



## CLEARING PERMIT

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

<b>Purpose Permit number:</b>	CPS 8178/1
<b>Permit Holder:</b>	Shire of Dardanup
<b>Duration of Permit:</b>	21 May 2019 to 21 May 2024

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 purpose of road widening to improve road safety

**2. Land on which clearing is to be done**

Crooked Brook Road reserve (PINs 1321363, 1321361, 1321358, 1321345 and 11529761), Crooked Brook

**3. Area of Clearing**

The Permit Holder must not clear more than 101 native trees within the area cross-hatched yellow on attached Plan 8178/1.

**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 works 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:

- avoid the clearing of native vegetation;
- minimise the amount of native vegetation to be cleared; and
- 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; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

## PART III – RECORD KEEPING AND REPORTING

### 8. Record keeping

The Permit Holder must maintain the following records 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(s) 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 6 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 7 of this Permit.

### 9. Reporting

The Permit Holder must produce the records required under condition 8 of this Permit when required 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 species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



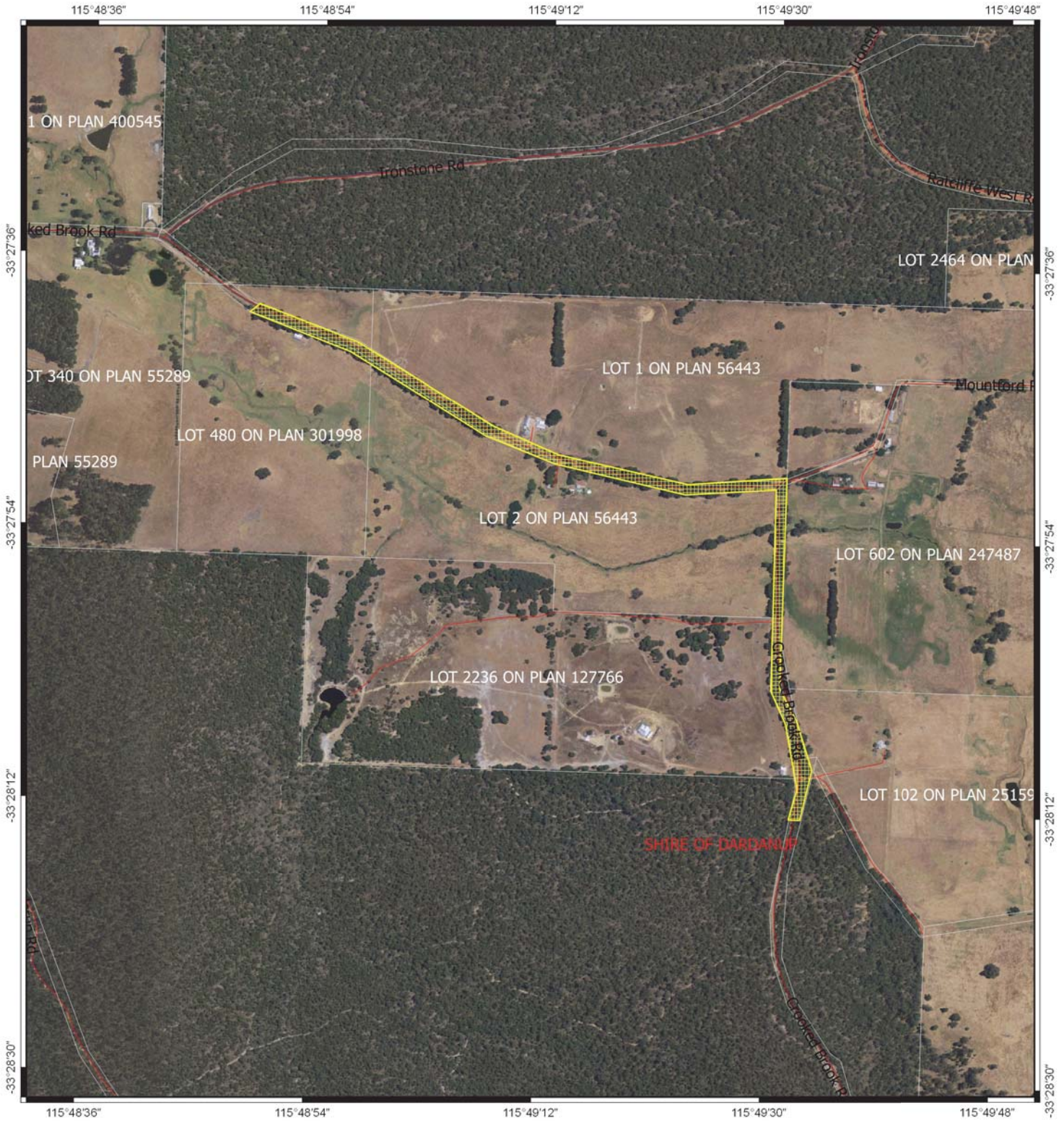
---

Samara Rogers  
MANAGER  
NATIVE VEGETATION REGULATION


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

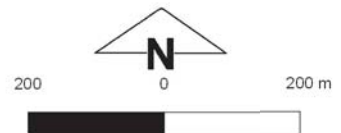
26 April 2019

# Plan 8178/1



## Legend

-  CPS areas approved to clear
-  Cadastre
-  Roads
-  Local Government Authorities
- Image



MGA 94  
Geocentric Datum of Australia 1994

*Samara Rogers*

Samara Rogers

2019.04.26 14:11:31

+08'00'

Officer with delegated authority under Section 20  
of the Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



## 1. Application details

### 1.1. Permit application details

Permit application No.: 8178/1  
Permit type: Purpose Permit

### 1.2. Applicant details

Applicant's name: Shire of Dardanup  
Application received: 23 August 2018

### 1.3. Property details

Property: CROOKED BROOK ROAD RESERVE, CROOKED BROOK  
(PIN's 1321358, 1321345, 11529761, 1321361, 13213630)  
Colloquial name: Crooked Brook Road  
Local Government Authority: SHIRE OF DARDANUP  
Localities: CROOKED BROOK

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
	101	Mechanical Removal	Road construction or upgrades

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 26 April 2019  
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*. It has been concluded that the proposed clearing is at variance to principle (f), may be at variance to clearing principle (h) and is not likely to be at variance to the remaining clearing principles.

Through assessment it was identified that vegetation within the application area is growing in association with a watercourse. Given the existing culverts and bridge in place, the proposed clearing is not likely to be significant.

In determining to grant a clearing permit, the Delegated Officer determined that potential impacts to adjacent vegetation and conservation areas can be adequately minimised and/or avoided by imposing weed and dieback management and that the proposed clearing is unlikely to lead to any unacceptable risk to the environment.

## 2. Site information

**Clearing Description** The application from the Shire of Dardanup (the Shire) is for the clearing of up to 101 native trees within a clearing footprint of 4.1 hectares (application area, see Figure 1), along Crooked Brook Road reserve (PIN's 1321358, 1321345, 11529761, 1321361 and 13213630) and for the purpose of road widening to improve road safety.

**Vegetation Description** The vegetation within the application area is mapped as the following South West Vegetation Complexes (Mattiske et al, 1998; Government of Western Australia, 2018):

- Preston-PR - described as woodland of *Eucalyptus rudis*, *Agonis flexuosa*, *Banksia seminuda* along streams, open forest of *Corymbia calophylla*, *Eucalyptus patens* on slopes in the humid zone (covers the majority of the application area); and
- Kingia-KI - described as open forest of *Eucalyptus marginata* subsp. *marginata*, *Corymbia calophylla*, *Allocasuarina fraseriana*, *Banksia grandis*, *Xylomelum occidentale* on lateritic uplands in perhumid and humid zones.

Officers of the Department of Water and Environmental Regulation (DWER) conducted a site inspection on 25 September 2018. The inspection determined the vegetation comprises predominately an upper-storey of *Corymbia calophylla* (marri) and *Eucalyptus marginata* (jarrah) with little to no native under-storey and other areas are devoid of vegetation. Potential habitat trees of an age and size suitable to be utilised by black cockatoos were noted (DWER, 2018a)

**Vegetation Condition** Based on the DWER site inspection, the vegetation within the application area is considered to vary from:

completely degraded: no longer intact, completely/almost completely without native species (Keighery, 1994); to

degraded: basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management (Keighery, 1994).

**Soil type**

The soils within the application area are mapped as the following subsystems (DPIRD, 2017):

- Rosa low slopes Phase: Low valley slopes (relief of 30-60 metres and gradients of 5-20 per cent);
- Rosa moderate slopes Phase: Moderate valley slopes (relief 20-50 metres, slopes 15-30 per cent); and
- Preston Subsystem: River channels, narrow flood plains and well drained alluvial terraces. Soils are brown loamy earths and some brown deep sands.

**Comment**

The local area considered in the assessment of this application is defined as a 10 kilometre radius measured from the perimeter of the application area. The local area retains approximately 62 per cent (approximately 22,000 hectares) vegetation cover.



**Figure 1 - Application area (cross-hatched blue)**



**Figure 2 – Typical vegetation within the application area comprising juvenile to mature jarrah-marri trees with minimal native understorey**



**Figure 3 – Culvert crossing showing the watercourse within the application area showing lack of riparian vegetation**

### 3. Avoidance and minimisation measures

The applicant undertook an assessment of the application area prior to submitting the clearing permit application and provided the following supporting information:

- Original application was for a blanket permit for entire road reserve without detailed design provided. Information was subsequently gathered to provide supporting information about vegetation retention in lieu of a detailed design.
- A desktop assessment was completed in July 2018 using the Environmental Planning Tool provided by WALGA and supported by Shire of Dardanup Intramaps, undertaken by Senior Environment officer, Jackie Nichol, at Shire of Dardanup. Results found:
  - No records of Significant or Priority Flora, Fauna.
  - No evidence of any Potential or Threatened Ecological Communities.
  - Low Western Ringtail possum habitat suitability,
  - Potential breeding area Jarrah Forest for Carnaby's cockatoo.
  - Vegetation has medium connectivity and over 40% vegetation community remaining in IBRA Subregion.
- A Site Survey was undertaken on Friday 3<sup>rd</sup> August 2018. Some potential habitat trees were identified as being appropriate species (*Corymbia calophylla*) and size. Trees were marked on a map that was transcribed and forwarded to the design surveyor for the area, marking potential trees to be retained, and trees suitable for removal.

The applicant advised that where possible, the trees included in the draft design will be retained and not cleared as part of the clearing permit, however a final design was not provided due to time constraints (Shire of Dardanup, 2018a).

On 25 February 2019 the applicant was formally notified by the Department of Water and Environmental Regulation (DWER) of the environmental issues associated with the proposed clearing of 2.995 hectares of native vegetation along Crooked Brook Road reserve. A preliminary assessment of the application area identified the following environmental impacts:

- The area proposed to be cleared may comprise approximately 2.995 hectares of significant feeding habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black-cockatoo (*Calyptorhynchus banksii* subsp. *naso*). The proposed clearing could result in significant impacts to these species particularly if suitable breeding hollows are present. A DWER site inspection observed several hollow bearing trees (DWER, 2018a).
- The application area is also likely to facilitate landscape connectivity and contribute to fauna dispersal between larger isolated bushland fragments in the local area. The proposed clearing may cause a decline in the effectiveness of the linkage, contributing towards landscape fragmentation and limitations in fauna dispersal.

Based on the above, DWER requested the following information from the applicant:

- Identification of appropriate onsite impact mitigation strategies and/or satisfactory environmental offsets
- Advice why the proposed road widening and maintenance is required to occur.
- A black cockatoo habitat tree survey for the area proposed to be cleared (DWER, 2019).

On 2 April 2019, the applicant provided further information to address the environmental impacts outlined above:

- The Shire reduced the number of trees to be removed as part of the proposed road upgrade, from 480 to 101, through the refinement of the road design within the road reserve.
- The proposed road widening and maintenance is required because Crooked Brook Road is identified as a General Access Vehicle route suitable for as-of-right vehicles, including semi-trailers and farming/rural machinery. It is classed as a Local Distributor Road in the Shire's road network hierarchy, and it is therefore not formally speed zoned. The overall existing road width is approximately between 3-5 metres side along most of its length. A Road Safety Audit (RSA) was undertaken along the length of Crooked Brook Road and pre-existing road safety issues were identified, including poor sight distances, trees close to the road pavement and poor geometry in some areas; the road also requires realignment and redesign of an existing substandard horizontal curve to meet minimum design standards for curve radii. Hence the Shire is required to remove dangerous roadside trees and general obstructions from clear zones, improve drainage and road geometry and to widen the overall pavement seal to 6.2 metres for two lanes with 0.9 metre wide unsealed shoulders on both sides. The new proposed road design is the continuation of previous stages where the road was improved in a similar manner and some vegetation clearing was required (Shire of Dardanup, 2019).
- A survey of each individual tree required to be removed was undertaken by the Shire's Senior Environmental Officer in August 2018, and in more detail of the finally identified 101 trees in February 2019. A formal black cockatoo habitat tree assessment was undertaken by Greg Harewood (Zoologist) with the Shire's Senior Environmental Officer, Jackie Nichol on 21 March 2019. The results of the survey identified that none of the 101 previously identified 'habitat' trees contained hollows suitable for black cockatoos to use for nesting (Harewood, 2019).

### 4. Assessment of application against clearing principles

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

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

The DWER site inspection determined the application area comprises predominately an upper-storey of marri and jarrah only with little to no native under-storey and a weedy groundcover. The application area is considered to be in a completely degraded to degraded (Keighery, 1994) condition. Other areas of the application area are devoid of vegetation (DWER, 2018a). The application area contains minimal floristic diversity when compared to adjacent areas which exhibit similar vegetation types in better vegetation condition.

According to available databases, two Threatened and nineteen Priority listed flora species have been recorded within the local area. The priority flora species are discussed below whilst Threatened flora are discussed further under Principle (c).

- *Gastrolobium sp. Yoongarillup* (S.Dilkes s.n. 1/9/1969) (P1) has been recorded approximately 630 metres from the application area. This species is known from 4 records from the Shire of Dardanup and the City of Busselton and is typically associated with dry brown sandy clay soil type (Western Australia Herbarium, 1998).
- *Orianthera wendyae* (P1) has been recorded approximately 1.4 kilometres from the application area. This species is known from 4 records from the Shires of Dardanup and Capel, and is typically associated with Ridge top; brown lateritic sandy clay soil type (Western Australia Herbarium, 1998).
- *Stylidium perplexum* (P1) has been recorded approximately 3.3 kilometres from the application area. This species is known from 4 records, all of them from the Shire of Dardanup, and is typically associated with brown lateritic sandy soil (Western Australia Herbarium, 1998).
- *Synaphea odocoileops* (P1) has been recorded approximately 7.5 kilometres from the application area. This species is known from 20 records from the Shires of Dardanup Capel, Marvey, Waroona and Murray, and is typically associated with brown clay soil (Western Australia Herbarium, 1998).
- *Gastrolobium whicherense* (P2) has been recorded approximately 630 metres from the application area. This species is known from 14 records from the Shires of Dardanup, Nannup, Augusta-Margaret River and the City of Busselton, and is typically associated with brown-white clayey sand over laterite (Western Australia Herbarium, 1998).
- *Carex tereticaulis* (P3) has been recorded approximately 7.7 kilometres from the application area. This species is known from 18 records from the Shires of Dardanup, Plantagenet, Manjimup, Nannup, Bridgetown Greenbushes, Harvey, Waroona, Serpentine-Jarrahdale, and the Cities of Bunbury, Gosnells and Swan; and is typically associated with grassy brown black clay (Western Australia Herbarium, 1998).
- *Caustis sp. Boyanup* (G.S. McCutcheon 1706) (P3) has been recorded approximately 4.5 kilometres from the application area. This species is known from 11 records from the Shires of Dardanup, Capel, Pingelly, Plantagenet, Manjimup, Kojonup and Donnybrook-Balingup, and the Cities of Busselton and Albany; and is typically associated with grey/brown dry sand (Western Australia Herbarium, 1998).
- *Isopogon formosus subsp. dasylepis* (P3) has been recorded approximately 9.7 kilometres from the application area. This species is known from 47 records from the Shires of Dardanup, Nannup, Augusta-Margaret River, Capel, Donnybrook-Balingup and the Cities of Busselton, and is typically associated with brown coarse sandy clay (Western Australia Herbarium, 1998).
- *Lasiopetalum laxiflorum* (P3) has been recorded approximately 620 metres from the application area. This species is known from 47 records, and except one that is located in the local area all of them are from the City of Busselton and the Shire of Augusta-Margaret River. The species is typically associated with brown-white clayey sand over laterite (Western Australia Herbarium, 1998).
- *Lomandra whicherensis* (P3) has been recorded approximately 1.5 kilometres from the application area. This species is known from 16 records from the Shires of Dardanup, Capel, and Collie, and is typically associated with brown lateritic sandy clay (Western Australia Herbarium, 1998).
- *Stylidium paludicola* (P3) has been recorded approximately 5.1 kilometres from the application area. This species is known from 30 records mapped along the Swan Coastal Plain and is typically associated with brown sandy clay (Western Australia Herbarium, 1998).
- *Synaphea hians* (P3) has been recorded approximately 4.2 kilometres from the application area. This species is known from 41 records from the Shires of Dardanup, Donnybrook-Balingup, Capel, Nannup, Augusta-Margaret River, Coolie, West Arthur and Woodanillig and the City of Busselton, and is typically associated with grey/white sandy soil type (Western Australia Herbarium, 1998).
- *Synaphea polypodioides* (P3) has been recorded approximately 630 metres from the application area. This species is known from 13 records from the Shires of Dardanup, Donnybrook-Balingup and the City of Busselton, and is typically associated with grey sand with some gravel over laterite (Western Australia Herbarium, 1998).
- *Acacia semitrullata* (P4) has been recorded approximately 4.5 kilometres from the application area. This species is known from 84 records from the Shires of Nannup, Augusta-Margaret River, Capel, Donnybrook-Balingup, Dardanup, Collie, Harvey, Waroona and Murray, and the Cities of Busselton and Bunbury. This species is typically associated with moist white/grey sand (Western Australia Herbarium, 1998).
- *Aponogeton hexatepalus* (P4) has been recorded approximately 8.5 kilometres from the application area. This species is known from 29 records mapped along the Swan Coastal Plain from the City of Canning to the Shires of Nannup and Bridgetown-Greenbushes. The species is typically associated with freshwater ponds, rivers and claypans. (Western Australia Herbarium, 1998).
- *Chamelaucium sp. Yoongarillup* (G.J. Keighery 3635) (P4) has been mapped approximately 9 kilometres from the application area. This species is known from 23 records from the Shires of Dardanup, Capel, Nannup, Augusta-Margaret River and the City of Busselton, and is typically associated with gravelly, clayey soil of steep southerly slope breaking from laterite plateau (Western Australia Herbarium, 1998).
- *Franklandia triaristata* (P4) has been recorded approximately 7.7 kilometres from the application area. This species is known from 31 records from the Shires of Dardanup, Capel, Nannup, Augusta-Margaret River, and the City of Busselton, and is typically associated with sandy soil type (Western Australia Herbarium, 1998).
- *Ornduffia submersa* (P4) has been recorded approximately 8 kilometres from the application area. This species is known from 57 records from the Shires of Dardanup, Capel, Collie, Boyup Brook, Bridgetown-Greenbushes, Nannup, Manjimup, Cranbrook, Plantagenet, Denmark, Waroona, Murray, Kalamunda, York, Beverley and Chittering, and the Cities of Busselton, Mandurah, Armadale, Gosnells, Belmont. The species is typically associated with heavy clay soils that are generally inundated from winter to the middle of the summer (Western Australia Herbarium, 1998).
- *Pultenaea skinneri* (P4) has been recorded approximately 7.8 kilometres from the application area. This species is known from 38 records from the Shires of Harvey, Collie, Dardanup, Capel, Augusta-Margaret River, Nannup and the Cities of Busselton and Bunbury, and is typically associated with sandy or clayey soils (Western Australia Herbarium, 1998).

As noted above, the application area is in a completely degraded to degraded (Keighery, 1994) condition where the groundcover is weed impacted and comprises minimal, if any, native vegetation (DWER, 2018a). Although the soil and/or vegetation habitat requirements of some of these species maybe similar to that of the application area, given the areas vegetation condition and description, it is unlikely these species could exist as viable populations. It is further considered that the loss of any individuals, should they occur, would not impact the conservation status of these species.

P3 and P4 flora species occur over a wide geographical area and are known from several populations, some within conservation reserves, and so their conservation status is not considered to be under any immediate threat (Jones, 2015). Noting this, and the number of records and range extents of the above species, the proposed clearing is not likely to impact on the conservation status of these species should any individuals occur within the application area.

As discussed further in principle (b), the application area may comprise potential breeding and foraging habitat trees that maybe utilised by Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*) or the forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (collectively known as black cockatoos). DWER site inspection noted several hollow bearing trees that may provide suitable breeding habitat for black cockatoos and evidence of foraging by way of chewed marri nuts (DWER, 2018a). A black cockatoo habitat tree assessment of the 101 trees proposed to be removed as the final road design identified that none of the 101 trees contained hollows suitable for black cockatoos to use for nesting (Harewood, 2019).

According to available databases, two priority ecological communities have been mapped within the local area. An occurrence of the 'Dardanup Jarrah and Mountain Marri woodland on laterite' community (Priority 1) has been mapped approximately three kilometres north of the application area, and the 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region' (listed as Priority 3 by the Department of Biodiversity, Conservation and Attractions and Endangered under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*) has been mapped approximately 3.8 kilometres northeast of the application area. Noting the species composition of these communities, the mapped vegetation type within the application area and completely degraded vegetation condition within the application area, the application area is not likely to comprise or be necessary for the maintenance of these communities.

As noted under Principle (h), it is noted that the vegetation under application may act as wildlife corridor linking vegetated state forest parcels.

Given the completely degraded to degraded (Keighery, 1994) condition of the vegetation within the application area and the vegetation community present, the application area is not likely to comprise of a high level of biological diversity.

The proposed clearing is not likely to be at variance to 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 not likely to be at variance to this Principle**

A DWER site inspection noted the vegetation within the application area comprises predominately an upper-storey of scattered marri and jarrah with little to no native under-storey, a degraded groundcover and other areas are devoid of vegetation (DWER, 2018a).

According to available databases, seven fauna species listed as Threatened or likely to become extinct under the *Biodiversity Conservation Act 2016* (BC Act) (*Specially Protected Fauna*) Notice 2018 have been recorded within the local area (DBCA, 2007-). These species include Woylie / Brush-tailed Bettong (*Bettongia penicillata ogilbyi*), Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), Chuditch (*Dasyurus geoffroii*), Western Ringtail Possum, ngwayir (*Pseudocheirus occidentalis*) and Quokka (*Setonix brachyurus*).

A preliminary assessment identified that the application area may comprise significant breeding and foraging habitat for Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's Cockatoo (*Calyptorhynchus baudinii*) (both listed as Endangered under the BC Act (*Specially Protected Fauna*) Notice 2018 or the forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*) (listed as Vulnerable under the BC Act) (collectively known as black cockatoos). Black cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). 'Breeding habitat' for black cockatoos is defined as trees of species (for example marri, jarrah, wandoo) known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres (Commonwealth of Australia, 2012). DWER's site inspection noted a portion of the eucalyptus trees may be of a suitable DBH to have or develop hollows, with few trees observed to contain hollows (DWER, 2018a).

Black cockatoos, in particular Carnaby's cockatoo, forage on the seeds, nuts and flowers of a large variety of plants including proteaceous and eucalyptus species, allocasuarina and a range of introduced species (Valentine and Stock, 2008). Evidence of foraging activity was noted during the DWER site inspection by the presence of chewed marri nuts within the application area (DWER, 2018a). Noting the cleared landscape in the immediate surrounds and that the application area may provide an ecological linkage from north to south, the proposed clearing is likely to have a significant impact on habitat for black cockatoos.

The Department of Biodiversity, Conservation and Attractions (DBCA) southwest region advised in relation to the original application area that "the clearing will remove Jarrah and Marri trees, these trees may provide foraging, breeding and roosting habitat to black cockatoo species. To protect these values, all known breeding trees and confirmed night roost sites should be



retained. The retention of all mature trees 500mm DBH or greater containing suitable breeding hollows is desirable" (DBCA, 2018).

The applicant advised that not all trees within the application area will require removal and that trees to be retained will be demarcated; other trees will remain along the road corridor (Shire of Dardanup, 2018). A black cockatoo habitat tree assessment of the 101 trees proposed to be removed as the final road design identified that none of the 101 trees contained hollows suitable for black cockatoos to use for nesting (Harewood, 2019).

Given the size of the clearing proposed, the narrow linear shape of the application area, and the fact that the understorey of the application area is largely devoid of native vegetation, the proposed clearing is not expected to result in significant impacts to any fauna species that have been recorded within the local area.

The proposed clearing is not likely to be at variance to this Principle.

**(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 to this Principle**

According to available databases, two Threatened flora species have been recorded within the local area; *Darwinia whicherensis* and *Synaphea sp. Fairbridge Farm (D. Papenfus 696)*.

*D. whicherensis* has been recorded approximately 5.5 kilometres from the application area. This species is known from 7 records from the Shire of Capel and the City of Busselton, and is typically associated with vegetation adjacent to marri-jarrah woodland over shallow red clay over ironstone (DoEE, 2018a).

*S. sp. Fairbridge Farm (D. Papenfus 696)* has been recorded approximately 6.5 kilometres of the application area. This species is known from 21 records located in the Shires of Dardanup (1 record), Murray, Serpentine-Jarrahdale, and the City of Gosnells, and typically occurs on grey, clayey sand with lateritic pebbles in low woodland areas near winter-wet flats (DoEE, 2018b).

The vegetation within the application area comprises marri and jarrah over a completely degraded to degraded (Keighery, 1994) understorey of introduced species. Based on the DWER site inspection, no Threatened flora species are expected to be present (DWER, 2018a).

Noting the above, the application area is not likely to include, or be necessary for the continued existence of, Threatened flora.

The proposed clearing is not likely to be at variance to 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 to this Principle**

According to available databases, there are no threatened ecological communities (TEC) mapped within the application area.

The 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region' (listed as Priority 3 by the Department of Biodiversity, Conservation and Attractions and Endangered under the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999*) has been mapped approximately 3.8 kilometres northeast of the application area.

Noting the species composition of this community, the mapped vegetation type within the application area and the degraded to completely degraded vegetation condition within the application area, the application area is not likely to comprise or be necessary for the maintenance of TEC's.

The proposed clearing is not likely to be at variance to 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 not likely to be at variance to this Principle**

The proposed clearing is located within the Jarrah Forest Interim Biogeographic Regionalisation of Australia bioregion. This bioregion retains approximately 53 per cent pre-European vegetation (Government of Western Australia, 2018).

The application area is mapped in the following South West Forest vegetation complexes (Mattiske et al, 1998):

- Preston (PR) which is mapped across approximately 88 per cent of the application area, and retains approximately 53 per cent of pre-European vegetation;
- Kingia (KI) which is mapped across approximately 12 per cent of the application area, and retains approximately 94 per cent of pre-European vegetation.

The local area retains approximately 62 per cent native vegetation (approximately 22,000 hectares).

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).

The bioregion, vegetation complexes and local area all retain more than the minimum 30 per cent threshold for maintaining ecological communities, and as such, the application area is not likely to be a significant remnant in an extensively cleared area.

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

Table 1: Vegetation extent remaining statistics (Government of Western Australia, 2018)

	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>					
Jarrah Forest	4,506,660.26	2,406,938.58	53.41	1,673,352.81	37.13
<b>Mattiske Vegetation Complex</b>					
Preston, PR	9,834.96	5,209.58	52.97	4,268.96	43.41
Kingia, KI	102,026.18	93,173.78	94.26	94,478.07	92.60

**(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 to this Principle**

According to available databases, a minor non-perennial watercourse (Crooked Brook) intersects the western end of the application area (Figure 3). No wetlands occur within the application area.

It is noted that limited native vegetation exists in the vicinity of the watercourse (DWER, 2018a), however given the location of watercourse the vegetation within the application area is growing in an environment associated with a watercourse or wetland.

The proposed clearing is at variance to this Principle. Given the culverts and bridge in place, the proposed clearing is not likely to be significant.

**(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 to this Principle**

As outlined in Section 2, the soils within the application area are mapped as the following (DPIRD, 2018):

- **Rosa low slopes Phase:** Low valley slopes (relief of 30-60 m and gradients of 5-20 per cent). Duplex sandy gravels with some loamy gravels and yellow sands (49 per cent of the application area).
- **Rosa moderate slopes Phase:** Moderate valley slopes (relief 20-50 m, slopes 15-30 per cent). Duplex sandy gravels with some loamy gravels and yellow sands (44 per cent of the application area)
- **Preston Subsystem:** River channels, narrow flood plains and well drained alluvial terraces. Soils are brown loamy earths and some brown deep sands. (7 per cent of the application area)

Groundwater salinity within the application area has been mapped as non-saline, with total dissolved solids (TDS) ranging between 500-1000 milligrams per litre.

Noting the extent of the proposed clearing, the linear shape of the application area and its location along an existing road, any land degradation impacts are likely to be minimal.

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

According to available databases, the nearest conservation area is Boyanup State Forest located in close proximity to the application area's northern extent and is immediately adjacent at the southern extent.

It is noted that the vegetation within the application area may act as wildlife corridor linking these vegetated state forest parcels and that the proposed clearing may lead to fragmentation of this corridor.

Given this, the proposed clearing may indirectly impact on the environmental values of the adjoining state forest through the potential spread or introduction of weed species or dieback. A weed and dieback management condition placed on a permit can mitigate potential impacts to nearby conservation areas.

An ecological linkage, defined by the South West Regional Ecological Linkage (SWREL) Report (Molloy et al., 2009) is mapped approximately 3 kilometres west of the application area within Boyanup State Forest. The SWREL report (Molloy et al., 2009) defines an ecological linkage as "A series of (both contiguous and non-contiguous) patches of native vegetation which, by virtue of their proximity to each other, act as stepping stones of habitat which facilitate the maintenance of ecological processes and the movement of organisms within, and across, a landscape". Given the distance to the SWREL linkage the proposed clearing is unlikely to impact the linkage.

Reducing impacts to vegetation which has the capability to act as wildlife corridor, thus reducing fragmentation especially where such remnants are important on a local scale, can be achieved by either avoiding and minimising disturbance to them, by modifying the proposed clearing footprint, or utilising areas within the footprint already in a degraded (Keighery, 1994) condition and/or already devoid of native vegetation. The Shire had done this by reducing the number of trees to be removed as part of the proposed road upgrade, from 480 to 101, through the refinement of the road design within the road reserve.

The proposed clearing may be at variance 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 to this Principle**

As discussed under Principle (f), the Crooked Brook intersects the application area. No significant impacts to the environmental values of the watercourse are expected given the brook's highly modified nature (weed infested) and the relatively minimal extent of clearing required at its crossing (Figure 3).

As discussed under Principle (g), groundwater salinity mapped within the application area is between 500-1000 milligrams per litre total dissolved salts.

Noting the extent of the proposed clearing, the linear shape of the application area and the nature of the soils present, the proposed clearing is not likely to cause deterioration in the quality of surface or underground water.

The proposed clearing is not likely to be at variance to 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 to this Principle**

As discussed under Principle (f), the Crooked Brook intersects the application area.

Noting the extent of the proposed clearing, the linear shape of the application area and the nature of the soils present, the proposed clearing is not likely to cause or exacerbate the incidence or intensity of flooding.

The proposed clearing is not likely to be at variance to this Principle.

**Planning instruments and other relevant matters.**

DWER's South West Region advised that as the application area intersects Crooked Brook that is a proclaimed tributary of the Preston River under the *Rights in Water and Irrigation (RIWI) Act 1914*. As of today's date, no permits have been applied for by the Shire (DWER, 2018b). It is the applicant's responsibility to ensure the latest progress in regards to permits and requirements under the RIWI Act, in liaison with DWER's Bunbury regional office.

The clearing permit application was advertised on the Department of Water and Environmental Regulations website on 18 October 2018 with a 21 day submission period. No public submissions have been received in relation to this application.

No aboriginal sites of significance have been mapped within the application area.

## **5. Applicants submissions**

On 25 February 2019, a Department of Water and Environmental Regulation (DWER) Delegated Officer wrote to the applicant, outlining the environmental impacts identified during the assessment of the application, and inviting the applicant to provide advice on how the impacts would be avoided or minimised, and how any unavoidable impacts would be offset (DWER, 2019).

In response to the Delegated Officer's letter, the applicant responded on 2 April 2019 provided advice of measures undertaken to avoid and minimise impacts, including a reduction to the proposed clearing and a fauna survey report. The avoidance and minimisation measures are discussed in Section 3 of this report.

## **6. References**

- Commonwealth of Australia. (2001). National Objectives and Targets for Biodiversity Conservation 2001-2005. Canberra. Department of the Environment and Energy (DoEE) (2018a). *Darwinia whicherensis* in Species Profile and Threats Database, Department of the Environment, Canberra. Retrieved from: <http://www.environment.gov.au/sprat>. Accessed 20 November 2018.
- Department of the Environment and Energy (DoEE) (2018b). *Synaphea* sp. Fairbridge Farm (D. Papenfus 696) in Species Profile and Threats Database, Department of the Environment, Canberra. Retrieved from: <http://www.environment.gov.au/sprat>. Accessed 20 November 2018.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007- ) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed 1 November 2018.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2018) Regional advice from South West Region for Clearing Permit application CPS 8178/1. Western Australia. Received on 8 December 2018 (DWER Ref: A1754505).
- Department of Primary Industries and Regional Development (DPIRD) (2018). NRInfo Digital Mapping. Department of Primary Industries and Regional Development. Government of Western Australia. URL: <https://maps.agric.wa.gov.au/nrm-info/>. Accessed November 13 2018.
- Department of Water and Environmental Regulation (DWER) (2018) Site Inspection Report for CPS 8178/1. Department of Water and Environmental Regulation. Western Australia (DWER ref A1738355).

Department of Water and Environmental Regulation (DWER) (Regulatory Services – Water) (2018b) *Rights in Water and Irrigation Act 1914* advice for clearing permit application CPS 8178/1 (DWER Ref: A1732754).

Government of Western Australia. (2018) 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity, Conservation and Attractions.

Harewood, G (2019). Black cockatoo habitat tree survey – CPS 8178/1. Crooked Brook Road, Shire of Dardanup. March 2019, Version 1. Prepared by Greg Harewood, Zoologist on behalf of the Shire of Dardanup (DWER ref: A1777791).

Jones, A. (2015) Threatened and Priority Flora List, 11 November 2015. Department of Parks and Wildlife: Kensington, WA.

Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.

Mattiske, E.M. and Havel, J.J. (1998) Vegetation Complexes of the South-west Forest Region of Western Australia. Maps and report prepared as part of the Regional Forest Agreement, Western Australia for the Department of Conservation and Land Management and Environment Australia.

Molloy, S., Wood, J., Hall, S., Wallrodt, S., Whisson, G., Department of Environment and Conservation, WALGA South West Biodiversity Project, Planning South West. (September, 2009). *South West Regional Ecological Linkages*. A report for the Western Australian Local Government Association and Department of Environment and Conservation.

Shire of Dardanup. (2018) Additional information provided in relation to CPS 8178/1. Received 23 August 2018 (DWER ref: A1713901 and A1716048).

Shire of Dardanup. (2019) Additional information provided in relation to CPS 8178/1 in response to DWER correspondence dated 25 February 2019. Received 2 April 2019 (DWER ref: A1777791).

Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gnangara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.

Western Australian Herbarium. (1998). FloraBase - The Western Australian Flora. Department of Biodiversity, Conservation and Attractions. Retrieved from <https://florabase.dpaw.wa.gov.au/> Accessed 1 November 2018.

#### **GIS Databases:**

- Aboriginal Sites of Significance
- Beard vegetation
- Clearing Regulations - Environmentally Sensitive Areas
- Carnaby's cockatoo: breeding, roosting, feeding
- Department of Biodiversity Conservation and Attractions, Tenure
- Groundwater salinity
- Hydrology, linear
- IBRA Australia
- NLWRA, Current Extent of Native Vegetation
- SAC Biodatasets (accessed December 2018)
- Soils, statewide
- Topographic contours