Brockman Iron Formation; in the eastern Pilbara, caves beneath bluffs composed of Gorge Creek Group geology and granite rockpiles are preferred (Armstrong & Anstee 2000). The species' persistence in the arid Pilbara depends on the physiologically benign day roosts found deep underground in humid, temperature-stable caves. To persist in an area, small colonies require a group of caves/shelters that provide alternative day and night roost sites, and a gully or gorge system that opens onto a plain or riparian line that provides good foraging opportunities, typically less than 5 km from the diurnal roost site (TSSC, 2016d).		Possible This species has similar roost requirements to the orange leaf-nosed bat (confirmed present in MDL) with which it is known to cohabitate. Suitable deep cave roosting sites are likely to occur within or nearby the MDL. The small watercourse nearby the Disturbance Footprint may provide occasional foraging habitat.
Mammals	*Rhinonicteris aurantia*	Orange leaf-nosed bat	V	-		Occurs in northeastern Western Australia, northern NT and northwestern Queensland. Uses monsoon rainforest, tall open forest, open savanna woodland and grasslands. Roosts in hot, humid caves/mines during dry season and probably in trees during the wet season (van Dyck et al., 2013).	Yes (7)	Likely This species was recorded in the MDL by MET Serve (2011a) less than 2.5km from the Proposed Disturbance Area at its closest point. Suitable deep cave roosting sites are likely to occur within or nearby the MDL. The small watercourse nearby the Disturbance

								Footprint may provide occasional foraging habitat.
Mammals	*Saccolaimus saccolaimus* subsp. *nudicluniatus*	Bare-rumped sheathtail bat	E	V		The bare-rumped sheathtail bat is known to occur in north-eastern Queensland and the monsoonal tropics of the Northern Territory, and is likely to occur in areas of the Kimberley in Western Australia. In Queensland, it occurs from Ayr to the Iron Range, including Magnetic and possibly Prince of Wales Islands. Most records are near-coastal, but one record (at Jasper Gorge, Northern Territory) has been found 150 km inland. In Australia, the bare-rumped sheathtail bat has been recorded mostly in eucalypt forests and woodlands, generally in near-coastal areas. In Queensland, it is known to be associated with coastal lowland rainforests, and more open forests dominated by Eucalyptus or Corymbia species interspersed with coastal lowland rainforest. The small number of roosts recorded in Australia have all been found in deep tree hollows of the following species: poplar gum (*Eucalyptus platyphylla*), Darwin woollybutt (*E. miniata*), Darwin stringybark (*E. tetrodonta*) and weeping paperbark (*Melaleuca leucadendra* syn. *leucodendron*) (TSSC, 2016e).		Unlikely No public records within 300 km. Hollows, when present, were generally small and were rare to absent across the Disturbance Footprint.
Mammals	*Trichosurus vulpecula* subsp. *arnhemensis*	Northern brushtail possum	V	V		Noting there are some uncertainties defining historical distribution boundaries, the Northern Brushtail Possum occurs discontinuously from the Gulf of Carpentaria hinterland near Borroloola, Northern Territory (NT) westward to the Kimberley, Western Australia (WA). Most of the current population appears to be in the NT, with limited sightings recorded in WA. Within its broad range, its distribution is patchy. The Northern Brushtail Possum is a nocturnal semi-arboreal marsupial. It occurs mainly in tall eucalypt open forests with large hollow-bearing trees, particularly where the understorey includes some shrubs that bear fleshy fruits. However, the subspecies also occurs in some mangrove communities (especially where these contain hollowbearing trees), some rainforests and some semi-urban areas (notably around Darwin). In the monsoonal tropics its diet mostly comprises fruits, flowers and foliage (for example mistletoe species such as *Lysiana spathulata* (Northern Mistletoe), *Amyema miquelii* and Amyema bifurcate, as well as *Erythrophleum chlorostachys* (Cooktown Ironwood). In forests of northern Australia it shelters mostly in tree hollows (and in some cases, human infrastructure). The subspecies is found in higher abundance where shrub density is high; these areas likely provide refuge from predation by feral cats (*Felis catus*) as well as important food resources. However, the persistence of the species (albeit a different subspecies, *T. v. vulpecula*) in the rugged desert uplands in the arid zone of the NT indicates that the species is not strictly dependent on high shrub abundance where other forms of shelter from predation exist (TSSC, 2021).		Unlikely No public records for northwest Queensland. Hollows were largely absent from the Proposed Disturbance Footprint and were rare to occasional along nearby drainage line/watercourse. Signs of presence (e.g. scats, trunk scratches) were not found.
Mammals	*Xeromys myoides*	Water mouse	V	V		The Water Mouse occurs across an extensive although almost linear range in coastal and near coastal Queensland and the Northern Territory. However, the regions in which it occurs are widely separated. It is also known to occur in Papua New Guinea, where it was discovered on the Bensbach River floodplain. In south-east Queensland, the Water Mouse is distributed from the Gold Coast and Moreton Bay area to the Great Sandy Strait and as far inland to the Beerwah State Forest. In central eastern Queensland, the Water Mouse is known to occur from Agnes Water to Mackay, and Cannonvale. More recently, it has been recorded around Gladstone Harbour and on Curtis Island. The discovery of the species along the Jack Barnes Bicentennial Boardwalk, adjacent to Cairns Airport in 2017, represents the sole record of the Water Mouse from north Queensland, extending its known range in the state northwards by approximately 600 km. The habitat of the Water Mouse is aquatic environments, including coastal saltmarsh, samphire shrublands, saline reed-beds and saline grasslands, mangroves, and coastal freshwater wetlands, and wet heathlands as demonstrated through occupancy by the species continuously, periodically or occasionally in the past or present (DAWE, 2021).		Unlikely Suitable habitat (e.g. coastal mangrove communities) are absent. No records within several hundred kilometers.
Mammals	*Zyzomys palatalis*	Carpentarian rock-rat		E		The Carpentarian Rock-rat is restricted to isolated rainforest thickets and broad-leaved vegetation on scree slopes in rugged sandstone gorges. The species was described in the late 1980s from a single adult female collected from Banyan Gorge on Wollogorang Station, Northern Territory. Comprehensive surveys across the region in the early 1990s located the species at a further two sites on Wollogorgang Station (McDermott Springs and Moonlight Gorge; Churchill 1996). None were found outside of Wollogorgang, including over the border into Queensland. Further local colonies were found at Camel Creek (1995) and Redbank Mine (2003) on Wollogorgang. Recent surveys (2017) using camera traps at all previously known sites and other areas of potential habitat recorded the species at nine sites, including four new sites (DENR unpublished data; Appendix A), although there is some doubt over the species identification from the images from McDermotts Springs. Some of the spatial data from historic records appear to have a margin of error, such that the two records from Camel Creek could represent a single population. The closest camera trapping location to the historic Camel Creek records did not detect any Carpentarian Rock-rats. The nine sites are all within a radius of 35 km, with an EOO of c. 1200 km2. All are within Wollogorang pastoral station, in the Northern Territory (adjacent to the Queensland border) (TSSC, 2019).		Unlikely The Proposed Disturbance Footprint does not contain sandstone gorges or vine/rainforest thickets. No populations have been discovered outside of Wollogorang Station.

Reptiles	*Acanthophis hawkei*	Plains death adder	V	V		The exact distribution of the species is unclear. Suitable habitat for the plains death adder consists of flat, treeless, cracking-soil riverine floodplains (Cogger, 2000). Based on the presence of suitable habitat, the potential geographic range of the plains death adder extends from Western Queensland, across the north of the Northern Territory to north-east Western Australia. Fragmented populations of the plains death adder are known to occur in the Mitchell Grass Downs of western Queensland, the Barkly Tableland on the Northern Territory / Queensland border and east of Darwin in the Northern Territory. The species' extent of occurrence is estimated to be approximately 720,000 km2 and its area of occupancy is estimated to be approximately 233,480 km2 (DSEWPC, 2012).		Unlikely The MDL and the Proposed Disturbance Footprint do not contain floodplains with deeply cracking soils.
Reptiles	*Elseya lavarackorum*	Gulf snapping turtle	V	E		The Gulf Snapping Turtle is restricted to rivers draining into the Gulf of Carpentaria. In the Northern Territory, this includes the Calvert to the Nicholson River systems. This species occurs within the Northern Territory and the Southern Gulf (Queensland) Natural Resource Management Regions. In Queensland it has been recorded in Lawn Hill Gorge. The species inhabits large rivers and their associated overflow lagoons and oxbow lakes. The Gulf Snapping turtle is found in deeper permanent pools most often with muddy, sandy or rocky bottoms. The species is also found in the middle reaches of rivers, upstream of saline regions and downstream of escarpments, including plunge pools. Steep rocky gorges, and river reaches with intact river banks seem to be preferred habitats for Gulf Snapping Turtles. Turtles will bask on exposed rocks and logs and commonly float with just their head breaking the surface of the water (Department of the Environment, 2024b; DEWHA, 2008).		Unlikely Disturbance Footprint does not contain permanent water. Nearby watercourses are ephemeral.
Reptiles	*Tiliqua scincoides*	Northern blue-tongued skink	CR	CE		The northern blue-tongue skink occurs across northern Australia from Eighty Mile Beach in Western Australia (WA), across the southern Kimberley and Top End of the Northern Territory (NT), to approximately the Gregory Downs / Cloncurry area in western Queensland (Qld). It is not clear where the eastern limit of this subspecies' range occurs in north Qld due to a sampling gap. A morphometric analysis determined that blue-tongue skinks on Cape York Peninsula are from the eastern, rather than northern, subspecies. The northern blue-tongue skink occurs in a wide variety of ecosystems (Appendix B). It has been recorded from dissected sandstone plateaus and gorges, limestone ranges, granite, basalt and dolerite hills, glacial shale undulations, sand plains, sandy waterways, swamps, cracking clay floodplains and coastal flats. Vegetation associations include riparian forest, vine scrub, monsoon rainforest, pandanus-lined gorges, melaleuca forest, eucalypt woodland and savanna, sparse and dense shrubland, and spinifex and tussock grassland. Most – but not all – detections have occurred near seasonal or permanent water. Northern blue-tongue skinks are recorded sheltering under shrubs and thick grasses, in leaf litter, within burrows, and under built structures and discarded household items. They tend to avoid areas with bare ground (DCCEEW, 2023b)	Yes (1)	Likely Detected during the 2024 assessment undertaken by Terra Solutions. Recorded within 1 km of Proposed Disturbance Footprint at the closest point. Vegetation community at the record site is also mapped in the Proposed Disturbance Footprint which likely contains suitable habitat.
Reptiles	*Varanus mertensi*	Mertens' water monitor	E	E		This species has a broad geographic range, occupying coastal and inland waters across the far north of Australia from the Kimberley to the west side of Cape York Peninsula. In the Northern Territory it has been recorded across most of the Top End and the Gulf Region. It is a semi-aquatic monitor seldom seen far from water. This species can often be basking on branches overhanging the water or on rocks mid-stream (DCCEEW, 2023c)	Yes (5)	Unlikely While recorded elsewhere in the MDL, the Disturbance Footprint does not contain permanent water. Nearby watercourses are ephemeral.
Reptiles	*Varanus mitchelli*	Mitchell's water monitor	CR	CE		Mitchell's water monitor occurs across the wet-dry tropics of northern Australia from Yampi Sound Training Area in the far west Kimberley of Western Australia (WA) across the Kimberley and Top End of the Northern Territory (NT), to approximately the Boodjamulla National Park area of far northwest Queensland (Qld). There are unconfirmed reports of this species from southern Cape York Peninsula. Mitchell's water monitor inhabits freshwater and saline wetlands that range from seasonal gorges in upper catchments to large rivers and coastal floodplains. It is recorded from rivers, creeks, riffle zones, gorges, springs, lagoons, swamps, mangroves, and foreshores. Mitchell's water monitor has a strong association with Pandanus and other areas of woody vegetation that are directly adjacent to waterbodies, e.g. rainforest, *Melalauca*, mangroves. Mitchell's water monitor shelters under bark and in hollow tree limbs that overhang the water. It is often encountered basking or resting on pandanus and other woody vegetation near the water, partially submerged logs, mangroves, riverbanks, rocks, and manmade structures such as rocky sea walls and slabs of concrete (DCCEEW, 2023d).		Unlikely Disturbance Footprint does not contain permanent water. Nearby watercourses are ephemeral.
Sharks & Rays	*Pristis pristis*	Largetooth sawfish	-	V	Migratory (Bonn)	A marine/estuarine species to approximately 7 m that occupies freshwater stretches of water until 3-4 m in length. The species potentially occurs in all large rivers in northern Australia. Preferred habitat includes mud bottoms and turbid waters with riparian vegetation and at least 1 m deep but mostly prefer deeper waters adjacent to shallows (Department of the Environment, 2023g).		Unlikely Disturbance Footprint does not contain permanent water.

								Nearby watercourses are ephemeral.

1 Conservation status as listed under the Queensland Nature Conservation Act 1992. E: Endangered; V: Vulnerable; NT: Near Threatened
2 Conservation status as listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. CE: Critically Endangered; E: Endangered; V: Vulnerable; M: Migratory
3 Previous records exist within 10 km of the site (Wildlife Online 2023)
4 Likelihood of occurrence is based on the known distribution and ecological requirements of the species in the context of the site, where Unlikely: No records of the species occurring regionally or suitable habitat does not occur onsite; Possibly: Species previously recorded in the vicinity of the site and marginal habitat is present on the site; or species known to occur regionally and preferred habitat is present on the site; Likely: Species previously recorded in the vicinity of the site and suitable habitat present on the site; Confirmed: Species observed through direct observation within or immediately adjacent to the site.
5 Assessment of potential level of impact is based on the known distribution and ecological requirements of the species in the context of the site.

Appendix K

Migratory Fauna Likelihood of Occurrence Assessment

Table 26: Migratory Fauna Likelihood of Occurrence Assessment

Class	Species Name	Common Name	NC Act Status	EPBC Act Status	Migratory	Habitat	Likelihood of occurrence
Birds	*Actitis hypoleucos*	Common Sandpiper	SL		EPBC Act, Bonn, CAMBA, JAMBA, ROKAMBA	Utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats. The Common Sandpiper has been recorded in estuaries and deltas of streams, as well as on banks farther upstream; around lakes, pools, billabongs, reservoirs, dams and claypans, and occasionally piers and jetties. The muddy margins utilised by the species are often narrow, and may be steep. The species is often associated with mangroves, and sometimes found in areas of mud littered with rocks or snags (Department of the Environment, 2023a).	Unlikely
Birds	*Apus pacificus*	Fork-tailed swift	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	The Fork-tailed swift is a non-breeding visitor to all states and territories of Australia (Higgins 1999). In north-east Queensland there are many records east of the Great Divide from near Cooktown and south to Townsville. The species is almost exclusively aerial, and mostly occur over inland plains, over dry or open habitats, including riparian woodland and tea-tree swamps, low scrub, heathland or saltmarsh. They also occur over settled areas, including towns, urban areas and cities (Department of the Environment, 2023b).	Likely
Birds	*Calidris acuminata*	Sharp-tailed sandpiper	V	V	EPBC Act, Bonn, CAMBA, JAMBA, ROKAMBA	During the non-breeding season, approximately 91 percent of the East Asian – Australasian population occurs in Australia and New Zealand. Sharp-tailed sandpipers occur within all states of Australia. They are found mostly in the south-east and are widespread in both inland and coastal locations. The species also occurs in both freshwater and saline habitats. In Queensland, the species is widespread along the coast and is sparsely scattered inland, particularly in central and south-western regions. The species utilises fresh and hypersaline environments, feeding along the edge of water on mudflats, coastal and inland wetlands, and sewage ponds. After rainfall events, the species may also feed on areas of agricultural pasture. The sharp-tailed sandpiper is migratory, breeding in northern Siberia and moving in flocks of less than a thousand individuals to non-breeding areas south of the Equator. Sharp-tailed sandpipers breed from June to August (DCCEEW, 2024a).	Unlikely
Birds	*Calidris ferruginea*	Curlew sandpiper	CE	CE	EPBC Act, Bonn, CAMBA, JAMBA, ROKAMBA	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms (DoE 2022). They are also recorded inland, though less often, including around ephemeral and permanent lakes, dams, waterholes and bore drains, usually with bare edges of mud or sand. They occur in both fresh and brackish waters. Occasionally they are recorded around floodwaters (Department of the Environment, 2023c).	Unlikely
Birds	*Calidris melanotos*	Pectoral sandpiper	SL		EPBC Act, Bonn, JAMBA, ROKAMBA	In Queensland, most records for the Pectoral Sandpiper occur around Cairns. There are scattered records elsewhere, mainly from east of the Great Divide between Townsville and Yeppoon. Records also exist in the south-east of the state as well as a few inland records at Mount Isa, Longreach and Oakley. In New South Wales (NSW), the Pectoral Sandpiper is widespread, but scattered. Records exist east of the Great Divide, from Casino and Ballina, south to Ulladulla. West of the Great Divide, the species is widespread in the Riverina and Lower Western regions. In Victoria the Pectoral Sandpiper is mainly found from Port Phillip Bay and the valley of the Murray River between Kerang and Piangil. It has also been recorded at Coronet Bay (in Westernport Bay), Wimmera and Mallee. In Australasia, the Pectoral Sandpiper prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands (Department of the Environment, 2015a).	Unlikely
Birds	*Cecropis daurica*	Red-rumped swallow	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	An irregular, non-breeding visitor to northern Australia. Predominately forages over wetlands and open well-watered grasslands (Department of the Environment, 2015d).	Possible
Birds	*Charadrius veredus*	Oriental plover	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	The Oriental Plover is a non-breeding visitor to Australia, where the species occurs in both coastal and inland areas, mostly in northern Australia. Most records are along the north-western coast, between Exmouth Gulf and Derby in Western Australia, and there are records at a few scattered sites elsewhere, mainly along the northern coast, such as in the Top End, the Gulf of Carpentaria and on Cape York Peninsula. The species also often occurs further inland on the 'blacksoil' plains of northern Western Australia, the Northern Territory and north-western Queensland ('the Gulf Country'). Immediately after arriving in non-breeding grounds in northern Australia, Oriental Plovers spend a few weeks in coastal habitats such as estuarine mudflats and sandbanks, on sandy or rocky ocean beaches or nearby reefs, or in near-coastal grasslands, before dispersing further inland. Thereafter they usually inhabit flat, open, semi-arid or arid grasslands, where the grass is short and sparse, and interspersed with hard, bare ground, such as claypans, dry paddocks, playing fields, lawns and cattle camps (Department of the Environment, 2024a).	Unlikely

Class	Species Name	Common Name	NC Act Status	EPBC Act Status	Migratory	Habitat	Likelihood of occurrence
Birds	*Cuculus optatus*	Oriental cuckoo	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	The oriental cuckoo is found throughout coastal and sub-coastal regions of northern and eastern Australia. The species prefers dense vegetation including monsoon forest, rainforest edges, dense tree canopies within paddocks, mangroves, and islands. This species is a non-breeding migrant to Australia from September-May (Pizzey & Knight, 2010).	Unlikely
Birds	*Hirundo rustica*	Barn Swallow	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	The barn swallow occurs in northern Australia, more commonly in the north-west and sporadically in the north and east. Open areas are favoured, especially coastal lowlands, freshwater wetlands, paperbark Melaleuca woodland, mesophyll shrub thickets and tussock grassland (Schodde & Mason, 1999).	Unlikely
Birds	*Glareola maldivarum*	Oriental pratincole	SL			Within Australia the Oriental Pratincole is widespread, non-breeding visitor in northern areas, especially along the coasts of the Pilbara Region and the Kimberley Division in Western Australia, the Top End of the Northern Territory, and parts of the Gulf of Carpentaria. It is also widespread but scattered inland, mostly north of 20° S. There are occasional records in southern Australia, at sparsely scattered sites, with records in all states, including an unconfirmed report in Tasmania In non-breeding grounds in Australia, the Oriental Pratincole usually inhabits open plains, floodplains or short grassland (including farmland or airstrips), often with extensive bare areas. They often occur near terrestrial wetlands, such as billabongs, lakes or creeks, and artificial wetlands such as reservoirs, saltworks and sewage farms, especially around the margins. The species also occurs along the coast, inhabiting beaches, mudflats and islands, or around coastal lagoons (Department of the Environment, 2024c)	Possible
	Motacilla cinerea	Grey wagtail	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	A non-breeding summer visitor to mostly northern Australia. Strongly associated with water. In Australia is has been detected near running water in disused quarries, sandy, rocky streams in escarpments and rainforests; sewage ponds, ploughed fields, and airfields. It has a preference for rocky substrates along watercourses, lakes and marshes (Department of the Environment, 2015d; Pizzey & Knight, 2010).	Unlikely
Birds	*Motacilla flava*	Yellow wagtail	SL		EPBC Act, CAMBA, JAMBA, ROKAMBA	The yellow wagtail is a non-breeding extremely uncommon summer migrant to mostly coastal areas of Australia, especially in the area of Darwin to Broome (Pizzey & Knight, 2010). In Queensland, records are most common in coastal habitats between Cairns and Townsville. Important habitat for the species includes well-watered open grasslands and the fringes of wetlands. Roosting habitat includes mangroves and other dense vegetation (Department of the Environment, 2023f).	Unlikely
Birds	*Numenius madagascariensis*	Far Eastern curlew	E	CE	EPBC Act, Bonn, JAMBA, ROKAMBA	Within Australia, the eastern curlew has a primarily coastal distribution. The species is found in all states, particularly the north, east, and south-east regions including Tasmania. Eastern curlews are rarely recorded inland. Eastern curlew does not breed in Australia. In Australia, the eastern curlew is most commonly associated with sheltered coasts, especially estuaries, bays, harbours, inlets and coastal lagoons, with large intertidal mudflats or sandflats, often with beds of seagrass (Zosteraceae). The birds are often recorded among saltmarsh and on mudflats fringed by mangroves, and sometimes within the mangroves. The birds are rarely seen on near-coastal lakes or in grassy areas. The eastern curlew roosts during high tide periods on sandy spits, sandbars and islets, especially on beach sand near the high-water mark, and among coastal vegetation including low saltmarsh or mangroves. The species is carnivorous during the non-breeding season, mainly eating crustaceans (including crabs, shrimps and prawns), small molluscs, as well as some insects (Department of the Environment, 2015c).	Unlikely
Birds	*Pandion haliaetus*	Osprey	SL	-	EPBC Act, Bonn	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW; with a second isolated breeding population on the coast of South Australia, extending from Head of Bight east to Cape Spencer and Kangaroo Island. Eastern Ospreys occur in littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands. They are mostly found in coastal areas but occasionally travel inland along major rivers, particularly in northern Australia. They require extensive areas of open fresh, brackish or saline water for foraging (Marchant & Higgins 1993). They frequent a variety of wetland habitats including inshore waters, reefs, bays, coastal cliffs, beaches, estuaries, mangrove swamps, broad rivers, reservoirs and large lakes and waterholes. They exhibit a preference for coastal cliffs and elevated islands in some parts of their range, but may also occur on low sandy, muddy or rocky shores and over coral cays. They may occur over atypical habitats such as heath, woodland or forest when travelling to and from foraging sites (DCCEEW, 2024b).	Unlikely
Birds	*Rhipidura rufifrons*	Rufous Fantail	SL		EPBC Act, Bonn	The rufous fantail occupies a range of coastal and near coastal habitats of northern and eastern Australia. Occurs in understorey of rainforest, wetter eucalypt forest, gullies, monsoon forest, paperbarks, sub inland and coastal scrubs, watercourses, parks, and gardens (Pizzey & Knight, 2010).	Unlikely

Class	Species Name	Common Name	NC Act Status	EPBC Act Status	Migratory	Habitat	Likelihood of occurrence
Birds	*Tringa nebularia*	Common greenshank	E	E	EPBC Act, Bonn, JAMBA, ROKAMBA	The species inhabits sheltered coastal habitat with large mudflats, saltmarsh, mangroves or seagrass in bays, harbours, estuaries, deltas and lagoons. Inland freshwater habitats are also used including swamps, lakes, dams, rivers, creeks, waterholes, floodplains, claypans and saltflats. The species is the most widespread wader in Australia (Department of the Environment, 2023h).	Possible
Reptilia	*Crocodylus porosus*	Estuarine crocodile	V		EPBC Act, Bonn	In Queensland the Salt-water Crocodile inhabits reef, coastal and inland waterways from Gladstone on the east coast, throughout the Cape York Peninsula and west to the Queensland-Northern Territory border. A seven-year survey recorded 6444 sightings of the species in the waterways of the Southern Gulf Plains, Northern Gulf Plains, north-west and north-east Cape York Peninsula, Lakefield National Park, East Coast Plains, the Burdekin River catchment and the Fitzroy River catchment. Studies from Arnhem Land (Northern Territory) indicated that the Salt-water Crocodile mostly occurs in tidal rivers, coastal floodplains and channels, billabongs and swamps up to 150 km inland from the coast. It has been noted that evaporation in isolated channels may lead to salinity levels that are twice that of seawater. The Salt-water Crocodile usually inhabits the lower (estuarine) reaches of rivers, while the upper reaches are inhabited by Crocodylus johnstoni (Fresh-water Crocodile); although, areas of overlap occur in some rivers. In Queensland, the species is usually restricted to coastal waterways and floodplain wetlands. Populations may also be found hundreds of kilometres upstream, such as in the Fitzroy River and the waterways of the southern Gulf of Carpentaria. Preferred nesting habitat of the Salt-water Crocodile includes elevated, isolated freshwater swamps that do not experience the influence of tidal movements. Floating rafts of vegetation also provide important nesting habitat. In the Northern Territory, most nest sites are found on the north-west banks of rivers and are usually exposed to the midday sun, but shaded in the early morning and late evening (Department of the Environment, 2023d).	Unlikely
Sharks & Rays	*Pristis pristis*	Largetooth sawfish	-	V	EPBC Act, Bonn	A marine/estuarine species to approximately 7 m that occupies freshwater stretches of water until 3-4 m in length. The species potentially occurs in all large rivers in northern Australia. Preferred habitat includes mud bottoms and turbid waters with riparian vegetation and at least 1 m deep but mostly prefer deeper waters adjacent to shallows (Department of the Environment, 2023g).	Unlikely

1 Conservation status as listed under the Queensland Nature Conservation Act 1992. E: Endangered; V: Vulnerable; NT: Near Threatened
2 Conservation status as listed under the Commonwealth Environment Protection and Biodiversity Conservation Act 1999. CE: Critically Endangered; E: Endangered; V: Vulnerable; M: Migratory
3 Previous records exist within 10 km of the site (Wildlife Online 2023)
4 Likelihood of occurrence is based on the known distribution and ecological requirements of the species in the context of the site, where Unlikely: No records of the species occurring regionally or suitable habitat does not occur onsite; Possibly: Species previously recorded in the vicinity of the site and marginal habitat is present on the site; or species known to occur regionally and preferred habitat is present on the site; Likely: Species previously recorded in the vicinity of the site and suitable habitat present on the site; Confirmed: Species observed through direct observation within or immediately adjacent to the site.
5 Assessment of potential level of impact is based on the known distribution and ecological requirements of the species in the context of the site

Appendix L
Environmentally Sensitive Areas

U-Valley – Crossing 1 (UV1)	
Latitude/Longitude:	-17.494738, 138.213908
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of assessment.
Direction of Flow	WNW
Bank Height:	1 m
Bankfull Width:	6 m
Bank Vegetation:	No distinct riparian community evident. Vegetation community on the banks also occurs on broader surrounding area.
Bed Composition:	Sandy bed with some cobble and boulders (10-40cm). Loamy banks without sand (sand present only in bed).
Bed Vegetation:	Occasional grasses and sedges, mostly dead.
Canopy Cover:	5-10%
Erosion:	Very minor.
Adjacent Land Use:	Historical grazing. No signs of recent cattle access.
General Observations:	NA

Upstream

Crossing Photo 1

Downstream

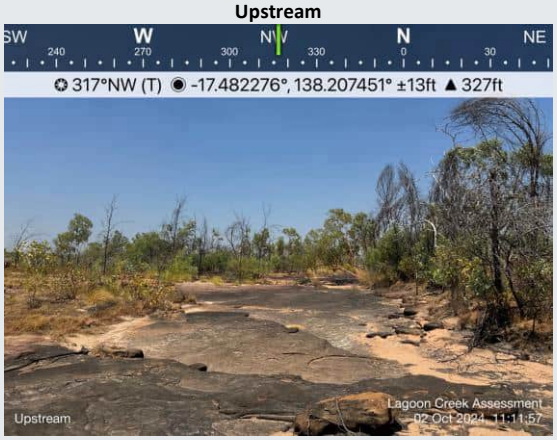
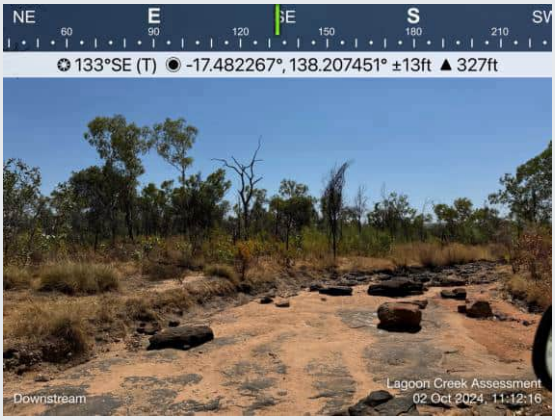
Crossing Photo 2

Long Pocket – Crossing 1 (LP1)	
Latitude/Longitude:	-17.479090, 138.220602
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of assessment.
Direction of Flow	NNW
Bank Height:	4-5 m on SW side. 3 m on NE side.
Bankfull Width:	35-40 m
Bank Vegetation:	*Eucalyptus camaldulensis* community 5-6 m wide. Very sparse.
Bed Composition:	Bed substrate includes gravel, cobbles, sand, boulders, large boulders.
Bed Vegetation:	Bed vegetation is abundant including grasses and small trees. It is an underdeveloped, distinct community from the surroundings, but there is overlap with the surrounding communities.
Canopy Cover:	<5%
Erosion:	Absent to minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	Banks are poorly defined particularly on the northeast side forming a gentle gradient.

Upstream

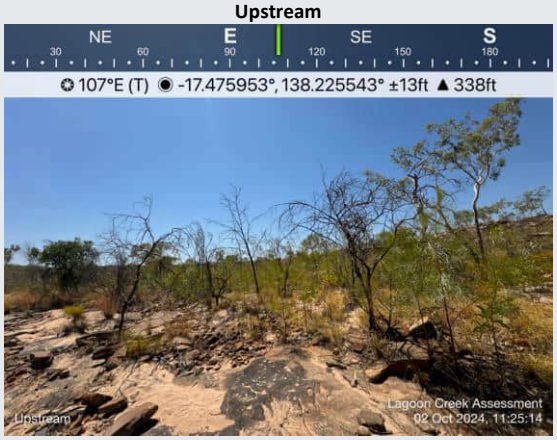
Downstream

Crossing Photo 1

Long Pocket – Crossing 2 (LP2)	
Latitude/Longitude:	-17.482291, 138.207484
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	SE
Bank Height:	0.5-1 m
Bankfull Width:	6-12 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Bedrock and sand.
Bed Vegetation:	NA
Canopy Cover:	<5%
Erosion:	Absent to minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA
Upstream 	**Downstream** 
Crossing Photo 1	**Crossing Photo 2**

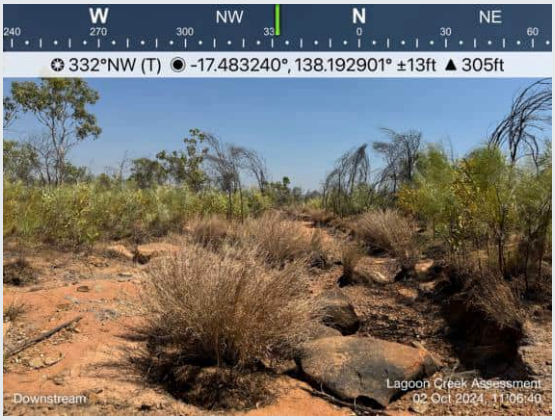
Black Hill – Crossing 1 (BH1)	
Latitude/Longitude:	-17.475936, 138.225538
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NW
Bank Height:	Poorly defined. 0.5-1 m
Bankfull Width:	60 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Bedrock,small boulders, sand and cobble.
Bed Vegetation:	Juvenile trees from surrounding community
Canopy Cover:	<5%
Erosion:	Absent to minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

Upstream

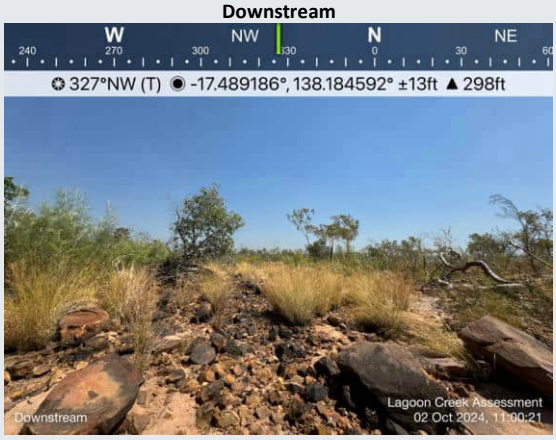


Downstream

Upstream Photo 2

MDL – Crossing 14 (MDL14)	
Latitude/Longitude:	-17.483250, 138.192900
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NW
Bank Height:	1 m
Bankfull Width:	2-4 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Sand, small and large boulders, cobble.
Bed Vegetation:	Juvenile trees from surrounding community
Canopy Cover:	NA
Erosion:	Absent to minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA
Upstream 	**Downstream** 

MDL – Crossing 13 (MDL13)	
Latitude/Longitude:	17.487277, 138.188500
Vegetation Management Stream Order:	1
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	NA
Direction of Flow	NA
Bank Height:	NA
Bankfull Width:	NA
Bank Vegetation:	NA
Bed Composition:	NA
Bed Vegetation:	NA
Canopy Cover:	NA
Erosion:	NA
Adjacent Land Use:	NA
General Observations:	No drainage line or watercourse is present at the mapped location. None encountered further up or down the track.

MDL – Crossing 12 (MDL12)	
Latitude/Longitude:	-17.489194, 138.184601
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NW
Bank Height:	1-2 m
Bankfull Width:	10-12 m
Bank Vegetation:	NA
Bed Composition:	Bed consists of sand, cobble, boulders and bedrock.
Bed Vegetation:	No distinct riparian community, however the community that is present thickens on the banks in a 1-2 m corridor..
Canopy Cover:	Bed consists of sand, cobble, boulders and bedrock.
Erosion:	*Melaleuca sp.*, grasses.
Adjacent Land Use:	0-1%
General Observations:	NA
Upstream 	**Downstream** 

MDL – Crossing 11 (MDL11)	
Latitude/Longitude:	-17.489438, 138.184060
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	NA
Direction of Flow	NA
Bank Height:	1 m
Bankfull Width:	8.5 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks in a 1-2 m corridor..
Bed Composition:	Bed consists of sand, cobble, boulders and bedrock.
Bed Vegetation:	*Melaleuca sp.*, grasses.
Canopy Cover:	0-1%
Erosion:	NA
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

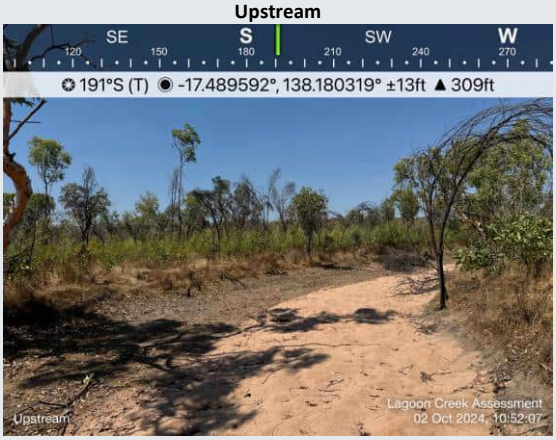
Upstream

Downstream

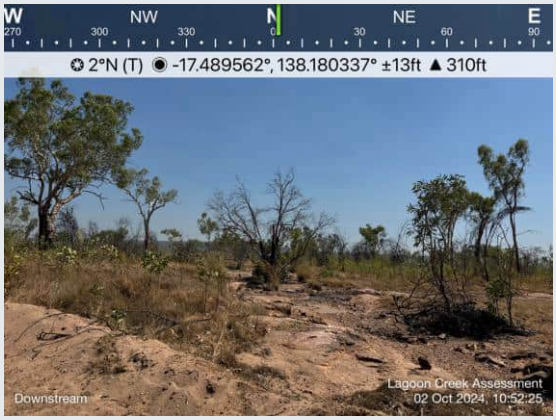
Crossing

MDL – Crossing 10 (MDL10)	
Latitude/Longitude:	-17.489600, 138.180344
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	N
Bank Height:	0.5-0.7 m
Bankfull Width:	5-6 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Sand, soil, cobble, stones, small boulders and bedrock.
Bed Vegetation:	Grasses and small trees.
Canopy Cover:	<5%
Erosion:	Absent.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

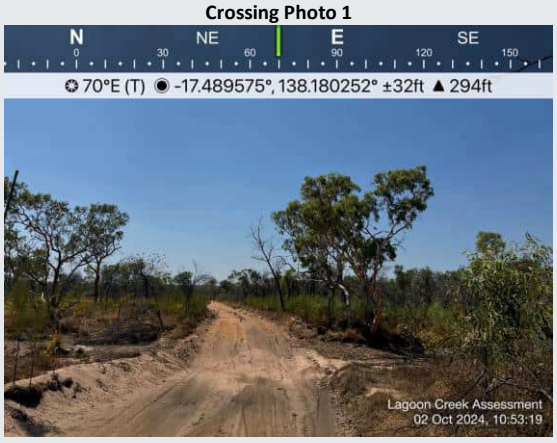
Upstream



Downstream



Crossing Photo 1



MDL – Crossing 9 (MDL9)	
Latitude/Longitude:	-17.490264, 138.177394
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNW
Bank Height:	0.5-1 m
Bankfull Width:	2.5-4 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Sand, small boulders and bedrock.
Bed Vegetation:	NA
Canopy Cover:	2-4%
Erosion:	Absent.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation. No sign of cattle access.
General Observations:	NA

Upstream

Downstream

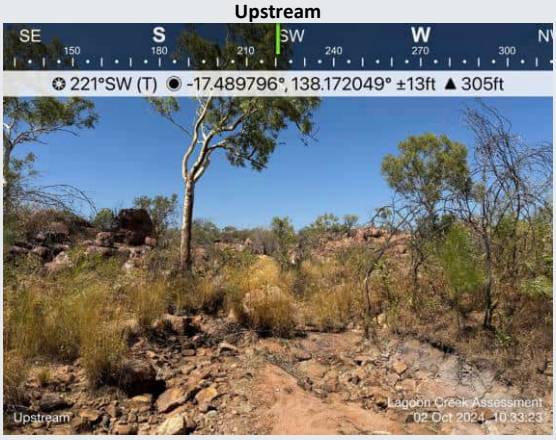
Crossing Photo

MDL – Crossing 8 (MDL8)	
Latitude/Longitude:	-17.490392, 138.174427
Vegetation Management Stream Order:	Unmapped. Minor drainage line. Not a watercourse.
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNE
Bank Height:	0.3 m
Bankfull Width:	1 m
Bank Vegetation:	Same as surrounds.
Bed Composition:	Sand, cobble.
Bed Vegetation:	NA
Canopy Cover:	1%
Erosion:	Absent.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation. No sign of cattle access.
General Observations:	NA

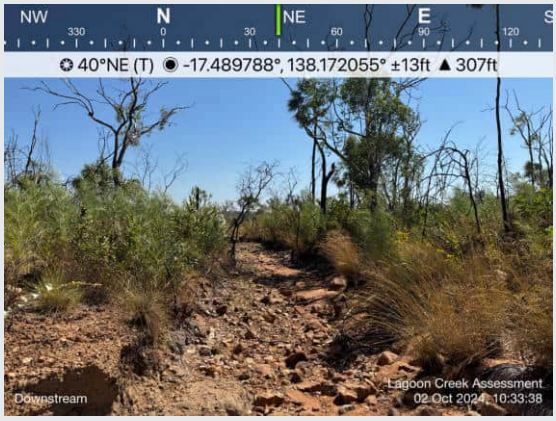
Downstream

MDL – Crossing 7 (MDL7)	
Latitude/Longitude:	-17.489789, 138.172050
Vegetation Management Stream Order:	1
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	0.5-1 m
Bankfull Width:	Downstream – 2.5m. Upstream 4.5 m.
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. *Eucalyptus sp.* to 7m height but sparse. Shrub layer to 1.5 m. Tall grass.
Bed Composition:	Sand, gravel, stone and small boulders (<1 m).
Bed Vegetation:	Grasses and small trees.
Canopy Cover:	<5%
Erosion:	Minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

Upstream



Downstream



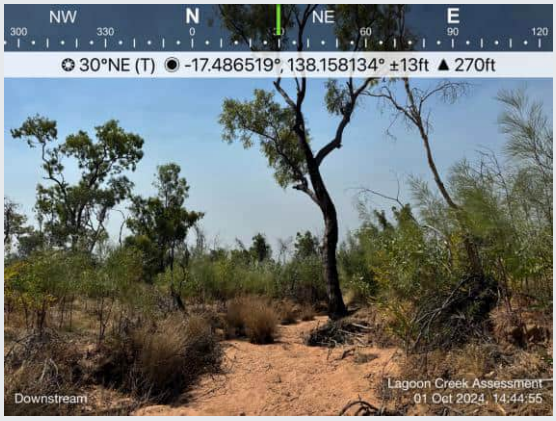
Crossing Photo 1

MDL – Crossing 6 (MDL6)	
Latitude/Longitude:	-17.489393, 138.170132
Vegetation Management Stream Order:	Mapped as stream order 1 however no drainage line or watercourse present.
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	No drainage line or watercourse present.
Direction of Flow	NA
Bank Height:	NA
Bankfull Width:	NA
Bank Vegetation:	NA
Bed Composition:	NA
Bed Vegetation:	NA
Canopy Cover:	NA
Erosion:	NA
Adjacent Land Use:	NA
General Observations:	NA

TSF – Crossing 5 (TSF5)	
Latitude/Longitude:	-17.486511, 138.158140
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	0.5-1 m
Bankfull Width:	Downstream – 4.5m. Upstream 3 m.
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Occasional eucalypts to 14 m height.
Bed Composition:	Sand and gravel
Bed Vegetation:	Grasses.
Canopy Cover:	<5%
Erosion:	Minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

Upstream

Downstream

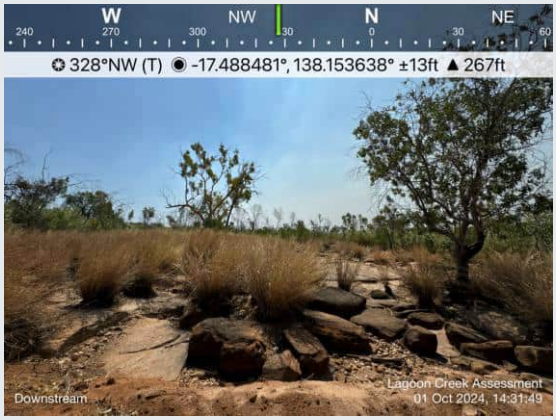


Crossing Photo 1

TSF – Crossing 4 (TSF4)	
Latitude/Longitude:	-17.488512, 138.153619
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNW
Bank Height:	0.5-1 m
Bankfull Width:	1-2 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Grass abundant.
Bed Composition:	Sand, cobble bedrock, large boulders.
Bed Vegetation:	Grasses.
Canopy Cover:	<5%
Erosion:	Minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

Upstream

Downstream



Crossing Photo 1

TSF – Crossing 3 (TSF3)	
Latitude/Longitude:	-17.492464, 138.141497
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	W
Bank Height:	0.5-1 m
Bankfull Width:	2 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Grass abundant.
Bed Composition:	Sand and gravel
Bed Vegetation:	Grasses.
Canopy Cover:	<5%
Erosion:	Minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:	NA

Upstream

Downstream

TSF – Crossing 2 (TSF2)	
Latitude/Longitude:	-17.495281, 138.134544
Vegetation Management Stream Order:	1
Queensland Waterways for Waterway Barrier Works:	NA
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	N
Bank Height:	1 m
Bankfull Width:	3.5 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks for 3 m.
Bed Composition:	Sand, cobble and bedrock.
Bed Vegetation:	Grasses and shrubs from surrounding community.
Canopy Cover:	<2%
Erosion:	Absent.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations:t	Pig tracks observed.

Upstream

Downstream

Crossing Photo 1

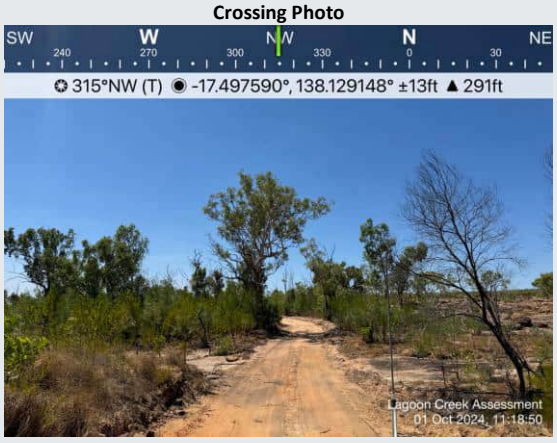
Crossing Photo 2

TSF – Crossing 1 (TSF1)	
Latitude/Longitude:	-17.497656, 138.129283
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	0.5 m
Bankfull Width:	2.5 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Vegetation height 2-3 m.
Bed Composition:	Sand, cobble, rocks and bedrock.
Bed Vegetation:	Grasses and juvenile trees from surrounding community.
Canopy Cover:	1%
Erosion:	Minor.
Adjacent Land Use:	No apparent adjacent land use other than the track. Native vegetation.
General Observations	NA

Upstream

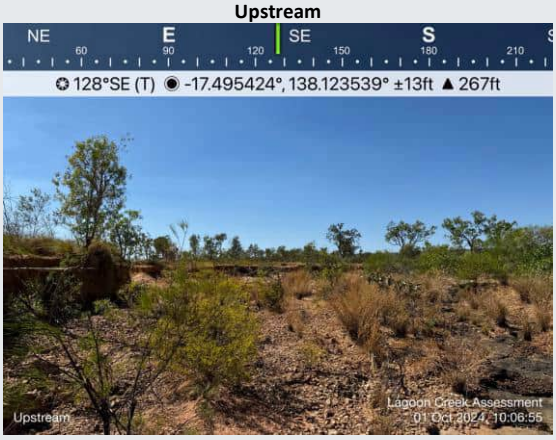
Downstream

Crossing Photo



Huarabagoo – Crossing 1 (HB1)	
Latitude/Longitude:	-17.495358, 138.123526
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNW
Bank Height:	1.5 m
Bankfull Width:	12 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Average height 1.5 m with 5 m emergents.
Bed Composition:	Sand, gravel cobble, and bedrock.
Bed Vegetation:	A slight different variation of the surrounding community with a few water-associated species.
Canopy Cover:	1%
Erosion:	Moderate.
Adjacent Land Use:	Low intensity grazing.
General Observations	Igneous bedrock.

Upstream



Downstream

Crossing Photo 1

Crossing Photo 2

Huarabagoo – Crossing 2 (HB2)	
Latitude/Longitude:	-17.499373, 138.122795
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNW
Bank Height:	0.7 m
Bankfull Width:	4 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Average height 1.5-2 m.
Bed Composition:	Sand, gravel cobble, and bedrock.
Bed Vegetation:	Grasses and dead sedges.
Canopy Cover:	<5%
Erosion:	Absent.
Adjacent Land Use:	Low intensity grazing.
General Observations	NA

Upstream

Downstream

Crossing Photo 1

Huarabagoo – Crossing 3 (HB3)	
Latitude/Longitude:	-17.500563, 138.121148
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	0.5-0.7 m
Bankfull Width:	3 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Sand, cobble, small boulders, large boulders and bedrock.
Bed Vegetation:	Grasses, shrubs and small trees.
Canopy Cover:	5%
Erosion:	Mild to moderate.
Adjacent Land Use:	Low intensity grazing.
General Observations	Small pool of water approx. 30 m upstream, with signs of cattle or pig activity, likely from recent rains. Rocky outcrop habitat on northern side.
Upstream 	**Downstream** 
Crossing Photo 1 	

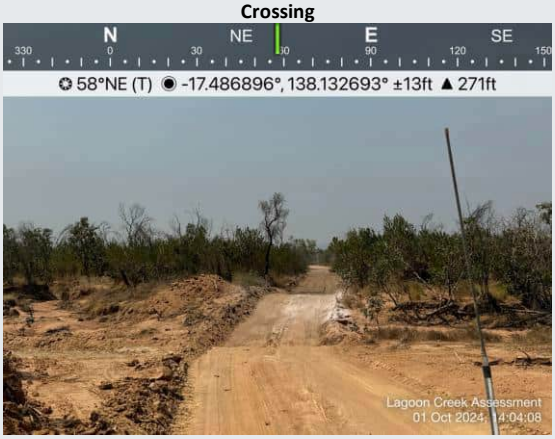
HB – JG Link – Crossing 1 (HBJG1)	
Latitude/Longitude:	-17.486762, 138.132819
Vegetation Management Stream Order:	2
Queensland Waterways for Waterway Barrier Works:	Low impact (green)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NNE and SE
Bank Height:	0.5-1 m
Bankfull Width:	2-3 m
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks. Community 3m high with 6 m emergent trees.
Bed Composition:	Sand and gravel.
Bed Vegetation:	Grasses, shrubs and small trees.
Canopy Cover:	5%
Erosion:	Mild to moderate.
Adjacent Land Use:	Low intensity grazing.
General Observations	Watercourse splits into two immediately downstream of the crossing.

Downstream 1

Downstream 2

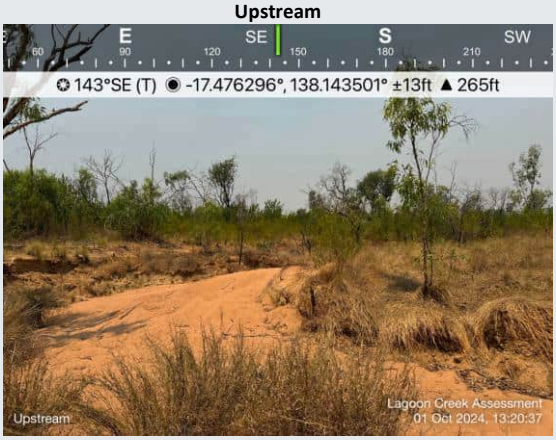
Upstream

Crossing

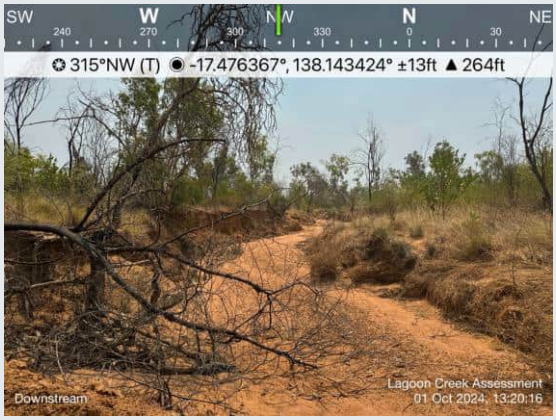


Junnagunna – Crossing 1 (JG1)	
Latitude/Longitude:	-17.486762, 138.132819
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NW
Bank Height:	1-2 m
Bankfull Width:	Low bank – 5 m. High bank – 14. Only the NE side has both low and high banks.
Bank Vegetation:	No distinct riparian community, however the community that is present thickens on the banks.
Bed Composition:	Sand and gravel.
Bed Vegetation:	Grasses, shrubs and small trees.
Canopy Cover:	5%
Erosion:	Minor.
Adjacent Land Use:	Low intensity grazing.
General Observations	NA

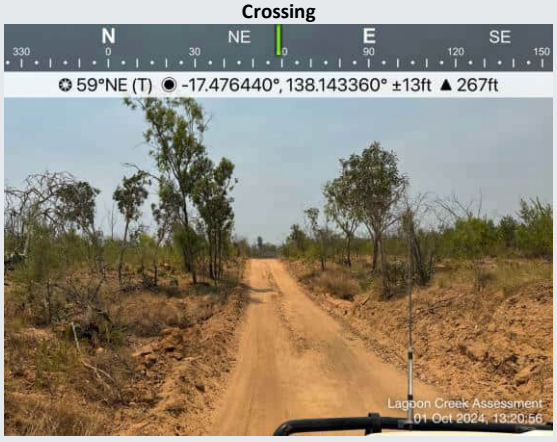
Upstream



Downstream

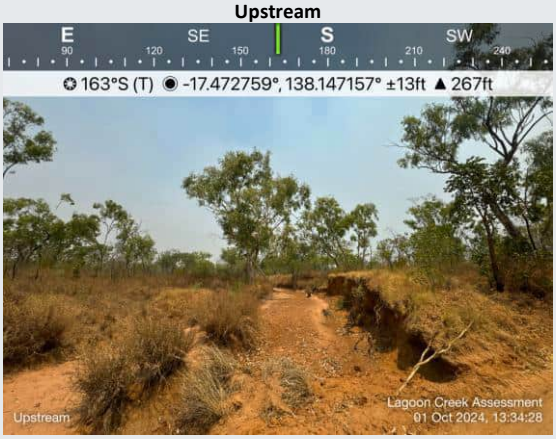


Crossing



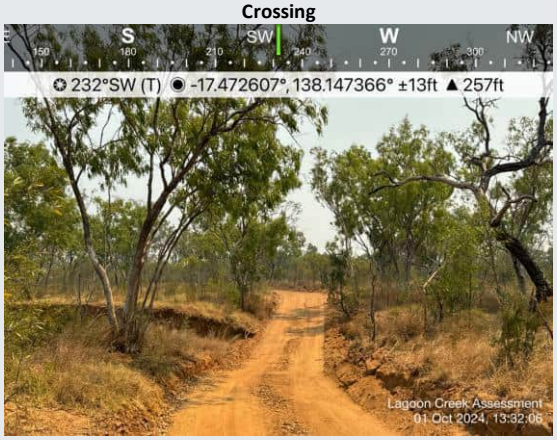
Junnagunna – Crossing 2 (JG2)	
Latitude/Longitude:	-17.472717, 138.147209
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NW
Bank Height:	0.5-3m
Bankfull Width:	5-6 m
Bank Vegetation:	Narrow riparian corridor comprising a single row of *Eucalyptus camaldulensis* to 7 m height on either bank. Trees contain hollows.
Bed Composition:	Sand and gravel.
Bed Vegetation:	Absent.
Canopy Cover:	5%
Erosion:	Minor.
Adjacent Land Use:	Low intensity grazing.
General Observations	Track layer provided by Lagoon Creek Resources ends at the watercourse, however it does cross and drilling was being undertaken on the northeastern side.

Upstream



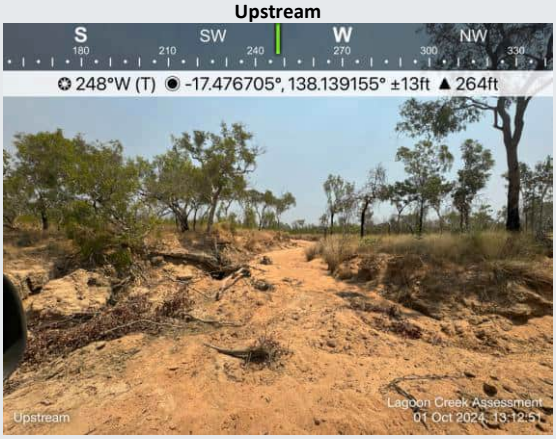
Downstream

Crossing

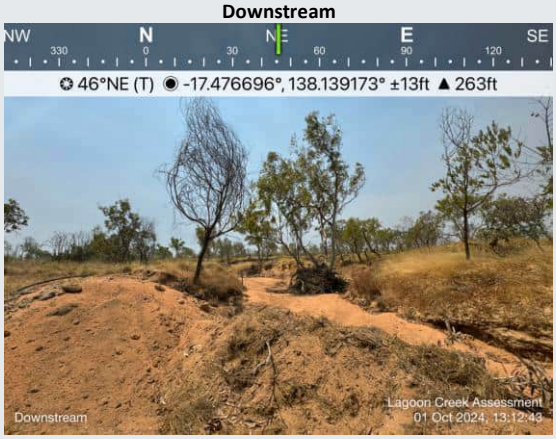


MDL – Crossing 5 (MDL5)	
Latitude/Longitude:	-17.476611, 138.139066
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	1-1.5 m
Bankfull Width:	5
Bank Vegetation:	Narrow riparian corridor comprising a single row of *Eucalyptus camaldulensis* on either bank.
Bed Composition:	Sand and gravel.
Bed Vegetation:	*E. camaldulensis* and grasses.
Canopy Cover:	2%
Erosion:	Minor to moderate.
Adjacent Land Use:	Low intensity grazing.
General Observations	NA

Upstream



Downstream



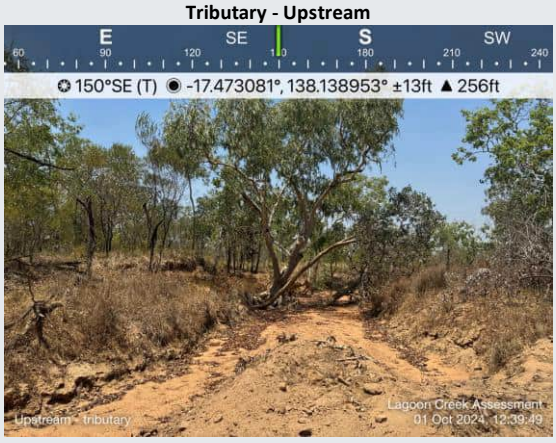
Crossing

MDL – Crossing 4 (MDL4)	
Latitude/Longitude:	-17.473050, 138.138957
Vegetation Management Stream Order:	5 and 3
Queensland Waterways for Waterway Barrier Works:	Major impact (purple) and moderate impact (amber)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	SW
Bank Height:	Low bank – 1.5 m. High bank – 3.5-4 m.
Bankfull Width:	Low bank – 60 m. High bank – 75 m
Bank Vegetation:	Riparian community 5 m wide. *Eucalyptus camaldulensis,* occasional *Pandanus sp*.
Bed Composition:	Sand and gravel.
Bed Vegetation:	*E. camaldulensis* and grasses.
Canopy Cover:	15-20%
Erosion:	Minor to moderate.
Adjacent Land Use:	Low intensity grazing.
General Observations	Crossing is located at a confluence of the watercourse with a tributary. Tree hollows are abundant.

Upstream

Downstream

Tributary - Upstream



Crossing

MDL – Crossing 3 (MDL3)	
Latitude/Longitude:	-17.462896, 138.134174
Vegetation Management Stream Order:	3
Queensland Waterways for Waterway Barrier Works:	Moderate impact (amber)
Perrenial/Ephemeral:	NA
Direction of Flow	NA
Bank Height:	NA
Bankfull Width:	NA
Bank Vegetation:	NA
Bed Composition:	NA
Bed Vegetation:	NA
Canopy Cover:	NA
Erosion:	NA
Adjacent Land Use:	NA
General Observations	Not a watercourse or drainage line. It is potentially an area that experiences overland flow or inundation in the wet season as indicated by the presence of *Melaleuca viridiflora*.

MDL – Crossing 2 (MDL2)	
Latitude/Longitude:	-17.459599, 138.132201
Vegetation Management Stream Order:	5
Queensland Waterways for Waterway Barrier Works:	Major impact (purple)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	2-4 m
Bankfull Width:	40 m
Bank Vegetation:	Riparian community 5-8 m wide. *Eucalyptus camaldulensis,* with abundant hollows.
Bed Composition:	Sand, gravel and cobble.
Bed Vegetation:	*E. camaldulensis, Melaleuca sp.* and grasses.
Canopy Cover:	20%
Erosion:	Minor to moderate.
Adjacent Land Use:	Low intensity grazing. Signs of recent cattle access.
General Observations	NA

Upstream

Downstream

Crossing

MDL – Crossing 1 (MDL1)	
Latitude/Longitude:	-17.462055, 138.123416
Vegetation Management Stream Order:	4
Queensland Waterways for Waterway Barrier Works:	High impact (red)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	NW low bank 1-1.5m. NW high bank 3 m. SE bank 2 m
Bankfull Width:	Low bank – 60 m. High bank – 80 m.
Bank Vegetation:	Riparian community 10-15 m wide. *Eucalyptus camaldulensis* community with abundant hollows.
Bed Composition:	Sand, gravel and cobble.
Bed Vegetation:	Juvenile riparian trees and grasses.
Canopy Cover:	5-10%
Erosion:	Moderate.
Adjacent Land Use:	Low intensity grazing. Signs of recent cattle access.
General Observations	NA

Upstream

Downstream

Crossing

MDL Access – Crossing 2 (MDLA2)	
Latitude/Longitude:	-17.462055, 138.123416
Vegetation Management Stream Order:	4
Queensland Waterways for Waterway Barrier Works:	High impact (red)
Perrenial/Ephemeral:	Ephemeral. Dry at the time of the assessment.
Direction of Flow	NE
Bank Height:	NW low bank 1-1.5m. NW high bank 3 m. SE bank 2 m
Bankfull Width:	Low bank – 60 m. High bank – 80 m.
Bank Vegetation:	Riparian community 10-15 m wide. *Eucalyptus camaldulensis* community with abundant hollows.
Bed Composition:	Sand, gravel and cobble.
Bed Vegetation:	Juvenile riparian trees and grasses.
Canopy Cover:	5-10%
Erosion:	Moderate.
Adjacent Land Use:	Low intensity grazing. Signs of recent cattle access.
General Observations	NA

Upstream

Downstream

Crossing