



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 8116/1
Permit Holder:	Shire of Capel
Duration of Permit:	13 October 2019 to 13 October 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.

2. Land on which clearing is to be done

Boyanup Road West road reserve (PIN 1328954) Boyanup

Boyanup Road West road reserve (PIN 1328917) Elgin

Boyanup Road West road reserve (PIN 1323149, 1323148, 1323147, 1323146, 1254316, 1323143 and 1253621) Statham.

3. Area of Clearing

The Permit Holder must not clear more than 2.21 hectares of native vegetation within the area shaded yellow on attached Plan 8116/1a, Plan 8116/1b, Plan 8116/1c and Plan 8116/1d.

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. Weed and Dieback 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 *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.

8. Fauna management – Carnaby’s cockatoo, forest red-tailed black cockatoo and Baudin’s cockatoo

(a) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall engage a *fauna specialist* to conduct a *fauna survey* of the Permit Area to identify *black cockatoo habitat tree/s* being utilised by fauna species listed below:

- (i) *Calyptorhynchus lateriosis* (Carnaby’s cockatoo);
- (ii) *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo).
- (iii) *Calyptorhynchus baudinii* (Baudin’s cockatoo)

(b) Each *black cockatoo breeding tree* identified under condition 8(a) shall be inspected by a *fauna specialist* for evidence of current or past breeding use by Carnaby’s cockatoo (*Calyptorhynchus latirostris*), Baudin’s cockatoo (*Calyptorhynchus baudinii*) or forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*).

(c) Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall provide the results of the *fauna survey* in a report to the CEO.

(d) The *fauna survey* report must include the following;

- (i) the location of the *black cockatoo habitat tree/s* 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; and
- (ii) the location of any fauna species, listed in condition 8(a) if identified, 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; and
- (iii) the name and amount of each fauna species identified; and
- (iv) the methodology, used to survey the Permit Area; and
- (v) a description of the *black cockatoo habitat tree/s* identified.

(e) Where *black cockatoo habitat tree/s* are identified within the Permit Area and are showing evidence of current or past breeding use by Carnaby’s cockatoo (*Calyptorhynchus latirostris*), Baudin’s cockatoo (*Calyptorhynchus baudinii*) or forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) under condition 8(b) of this Permit, the Permit Holder shall ensure that no clearing occurs within 10 metres of *black cockatoo habitat tree/s* showing evidence or past or current use of the identified fauna.

PART III – RECORD KEEPING AND REPORTING

9. 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); and
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of this Permit.
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 7 of this Permit.

10. Records must be kept

- (a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:
 - (i) of records required under condition 9 of this Permit; and
 - (ii) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this permit has been carried out, must be provided to the CEO on or before 30 June of each year.
- (c) Prior to 13 July 2024 the Permit Holder must provide to the CEO a written report of records required under condition 9 of this Permit where these records have not already been provided under condition 10(a) of this Permit.

DEFINITIONS

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

black cockatoo breeding tree/s: means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for *Eucalyptus salmonophloia* or *Eucalyptus wandoo*) that contain hollows suitable for breeding by Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*) or Baudin's cockatoo (*Calyptorhynchus baudinii*);

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;

fauna specialist: means a person who holds a tertiary qualification specializing in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the *Biodiversity Conservation Act 1950*;

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.

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Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

13 September 2019

Plan 8116/1a

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Legend

-  Imagery
-  Clearing Instruments Activities
-  Localities
-  Local Government Authority



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GDA 94 (Lat/Long)

Geocentric Datum of Australia 1994

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Legend

-  Imagery
-  Clearing Instruments Activities
-  Localities
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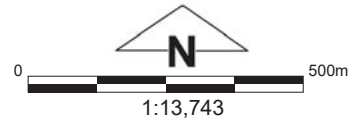
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Plan 8116/1d



Legend

-  Imagery
-  Clearing Instruments Activities
-  Localities
-  Local Government Authority



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3. Application details

3.1. Permit application details

Permit application No.: 8116/1
Permit type: Purpose Permit

3.2. Applicant details

Applicant's name: Shire of Capel

3.3. Property details

Property: Boyanup Road West road reserve (PINs: 1328954, Boyanup; PIN: 1328917, Elgin; and PINs: 1323149, 1323148, 1323147, 1323146, 1254316, 1323143 and 1253621, Stratham)

Local Government Authority: Shire of Capel
Localities: Boyanup, Elgin and Stratham

3.4. Application

Clearing Area (ha)	No. Trees	Method of Clearing	For the purpose of:
2.21 hectares revised		Mechanical Removal	Road widening

3.5. Decision on application

Decision on Permit Application: Granted
Decision Date: 13 September 2019

Reasons for Decision: The clearing permit application was received on 26 June 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 clearing principle (f), may be at variance to principle (b) and is not likely to be at variance to the remaining clearing principles.

The Delegated Officer noted that the proposed clearing may impact on riparian vegetation growing in association with a multiple use wetland, however determined that the proposed clearing is unlikely to have any significant environmental impacts. The Delegated Officer also noted that the proposed clearing may increase the risk of weeds and dieback being introduced or spread into adjacent areas. Weed and dieback management measures will minimise this risk.

2. Site Information

Clearing Description: The application is to clear up to 2.21 hectares of native vegetation within various locations along Boyanup Road West (approximately 10.3 kilometres long), for the purpose of road upgrades. During the assessment the applicant reduced the proposed clearing from 18.21 hectares to 2.21 hectares.

Vegetation Description: The application area is mapped as two Heddle vegetation complexes:

- Guildford Complex (90 per cent): 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 lanepolei* (Salmon White Gum)). Minor components include *Eucalyptus rudis* (Flooded Gum) - *Melaleuca raphiophylla* (Swamp Paperbark); and
- Bassendean Complex-Central and South (10 per cent): Vegetation ranges from woodland of *Eucalyptus marginata* (Jarrah) - *Allocasuarina fraseriana* (Sheoak) - Banksia species to low woodland of Melaleuca species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* (Jarrah) to *Eucalyptus todtiana* (Pricklybark) in the vicinity of Perth. (Heddle et al., 1980).

A level 2 vegetation and flora survey was undertaken by Natural Area Consulting Management Services (Natural Area) in October 2018. The road reserve surveyed is approximately 40.2 hectares in area, including the current road area. A total of five vegetation types were identified during the survey (Natural Area, 2018).

Vegetation Type	Vegetation Description	Proposed Clearing Total
Marri Woodland	<i>Corymbia calophylla</i> over mixed herbs and sedges. Associated <i>Agonis flexuosus</i> in sandier areas and <i>Melaleuca</i> spp in wetter areas. Most of the area is Completely Degraded, with a dense, weedy grass understory.	1.52 hectares

Peppermint Woodland	<i>Agonis flexuosus</i> over mixed shrubs and sedges. Most of the area is Completely Degraded, with a dense, weedy grass understory.	0.113 hectares
Melaleuca Woodland	<i>Melaleuca raphiophylla</i> or <i>M. preissiana</i> with associated <i>M. lateritia</i> over a Kikuyu grass or mixed weed understory.	0.007 hectares
Flooded Gum Woodland	<i>Eucalyptus rudis</i> over a dense, weedy understory.	0.46 hectares
Foreign Eucalypt Woodland	Mixed, planted, non-native Eucalyptus species over a dense, grassy weed understory.	

Vegetation Condition:

Good; Structure significantly altered by multiple disturbance; retains basic structure/ability to regenerate (Keighery, 1994).

To

Completely Degraded; No longer intact, completely/almost completely without native species (Keighery, 1994).

The condition and structure of the vegetation under application was determined by a site inspection undertaken by the Department of Water and Environmental Regulation (DWER) on 10 August 2018 and the flora and vegetation survey (Natural Area, 2018). It should be noted that the flora survey covered all the vegetation present within the road reserves (40.2 hectares), with the vegetation condition ranging as per the table below;

Vegetation Condition	Excellent	Very Good	Good	Degraded	Completely Degraded	Total
Area (ha)	0.1ha	0.9ha	3ha	12.4ha	23.8ha	40.2ha

Whilst the flora survey identified better quality vegetation in 'excellent' to 'very good' condition (Keighery, 1994), it should be noted that these areas do not occur within the proposed clearing footprint. Consequently, the vegetation under application has been described as being in a 'good' to 'completely degraded' (Keighery, 1994) condition.

Soil and Landform Type:

The application area is mapped within the following land subsystems;

- Pinjarra P8 Phase: Broad poorly drained flats and poorly defined stream channels with moderately deep to deep sands over mottled clays; acidic or less commonly alkaline grey and yellow duplex soils to uniform bleached or pale brown sands over clay.
- Spearwood S1b Phase: Dune ridges with deep siliceous yellow brown sands or pale sands with yellow-brown subsoil and slopes up to 15 per cent.
- Pinjarra P1a Phase: Flat to very gently undulating plain with deep acidic mottled yellow duplex soils. Shallow pale sand to sandy loam over clay; imperfect to poorly drained and generally not susceptible to salinity.
- Bassendean B1 Phase: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres; banksia dominant.
- Bassendean B4 Phase: Broad poorly drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 metres by clay or less frequently a strong iron-organic hardpan.
- Bassendean wet, swamp Phase: Bassendean wet, swamp Phase
- Pinjarra P1b Phase: Flat to very gently undulating plain with deep acidic mottled yellow duplex soils. Moderately deep pale sand to loamy sand over clay; imperfectly drained and moderately susceptible to salinity in limited areas.
- Pinjarra P1d Phase: Flat to very gently undulating plain with deep acidic mottled yellow duplex soils. Shallow pale sand to sandy loam over clay; imperfect to poorly drained and moderately susceptible to salinity. (Schoknecht et al., 2004).

As indicated above, the application areas comprises of eight land subsystems, however, 80 percent of the application area falls within the Pinjarra P8 Phase and Pinjarra P1b Phase.

Comment:

The local area referred to in this assessment is defined as the area within a 10 kilometre radius from the perimeter of the application area. Aerial imagery indicates that the local area retains approximately 22 per cent native vegetation cover.

Figure 1: Western section of the application area



Figure 2: Central western section of the application area



Figure 3: Central eastern section of the application area.



Figure 4: Eastern section of the application area.



Photographs of vegetation within the application area



Photo 1: Taken of the vegetation in the western section of the application area on the northern side of the road reserve adjacent to the mapped occurrence of a TEC which is mapped on the southern side of the road reserve.



Photo 2: Taken of the vegetation in the central western section of the application area.



Photo 3: Taken of the vegetation in the central eastern section of the application area.



Photo 4: Taken of the vegetation in the eastern section of the application area.

3. Minimisation and mitigation measures

On 2 October 2018, the Department of Water and Environmental Regulation wrote to the applicant to advise that the proposed clearing of 18.21 hectares had the potential to result in environmental impacts to the following:

- Conservation significant flora;
- Threatened ecological communities; and
- Conservation significant fauna.

It was also noted that the application occurs within an extensively cleared area and contains Heddlé vegetation complex 'Guilford Complex' which is poorly represented.

The applicant subsequently amended the clearing footprint and reduced the clearing size from 18.21 hectares to 2.21 hectares, minimising some of environmental impacts listed above. The applicant commissioned a Level 2 flora and vegetation survey of the application area. The survey indicated that no flora of conservation significance will be impacted upon within the revised clearing footprint. It also determined that the vegetation within the revised application area is unlikely to be a representation of a threatened ecological community. The revised application area has also reduced the amount of suitable foraging habitat for black cockatoos and preferred habitat for the western ringtail possums. These aspects are further discussed in the below assessment report.

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

As discussed in Section 2, a total of five vegetation types were recorded during the flora survey, of which four occur within the proposed clearing areas. The condition of the vegetation within the application areas ranges from good to completely degraded (Keighery, 1994).

According to available databases received from the Department of Biodiversity, Conservation and Attractions (DBCA), 41 priority flora species and 11 threatened flora species have been recorded within the local area. Threatened flora are discussed under Principle (c). Of the priority flora listed in the local area, the flora and vegetation survey identified one priority flora species *Acacia semitrullata* (P4) occurring within the road reserve, however not within the proposed clearing footprint (Natural Area, 2018). The flora and vegetation survey of the application did not identify any other priority flora within the clearing area (Natural Area, 2018). Taking into consideration that the flora survey was undertaken at an appropriate time of year and that 85-95 per cent of the species recorded during the survey were able to be identified, the proposed clearing is not likely to impact on priority flora known to occur within the local area.

According to available databases, nine fauna species specially protected under the *Biodiversity Conservation Act 2016*, (DBCA, 2007-) have been recorded within the local area. Of the fauna recorded within local area, it is considered that the application area is likely to comprise of fauna habitat for eight conservation significant fauna species. However, it is considered that the application area is unlikely to comprise of significant habitat for these species. This is discussed further under Principle (b).

According to available databases, several occurrences of the threatened ecological community (TEC) 'Banksia woodlands of the Swan Coastal Plain' occur within the local area, including having been mapped as occurring within the application area. This ecological community is listed as a Priority 3 Priority Ecological Community (PEC) by the Department of Biodiversity, Conservation and Attractions (DBCA) and as a TEC under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Approved Conservation Advice for the TEC states that to be considered representative of the TEC, a remnant in the Swan Coastal Plain bioregion must include at least one of four *Banksia* species being candlestick banksia, *Banksia menziesii* (firewood banksia), *Banksia prionotes* (acorn banksia) and/or *Banksia ilicifolia* (holly-leaved banksia); must include an emergent tree layer often including marri, jarrah, or tuart, and other medium trees including *Eucalyptus tottiana* (pricklybark), *Nuytsia floribunda* (WA Christmas tree), western sheoak, *Callitris arenaria* (sandplain cypress), *Callitris pyramidalis* (swamp cypress) or *Xylomelum occidentale* (woody pear); and must include an often highly species-rich understorey (Threatened Species Scientific Committee, 2016). A flora and vegetation survey and site inspection undertaken of the application area did record any banksia species present within the application area (Natural Area, 2018). Noting this, the state listed PEC is not represented within the application area. Several state listed TEC's occur within the local area and are discussed further under Principle (d).

Given the above, the application area is unlikely to comprise 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 indigenous to Western Australia.

Proposed clearing may be at variance to this Principle

According to available databases, nine fauna species specially protected under the *Biodiversity Conservation Act 2016*, two protected fauna under international agreement, three specially protected fauna species and five priority fauna have been recorded within the local area (DBCA, 2007-). Based on the findings of the site inspection and the flora and vegetation survey, the following significant fauna species have the potential to occur within the application area;

- Woylie (*Bettongia penicillata* subsp. *Ogilbyi*)
- Forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*)
- Baudin's cockatoo (*Calyptorhynchus baudinii*)

- Carnaby's cockatoo (*Calyptorhynchus latirostris*)
- Western ringtail possum (*Pseudocheirus occidentalis*)
- Brush-tailed phascogale (*Phascogale tapoatafa*)
- Southwestern brown bandicoot (*Isodon fusciventer*)
- Rainbow Bee Eater (*Merops ornatus*)

Black cockatoo species nest in hollows in live or dead trees of *Eucalyptus gomphocephala* (tuart), *Eucalyptus marginata* (jarrah), *Corymbia calophylla* (marri), *Eucalyptus diversicolor* (karri), *Eucalyptus wandoo* (wandoo), *Eucalyptus salmonophloia* (salmon gum), *Eucalyptus rudis* (flooded gum), *Eucalyptus loxophleba* (York gum), *Eucalyptus accedens* (powder bark), *Eucalyptus megacarpa* (bullich) and *Eucalyptus patens* (blackbutt) (Commonwealth of Australia, 2012). Black cockatoos have a preference for foraging habitat that includes jarrah and marri woodlands and forest heathland and woodland dominated by proteaceae plant species such as *Banksia* sp., *Hakea* sp. and *Grevillea* sp. (Commonwealth of Australia, 2012).

The site inspection (DWER, 2018) and the flora and vegetation survey noted the application area provides foraging habitat for black cockatoos with evidence of foraging (chewed marri nuts) by forest red-tailed black cockatoo occurring within the application area (Natural Area, 2018). Whilst the application area provides foraging habitat for black cockatoos, it is considered to be of a low quality based upon the segmented nature of clearing over a distance of 10.3 kilometres and that the condition of the vegetation being predominately degraded to completely degraded (Keighery, 1994). Additionally, a large amount of similar habitat (approximately 38 hectares) will remain in the road reserve and larger portions of similar or better quality habitat remain in nearby conservation areas (Tuart National Park, located 2.5 kilometres east of the application area, Unnamed Nature Reserve, located three kilometres east of the application area, Boyanup State Forest, located four kilometres of the application area and Dardanup Conservation Park, located 8.9 kilometres north east of the application area).

A site inspection of the application area noted trees within the road reserve to be of an appropriate size for breeding purposes for black cockatoos (DWER, 2018). The flora and vegetation survey noted a tree to contain a hollow, however, it was not of a sufficient size (<20 cm) to provide nesting habitat for black cockatoos (Natural Area, 2018). There is a confirmed Carnaby's cockatoo breeding site approximately 3.7 kilometres south of the application area. Noting this, the application area may provide suitable breeding habitat for black cockatoos. To avoid impacts to potential breeding trees that may occur within the application area, a fauna management condition has been imposed on the permit to mitigate and minimise impacts on black cockatoo breeding trees.

Western ringtail possums spend most of their time in trees (arboreal), particularly in the canopy of peppermint (*Agonis flexuosa*) woodland and eucalypt forests. They feed on leaves and like to forage for food at night (nocturnal). They build nests or resting places called 'dreys' from the foliage and also use tree hollows. A site inspection and vegetation and flora survey noted dreys occurring within the canopy of peppermint trees. The revised clearing footprint has removed the areas where these dreys were recorded. Noting this and that the total amount of proposed clearing of the peppermint woodland is approximately 0.113 hectares (leaving approximately 97.5 per cent of the peppermint woodland remaining in the road reserve), the proposed clearing is not expected to result in significant impacts to western ringtail possums of their preferred habitat.

The woylie is known from four surviving populations (Perup, Kingston, Dryandra Woodland and Tutanning Nature Reserve) and has been translocated to several additional locations including locations in South Australia and New South Wales (Yeatman and Groom, 2012). The application is not located near one of the known woylie locations and its habitat is unlikely to be impacted upon by the proposed clearing.

The preferred habitat of the brush-tailed phascogale is dry sclerophyll forests and open woodlands that contain hollow-bearing trees with a sparse ground cover. Records are less common from wetter forests. The flora and vegetation survey states that residents have described sightings of a small brush-tailed mammal crossing the road that is consistent with that of the brush-tailed phascogale (Natural Area, 2018). Noting this, the brush-tailed phascogale has the potential to occur within the application area, however, given the size of the proposed clearing, the narrow and linear configuration of the clearing and segmented clearing approach over a distance of 10.3 kilometres (of which over 95 per cent of the vegetation will remain in the road reserve), the proposed clearing is not expected to result in significant impacts to brush-tailed phascogale.

The southern brown bandicoot prefers areas with dense understorey vegetation, particularly around swamps and watercourses that provides protection from predators (DEC, 2012). This species is also commonly found around wet areas adjacent to dryland vegetation (DEC, 2012). Noting that the understorey of the application area is largely devoid of native vegetation, the application area is unlikely to represent significant habitat for the southern brown bandicoot.

The vegetation and flora survey observed a rainbow bee-eater in the area of peppermint woodland (Natural Area, 2018). This type of habitat is not considered significant habitat for the rainbow bee-eater as the species distribution covers the majority of Australia and is not limited to the application area.

Noting the application area may provide breeding habitat for black cockatoos, the proposed clearing may be at variance to this principle. A habitat tree assessment prior to clearing will identify and avoid and minimise the potential risk to black cockatoo species.

(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

According to available databases, 11 threatened flora species have been recorded within the local area. The closest record of a threatened flora species is approximately 1.3 kilometres away the application area. Noting the known ranges of these species and their preferred habitats, including soil and vegetation types, the application area may comprise suitable habitat for the following species.

- *Eleocharis keigheryi* - Rhizomatous, clumped perennial, grass-like or herb (sedge), to 0.4 metres high and is generally associated with clay, sandy loam soils, emergent in freshwater creeks and claypans. There are 54 records within florabase, three records within the Capel area with the closest being 1.3 kilometres to the application area. Records within 10 kilometres appear to be associated with water filled clay pans, within *Melaleuca latritia*, *Wurmbaea*, *Tribonanthes* and *Leptocarpus* (Western Australian Herbarium, 1998-).
- *Synaphea stenoloba* - Caespitose shrub, 0.3-0.45 metres high associated with sandy or sandy clay soils, winter-wet flats and granite. There are 51 records within florabase, two within 10 kilometres of the application area with the closest being 1.8 kilometres away. Records within the local area appear to be associated with Marri, *Melaleuca sp.* and *Kunzea sp.* with other common species being *Gompholobium sp.*, *Jacksonia sp.*, *banksia sp.* and herbs. The local area species were recorded within wet, moist soils with the vegetation being in good or better condition (Western Australian Herbarium, 1998-).
- *Diuris drummondii* - Tuberous, perennial, herb, 0.5-1.05 metres high associated with low-lying depressions, swamps. There are 34 records within florabase. The record within close proximity to the application area (1.4 kilometres) was recorded within dry soil amongst a large number of weeds. The dominant vegetation type was *Melaleuca preissiana* and *M laetifica*, associated species consisted of various sedges, rushes and grasses (Western Australian Herbarium, 1998-).
- *Synaphea sp.* Serpentine (G.R. Brand 103) - Erect, clumped shrub (sub-shrub), to 0.8 metres high. Generally associated with grey sandy loam or clay, grey-brown clayey sand, brown clayey loam, laterite, on flats, seasonally wet areas and railroad reserves often with wet depressions or drains. There are 36 records within florabase. The record within close proximity to the application was recorded approximately 2.2 kilometres away within low winter wet, sandy clay over clay soils, with vegetation consisting of a swampy heath (Western Australian Herbarium, 1998-).
- *Synaphea sp.* Pinjarra Plain (A.S. George 17182) - Sprawling sub-shrub with very long inflorescences towards end of flowering, with stems red, peduncle bases red. Leaves darker green than *S. odocoileops* at site, highly dissected with linear ultimate lobes and very long petioles. Juvenile leaves are red. There are 53 records within florabase with the record within close proximity to the application occurring 2.3 kilometres away. The record was found in red-brown moist clay, vegetation being *Corymbia calophylla* woodland with *Viminaria juncea*, *Synaphea odocoileops*, *S. aff. petiolaris* (broad leaf lobes; large, very widely opening flowers), *Mirbelia*, *Patersonia*, *Brachysema*, *Daviesia*, *Agrostocrinum scabrum*, *Stylidium*, *Restionaceae* (Western Australian Herbarium, 1998-).
- *Verticordia densiflora var. pedunculata* - Erect to spreading shrub, 0.3-0.6 metres high. Generally associated with Grey/yellow sand, sandy loam and winter-wet low-lying areas. There are 21 records within florabase. The record within close proximity to the application was recorded 12/12/2006 approximately 4.8 kilometres away within white sandy soils. Vegetation was consisted of *Eucalyptus marginata*, *Corymbia calophylla*, *Stirlingia latifolia* and *Hypocalymma angustifolium*. It was also noted that grassy weeds were present (Western Australian Herbarium, 1998-).
- *Darwinia whicherensis* is known from seven records with the closest known record to the application area being five kilometres away. The record was adjacent to a marri-jarrah woodland within and open sandy roadside that was highly disturbed (Western Australian Herbarium, 1998-).
- *Drakaea elastica* - Tuberous, perennial, herb, 0.12-0.3 metres high generally associated with white or grey sand in low-lying situations adjoining winter-wet swamps. There are seven records within florabase with the closest being 3.1 kilometres from the application area. The record was taken from moist sandy white soils with the vegetation dominated by *kunzea glabrescens* (Western Australian Herbarium, 1998-).

On review of the flora and vegetation survey, it was noted that 116 native flora species were identified within the 40.2 hectares surveyed (Natural Area, 2018). No threatened flora, including the above listed flora species were recorded within the area surveyed. It is considered that the timing of the survey was undertaken at an appropriate time of year with 85-95 per cent of the species were able to identified (Natural Area, 2018).

Noting the findings within the flora and vegetation survey, the segmented clearing approach over a linear distance of 10.3 kilometres that is next to an existing road, the application areas are not likely be necessary for the continued existence of, threatened flora including the abovementioned conservation significant species in the local area.

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

According to available databases, two state listed threatened ecological communities (TEC's) have been recorded within the local area;

- SCP3c – *Corymbia calophylla* – *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain, listed as Critically Endangered under the *Biodiversity Conservation Act 2016*. The mapped boundary of the TEC is located 15 metres from the application area. A small portion of the application areas falls within the buffer of the TEC, with the size of this occurrence of the TEC being 3.2042 hectares; and
- SCP08 – Herb rich shrublands in clay pans, listed as Vulnerable under the *Biodiversity Conservation Act 2016*. The mapped boundary of the TEC is located 15 metres from the application area. A small portion of the application areas falls within the buffer of the TEC, with the size of this occurrence of the TEC being 3.3086 hectares.

As noted, a small section of the proposed clearing is located within the mapped buffers of SCP3c and SCP08. It is recommended that buffers of at least 20-50 metres are retained around these ecological communities to prevent potential habitat damage to such communities. However, the portions of the application areas which occur within such buffers have already been highly modified and the fragmented vegetation consisting of Marri trees over a weedy understory. It also noted that the existing road has been constructed within the recommended buffer which would indicate that the buffer has already been impacted through the initial road

construction. It also noted that the vegetation south of the existing road that adjoins the mapped TEC's will not be disturbed from the proposed clearing activities.

Noting the above the, application area is unlikely to comprise the whole or part of, or be necessary for the maintenance of a TEC.

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 at variance to 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, its condition and whether it is a representation of the mapped vegetation types:

- as indicated in Table 1, the current vegetation extent for mapped Hedde vegetation complex Guildford Complex is below the 30 per cent recommended threshold;
- as indicated in Table 1, less than 0.5 per cent of the pre-European extent of the mapped Guilford Complex is contained in conservation estate; and
- the local area retains approximately 22 per cent pre-European native vegetation cover.

Based upon the five vegetation types recorded within application area, the Marri woodland would most closely resemble the Guildford complex, however, a number of species listed under complex's description are absent. Noting this and that most of the Marri woodland mapped within the survey area was in a completely degraded (Keighery, 1994) condition (Natural Area, 2018), the vegetation within the application area is not considered to be representative of the extensively cleared Guildford complex.

Noting the extent of native vegetation remaining within the local area, the application area occurs within an extensively cleared landscape. However, the majority of the vegetation is in a degraded to completely degraded (Keighery, 1994) condition and does not represent significant habitat for fauna and flora that occurs in the local area. The vegetation under application is not considered to be a significant remnant.

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 DCBA Managed Lands (%)
IBRA Bioregion				
Swan Coastal Plain	1,501,221	579,813	38.5	15
Local government authority				
Shire of Capel	55,945	18,585	33	15
Hedde vegetation complex				
Guildford Complex	90,513	4,607	5	0.5
Bassendean Complex-Central and South	79,057	56,659	71.5	25.5

(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 number of wetlands and watercourses occur within the local area, including the following:

- approximately 90 per cent of the application area falls within a multiple use wetland, with the wetland mapped as occurring over a total area of 42,322 hectares;
- a conservation category wetland (CCW) occurs approximately 50 metres from the western end of the application area;
- a resource enhancement wetland is also mapped as occurring 230 metres away from the application area; and
- a minor tributary of associated with the Capel river occurs within 20 metres of the application area.

The site inspection of the application area noted a large amount of water lying in the adjoining paddocks to the application (DWER, 2019).

Multiple use wetlands are wetlands with few remaining important attributes and functions, development and management should be considered in the context of ecologically sustainable development and best management practice (Water and Rivers Commission, 2001). Noting the purpose of the application is for road upgrades in an established and existing road, it is unlikely the impacts associated with the works will further diminish any important attributes and functions of this large multiple use wetland system. It is also noted that a large amount of the mapped wetland has been cleared.

Resource enhancement wetlands are wetlands that have been modified and do not have clearly recognised human uses in their urban or rural settings. Management objectives of these wetlands is to maintain and enhance the existing ecological functions. The term resource enhancement has been used to indicate that opportunities may exist for commercial developments to enhance the conservation values of these wetlands (Water and Rivers Commission, 2001). Whilst it is acknowledged that resource enhancement wetlands do still have ecological values, the proposed clearing will not impact on the nearby resource enhancement wetlands values due the distance between the known wetland and application area. Aerial imagery suggests that the wetland values have already been lost as there appears to be no native vegetation attributed to the wetland as it appears to be currently used for agricultural purposes (paddock).

Conservation category wetlands support a high level of ecological attributes and functions and are the highest priority for preservation, and buffers are designed to protect wetlands from potential impacts while helping to maintain ecological processes and functions within the wetland (Water and Rivers Commission, 2001). Where the CCW occurs in the vicinity of the application area, the proposed clearing occurs on the northern side of the road reserve with the vegetation in this area being in a degraded to completely degraded (Keighery, 1994) condition. It is acknowledged that the proposed clearing is within the buffer of the CCW, however, the amount of clearing that will occur within the buffer is 0.075 hectares and spread out over seven individual areas. Furthermore, the proposed clearing occurs next to an already established road and impacts to the CCW have already occurred through the initial road construction. The new proposed upgrade is unlikely to have any significant impacts on the ecological attributes and function of the CCW.

The tributary that passes within close proximity to the application area appears to have no vegetation growing within in it. Noting this and that the application area does not intersect with the tributary, it is unlikely the proposed clearing will have a significant impact on the tributary.

The application area will impact on vegetation growing in association with a wetland, however, as noted above it is unlikely the proposed clearing will have significant residual impacts on the wetlands or watercourses in the local area.

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 is not likely to be at variance to this Principle

As discussed in Section 2, the application area is located within eight land subsystems with the most dominant being the Pinjarra P1a Phase subsystem which occupies approximately 50 per cent of the application area (Schoknecht et al., 2004).

The greatest risk of land degradation from the proposed clearing is waterlogging with 95 per cent of the application having >70 per cent of the area being a moderate to very high waterlogging risk. Given the presence of surface water was observed during the site inspection and that a large number of the mapped soils comprised of non-permeable, poorly drained soils of sand to sandy loam over clay, the proposed clearing could potentially contribute to further waterlogging within the local area. Notwithstanding, any land degradation impacts are not likely to be appreciable noting the extent of the proposed clearing over a 10.3 kilometre stretch of road, the linear configuration of the application area and its location along an existing road.

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

According to available datasets, a number of conservation areas have been recorded within the local area, most notably;

- Tuart National Park, located 2.5 kilometres east of the application area;
- Unnamed Nature Reserve, located three kilometres east of the application area;
- Boyanup State Forest, located four kilometres of the application area; and
- Dardanup Conservation Park, located 8.9 kilometres north east of the application area.

Although there is unlikely to be any direct impacts to the conservation areas listed above from the proposed clearing due to the distances between the application area and conservation areas, the application area is likely to act as an ecological linkage that facilitates the movement of fauna across the landscape, possibly connecting Tuart National Park in the west to the Boyanup State Forest and an unnamed nature reserve in the east. Whilst the proposed clearing will impact on the linkage, it will not sever it noting that the majority of the vegetation will remain within the road reserve.

Whilst the proposed clearing is not likely to impact on conservation areas, it is considered the disturbance caused by the proposed clearing may increase the risk of weed and dieback being spread into the nearby vegetated areas. Weed and dieback management practices will assist in mitigating the risk.

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 majority of the application is mapped within a multiple use wetland that covers an area of over 42,322 hectares. It is also in close proximity to a watercourse and other wetlands. The site inspection noted surface water present within and adjacent to the application area as shown within photo 4 (DWER, 2018). Noting the wetlands and watercourse and that the application areas appears susceptible to water inundation (seasonal), it is possible the clearing as proposed may cause deterioration to the water quality within nearby wetlands and watercourse. However, these impacts are likely to be short term and minimal noting the linear and segmented nature of the clearing, with the majority of the vegetation being retained within the road reserve.

The application area has relatively flat topography, an average rainfall of 400 millimetres per annum and groundwater salinity mapped at 500-1,000 total dissolved solids (milligrams per litre). Noting the area appears highly disturbed and the selective clearing approach leaving the majority of the vegetation within the road reserve intact, the proposed clearing is not likely to deteriorate the quality of surface and/or groundwater via increased salinity.

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), there is a large multiple use wetland within close proximity to other wetlands and a watercourse. As observed during the site inspection, these areas may be subject to inundation during the wet season (winter). Noting the extent of the proposed clearing, the linear configuration of the application area and that the application areas are disturbed and adjoin an existing road, 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.

The application was advertised on the Department of Water and Environmental Regulation's website on 26 June 2018 for a 21 day submission period. Two submissions were received in relation to the application, with these submissions received prior to the applicant revising the application area. The submissions raised the following concerns;

- The trees within the application area act as a good wind break from cold winds in winter and provide a good source of shade during summer;
- The roadside vegetation provides an important food and breeding source for black cockatoos;
- Extensive clearing is not required within the road reserve to improve road safety, road safety can be achieved through selective clearing;
- The information provided by the applicant is not sufficient to make an adequate assessment;
- The remnant vegetation along the road reserve represents a significant remnant of vegetation within an extensively cleared landscape;
- The vegetation within the road corridor acts as an important ecological corridor for flora, vegetation communities and fauna movement;
- The area is likely to provide habitat for flora of conservation significance and may be a representation of a TEC;
- A flora and fauna survey is required before a decision is made;
- WALGA/RCC road construction and maintenance training for the construction work crew;
- Suggestions around the road design layout and structure;
- Close supervision of Shire plant drivers undertaking the clearing and frequent site inspections visits by suitably experienced environmental personnel; and
- Detailed surveying post-clearing to confirm adherence to the design clearing envelope, clearly showing and confirming extent of clearing actually undertaken, to be provided and made publically available at the close of the project.

In relation to the above matters, dot points one to eight have been addressed within the above assessment report with information within the assessment obtained from a vegetation and flora survey which addresses both dot points four and eight. In relation to the other concerns raised from the submission, dot points nine to eleven are considered to be outside of the scope of the assessment. In relation to the last dot point, through permit conditions the applicant is required to record the actions undertaken through the clearing process and report them to the Department each calendar year until the permit expires. These reports are not available to the public.

The subject road reserves are located within the boundaries of the proclaimed Busselton-Capel Groundwater Area. The taking of groundwater will require licensing by the Department (DWER, 2018b).

The subject lot is located within the proclaimed Capel Surface Water Area. The taking and use of surface water is subject to assessment and licencing by the Department. Additionally, a tributary of Gynudup Brook (Capel River) crosses road reserve PIN 1328917. Any interference to bed and banks will require a permit from the Department (DWER, 2018b).

No registered Aboriginal Sites of Significance occur within the application area.

5. 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.
- 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 August 2019
- Department of Environment and Conservation (DEC) (2012) Fauna profiles, Quenda, *Isodon obesulus*. Department of Environment and Conservation, Western Australia.
- Department of Water and Environmental Regulation (2018). Site Inspection Report for Clearing Permit Application CPS 8116/1 – Shire of Capel. DWER Ref:A1818975
- Department of Water and Environmental Regulation (2018b). Landuse Planning. Permit issued under the *Right in Water and Irrigation Act 1914* (DWER Ref:A1707637).
- Government of Western Australia. (2018a). 2017 Statewide Vegetation Statistics incorporating the CAR Reserve Analysis (Full Report). Current as of December 2017. WA Department of Biodiversity and Attractions, Perth
- Hedde, E. M., Loneragan, O. W., and Havel, J. J. (1980) Vegetation Complexes of the Darling System, Western Australia. In Department of Conservation and Environment, Atlas of Natural Resources, Darling System, Western Australia.
- Keighery, B.J. (1994) Bushland Plant Survey: A Guide to Plant Community Survey for the Community. Wildflower Society of WA (Inc). Nedlands, Western Australia.
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- 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.
- Submission (2018a) Submission received from the Wildflower Society of Western Australia. Comments provided in relation to Clearing Permit Application CPS 8116/1 – Shire of Capel (DWER Ref:A1711822).
- Submission (2018b) Submission received from member of the public. Comments provided in relation to Clearing Permit Application CPS 8116/1 – Shire of Capel (DWER Ref:1713182).
- Threatened Species Scientific Committee (2016). Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain Ecological Community. Canberra: Department of the Environment and Energy. Available from: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/131-conservation-advice.pdf>
- Water and Rivers Commission (2001) Position Statement: Wetlands, Water and Rivers Commission, Perth.
- Western Australian Herbarium (1998-) FloraBase - The Western Australian Flora. Department of Parks and Wildlife. <http://florabase.dpaw.wa.gov.au/> (Accessed August 2019).
- Woodman Environmental (2018) Biological Survey for the Nanutarra Munjina Road Material Pits. Prepared for Main Roads Western Australia, November 2018.
- Yeatman, G.J. and Groom, C.J. (2012) National Recovery Plan for the woylie *Bettongia penicillata*. Wildlife Management Program No. 51. Department of Environment and Conservation, Perth.

GIS Databases:

- Aboriginal Sites of Significance
- Acid Sulfate Soil Risk Map, Swan Coastal Plain
- DBCA Managed Estate
- Directory of Important Wetlands
- Groundwater salinity, Statewide
- Hydrography, hierarchy
- Hydrography, linear
- Land Degradation datasets
- NLWRA, Current Extent of Native Vegetation
- SAC Bio Datasets
- Soils, Statewide
- Topographic contours
- Vegetation Complexes SCP
- Wetlands, Swan Coastal Plain