



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8608/1
Permit Holder:	Shire of Esperance
Duration of Permit:	26 June 2020 – 26 June 2030

ADVICE NOTE - OFFSET

Offset Condition 9 of CPS 7188/2, required the Permit Holder to provide a copy of the executed change in purpose of the area cross-hatched red on Plan 7188/2c within Crown Reserve 26257 from 'agriculture general' to 'conservation'. A management order was issued by the Department of Planning, Lands and Heritage over Crown Reserve 26257 for the designated purpose of 'conservation' on 28 September 2017. The Permit Holder used an additional 3.5 hectares of the banked offset to offset the residual environmental impacts identified under CPS 5330/3. A banked offset of 82 hectares currently remains within Crown Reserve 26257 following the completion of offset requirements under CPS 7188/2 and CPS 5330/3. The Permit Holder will use an additional six hectares of the banked offset to offset the residual environmental impacts identified under CPS 8608/1. The offset site occurs within the area cross-hatched red on attached Plan 8608/1h within Crown Reserve 26257.

The Crown Reserves referred to in conditions 17 and 18 of this permit are intended to offset the remaining residual environmental impacts identified under CPS 8608/1.

The Permit Holder is authorised to clear native vegetation subject to the following conditions of this Permit.

PART I – CLEARING AUTHORISED

1. Purpose for which clearing may be done

Clearing for the purposes of gravel extraction and road widening and upgrades.

2. Land on which clearing is to be done

Cascade Road reserve (PINs 11465894, 11642268 and 11642734), Cascade
River Road reserve (PINs 11465893, 11642269 and 11642735), Cascade
Oldfield Road reserve (PIN 11642041), Cascade
Neds Corner Road reserve (PIN 11642046), Cascade
Clare Road reserve (PIN 11642039), Cascade
Howick Road reserve (PIN 11644423), Condingup
Howick Road reserve (PINs 11645173 and 11644424), Howick
Fisheries Road reserve (PIN 11645708), Howick
Muntz Road reserve (PIN 11645175), Howick
Salmon Gums West Road reserve (PINs 11283289, 11425953, 11688324, 11688323, 11645103, 11688318, 11688319 and 11687112), Salmon Gums
Gimlet Road reserve (PIN 11688317), Salmon Gums

3. Area of clearing

The Permit Holder must not clear more than:

- 11.87 hectares of native vegetation within the area cross-hatched red on attached Plan 8608/1a.
- 2.55 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8608/1b.
- 6.35 hectares of native vegetation within the area cross-hatched yellow on attached Plan 8608/1c.
- 5.52 hectares of native vegetation within the combined areas cross-hatched red on attached Plan 8608/1d.
- 2.38 hectares of native vegetation within the combined areas cross-hatched yellow on attached Plan 8608/1e.

- (f) 4.3 hectares of native vegetation within the combined areas cross-hatched yellow on attached Plan 8608/1f.
- (g) 3.84 hectares of native vegetation within the combined areas cross-hatched yellow on attached Plan 8608/1g.

4. Application

This Permit allows the Permit Holder to authorise persons, including employees, contractors and agents of the Permit Holder, to clear native vegetation for the purposes of this Permit subject to compliance with the conditions of this Permit and approval from the Permit Holder.

5. Type of clearing authorised

This Permit authorises the Permit Holder to clear native vegetation for the activities described in condition 1 of this Permit to the extent that the Permit Holder has the power to carry out work involving clearing for those activities under the *Local Government Act 1995* or any other written law.

PART II – MANAGEMENT CONDITIONS

6. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

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

7. Dieback and weed control

When undertaking any clearing or other activity authorised under this Permit, the Permit Holder must take the following steps to minimise the risk of the introduction and spread of *weeds* and *dieback*:

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

8. Flora management

The Permit Holder shall retain a 50 metre vegetated buffer to records of Threatened flora *Conostylis lepidospermoides* within the area cross-hatched red on attached Plan 8608/1b.

9. Flora management

The Permit Holder shall not clear native vegetation between 1 August and 30 November within the area cross-hatched red on attached Plans 8608/1a and 8608/1f to avoid the flowering period of priority flora *Bentleya diminuta*.

10. Fauna management - direction of clearing

The Permit Holder shall conduct clearing in a slow progressive manner from one direction to the other (e.g. east to west) to allow fauna to move into adjacent native vegetation ahead of the clearing activity.

11. Trees not authorised to clear

This Permit does not authorise the Permit Holder to clear salmon gum (*Eucalyptus salmonophloia*) trees with a diameter at breast height of 50 centimetres or greater, within the area cross-hatched red on Plan 8608/1d.

12. Threatened ecological community management

The Permit Holder shall not clear more than 12.5 hectares of vegetation representative of the 'Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia' ecological community.

13. Carnaby's cockatoo habitat management

The Permit Holder shall not clear more than 13.73 hectares of vegetation that provides suitable foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*).

14. Vegetation management

The Permit Holder shall not clear more than:

- (a) 6.90 hectares of vegetation that is representative of Beard vegetation association 512; and
- (b) 1.20 hectares of vegetation that is representative of Beard vegetation association 4801.

15. Period in which clearing is authorised

The Permit Holder must ensure that road widening and upgrade activities occur within three months of the authorised clearing being undertaken.

16. Revegetation and rehabilitation

The Permit Holder shall, within the area cross-hatched red on attached Plan 8608/1e:

- (a) Retain the vegetative material and topsoil removed by clearing authorised under this Permit and stockpile the vegetative material and topsoil in an area that has already been cleared.
- (b) At an *optimal time* within 12 months following completion of material extraction, *revegetate* and *rehabilitate* the areas cleared for temporary works, by:
 - (i) ripping the ground on the contour to remove soil compaction;
 - (ii) laying the vegetative material and topsoil retained under condition 16(a) on the cleared areas that are no longer required for the purpose for which they were cleared under the Permit; and
 - (iii) undertake additional *planting* as required, ensuring only *local provenance* propagating materials are used to *revegetate* the area.

17. Offset – Crown Reserve 26912

By 26 June 2021, the Permit Holder shall provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red on attached Plan 8608/1i within Crown Reserve 26912 from 'parkland and recreation' to 'conservation'.

18. Offset – Crown Reserve 27365

By 26 June 2021, the Permit Holder shall provide to the *CEO* a copy of the executed change in purpose of the area cross-hatched red on attached Plan 8608/1j within Crown Reserve 27365 from 'aerial landing ground' to 'conservation'.

PART III - RECORD KEEPING AND REPORTING

19. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
 - (i) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
 - (ii) the date that the area was cleared;
 - (iii) the size of the area cleared (in hectares);
 - (iv) purpose for which clearing was undertaken;
 - (v) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of this Permit;
 - (vi) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 7 of this Permit;
 - (vii) activities taken in accordance with condition 8 of this Permit;
 - (viii) the dates clearing was undertaken within the area cross-hatched red on attached Plans 8608/1a and 8608/1f, in accordance with condition 9 of this Permit;
 - (ix) activities taken in accordance with condition 10 of this Permit;
 - (x) activities taken in accordance with condition 11 of this Permit;
 - (xi) the size of vegetation representative of the 'Proteaceae Dominated Kwongan Shrublands of the Southeast Coastal Floristic Province of Western Australia' ecological community cleared (in hectares) in accordance with condition 12 of this Permit;

- (xii) the size of vegetation that provides suitable foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*) cleared (in hectares) in accordance with condition 13 of this Permit;
- (xiii) the size of vegetation that is representative of Beard vegetation associations 512 and 4801 cleared (in hectares) in accordance with condition 14 of this Permit; and
- (xiv) the date road widening and upgrade activities commenced following cessation of authorised clearing in accordance with condition 15 of this Permit.

(b) In relation to the Revegetation and Rehabilitation done pursuant to condition 16 of this Permit:

- (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
- (ii) the location of any areas *revegetated* and *rehabilitated*, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;
- (iii) the size of the area *revegetated* and *rehabilitated* (in hectares); and
- (iv) the species composition, structure and density of *revegetation* and *rehabilitation*.

20. 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 19 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 has been undertaken, a written report confirming that no clearing under this Permit has been undertaken, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 26 January 2030, the Permit Holder must provide to the *CEO* a written report of records required under condition 19 of this Permit where these records have not already been provided under condition 20(a) of this Permit.

DEFINITIONS

The following meanings are given to terms used in this Permit:

CEO means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*

dieback means the effect of *Phytophthora* species on native vegetation

fill means material used to increase the ground level, or fill a hollow

local provenance: means native vegetation propagating material from natural sources within the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

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

optimal time: means the period April to May for undertaking *planting* (for the Goldfields/Esperance region);

planting: means the re-establishment of vegetation by creating favourable soil conditions and planting saplings of the desired species.

rehabilitate/ed/ion means actively managing an area containing native vegetation in order to improve the ecological function of that area;

revegetate/ed/ion: means the re-establishment of a cover of local provenance native vegetation in an area using planting methods;

weed/s means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;
or
- (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.



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

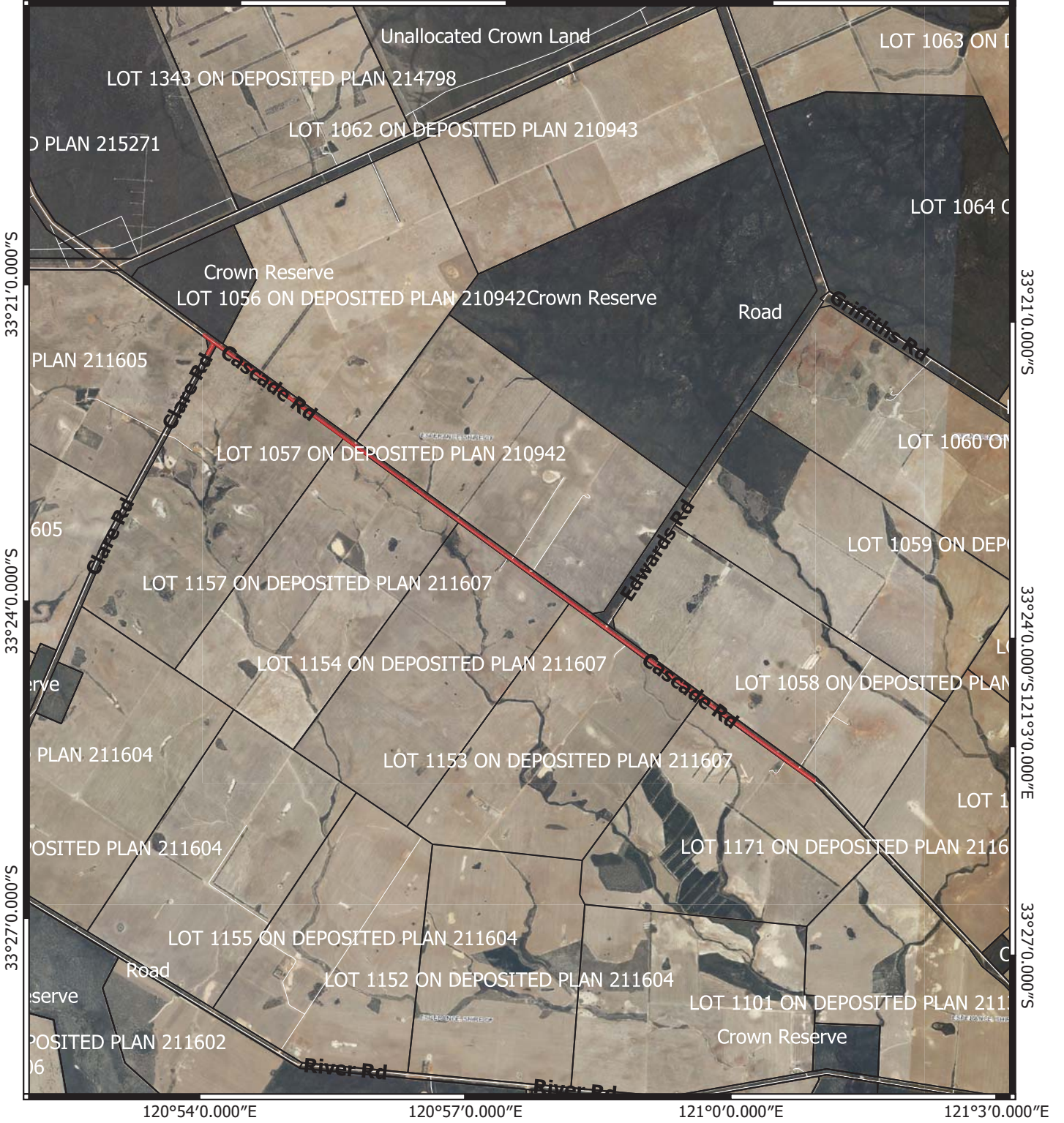
4 June 2020

Plan 8608/1a



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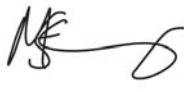
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-  Cadastre

base layers
Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)

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GOVERNMENT OF WESTERN AUSTRALIA




Plan 8608/1b

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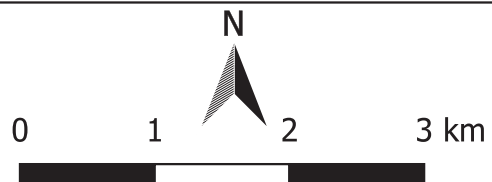
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GOVERNMENT OF
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Plan 8608/1c



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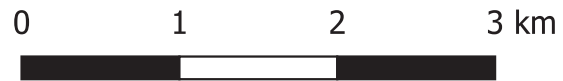
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Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)



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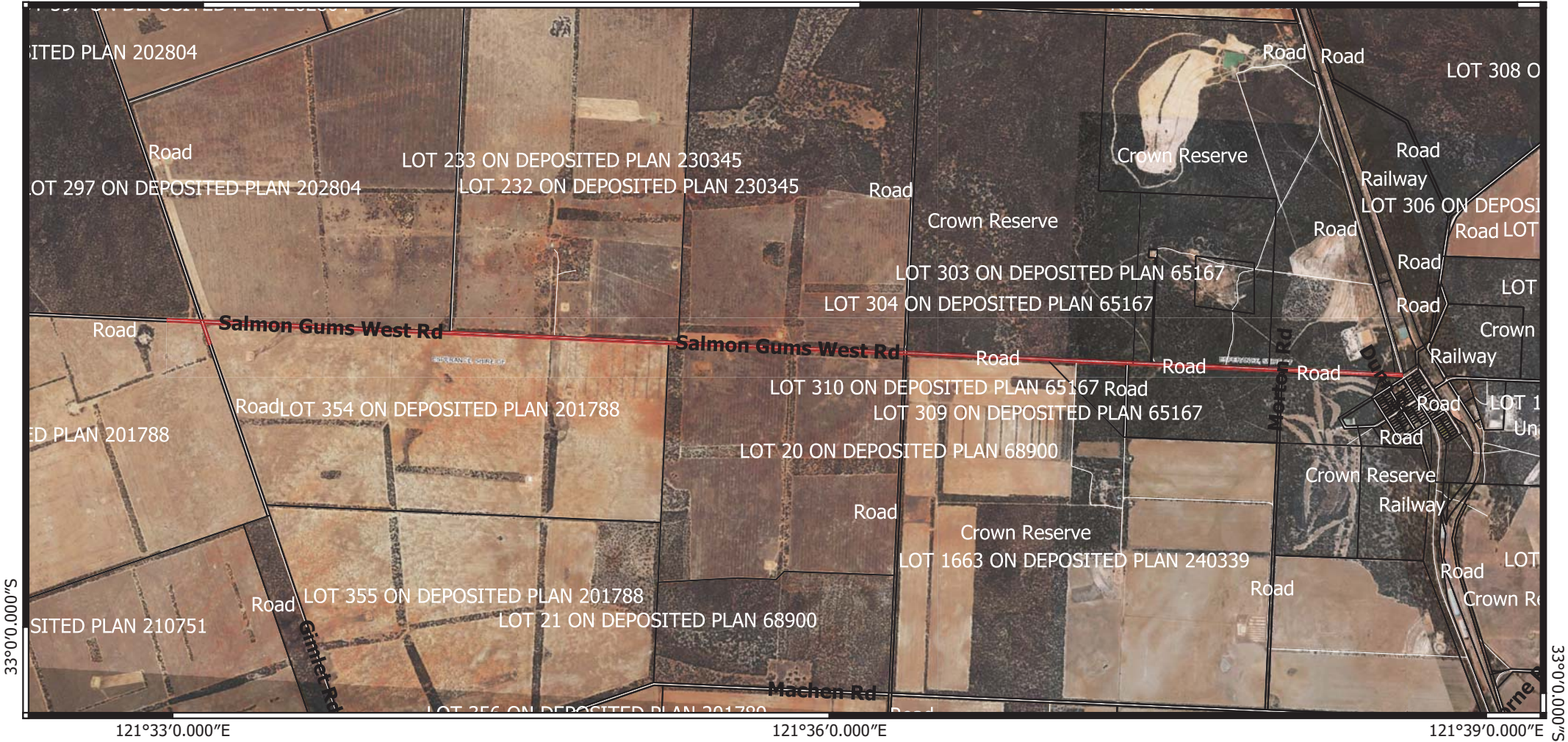


Plan 8608/1d

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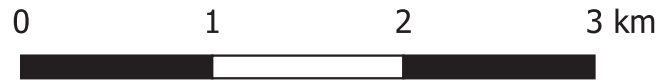
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Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)



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Plan 8608/1e


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CPS layers

 CPS subject to conditions

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Road Centrelines

 Cadastre - LGATE 218

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Plan 8608/1f

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Legend

CPS layers

 CPS subject to conditions

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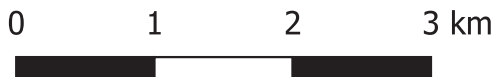
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 Cadastre - LGATE 218

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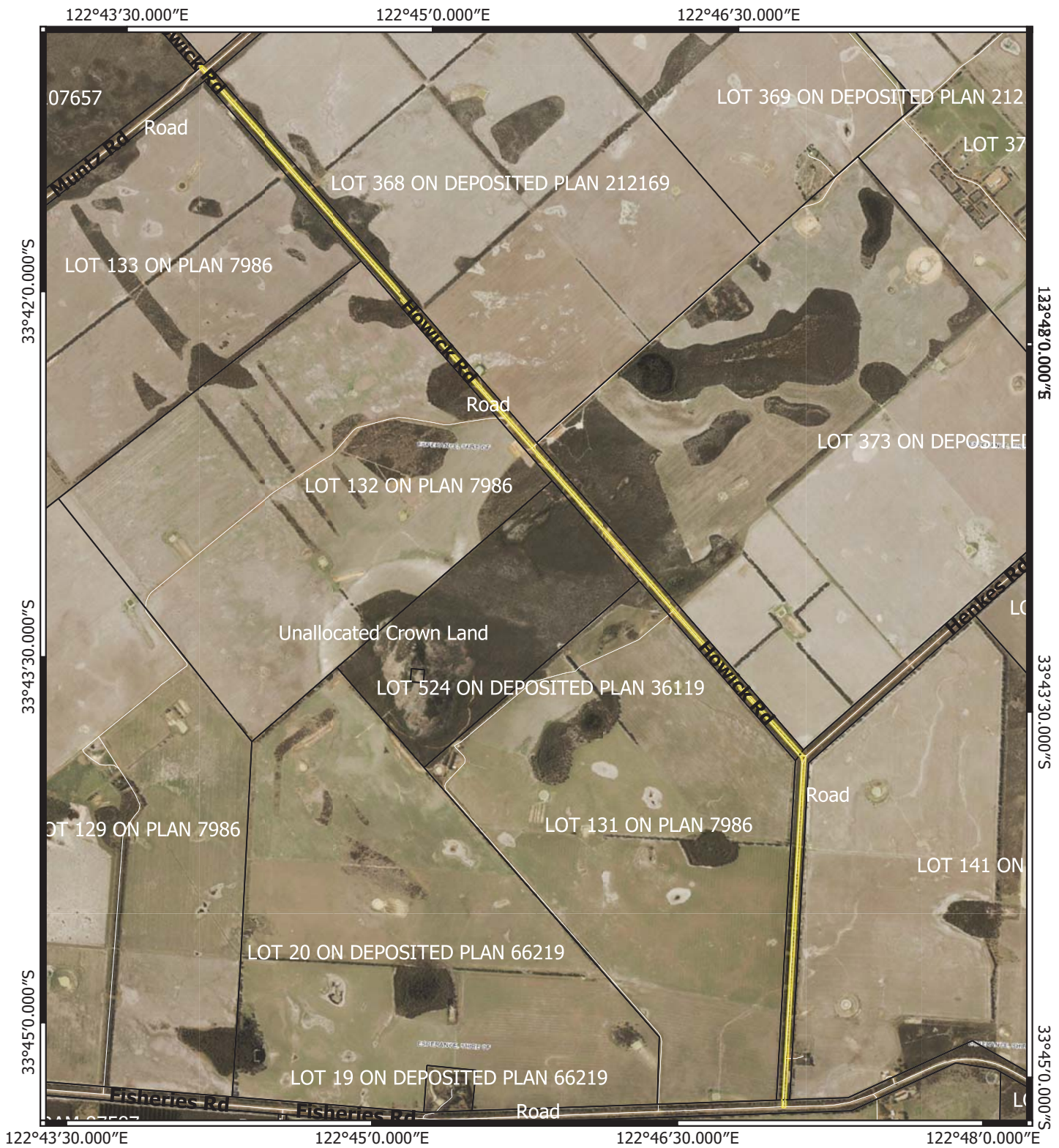
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GOVERNMENT OF
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Plan 8608/1g



Legend

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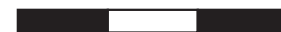
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Local Government Authority (LGA) Boundaries (LGATE-233)

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GOVERNMENT OF
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Plan 8608/1h

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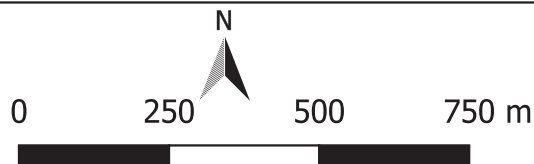
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Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)




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GOVERNMENT OF
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Plan 8608/1i



Legend

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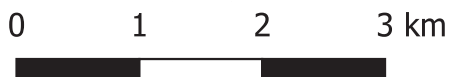
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Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)

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GOVERNMENT OF
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Plan 8608/1j

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base layers

Road Centrelines

Local Government Authority (LGA) Boundaries (LGATE-233)

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Environmental Protection Act 1986



GOVERNMENT OF
WESTERN AUSTRALIA



1. Application details

1.1. Permit application details

Permit application No.: 8608/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Esperance
Application received date: 05 July 2019

1.3. Property details

Property: Cascade Road reserve (PINs 11465894, 11642268 and 11642734), Cascade River Road reserve (PINs 11465893, 11642269 and 11642735), Cascade Oldfield Road reserve (PIN 11642041), Cascade Neds Corner Road reserve (PIN 11642046), Cascade Clare Road reserve (PIN 11642039), Cascade Howick Road reserve (PIN 11644423), Condingup Howick Road reserve (PINs 11645173 and 11644424), Howick Fisheries Road reserve (PIN 11645708), Howick Muntz Road reserve (PIN 11645175), Howick Salmon Gums West Road reserve (PINs 11283289, 11425953, 11688324, 11688323, 11645103, 11688318, 11688319 and 11687112), Salmon Gums Gimlet Road reserve (PIN 11688317), Salmon Gums
Local Government Authority: Shire of Esperance
Localities: Cascade, Condingup, Howick and Salmon Gums.

1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
34.43		Mechanical Removal	Road construction or upgrades
2.38		Mechanical Removal	Gravel extraction

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 4 June 2020

Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance with principles (a), (b), (e) and (f), may be at variance with principle (h), and is not likely to be at variance with the remaining principles.

The applicant has implemented or committed to a number of minimisation and mitigation measures, including the following:

- a total reduction of 9.68 hectares of proposed clearing from the initial design to final design; and
- avoidance of a number of threatened and priority flora individuals and old-growth salmon gum (*Eucalyptus salmonophloia*) trees.

Taking into account the above measures, the Delegated Officer considers that the following significant residual impacts remain:

- loss of 13.73 hectares of foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*);
- loss of 12.54 hectares of native vegetation that is representative of the federally listed threatened ecological community (TEC) 'Proteaceae Dominated Kwongan Shrublands of the southeast coastal floristic province of Western Australia';
- loss of 6.90 hectares of the highly cleared Beard Vegetation Association (BVA) 512;
- loss of 1.20 hectares of the highly cleared BVA 4801; and
- loss of 22.56 hectares of native vegetation that is a significant remnant within a highly cleared area.

Consistent with the Western Australian Environmental Offset Policy (2011) and WA Environmental Offsets Guidelines (2014), and pursuant to section 51(2)(b) of the EP Act, in order to mitigate the significant residual impacts described above, the Permit Holder is required to provide an offset involving the acquisition and conservation of:

- 153.3 hectares of native vegetation representative of BVA 512 within Crown Reserve 26912 (Roberts Swamp); and

- 193.7 hectares of native vegetation representative of the federally listed TEC 'Proteaceae Dominated Kwongkan Shrublands of the southeast coastal floristic province of Western Australia' within Reserve 27365.

In addition to the above, the Permit Holder is required to use six hectares of vegetation representative of BVA 4801 within Reserve 26257, a banked offset approved under CPS 7188/2.

The additional land within Reserves 26912 and 27365 proposed to be included in land acquisition and change in reserve purpose exceeds that required to offset the identified impacts. The Delegated Officer approves the banking of the remaining 1507.6 hectares within Reserve 26912 and 20.16 hectares within Reserve 27365 as a pre-impact offset in accordance with the WA Environmental Offsets Guidelines (2014).

To minimise other potential impacts, as a condition of the clearing permit, the applicant will be required to undertake the following measures:

- undertake slow, progressive one directional clearing to allow terrestrial fauna to move into adjacent habitat ahead of the clearing activity;
- implement weed and dieback management measures to reduce the risk of spread, including;
 - cleaning machines of soil and vegetation before entering and leaving the application area
 - prohibiting the movement of machines between dieback infested and non-infested areas until those machines have been cleaned of soil and vegetation
 - ensuring that no known dieback or weed-affected soil, mulch, fill or other material is brought into the application area
 - restricting the movement of machines and other vehicles to the limits of the areas to be cleared.
- undertake activities within three months of clearing to reduce the exposure time of bare sandy soils and minimise the risk of land degradation through wind erosion.

The roads proposed to be widened are part of a major transport route to the Beaumont CBH grain receival facility, resulting in a high amount of road trains and other traffic. The Delegated Officer took into consideration that the road upgrades are required to improve road safety and to align with current road safety design standards.

In granting a clearing permit subject to the above requirements, the Delegated Officer determined that the proposed clearing is not likely to lead to an unacceptable risk to the environment.

2. Site information

Clearing Description The application is for the proposed clearing of up to 36.81 hectares of native vegetation within the land parcels listed above (section 1.3) within the Shire of Esperance for the purposes of road construction and upgrades between six project areas, and gravel extraction within the River Road project area (Shire of Esperance, 2019). Table 1 below shows the naming conventions for the seven project areas that amount to the proposed 36.81 hectares of clearing.

Table 1: Project areas within CPS 8608/1

Project Area	Clearing size (hectares)
Cascade and Clare Roads	11.87
Neds Corner Road	2.55
Cascade, River and Oldfield Roads	6.35
Salmon Gums West and Gimlet Roads	5.52
River Road	2.38
Howick Road	4.3
Muntz, Howick and Fisheries Road	3.84

Comment The term 'application area' used throughout the assessment refers to the areas proposed to be cleared as a whole, while the term 'project area' refers to individual areas proposed to be cleared as listed in Table 1.

The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of each project area.

The federally listed TEC 'Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia' is hereon referred to as Kwongkan Shrublands.



Figure 1: Project areas within Cascade, Shire of Esperance

Note: The project areas have been enlarged for visibility and the colours used relate to Table 1



Figure 2: Project areas within Salmon Gums, Shire of Esperance

Note: The project areas have been enlarged for visibility and the colours used relate to Table 1



Figure 3: Project areas within Howick and Condingup, Shire of Esperance

Note: The project areas have been enlarged for visibility and the colours used relate to Table 1

Vegetation description

The application area intersects nine mapped BVAs (47, 128, 486, 512, 516, 519, 929, 931 and 4801) across two Interim Biogeographic Regionalisation for Australia (IBRA) bioregions, Esperance Plains and Mallee (Table 2).

Table 2: Project area Beard vegetation association descriptions

Project Area	Beard vegetation association	Beard vegetation association description (Shepherd et al., 2001)	IBRA Bioregion
Cascade and Clare Roads	512	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i> and Forrest's marlock (<i>Eucalyptus forrestiana</i>)	Mallee
	519	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i>	
	47	Medium woodland; York gum	
Neds Corner Road	47	Medium woodland; York gum	Esperance Plains
	512	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i> and Forrest's marlock (<i>Eucalyptus forrestiana</i>)	
	519 929	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i> Low forest, moort (<i>Eucalyptus platypus</i>)	
Cascade, River and Oldfield Roads	512	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i> and Forrest's marlock (<i>Eucalyptus forrestiana</i>)	Mallee
	47	Medium woodland; York gum	
	519	Shrublands; mallee scrub, <i>Eucalyptus eremophila</i>	
Salmon Gums West and Gimlet Roads	486	Mosaic: Medium woodland; salmon gum & red mallee/Shrublands; mallee scrub, <i>Eucalyptus eremophila</i>	Mallee
River Road	47	Medium woodland; York gum	Mallee
Howick Road	47	Medium woodland; York gum	Esperance Plains Mallee Esperance Plains
	516	Shrublands; mallee scrub, black marlock	
	931	Medium woodland; Yate	
Muntz, Howick and Fisheries Road	47	Medium woodland; York gum	Esperance Plains
	128	Bare areas; rock outcrops	
	516	Shrublands; mallee scrub, blue mallee (<i>Eucalyptus socialis</i>)	
	4801	Shrublands; mallee scrub, <i>Eucalyptus eudesmioides</i>	

Surveys undertaken and findings

The applicant provided a number of surveys under previous applications within the project areas (previous applications are discussed in Planning and other matters below). A summary of the timing and findings of these surveys is provided below (Shire of Esperance 2016; 2017a-h; 2018a-b).

Vegetation condition recorded across the application area ranges from Completely Degraded to Excellent using the Keighery (1994) scale (Table 3).

Vegetation condition ratings are defined as follows:

- Pristine: Pristine or nearly so, no obvious signs of disturbance (Keighery, 1994).
- Excellent: Vegetation structure intact, disturbance affecting individual species and weeds are non-aggressive species (Keighery, 1994).
- Very Good: Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).
- Good: Vegetation structure significantly altered by very obvious signs of multiple disturbance; retains basic structure or ability to regenerate (Keighery 1994).
- Degraded: Basic vegetation structure severely impacted by disturbance; scope for regeneration but not to a state approaching Good condition without intensive management (Keighery 1994).
- Completely Degraded: The structure of the vegetation is no longer intact and the area is completely or almost completely without native species (Keighery, 1994).

Table 3: Surveys completed and findings

Project Area	Title of Survey	Survey dates	Comments on environmental values from surveys
Cascade and Clare Roads	Cascade Road Construction Project-Vegetation, flora, fauna and environmental considerations report	February 2017	<p>Vegetation condition: Excellent to completely degraded. Mostly in excellent condition.</p> <p>Four vegetation communities were identified:</p> <ul style="list-style-type: none"> • Mallee over Melaleuca shrubland; • Tallerack and <i>Banksia media</i> heath; • Eucalyptus woodland over Melaleuca shrubland; and • Heath. <p>Approximately 2.376 hectares of the application area intersects Kwongkan Shrublands.</p> <p>No threatened or priority flora were recorded during the survey. No weeds were recorded within the project area.</p>
	Unpublished-Targeted Search for <i>Bentleya diminuta</i>	October 2017	Five live plants of <i>Bentleya diminuta</i> (P2) recorded within a 10 metre squared area.
Neds Corner Road	Neds Corner Road-Vegetation, flora, fauna and environmental considerations report	February 2017	<p>Vegetation condition: Excellent to completely degraded. Majority in very good to excellent.</p> <p>Five vegetation communities were identified:</p> <ul style="list-style-type: none"> • <i>Eucalyptus eremophila</i> over Melaleuca shrubland; • Heath; • <i>Eucalyptus pleurocarpa</i> over mixed heath; • Mixed heath; and • Tallerack over mixed heath. <p>Approximately 1.97 hectares of the application area intersects Kwongkan Shrublands.</p> <p>No threatened or priority flora recorded during survey. However, the survey noted that two species, <i>Daviesia pauciflora</i> (P3) and <i>Conostylis lepidospermoides</i> (T) may occur within the application area but were unable to be identified due to timing of survey.</p> <p>Weeds, namely *<i>Eragrostis curvula</i> (African Lovegrass), was found extensively within the project area, particularly in historic roadside gravel pits.</p>
	Neds Corner Road Construction Project-Spring Survey Report	November 2017	<p>Seven individuals of <i>Conostylis lepidospermoides</i> (T) recorded within survey area, survey notes that the proposed clearing would avoid these individuals.</p> <p>Ten individuals of <i>Daviesia pauciflora</i> (P3) were recorded, two of which would likely be removed as a result of clearing.</p> <p>Thousands of the Priority 4 species, <i>Eucalyptus stoatei</i> were recorded within the survey area. The applicant has noted that these individuals would only be trimmed and are not likely to be impacted by the proposed clearing.</p>

Project Area	Title of Survey	Survey dates	Comments on environmental values from surveys
Cascade, River and Oldfield Roads	River Road Construction Project- Vegetation, Flora, Fauna and environmental considerations report	February 2017	<p>Vegetation condition: Excellent to completely degraded. Majority in very good to excellent.</p> <p>Six vegetation communities were identified:</p> <ul style="list-style-type: none"> • Mallee over Melaleuca shrubland; • Mallee thicket over Melaleuca shrubland; • Acacia / Leptosperma mixed shrubland; • <i>Eucalyptus occidentalis</i> forest; • Tallerack over mixed heath; and • Open mallee over melaleuca shrubland. <p>Approximately 1.2 hectares of the application area intersects Kwongkan Shrublands.</p> <p>No threatened or priority flora recorded during survey. No declared weeds were recorded within the project area.</p>
Salmon Gums West and Gimlet Road	Salmon Gums West Road Construction Project- Vegetation, Flora, Fauna and environmental considerations report	July 2017	<p>Vegetation condition: Very good to excellent. Majority in excellent condition.</p> <p>Six vegetation communities were identified:</p> <ul style="list-style-type: none"> • Eucalyptus woodland over Melaleuca shrubland; • Open <i>Eucalyptus salmonophloia</i> woodland; • Mixed <i>Eucalyptus grossa</i> / broombush scrub; • Shrubland; • Open Eucalyptus woodland over open Melaleuca shrubland; and • Eucalyptus woodland over shrubland. <p>Kwongkan Shrublands was not identified within the project area.</p> <p>Six individuals of <i>Eremophila compressa</i> (P3) would be impacted, however the loss of individuals is not expected to impact the local population.</p> <p><i>Acacia amyctica</i> (P2) and <i>Grevillea aneura</i> (P4) individuals are likely to be removed but number was not specified.</p> <p>The project area has a number of large old growth <i>Eucalyptus salmonophloia</i> (Salmon Gums) with hollows present which could provide fauna habitat. Old growth Salmon Gums within the project area are not proposed to be cleared.</p> <p>The vegetation was noted to likely function as a corridor for fauna movement.</p>
River Road	River Road Gravel Extraction Flora Survey	October 2017	<p>Vegetation condition: Excellent.</p> <p>The survey described the vegetation within the project area as '<i>Eucalyptus tetragona</i> mallee over mixed heath'.</p> <p>The whole project area (2.38 ha) intersects Kwongkan Shrublands.</p> <p>No priority or threatened species were found during this survey. There was no evidence of dieback or weeds within the project area.</p>
Howick Road	Howick Road North Construction Project- Vegetation, Flora, Fauna and environmental considerations report	December 2017	<p>Vegetation condition: Very good to degraded. Majority in Very good condition.</p> <p>Eight vegetation communities were identified:</p> <ul style="list-style-type: none"> • Open Eucalyptus woodland over mixed Melaleuca shrubland, with scattered <i>Banksia media</i> and <i>Hakea laurina</i>; • <i>Banksia armata</i> dominated shrubland; • <i>Hakea laurina</i> over Melaleuca shrubland; • Eucalypt over melaleuca shrubland; • Yate woodland; • Hakea shrubland;

Project Area	Title of Survey	Survey dates	Comments on environmental values from surveys
			<ul style="list-style-type: none"> • <i>Banksia speciosa</i> woodland; and • <i>Nuytsia floribunda</i> and tallerack over mixed heath. <p>Approximately 1.42 hectares of the application area intersects Kwongkan Shrublands.</p> <p>A population of <i>Grevillea baxteri</i> (P4) was recorded but not counted. Three individuals of this species are likely to be impacted by the proposed clearing.</p> <p>Presence of Carnaby's cockatoo foraging habitat was noted.</p>
	Targeted Flora Survey Report-Howick Road North Construction Project	October 2018	<p>The survey recorded 201 flora species within the Project Area.</p> <p>Two populations of <i>Grevillea baxteri</i> (P4) were recorded. One population consists of 11 individuals, five of which are likely to be removed. The other population consisted of nine individuals, four of which would be removed by the proposed clearing.</p> <p><i>Bentleya diminuta</i> (P2) was recorded at one location, within both sides of the road reserve. The population contained up to 1000 ramets but it is unknown how many individuals this included. This species was located on the road shoulder and is within the clearing footprint.</p> <p>A recent submission by the Shire noted an opportunistic sighting of a Priority 3 species, <i>Daviesia pauciflora</i> within the proposed clearing area. The sighting noted up to three plants at one location.</p>
Muntz, Howick and Fisheries Road	Howick Road South Construction Project (Muntz to Fisheries Rd) – Vegetation, Flora, Fauna and Environmental Considerations Report	December 2017	<p>Vegetation condition: Excellent to degraded. Majority in Very Good condition.</p> <p>Eight vegetation communities were identified:</p> <ul style="list-style-type: none"> • Open Eucalyptus woodland over mixed <i>Hakea cinerea</i> dominated shrubland; • Yate Swamp; • Eucalyptus open woodland over <i>Banksia media</i> and <i>Hakea cinerea</i> dominated shrubland; • Tallerack mallee heath; • Closed mixed shrubland; • <i>Banksia armata</i> low heath; • <i>Melaleuca cuticularis</i> woodland; • <i>Nuytsia floribunda</i> over low mixed heath; and • Scattered pines and introduced Eucalypts over grasses with an occasional shrub <p>Approximately 2.83 hectares of the application area intersects Kwongkan Shrublands.</p> <p>Ten individuals of <i>Eucalyptus sweedmaniana</i> (P2) are likely to be impacted by the clearing.</p> <p>One individual of <i>Grevillea baxteri</i> (P4) is likely to be impacted by the clearing.</p>
	Targeted Flora Survey Report – Howick Road South Construction Project	September 2018	<p>Survey identified 209 flora species including 2 priority species <i>Grevillea baxteri</i> (P4) and <i>Eucalyptus sweedmaniana</i> (P2).</p> <p>Two populations of <i>Grevillea baxteri</i> (P4), one of which was previously identified. In total, it is estimated that 15 plants of this species within a population of at least 80 individuals will be removed.</p> <p>The second population of <i>Grevillea baxteri</i> (P4) consists of at least 25 individuals, it is estimated that 5 individuals from this population will be removed.</p>

Project Area	Title of Survey	Survey dates	Comments on environmental values from surveys
			<p><i>Eucalyptus sweetmaniana</i> (P2) was recorded as over 100 individuals at one location. The proposed clearing is likely to remove a maximum of 35 individuals</p> <p>No Threatened flora were recorded during this survey.</p> <p>Carnaby's cockatoo were observed to be feeding in a stand of Eucalyptus with mixed Hakea mid-storey, a flock of approximately 20 birds was present.</p>

Soils and landform

The application area has been mapped as the following land subsystems listed in Table 4.

Table 4: Description of soil types within application area (Schoknecht et al., 2004).

Project Area	Mapped soil types within project area	Description of soil type
Cascade and Clare Roads	Scaddan 6	Red-brown uniform siliceous sands.
	Scaddan 4	Red alkaline gradational soils.
Neds Corner Road	Esperance 1	Gravelly yellow mottled duplex soils (<30 cm sand over gravel).
	Scaddan 1	Alkaline solonetzic duplex soils.
	Munglinup 1	Externally drained plains and rises with gently inclined slopes some small level plains on upper slopes and catchment divides. Grey deep and shallow sandy duplex (gravelly) minor pale deep sands and gravelly duplex and deep sandy gravels.
Cascade, River & Oldfield Roads	Esperance 1	Gravelly yellow mottled duplex soils (<30 cm sand over gravel).
	Scaddan 6	Red-brown uniform siliceous sands.
	Scaddan 1	Alkaline solonetzic duplex soils.
Salmon Gums West Road	Salmon Gums 1	Level plain or plateau of low relief and poor external drainage and extensive Gilgia micro relief. Alkaline grey shallow sandy duplex soils and calcareous loamy earths with minor non-cracking clays.
	Salmon Gums 2	Very gently inclined scarp with external drainage via a well-developed network of incipient streams. Alkaline grey shallow sandy duplex soils and calcareous loamy earths with minor non-cracking clays and bare rock.
	Salmon Gums 3	Seasonally inundated generally fresh water swamps. Grey non-cracking clays seasonally inundated.
River Road	Scaddan 6	Red-brown uniform siliceous sands.
	Scaddan 8	Soil complex, S2 + S3.
Howick Road	Scaddan 10	Slightly elevated gently undulating plain. Tertiary marine sediments / Prot. granite and gneiss. Alkaline grey shallow sandy duplex soils and calcareous loamy earths. Mallee shrubland / Melaleuca species with E. occidentalis woodland in Swamps.
	Scaddan 9	Soil complex, S1 + S2.
	Esperance 6	Red-brown to grey brown alluvial sands.
	Condingup 1	Gently undulating plain with subdued sandsheets and dunes. Aeolian sands / Pallinup formation. Pale deep sands and associated grey deep sandy duplex soils (some gravelly). Shrubland of <i>Banksia speciosa</i> and associated mallee heath.
Muntz, Howick and Fisheries Road	Esperance 6	Red-brown to grey brown alluvial sands.
	Esperance 2	Gravelly yellow mottled duplex soils, (30-80 cm sand over gravel).
	Esperance 5	Shallow grey-brown duplex soils developed over spongelite.
	Ney 2	Gently inclined to moderately inclined hillslopes. Proterozoic granite and gneiss and associated colluvium. Grey deep sandy duplex soils and pale deep sands with minor shallow gravel and grey non-cracking clays. Heath and shrubland.
	Condingup 1	Gently undulating plain with subdued sandsheets and dunes. Aeolian sands / Pallinup formation. Pale deep sands and associated grey deep sandy duplex soils (some gravelly). Shrubland of <i>Banksia speciosa</i> and associated mallee heath.

3. Minimisation and mitigation measures

The project areas which relate to the proposed road widening were considered, by the applicant, to be necessary for safe use by road trains as a part of haulage routes to grain terminals within the area. The current size of the roads used is considered to be of insufficient standard for use by road trains. Sources of gravel within the local area have been explored but it is considered by the applicant that sourcing gravel from the River Road project area is the most efficient. Minimisation and mitigation measures taken by the applicant are detailed in Table 5.

Table 4: Minimisation and mitigation measures for each project area

Project Area	Minimisation and mitigation measures
Cascade and Clare Roads	<ul style="list-style-type: none"> The applicant reduced the proposed clearing area from 13.35 hectares to 11.87 hectares; The proposed clearing is the minimum width required for road trains; and Spoon drains will be installed to prevent environmental damage to the surrounding native vegetation.
Cascade and River Roads	<ul style="list-style-type: none"> The proposed clearing area has been revised from 7.5 hectares to 6.35 hectares; The proposed clearing is the minimum width required for road trains; and Spoon drains will be installed to prevent environmental damage to the surrounding vegetation.
Neds Corner Road	<ul style="list-style-type: none"> The applicant reduced the proposed clearing area from 9.6 hectares to 2.55 hectares; The proposed clearing is the minimum width required for road trains; Spoon drains will be installed to prevent environmental damage to the surrounding native vegetation; and Threatened flora identified within the application area will be avoided with markers placed across 400 meters of the road reserve where the individuals occur. Works will not be undertaken within this area and a minimum of 50 metre buffer will be provided (Shire of Esperance, 2020).
Salmon Gums West and Gimlet Road	<ul style="list-style-type: none"> Avoidance and minimisation were considered by the applicant, however a reduction in proposed clearing for this project is not considered possible as the clearing is required to meet road safety standards; and Avoidance of all old-growth Salmon Gums.
River Road	<ul style="list-style-type: none"> The applicant noted the project for gravel extraction has been designed to minimise the area required for clearing; Access tracks for vehicles will be kept to a minimum to prevent environmental damage to the surrounding native vegetation; and The applicant will be required to revegetate the area following extraction activities.
Howick Road	<ul style="list-style-type: none"> The proposed clearing is the minimum width required for road trains; and Spoon drains will be installed to prevent environmental damage to the surrounding native vegetation.
Muntz, Howick and Fisheries Road	<ul style="list-style-type: none"> The proposed clearing is the minimum width required for road trains; and Spoon drains will be installed to prevent environmental damage to the surrounding native vegetation.

4. Assessment of application against clearing principles

(a) Native vegetation should not be cleared if it comprises a high level of biodiversity.

Proposed clearing is at variance with this Principle

Biodiversity is defined as the variability among living organisms and the ecosystems of which those organisms are a part and includes the following:

- diversity within native species and between native species;
- diversity of ecosystems; and
- diversity of other biodiversity components (which includes native species, habitats, ecological communities, genes, ecosystems and ecological processes).

As outlined in Section 2, the flora and vegetation surveys recorded a total of 34 different vegetation communities across the application area with vegetation condition ranging from Completely Degraded to Excellent (Table 3). The majority of the vegetation within the application area was recorded to be in Very Good and Excellent condition.

Table 6 details the biodiversity values of each project area.

Table 6: Project area biodiversity values

Project Area	Biodiversity values within Project Area
Cascade and Clare Roads	<p>This project proposes to clear 11.87 hectares of native vegetation within a footprint of 34.9 hectares. The majority of the project area comprises open Eucalyptus mallee woodland over Melaleuca shrubland in an excellent condition. Approximately 2.376 hectares of the project area is consistent with the Kwongkan Shrublands.</p> <p>The former Department of Parks and Wildlife (Parks and Wildlife) advised that a population of <i>Bentleya diminuta</i> (P2) was recorded within the application area in 2012 at the corner of Clare Road and Cascade Road (Parks and Wildlife, 2017a). This species was not identified during the applicant's flora survey conducted in February (Shire of Esperance, 2017a). This species is known from three populations within the Esperance area and two populations within the Wheatbelt area, therefore removing the population within the application area may significantly impact the conservation status of this species. A targeted survey was conducted by the Shire of Esperance in October 2017 which recorded 38 individuals of <i>Bentleya diminuta</i> (P2), 33 of which were dead (Shire of Esperance, 2017c). Additional advice from the Esperance Region of Department of Biodiversity, Conservation and Attractions (DBCA) (formally Parks and Wildlife) advised that this population is likely to have existed as a disturbance site for many years given its location and exposure to machinery works in the past and appears to be persisting. As long as there is viable seed store in the soil, this species should be able to recruit post clearing. Success of this recruitment will be increased if disturbance to the population is carried out after the plants have flowered and set seed which is between August and November (DBCA, 2017). Provided that the clearing does not occur during the flowering period of this species, it is not likely to have a significant impact on the conservation status of this species.</p> <p>The vegetation within this project area provides a linkage for local fauna between Griffiths Nature Reserve and other remnants in the area. The vegetation also contains foraging habitat for Carnaby's Cockatoo. Fauna are discussed further under Principle (b).</p> <p>Noting that the project area contains vegetation in an excellent condition which includes priority flora, Carnaby's cockatoo foraging habitat, an ecological linkage, and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.</p>
Neds Corner Road	<p>This project proposes to clear 2.55 hectares of native vegetation within a footprint of 25.82 hectares. The majority of the vegetation within the project area is in a very good to excellent condition, with some areas that have been cleared for crossovers or access tracks in degraded to completely degraded condition.</p> <p>A spring survey provided by the applicant (Shire of Esperance, 2017d) identified one threatened flora species, one Priority 3 (P3) species, and one Priority 4 (P4) flora species.</p> <p>Seven individuals of <i>Conostylis lepidospermoides</i> (T) were recorded within the project area. The Shire of Esperance advised that clearing of threatened flora within the project area will not occur and a minimum of a 50 metre buffer will be provided (Shire of Esperance, 2017i). Threatened flora are discussed further under Principle (c).</p> <p>Ten individuals of <i>Daviesia pauciflora</i> (P3) were recorded, two of which would likely be removed as a result of clearing. Given the limited impact, it is not considered likely for the proposed clearing to significantly impact the conservation status of this species.</p> <p>Thousands of the Priority 4 species, <i>Eucalyptus stoatei</i> were recorded within the survey area. The applicant has noted that <i>Eucalyptus stoatei</i> individuals would only be trimmed and are not likely to be impacted by the proposed clearing. Considering this, the proposed clearing is not likely to have a significant impact on local or regional populations of <i>E. stoatei</i>.</p> <p>The flora survey also identified that approximately 1.97 hectares of the vegetation within the project area was representative of the Kwongkan Shrublands.</p> <p>The vegetation within this project area also provides suitable foraging (proteaceous species) habitat for Carnaby's Cockatoo and may contain suitable habitat for <i>Isoodon obesulus fusciventer</i> (Quenda). Fauna are discussed further under Principle (b).</p> <p>Noting that the project area contains vegetation in very good to excellent condition which includes conservation significant flora, Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.</p>

<p>Cascade, River and Oldfield Roads</p>	<p>The project proposes to clear up to 6.35 hectares of native vegetation within a footprint of 30.06 hectares within the road reserves. The majority of the vegetation within the project area is in a very good to excellent condition, with some areas that have been cleared for crossovers or access tracks in degraded to completely degraded condition.</p> <p>A flora survey provided did not record any priority or threatened flora species (Shire of Esperance, 2017e). A site inspection identified approximately 1.2 hectares of vegetation within the project area may be representative of the Kwongkan Shrublands (DER, 2017).</p> <p>The vegetation within this project area also provides suitable foraging (Proteaceous species) habitat for Carnaby's Cockatoo and may contain suitable habitat for <i>Isoodon obesulus fusciventer</i> (Southern Brown Bandicoot). Fauna are discussed further under Principle (b).</p> <p>Noting that the project area contains vegetation in very good to excellent condition, Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.</p>
<p>Salmon Gums West Road</p>	<p>The project proposes to clear up to 5.52 hectares of native vegetation within a footprint of 17.56 hectares within a 8.8 kilometre section of Salmon Gums West Road reserve and Gimlet Road reserves. The vegetation within the project area is considered to be in a very good to excellent condition.</p> <p>A Level 1 Flora Survey recorded <i>Acacia amyctica</i> (P2), <i>Eremophila compressa</i> (P3) and <i>Grevillea aneura</i> (P3) within the project area (Shire of Esperance, 2017f). The applicant noted that six individuals of <i>Eremophila compressa</i> would be impacted by the proposed clearing but did not indicate the number of individuals of the other two priority species would be impacted by the proposed clearing. Records of <i>Acacia amyctica</i> (P2) and <i>Grevillea aneura</i> (P3) were located adjacent to the application area and it was considered that the proposed clearing would not impact the conservation status of these species.</p> <p><i>Acacia amyctica</i> is known from 13 records across a restricted distribution of 55 kilometres north-south and 88 kilometres east-west within the Shire of Esperance (Western Australian Herbarium, 1998-). Only two of the 13 records for this species are dated post-1994, being recorded in 2005 and 2009. The record dated 2009 is located in native vegetation adjacent to the application area, and it is therefore likely that the proposed clearing will not impact the conservation of <i>Acacia amyctica</i> on a local scale.</p> <p><i>Eremophila compressa</i> is known from 25 records across the Shire of Esperance and the eastern extent of the Shire of Ravensthorpe (Western Australian Herbarium, 1998-). Five of these records are directly adjacent to the application area, and the removal of six plants is not likely to impact the conservation of this species on a local scale.</p> <p><i>Grevillea aneura</i> is known from 45 records across the Shire of Kondinin, Lake Grace, Esperance and Ravensthorpe (Western Australian Herbarium, 1998-). The proposed clearing is not likely to impact the conservation of this species.</p> <p>The Department of Biodiversity, Conservation and Attractions (DBCA) advised that an additional species, <i>Thysanotus brachyantherus</i> (P2) may occur within the application area, as the survey was undertaken outside the flowering time for this species and it is difficult to identify when not in flower (DBCA, 2017). This species is known from 12 records, with four of these records dated post-2000 and the remainder recorded between 1960 and 1988. The nearest record for this species is approximately five kilometres from the application area, however this record is dated 1983 and its status is uncertain. Recent records occur in both the Shire of Dundas and the Shire of Esperance, with four records occurring in Cape Arid National Park. Similar vegetation extends past the western end of the application area and adjacent to the eastern portion of the application area, which is likely to provide suitable habitat for <i>Thysanotus brachyantherus</i> if it does occur within the application area. Given the availability of suitable habitat and records in conservation estate, the proposed clearing is not likely to impact the conservation of this species if it does occur within the application area.</p> <p>As discussed in Principle (b), the project area contains old-growth salmon gums that may provide a breeding habitat resource for Carnaby's cockatoo. The applicant has committed to avoiding large salmon gums with hollows (Shire of Esperance, 2017f), therefore the proposed clearing is not expected to impact Carnaby's breeding habitat.</p> <p>Noting that the project area contains vegetation in very good to excellent condition which includes priority flora species and potential Carnaby's cockatoo breeding habitat, the vegetation is considered to comprise a high level of biodiversity.</p>

River Road	<p>The project proposes to clear 2.38 hectares of native vegetation considered to be in excellent condition. Approximately 2.38 hectares of the vegetation within the project area is consistent with the Kwongkan Shrublands.</p> <p>A Level 1 flora survey provided by the applicant noted that no priority or threatened flora species were present in the project area during the survey (Shire of Esperance, 2017g). Advice from DBCA notes that the three priority flora species, <i>Dampiera orchardii</i> (Priority 2), <i>Eucalyptus stoatei</i> (Priority 4) and <i>Grevillea aneura</i> (Priority 4), located within the local area are distinctive and therefore it is considered the species would have been identifiable even if the flora survey was not within season (DBCA, 2018a).</p> <p>The vegetation within this project area provides suitable foraging (Proteaceous species) habitat for Carnaby's Cockatoo. The vegetation forms part of a vegetative corridor that may facilitate movement of fauna and is opposite a Shire of Esperance reserve, zoned recreation and conservation under the local Town Planning Scheme.</p> <p>Noting that the project area contains vegetation in an excellent condition, Carnaby's cockatoo foraging habitat, an ecological linkage and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.</p>
Howick Road	<p>This project proposes to clear up to 4.3 hectares of native vegetation within a footprint of 15.75 hectares. The project area comprises of eight vegetation types with vegetation considered to be in excellent to degraded condition. A portion of the vegetation within the project area (2.83 hectares) is consistent with the Kwongkan Shrublands.</p> <p>A Level 1 Flora survey recorded <i>Grevillea baxteri</i> (P4) within the application area (Shire of Esperance, 2017h). This species has also been recorded within other surveys within the local area, however the absence of full surveys of local populations has resulted in uncertainty of impacts to the species at the local level. DBCA have advised that although the proposed clearing is likely to impact the species at the local level, it is unlikely to impact the overall conservation of the species (DBCA, 2018b).</p> <p>Two populations of <i>Grevillea baxteri</i> (P4) were recorded during a targeted survey (Shire of Esperance, 2018b). One population consists of 11 individuals, five of which are likely to be removed with the proposed clearing. The other population consisted of nine individuals, four of which would be removed by the proposed clearing. Noting this, <i>Grevillea baxteri</i> (P4) will still remain within the road reserve.</p> <p>A targeted survey recorded <i>Bentleya diminuta</i> (P2) at one location, within both sides of the road reserve (Shire of Esperance, 2018b). The population was located on the road shoulder and contained up to 1,000 ramets, all within the clearing footprint. As considered under the Cascade and Clare roads project, as long as there is viable seed store in the soil, this species should be able to recruit post clearing and the success will be increased if disturbance to the population is carried out after the plants have flowered and set seed which is between August and November (DBCA, 2017). Provided that the clearing does not occur during the flowering period of this species, it is not likely to have a significant impact on the conservation status of this species.</p> <p>A recent submission by the Shire noted an opportunistic sighting of a Priority 3 species, <i>Daviesia pauciflora</i> within the proposed clearing area and noted that up to three individuals may be impacted (Shire of Esperance, 2019b).</p> <p>The project area may also contain suitable habitat for the threatened flora species <i>Anigozanthos bicolour</i> subsp. <i>minor</i>. No threatened flora were recorded in either of the surveys. Threatened flora are discussed in detail under Principle (c) below.</p> <p>No conservation significant fauna have been recorded within the local area, however, the vegetation types within the project area are likely to provide habitat for Carnaby's Cockatoo. As discussed under Principle (b), Carnaby's cockatoo has been significantly impacted by historical clearing and remaining suitable habitat for this species is likely to be significant.</p> <p>Noting that the project area contains vegetation in an excellent condition which includes priority flora species, Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.</p>

Muntz, Howick and Fisheries Road

The project is for the clearing of up to 3.84 hectares of native vegetation within a 24 hectare footprint, for the purpose of road widening. The vegetation within the project area comprises of nine vegetation types considered to be in excellent to degraded condition (Shire of Esperance, 2017). A portion of the vegetation within the project area (1.42 hectares) is representative of the Kwongkan Shrublands.

A targeted survey noted the presence of *Grevillea baxteri* (P4) and *Eucalyptus sweedmaniana* (P2) (Shire of Esperance, 2018a).

Two populations of *Grevillea baxteri* (P4), one of which was previously identified. In total, it is estimated that 15 plants of this species within a population of at least 80 individuals will be removed. The second population of *Grevillea baxteri* (P4) consists of at least 25 individuals, it is estimated that 5 individuals from this population will be removed.

Eucalyptus sweedmaniana (P2) was recorded as over 100 individuals at one location. The proposed clearing is likely to remove a maximum of 35 individuals.

Noting the limited impact to the priority flora above and the individuals that will remain, the proposed clearing is unlikely to impact the overall conservation of the species.

Of the fauna species of conservation significance recorded within the local area, Carnaby's cockatoo and the southern death adder is likely to utilise the application area. Fauna are discussed further under Principle (b).

Noting that the project area contains vegetation in an excellent condition which includes priority flora species, Carnaby's cockatoo foraging habitat and Kwongkan Shrublands, the vegetation is considered to comprise a high level of biodiversity.

Conclusion

Considering the information above, the application area comprises the following biodiversity values:

- Eight priority flora species, as indicated within Table 7. No significant impact on the conservation status of the priority flora species is expected

Table 7: Priority flora species within project areas

Priority flora species recorded	Total individuals / population recorded	Number of impacted individuals	Comments
<i>Acacia amyctica</i> (P2)	One population	unascertained	Known records of this species adjacent to Salmon Gums West road project area.
<i>Bentleya diminuta</i> (P2)	38 individuals and one population of up to 1,000 ramets	38 individuals and one population of up to 1,000 ramets	33 of the 38 individuals recorded within Cascade and Clare road project area were dead. Applicant will be required to avoid clearing during flowering period to increase success of recruitment.
<i>Eucalyptus sweedmaniana</i> (P2)	100 individuals	35 individuals	Limited impact
<i>Daviesia pauciflora</i> (P3)	13 individuals	5 individuals	Limited impact
<i>Eremophila compressa</i> (P3)	One population	6 individuals	Known records of this species adjacent to Salmon Gums West road project area.
<i>Grevillea aneura</i> (P3)	One population	unascertained	Known records of this species adjacent to Salmon Gums West road project area
<i>Eucalyptus stoatei</i> (P4)	>1000 individuals	-	Individuals will only be trimmed
<i>Grevillea baxteri</i> (P4)	125 individuals	29 individuals	Limited impact

- One threatened flora species was recorded at the Neds Corner Road project area. The applicant has advised that clearing of threatened flora within the application area will not occur (discussed further under Principle (c));
- The proposed clearing will result in the loss of up to 12.54 hectares of the Kwongkan Shrublands. The Kwongkan Shrublands are listed as an endangered TEC under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and as a Priority 3 priority ecological community (PEC) by DBCA. The proposed clearing of up to 12.54 hectares of the Kwongkan Shrublands represents a relatively small proportion of its current extent, however, cumulative impacts to the federally listed TEC are considered significant, incremental and ongoing;
- No impacts on any state listed TECs;
- Significant habitat for indigenous fauna including 13.73 hectares of Carnaby's cockatoo (*Calyptorhynchus latirostris*) foraging habitat, listed as Endangered under the EPBC Act and the BC Act (discussed under Principle (b));
- Application area contains 6.90 hectares of BVA 512 and 1.20 hectares of BVA 4801, both of which are extensively cleared; and
- Vegetation that contributes to an ecological linkage, facilitating fauna movement across the landscape (discussed under Principle (b)).

Given the above, the proposed clearing is at variance with this Principle.

(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.

Proposed clearing is at variance with this Principle

According to available databases, 12 conservation significant fauna species have been recorded in the local area of the project areas. Of these, the following five are considered to utilise the project areas:

- Carnaby's cockatoo (*Calyptorhynchus latirostris*), listed as Endangered under the EPBC Act and the BC Act;
- Malleefowl (*Leipoa ocellata*), listed as Vulnerable under the EPBC Act and the BC Act;
- Southern death adder (*Acanthopis antarcticus*) listed as Priority 3 by DBCA;
- Quenda (*Isoodon obesulus* subsp. *fusciventer*), listed as Priority 4 by DBCA; and
- Chuditch (*Dasyurus geoffroi*), listed as vulnerable under the EPBC Act and the BC Act.

Carnaby's cockatoo

Carnaby's cockatoo nests in hollows in live or dead trees of wandoo, York gum, salmon gum, powderbark wandoo (*Eucalyptus accedens*), marri (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*), flooded gum (*Eucalyptus rudis*), tuart (*Eucalyptus gomphocephala*) and karri (*Eucalyptus diversicolor*) (Commonwealth of Australia, 2012). This species forages on the seeds, flowers and nectar of native proteaceous plant species (e.g. *Banksia*, *Hakea* and *Grevillea* species), *Eucalyptus* and *Callistemon* species (Commonwealth of Australia, 2012). All of the project areas, with the exception of Salmon Gums West and Gimlet Road project area, contain vegetation that comprise of the common foraging items for Carnaby's cockatoo. While there is an absence of foraging habitat within the Salmon Gums West and Gimlet Road project area, the applicant has advised that the project area contains a number of large, old-growth salmon gum (*Eucalyptus salmonophloia*) trees which contain a number of hollows (Shire of Esperance, 2017f). These trees may provide breeding habitat for Carnaby's cockatoo and are considered significant fauna habitat due to the limited resource in the area. However, the applicant has advised that these large trees will not be cleared (Shire of Esperance, 2017f) therefore impacts to potential Carnaby's cockatoo breeding habitat are avoided within this project area.

Carnaby's cockatoo has been significantly impacted by historical clearing of its habitat and as a result it is estimated that this species has disappeared from more than one-third of its historical breeding range (EPA, 2019). Broad-scale clearing of native vegetation has resulted in fragmentation of breeding and foraging habitat, loss of breeding hollows, changes in the species distribution, and genetic partitioning (EPA, 2019). The EPA's technical guidance notes that "this species is reliant on the maintenance of resources over multiple bioregions, which adds an extra complexity to its conservation. To address this, mitigation must be applied across the species range" (EPA, 2019). Noting this, it is considered that the remaining suitable habitat for this species within its current range is likely to be significant.

Specifically, it is considered that the foraging habitat within the application area is significant for Carnaby's cockatoo due to the following reasons:

- the extent of foraging habitat within the application area (13.73 hectares);
- the dominance of native proteaceous plant species which are a preferred foraging species;
- the very good to excellent condition of the vegetation;
- Carnaby's cockatoo foraging evidence was identified within the application area; and
- the local area surrounding the project areas has been extensively cleared and retains an average of 21 per cent native vegetation.

Malleefowl

Malleefowl are found in arid and semi-arid areas dominated by mallee eucalypts on sandy soils (DPaW, 2016). They are known to also occur in Mulga (*Acacia aneura*), Broombush (*Melaleuca uncinata*), Scrub Pine (*Callitris verrucosa*), *Eucalyptus* woodlands and coastal heathlands. Malleefowl require abundant leaf litter and a sandy substrate for the successful construction of nest mounds (DPaW, 2016). Its remaining populations are highly fragmented due to extensive land clearing. Noting its known habitats, the application area may provide habitat for malleefowl. However, given the presence of nature reserves and larger extents of remnant vegetation within the local area, the linearity of the application area and that the proposed clearing will occur adjacent to an existing road, the application area is not likely to provide significant habitat for this species.

Southern death adder

The Southern death adder has been recorded within the local area of Muntz, Howick and Fisheries Road project. This species is known from Yanchep to Pinjarra and inland to Narrogin and Cunderdin within its northern population extent, and from Hopetoun to the Western Australian - South Australian border within 200 kilometres of the coastline in its southern population extent. This species occurs within a wide variety of habitats in association with deep leaf litter, including coastal heathlands and chenopod dominated shrublands (DEHP, 2015). Based on the known habitat of this species and the habitat present within the application area, it is considered likely that the species inhabits vegetation within the application area. However given the range of this species, and that it occupies a wide range of habitats, the application area is not likely to provide significant habitat for this species. Mechanical clearing activities would however pose a risk of fauna fatalities should this species occur within the application area. Slow, directional clearing may allow for dispersal of this species into other areas of remnant vegetation.

Quenda

The Quenda is known to inhabit areas of dense understory, scrubby, often swampy vegetation and are often associated with areas close to freshwater. The quenda often feeds in areas of pasture and croplands lying close to dense cover (Department of Environment and Conservation [DEC], 2012a). Recordings of this species are within the local area of project areas within the Cascade area. It is considered that the project areas within the Cascade area meet the habitat requirements of this species. Given the linear nature of the application area and that vegetation within the road reserves will remain post clearing, the

application area is not considered to be significant habitat for quenda. Slow, directional clearing may allow for dispersal of this species into other areas of remnant vegetation.

Chuditch

The Chuditch has been recorded within the local area of Salmon Gums. The Chuditch is listed as vulnerable under the EPBC Act. Chuditch are now only present in approximately five per cent of their pre-European range (DEC, 2012b). Most chuditch are found in varying densities throughout the jarrah forest and south coast of Western Australia, and in a range of habitats including forest, mallee shrublands, woodland and desert (DEC, 2012b). The species uses denning habitat types such as hollow logs, burrows or rock crevices (DEC, 2012). Based on information provided by the applicant, the application area is not likely to contain suitable denning habitat for the chuditch (Shire of Esperance, 2017f). Due to the habitat preferences of this species, it is not considered likely that habitat for this species is present within the application area.

Ecological linkages

Ecological linkages are a series of non-contiguous natural areas that connect larger natural areas by forming stepping stones through the altered landscape that allows the movement over time of organisms between these larger areas and across the landscape.

The application area is within Strategic Zones A and C of the Western Australian South Coast Macro Corridor Network, which was designed to identify a regional-scale Macro Corridor Network of native vegetation, which extends from around 700 kilometres from Israelite Bay, east of Esperance and westwards through Albany along Western Australia's southern coastline (CALM, 2006). The document that outlines this Network notes that the vegetation within Zone C potentially provides habitat for wildlife at the local scale, but requires closer assessment to determine its value for a regional scale Macro Corridor Network (CALM, 2006).

The vegetation in Zone A is considered to potentially form the most strategic link between major protected areas, and are thus of potentially higher value and significance for fauna movement across the landscape (CALM, 2006). While the proposed clearing will impact on vegetation recognised for its importance as a fauna corridor, noting that the proposed clearing will not sever the corridor, and is surrounded by vegetation in similar condition on either side, impacts to the ecological linkages are not expected to be significant.

Conclusion

Given the above, the application area contains significant foraging habitat for Carnaby's cockatoo. The proposed clearing is at variance with this Principle. It is considered that the proposed impacts to significant foraging habitat for Carnaby's cockatoo are of a scale that can be offset through the offset proposed by the applicant. Further details on the offset are provided in Section 5.

(c) Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.

Proposed clearing is not likely to be at variance with this Principle

According to available databases, three threatened flora species have been found within the local area; *Anigozanthos bicolor* subsp. *minor*, *Conostylis lepidospermoides* and *Hypocalymma* sp. Cascade (R. Bruhn 20896).

Anigozanthos bicolor subsp. *minor* is known from 15 records within Esperance, Lake Grace and Ravensthorpe areas, in well-watered sites (Western Australian Herbarium, 1998-). This species is known to flower from August to October. A targeted flora survey for *A. bicolor* subsp. *minor* was undertaken in October 2018 within the Howick Road project area, and none were recorded (Shire of Esperance, 2018a). Known populations of this species were visited prior to the targeted survey, to familiarise with key identifying features of the species. Due to this and the timing of the survey, the likelihood of overlooking this species is low. The proposed clearing is not likely to impact this species.

Hypocalymma sp. Cascade (R. Bruhn 20896) is known from just five recordings within the Shire of Esperance. None of these records occur within the project areas. The closest recording is approximately seven kilometres north-east from Cascade Road. This species is known to flower in August and occur in sandy loam associated with granite (Western Australian Herbarium, 1998-). Surveys within the Cascade area were undertaken in February 2017, and did not record this species. However, the soils within the project area was described as predominately red-brown uniform siliceous sands. In the very north of the site soils become alkaline grey shallow sandy duplex soils associated calcareous loamy earths and grey non-cracking clays and minor deep sands and ironstone (Shire of Esperance, 2017b). Due to the soil type, it is not likely that the proposed clearing will impact this species.

Conostylis lepidospermoides is known from 42 records within Western Australian and has a preference for grey or yellow-brown sand over laterite. The closest recording of this is approximately 500 meters from the proposed clearing at Neds Corner Road. A targeted survey for this species at the Neds Corner Road project area located seven individuals within the proposed clearing area, however the applicant has committed to avoiding these individuals. The applicant has advised that markers have been placed across 400 meters of the road reserve where the individuals occur and works will not be undertaken within this area (Shire of Esperance, 2020). A condition requiring the applicant to avoid the seven individuals will reinforce avoidance of impacts to this species.

Considering the above, the proposed clearing is not likely to be at variance with this Principle.

(d) 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.

Proposed clearing is not likely to be at variance with this Principle

According to available datasets, there are no state-listed TECs mapped within the application area or the local area.

Noting the above, the application area is not considered to comprise or be necessary for the maintenance of any state listed TECs. The proposed clearing is not likely to be at variance with this Principle.

(e) Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.

Proposed clearing is at variance with this Principle

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). Table 8 shows BVAs 512 and 4801 retaining less than 30 per cent of their pre-European extent within both the state and IBRA Bioregions.

Table 8: Bioregion and local government vegetation extent statistics (Government of Western Australia, 2019)

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed lands (ha)	Extent remaining in all DBCA managed lands (proportion of Pre-European extent) (%)
IBRA bioregion					
Esperance plains	2,899,940.66	1,494,450.87	51.53	822,666.27	28.84
Mallee	7,395,894.36	4,180,937.68	56.53	1,289,384.08	18.03
Beard vegetation association in WA					
47	1,032,885.09	370,425.32	35.86	185,187.18	17.93
128	327,982.50	288,766.05	88.04	69,053.50	21.05
486	436,130.35	255,973.29	58.69	28,301.64	6.49
512	237,886.07	62,809.99	26.40	5,654.35	2.38
516	607,426.24	332,848.54	54.80	147,481.29	24.19
519	2,336,704.08	1,443,352.60	61.77	244,095.67	10.45
929	10,735.25	7,927.14	73.84	369.81	3.44
931	31,730.28	14,267.63	44.97	2,122.31	6.69
4801	58,196.27	6,499.26	11.17	1,931.74	3.32
Beard vegetation association in IBRA bioregion					
Esperance Plains					
47	959,935.91	336,492.07	35.05	178,325.54	18.58
128	10,827.32	9,158.46	84.59	6,973.01	64.40
512	203.78	38.75	19.02	0	0
516	318,746.74	219,798.44	68.96	91,555.75	28.72
519	73,495.22	39,194.87	53.33	2,430.28	3.31
929	4,072.22	3,101.34	76.16	161.63	3.97
931	21,209.61	10,304.97	48.59	1,777.66	8.38
4801	58,196.27	6,499.26	11.17	1,931.74	3.32
Mallee					
47	66,127.02	31,535.89	47.69	5,783.40	8.75
128	47,855.06	31,551.31	65.93	10,857.75	22.69
486	351,116.16	171,015.92	48.71	17,554.12	5.00
512	237,682.29	62,771.24	26.41	5,654.35	2.38
516	288,175.89	113,015.94	39.22	55,382.84	19.22
519	2,100,313.59	1,248,661.16	59.45	225,928.43	10.76
929	6,663.03	4,825.80	72.43	208.18	3.12
931	8,856.91	3,220.49	36.36	280.16	3.16

The extent of vegetation remaining has also been considered within the local area of each project area.

Table 9: Project area calculated vegetation within local area

Project Area	Approximate vegetation remaining in local area (%)
Cascade and Clare Roads	33.9
Neds Corner Road	27.5
Cascade, River & Oldfield Roads	26.3
Salmon Gums West Road	11.3
River Road	30.2
Howick Road	12.8
Muntz, Howick and Fisheries Road	10.6

Collectively, the project areas are considered to be significant as a remnant in an area that has been extensively cleared as the local area (with the exception of Cascade and Clare Roads and River Road project areas) retains less than 30 per cent remnant vegetation.

The vegetation within the application area is considered a significant remnant as it contains significant foraging habitat for Carnaby's cockatoo, a high level of biodiversity (including conservation significant flora and ecological community) and ecological linkage values. Noting this, the pre-European extent of the mapped BVAs 512 and 4801 and the extent of native vegetation within the local area, the proposed clearing is considered to be within an extensively cleared area.

Considering the above, the proposed clearing is at variance with this Principle.

(f) Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.

Proposed clearing is at variance with this Principle

According to available datasets and reports provided by the applicant, the following project areas are intersected by watercourses or have been reported to contain riparian vegetation:

- Cascade, River and Oldfield Roads;
- Howick Road; and
- Muntz, Howick and Fisheries Road.

There is one watercourse mapped within the Cascade, River and Oldfield Roads project area. A site inspection by DWER (under CPS 7489/1) identified vegetation associated with a watercourse within the River road section of the project area. As River road currently intersects the watercourse and drainage infrastructure is already in place, the proposed clearing is not likely to have a significant impact on the environmental values of this watercourse.

One minor non-perennial watercourse intersects the northern section of Howick Road, however, the extent of the proposed clearing in the vicinity of this watercourse for the Howick Road project is calculated to be less than 0.001 hectares (10 square metres) and is therefore not likely to have a significant impact on the environmental values of this watercourse.

A flora and vegetation survey within the Muntz, Howick and Fisheries Road project area undertaken by the applicant identified that the project area contains vegetation growing in, or in association with a non-perennial swamp referred to as Yate swamp. However, the applicant advised that the proposed clearing will involve widening the road only by one meter on either side in an already disturbed area. The Yate swamp vegetation occurred along a total of 500 metres within the southern section of Howick Road (Shire of Esperance, 2017h). The extent of the proposed clearing within the non-perennial swamp is calculated to be approximately 0.05 hectares.

The area within Cascade and Clare Roads was mapped as having two minor non-perennial watercourses intersecting the area but a site inspection by DWER (under CPS 7485/1) did not identify any riparian vegetation.

It is considered that, cumulatively, the proposed clearing of riparian vegetation within the Project Areas is of a small scale (0.05 hectares). Due to the project area being located adjacent to existing roads with culverts and drainage infrastructure, impacts to riparian vegetation from the proposed clearing are likely to be short-term and minimal.

Considering the application area includes vegetation growing in, or in association with, and environment associated with a watercourse or wetland, the proposed clearing is at variance with this Principle.

(g) Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.

Proposed clearing is not likely to be at variance with this Principle

As discussed in Section 2, the application area is mapped as 16 different land subsystems (DPIRD, 2017). The mapping indicates that the majority of the land unit subsystems have a high to extreme risk of wind erosion and high susceptibility to subsurface acidification. Noting the linearity of the application area, the proposed clearing is not likely to cause significant subsurface acidification and wind erosion. The soils will be exposed on a short term basis with cleared areas to be covered by bitumen and gravel, any wind erosion is likely to be minimal given that soil exposure is short term. As a condition of the permit, the applicant will be required to commence road upgrade activities within three months of clearing.

Noting the porous nature of sandy soils within the application area, the relatively low annual rainfall of 600 millimetres and the linear nature of the application area, the proposed clearing is unlikely to cause appreciable land degradation through water erosion, salinity or waterlogging.

Noting the above, the proposed clearing is not likely to result in appreciable land degradation and the proposed clearing is not likely to be at variance with this Principle.

(h) 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.

Proposed clearing may be at variance with this Principle

Two conservation areas are located adjacent to the project areas:

- A class Beaumont nature reserve (Crown Reserve 32128) is located at the southern end of the proposed clearing for the Howick Road Project Area; and
- a Shire of Esperance reserve zoned recreation and conservation under the local Town Planning Scheme is located approximately 30 meters from the River Road Project area.

The proposed clearing has the potential to spread weeds and dieback into these nearby conservation areas. Weed and dieback management measures will assist in mitigating this risk.

As discussed within Principles (b) and (e), the application area is likely to function as a linkage between areas of remnant vegetation in the landscape. Due to the vegetation that will remain within the road reserves after the proposed clearing, it is unlikely that the proposed clearing will sever these linkages.

Given the extent to which the local area has been previously cleared, the application area may contribute towards fauna dispersal between the abovementioned conservation areas and remnant vegetation located within the local area, and the proposed clearing may therefore impact on the environmental values of these areas.

Given the above, the proposed clearing may be at variance with this Principle.

(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.

Proposed clearing is not likely to be at variance with this Principle

The following project areas intersect minor non-perennial watercourses/wetland:

- Cascade, River and Oldfield Roads;
- Howick road; and
- Muntz, Howick and Fisheries Road.

However, noting the extent of the clearing and that intact vegetation remains around the watercourses, impacts to surface water quality are likely to be short-term and minimal. Clearing at existing crossings of the drainage lines along River road and the northern section of Howick road, and the non-perennial swamp along the southern section of Howick road, for road widening is not expected to be of a scale that would result in a perceptible deterioration of surface water quality.

The remaining project areas do not intersect any mapped wetlands or watercourses.

In general, mapped groundwater is between 7000-35,000 milligrams per litre total dissolved solids for all project areas, which is regarded as saline to highly saline. The project areas mostly occur within existing road reserves with native vegetation persisting surrounding the project areas. It is considered that the proposed clearing is not likely to lead to a perceptible rise in the water table and thus an increase in groundwater salinity levels.

Considering the above, the proposed clearing is not likely to be at variance with this Principle.

(j) Native vegetation should not be cleared if clearing the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.

Proposed clearing is not likely to be at variance with this Principle

With the exception of the project areas at Salmon Gums West Road and Howick Road, the mapped soil types within the project areas have low flood risk. Considering the low flood risk and that the proposed clearing is adjacent to existing roads with culverts and drainage infrastructure, it is considered that the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.

The Salmon Gums West Road and Howick Road project areas intersect mapped soil types with characteristics of poor drainage. However, it is considered that the low rainfall within the area and the linear shapes of the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.

Given the above, the proposed clearing is not likely to be at variance with this Principle.

Planning instruments and other relevant matters.

No Aboriginal sites of significance have been mapped within the project areas.

The clearing permit application was advertised on the DWER website on 23 July 2019 with a 21 day submission period. No public submissions have been received in relation to this application.

The application was advertised for an additional seven days on 6 February 2020 due to a minor increase in the application area at the intersection of Howick and Henke Roads. The increase was 0.0061 hectares. No public submissions have been received in relation to this application.

The proposed clearing may be considered a 'controlled action' under the EPBC Act, as clearing may impact threatened black cockatoo species and a federally listed TEC. The applicant is responsible in determining if the proposed clearing should be referred to the Commonwealth Department of the Environment and Energy's (DotEE).

The proposed clearing under this assessment is a strategic permit which has combined previous applications to clear under the EP Act. The previous applications, detailed in Table 10, were either withdrawn by the applicant or refused by DWER due to the availability of suitable offsets.

Table 10: Previous applications

Project Area	Previous application number
Cascade and Clare Roads	7485/1
Neds Corner Road	7487/1
Cascade, River & Oldfield Roads	7489/1
Salmon Gums West and Gimlet Roads	7685/1
River Road	7857/1
Howick Road	7889/1
Muntz, Howick and Fisheries Road	7890/1

5. Summary of significant residual impacts

Calyptorhynchus latirostris (Carnaby's Cockatoo)

The reports provided by the applicant note that the majority of the project areas contain vegetation types known to contain quality foraging habitat for Carnaby's Cockatoo, with the exception of the Salmon Gums West Road Project Area. The proposed clearing is within the non-breeding range for the species, however, there are a number of confirmed and unconfirmed roost sites within the local area, with the closest being adjacent to Neds Corner Road and a cluster of observations in the Howick area. The proposed clearing may impact up to 13.73 hectares of native vegetation containing significant foraging habitat for Carnaby's Cockatoo.

Significant remnant in a highly cleared landscape

Five of the seven project areas occur within a local area that retains less than 30 per cent remnant vegetation. These project areas, amounting to 22.56 hectares, are considered to be significant of a remnant in an area that has been extensively cleared.

Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia

Six of the seven project areas contain vegetation representative of the Proteaceae Dominated Kwongkan Shrublands of the Southeast Coastal Floristic Province of Western Australia, listed as an Endangered TEC under EPBC Act and as Priority 3 PEC by DBCA.

The proposed clearing of up to 12.2 hectares of the TEC represents a relatively small proportion of its current extent, however, cumulative impacts to the TEC are considered significant, incremental and ongoing.

Beard vegetation associations

The project area intersects eight mapped BVA's including BVA 512 which is considered to be highly cleared with approximately 26.40 per cent remaining of the pre-European vegetation extent. The proposed clearing of up to 6.9 hectares of BVA 512 is considered significant.

The project area also intersects BVA 4801 within the 3.84 hectares of proposed clearing at Muntz, Howick and Fisheries Road. BVA 4801 is considered to be highly cleared with approximately 11 per cent remaining of its pre-European extent remaining. The proposed clearing of up to 1.2 hectares of BVA 4801 is considered significant.

Summary of significant residual impacts is as follows, also detailed in Table 11:

- Clearing of 13.73 hectares of foraging habitat for Carnaby's cockatoo;
- Clearing of 22.56 hectares of a significant remnant in a highly cleared landscape;
- Clearing of 12.54 hectares of the Commonwealth listed TEC Kwongkan Shrublands;
- Clearing of 1.20 hectares of the highly cleared Beard Vegetation Association 4801; and
- Clearing of 6.90 hectares of the highly cleared Beard Vegetation Association 512.

Table 11: Significant residual impacts of each project area

Project Area	Clearing size (hectares)	Significant residual impacts				
		Kwongkan Shrublands	Carnaby's Cockatoo foraging habitat	BVA 512	BVA 4801	Extensively cleared landscape
Cascade and Clare Roads	11.87	2.74	2.74	4.82		
Neds Corner Road	2.55	1.97	1.97	0.5825		2.55

Cascade, River & Oldfield Roads	6.35	1.2	1.2	1.5		6.35
Salmon Gums West and Gimlet Roads	5.52					5.52
River Road	2.38	2.38	2.38			
Howick Road	4.3	2.83	3.7		0.636 in excellent condition 0.24 in very good condition	4.3
Muntz, Howick and Fisheries Road	3.84	1.42	1.74		0.32 in very good condition	3.84
Total	36.81	12.54	13.73	6.9	1.196	22.56

6. Suitability of Proposed Offset

After avoidance, minimisation and mitigation (outlined in Section 3 of this report), it is considered that the proposed clearing will result in the significant residual impacts summarised in Section 5 above.

To counterbalance the significant residual impacts, the applicant submitted an offset proposal that involves changing the vesting of a number of reserves to conservation for management in perpetuity and utilising a banked offset. The following reserves were presented to DWER to be used as offsets for the proposed clearing:

- Crown Reserve 27365 – current vesting is 'aerial landing ground', proposed to be changed to 'conservation';
- Crown Reserve 26912 – current vesting is 'recreation and parklands', proposed to be changed to 'conservation';
- Crown Reserve 26257 (existing banked offset) – previous vesting was 'agricultural general', which has changed to 'conservation'.

In assessing whether the proposed offset is adequately proportionate to the significance of the environmental values being impacted, DWER undertook a calculation using the Department of the Environment and Energy (DotEE) Offsets Assessment Guide 'calculator'. The calculator indicated that:

- The allocation of 193.7 hectares of Very Good to Excellent vegetation within Reserve 27365 is adequate to counterbalance the significant residual impacts upon 13.73 hectares of Carnaby's cockatoo foraging habitat and 12.54 hectares of Kwongan Shrublands, from the proposed clearing;
- The allocation of 153.3 hectares of Very Good to Excellent vegetation representative of BVA 512 within Reserve 26912 (Roberts Swamp) is adequate to counterbalance the significant residual impacts upon 6.90 hectares of BVA 512 from the proposed clearing;
- The allocation of six hectares of vegetation representative of BVA 4801 within a banked offset approved under a previous permit CPS 7188/2 (Reserve 26257) is adequate to counterbalance the significant residual impacts upon 1.20 hectares of BVA 4801 from the proposed clearing; and
- the total amount of native vegetation allocated within the reserves above (353 hectares) is adequate to counterbalance the significant residual impacts upon 22.56 hectares of significant remnant in a highly cleared landscape, from the proposed clearing.

Justification used for values in the offsets calculator for Reserves 27365 and 26912 can be found in Appendix 1. This is consistent with the WA Environmental Offsets Policy September 2011. The same values were used to calculate the allocation of offset within Reserve 26257 as under permit CPS 7188/2, due to the Reserve already being identified as a banked offset.

The remaining habitat within Reserves 27365 and 26912 may be banked for future authorised clearing. It should be noted that use of the banked offset sites will not be automatically accepted in every instance. In each case, the Shire must demonstrate how the offset counterbalances the significant residual impacts of the associated clearing.

The reserves to be used as offset sites are shown in the Figure 4.



Figure 4: Offset sites (outlined in red) in context of project areas (outlined in blue)

Crown Reserve 27365

Figure 5 below illustrates the remaining banked offset in reference to the offset site associated with counterbalancing the significant residual impacts upon Carnaby’s cockatoo foraging habitat and Kwongkan Shrublands from the proposed clearing. The 193.7 hectare offset, in addition to the remaining banked portion (20.16 ha), will be recorded in the WA Offsets Register. It should be noted that the vegetation within this banked offset is in Excellent condition and contains 4.019 hectares of mallee over mixed Melaleuca, with the remaining being vegetation representative of Kwongkan Shrublands.

The proposed offset is considered suitable to counterbalance the significant residual impacts to Carnaby’s cockatoo foraging habitat, Kwongkan Shrublands and significant remnant in a highly cleared landscape, due to:

- the presence of 209.84 hectares of Kwongkan Shrublands, of which 189.817 hectares is in excellent condition and 19.99 hectares is in Very Good condition. Kwongkan Shrublands also provides foraging habitat for Carnaby’s cockatoo; and
- the reserve being located in a highly cleared landscape.

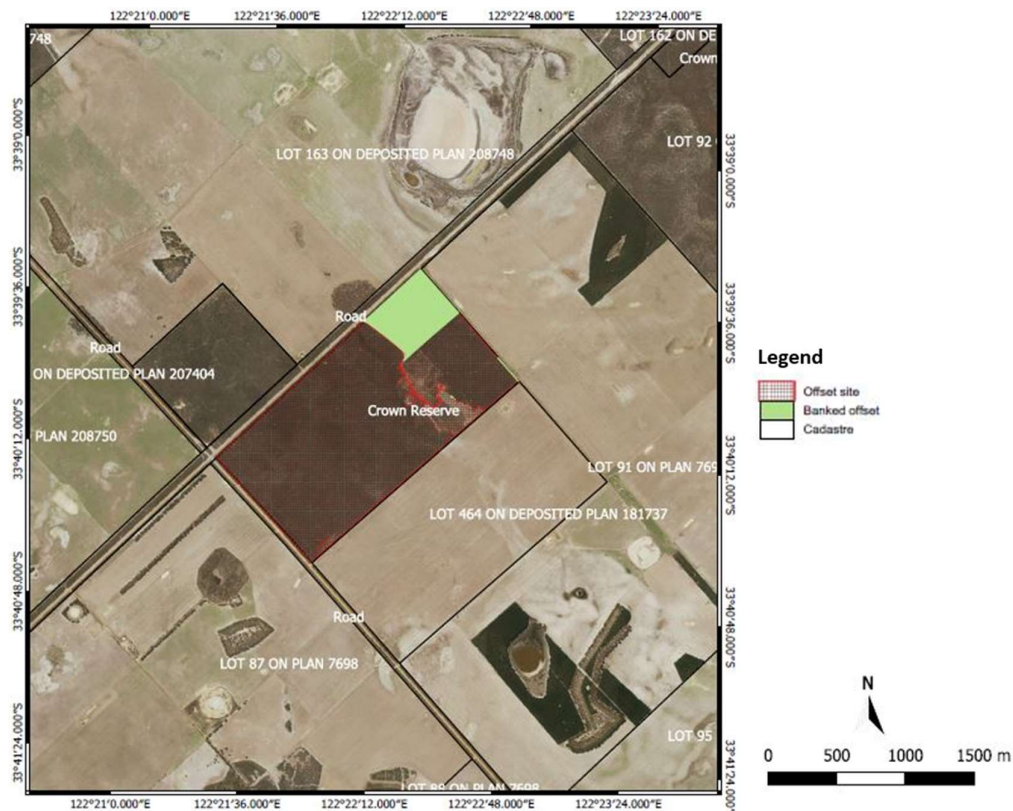


Figure 5: Crown Reserve 27365 approved offset (193.7 ha) and banked offset (20.16 ha)

Crown Reserve 26912

Figure 6 below illustrates the remaining banked offset in reference to the offset site associated with counterbalancing the significant residual impacts upon BVA 512 from the proposed clearing. The 153.3 hectare offset, in addition to the remaining banked portion (1,507.6 ha), will be recorded in the WA Offsets Register. It should be noted that the vegetation within this banked offset is in Excellent condition and contains the following environmental values:

- BVAs 51, 482 and 512;
- Old growth Salmon Gums / York gum woodlands; and
- Populations of Priority 1 flora *Leucopogon rugulosus*.

The proposed offset is considered suitable to counterbalance the significant residual impacts to BVA 512, due to the presence of 370 hectares of vegetation type 'Mallee woodlands of sand and blue mallee' which corresponds with BVA 512 and the reserve being located in a highly cleared landscape.

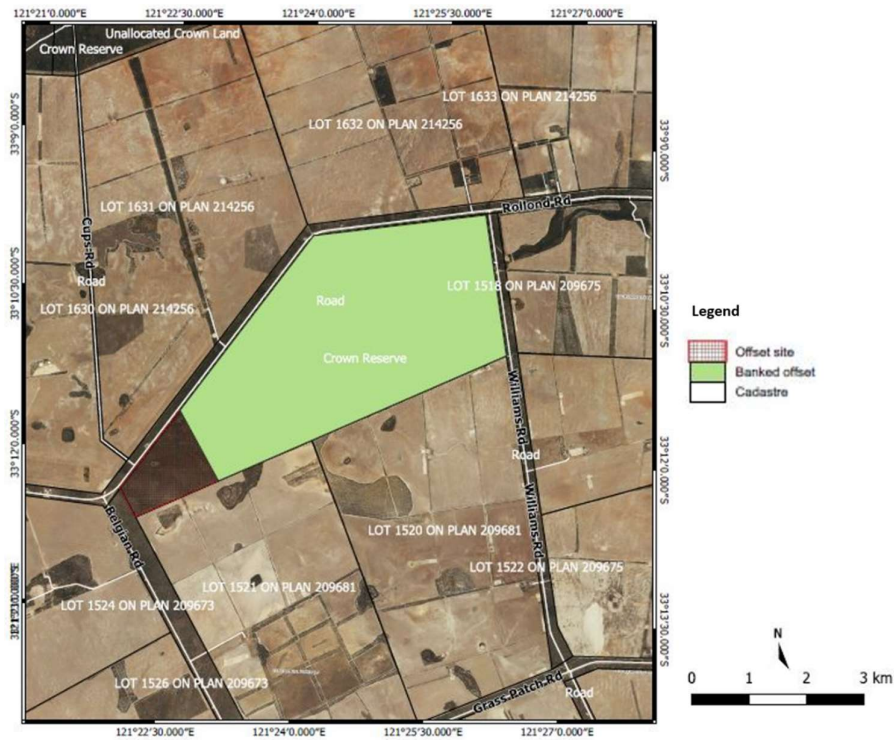


Figure 6: Crown Reserve 26912 approved offset (153.3 ha) and banked offset (1,507.6 ha)

Crown Reserve 26257

Figure 7 below illustrates the remaining banked offset in reference to the offset site associated with counterbalancing the significant residual impacts upon BVA 4801 from the proposed clearing. The six hectare offset, in addition to the remaining banked portion (76 ha), will be recorded in the WA Offsets Register. It should be noted that the vegetation within this banked offset ranges from Excellent to Good condition, and that it also contains vegetation type 'Boyra and *Kunzea baxteri* / *Hakea clavata* near granite areas' which corresponds with BVA 128.

The proposed offset is considered suitable to counterbalance the significant residual impacts to BVA 4801, due to the presence of 57.468 hectares of vegetation type 'heath with scattered *Nuytsia floribunda*' in Very Good condition which corresponds with Beard vegetation association 4801.

This banked offset has been used for previous permits, 15.5 hectares to offset the residual impacts associated with CPS 7188/2 and 3.5 hectares to offset the residual impacts associated with CPS 5330/3. These areas are shown in Figure 7.

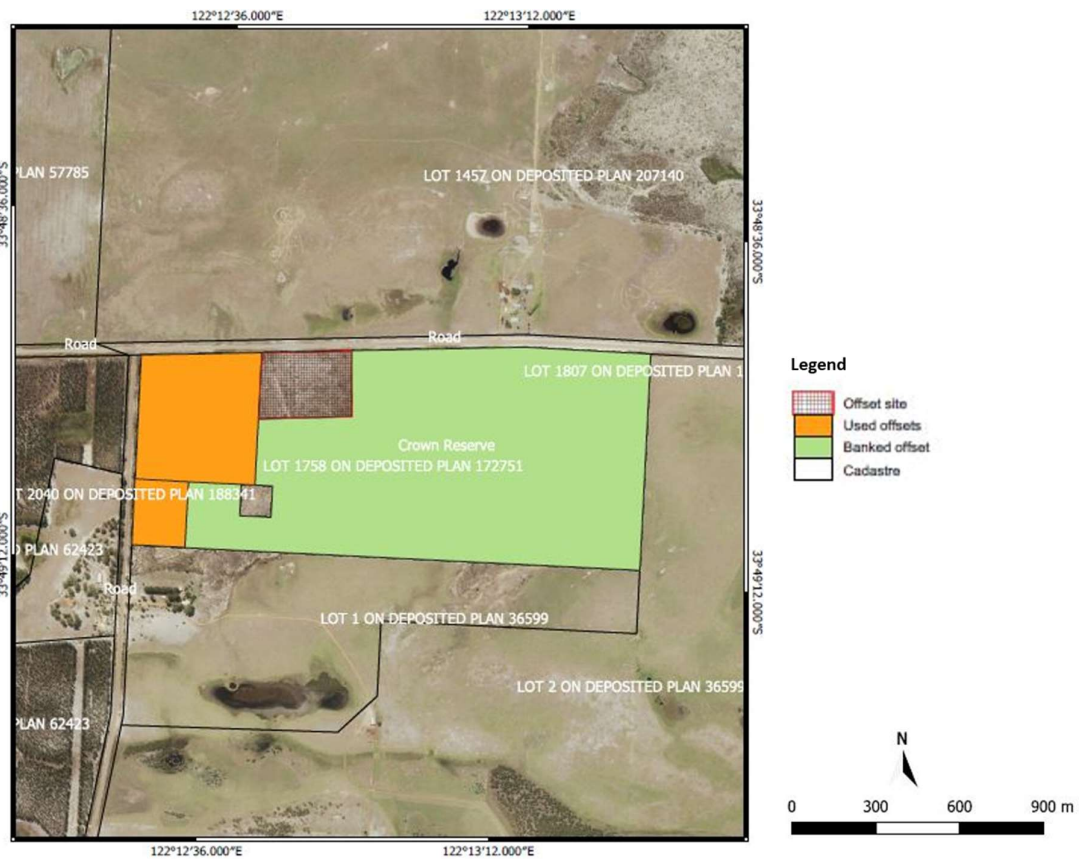


Figure 7: Crown Reserve 26257 approved offset area (6 ha), used offset areas (19ha) and banked offset (76 ha)

7. References

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Shire of Esperance (2018b) Targeted Flora Survey Report – Howick North South Construction Project 7889/1 (Ridgeland Road to Parmango Road). DWER ref. A1750821

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8. GIS Databases:

- Aboriginal Sites of Significance
- CPS Areas applied to clear
- DBCA Managed Estate
- Directory of Important Wetlands
- Geomorphic Wetlands
- Groundwater salinity
- Hydrography, hierarchy
- Hydrography, linear
- Land Degradation datasets
- SAC Bio Datasets (accessed August 2019)
- Soils, Statewide
- Topographic contours
- TPFL
- WAHerb Data
- WA TEC PEC Boundaries

9. Appendix 1: Justification of values used in the EPBC offsets calculator

Crown Reserve 27365 – offset associated with counterbalancing the significant residual impacts to Carnaby’s cockatoo foraging habitat and Kwongkan Shrublands

Calculator Field Name	Description	Justification for value used
<i>IUCN Criteria</i>	The IUCN criteria for the value being impacted	1.2% - afforded to Carnaby’s cockatoo habitat and Kwongkan Shrublands, both listed as endangered under the <i>Environment Protection and Biodiversity Conservation Act 1999</i>
<i>Area of impact (habitat/community) or Quantum of impact (features/individuals)</i>	The area of habitat/community impacted or number of features/individuals impacted	13.73 hectares of Carnaby’s Cockatoo foraging habitat and 12.54 hectares of Kwongkan Shrublands within application area. This is based on flora and vegetation surveys undertaken by the applicant.
<i>Quality of impacted area (habitat/community)</i>	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The vegetation within the application area is in mostly Very Good to Excellent (Keighery 1994) condition.
<i>Time over which loss is averted (habitat/community)</i>	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	The proposed offset would change the purpose of the reserve to conservation in perpetuity therefore the maximum 20 years is applied.
<i>Time until ecological benefit (habitat/community) or Time horizon (features/individuals)</i>	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	The process for changing the vesting from aerial landing ground to conservation is expected to occur within one year.
<i>Start area (habitat/community) or Start value (features/individuals)</i>	The area of habitat/community or number of features/individuals proposed to offset the impacts	193.7 hectares of vegetation in very good to excellent condition at Reserve 27365 is required to offset 100% of the significant residual impacts from the proposed clearing of Carnaby’s cockatoo foraging habitat and Kwongkan shrublands.
<i>Start quality (habitat/community)</i>	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The native vegetation within Reserve 27365 is in Very Good to Excellent (Keighery 1994) condition
<i>Future quality without offset (habitat/community) or Future value without offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	Same values as Start Quality. It is expected that over the foreseeable future (20 years), the current condition of the site will not deteriorate in the absence of a change in land tenure.
<i>Future quality with offset (habitat/community) or Future value with offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	Same values as Start Quality. The condition of the vegetation is unlikely to change in the presence of a change in land tenure.
<i>Risk of loss (%) without offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	20% - the proposed offset area is not zoned for conservation.

<i>Risk of loss (%) with offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	Securing the land parcel within conservation estate should reduce the risk of loss to 10%. The risk of catastrophic events (fire, dieback etc.) remain.
<i>Confidence in result (%) – risk of loss (habitat/community)</i>	The capacity of measures to mitigate risk of loss of the proposed offset site	There is a high level of confidence that the conservation covenant will mitigate the risk of loss.
<i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)</i>	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	There is a high level of confidence that the offset site would remain in at its current quality if managed for conservation.
<i>% of impact offset</i>	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100% - obtained through the input of variables explained above.

Crown Reserve 26912 – offset associated with counterbalancing the significant residual impacts to Beard vegetation association 512

Field Name	Description	Justification for value used
<i>IUCN Criteria</i>	The IUCN criteria for the value being impacted	0.0% - No IUCN criteria Beard vegetation association 512
<i>Area of impact (habitat/community) or Quantum of impact (features/individuals)</i>	The area of habitat/community impacted or number of features/individuals impacted	6.9 hectares of Beard vegetation association 512 is mapped within the application area. This is based on flora and vegetation surveys undertaken by the applicant.
<i>Quality of impacted area (habitat/community)</i>	The quality score for area of habitat/community being impacted - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The vegetation within the application area is in mostly Very Good to Excellent (Keighery 1994) condition.
<i>Time over which loss is averted (habitat/community)</i>	This describes the timeframe over which changes in the level of risk to the proposed offset site can be considered and quantified	The proposed offset would change the purpose of the reserve to conservation in perpetuity therefore the maximum 20 years is applied.
<i>Time until ecological benefit (habitat/community) or Time horizon (features/individuals)</i>	This describes the estimated time (in years) that it will take for the main benefit of the quality (habitat/community) or value (features/individuals) improvement of the proposed offset to be realised	The process for changing the vesting from recreation and parklands to conservation is expected to occur within one year.
<i>Start area (habitat/community) or Start value (features/individuals)</i>	The area of habitat/community or number of features/individuals proposed to offset the impacts	153.3 hectares of vegetation in very good to excellent condition at Reserve 26912 is required to offset 100% of the significant residual impacts from the proposed clearing of Beard vegetation association 512.
<i>Start quality (habitat/community)</i>	The quality score for the area of habitat/community proposed as an offset - a measure of how well a particular site supports a particular threatened species or ecological community and contributes to its ongoing viability	The native vegetation within Reserve 26912 is in Very Good to Excellent (Keighery 1994) condition
<i>Future quality without offset (habitat/community) or Future value without offset (features/individuals)</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site without the offset	Same values as Start Quality. It is expected that over the foreseeable future (20 years), the current condition of the site will not deteriorate in the absence of a change in land tenure.
<i>Future quality with offset (habitat/community) or Future</i>	The predicted future quality score (habitat/community) or value (features/individuals) of the proposed offset site with the offset	Same values as Start Quality. The condition of the vegetation is unlikely to change in the presence of a change in land tenure.

<i>value with offset (features/individuals)</i>		
<i>Risk of loss (%) without offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future without an offset	15% - Reserve is vested with the Shire for recreation and parklands
<i>Risk of loss (%) with offset (habitat/community)</i>	This describes the chance that the habitat/community on the proposed offset site will be completely lost (i.e. no longer hold any value for the protected matter of concern) over the foreseeable future with an offset	Securing the land parcel within conservation estate should reduce the risk of loss to 10%. The risk of catastrophic events (fire, dieback etc.) remain.
<i>Confidence in result (%) – risk of loss (habitat/community)</i>	The capacity of measures to mitigate risk of loss of the proposed offset site	There is a high level of confidence that the conservation covenant will mitigate the risk of loss.
<i>Confidence in result (%) – Change in quality (habitat/community) or Change in value (features/individuals)</i>	The level of certainty about the successful achievement of the proposed change in quality (habitat/community) or value (features/individuals)	There is a high level of confidence that the offset site would remain in at its current quality if managed for conservation.
<i>% of impact offset</i>	% of the significant residual impact that would be offset by the proposed offset (note: the offset calculations combined should equate to 100% for each residual impact)	100% - obtained through the input of variables explained above.