



## CLEARING PERMIT

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

### PERMIT DETAILS

Area Permit Number: 8526/1  
File Number: DWERT2914  
Duration of Permit: From 20 March 2020 to 20 March 2022

### PERMIT HOLDER

Shire of Serpentine-Jarrahdale

### LAND ON WHICH CLEARING IS TO BE DONE

Cardup Siding Road reserve (PINs 11549965, 11549966, 11549969, 11549970, 11549976, 11549984, 11753957), Cardup and Byford  
Wright Road reserve (PINs 11609514, 11609515, 11609516, 11609517, 11609518, 11609956),  
Mardella

### AUTHORISED ACTIVITY

The Permit Holder must not clear more than 0.99 hectares of native vegetation within the area shaded yellow on attached Plans 8526/1a, 8526/1b, 8526/1c and 8526/1d.

### CLEARING NOT AUTHORISED

The Permit Holder must not clear any Banksia species in the area shaded yellow within attached Plan 8526/1a.

### CONDITIONS

#### 1. 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; and
- (c) reduce the impact of clearing on any environmental value.

#### 2. 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; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

#### 3. 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.

#### 4. Records must be kept

The Permit Holder must maintain the following records for activities done pursuant to this Permit, in relation to the clearing of native vegetation authorised under this Permit:

- (a) 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 or decimal degrees;
- (b) the date that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 2 of this Permit.

#### 5. Reporting

The Permit Holder must provide to the *CEO* the records required under condition 4 of this Permit, when requested by the *CEO*.

#### 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*;

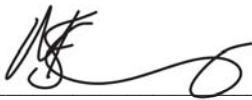
***dieback*** means the effect of *Phytophthora* species on native vegetation;

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

***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;

***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 Regional Weed Rankings 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*

19 February 2020

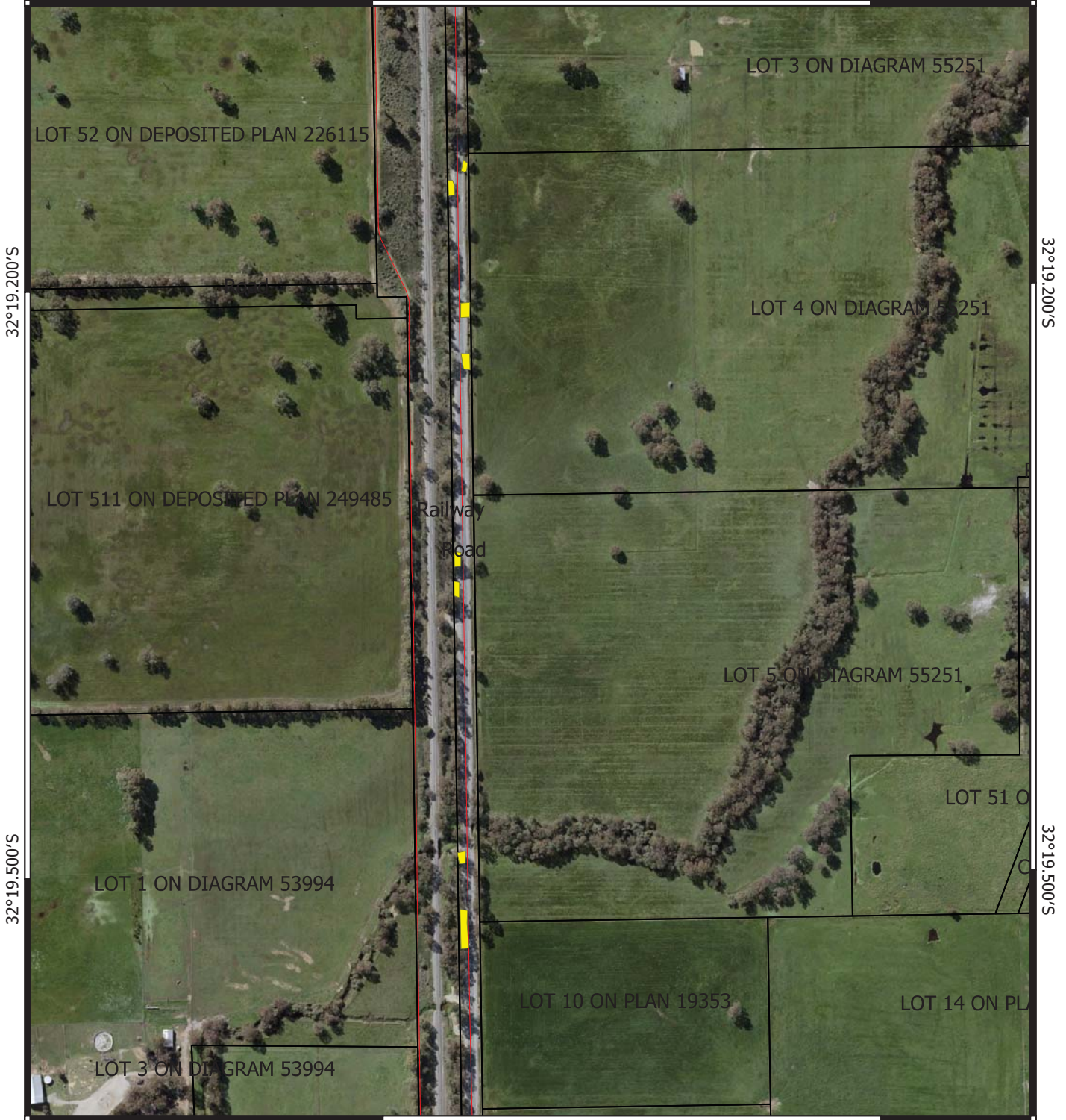




# Plan 8526/1b

115°58.800'E

115°59.100'E




115°58.800'E

115°59.100'E

## Legend

### CPS layers


 CPS areas approved to clear

### base layers

 Road Centrelines



0 75 150 225 300 m

  
Mathew Gannaway  
2020.02.19  
12:05:24 +08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



# Plan 8526/1c

115°58.800'E

115°59.100'E

32°19.500'S

32°19.500'S

32°19.800'S

32°19.800'S




115°58.800'E

115°59.100'E

## Legend

### CPS layers


 CPS areas approved to clear

### base layers

 Road Centrelines



0 75 150 225 300 m

  
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Gannaway  
2020.02.19  
12:05:57 +08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



# Plan 8526/1d

115°58.800'E

115°59.100'E




115°58.800'E


115°59.100'E

## Legend

### CPS layers


 CPS areas approved to clear

### base layers

 Road Centrelines



0 75 150 225 300 m

  
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2020.02.19  
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Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



## 1. Application details

### 1.1. Permit application details

Permit application No.: 8526/1  
Permit type: Purpose Permit

### 1.2. Applicant details

Applicant's name: Shire of Serpentine-Jarrahdale  
Application received date: 7 June 2019

### 1.3. Property details

Property: Cardup Siding Road reserve (PINs 11549965, 11549966, 11549969, 11549970, 11549976, 11549984, 11753957), Cardup and Byford Wright Road reserve (PINs 11609514, 11609515, 11609516, 11609517, 11609518, 11609956), Mardella  
Local Government Authority: Shire of Serpentine-Jarrahdale  
Localities: Byford, Cardup, Mardella

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
4.35 (original)		Mechanical Removal	Road construction and upgrades
0.99 (revised)		Mechanical Removal	Road construction and upgrades

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 19 February 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 principle (f), may be at variance with principles (d) and (h), and is not likely to be at variance with the remaining clearing principles.

The Delegated Officer considered the minimisation and mitigation measures implemented by the applicant, whereby the application area was reduced from 4.35 hectares to 0.99 hectares.

The Delegated Officer determined that the proposed clearing may result in the spread of weeds and dieback into the Cardup Nature Reserve, which comprises a Commonwealth listed threatened ecological community (TEC) and is mapped as State listed TECs. The Delegated Officer considered that the above impact can be minimised by requiring the applicant to undertake weed and dieback management.

Given the above, the Delegated Officer decided to grant a clearing permit subject to conditions.

## 2. Site Information

### Clearing Description

The revised application is to clear up to 0.99 hectares of native vegetation at two locations within the Shire of Serpentine-Jarrahdale for the purpose of road construction and upgrades (Table 1; Figures 1-3.).

Table 1. Project areas.

Project area name	Original project area (hectares)	Revised project area (hectares)
Cardup Siding Road	2.03	0.36
Wright Road	2.32	0.63

### Vegetation Description

Two Swan Coastal Plain vegetation complexes have been mapped within the project areas, described as (Heddl et al., 1980):

- Beermullah Complex: Mixture of low open forest of *Casuarina obesa* (Swamp Sheoak) and open woodland of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah). Minor components include closed scrub of *Melaleuca* species and occurrence of *Actinostrobus pyramidalis* (Swamp Cypress) (Wandoo) - *Eucalyptus marginata* (Jarrah); and
- Guildford Complex: A mixture of open forest to tall open forest of *Corymbia calophylla* (Marri) - *Eucalyptus wandoo* (Wandoo) - *Eucalyptus marginata* (Jarrah) and woodland

of *Eucalyptus wandoo* (Wandoo) (with rare occurrences of *Eucalyptus lane-poolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark).

The flora and vegetation survey conducted by Del Botanics during 24 September, 7 October and 4 November 2019 recorded three vegetation communities within the project areas (Table 2; Del Botanics, 2019).

Table 2. Vegetation communities (Del Botanics, 2019).

Project area	Vegetation communities	Description
Cardup Siding Road	Marri-Jarrah Woodland	Open Woodland of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over degraded grass dominated understorey.
	<i>Banksia</i> Woodland	Woodland of <i>Banksia attenuata</i> and <i>Eucalyptus marginata</i> over open shrubland of <i>Xanthorrhoea preissii</i> , <i>Eremaea pauciflora</i> , over open herbland of <i>Mesomelaena pseudostygia</i> , <i>Tetraria octandra</i> and <i>Loxocarya cinerea</i> species.
Wright Road	<i>Melaleuca</i> dampland	Low closed forest of <i>Melaleuca</i> species over closed herbland of * <i>Watsonia meriana</i> var. <i>bulbillifera</i> .

\*denotes a weed species.

### Vegetation Condition

The flora and vegetation survey determined that the application area ranges from completely degraded to very good (Keighery, 1994) condition (Del Botanics, 2019), described as:

- 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).

The range in vegetation condition throughout the application area is shown within Table 3 (Del Botanics, 2019).

Table 3. Vegetation condition (Del Botanics, 2019).

Project area	Vegetation condition	Amount (hectares)
Cardup Siding Road	Good to Very Good	0.18
	Degraded	0.07
	Completely degraded	0.12
Wright Road	Completely degraded	0.63

### Soil type

The following seven land subsystems have been mapped within the application area (Schoknecht et al., 2004) (Table 4).

Table 4. Mapped soil subsystems.

Project area	Subsystem
Cardup Siding Road	<ul style="list-style-type: none"> <li>• Bassendean B1a Phase: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands with an intensely coloured yellow B horizon occurring within 1 m of the surface; marri and jarrah dominant.</li> </ul>
	<ul style="list-style-type: none"> <li>• Bassendean B2 Phase: Flat to very gently undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m.</li> </ul>
	<ul style="list-style-type: none"> <li>• Forrestfield F2b Phase: Low slopes and foot slopes up to 5-10% with well drained moderately deep to deep, gravelly acidic yellow duplex soils and rare laterite.</li> </ul>
	<ul style="list-style-type: none"> <li>• Pinjarra P9 Phase: Shallowly incised stream channels of minor creeks and rivers with deep acidic mottled yellow duplex soils.</li> </ul>
Wright Road	<ul style="list-style-type: none"> <li>• Pinjarra P3 Phase: Flat to very gently undulating plain with deep, imperfect to poorly drained acidic gradational yellow or grey-brown earths and mottled yellow duplex soils, with loam to clay loam surface horizons.</li> </ul>



- Pinjarra P5 Phase: Poorly drained flats, commonly with gilgai microrelief and with deep black-grey to olive-brown cracking clays with subsoils becoming alkaline.
- Pinjarra P9 Phase: Shallowly incised stream channels of minor creeks and rivers with deep acidic mottled yellow duplex soils.
- Forrestfield F4 Phase: Incised stream channels within gentle slopes with deep acidic yellow duplex soils and sandy alluvial gradational brown earths.

**Comment**

The local area referred to in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area. A review of available databases has determined that the local area retains approximately 33 per cent of its pre-European clearing extent.

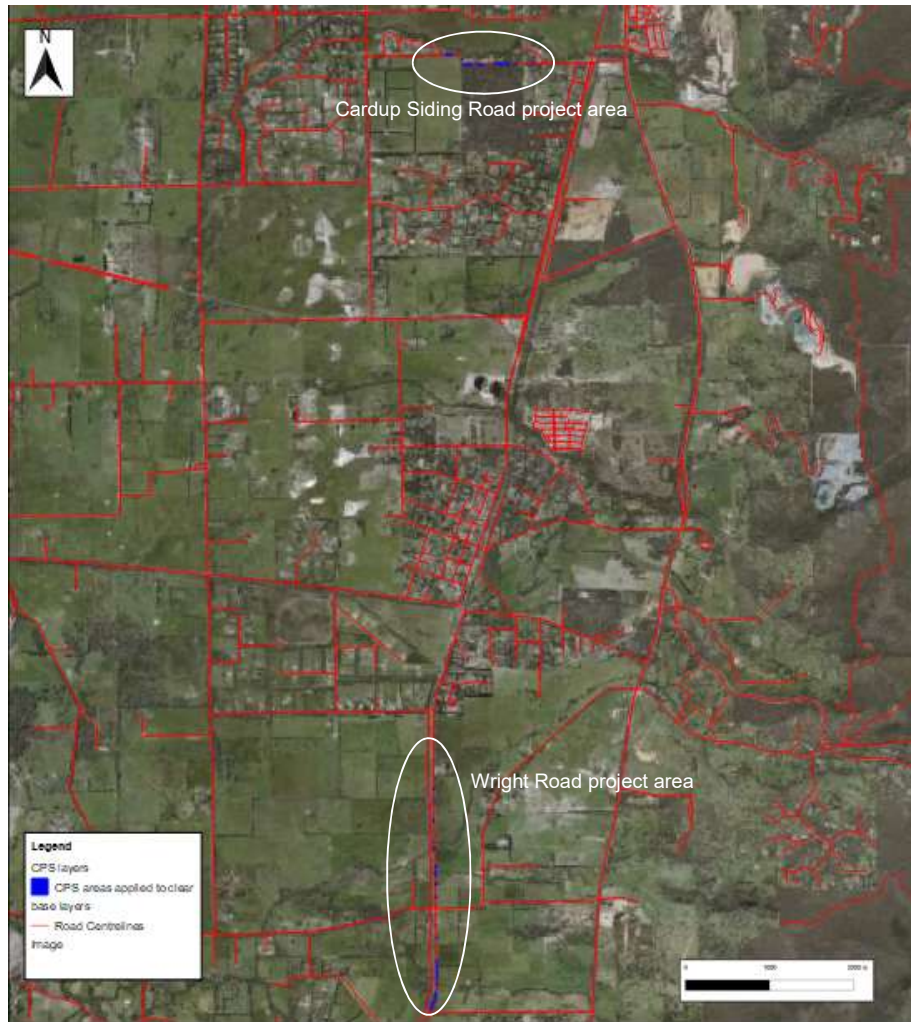


Figure 1. Revised application area (shaded blue and outlined in white)

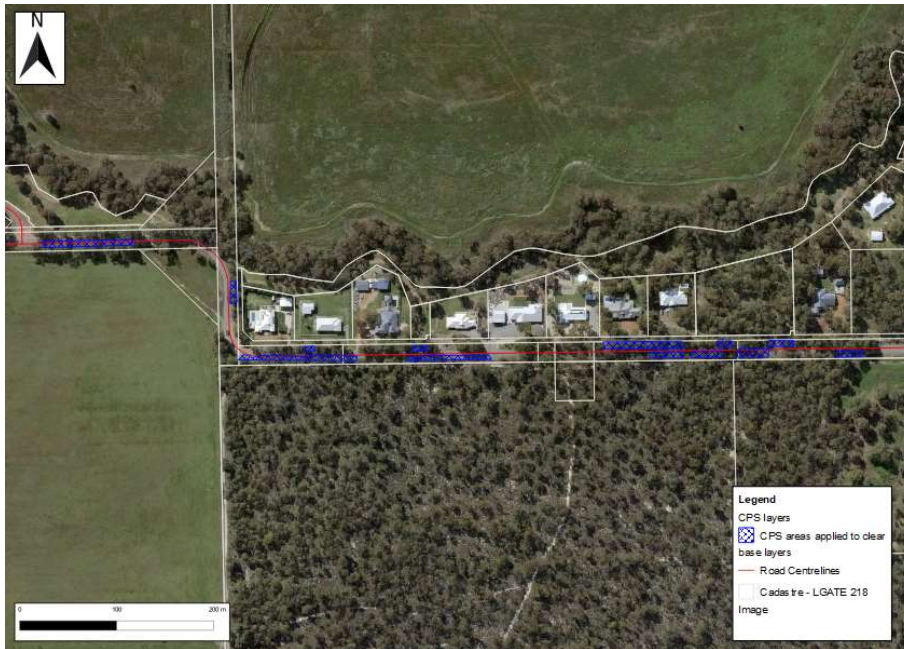


Figure 2. Revised Cardup Siding Road project area (cross-hatched blue)



Figure 3. Revised Wright Road project area (shaded blue)

### 3. Minimisation and mitigation measures

The original application proposed to clear 8.76 hectares of native vegetation within Cardup Siding Road and Wright Road reserves within Byford, Cardup, Mardella and Serpentine, for the purpose of road upgrades (Shire of Serpentine-Jarrahdale, 2019a). The



proposed clearing was reduced to 4.35 hectares, and a preliminary assessment was conducted by the Department of Water and Environmental Regulation (DWER) (Section 4), which identified numerous potential environmental impacts.

Based on this preliminary assessment, and with the progression of detailed road engineering designing, the applicant reduced the proposed clearing further to 0.99 hectares (Figures 1-3; Shire of Serpentine-Jarrahdale, 2020). DWER's assessment of the revised application area and consideration to changes in variance levels are discussed in Section 5.

The applicant has advised that the reduction of the application area is possible based on the implementation of the following minimisation measures (Shire of Serpentine-Jarrahdale, 2020):

- Pruning trees back from the road, instead of clearing, to ensure road user safety;
- Install kerbing and crash barriers around the base of significant trees along Cardup Siding Road reserve; and
- Installation of a 600 metre crash barrier along Wright Road reserve to avoid clearing native vegetation along this stretch.

In addition to the above, the applicant has committed to avoiding clearing of any *Banksia* species within the Cardup Siding Road project area, adjacent to where the Banksia Woodlands of the Swan Coastal Plain TEC was recorded during the survey, to minimise the risk of direct impacts to this TEC (Shire of Serpentine-Jarrahdale, 2020).

#### **4. Assessment of application against clearing principles**

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

###### **Proposed clearing may be at variance with this Principle**

One priority flora taxon, *Johnsonia pubescens* subsp. *cygnorum* (P2), has been mapped within Cardup Nature Reserve, which is adjacent to the Cardup Siding Road project area. This species is found within winter wet swamps (WA Herbarium, 1997-). No winter wet areas occur within the Cardup Siding Road project area. It is not considered for the proposed clearing to impact suitable habitat for this species. No priority flora species have been recorded within the project areas. Based on the condition and habitat type of the vegetation found within the project areas, it is not considered for the project areas to contain suitable habitat for other priority flora species mapped within the local area.

As discussed under principle (b) the proposed clearing is likely to impact on significant foraging and potential nesting habitat for the three threatened black cockatoo species.

No threatened or priority flora records have been mapped within the project areas. However, 10 threatened flora species have been recorded within the local area. Based on the condition and habitat type of the vegetation, habitat for seven threatened flora species may occur within the project areas. See Principle (c) for more detail on threatened flora.

As discussed under Principle (d), there are no TECs mapped within any of the project areas. However, the application areas occur adjacent to three known TECs and vegetation within the application areas may represent these TEC's.

No priority ecological communities (PEC) occur within the project areas or have been mapped within the local area of the proposed clearing. The proposed clearing is not likely to impact on any PECs.

As discussed under Principle (e), the vegetation within the project areas may represent highly cleared vegetation complexes, Beermullah Complex and Guildford Complex, which have less than 10 per cent of their pre-European extent remaining within the Swan Coastal Plain bioregion. The application area may be considered a significant remnant within an extensively cleared landscape due to the presence of conservation significant flora, fauna and communities.

Given that the proposed clearing may impact on habitat for threatened flora species, is likely to impact significant habitat for threatened black cockatoo species, may impact vegetation that represents highly cleared vegetation complexes and may include vegetation that is consistent with a TEC, the proposed clearing may be 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**

Seven terrestrial fauna species, listed as threatened under the *Biodiversity Conservation Act 2016* (BC Act) or as priority fauna by the Department of Biodiversity, Conservation and Attractions (DBCA) have been recorded within the local area. Of these species, it is considered that habitat for the three black cockatoo species to occur within the project areas. These species are Carnaby's cockatoo (*Calyptorhynchus latirostris*), listed as Endangered, forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*), listed as Vulnerable and Baudin's cockatoo (*Calyptorhynchus baudinii*), listed as Endangered under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

All three cockatoo species have been recorded within the local area of the project areas. The project areas are on the edge of the Jarrah Forrest and Swan Coastal Plain IBRA regions, which is known foraging and breeding areas for all three black cockatoo species.

Black cockatoos nest 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). Three large jarrah trees containing hollows were observed within the project area along Cardup Siding Road and may provide suitable nesting habitat for the species (Shire of Serpentine-Jarrahdale, 2019). Numerous potential habitat trees (*Eucalyptus rudis* and *Eucalyptus wandoo*) were also observed within the Wright Road project area (Shire of Serpentine-Jarrahdale, 2019).

Common foraging items for black cockatoo species includes seeds, flowers and nectar of Proteaceous plant species, *Eucalyptus* spp. and *Callistemon* spp. (Commonwealth of Australia, 2012). The project areas contain suitable foraging habitat (*Eucalyptus* species) for black cockatoo species.

The Cardup Siding Road and Wright Road project areas are considered to contain significant foraging habitat for black cockatoo species given that these project areas occur in the highly cleared eastern portion of the Swan Coastal Plain bioregion.

In addition, the Wrights Road project area is within a north to south regionally significant but not continuous ecological linkage of bushland/wetland areas (Government of Western Australia, 2000). The Wright Road project area occurs within this ecological linkage and is located between Bush Forever site 275 (Serpentine River, Peel Estate to Serpentine) to the south and Bush Forever site 360 (Mundijong and Watkins Road Bushland) to the north. The proposed clearing within this area may contribute to the fragmentation of this linkage and may impact movement of local and threatened fauna through a highly cleared landscape. It is therefore considered for Wright road project area to contain significant habitat for local and threatened fauna.

Given the above, the proposed clearing within the Cardup Siding Road and Wright Road project areas is considered to be at variance with this Principle.

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

**Proposed clearing may be at variance with this Principle**

There are 10 threatened flora species that have been recorded within the local area, being;

- *Austrostipa jacobiana*
- *Caladenia huegelii*
- *Diuris purdiei*
- *Drakaea elastica*
- *Drakaea micrantha*
- *Lepidosperma rostratum*
- *Synaphea* sp. Fairbridge Farm (D. Papenfus 696)
- *Synaphea* sp. Pinjarra Plain (A.S. George 17182)
- *Synaphea* sp. Serpentine (G.R. Brand 103)
- *Tetraria australiensis*

Based on the condition of the vegetation and habitat type established from site visits report conducted by the applicant (Shire of Serpentine-Jarrahdale, 2019) within the project areas, the application area may provide habitat for seven threatened flora species (Western Australian Herbarium, 1998-) (Table 5).

Table 5: Threatened flora that may occur within project areas.

Project Areas	Species
Wright Road	<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182)
	<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)
	<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696)
	<i>Verticordia plumosa</i> var. <i>ananeotes</i>
	<i>Lepidosperma rostratum</i>
Cardup Siding Road	<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182)
	<i>Synaphea</i> sp. Serpentine (G.R. Brand 103)
	<i>Caladenia huegelii</i>
	<i>Drakaea elastica</i>

Given the above, the proposed clearing along Wright Road and Cardup Siding Road may be at variance with this Principle. An appropriately timed flora survey is required to establish the presence of these species within the project areas.

**(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 may be at variance with this Principle**

Three state listed TECs have been mapped adjacent to the project areas (Table 6).

Table 6: Mapped TECs adjacent to proposed clearing areas.

Closest project area	TEC location and name	Status
Cardup Siding Road	<b>SCP20b</b> <i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain	Endangered under the BC Act and EPBC Act
	<b>SCP3b</b> <i>Corymbia calophylla</i> - <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain	Vulnerable under the BC Act
Wright Road	<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain	Critically Endangered under the BC Act, Endangered under the EPBC Act



Part of Cardup Siding Road is adjacent to the Cardup Nature Reserve which contains TEC SCP 20b and SCP3b. The vegetation within the project area that is adjacent to this Nature Reserve occurs in good to excellent (Keighery, 1994) condition and is considered to represent these two TECs. It is considered that approximately 0.085 hectares of vegetation may represent the TEC SCP20b and 0.090 hectares representing SCP3b may be impacted. In addition, the proposed clearing within this project area may contribute to the spread of weeds and dieback into the adjacent TECs.

The northern portion of the Wright Road project area includes vegetation that is part of the same patch of vegetation that has been mapped as the TEC – *Corymbia* within *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain. The vegetation within the project area adjacent to this TEC is in good condition (Keighery, 1994) and may be considered likely to represent this TEC. The conservation advice for this TEC states that because of its very restricted distribution, no condition thresholds have been applied and hence all areas meeting the description of this community are habitat areas that are critical to its survival (Department of Environment and Energy, 2017).

A TEC assessment, to establish the occurrence and extent of these TECs within the Wright Road and Cardup Siding Road project areas, is required. The proposed clearing may 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 2001-2005 include a target to have clearing controls in place that prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750 (i.e. pre-European settlement) (Commonwealth of Australia, 2001). This is the threshold level, below which species loss appears to accelerate exponentially.

In assessing the risk of further loss and subsequent cumulative effects, consideration has been given to the extent of native vegetation remaining. The local area retains 33 per cent pre-European native vegetation cover within the local area however both project areas occur within the extensively cleared eastern portion of the Swan Coastal Plain.

Two of the mapped vegetation associations/complexes have less than 10 per cent or their pre-European extent remaining within the Swan Coastal Bioregion (Table 7).

It is considered for vegetation in good or better condition (Keighery, 1994) that occurs within Wright Road and Cardup Siding Road project areas to represent these highly cleared vegetation complexes.

In addition, significant fauna habitat for threatened black cockatoo species and three TECs occur within Wright Road and Cardup Siding Road project areas.

Given the above, the Cardup Siding Road and Wright Road project areas are considered to be significant remnants within an area that has been extensively cleared. The proposed clearing is at variance with this Principle.

Table 7: Remnant vegetation extents (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) (%)
<b>IBRA Bioregion*</b>					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	222,916.97	14.85
<b>Vegetation complexes Swan Coastal Plain**</b>					
Beermullah Complex	6,707.27	447.21	6.67	142.62	2.13
Guildford Complex	90,513.13	4,607.91	5.09	287.49	0.32

**(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**

The Cardup Siding Road project area is immediately adjacent to a conservation category wetland. This project area intersects a non-perennial minor watercourse (Cardup Brook). As a watercourse crosses the application area, the proposed clearing associated with Cardup Siding Road may impact vegetation associated with this watercourse.

The western side of Wright Road (adjacent to the project area) is mapped as a conservation category wetland. The Wright Road project area intersects two minor non-perennial watercourses - Medulla Brook (northern intersect) and an un-named watercourse. A site inspection by the Shire of Serpentine-Jarrahdale identified *Eucalyptus rudis* and *Melaleuca* species within portions of the application area (Shire of Serpentine-Jarrahdale, 2019). These species are considered riparian and/or wetland species and therefore it is considered for the clearing within Wright Road reserve to impact vegetation growing in or in association with an environment associated with a watercourse or wetland.

Given the above, 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 within Section 2, seven soil subsystems are mapped within the revised project areas (Schoknecht et al., 2004).

Based on the land degradation risks of the mapped subsystems, the Cardup Siding Road project area has a high risk of wind erosion, and a low risk of water erosion, waterlogging and flooding (van Gool et al., 2005). The Wright road project area has a high risk of waterlogging, and a low risk of wind and water erosion, and flooding (van Gool et al., 2005).

The proposed clearing may cause land degradation through an increase in wind erosion and waterlogging, however given the long and linear shape of the proposed clearing and that the clearing is to take place over two separate areas, the risk of appreciable land degradation through wind erosion or waterlogging is considered to be very low.

Given the above, 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**

Wright Road project area is mapped adjacent to the Bush Forever site 365 (Byford to Serpentine Rail/Road Reserves and Adjacent Bushland) and Cardup Siding Road project area is adjacent to the Cardup Nature Reserve which is also Bush Forever site 352 (Cardup Nature Reserve and Adjacent Bushland, Cardup). A small portion of this project area is also mapped within Bush Forever site 351 which runs along Cardup Brook (Cardup Brook Bushland, Cardup/Peel Estate).

The proposed clearing within these project areas may increase the spread of weeds and dieback within the adjacent conservation areas. Implementation of weed management and dieback management measures would reduce this risk.

In addition, the Wright Road project area is within a north to south regionally significant but not continuous ecological linkage of bushland/wetland areas (Government of Western Australia, 2000). The Wright Road project area occurs within this ecological linkage and is located between Bush Forever site 275 (Serpentine River, Peel Estate to Serpentine) to the south and Bush Forever site 360 (Mundijong and Watkins Road Bushland) to the north. The proposed clearing within this area may contribute to the fragmentation of this linkage and may impact movement of local and threatened fauna through a highly cleared landscape. Therefore, the proposed clearing within Wright Road may impact the movement of fauna and impact the environmental values of these nearby conservation areas.

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 may be at variance with this Principle**

Groundwater salinity within the application area is mapped as less than 500 total dissolved solids, milligrams per litre. This level of groundwater salinity is classified as 'fresh'. Given this level, the proposed clearing is not likely to increase groundwater salinity.

As discussed in Principle (f), watercourses and wetland areas occur within the project areas. Given that the project areas may contain areas of surface water, the proposed clearing may increase sedimentation in the mapped watercourses, potentially degrading the quality of surface water.

Given the potential for deterioration of the quality of surface water, the proposed clearing may be at variance with this Principle.

Although the proposed clearing may deteriorate the quality of surface water, the impact is unlikely to be significant as the impact is likely to be short term during the clearing process. Surface water will be managed through the drainage design of the project areas.

**(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**

Both project areas have a low risk of flooding (van Gool et al., 2005), therefore 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 application area.

The clearing permit application was advertised on the DWER's website on 16 July 2019 with a 21 day submission period. One public submission has been received. The submission raised concerns relating to the extent of the proposed clearing and that further evidence from the applicant is required to justify that avoid and minimise measures have been considered (Submission, 2019). The applicant has minimised the extent of clearing through the final road designs. This concern is addressed under Section 3.



The submission recommended upfront flora and fauna surveys to be provided, due to concerns regarding the impact to threatened and priority flora and fauna habitat (Submission, 2019). These concerns have been addressed under sections 5 and 6 of this report.

The submission also raised concerns that the applicant should submit the proposed clearing and the proposed clearing under the nearby clearing application (CPS 8524/1) as one strategic application so impacts could be assessed as a whole (Submission, 2019). DWER conducted a strategic preliminary assessment of the application area and the application areas for clearing permit application CPS 8524/1 prior to the applicant submitting the two separate applications. During this assessment it was determined that the applicant should submit the proposed clearing as two separate applications as the project areas for Cardup Siding and Wright Roads (CPS 8526/1) had the potential to impact priority and threatened flora habitat and a TEC, and require further information prior to a decision being made. The preliminary assessment determined that no further information was required for a decision to be made for the proposed clearing under clearing permit application CPS 8524/1.

## 5. Applicant's Submissions

Based on the above assessment, DWER wrote to the applicant on 10 September 2019 outlining the preliminary assessment (Section 4) identified that the proposed clearing had the potential to impact on the following environmental values:

- '*Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain', '*Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain', and the '*Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain' TECs;
- Significant remnant vegetation, including mapped vegetation complexes with a Pre-European extent below 30 per cent;
- Threatened and priority flora habitat;
- Black cockatoo habitat; and
- A regionally significant ecological linkage along Wright Road project area.

The applicant was invited to provide additional information regarding proposed measures to avoid and minimise impacts.

In response to DWER's preliminary assessment and correspondence above, the applicant commissioned Del Botanics to undertake a flora and vegetation survey, and black cockatoo habitat assessment over the application area. This report was provided to DWER in support of the clearing permit. As described in Section 2, the survey identified three vegetation associations from the two project areas in a completely degraded to very good (Keighery, 1994) condition (Del Botanics, 2019).

The survey identified suitable foraging habitat for black cockatoos within both of the project areas, and potential breeding habitat within the Cardup Siding Road project area (Del Botanics, 2019). Within the Cardup Siding Road project area, 78 trees with a diameter at breast height (DBH) measurement greater than 500 millimetres (300 millimetres at DBH for *Eucalyptus rudis*) was recorded during the survey. Of these, eight trees were identified as having hollows that were of suitable size for black cockatoos. Within the Wright Road project area, 47 significant trees were recorded, however none of these trees were identified as having hollows of suitable size for black cockatoos (Del Botanics, 2019).

No threatened or priority flora species within either of the project areas, and no vegetation associations within the Wright Road project area was considered to be representative of any State or Commonwealth listed TECs. However, the vegetation within the Cardup Siding Road Reserve and adjacent Cardup Nature Reserve was identified to be representative of the Commonwealth listed '*Banksia* Woodlands of the Swan Coastal Plain' TEC. The survey did not positively identify whether this vegetation was representative of the mapped '*Banksia attenuata* and/or *Eucalyptus marginata* woodlands of the eastern side of the Swan Coastal Plain' State listed TEC (Del Botanics, 2019). Furthermore, the survey did not identify the '*Corymbia calophylla* - *Eucalyptus marginata* woodlands on sandy clay soils of the southern Swan Coastal Plain' within the Cardup Siding Road project area, which is mapped within the Cardup Nature Reserve.

On 8 January 2020, the DWER wrote to the applicant requesting further evidence or efforts to avoid/and or mitigate the need for clearing. In particular, further justification on how the applicant has considered minimising the potential impact to black cockatoo habitat, and the '*Banksia* Woodlands of the Swan Coastal Plain' TEC.

In response to DWER's correspondence of 8 January 2020, the applicant subsequently revised the application, reducing the proposed clearing from 4.35 hectares to 0.99 hectares. The reduction in the proposed clearing amount was achieved by implementing minimisation measures into the final road engineering designs, as discussed in Section 3.

## 6. Consideration of variances following applicants submission / further information

Based on the applicant's submission as outlined in Section 5, the assessment against the clearing principles has been updated and are discussed below.

DWER is of the opinion that the applicant has adequately minimised potential impacts to fauna. Of the 78 significant trees within the Cardup Siding Road project area, only two marri trees are proposed to be cleared (Shire of Serpentine-Jarrahdale, 2020). Neither of these trees contain a hollow (Del Botanics, 2019). Within the Wright Road project area, two marri trees and six flooded gum trees are proposed to be cleared. Given this, 76 significant trees within the Cardup Siding Road project area and 39 significant trees within the Wright Road project area will be retained within the road reserves. It is not considered likely that the proposed clearing will significantly impact on foraging or breeding habitat for black cockatoos. Furthermore, the potential impact to the regionally significant ecological linkage, of which the Wright Road project area is a part of, has been reduced with the proposed installation of a 600 metre crash barrier. DWER considers that that as the proposed clearing is predominantly limited to one side of the road, impacts to this linkage will not be significant. Therefore, the assessment of Principle (b) has been changed to 'not likely to be at variance'.

The survey did not record any threatened or priority flora species occurring within the project areas during a survey undertaken at an appropriate time for the region. Given that the majority of the project area was identified to be in a completely degraded (Keighery, 1994) condition, it is not considered likely that the application area provides suitable habitat that is necessary for the continued existence of threatened flora. Based on this, the assessment of Principle (c) has been changed to 'not likely to be at variance'.

The assessment against Principle (d) remains the same given the proximity of the Cardup Siding Road project area to the Cardup Nature Reserve, which is mapped as a State listed TEC. The survey identified the Cardup Siding Road project area to be representative of the Commonwealth listed 'Banksia Woodlands of the Swan Coastal Plain TEC'. The application has been reduced within the Cardup Siding Road project area, and the applicant has committed to not clearing any Banksia species within this area. The implementation of a flora management condition whereby no clearing of any Banksia species is authorised within the Cardup Siding Road project area, and the implementation of a weed and dieback management condition, is considered to mitigate any potential significant impact to the TECs adjacent to the application area.

The assessment of the application against clearing Principle (e) was reconsidered based on the reduction in application area to 0.99 hectares and the results of the flora survey. Noting the species and communities identified during the flora survey, the proposed clearing area is not likely to represent the two mapped vegetation complexes. Furthermore, the vegetation in both project areas are predominantly in a degraded to completely degraded condition. Noting this and the extent of vegetation remaining in the local area is over the 30 per cent threshold, and that the application area does not contain significant fauna, flora or TEC habitat, the application area is no longer considered a significant remnant. The proposed clearing is therefore considered 'not likely to be at variance' with Principle (e).

In relation to clearing Principle (f), the proposed clearing for both project areas still occurs within the multiple use palusplains. Given this, the proposed clearing remains 'at variance' with this Principle. However, the original application intersected a non-perennial minor watercourse (Cardup Brook, a resource enhancement creek) within the Cardup Siding Road project area. This impact has been avoided with the revised application area. Given this, the potential impact to vegetation associated with this watercourse has been avoided, and the risk of degrading the quality of surface water as discussed under Principle (i) is avoided. It is considered that the proposed clearing will not cause unacceptable environmental impact to the larger occurrence of these palusplains or any watercourses within the local area. Therefore, the assessment of Principle (i) has been changed to 'is not likely to be at variance'.

Based on the above assessment of Principles (b), (c), (d) and (e), the assessment of Principle (a) has also been changed to 'not likely to be at variance'.

In relation to Principle (h), given the proximity of the Cardup Siding Road project area to the Cardup Nature Reserve, the risk of edge effects remains. The requirement for weed and dieback hygiene measures to be implemented during clearing operations therefore also remains.

The assessment against clearing Principle (j) remains the same.

It is also noted that upgrades to the road will provide a public benefit including improved road safety.

The WA Environmental Offsets Guidelines states that environmental offsets address significant environmental impacts that remain after on-site avoidance and mitigation measures have been undertaken. The WA Environmental Offsets Policy states that environmental offsets are not appropriate in all circumstances and will not be applied to minor environmental impacts. It is considered that an offset is not required due to the following:

- the ability to impose a condition requiring the avoidance of all *Banksia* species in the Cardup Siding Road project area;
- the ability to impose a weed and dieback management condition; and
- the minimisation of the application area within the Wright Road project area, so that the ecological linkage is not fragmented.

## 7. References

- Commonwealth of Australia (2001). National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Commonwealth of Australia (2012). EPBC Act referral guidelines for three threatened black cockatoo species. Department of Sustainability, Environment, Water, Populations and Communities, Canberra.
- Del Botanics (2019). Flora and Vegetation Survey Cardup-Siding Rd, Wright Rd and Soldier's Rd Byford. Report for the Shire of Serpentine-Jarrahdale prepared by Del Botanics, Perth, December 2019 (DWER Ref: A1863468).
- Department of the Environment and Energy (2017). Approved Conservation Advice for *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands of the Swan Coastal Plain. Canberra: Department of the Environment and Energy.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007- ). NatureMap: Mapping Western Australia's Biodiversity. URL: <http://naturemap.dpaw.wa.gov.au/> (Accessed June 2018).
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- Keighery, B.J. (1994). Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
- Schoknecht, N., Tille, P. and Purdie, B. (2004). Soil-landscape mapping in South-Western Australia – Overview of Methodology and outputs' Resource Management Technical Report No. 280. Department of Agriculture.
- Shire of Serpentine-Jarrahdale (2019a). Application form and supporting information for Clearing Permit Application CPS 8526/1 (DWER Ref: A1817000 and A1812199).
- Shire of Serpentine-Jarrahdale (2019b). Additional information received for Clearing Permit Application CPS 8526/1, received 16 December 2019 (DWER Ref: 1852118).



Shire of Serpentine-Jarrahdale (2019c). Additional information received for Clearing Permit Application CPS 8526/1, received 24 December 2019 (DWER Ref: 1855083).

Shire of Serpentine-Jarrahdale (2020). Additional information received for Clearing Permit Application CPS 8526/1, received 30 January 2020 (DWER Ref: A1863424, A1863468 and A1863470).

Submission (2019). Submission received from Wildflower Society of Western Australia for clearing permit application CPS8526/1 (DWER Ref: A1812197).

van Gool, D, Tille, P J, and Moore, G A. (2005). Land evaluation standards for land resource mapping: assessing land qualities and determining land capability in south-western Australia. Department of Agriculture and Food, Western Australia, Perth. Report 298.

Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au> (Assessed July 2019).

**GIS databases:**

- Aboriginal Sites of Significance
- Department of Biodiversity, Conservation and Attractions, Managed Tenure
- Hydrography Linear – Linear
- Hydrography WA 250K – Surface Water Lines
- IBRA Australia
- PDWSA
- Pre-European Statistics
- Rangeland land systems
- RIWI Act Areas
- SAC bio datasets
- Threatened and Priority Fauna Data November 2019
- TPFL Data November 2019
- WA Herb Data November 2019
- WA TECPEC Boundaries