



## **CLEARING PERMIT**

*Granted under section 51E of the Environmental Protection Act 1986*

### **PERMIT DETAILS**

Area Permit Number: CPS 9534/1

File Number: DWERT9275

Duration of Permit: From 03 December 2022 to 03 December 2027

### **PERMIT HOLDER**

Commissioner of Main Roads Western Australia

### **LAND ON WHICH CLEARING IS TO BE DONE**

Lot 149 on Deposited Plan 220384, Peedamulla

Lot 279 on Deposited Plan 219235, Peedamulla

Lot 281 on Deposited Plan 219235, Peedamulla

Lot 306 on Deposited Plan 45640 (Crown Reserve 21235), Peedamulla

Lot 512 on Deposited Plan 69200, Peedamulla

Onslow Road reserve (PIN 11730566), Peedamulla

Onslow Road reserve (PIN 12185014), Peedamulla

Onslow-Peedamulla Road reserve (PIN 11728420), Peedamulla

Easement (PIN 11954555), Talandji

Easement (PIN 12312832), Talandji

Easement (PIN 12453469), Talandji

Lot 152 on Deposited Plan 220265, Talandji

Lot 186 on Deposited Plan 219155, Talandji

Lot 280 on Deposited Plan 219235, Talandji

Lot 509 on Deposited Plan 69198, Talandji

Lot 510 on Deposited Plan 69198, Talandji

Lot 511 on Deposited Plan 69198, Talandji

Lot 530 on Deposited Plan 69198 (Unallocated Crown Land), Talandji

Lot 531 on Deposited Plan 69198, Talandji

Lot 535 on Deposited Plan 69198, Talandji

Lot 536 on Deposited Plan 69198, Talandji

Lot 557 on Deposited Plan 74894, Talandji  
Lot 558 on Deposited Plan 71346, Talandji  
Lot 560 on Deposited Plan 71346, Talandji  
Lot 561 on Deposited Plan 71346, Talandji  
Lot 564 on Deposited Plan 71346, Talandji  
Lot 573 on Deposited Plan 71345, Talandji  
Lot 574 on Deposited Plan 71345, Talandji  
Lot 575 on Deposited Plan 71345, Talandji  
Lot 605 on Deposited Plan 402524, Talandji  
Lot 606 on Deposited Plan 402524, Talandji  
Lot 800 on Deposited Plan 413048, Talandji  
Lot 801 on Deposited Plan 413048, Talandji  
Lot 1562 on Deposited Plan 72843, Talandji  
Onslow Road reserve (PIN 11730565), Talandji  
Unnamed Road reserve (PIN 11932769), Talandji

## **AUTHORISED ACTIVITY**

The permit holder must not clear more than 234.44 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

## **CONDITIONS**

### **1. Avoid, minimise, and reduce impacts and extent of clearing**

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending order of preference:

- (a) avoid the clearing of *native vegetation*;
- (b) minimise the amount of *native vegetation* to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

### **2. Weed management**

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

### 3. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner in one direction towards adjacent *native vegetation* to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

### 4. Vegetation management – Watercourse and wetland surface flow

- (a) Where practicable the permit holder shall avoid clearing *riparian vegetation*.
- (b) Where a *watercourse* or wetland is to be impacted by clearing, the permit holder shall maintain the existing surface flow by use of culverts or diversions.

### 5. Flora management – Priority flora

- (a) The permit holder must ensure that:
  - (i) the boundaries of the area to be cleared are identified and demarcated using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/20), expressing the geographical coordinates in Eastings and Northings or decimal degrees
  - (ii) *recorded priority flora* are identified within the clearing boundary using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/20), expressing the geographical coordinates in Eastings and Northings or decimal degrees
- (b) When undertaking any clearing authorised under this permit, the permit holder must not cause or allow the clearing of more than the *recorded priority flora* within the clearing boundary.

### 6. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"><li>(a) the species composition, structure, and density of the cleared area;</li><li>(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/20), expressing the geographical coordinates in Eastings and Northings;</li><li>(c) the date that the area was cleared;</li><li>(d) the size of the area cleared (in hectares);</li></ul>

No.	Relevant matter	Specifications
		<p>(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 1;</p> <p>(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> in accordance with condition 2;</p> <p>(g) actions taken to conduct directional clearing in accordance with condition 3; and</p> <p>(h) actions taken to avoid clearing <i>riparian vegetation</i> and maintain existing surface flow in accordance with condition 4.</p>
2.	In relation to flora management pursuant to condition 5	<p>(a) the date <i>recorded priority flora</i> species were cleared;</p> <p>(b) the <i>recorded priority flora</i> taxa and number of individuals cleared;</p> <p>(c) the location of <i>recorded priority flora</i> taxa cleared, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020 (GDA94/20), expressing the geographical coordinates in Eastings and Northings; and</p> <p>(d) actions taken to avoid the clearing of <i>recorded priority flora</i> species, where practicable.</p>

## 7. Reporting

- (a) The permit holder must provide to the *CEO* on or before 30 June of each year, a written report:
- (i) of records required under condition 6 of this permit; and
  - (ii) concerning activities done by the permit holder under this permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 03 August 2027, the permit holder must provide to the *CEO* a written report of records required under condition 6 of this permit where these records have not already been provided under condition 7(a) of this permit.

## DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

**Table 2: Definitions**

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
priority flora	means those plant taxa described as priority flora classes 1, 2, 3, or 4 in the Department of Biodiversity, Conservation and Attractions Threatened and Priority Flora List for Western Australia (as amended from time to time).
recorded	means individuals of those <i>priority flora</i> species found within the area cross-hatched yellow in Figure 1 of Schedule 1 during the following surveys: <ul style="list-style-type: none"> <li>(a) <i>Ashburton Infrastructure Project – Flora and vegetation Assessment</i> (360 Environmental, 2021);</li> <li>(b) <i>Detailed Flora and Vegetation Assessment – Onslow Rare Earths Plant</i> (RPS Group, 2021);</li> <li>(c) <i>Eremophila forrestii subsp. viridis targeted flora survey August 2022</i> (Anders Environmental Consulting, 2022a);</li> <li>(d) <i>Eremophila forrestii subsp. viridis targeted flora survey September 2022</i> (Anders Environmental Consulting, 2022b);</li> <li>(e) <i>Targeted Eremophila forrestii subsp. viridis (P3) Survey at Onslow</i> (EcoLogical Australia, 2021); and</li> <li>(f) <i>Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment</i> (Spectrum Ecology, 2021).</li> </ul>
riparian vegetation	has the meaning given to it in Regulation 3 of the <i>Environmental Protection (Clearing of Native Vegetation) Regulations 2004</i> ;
watercourse	has the meaning given to it in section 3 of the <i>Rights in Water and Irrigation Act 1914</i> .
weeds	means any plant – <ul style="list-style-type: none"> <li>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</li> </ul>

Term	Definition
	(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

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**END OF CONDITIONS**



Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

9 November 2022



# SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1).



Figure 1: Map of the boundary of the area within which clearing may occur



# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 9534/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Commissioner of Main Roads Western Australia
<b>Application received:</b>	21 December 2021
<b>Application area:</b>	234.44 (revised) hectares of native vegetation
<b>Purpose of clearing:</b>	Road construction and upgrades
<b>Method of clearing:</b>	Mechanical
<b>Property:</b>	Lot 149 on Deposited Plan 220384 Lot 279 on Deposited Plan 219235 Lot 281 on Deposited Plan 219235 Lot 306 on Deposited Plan 45640 (Crown Reserve 21235) Lot 512 on Deposited Plan 69200 Onslow Road reserve (PIN 11730566) Onslow Road reserve (PIN 12185014) Onslow-Peedamulla Road reserve (PIN 11728420) Easement (PIN 11954555) Easement (PIN 12312832) Easement (PIN 12453469) Lot 152 on Deposited Plan 220265 Lot 186 on Deposited Plan 219155 Lot 280 on Deposited Plan 219235 Lot 509 on Deposited Plan 69198 Lot 510 on Deposited Plan 69198 Lot 511 on Deposited Plan 69198 Lot 530 on Deposited Plan 69198 (Unallocated Crown Land) Lot 531 on Deposited Plan 69198 Lot 535 on Deposited Plan 69198 Lot 536 on Deposited Plan 69198 Lot 557 on Deposited Plan 74894 Lot 558 on Deposited Plan 71346 Lot 560 on Deposited Plan 71346 Lot 561 on Deposited Plan 71346



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Lot 801 on Deposited Plan 413048  
Lot 1562 on Deposited Plan 72843  
Onslow Road reserve (PIN 11730565)  
Unnamed Road reserve (PIN 11932769)

**Location (LGA area/s):** Shire of Ashburton

**Localities (suburb/s):** Peedamulla  
Talandji

## 1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area along the existing footprint of Warrirda Road and Onslow Road in the Shire of Ashburton (see Figure 1, Section 1.5). The proposed clearing is to facilitate the expansion of Warrirda Road, including:

- adjustments to the existing alignment of Onslow Road, including acceleration and deceleration lanes along Onslow Road,
- a second two-way carriageway within Warrirda Road which will form a restricted permit road,
- a tunnel under the re-aligned Onslow Road linking to the Ashburton Infrastructure Project,
- adjustments to the existing Warrirda Road pavement as required to allow construction of the second carriageway, and
- installation of services within Warrirda Road reserve (MRWA, 2021).

The application was revised during the assessment process in response to a request for further avoidance and mitigation measures issued by the Department of Water and Environmental Regulation (DWER). The change included a reduction in the proposed clearing area from 372.06 hectares to 234.44 hectares to avoid and minimise the clearing impacts to priority flora species (see Section 3.1 for further details).

## 1.3. Decision on application

**Decision:** Granted  
**Decision date:** 9 November 2022  
**Decision area:** 234.44 hectares of native vegetation, as depicted in Section 1.5, below.

## 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The DWER advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for:

- the site characteristics (see Appendix B),
- relevant datasets (see Appendix F.1),
- the findings of biological surveys (see Appendix E),
- advice received from the Department of Biodiversity Conservation and Attractions (DBCA),
- the clearing principles set out in Schedule 5 of the EP Act (see Appendix C),
- relevant planning instruments and any other matters considered relevant to the assessment (see Section 3).

The assessment identified that the proposed clearing will result in:

- the loss of 372 individual *Eremophila forrestii* subsp. *viridis* (Priority 3) plants,
- the loss of one individual *Triumfetta echinata* (Priority 3) plant,
- the loss of native vegetation that is suitable habitat for migratory waterbirds and the Lakeland Downs mouse (*Leggadina lakedownensis*) and potential direct impacts to these fauna if utilising the application area during the time of clearing,
- the loss of up to 130 hectares vegetation growing in, or in association with, an environment associated with a watercourse or wetland, and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values for conservation significant flora and fauna, and riparian communities.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have long-term adverse impacts on the persistence of priority flora at the subpopulation, regional, and species level. The proposed clearing is also unlikely to result in significant adverse impacts to significant habitat for fauna, the quality of surface or underground water, or the ecological values of the riparian communities associated with the watercourses and wetlands within the application area. The Delegated Officer determined that the proposed clearing can be minimised and managed to unlikely lead to an unacceptable risk to these environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise, and reduce the impacts and extent of clearing,
- take hygiene steps to minimise the risk of the introduction and spread of weeds,
- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity,
- avoid the clearing of riparian vegetation in the first instance and, where unavoidable, ensure the existing surface flow is maintained by use of culverts or diversions, and
- ensure the clearing of *Eremophila forrestii* subsp. *viridis* and *Triumfetta echinata* is limited to the individual plants recorded within the clearing boundary during the six local flora surveys.

## 1.5. Site map



Figure 1 The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.

## 2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Contaminated Sites Act 2003* (WA) (CS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Rights in Water and Irrigation Act 1914* (WA) (RIWI Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020)

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

#### Avoidance and minimisation measures

Supporting documentation was submitted by the applicant, indicating that the proposed clearing is required to facilitate the construction of a new sole purpose, restricted access permit road for Concessionally Loaded Heavy Vehicles to convey iron ore to the Port of Ashburton (MRWA, 2021). As Concessionally Loaded Heavy Vehicles are not permitted on the existing Warrirda Road, the construction of the restricted permit road will provide access for these heavy vehicles to the Port of Ashburton, while maintaining the safety and efficacy of the existing alignment (MRWA, 2021). The applicant has advised that the proposed clearing is only to the extent necessary to facilitate the following project components:

- adjustments to the existing alignment of Onslow Road including acceleration and deceleration lanes along Onslow Road,
- a second two-way carriageway within Warrirda Road which will form the restricted permit road,
- a tunnel under the re-aligned Onslow Road linking to the Ashburton Infrastructure Project,
- adjustments to the existing Warrirda Road pavement as required to allow construction of the second carriageway, and
- installation of services within Warrirda Road reserve (MRWA, 2021).

During the assessment of the application, the applicant reduced the area of proposed clearing from 372.06 hectares to 234.44 hectares to reduce the extent of impacts to priority flora species (see Figure 2 below), as discussed further under Section 3.2.1. The revised application area resulted in the following:

- a reduction in direct impacts to *Eremophila forrestii* subsp. *viridis* from 949 individuals to 372 individuals, and
- a reduction in direct impacts to *Triumfetta echinata* from 100 individuals to one individual.



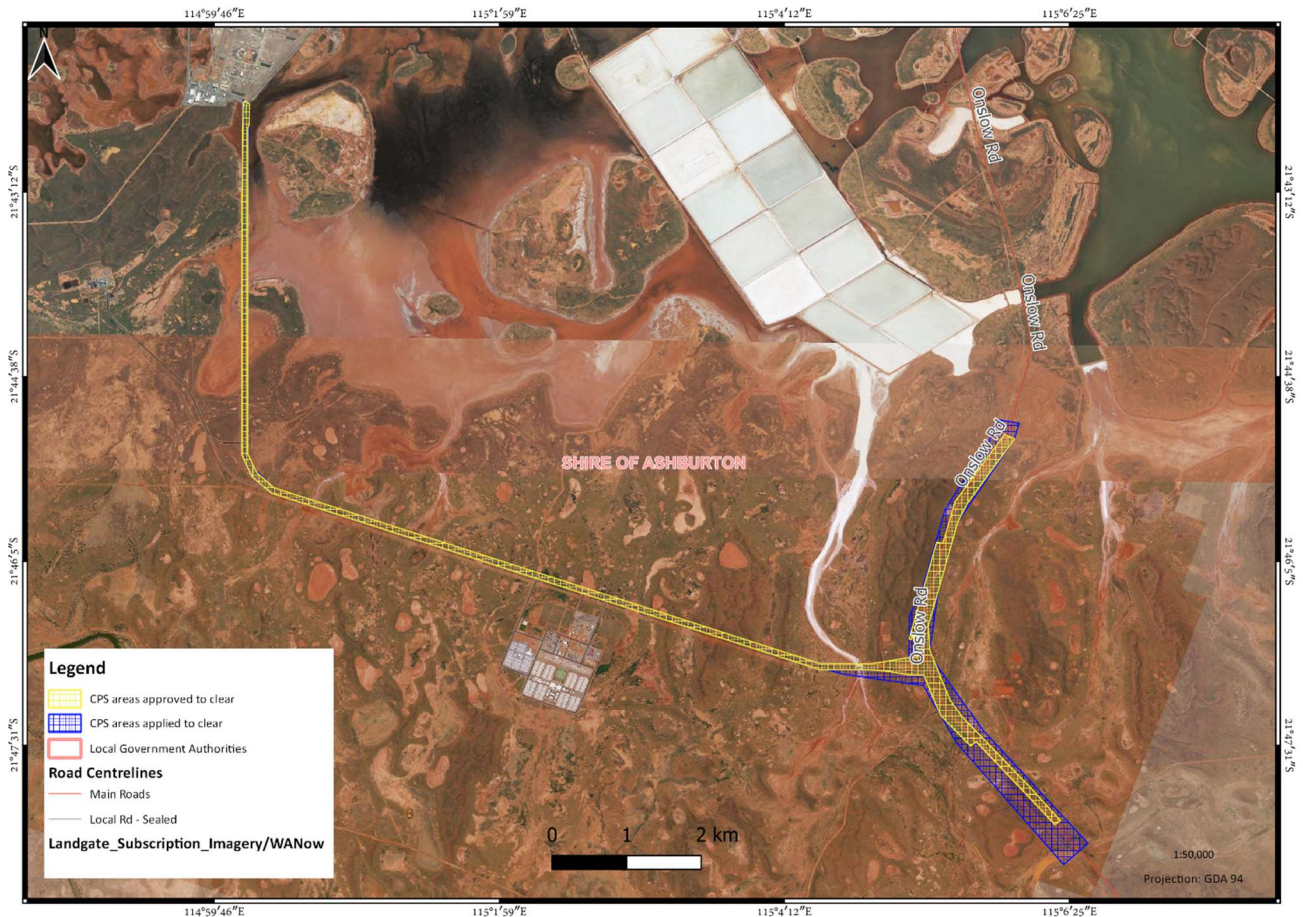


Figure 2. Comparison of originally proposed clearing area of 372.06 hectares (cross-hatched blue) and reduced clearing area of 234.44 hectares (cross-hatched yellow).

### Mitigation measures

The applicant has advised that a Construction Environment Management Plan (CEMP) will be prepared prior to undertaking the proposed works (MRWA, 2021). A draft CEMP was submitted in support of the application and the construction environmental risks and opportunities identified by the applicant are displayed in Table 1. The applicant also advised that the final CEMP will include the following provisions to minimise clearing impacts:

- Including environmental and heritage requirements in site inductions and pre-starts for all contractors, incorporating details of the approved clearing areas and the environmental values they contain,
- Clear demarcation of clearing boundaries prior to clearing and ensuring machinery stays within the approved clearing areas,
- Demarcation of priority flora to be retained in the immediate surrounds of the clearing envelope and flagging of a 20-metre exclusion zone, where practicable,
- Using infrastructure to maintain surface drainage patterns, if required (e.g., culverts, diversions),
- Avoiding construction during rainfall and in areas subject to inundation, where practicable,
- Conducting hygiene inspections for all vehicles and machinery, prior to entry to site in accordance with a hygiene inspection checklist,
- Removal of known infestations of Mesquite within the disturbance footprint will be removed, and
- Undertaking compliance inspections during and at the completion of operations to assess compliance with the CEMP, in accordance with an inspection checklist (MRWA, 2022b).

In considering the above, the Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

Table 1. Construction environmental risks and opportunities for the Ashburton Infrastructure Project – Onslow and Warrirda Roads (MRWA, 2022b).

Construction Activity / Process / Product	Risks and Opportunities	Rating	Risk Treatment Management Action	Residual Rating	Monitoring	Responsibility
Clearing	Loss of well represented vegetation communities and flora species	Low	<ul style="list-style-type: none"> <li>Vegetation clearing minimised</li> <li>Clearing only conducted within approved areas</li> </ul> Clearing areas demarcated prior to clearing.	Low	Weekly inspections	Construction Supervisor
Clearing	Loss of conservation significant fauna	Low	<ul style="list-style-type: none"> <li>Fauna habitat clearing minimised</li> <li>Clearing only conducted within approved areas</li> <li>Clearing areas demarcated prior to clearing</li> <li>A licensed fauna spotter will be on site for the clearing of hollow bearing trees to manage risk to fauna. Records must be kept</li> </ul> Native fauna will not be fed or intentionally harmed. No pets or firearms will be permitted on site.	Low	Weekly inspections	Construction Supervisor
Clearing	Reduced health or loss of vegetation from dust emissions	Low	Fugitive dust controlled using dust suppression (e.g. using water carts), where required.	Low	Weekly inspections	Construction Supervisor
Clearing	Introduction or spread of weeds	Moderate	<ul style="list-style-type: none"> <li>Vehicle hygiene procedures and daily pre-start checks</li> <li>Prior to clearing, declared weed species</li> <li>Mesquite and Athel Pine should be searched for in the Development Envelope and removed to eliminate the risk of it being further dispersed by Project activities</li> </ul>	Low	Vehicle and Plant hygiene checklists	Construction Supervisor
Clearing	Loss of topsoils	Moderate	Topsoils to be removed, stockpiled and signposted for future rehabilitation	Low	Weekly	Construction Supervisor
Clearing	Damaging Macedon Sales Gas Pipeline and Onslow Lateral	High	<ul style="list-style-type: none"> <li>Clearing only conducted within approved areas</li> <li>Conduct a Dial Before You Dig prior to clearing</li> <li>The use of heavy machinery on the roads may potentially damage the pipeline. The requirements for a vibration assessment from the proposed works will be determined in consultation with the utility owners</li> <li>Clearing areas demarcated prior to clearing</li> <li>Location of pipeline demarcated prior to clearing</li> </ul> Location of pipeline communicated to all site personnel through Pre-start or similar meetings.	Moderate	Weekly inspections	Construction Supervisor
Clearing	Fire	High	<ul style="list-style-type: none"> <li>No clearing during catastrophic fire danger conditions</li> <li>Water carts on standby at all times in vicinity of clearing operations</li> <li>Spotters in place able to identify any fire/smouldering of vegetation</li> <li>Water carts to have fire cannons</li> <li>Risk of fire to be included in clearing JHA</li> </ul>	Moderate	Constantly during clearing operations	Construction supervisor

Construction Activity / Process / Product	Risks and Opportunities	Rating	Risk Treatment Management Action	Residual Rating	Monitoring	Responsibility
			<ul style="list-style-type: none"> <li>No smoking or disposal of cig butt during clearing activities</li> </ul> <p>All plant, vehicles and machinery will be fitted with fire extinguishers.</p>			
Machinery movements	Dust generation impact to vegetation health	Low	<ul style="list-style-type: none"> <li>Dust suppression using water trucks;</li> </ul> <p>Dust generating activities avoided during unfavourable weather conditions.</p>	Low	Weekly inspections	Construction Supervisor
Machinery movements	Fire	High	<ul style="list-style-type: none"> <li>No machine movements during vegetation catastrophic fire danger conditions</li> <li>Water carts on standby at all times in vicinity of clearing operations</li> <li>Spotters in place able to identify any fire/smouldering of vegetation</li> <li>Water carts to have fire cannons</li> <li>Risk of fire to be included in clearing JHA</li> <li>No smoking or disposal of cigarette butt during clearing activities</li> </ul> <p>All machinery to be checked daily for build up of vegetation in moving parts.</p>	Moderate	Constantly during clearing operations	Construction supervisor
Erosion and sedimentation	Loss of topsoil and impact to waterways	Low	<ul style="list-style-type: none"> <li>Infrastructure used to maintain surface drainage patterns, if required (e.g. culverts, diversions)</li> <li>Sediment traps used to minimise sedimentation offsite, if required</li> <li>Silt fences may be installed around stockpiled materials if erosion and sediment movement is observed</li> </ul> <p>Construction during rainfall avoided where practicable.</p>	Low	Weekly inspections	Construction Supervisor
Spills	Environmental pollution	Low	<ul style="list-style-type: none"> <li>Spill trays and spill response equipment will be available near a designated refuelling area</li> <li>No bulk fuel and oil will be stored at the site. Refuelling will be carried out by direct transfer daily</li> </ul> <p>All spills to be reported and contaminated soils to be removed of and disposed of in accordance with MRL waste management plan.</p>	Low	Weekly inspections	Construction Supervisor



### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, and land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (fauna and flora) and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

#### 3.2.1. Biological values (flora) - Clearing Principle (a)

##### Assessment

A review of the site characteristics and habitat preferences of the conservation significant flora species recorded in the local area (see Appendix B) identified that the application area may provide suitable and potentially significant habitat for the following species:

- *Eremophila forrestii* subsp. *viridis* (listed as Priority 3 by DBCA), and
- *Triumfetta echinata* (listed as Priority 3 by DBCA).

##### *Eremophila forrestii* subsp. *viridis*

*Eremophila forrestii* subsp. *viridis* is a multi-branched shrub with pink-cream flowers occurring in August and occurs in red to brown sandy soils, usually in *Acacia* shrubland over hummock grassland of *Triodia* spp. (Western Australian Herbarium, 1998-). *Eremophila forrestii* subsp. *viridis* is known from six locations in Western Australia over a range of 1000 kilometres east-west by 700 kilometres north-south from Talandji to Gibson Desert North and is also known from one record in the Northern Territory and one record in South Australia (DBCA, 2022). Advice received from DBCA indicates that, although the species occurs over a large range, the locations of records are disjunct and three known locations are based on records obtained pre-1980, where plants may no longer persist (DBCA, 2022). In addition, the number of individuals has not been recorded at most known locations and the total number of plants in Western Australia is unknown (DBCA, 2022).

The Warrirda Road Detailed and Targeted Flora survey, undertaken over three days in May 2021, identified a total of 1072 individuals of *Eremophila forrestii* subsp. *viridis* within the greater survey area, of which 949 individuals occur within the original clearing area of 372.06 hectares (Spectrum Ecology, 2021). Advice received from DBCA indicated that, without additional survey data and specific information on the species, there is a high level of uncertainty surrounding the extent of *Eremophila forrestii* subsp. *viridis* and the loss of individuals may represent a significant impact to regional populations (DBCA, 2022).

From DWER's records, six flora surveys targeting *Eremophila forrestii* subsp. *viridis* have been undertaken in the vicinity of the proposed clearing area between 2021 and 2022. The extent of individuals recorded in these surveys is summarised in Table 2 and the extent of these surveys is captured in Figure 3 below.

Table 2. Summary of known flora and vegetation surveys conducted in the vicinity of the CPS 9534/1 application area.

Survey Reference	Survey Title	IBSA Reference	No. of <i>Eremophila forrestii</i> subsp. <i>viridis</i> identified
Spectrum Ecology (2021)	Warrirda Road Flora and Fauna Assessment	IBSA-2021-0480	1072
360 Environmental (2021)	Ashburton Infrastructure Project – Flora and vegetation Assessment	IBSA-2021-0460	1237
RPS (2021)	Detailed Flora and Vegetation Assessment – Onslow Rare Earths Plant	IBSA-2021-0097	1102
EcoLogical Australia (2021)	Targeted <i>Eremophila forrestii</i> subsp. <i>viridis</i> (P3) Survey at Onslow	IBSA-2021-0076	3559
Anders (2022a)	<i>Eremophila forrestii</i> subsp. <i>viridis</i> targeted flora survey August 2022	IBSA-2022-0303	281
Anders (2022b)	<i>Eremophila forrestii</i> subsp. <i>viridis</i> targeted flora survey September 2022	IBSA-2022-0337	1444
<b>TOTAL</b>			<b>8552*</b>

\*NOTE: Approximately 143 records of *Eremophila forrestii* subsp. *viridis* are considered to be duplicate records between surveys and have been removed from the total, based on the individual records overlapping by 2 metres or less.

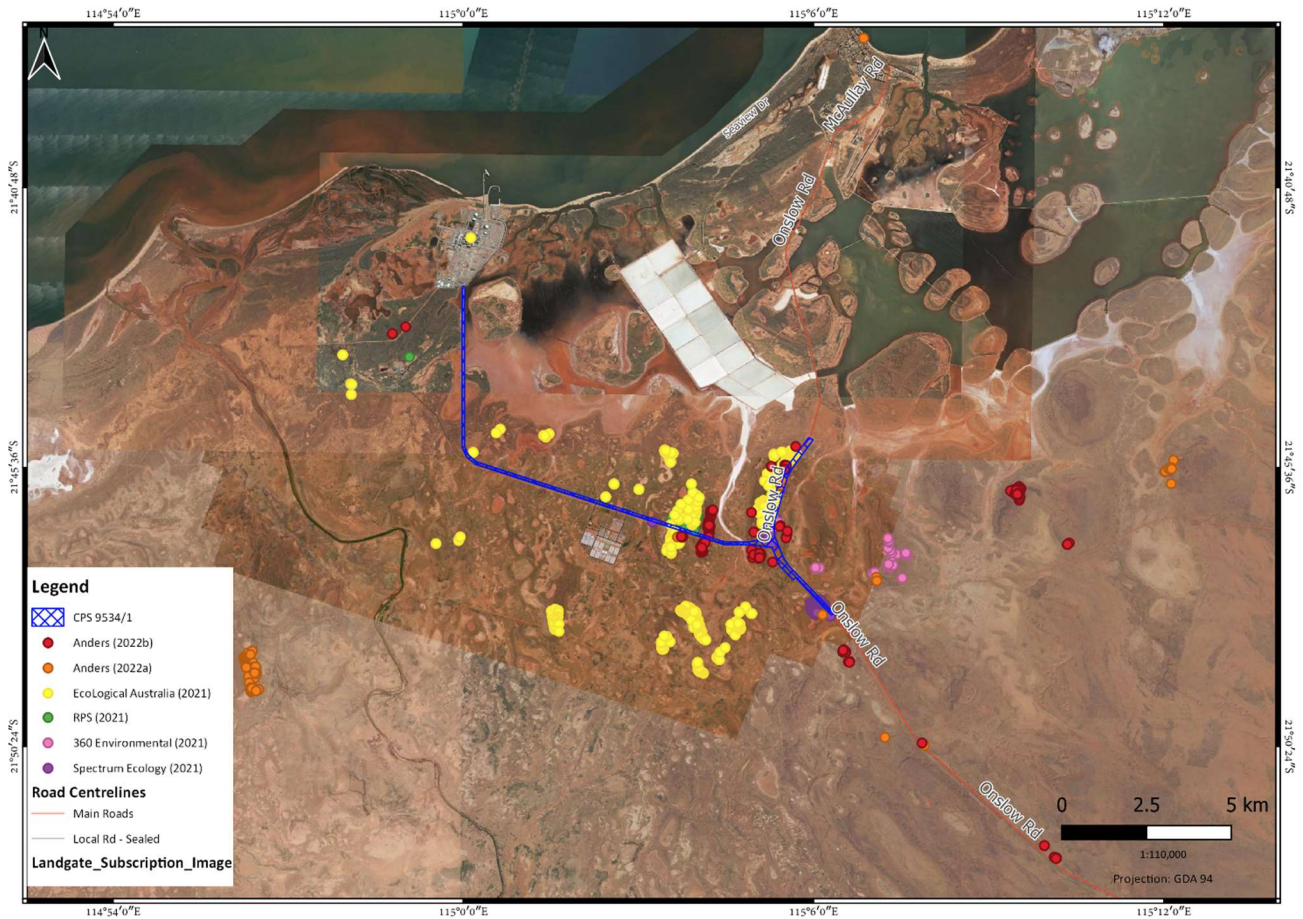


Figure 3. Records of *Eremophila forrestii* subsp. *viridis* from known flora and vegetation surveys conducted in the vicinity of the CPS 9534/1 application area.

Following DWER's preliminary assessment and advice received from DBCA, the applicant reduced the proposed clearing area to 234.44 hectares to reduce the extent of impacts to priority flora species. The revised application area reduced the direct impacts to *Eremophila forrestii* subsp. *viridis* to the removal of 372 plants. Based on the survey data available from the six local flora surveys outlined in Table 1, the proposed clearing will result in the loss of approximately 4.35 per cent of the recorded regional population. Approximately 269 additional individuals (3.1 per cent of the regional population) occur within 30 metres of the revised proposed clearing area and may be indirectly impacted by the proposed clearing and subsequent road construction.

In considering impacts to *Eremophila forrestii* subsp. *viridis* resulting from CPS 9534/1, the Delegated Officer also had regard to three additional clearing permit applications in the vicinity of the proposal that may impact the species (CPS 9545/1, CPS 9550/1, and CPS 9818/1). The extent of these applications is outlined in Figure 4 below. The cumulative impacts of these four proposals will result in the loss of approximately 1723 individuals of *Eremophila forrestii* subsp. *viridis*, with potential indirect impacts to an additional 269 individuals, and represents impacts to between 20.1 and 23.3 per cent of the regional population. However, it should be noted that CPS 9545/1 and CPS 9818/1 are still under assessment by DWER, and the extent of impacts are subject to change as a result of this assessment.





Figure 4. Clearing permit applications in the vicinity of the CPS 9534/1 application area.

Although *Eremophila forrestii* subsp. *viridis* has not been well-surveyed over a large range, it is acknowledged that the six flora surveys outlined in Table 1 are unlikely to have captured the full extent of the subpopulations within the vicinity of the CPS 9534/1 application area, given the surveys were predominantly linear in nature and focused on suitable habitat within and immediately adjacent to proposed disturbance areas. Advice received from DBCA indicates that there are also large areas of unsurveyed suitable habitat and possible unconfirmed subpopulations in the region (DBCA, 2022). Therefore, the true impact to the regional population of *Eremophila forrestii* subsp. *viridis* may be less than the 20.1 to 23.3 per cent that has been assumed from the available survey data and is unlikely to represent a significant impact the species' long-term persistence in the region (DBCA, 2022). Advice received from DBCA also indicates that, as the clearing proposed under CPS 9534/1 relates to linear clearing along an existing road, it is unlikely to result in fragmentation of the subpopulations of *Eremophila forrestii* subsp. *viridis* in the vicinity of this application area (DBCA, 2022). Given the above, it is considered unlikely that the proposed clearing under CPS 9534/1 will result in significant impacts to *Eremophila forrestii* subsp. *viridis* at the subpopulation, regional, or species level.

Advice received from DBCA indicated that, while impacts to up to 23.3 per cent of the population are unlikely to impact the long-term persistence of *Eremophila forrestii* subsp. *viridis*, the cumulative impacts of the four clearing permit applications are at the upper levels of acceptability and additional measures to avoid and minimise impacts to *Eremophila forrestii* subsp. *viridis* should be implemented on-ground, if practicable (DBCA, 2022). It is considered that the potential for additional impacts to *Eremophila forrestii* subsp. *viridis* resulting from CPS 9534/1 can be adequately mitigated through permit conditioning and the provisions of the applicant's draft CEMP, including the demarcation of the clearing boundaries, the application of exclusion zones for priority flora to be retained, and dust and weed management measures.

DBCA indicated that any additional impacts to *Eremophila forrestii* subsp. *viridis* in the region from future proposals may represent a significant impact to the conservation status of the species, unless additional survey data can be provided to demonstrate that the overall risk to the species has reduced (DBCA, 2022). It is considered that, if the clearing required for future proposals in the region does not meet the specifications of an exemption under the

Clearing Regulations, the cumulative impacts to *Eremophila forrestii* subsp. *viridis* in the region and the need for additional surveys would be considered by DWER during the assessment of such a proposal.

### ***Triumfetta echinata***

*Triumfetta echinata* is a prostrate shrub that flowers in August and occurs in red to brown sandy soils, typically in dune systems of *Triodia* hummock grassland (Western Australian Herbarium, 1998-). *Triumfetta echinata* is known from three locations in Western Australia over a range of 40 kilometres east-west by 40 kilometres north-south from Peedamulla to Talandji (DBCA, 2022). An additional southernmost record of *Triumfetta echinata* in Yannarie was recorded in 1905, however, it is not considered to accurately represent the location of collection of the specimen, and it is unlikely that plants persist at this location (DBCA, 2022). Advice received from DBCA indicates that plant numbers have not been recorded at most locations and that the total number of plants cannot be estimated (DBCA, 2022). Based on the uncertainty surrounding the distribution and extent of *Triumfetta echinata*, advice received from DBCA indicates that major disturbance to a known population may represent a significant impact to the conservation status of the species (DBCA, 2022).

The Warrirda Road Detailed and Targeted Flora survey identified a total of 101 individuals of *Triumfetta echinata* within the greater survey area, of which 100 individuals occur within the original proposed clearing area of 372.06 hectares (Spectrum Ecology, 2021). *Triumfetta echinata* has not been recorded in any other flora survey undertaken in the vicinity of the clearing area and is not expected to be well-represented regionally. The species is not known to occur within the application areas of CPS 9545/1, CPS 9550/1, or CPS 9818/1. Therefore, cumulative impacts to *Triumfetta echinata* are not expected to occur as a result of these clearing permit applications and have not been included in this assessment.

The reduction in the proposed clearing area following DWER's preliminary assessment and advice received from DBCA consequently reduced direct impacts to *Triumfetta echinata* to the removal of one individual, representing the loss of approximately 0.99 per cent of the recorded local population. Approximately 82 additional individuals (81.2 per cent of the recorded population) occur within 30 metres of the revised proposed clearing area and may be indirectly impacted by the proposed clearing and subsequent road construction.

Advice received from DBCA indicates that the proposed clearing of one individual is unlikely to significantly impact *Triumfetta echinata* at the regional or species level, given indirect impacts to the remaining population can be adequately mitigated (DBCA, 2022). DBCA advised that suitable mitigation measures may include dust and drainage management, demarcation of individuals and application of an exclusion zone for those within 10 metres of the clearing area, hygiene management, and minimising clearing on-ground where practicable (DBCA, 2022).

The applicant's draft CEMP includes the following commitments which are expected to adequately mitigate indirect impacts to the remaining population of *Triumfetta echinata*:

- Clearing management:
  - Approved clearing boundaries shall be demarcated prior to clearing,
  - Movement and storage of machinery will be limited to within the approved clearing area or existing cleared areas, and
  - Priority flora to be retained in the immediate surrounds of the clearing area shall be flagged with a 20-metre exclusion zone, where practicable.
- Dust management:
  - Dust suppression using water trucks will be implemented to prevent excessive fugitive dust, if required,
  - Dust generating activities shall be minimised during unfavourable weather conditions as far, as practicable, and
  - All vehicles carrying dusty loads shall be covered using tarpaulins or covers when travelling outside of the approved clearing area.
- Drainage management:
  - Infrastructure will be used to maintain surface drainage patterns, if required (e.g., culverts, diversions).
- Weed management:
  - Weed hygiene inspections shall be conducted for all vehicles and machinery, prior to entry and exit to site, and
  - Prior to clearing, weed species Mesquite and Athel Pine should be searched for in the approved clearing area and removed to eliminate the risk of it being further dispersed by project activities.

## Conclusion

Based on the above assessment, the proposed clearing will result in the loss of 372 individuals of *Eremophila forrestii* subsp. *viridis* and one individual of *Triumfetta echinata* recorded within the clearing boundary during the six local flora surveys. For the reasons set out above, it is considered that the impacts of the proposed clearing on *Eremophila forrestii* subsp. *viridis* and *Triumfetta echinata* are unlikely to be significant at the subpopulation, regional, or species level and does not constitute a significant residual impact to priority flora species.

Based on the avoidance and minimisation measures proposed by the applicant, it is considered that the impacts of the proposed clearing on priority flora species can be managed through permit conditioning and by implementing appropriate construction and design methods to maintain surface drainage patterns, as well as dust and weed control measures.

## Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Flora management – Priority flora, which ensures that the clearing of *Eremophila forrestii* subsp. *viridis* and *Triumfetta echinata* is limited to the individual plants recorded within the clearing boundary during the six local flora surveys, and
- Weed control, which ensures protocols are put in place to limit the introduction and transportation of weed-affected materials.

### **3.2.2. Biological values (fauna) - Clearing Principles (a) and (b)**

#### Assessment

The Warrirda Road Basic Fauna Assessment recorded five fauna habitat types within the greater survey area:

- Sand Plains, covering approximately 181.5 hectares and described as areas of scattered shrubs of *Acacia tetragonophylla*, *Acacia synchronicia*, and *\*Vachellia farnesiana* over moderate to open grass cover of *Triodia epactia* and *\*Cenchrus ciliaris* in red sand and sandy clay, intersected by a series of drainage lines and clay pans,
- Sand Dunes, covering approximately 77.2 hectares and described as areas of red sand dunes characterised by sparse to moderate shrubs of *Acacia stellaticeps*, *Scaevola sericophylla* and *Grevillea stenobotrya* with a ground layer of *Triodia epactia* and areas of *\*Cenchrus ciliaris*,
- Tidal Mudflats and Claypans, covering approximately 26.5 hectares and described as seasonally or tidally inundated areas with little vegetation present other than a fringing layer of *Tecticornia auriculata* or *Tecticornia indica* subsp. *leiostachya* with *\*Cenchrus ciliaris* present in some areas,
- Tecticornia Shrubland, covering approximately 15.44 hectares and described as areas of scattered *Tecticornia auriculata* or *Tecticornia indica* subsp. *leiostachya* shrubs with sparse *Eragrostis pergracilis* or *\*Cenchrus ciliaris* which was present in some areas ranging from a sparse to dense layer in orange clay, and
- Tall Mesquite Shrubland, covering approximately 1.91 hectares and described as a dense thicket of *\*Prosopis pallida* (Mesquite) over *\*Cenchrus ciliaris* grass on sandy clay (Spectrum Ecology, 2021).

Based on fauna habitat mapping from the Warrirda Road Basic Fauna Assessment, the reduced application area contains approximately 102.4 hectares of Sand Plains, 40.9 hectares of Sand Dunes, 20.7 hectares of Tidal Mudflats and Claypans, 6.8 hectares of Tecticornia Shrubland, 1.9 hectares of Tall Mesquite Shrubland, and 61.8 hectares of cleared land (Spectrum Ecology, 2021).

Noting the findings of the Warrirda Road Basic Fauna Assessment and the habitat preferences of the conservation significant fauna species recorded in the local area (see Appendix B), the application area was considered to contain suitable habitat for the following:

- Migratory waterbirds (37 species),
- *Falco peregrinus* (peregrine falcon) (listed as other specially protected fauna by DBCA), and
- *Leggadina lakedownsensis* (Lakeland Downs mouse or northern short-tailed mouse) (listed as Priority 4 by DBCA).

#### **Migratory waterbirds**

The following migratory waterbird species have the potential to occur within the application area based on habitat preferences:

- 28 species of migratory waterbird protected under International Agreements, which may inhabit the Tidal Mudflats and Claypans habitat within the application area for foraging or roosting habitat, or as transient habitat during migration (Commonwealth of Australia, 2015). Two of these migratory waterbirds, *Gelochelidon nilotica* (gull-billed tern) and *Sternula albifrons* (little tern), were recorded flying over the application area during the fauna assessment (Spectrum Ecology, 2021).

- *Calidris canutus* (Red knot) (Endangered under EPBC Act and Vulnerable under BC Act) typically inhabit intertidal mudflats, sand flats and sandy beaches of sheltered coasts, estuaries, or terrestrial saline wetlands near the coast (TSSC, 2016a). The Tidal Mudflats and Claypans habitat within the application area may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration. The red knot is not known to breed in Australia, and the application area is not considered likely to provide suitable breeding habitat for this species (TSSC, 2016a).
- *Calidris ferruginea* (Curlew sandpiper) (Critically Endangered under EPBC Act and Vulnerable under BC Act) is found on intertidal mudflats of estuaries, lagoons, mangroves, as well as beaches, rocky shores and around lakes, dams and floodwaters (DoE, 2015a). The Tidal Mudflats and Claypans habitat within the application area is unlikely to provide suitable breeding habitat, as the species does not breed in Australia, but may provide suitable roosting or foraging habitat for this species as well as transient habitat as it migrates between more suitable coastal habitats.
- *Calidris tenuirostris* (Great knot) (Critically Endangered under EPBC Act and BC Act) inhabits intertidal mudflats and sandflats in sheltered coasts, including bays and estuaries (TSSC, 2016b). They forage on the moist mud, and often roost on beaches or in nearby low vegetation, such as mangroves or dune vegetation (TSSC, 2016b). The Tidal Mudflats and Claypans habitat within the application area is unlikely to provide suitable breeding habitat, as the species does not breed in Australia, but may provide suitable foraging habitat for this species as well as transient habitat as it migrates between more suitable coastal habitats for roosting.
- *Charadrius leschenaultii* (Greater sand plover) (Vulnerable under EPBC Act and BC Act) is known to occur in littoral and estuarine habitats, typically on sheltered sandy, shelly, or muddy beaches with large intertidal mudflats or sandbanks (TSSC, 2016c). The Tidal Mudflats and Claypans habitat within the application area may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration. The greater sand plover is not known to breed in Australia, and the application area is not considered likely to provide suitable breeding habitat for this species (TSSC, 2016c).
- *Charadrius mongolus* (Lesser sand plover) (Endangered under EPBC Act and BC Act) usually occurs in coastal littoral and mudflats in estuaries or beaches but has also been recorded at inland sites in muddy areas around lakes, soaks and bores (TSSC, 2016d). The Tidal Mudflats and Claypans habitat within the application area may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration. The lesser sand plover is not known to breed in Australia, and the application area is not considered likely to provide suitable breeding habitat for this species (TSSC, 2016d).
- *Limosa lapponica menzibieri* (Bar-tailed godwit, northern Siberian) (Critically Endangered under EPBC Act and BC Act) typically inhabit coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays (TSSC, 2016e). The Tidal Mudflats and Claypans habitat within the application area is unlikely to provide suitable breeding habitat, as the species does not breed in Australia, but may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration.
- *Numenius madagascariensis* (Eastern curlew) (Critically Endangered under EPBC Act and BC Act) is found on intertidal mudflats and sandflats, often with beds of seagrass, on sheltered coasts, especially estuaries, mangrove swamps, bays, harbours and lagoons (DoE, 2015b). The Tidal Mudflats and Claypans habitat within the application area is unlikely to provide suitable breeding habitat, as the species does not breed in Australia, but may provide suitable roosting or foraging habitat for this species as well as transient habitat as it migrates between more suitable coastal habitats.
- *Sternula nereis nereis* (Fairy tern) (Vulnerable under EPBC Act and BC Act) utilises a variety of habitats including offshore, estuarine, or lacustrine (lake) islands, wetlands, beaches and spits (DSEWPC, 2011). The Tidal Mudflats and Claypans habitat within the application area may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration. Whilst it is acknowledged that the application area occurs within the breeding range of the fairy tern, it is noted that the species typically nests on sandy, shelly beaches, above the high-water mark and often in clear view of the water (DSEWPC, 2011). As the application area occurs approximately three kilometres inland from the coast and the Tidal Mudflats and Claypans habitat is more representative of a saline coastal flat or claypan than a sandy beach, it is not considered likely that the application area would be utilised as nesting habitat for the fairy tern.
- *Tringa brevipes* (Grey-tailed tattler) (Priority 4) is known to occur in sheltered coasts with reefs or rock platforms or with intertidal mudflats, including embayments, estuaries, and coastal lagoons, especially those fringed with mangroves (Higgins and Davies, 1996). The Tidal Mudflats and Claypans habitat within the application area may provide suitable roosting and foraging habitat for this species, as well as transient habitat during migration. The grey-tailed tattler is not known to breed in Australia, and the application area is not considered likely to provide suitable breeding habitat for this species (Higgins and Davies, 1996).

While the aforementioned waterbird species have the potential to occur within the application area, it is acknowledged that the Tidal Mudflats and Claypans habitat within the application area is well-represented within the local area and the greater Carnarvon bioregion. It is also acknowledged that disturbance activities within the Tidal Mudflats and Claypans habitat is limited to a linear footprint of 20.7 hectares across a length of approximately 20 kilometres that



runs directly adjacent to the existing Onslow and Warrirda roads. As none of the aforementioned waterbird species are expected to breed within the application area, the proposed clearing is also not considered likely to impact nest sites or significant breeding habitat for these species. Noting the extent of the proposed clearing and that abundant suitable habitat is available in the local area, the application area is not considered likely to represent significant breeding, foraging or roosting habitat for any conservation significant waterbird species. It is considered that the potential for direct impacts to individual waterbirds utilising the Tidal Mudflats and Claypans habitat within the application area for foraging or roosting at the time of the proposed clearing can be suitably mitigated through the application of slow, directional clearing.

### **Peregrine falcon**

The peregrine falcon typically nests on rocky ledges in tall, vertical cliff faces and gorges, or in tall trees associated with drainage lines, and can hunt in a range of habitat types including timbered watercourses, riverine environments, wetlands, plains, open woodlands, and pylons and spires of buildings (Australian Museum, 2021). The Warrirda Road Basic Fauna Assessment identified that, given the widespread nature of the species and the proximity of existing records, the application area may provide suitable foraging habitat for the peregrine falcon, particularly along drainage lines (Spectrum Ecology, 2021). However, the application area does not contain suitable nesting habitat for the peregrine falcon and the species is likely to occur infrequently and at low densities within the application area (Spectrum Ecology, 2021). Given the extent of similar, suitable habitat in the local area and that the peregrine falcon is a highly mobile species with a large range that does not rely on specialist niche habitats, it is not considered likely that the application area contains significant habitat for the species or that the proposed clearing will significantly reduce foraging habitat for the peregrine falcon in the local area.

### **Lakeland Downs mouse**

The Lakeland Downs mouse occupies spinifex and tussock grasslands in *Acacia* shrublands on deep sandy soils (CALM, 2002). The species is nocturnal, residing in burrows during the day and foraging on invertebrates and plant material at night (CALM, 2002). The Warrirda Road Basic Fauna Assessment identified that the Sand Plains habitat within the application area may provide suitable substrate and vegetation for the Lakeland Downs mouse (Spectrum Ecology, 2021). However, no individuals, burrows or other evidence of the Lakeland Downs mouse were recorded within the greater survey area during the fauna assessment (Spectrum Ecology, 2021). Whilst it is acknowledged that the proposed clearing will result in the loss of up to 102.4 hectares of suitable habitat for the Lakeland Downs mouse, it is noted that this impact is distributed across a linear footprint along a length of approximately 22 kilometres, that runs directly adjacent to the existing Onslow and Warrirda roads. It is also acknowledged that the Sand Plains habitat within the application area was noted to be well-represented in the immediate vicinity of the survey area during the fauna assessment (Spectrum Ecology, 2021) and that similar habitat is also likely to be well-represented in the extensively vegetated local area. Given the extent of suitable habitat in the local area, that no evidence of individuals was observed during the fauna assessment, and that the species has a scattered distribution on the mainland across northern Australia and on offshore islands including Thevenard and Serrurier Islands, it is not expected that the application area comprises significant habitat for the Lakeland Downs mouse or is critical for the continuation of the species. Noting the linear nature of the proposed clearing and that abundant suitable habitat for the Lakeland Downs mouse is located adjacent to the application area, it is expected that any individuals present at the time of clearing will be able to disperse into adjacent suitable habitat given the application of slow, directional clearing and are unlikely to be significantly impacted.

### Conclusion

Based on the above assessment, the application area is not considered likely to represent significant habitat for any conservation significant fauna species or to be critical for the continuation of these species. However, it is acknowledged that the proposed clearing has the potential to result in direct impacts to migratory waterbirds and the Lakeland Downs mouse, if individuals are present at the time of the clearing. For the reasons set out above, it is considered that direct impacts to threatened and priority fauna species can be managed to be environmentally acceptable through the application of slow, directional clearing and that the proposed clearing does not constitute a significant residual impact.

### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Directional clearing, which ensures slow, progressive, directional clearing is undertaken to allow fauna to move into adjacent vegetation ahead of the clearing activity to minimise impact to individuals.

### **3.2.3. Land and water resources - Clearing Principles (f) and (i)**

#### Assessment

As the application area intersects saline coastal flats and transects several minor, non-perennial tributaries, waterbodies, and drainage lines, some of the vegetation within the application area may be considered to be growing in, or in association with, an environment associated with a watercourse or wetland. It is also acknowledged that the

application area contains *Tecticornia* shrublands in tidal mudflats and claypans that are indicative of wetland and riparian areas. Further, as the application area is mapped within the Pilbara Surface Water Area, any clearing within the vicinity of these watercourses has the potential to impact surface water quality within a proclaimed water resource under the RIWI Act. Based on vegetation mapping from the Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment (Spectrum Ecology, 2021), the proposal will result in the clearing of up to 130 hectares of vegetation growing in association with a watercourse or wetland across a linear footprint of 22 kilometres in length. It is acknowledged that the vegetation proposed to be cleared runs directly adjacent to the existing Onslow and Warrirda roads which have historically disturbed the saline coastal flats and non-perennial tributaries, waterbodies, and drainage lines within the application area. The applicant has also committed to undertaking hydrological assessments and using infrastructure such as culverts, floodways, and diversions to maintain natural surface water flows and drainage patterns in their CEMP (MRWA, 2021).

Advice received from DWER's North West Region indicates that the proposed clearing is unlikely to significantly impact the quality of water resources, provided the clearing is undertaken in accordance with the applicant's environmental management commitments outlined in their draft CEMP and best practice management as per DWER's Water Quality Protection Notes and Guidelines (DWER, 2022). The North West Region also advised that best practice management of erosion should be used during clearing activities to minimise impacts to groundwater and surface water quality including, but not limited to:

- Adhering to the Department's Guidelines and Water Quality Protection Notes (WQPNs), including:
  - WQPN 6: Vegetation buffers to sensitive water resources,
  - WQPN 10: Contaminant spills – emergency response,
  - WQPN 65: Toxic and hazardous substances – storage and use, and
  - WQPN 83: Infrastructure corridors near sensitive water resources.
- Avoiding disturbance to riparian vegetation to maintain foreshore stability and protect important riparian habitats (where possible),
- Constructing any unavoidable creek crossings on relatively straight sections of the watercourse not on meander bends, and
- Rehabilitating any temporarily disturbed areas as soon as practical after the campaign (DWER, 2022).

Given the extent of the proposed clearing across a linear footprint, the non-perennial nature of the waterbodies, the extensively vegetated local area, and the applicant's commitments to minimising erosion and maintaining natural surface water flows, it is not considered likely that the proposed clearing will result in any significant or long-term impacts to surface or underground water quality or to the ecological values of the vegetation communities associated with the watercourses and coastal flats within the application area.

Given parts of the application area contain invasive weeds, it is acknowledged that the proposed clearing may cause degradation of adjacent remnant native vegetation and riparian vegetation by facilitating the spread of weeds, in particular the Declared Pests Mesquite and *Tamarix aphylla* (Athel tree). However, noting the extent of the proposed clearing across a linear footprint and that the applicant has committed to implementing hygiene protocols to avoid the spread of invasive weeds in the CEMP, it is considered that a weed management condition will adequately minimise this risk.

### Conclusion

Based on the above assessment, the proposed clearing may result in the loss of up to 130 hectares of vegetation growing in, or in association with, an environment associated with a watercourse or wetland and may facilitate the spread of invasive weeds into adjacent vegetation in the local area. For the reasons set out above, the proposed clearing is unlikely to result in any significant or long-term impacts to the quality of surface or underground water or the ecological values of the riparian communities associated with the watercourses and wetlands within the application area.

It is considered that the impacts of the proposed clearing can be managed to be environmentally acceptable through permit conditioning to avoid clearing riparian vegetation where practicable and maintain surface hydrology through use of appropriate infrastructure, and by taking steps to minimise the risk of the introduction and spread of weeds. In considering the above, the Delegated Officer determined that the impacts of the proposed clearing on land and water resources does not constitute a significant residual impact.

### Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Vegetation management - watercourse and wetland surface flow, which ensures that riparian vegetation is avoided from clearing in the first instance and that, where clearing of a watercourse or wetland is unavoidable, the existing surface flow is maintained by use of culverts or diversions, and

- Weed control, which ensures protocols are put in place to limit the introduction and transportation of weed-affected materials.

### 3.3. Relevant planning instruments and other matters

The clearing permit application was advertised on DWER's website on 10 January 2022, inviting submissions from the public within a 21-day period. No submissions were received in relation to this application.

The Shire of Ashburton advised DWER that, pursuant to the Shire of Ashburton Local Planning Scheme No. 7 and the Deemed Provisions of the *Planning and Development (Local Planning Schemes) Regulations 2015*, local government approvals are not required, and that the proposed clearing is consistent with the Shire's Local Planning Scheme (Shire of Ashburton, 2022). The Shire did not raise any concerns in relation to the proposed clearing (Shire of Ashburton, 2022).

DWER's North West Region advised that the proposed activities occur within the Pilbara surface and groundwater areas that are subject to licensing requirements under the RIWI Act (DWER, 2022). The North West Region advised that, as the proposed disturbance envelope encompasses minor drainage lines and tributaries, a bed and banks permit will be required if the proposed disturbance will interfere with or obstruct the bed or banks of these tributary watercourses (DWER, 2022). The applicant has been advised of this requirement. The North West Region also advised that, if the applicant will need to use groundwater for construction or other purposes (e.g., dust suppression), a 5C license to take water and a 26D license to construct new water supply bores will be required (DWER, 2022). Supporting information provided by the applicant implies that project activities do not include dewatering or excavation below the water table at this stage (MRWA, 2021). However, the applicant has been advised that any future activities of this nature within the disturbance envelope may be subject to groundwater licensing requirements under the RIWI Act.

The application area intersects several reported contaminated sites. However, none of these areas have been confirmed contaminated or classified under the *Contaminated Sites Act 2003*.

It is acknowledged that the application area partially intersects the project area for the Wheatstone Development – Gas Processing, Export Facilities and Infrastructure approved under Ministerial Statement 873. However, the proposed clearing and expansion of Warrirda Road is not associated with or included in the provisions of this Ministerial Statement.

Several Aboriginal sites of significance have been mapped within the application area. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972 (WA)* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

**End**

## Appendix A. Additional information provided by applicant

Summary of comments	Consideration of comment
The applicant provided a copy of a draft Construction Environment Management Plan (CEMP) on 31 January 2022 in response to a request from DWER (MRWA, 2022b).	The provisions of the draft CEMP are summarised in <i>Avoidance and mitigation measures</i> (see Section 3.1).
<p>The applicant provided the following additional supporting information on 15 August 2022 in response to a formal Request for Further Information issued by DWER:</p> <ul style="list-style-type: none"> <li>• A reduction in the proposed clearing area from 372.06 hectares to 234.44 hectares to avoid and minimise impacts to priority flora,</li> <li>• Clarification of the total number of individuals of <i>Eremophila forrestii</i> subsp. <i>viridis</i> and <i>Triumfetta echinata</i> identified in the 'Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment', and</li> <li>• Identification of additional regional surveys that have been undertaken for <i>Eremophila forrestii</i> subsp. <i>viridis</i> (MRWA, 2022a).</li> </ul>	<p>The additional information provided was considered as follows:</p> <ul style="list-style-type: none"> <li>• The reduction in the proposed clearing area are considered in <i>Avoidance and mitigation measures</i> (see Section 3.1)., and</li> <li>• The impacts to <i>Eremophila forrestii</i> subsp. <i>viridis</i> and <i>Triumfetta echinata</i> and additional regional flora surveys are considered in the detailed assessment of impacts to biological values (flora) (see Section 3.2.1).</li> </ul>

## Appendix B. Site characteristics

### B.1. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

Characteristic	Details
Local context	The area proposed to be cleared is part of an expansive tract of native vegetation in the extensive land use zone of Western Australia. It spans the length of the existing Warrirda Road, including its intersection with Onslow Road. The proposed clearing area is adjacent to expansive tracts of remnant native vegetation, as well as land developed as part of Wheatstone Project. Spatial data indicates the local area (50-kilometre radius from the centre of the area proposed to be cleared) retains approximately 98 per cent of the original native vegetation cover.
Ecological linkage	The application area does not intersect any formally mapped ecological linkages. Although the vegetation may be providing some connectivity along the existing road infrastructure, it is not considered likely to be contributing significantly to vegetation connectivity or linkage values in the local area, noting the extensively vegetated region and adjacent expansive tracts of connected vegetation.
Conservation areas	The closest conservation area is Locker Island Nature Reserve located approximately 2.5 kilometres west of the application area, off the coast of the Port of Ashburton. The closest mainland conservation area is Cane River Conservation Park, located approximately 50 kilometres south-east of the application area.
Vegetation description	A flora and vegetation survey undertaken by Spectrum Ecology & Spatial in May 2021 identified eight vegetation units within the greater survey area, of which seven vegetation units occur within the revised proposed clearing area, outlined in Table 3. An

Characteristic	Details																																								
	<p>additional 61.8 hectares within the application area is described as Cleared, containing existing road infrastructure, or historically cleared land (Spectrum Ecology 2021).</p> <p>Table 3. Vegetation units within the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).</p> <table border="1"> <thead> <tr> <th>Vegetation Unit</th> <th>Vegetation Type Description</th> <th>Extent within area to be cleared (ha)</th> <th>% of area to be cleared</th> </tr> </thead> <tbody> <tr> <td>C1</td> <td><i>Tecticornia auriculata</i> or <i>Tecticornia indica</i> subsp. <i>leiostachya</i> low open shrubland over <i>Eragrostis pergracilis</i> and/or *<i>Cenchrus ciliaris</i> low sparse tussock grassland.</td> <td>6.8</td> <td>2.9</td> </tr> <tr> <td>C2</td> <td>+/-<i>Tecticornia auriculata</i> low isolated shrubs.</td> <td>20.7</td> <td>8.8</td> </tr> <tr> <td>D1</td> <td>+/- <i>Grevillea stenobotrya</i> tall sparse shrubland over <i>Scaevola sericophylla</i>, +/- <i>Acacia stellaticeps</i> mid sparse shrubland over <i>Triodia epactia</i> open hummock grassland.</td> <td>40.9</td> <td>17.4</td> </tr> <tr> <td>P1a</td> <td><i>Acacia tetragonophylla</i> tall sparse shrubland or isolated shrubs over <i>Triodia epactia</i> open hummock grassland.</td> <td>56.2</td> <td>24.0</td> </tr> <tr> <td>P1b</td> <td>*<i>Cenchrus ciliaris</i> low open tussock grassland, with +/-<i>Triodia epactia</i> sparse hummock grassland.</td> <td>40.5</td> <td>17.3</td> </tr> <tr> <td>P2</td> <td><i>Acacia synchronicia</i>, <i>Acacia tetragonophylla</i> and *<i>Vachellia farnesiana</i> tall sparse shrubland over <i>Scaevola spinescens</i> and <i>Sesbania cannabina</i> mid sparse shrubland over <i>Diplachne fusca</i> subsp. <i>fusca</i>, <i>Eulalia aurea</i>, *<i>Cenchrus ciliaris</i>, +/- <i>Eriachne benthamii</i>.</td> <td>5.6</td> <td>2.4</td> </tr> <tr> <td>P3</td> <td>*<i>Prosopis pallida</i> tall closed shrubland over *<i>Cenchrus ciliaris</i> open tussock grassland.</td> <td>1.9</td> <td>0.8</td> </tr> <tr> <td>P1a</td> <td><i>Acacia tetragonophylla</i> tall sparse shrubland or isolated shrubs over <i>Triodia epactia</i> open hummock grassland.</td> <td>56.2</td> <td>24.0</td> </tr> <tr> <td>Total</td> <td></td> <td>234.4</td> <td>100</td> </tr> </tbody> </table> <p>The full survey descriptions and mapping is available in Appendix E.</p> <p>This is broadly consistent with the mapped Beard vegetation associations:</p> <ul style="list-style-type: none"> <li>• 127, which is described as bare areas and mudflats,</li> <li>• 589, which is described as a mosaic of short bunch grassland, savanna and grass plain, and hummock grasslands, grass steppe and soft spinifex,</li> <li>• 670, which is described as hummock grasslands, shrub steppe and scattered shrubs over <i>Triodia basedowii</i>, and</li> <li>• 676, which is described as succulent steppe and samphire (Shepherd et al, 2001).</li> </ul>	Vegetation Unit	Vegetation Type Description	Extent within area to be cleared (ha)	% of area to be cleared	C1	<i>Tecticornia auriculata</i> or <i>Tecticornia indica</i> subsp. <i>leiostachya</i> low open shrubland over <i>Eragrostis pergracilis</i> and/or * <i>Cenchrus ciliaris</i> low sparse tussock grassland.	6.8	2.9	C2	+/- <i>Tecticornia auriculata</i> low isolated shrubs.	20.7	8.8	D1	+/- <i>Grevillea stenobotrya</i> tall sparse shrubland over <i>Scaevola sericophylla</i> , +/- <i>Acacia stellaticeps</i> mid sparse shrubland over <i>Triodia epactia</i> open hummock grassland.	40.9	17.4	P1a	<i>Acacia tetragonophylla</i> tall sparse shrubland or isolated shrubs over <i>Triodia epactia</i> open hummock grassland.	56.2	24.0	P1b	* <i>Cenchrus ciliaris</i> low open tussock grassland, with +/- <i>Triodia epactia</i> sparse hummock grassland.	40.5	17.3	P2	<i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> and * <i>Vachellia farnesiana</i> tall sparse shrubland over <i>Scaevola spinescens</i> and <i>Sesbania cannabina</i> mid sparse shrubland over <i>Diplachne fusca</i> subsp. <i>fusca</i> , <i>Eulalia aurea</i> , * <i>Cenchrus ciliaris</i> , +/- <i>Eriachne benthamii</i> .	5.6	2.4	P3	* <i>Prosopis pallida</i> tall closed shrubland over * <i>Cenchrus ciliaris</i> open tussock grassland.	1.9	0.8	P1a	<i>Acacia tetragonophylla</i> tall sparse shrubland or isolated shrubs over <i>Triodia epactia</i> open hummock grassland.	56.2	24.0	Total		234.4	100
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Vegetation condition	<p>A flora and vegetation survey undertaken by Spectrum Ecology &amp; Spatial in May 2021 identified that the vegetation within the proposed clearing area is in Very Good to Cleared (Completely Degraded) (Trudgen, 1991) condition, as outlined in Table 4.</p> <p>Table 4. Vegetation condition within the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).</p> <table border="1"> <thead> <tr> <th>Condition Rating (Trudgen, 1991)</th> <th>Extent within area to be cleared (ha)</th> <th>% of area to be cleared</th> </tr> </thead> <tbody> <tr> <td>Very Good</td> <td>97.6</td> <td>41.6</td> </tr> <tr> <td>Good</td> <td>25.4</td> <td>10.8</td> </tr> <tr> <td>Poor</td> <td>44.5</td> <td>19.0</td> </tr> <tr> <td>Degraded</td> <td>5.2</td> <td>2.2</td> </tr> <tr> <td>Completely Degraded</td> <td>61.8</td> <td>26.3</td> </tr> <tr> <td>Total</td> <td>234.4</td> <td>100</td> </tr> </tbody> </table> <p>The full Trudgen (1991) condition rating scale is provided in Appendix D. The full survey mapping is available in Appendix E.</p>	Condition Rating (Trudgen, 1991)	Extent within area to be cleared (ha)	% of area to be cleared	Very Good	97.6	41.6	Good	25.4	10.8	Poor	44.5	19.0	Degraded	5.2	2.2	Completely Degraded	61.8	26.3	Total	234.4	100
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Poor	44.5	19.0																				
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Total	234.4	100																				

Characteristic	Details
Climate and landform	<p>The application area is located on flat topography within Cape Range sub-region, characterised by limestone ranges and extensive areas of red dune fields, coastal beach dunes and mud flats. The climate is arid, semidesert to subtropical climate, with variable summer and winter rainfall; cyclonic activity can be significant (Kendrick and Mau, 2002).</p> <p>The application area has a mean annual maximum temperature of 32.1°C and a mean annual minimum temperature of 19.2°C. The mean annual rainfall and the annual evapotranspiration rate are both 400 millimetres.</p>
Soil description and land degradation risk	<p>The soil within the application area is mapped as the following systems:</p> <ul style="list-style-type: none"> <li>• Onslow System (201On), described as undulating sandplains, dunes and level clay plains supporting soft spinifex grasslands and minor tussock grasslands,</li> <li>• Dune System (201Du), described as dune fields supporting soft spinifex and minor hard spinifex grasslands, and</li> <li>• Littoral System (201Li), described as bare coastal mudflats (unvegetated), samphire flats, sandy islands, coastal dunes and beaches, supporting samphire low shrublands, sparse acacia shrublands and mangrove forests (DPIRD, 2022).</li> </ul> <p>While the mapped soils generally are not prone to land degradation, sandy units of the Onslow System and Dune System are susceptible to wind erosion when bared by overgrazing or fire, but revegetate rapidly after rain (Van Vreeswyk et al., 2004). Clay plains with tussock grasses within the Onslow System are also sensitive to overgrazing and are susceptible to erosion (Van Vreeswyk et al., 2004). Similarly, coastal dunes within the Littoral System are highly prone to wind erosion if vegetation cover is lost as a result of fire or other disturbance (Van Vreeswyk et al., 2004).</p>
Waterbodies and hydrogeography	<p>The desktop assessment and aerial imagery indicated that the application area intersects several saline coastal flats. This was confirmed by the biological surveys undertaken, which identified that 20.7 hectares of the application area includes <i>Tecticornia auriculata</i> shrubland on tidal mudflats and claypans (Spectrum Ecology, 2021). The application area also transects several non-perennial lakes and non-perennial tributaries.</p> <p>The application area is mapped within the Pilbara Surface Water Area and the Pilbara Groundwater Area proclaimed under the RIWI Act but does not transect any water resources proclaimed under either the <i>Metropolitan Water Supply Sewerage and Drainage Act 1909</i> or <i>Country Areas Water Supply Act 1947</i> (CAWS Act).</p> <p>Groundwater salinity within the application area is mapped at 7000 to 14,000 milligrams per litre total dissolved solids.</p>
Flora	<p>The desktop assessment identified that a total of nine conservation significant flora species have been recorded within the local area, comprising one Priority 1 (P1) flora, seven Priority 3 (P3) flora, and one Priority 4 (P4) flora (Western Australian Herbarium, 1998-). None of these existing records occur within the application area, with the closest records being occurrences of <i>Eremophila forrestii</i> subsp. <i>viridis</i> (P3) approximately 10 metres from the application area.</p> <p>No flora species listed as threatened under the BC Act or EPBC Act have been recorded in the local area.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (Spectrum Ecology, 2021), the application area provides suitable habitat for two priority flora species and impacts to these species required further consideration (see Appendix B.3).</p>



Characteristic	Details
Ecological communities	<p>The desktop assessment identified that the closest state-listed threatened ecological community (TEC) is an occurrence of the Themeda grasslands on cracking clays (Hamersley Station, Pilbara) (Themeda grasslands) TEC, located approximately 241 kilometres east of the application area.</p> <p>The closest state-listed priority ecological community (PEC) is an occurrence of the Tanpool Land System PEC, located approximately 53 kilometres east of the application area.</p> <p>No TECs or PECs were recorded within the application area (Spectrum Ecology, 2021).</p>
Fauna	<p>The desktop assessment identified that a total of 70 threatened or priority fauna species have been recorded within the local area, including 20 threatened fauna species, 11 priority fauna species, 34 fauna species protected under international agreement, and five other specially protected fauna species (DBCA, 2007-). Four of these existing records occur within the application area, including one record of <i>Calidris tenuirostris</i> (great knot), one record of <i>Charadrius mongolus</i> (lesser sand plover), and two records of <i>Dasyurus hallucatus</i> (northern quoll). It is noted that, according to available databases, records of the northern quoll within the application area were uncertain sightings from surveys undertaken in 2012 and 2013.</p> <p>With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the habitat preferences and conservation statuses of the aforementioned species, the distribution and extent of existing records, and biological survey information (Spectrum Ecology, 2021), the application area may provide suitable habitat for 39 conservation significant fauna species and impacts to these species required further consideration (see Appendix B.4).</p>

## B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Carnarvon	8,382,890.35	8,360,801.46	99.74	1,020,434.08	12.17
Vegetation complex*					
Beard vegetation association 127	716,160.82	691,516.26	96.56	83831.67	11.71
Beard vegetation association 589	806,985.08	802,646.84	99.46	15304.39	1.9
Beard vegetation association 670	147,810.16	147,793.61	99.99	17242.88	11.67
Beard vegetation association 676	2,061,241.05	1,962,930.40	95.23	302280.66	14.66
Vegetation complex within IBRA Bioregion*					
Beard vegetation association 127 (Carnarvon)	102,780.91	101,489.55	98.74	1996.31	1.94
Beard vegetation association 589 (Carnarvon)	78,100.80	77,834.93	99.66	-	-
Beard vegetation association 670 (Carnarvon)	147,808.61	147,792.06	99.99	17242.88	11.67
Beard vegetation association 676 (Carnarvon)	51,983.51	51,232.57	98.56	15035.55	28.92

\*Government of Western Australia (2019)

## B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the distribution and extent of existing records, and biological survey information (Spectrum Ecology, 2021), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Eremophila forrestii</i> subsp. <i>viridis</i>	P3	Y	Y	Y	0.01	3	Y
<i>Triumfetta echinata</i>	P3	Y	Y	Y	0.09	6	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

## B.4. Fauna analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1), the distribution and extent of existing records, and biological survey information (Spectrum Ecology, 2021), impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records in local area (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Calidris canutus</i> (Red knot)	EN	Y	Y	7.1	3	Y
<i>Calidris ferruginea</i> (Curlew sandpiper)	CR	Y	Y	9.7	5	Y
<i>Calidris tenuirostris</i> (Great knot)	CR	Y	Y	0.0	11	Y
<i>Charadrius leschenaultii</i> (Greater sand plover)	VU	Y	Y	6.4	106	Y
<i>Charadrius mongolus</i> (Lesser sand plover)	EN	Y	Y	0.0	33	Y
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	Y	0.4	5	Y
<i>Leggadina lakedownensis</i> (Lakeland Downs mouse)	P4	Y	Y	0.2	348	Y
<i>Limosa lapponica menzbieri</i> (Bar-tailed godwit)	CR	Y	Y	3.3	4	Y
Migratory waterbirds (28 species)	MI	Y	Y	<10.0	-	Y
<i>Numenius madagascariensis</i> (Eastern curlew)	CR	Y	Y	5.6	29	Y
<i>Sternula nereis nereis</i> (Fairy tern)	VU	Y	Y	12.7	51	Y
<i>Tringa brevipes</i> (Grey-tailed tattler)	P4	Y	Y	6.5	96	Y

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority, MI: migratory species protected under International Agreement; OS: other specially protected fauna

## Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><b>Principle (a):</b> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><b>Assessment:</b> The area proposed to be cleared contains 372.06 hectares of tidal mudflats and claypans, sand plains and dunes, <i>Tecticornia</i> spp. shrubland, and Mesquite shrubland over hummock and tussock grasslands that are well-represented in the local area and region but contains suitable habitat for priority flora and conservation significant fauna species.</p>	At variance	Yes <i>Refer to Sections 3.2.1 and 3.2.2, above.</i>
<p><b>Principle (b):</b> "Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna."</p> <p><b>Assessment:</b> The area proposed to be cleared contains suitable habitat for conservation significant fauna.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><b>Principle (c):</b> "Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."</p> <p><b>Assessment:</b> No threatened flora species listed under the BC Act are known to occur within a 50-kilometre radius of the application area. Therefore, the area proposed to be cleared is unlikely to contain suitable or significant habitat necessary for the continued existence of threatened flora species.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a threatened ecological community.”</i></p> <p><u>Assessment:</u> The area proposed to be cleared is unlikely to be representative of any TEC listed under the BC Act or EPBC Act. Given the separation from the nearest TEC through road infrastructure, the proposed clearing is not likely to impact or be necessary for the maintenance of any TEC.</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> The extent of the mapped vegetation types and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> Given the distance and separation from the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of any nearby conservation areas.</p>	Not likely to be at variance	No
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> Given the application area transects a saline coastal flat and several non-perennial watercourses, the vegetation is considered to be growing in, or in association with, an environment associated with a watercourse or wetland and the proposed clearing has the potential to impact on- or off-site hydrology and water quality.</p>	At variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The mapped soils are susceptible to wind erosion where surface cover is lost. However, it is acknowledged that cleared areas will be developed into permanent road infrastructure and that bare ground will not be left exposed to weathering for extended periods. Noting this, the long, linear nature of the application area, and the extent of the proposed clearing in the context of the extensively vegetated local area, the proposed clearing is not considered likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u> Given a saline coastal flat and several non-perennial water courses are recorded within the application area, the proposed clearing has the potential to impact surface or ground water quality.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> Given the application area intersects a saline coastal flat and includes tidal mudflat and claypan vegetation, portions of the application area may be seasonally inundated. However, the mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
likely to contribute to increased incidence or intensity of flooding or waterlogging. Further, noting the long, linear nature of the application area, and the extent of the proposed clearing in the context of the extensively vegetated local area, the proposed clearing is not considered likely to cause, or exacerbate, the incidence or intensity of flooding.		

## Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Trudgen, M.E. (1991) *Vegetation condition scale* in National Trust (WA) 1993 Urban Bushland Policy. National Trust of Australia (WA), Wildflower Society of WA (Inc.), and the Tree Society (Inc.), Perth.

### Measuring vegetation condition for the Eremaean and Northern Botanical Provinces (Trudgen, 1991)

Condition	Description
Excellent	Pristine or nearly so, no obvious signs of damage caused by human activities since European settlement.
Very good	Some relatively slight signs of damage caused by human activities since European settlement. For example, some signs of damage to tree trunks caused by repeated fire, the presence of some relatively non-aggressive weeds, or occasional vehicle tracks.
Good	More obvious signs of damage caused by human activity since European settlement, including some obvious impact on the vegetation structure such as that caused by low levels of grazing or slightly aggressive weeds.
Poor	Still retains basic vegetation structure or ability to regenerate it after very obvious impacts of human activities since European settlement, such as grazing, partial clearing, frequent fires or aggressive weeds.
Very poor	Severely impacted by grazing, very frequent fires, clearing or a combination of these activities. Scope for some regeneration but not to a state approaching good condition without intensive management. Usually with a number of weed species present including very aggressive species.
Completely degraded	Areas that are completely or almost completely without native species in the structure of their vegetation; i.e. areas that are cleared or 'parkland cleared' with their flora comprising weed or crop species with isolated native trees or shrubs.

## Appendix E. Biological survey information excerpts

### **Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment (Spectrum Ecology, 2021)**

The applicant commissioned the 'Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment' to delineate key flora, fauna, soil, and surface water (wetland) values within the application area (Spectrum Ecology, 2021). The 'Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment' comprised a desktop assessment, flora and vegetation assessment, and terrestrial fauna assessment (Spectrum Ecology, 2021). Survey descriptions and mapping excised from the flora and fauna assessments is available in Figures 5 to 9 and Table 5 below.

#### Desktop Assessment

The desktop assessment for the 'Warrirda Road Detailed and Targeted Flora and Basic Fauna Assessment' was undertaken by experienced ecologists and involved the following:

- A review of all relevant and available flora, vegetation, and fauna data sources in the vicinity of the survey area,
- A review of previous flora and fauna assessments conducted in the vicinity of the survey area, and
- A likelihood of occurrence assessment for conservation significant flora and fauna identified in the vicinity of the survey area, including consideration of the distance of existing records to the survey area and the potential for appropriate habitats to occur within the survey area based on geology, vegetation mapping and aerial imagery (Spectrum Ecology, 2021).

#### Flora and Vegetation Assessment

The methods of the flora and vegetation assessment were in accordance with the *EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). The flora and vegetation assessment was undertaken by an experienced botanist and involved the following:

- Field surveys over three days between 4 and 7 May 2021, including comprehensive sampling of 12 quadrats, 13 relevés, and 65 kilometres of targeted flora traverses,
- Vegetation type mapping for the survey area, using data collected from quadrats, relevés, traverses and opportunistic sampling,
- Vegetation condition mapping for the survey area, using data collected from quadrats, relevés, and opportunistic sampling, and
- Targeted searches for significant flora, involving flora traverses at spacing of 20-40 metres through all potential habitat for conservation significant flora identified in the likelihood of occurrence assessment (Spectrum Ecology, 2021).

#### Terrestrial Fauna Assessment

The methods of the terrestrial fauna assessment were in accordance with the *EPA Technical Guidance – Vertebrate Fauna Surveys for Environmental Impact Assessment* (EPA, 2020). The terrestrial fauna assessment was undertaken by an experienced zoologist and involved the following:

- Field surveys over three days between 4 and 7 May 2021, involving traversing the survey area to record direct sightings or indirect evidence of fauna and potential fauna habitat, as well as targeted searches for reptiles and amphibians in areas of suitable habitat, and
- Fauna habitat mapping for the survey area, based on:
  - Vegetation type mapping and structure, from desktop assessment and flora and vegetation assessment,
  - Landforms,
  - Geological units,
  - Soil substrate,
  - Aerial imagery,
  - Fauna assemblage, and
  - Field observations (Spectrum Ecology, 2021).

### **Additional Regional Flora and Vegetation Surveys**

DWER's assessment of CPS 9534/1 also considered additional data of flora records from recent flora and vegetation surveys in the region that were not commissioned by the applicant, including:




- 'Ashburton Infrastructure Project – Flora and vegetation Assessment' which comprised a desktop assessment and targeted flora surveys over 22 days between 17 March and 24 May 2021 (360 Environmental, 2021),






- ‘Detailed Flora and Vegetation Assessment – Onslow Rare Earths Plant’ which comprised a desktop assessment, reconnaissance flora and vegetation survey, and targeted flora searches over eight days between 16 and 23 October 2020 (RPS, 2021),
- ‘Targeted *Eremophila forrestii* subsp. *viridis* (P3) Survey at Onslow’ which comprised a desktop assessment and targeted flora survey over four days from 13 December to 16 December 2020 (EcoLogical Australia, 2021),
- ‘*Eremophila forrestii* subsp. *viridis* targeted flora survey August 2022’ which comprised a desktop assessment and targeted searches for *Eremophila forrestii* subsp. *viridis* over three days from 27 to 29 July 2022 (Anders, 2022a), and
- ‘*Eremophila forrestii* subsp. *viridis* targeted flora survey September 2022’ which comprised a desktop assessment and targeted searches for *Eremophila forrestii* subsp. *viridis* over five days from 31 August to 4 September 2022 (Anders, 2022b).

The methods of these additional surveys were in accordance with the *EPA Technical Guidance – Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016). The location of these surveys and flora records with respect to the application area for CPS 9534/1 are available at Figure 3 under the detailed assessment of impacts to biological values (flora) (see Section 3.2.1).

### Survey Descriptions and Mapping

Table 5. Vegetation types recorded within the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).

Code	Vegetation Description (NVIS)	Associated Species	Landform, Condition	Sites	Area &%	Representative Photo
<b>Claypans</b>						
C1	<i>Tecticornia auriculata</i> or <i>Tecticornia indica</i> subsp. <i>leiotachya</i> low open shrubland over <i>Eragrostis pergracilis</i> and/or * <i>Cenchrus ciliaris</i> low sparse tussock grassland.	<i>Cullen cinereum</i> <i>Cyperus bulbosus</i> <i>Lawrenca viridigrisea</i> <i>Nicotiana occidentalis</i> subsp. <i>?occidentalis</i> <i>Portulaca oleracea</i> <i>Swainsona pterostylis</i>	Drainage plain, salt pans on clay soils.	Q002 Q004 Q009 R008 R010	15.4 ha 4.1%	
C2	+/- <i>Tecticornia auriculata</i> low isolated shrubs.	-	Bare clay pans, tidal mud flats.	R002	26.5 ha 7.1%	
<b>Dunes</b>						
D1	+/- <i>Grevillea stenobotrya</i> tall sparse shrubland over <i>Scaevola sericophylla</i> , +/- <i>Acacia stellaticeps</i> mid sparse shrubland over <i>Triodia epactia</i> open hummock grassland.	<i>Abutilon</i> sp. <i>Dioicum</i> (A.A. Mitchell PRP 1618) * <i>Cenchrus ciliaris</i> <i>Eremophila forrestii</i> subsp. <i>viridis</i> (P3) <i>Hakea stenophylla</i> subsp. <i>stenophylla</i> <i>Indigofera colutea</i> <i>Triumfetta echinata</i> (P3) <i>Yakirra australiensis</i> var. <i>australiensis</i>	Sand dunes, swales, low rises.	Q001 Q003 Q005 Q008 R012	77.1 ha 20.7%	

Code	Vegetation Description (NVIS)	Associated Species	Landform, Condition	Sites	Area &%	Representative Photo
<b>Drainage Line</b>						
DL1	+/- <i>Eucalyptus camaldulensis</i> subsp. <i>refulgens</i> low isolated trees over <i>Acacia tetragonophylla</i> and * <i>Vachellia farnesiana</i> tall open shrubland over * <i>Cenchrus ciliaris</i> sparse tussock grassland.	<i>Acacia synchronicia</i> <i>Ipomoea muelleri</i>	Drainage line. Degraded condition. Mostly no native species present.	R009	2.1 ha 0.6%	
<b>Plains</b>						
P1a	+/- <i>Acacia tetragonophylla</i> tall isolated shrubs over <i>Triodia epactia</i> open hummock grassland.	<i>Abutilon</i> sp. Dioicum (A.A. Mitchell PRP 1618) <i>Acacia stellaticeps</i> <i>Acacia synchronicia</i> <i>Enchylaena tomentosa</i> <i>Indigofera colutea</i> <i>Indigofera linifolia</i> <i>Rhagodia eremaea</i> <i>Senna glutinosa</i> subsp. <i>xluerssenii</i> <i>Yakirra australiensis</i> var. <i>australiensis</i>	Flat plains on sand/sandy clay/ clay soils.	Q006 Q007 Q012 R007 R011	108.3 ha 29.1%	
P1b	* <i>Cenchrus ciliaris</i> low open tussock grassland, with +/- <i>Triodia epactia</i> sparse hummock grassland.	<i>Acacia synchronicia</i> <i>Aerva javanica</i> <i>Neobassia astrocarpa</i>	Flat plains / Floodplains on sandy clay soils. Structurally separated from P1a due to dominance of * <i>Cenchrus ciliaris</i> .	R001 R003 R004 R006 R013	58.0 ha 15.6%	
P2	<i>Acacia synchronicia</i> , <i>Acacia tetragonophylla</i> and * <i>Vachellia farnesiana</i> tall sparse shrubland over <i>Scaevola spinescens</i> and <i>Sesbania cannabina</i> mid sparse shrubland over <i>Diplachne fusca</i> subsp. <i>fusca</i> , <i>Eulalia aurea</i> , and * <i>Cenchrus ciliaris</i> sparse tussock grassland.	<i>Cullen cinereum</i> <i>Cyperus iria</i> <i>Cyperus rigidellus</i> <i>Enchylaena tomentosa</i> <i>Marsilea exarata</i> <i>Rhagodia eremaea</i> <i>Streptoglossa decurrens</i>	Minor depressions on clay to sandy clay soils.	Q010 Q011	13.2 ha 3.5%	
P3	* <i>Prosopis pallida</i> tall closed shrubland over * <i>Cenchrus ciliaris</i> open tussock grassland.	* <i>Vachellia farnesiana</i>	Unnatural depression on sandy clay soils. Degraded condition. Mostly no native species present.	R005	1.9 ha 0.5%	
<b>Other</b>						
-	Cleared (no vegetation)	N/A	N/A	-	69.6 ha 18.7%	-



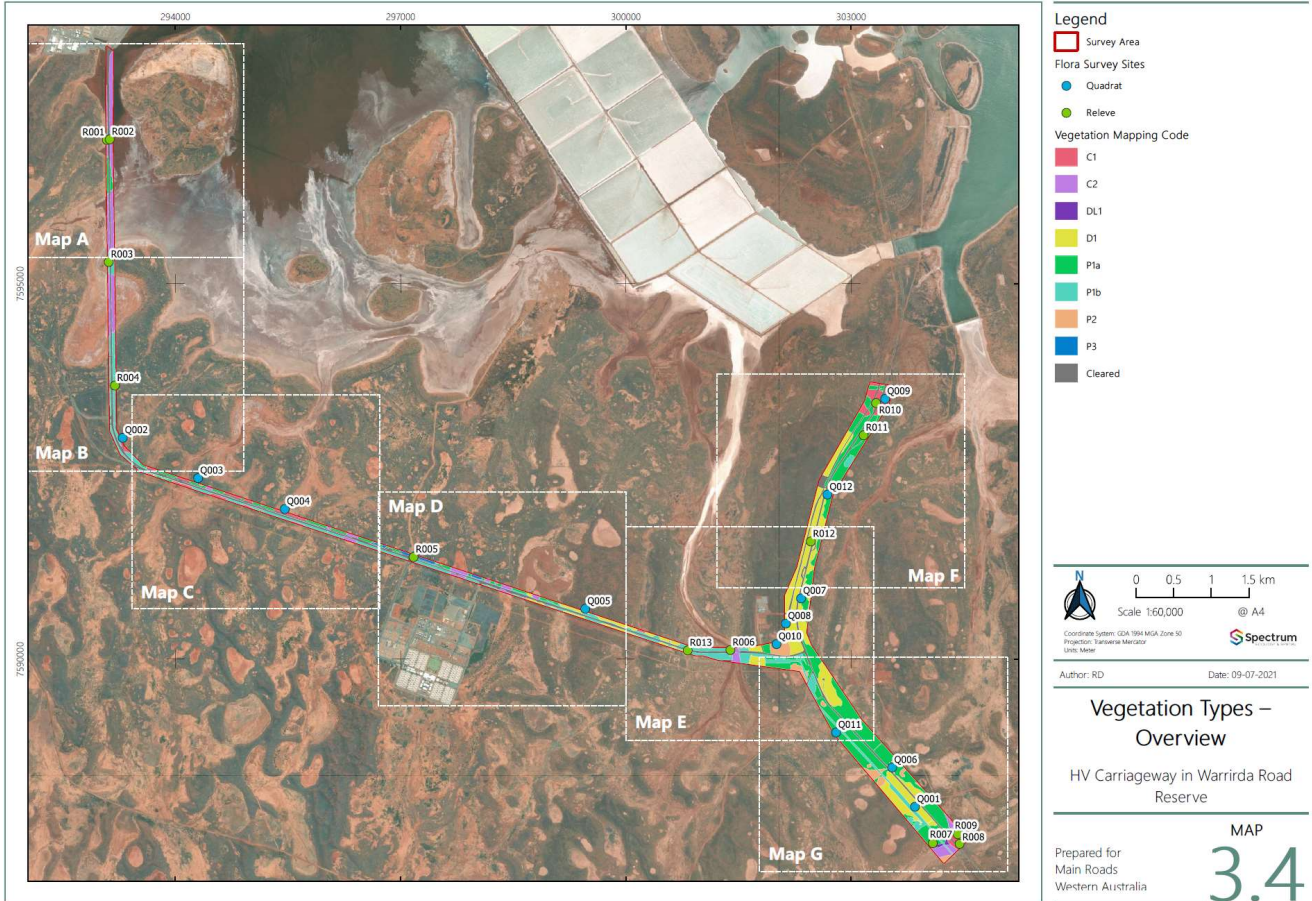


Figure 5. Vegetation type mapping overview for the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).

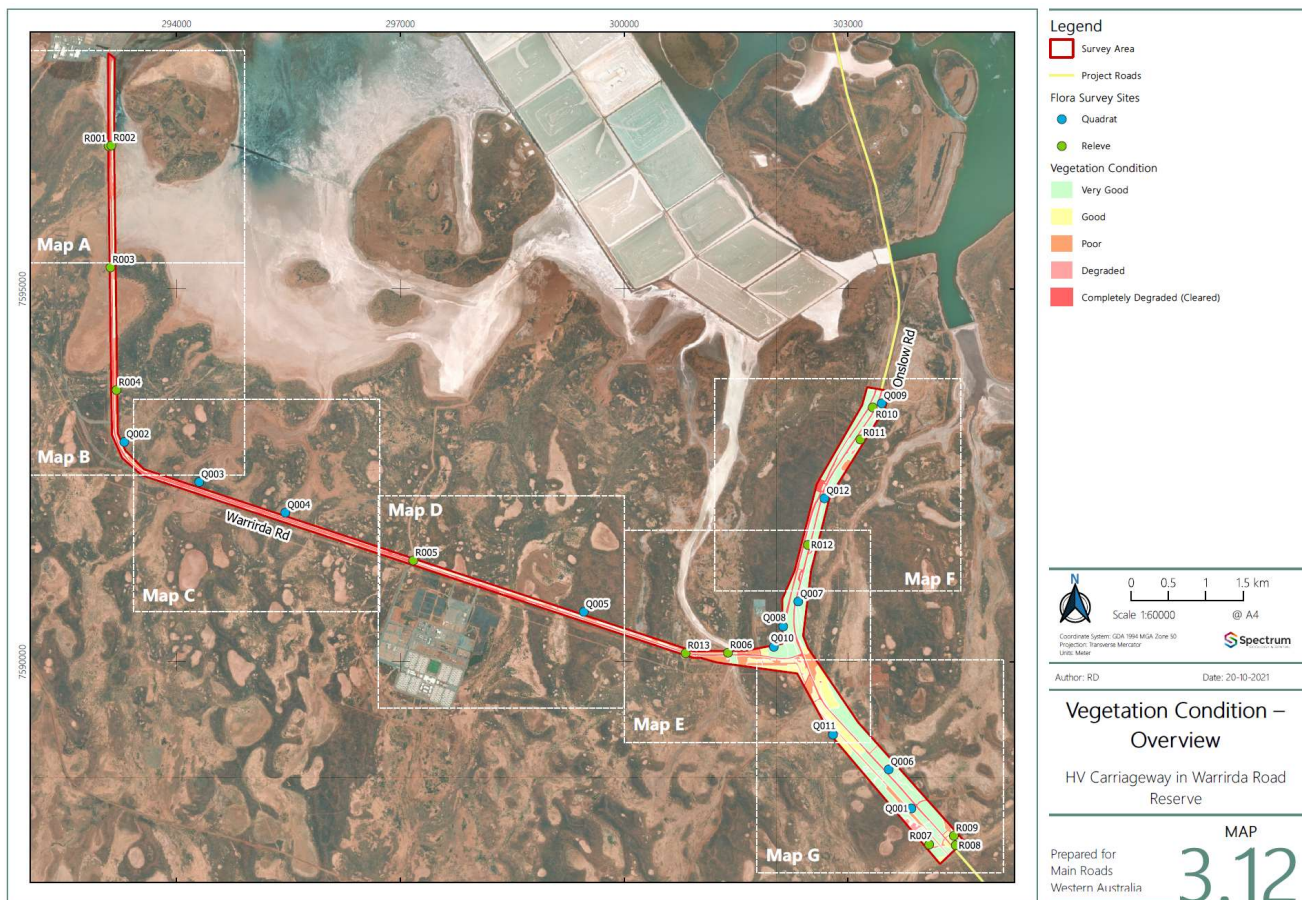


Figure 6. Vegetation condition mapping overview for the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).



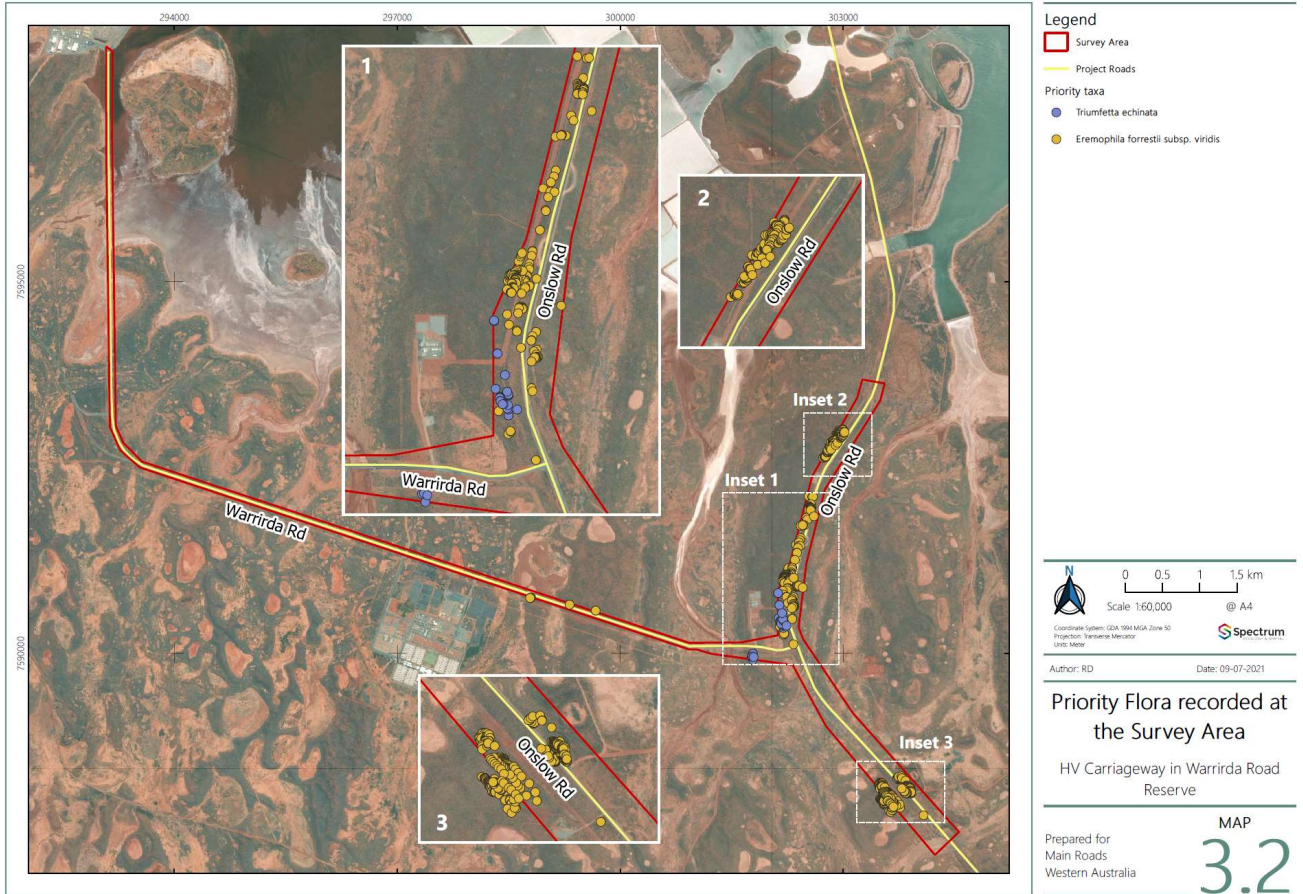


Figure 7. Priority flora recorded within the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).

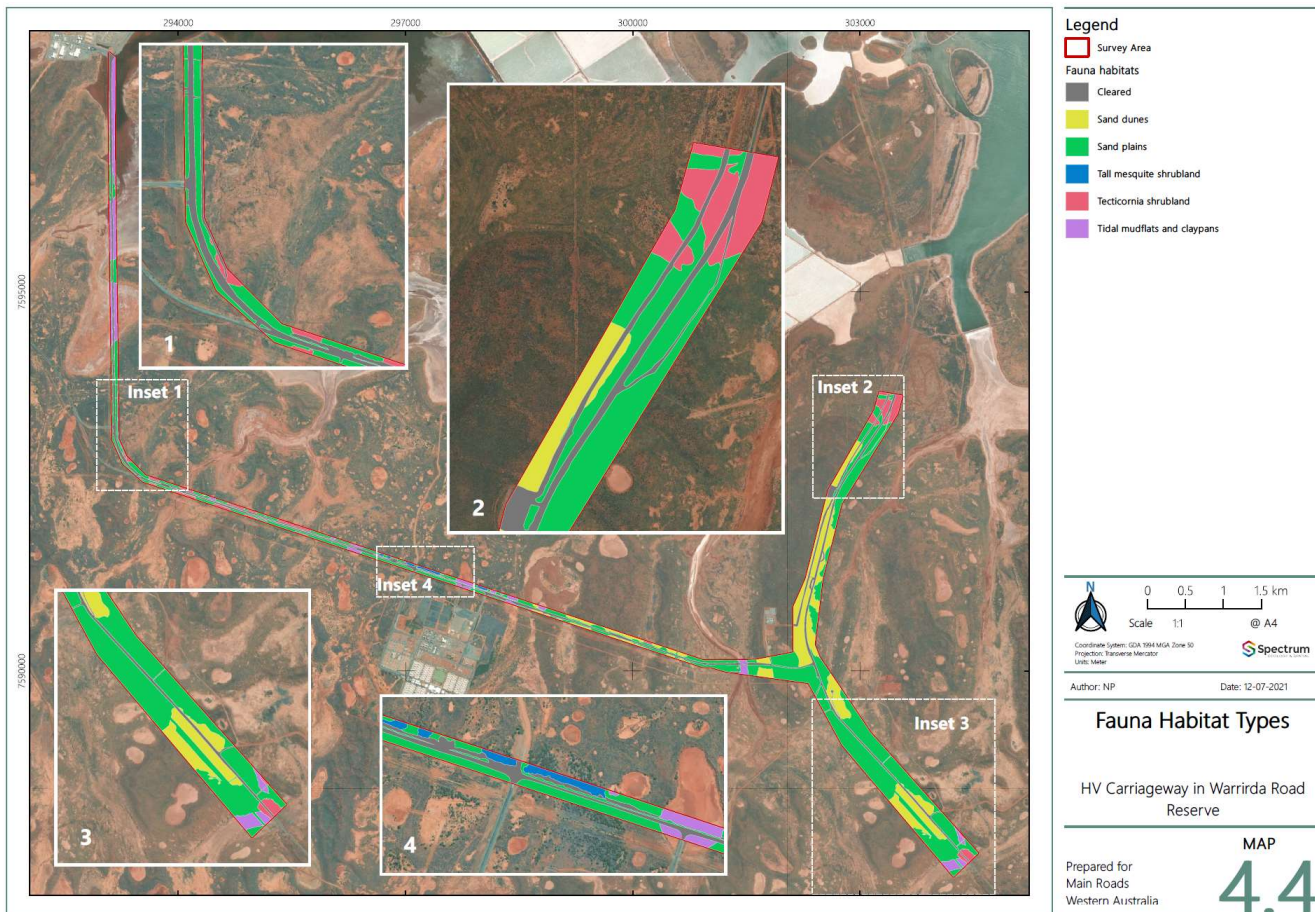


Figure 8. Fauna habitat type mapping for the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).



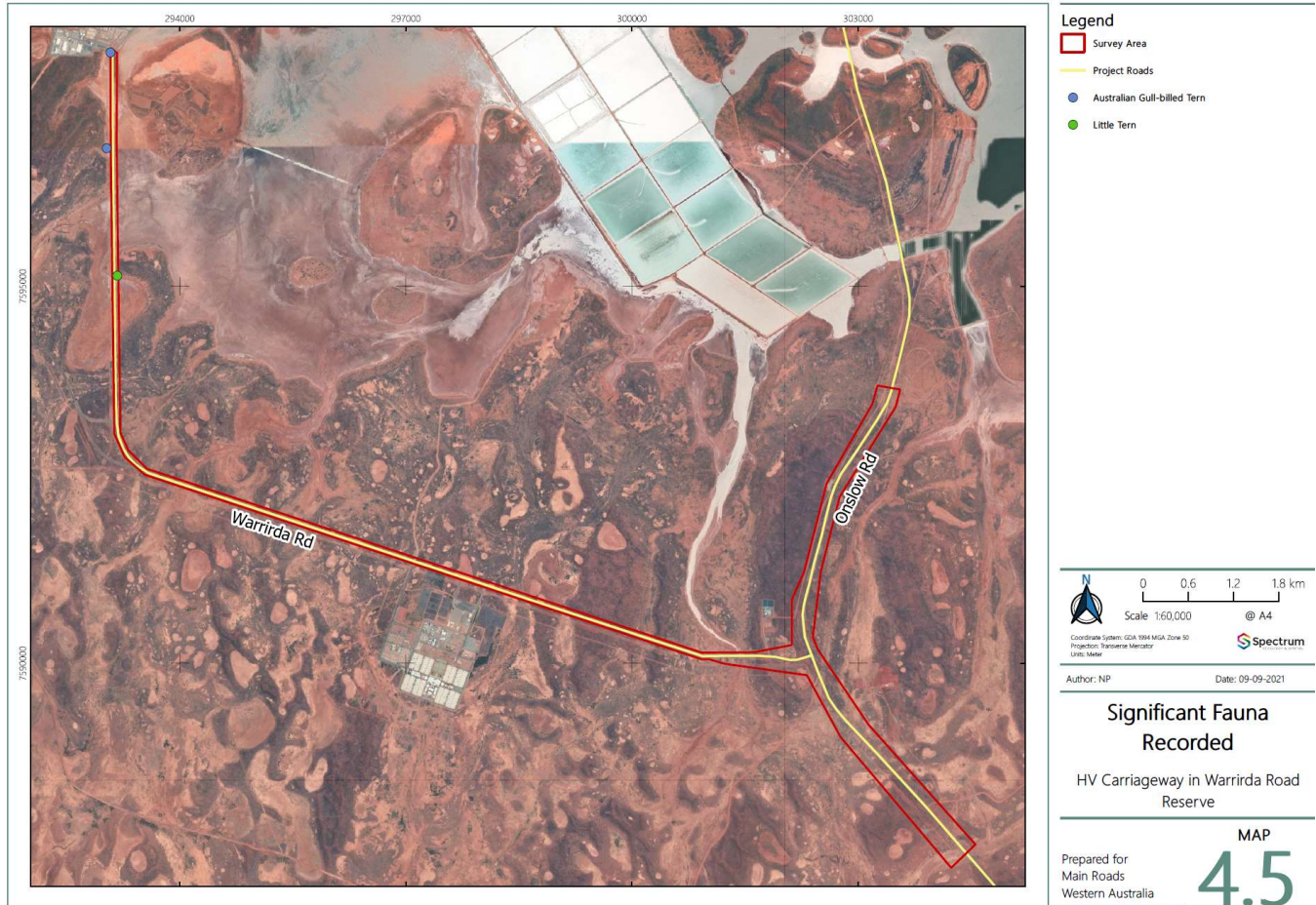


Figure 9. Conservation significant fauna recorded within the clearing footprint for CPS 9534/1 (Spectrum Ecology, 2021).

## Appendix F. Sources of information

### F.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Bush Forever Areas 2000 (DPLH-019)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- CAWSA Part 2A Clearing Control Catchments (DWER-004)
- Consanguineous Wetlands Suites (DBCA-020)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- DBCA Statewide Vegetation Statistics
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Groundwater Salinity Statewide (DWER-026)
- Hydrographic Catchments - Catchments (DWER-028)
- Hydrographic Catchments - Divisions (DWER-029)
- Hydrography, Linear (Hierarchy) (DWER-031)
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)

- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics (DPIRD-006)
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Mapping – Best Available (DPIRD-027)
- Soil Landscape Mapping – Systems (DPIRD-064)

Restricted GIS Databases used:

- Conservation Covenants Western Australia (DPIRD-023)
- Contaminated Sites Database - Restricted (DWER-073)
- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

## F.2. References

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