



## CLEARING PERMIT

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

### PERMIT DETAILS

Area Permit Number: CPS 8127/1  
File Number: DER2018/001098  
Duration of Permit: 14 December 2018 to 14 December 2020

### PERMIT HOLDER

Shire of Denmark

### LAND ON WHICH CLEARING IS TO BE DONE

McLeod Road reserve (PIN 11746159 and 1141701), Shadforth

### AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.95 hectares of native vegetation within the area cross hatched yellow on attached Plan 8127/1.

### 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. Records must be kept

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 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 *weeds* and *dieback* in accordance with condition 2 of this Permit.

#### 4. Reporting

The Permit Holder must provide to the *CEO* the records required under condition 3 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 administering 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;

*weeds* 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.



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Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

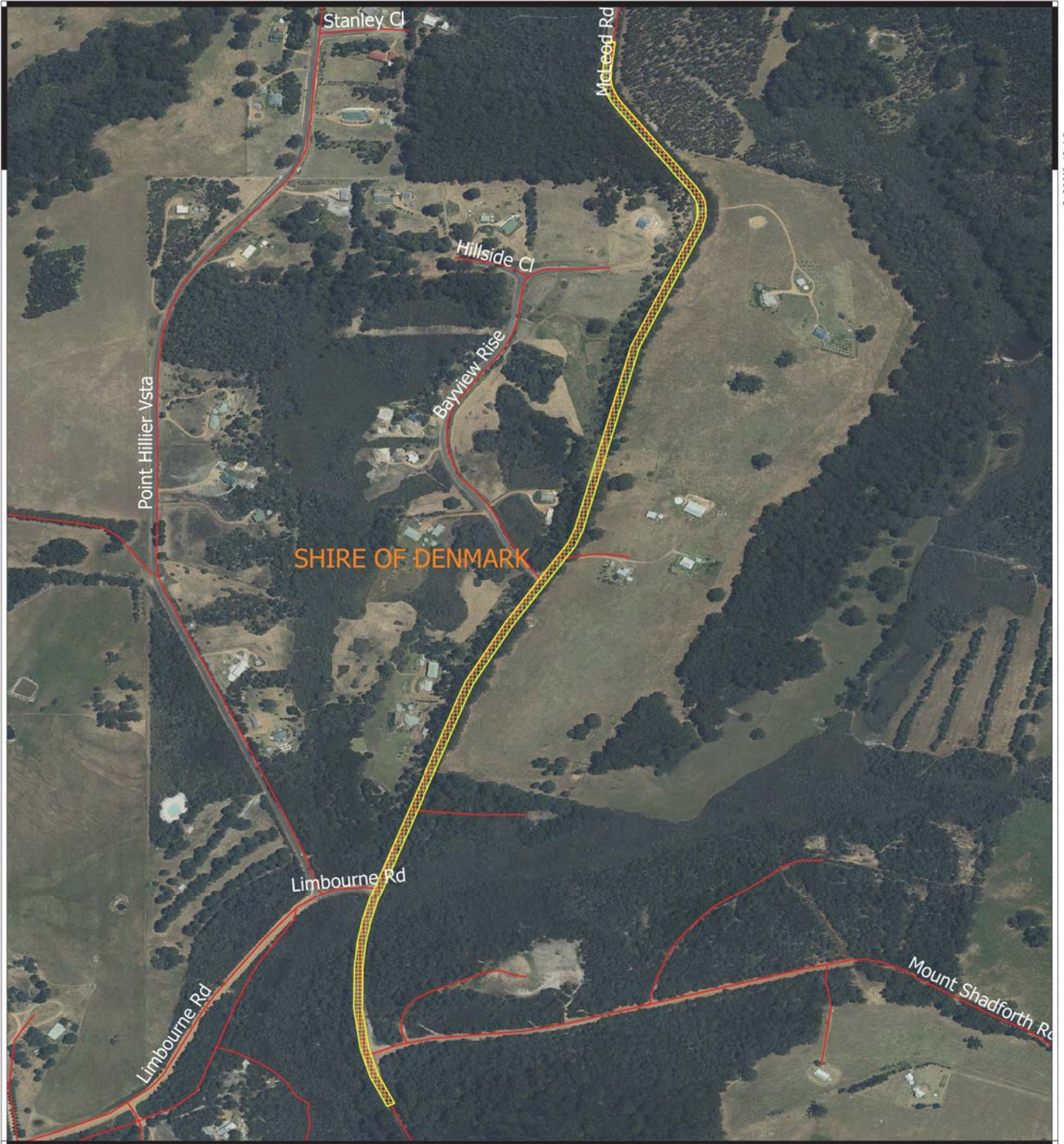
Officer delegated under section 20  
of the *Environmental Protection Act 1986*

14 November 2018

# Plan 8127/1

34°57'0.000"S

34°57'0.000"S



## Legend

-  Areas approved to clear base layers
-  Road Centrelines
-  Local Government Authorities



MGA 94  
Geocentric Datum of Australia 1994  
*Mathew Gannaway* date 14/11/2018  
Mathew Gannaway  
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.: 8127/1  
Permit type: Area Permit

### 1.2. Applicant details

Applicant's name: Shire of Denmark  
Application received date: 12 July 2018

### 1.3. Property details

Property: McLeod Road Reserve – PIN's 1141701 and 11746159, Shadforth  
Local Government Authority: Denmark, Shire of  
Localities: Shadforth

### 1.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	Purpose category:
0.95		Mechanical Removal	Road widening

### 1.5. Decision on application

Decision on Permit Application: Grant  
Decision Date: 14 November 2018

Reasons for Decision: The clearing permit application was received on 12 July 2018 and 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), and is not likely to be at variance to the remaining principles.

Through the assessment it was determined that the application area contains suitable foraging habitat for five fauna species of conservation significance. The Delegated Officer noted that the small amount of clearing proposed was to occur selectively over a long, narrow 2.4 kilometre stretch of road, no hollow-bearing trees suitable for providing breeding habitat and that sufficient vegetation would remain within the road reserve, so as not to significantly impact fauna movement through the landscape.

Through assessment it was determined that the proposed clearing may result in the spread of weeds and dieback into remnant vegetation remaining in the road reserve. A weed and dieback management condition has been placed on the clearing permit to minimise this risk.

In determining to grant a clearing permit, the Delegated Officer determined that the proposed clearing is not likely to lead to any unacceptable risk to the environment.

## 2. Site Information

**Clearing Description** The applicant proposes to clear 0.95 hectares of native vegetation within a 2.4 hectare footprint area within McLeod Road Reserve (PIN 11746159 and 1141701), Shadforth, for the purpose of road widening.

**Vegetation Description** The application area has been mapped within three South West vegetation complexes described as the following:

- **Granite Valleys (S1):**

Tall open forest of *Eucalyptus diversicolor-Corymbia calophylla* on slopes with some *Eucalyptus patens* and *Eucalyptus megacarpa* on valley floors in hyperhumid and perhumid zones.

- **Keystone (Kb):**

Mosaic of tall open forest of *Eucalyptus guilfoylei-Eucalyptus jacksonii-Eucalyptus diversicolor* on slopes of major hills rising above coastal plain with *Allocasuarina decussata-Banksia grandis-Agonis flexuosa* on slopes in hyperhumid and perhumid zones and tall open forest of *Eucalyptus brevistylis-Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* and the occasional *Eucalyptus megacarpa* near rock outcrops in hyperhumid and perhumid zones.

- **Keystone (Ks):**

Woodland of *Eucalyptus marginata* subsp. *marginata*-*Allocasuarina fraseriana* on lower slopes in hyperhumid and perhumid zones.

A site inspection undertaken by officers of the Department of Water and Environmental Regulation (DWER) identified two vegetation types that occur within the application area described as:

- **Area A:** The southern section of the application area from Limbourne Road to the most southern extent of the application area consists of *Corymbia calophylla*, tall Myrtaceous shrubs over *Lepidosperma* sp. and sedges on the eastern side of the road. *Corymbia calophylla*, *Allocasuarina* sp. over *Pteridium esculentum* (bracken) on the western side of the road (DWER, 2018).
- **Area B:** The vegetation commencing at the intersection of Limbourne and McLeod Road reserves to the most northern extent of the application area consists of *Eucalyptus diversicolor*, *Corymbia calophylla*, *Allocasuarina* sp. over *Pteridium esculentum* and *Lepidosperma* sp. (DWER, 2018).

#### Vegetation Condition

The condition of the vegetation within the application area was determined via a DWER site inspection (DWER, 2018). The site inspection identified four differing types of vegetation condition within the combined Areas A and B. The application area was determined to be in completely degraded to very good condition, described as:

- Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994); to
- Completely Degraded; No longer intact, completely/almost completely without native species (Keighery, 1994).

Area A which covers the first 400 metre stretch of road from the most southern section of the road reserve, is considered to be in a very good (Keighery, 1994) condition. Area B comprises of two differing types of vegetation condition. The following 400 metre stretch of road commencing at Limbourne Road reserve up to the boundary of Lot 12 and Lot 13 on Plan 22875 located on the western side of McLeod Road reserve, is in a good to degraded (Keighery, 1994) condition. The remainder of the Road reserve (approximately 1.1 kilometers) up to the most northern extent of the application area contains areas completely devoid of native vegetation particularly near driveways and crossings. This section is considered to be in a degraded to completely degraded (Keighery, 1994) condition (DWER, 2018). The last 100 meters of the northern extent of McLeod Road is in a good (Keighery, 1994) condition.

#### Soil and landform type

The application area has been mapped by the Department of Primary Industries and Regional Development (DIPRD) as the following soil types:

- **Land Unit 1 - Keystone podzols Phase** subsystem is described as Podzols; teatree heath and jarrah woodland.
- **Land Unit 2 - Keystone brown duplex Phase** subsystem is described as brown gravelly duplex soils and of red yellow earths; much laterite. Marri-Karri-Red Tingle-Yellow Tingle forest.
- **Land Unit 3 - Minor Valleys S1 Subsystem (Walpole)** subsystem is described as Valleys in granitic terrain, narrow swampy floor; <20 m relief. Gravelly yellow duplex soils on smooth flanks; Jarrah-Marri-Karri forest. Peaty soils on narrow floor; Wattle low forest (Schoknecht et al., 2004).

The site inspection undertaken by DWER officers identified loamy, gravelly soils within the majority of the application area (DWER, 2018). Clay, gravelly soils were identified on the north eastern corner of the intersection of the McLeod and Mount Shadforth Road (DWER, 2018).

The application area is on a gradual incline landscape, where the southern section (Area A) is located on a low lying wet area in the valley (DWER, 2018).



Figure 1: Application Area

### 3. 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 application is to clear 0.95 hectares of native vegetation within McLeod Road Reserve (PIN 11746159 and 1141701), Shadforth, for the purpose of road widening over a 2.4 kilometre stretch of road between the Mount Shadforth Road and Osborne Road intersections. The applicant proposes to clear up to three metres from either side of the existing road, whereby up to 1.5 metres from the existing backslope will be cleared. The applicant has advised that minimal clearing will occur on the Eastern side of McLeod Road (limited to a few individual trees) due to bank stabilisation and that the majority of the clearing will occur on the Western side of the Road (Shire of Denmark, 2018a).

The local area considered in the assessment of this application is defined as a 10 kilometre radius surrounding the application area. The local area retains approximately 27.92 per cent native vegetation (9902.58 hectares).

According to available databases, a total of 28 Priority (P) species and four rare flora species have been recorded within the local area. The closest of these is priority flora 3 species '*Amanita fibrillopes*' which has been mapped approximately 900 metres south east of the application area. The record of this species from 2011 was identified in grey sand. Noting the application area contains loamy/gravelly and clay/gravelly soils, it is not likely this species would occur within the area under application. Three P2 flora species, namely '*Amanita walpolei*', '*Drepanocladus aduncus*' and '*Caladenia applanata* subsp. *erubescens*' and one P1 flora species '*Stylidium* sp. Kordabup (A.R. Annels 1660)' have been recorded 2.3 kilometres south east, 6.8 kilometres south east, 7.7 kilometres south east and 4.1 kilometres south east of the application area respectively. Noting the preferred soil and vegetation characteristics of these priority flora species recorded in the local area, it is not likely the application area would provide suitable habitat for these species.

The majority of the remaining species that have been recorded within the local area are P3 or P4 flora species. Although suitable habitat for four of the remaining 23 P3 and P4 species may occur within the application area, it is not likely the proposed clearing will impact on the conservation status of these species given P3 species are generally known from collections from several different localities not under imminent threat, and P4 species are species that considered to have been adequately surveyed that are considered not currently threatened or in need of special protection (Department of Parks and Wildlife, 2014).

As discussed under Principle (b), the application area contains suitable habitat for six conservation significant fauna species including; the forest red-tailed black-cockatoo (*Calyptorhynchus banksii* subsp. *naso*), Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*), South-western brush-tailed phascogale (*Phascogale tapoatafa* subsp. *wambenger*) and the Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*). The proposed clearing is not likely to provide significant habitat for these species.

As assessed under Principle (c), the application area is not likely to contain, or provide suitable habitat for any rare flora species recorded within the local area.

No threatened ecological communities (TEC) or priority ecological communities (PEC) have been recorded in the local area. The vegetation within the application area is not likely to be representative of a PEC or TEC.

The proposed clearing may result in the spread of weeds and dieback into remnant vegetation remaining in the road reserve. A weed and dieback management condition will help to minimise this risk.

Given the above, 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 indigenous to Western Australia.

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

A search of the Naturemap database (Department of Biodiversity, Conservation and Attractions (DBCA), 2007-) returned 30 records of conservation significant fauna species within the local area (10 kilometre radius). The majority of these species are either marine, aquatic, or migratory avian fauna with large home ranges, and the proposed clearing is not likely to provide significant habitat for these species.

The application area may provide suitable habitat for six terrestrial/arboreal fauna species listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* including:

- forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*);
- Carnaby's cockatoo (*Calyptorhynchus latirostris*);
- Baudin's cockatoo (*Calyptorhynchus baudinii*),
- South-western brush-tailed phascogale (*Phascogale tapoatafa* subsp. *wambenger*);
- Chuditch (*Dasyurus geoffroyi*); and
- Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*).

Carnaby's cockatoo, Baudin's cockatoo and Forest Red-tailed black cockatoo are classified as rare or likely to become extinct under the WC Act. Under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), the Carnaby's and Baudin's cockatoo are listed as Endangered and the Forest Red-tailed black cockatoo is listed as Vulnerable. All three species of black cockatoo forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*,



*Hakea*, *Grevillea*), Eucalypts, *Corymbia* species and a range of introduced species (Valentine and Stock, 2008). Noting the vegetation type as described under Section 2, the application area contains suitable foraging habitat for all three species of black cockatoo in the form of *Corymbia calophylla* species. Noting the presence of remnant native vegetation located directly adjacent to the application area and the large area of remnant vegetation to the East of the application area that is likely to be in higher quality to the application area, it is considered that the application area is not likely to comprise significant foraging habitat for black cockatoos.

'Breeding habitat' for black cockatoos is defined as trees of species 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). The site inspection undertaken by DWER officers identified two large mature trees with hollows (one with suitable nesting hollows for black cockatoo species) within the application area (DWER, 2018). Additional information was provided by the applicant confirming that the tree containing suitable hollows for black cockatoo species is outside of the application area and will not be impacted by the proposed clearing (Shire of Denmark, 2018b). The other large mature tree that contained small hollows, however they considered to be not of a suitable size for providing breeding habitat for black cockatoo species (DWER, 2018). Given the above, the application area is not likely to provide significant breeding habitat for black cockatoo species.

The South-western brush-tailed phascogale preferred habitat in Western Australia is within dry sclerophyll forests and open woodlands that contain hollow-bearing trees. Noting the vegetation type under application, suitable habitat for this species occurs within the application area. However, noting only one hollow bearing tree was identified within the application area which is not considered to provide suitable breeding habitat for this species, and given the small scale of the clearing of 0.95 hectares which will be selectively cleared over a 2.4 kilometre stretch of road, it is not likely the application area represents significant habitat for the South-western Brush-tailed Phascogale.

Chuditch have a preference for eucalypt forest, dry woodland and mallee shrublands and utilise horizontal hollow logs or earth burrows as dens or refuge. To be suitable as den sites, logs must have a diameter of at least 30 centimeters, a hollow diameter of 7 to 20 centimeters and are generally one meter long (Department of the Environment, 2014). Noting the site inspection of the application area did not identify any hollow horizontal logs (DWER, 2018), the application area is unlikely to provide significant habitat for this species.

Suitable habitat for WRP varies between land units, however commonly it includes suitable vegetation structures for protection and/or nesting, and canopy continuity to aid in avoidance and/or escape predation and other threats. Vegetation communities critical to WRP include long unburnt mature remnants of peppermint (*Agonis flexuosa*) woodlands with high canopy continuity and *Eucalyptus marginata* and *Corymbia calophylla* forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation (Department of the Environment and Energy, 2018). The vegetation within the application area is unlikely to be considered high quality foraging habitat given *Agonis flexuosa*, which is the preferred food source for this species does not occur within the application area. Given this, and that over 50 per cent of the application area is fragmented and in a degraded to completely degraded (Keighery, 1994) condition, the application area is not likely to provide significant habitat for this species.

The application area provides and contributes to an ecological linkage that connects remnant patches of native vegetation from the north to the south of the application area. This linkage facilitates the movement of fauna within and across the landscape. However, in consideration of the extent of the proposed clearing that is spread out selectively over a 2.4 kilometre stretch of road and that majority of the vegetation in the road reserve will be retained, it is considered that the impact on the functionality of this road reserve as an ecological linkage to support fauna habitat will be minimal.

Given the above, 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, rare flora.**

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

A search of the Department of Biodiversity, Conservation and Attractions' (DBCA) rare flora database revealed records of four rare flora species within the local area (10 kilometre radius).

*Commersonia apella*, the closest of the four rare flora species to the application area, is a WA Herbarium record from 1978 which has been recorded approximately 2.5 kilometres west of the proposed clearing. The species is found near the banks of streams or rivers, growing in humic, greyish-brown, clayey-sand, in open jarrah-wandoo woodland, karri-marri forest and coastal *Eucalyptus angulosa*, *E. conferruminata* and *E. cornuta* mallee shrubland. Noting the habitat requirements of this species, it is not likely suitable habitat would occur within the application area due to the differing soil type under application.

*Microtis globula* has been mapped approximately 3.8 kilometres south of the application area and is usually found to occur within peaty soils associated with winter wet swamps (Western Australian Herbarium, 1998-). Noting the loamy gravelly and clay/gravelly soils that were identified within the application area during DWER's site inspection, it is not likely that suitable habitat for this species would occur within the application area (DWER, 2018).

*Drakaea micrantha* and *Kennedia glabrata* have been recorded approximately 5.2 and 6.4 kilometres south east of the application area. Both of these rare flora species have a preference for sandy soils. Noting the soil type under application, it is not considered likely that the application area would provide suitable habitat for either species.

Given the above, 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**

As discussed under Principle (a), no TEC's have been recorded in the local area. As discussed under the site information under Section 2, the majority of the application area is in a degraded to completely degraded (Keighery, 1994) condition. In consideration of this and the vegetation type observed during the site inspection undertaken by DWER officers, the vegetation within the application area is not likely to be representative of a TEC listed under the EPBC Act or endorsed by the Western Australian Minister for Environment (DWER, 2018).

Given the above, 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 national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 percent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

As indicated in Table 1, the mapped IBRA Bioregion and South West vegetation complexes retain greater than the recommended 30 per cent representation threshold (Government of Western Australia, 2018).

The local area (10 kilometre radius) retains approximately 27.92 per cent native vegetation cover. The proposed clearing represents approximately 0.0096 per cent of the remaining vegetation within the local area and the proposed clearing would reduce the extent of native vegetation within the local area to 9901.63 hectares.

As discussed under Principle (b), the roadside vegetation is likely to provide a fauna corridor that provides a connection between patches of remnant vegetation to the north and south of the application area. However, noting that the majority of native vegetation will remain within the road reserve and is therefore not likely to significantly impact fauna movement across the landscape, and given only minimal clearing (which is mostly constrained to the Western side of the Road) of up to 1.5 metres in width over a 2.4 hectare footprint area will occur, the application area is not considered to be significant as a remnant of native vegetation.

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

**Table 1: Vegetation extents**

	Pre-European (ha)	Current Extent (ha)	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>					
Warren	833,985.6	659,438.6	79.1	557,850.1	66.9
<b>South West Vegetation Complex (Matiske)**</b>					
Granite Valleys (S1)	25,606.6	21,661.7	84.6	19,515.8	76.2
Keystone (KB)	29,634.1	23,188.2	78.3	18,283.9	61.7
Keystone (Ks)	1,950.5	1,178.6	60.4	544.1	27.9

**(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 perennial watercourse intersects the application area. A site inspection undertaken by DWER confirmed the presence of this watercourse where riparian vegetation and surface water was observed on the Eastern side of the Road reserve (DWER, 2018). As discussed under Site information under Section 2, the application area is on a gradual incline landscape, where the southern section (Area A) is located on a low lying valley. Riparian areas were observed within Area A which are likely to be associated to the low lying valley in the landscape (DWER, 2018).

The applicant advised that the existing culverts within the scope of the proposed works will be reshaped to accommodate the road widening (Shire of Denmark, 2018). Noting the presence of the minor perennial watercourse and the riparian areas observed in Area A of the application area, the proposed clearing is likely to impact upon riparian vegetation growing in association with a watercourse. However, noting the extent of the application area and that the existing culverts are being upgraded, it is not likely the proposed clearing will significantly impact upon riparian vegetation growing in association with the above mentioned hydrological features.

Given the above, the proposed clearing is at variance to 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 to this Principle**

As discussed under Section 2, the application area is mapped as three different soil types, being, Keystone podzols Phase subsystem (**Land Unit 1**), Keystone brown duplex Phase subsystem (**Land Unit 2**) and Minor Valleys S1 Subsystem (Walpole) subsystem (**Land Unit 3**) (Schoknecht et al., 2004). The soils observed during the site inspection across the application area were more consistent with the Keystone brown duplex Phase subsystem (**Land Unit 2**) which were brown gravelly, loamy soils (DWER, 2018). Clay/gravelly soils were identified in a very small section of Area A and B as described under Section 2, however they were not peaty soils as described under **Land Unit 3**.

**Table 2: Land degradation risk summary**

<b>Risk categories</b>	<b>Land Unit 1</b>	<b>Land Unit 2</b>	<b>Land Unit 3</b>
Wind erosion	>70% of map unit has a high to extreme wind erosion risk	<3% of map unit has a high to extreme wind erosion risk	10-30% of map unit has a high to extreme wind erosion risk
Water erosion	30-50% of map unit has a high to extreme water erosion risk	50-70% of map unit has a high to extreme water erosion risk	30-50% of map unit has a high to extreme water erosion risk
Salinity	30-50% of map unit has a moderate to high salinity risk or is presently saline	30-50% of map unit has a moderate to high salinity risk or is presently saline	30-50% of map unit has a moderate to high salinity risk or is presently saline
Subsurface Acidification	<3% of map unit has a high subsurface acidification risk or is presently acid	<3% of map unit has a high subsurface acidification risk or is presently acid	3-10% of map unit has a high subsurface acidification risk or is presently acid
Flood risk	<3% of the map unit has a moderate to high flood risk	<3% of the map unit has a moderate to high flood risk	3-10% of the map unit has a moderate to high flood risk
Water logging	10-30% of map unit has a moderate to very high waterlogging risk	<3% of map unit has a moderate to very high waterlogging risk	10-30% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	<3% of map unit has a high to extreme phosphorus export risk	<3% of map unit has a high to extreme phosphorus export risk	<3% of map unit has a high to extreme phosphorus export risk

Noting that the majority of the soil type under application was consistent with **Land Unit 2**, the proposed clearing has a relatively low likelihood of causing land degradation in the forms of wind erosion, flooding, subsurface acidification, water logging, salinity and phosphorus export based on the mapped land degradation risk outlined above (Schoknecht et al., 2004).

Approximately 50 to 70 per cent of the mapped land unit for the soil type observed in the majority of the application area has a high to extreme risk of water erosion (Schoknecht et al., 2004). Noting the soil type under application, presence of a watercourse, and gentle incline towards a low lying area, the proposed clearing may result in land degradation in the form of water erosion. However, given that the proposed clearing will be spread out over a 2.4 hectare footprint area, the small size of the application area, and the existing culverts which will be upgraded to accommodate the clearing, it is not likely the clearing would result in appreciable land degradation.

Salinity levels within the application area is mapped at between 500 and 1000 milligrams per litre total dissolved solids. Noting these low salinity levels, the proposed clearing is unlikely to result in land degradation as a result of salinity.

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 is not likely to be at variance to this Principle**

There are several conservation areas mapped within the local area (10 kilometre radius). The closest of these conservation areas is an un-named reserve located approximately 2.7 kilometres west of the application area. This Reserve is vested with the Conservation Commission of Western Australia for the purpose of 'timber'. The next closest conservation areas to the application area are the Denmark Catchment State Forest, and the Mount Shadforth Nature Reserve both managed by the DBCA, located approximately 4.6 kilometres north and south east of the application area respectively.

As discussed within Principles (b) and (e), the road side vegetation within the application area is likely to function as an ecological linkage by providing connection between areas of remnant vegetation in the local area. However, the proposed clearing will not sever this connection as the majority of the native vegetation within the Road reserve will remain. In consideration of this and noting the distance between the application area and the closest conservation area, it is not likely the proposed clearing will impact on the environmental values of a conservation area.

Given the above, the proposed clearing is not likely to be at variance to 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 application area intersects a watercourse and Area A is located in a low lying wet area.

As discussed under Principle (g), the application area consists of loamy, gravelly soils which are more prone to water erosion. The proposed clearing may increase runoff due to the soil type under application and result in sedimentation into the watercourse and wet areas. However, noting the small extent of the proposed clearing and that the proposed clearing is along an existing road with culverts that will be reshaped to manage surface water flow, the impacts to surface water quality are likely to be short term and minimal.

Groundwater salinity over the application has been mapped between 500 and 1000 milligrams per litre per total dissolved solids. Noting the extent of the clearing occurring over sections of a larger footprint area, the proposed clearing is not likely to result in a significant rise in groundwater levels.

Given the above, 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 demonstrated in Table 2 under Principle (g), the flood risk for **Land Unit 2** which was identified as covering the majority of the application area (DWER, 2018) is less than three per cent of the map unit with a moderate to high flood risk, the lowest risk category (Schoknecht et al., 2004). Given the mapped low level of flood risk, and the extent of the proposed clearing, it is unlikely that the proposed clearing will cause or exacerbate flooding.

Given the above, the proposed clearing is not likely to be at variance to 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 website on 3 August 2018 for a 21 day public submission period. The clearing permit application was re-advertised on the DWER website on 13 September 2018 with a 7 day submission period due to an increase in the size of the application area. No public submissions have been received in relation to this application.

**4. References**

- Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.
- Department of Biodiversity, Conservation and Attractions (DBCA) (2007- ) NatureMap: Mapping Western Australia's Biodiversity. Department of Parks and Wildlife, Perth, Western Australia. URL: <http://naturemap.dpaw.wa.gov.au/>. Accessed September 2018.
- Department of Parks and Wildlife (2014) Conservation Codes for Western Australia Flora and Fauna. Department of Parks and Wildlife. Western Australia.
- Department of the Environment (DotE) (2014). *Dasyurus geoffroii* in Species Profile and Threats Database, Department of the Environment, Canberra. Available from: <http://www.environment.gov.au/sprat>
- Department of the Environment and Energy (2018) *Pseudocheirus occidentalis* – Western Ringtail Possum in Species Profile and Threats Database, Department of the Environment, Canberra.
- Department of Water and Environmental Regulation (DWER) (2018) Site Inspection Report for Clearing Permit Application CPS 8127/1. Site inspection undertaken 26 September 2018. Department of Water and Environmental Regulation, Western Australia (DWER Ref: A1728513).
- Government of Western Australia. (2018). 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. Department of Biodiversity, Conservation and Attractions.
- 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 Denmark (2018a) Additional advice received for Clearing Permit Application CPS 8127/1 (DWER Ref: A1729598).
- Shire of Denmark (2018b) Additional advice received for Clearing Permit Application CPS 8127/1 (DWER Ref: A1729606).
- 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 Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed 16/10/2018).

GIS Databases:

- Aboriginal Sites of Significance
- Department of Biodiversity, Conservation and Attractions, Tenure
- Conservation managed reserves
- Hydrography, COG Hydro
- Hydrography, General Hydro
- Hydrography, Wetlands
- Land degradation risk categories



- SAC bio-datasets