GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

Purpose Permit number:	CPS 7662/1
Permit Holder:	Shire of Dandaragan
Duration of Permit:	26 September 2018 – 26 September 2023

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 upgrades.

2. **Land on which clearing is to be done**
   Jurien East Road reserve (PINs: 11674839, 11674838, 11674837, 11674841, 11675288, 11675289, 11675290, 11674878, 11674877 and 11674879), Hill River and Jurien Bay
   Munbinea Road reserve (PIN: 11674882), Hill River
   Cockleshell Gully Road reserve (PIN: 11674884), Hill River

3. **Area of Clearing**
   The Permit Holder must not clear more than 2.4 hectares of native vegetation within the area hatched yellow on attached Plan 7662/1.

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

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

PART II – MANAGEMENT CONDITIONS

6. **Avoid, minimise and reduce the impacts and extent of clearing**
   In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:
   (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.

7. Dieback and weed control

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

(a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;

(b) ensure that no *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. Flora management

Prior to undertaking any clearing authorised under this Permit, the Permit Holder shall:

(a) demarcate all *rare flora* and *priority flora* individuals and the relevant *buffers*, located within the area hatched yellow on Plan 7662/1;

(b) ensure that no clearing of *rare flora* occurs; and

(c) ensure that clearing of *priority flora* is limited to:

(i) two individuals of *Acacia retrorsa* (P2);

(ii) 29 individuals of *Synaphea sparsiflora* (P2);

(iii) one individual of *Synaphea endothrix* (P3);

(iv) 11 individuals of *Haemodorum loratum* (P3);

(v) six individuals of *Patersonia argyrea* (P3);

(vi) two individuals of *Thysanotus vernalis* (P3); and

(vii) two individuals of *Hemiandra* sp. Watheroo (P4).

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:

(a) In relation to the clearing of native vegetation authorised under this Permit:

(i) the species composition, structure and density of the cleared area;

(ii) 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;

(iii) the date that the area was cleared;

(iv) the size of the area cleared (in hectares);

(v) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 6 of this Permit; and

(vi) actions taken to minimise the risk of the introduction and spread of *dieback* and *weeds* in accordance with condition 7 of this Permit.

(b) In relation to condition 8:

(i) the name and location of each *rare flora* and/or *priority flora* species 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) actions taken to demarcate each *rare flora* and/or *priority flora* species recorded and the relevant *buffers*;

(iii) actions taken to avoid clearing of *rare flora* species; and

(iv) number of *priority flora* individuals cleared under condition 8(c).

10. Reporting

(a) The Permit Holder must provide to the CEO on or before 30 June of each year, a written report:

(i) of records required under condition 9 of this Permit; and

(ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.

(b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, 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 30 July 2023, 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:

buffer means 50 metres for *rare flora* and 10 metres for *priority flora*.

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;

priority flora means those plant taxa described as priority flora classes 1, 2, 3 or 4 in the *Department of Parks and Wildlife's Threatened and Priority Flora List for Western Australia* (as amended);

rare flora means those plant taxa gazetted as rare flora pursuant to section 23F(2) of the *Wildlife Conservation Act 1950* (as amended).

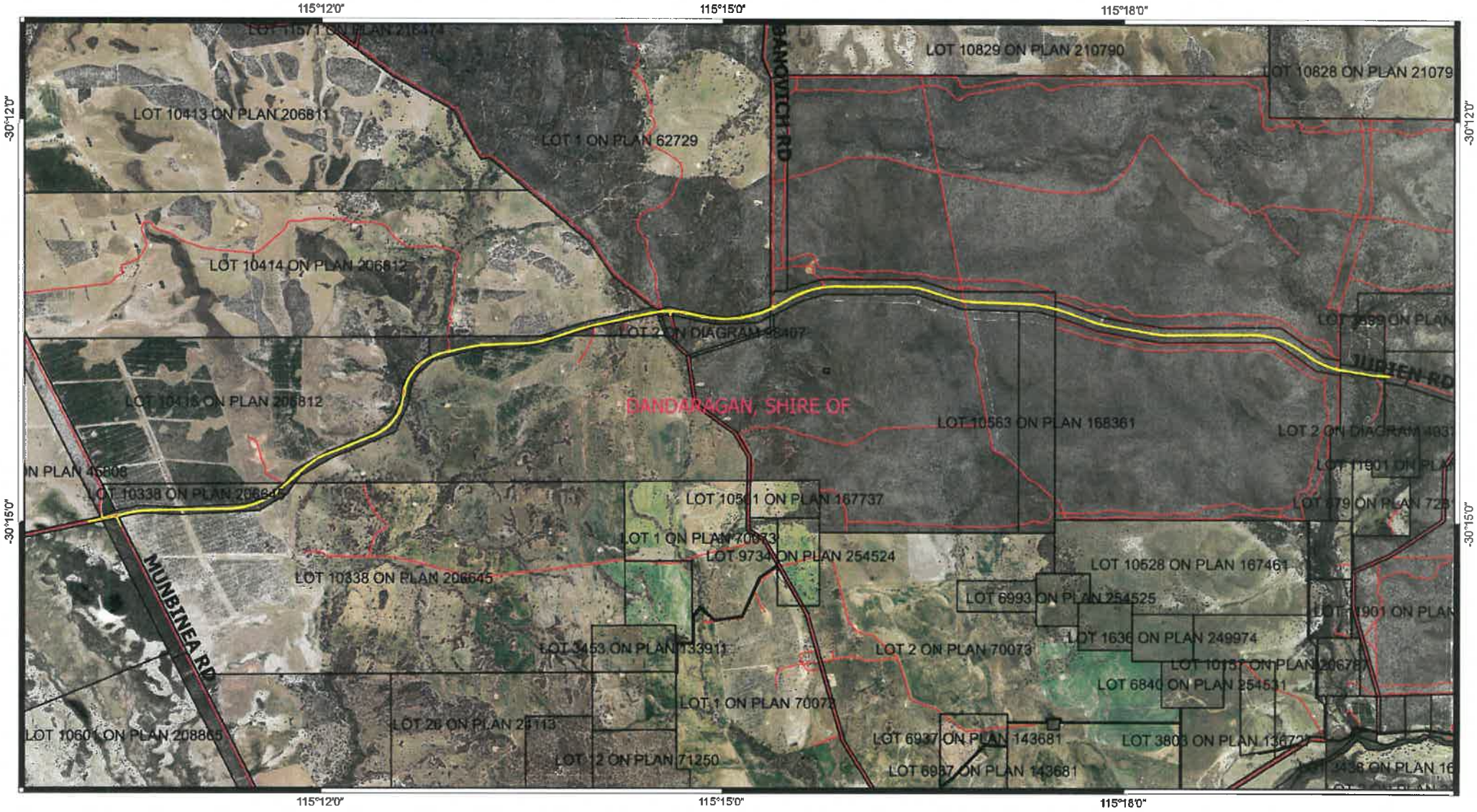
weed/s means any plant -
(a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or
(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or
(c) not indigenous to the area concerned.

Samara Rogers
MANAGER
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

28 August 2018

Plan 7662/1



Legend

- Areas Approved to Clear
- Cadastre
- Roads
- LGA
- Virtual Mosaic (LGATE-V001)

N

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MGA 94
Geocentric Datum of Australia 1994

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

GOVERNMENT OF WESTERN AUSTRALIA

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1. Application details

1.1. Permit application details

Permit application No.: 7662/1
Permit type: Purpose Permit

1.2. Applicant details

Applicant's name: Shire of Dandaragan
Application received date: 27 June 2017

1.3. Property details

Property: Jurien East Road Reserve – PIN 11674879, Jurien Bay
Cockleshell Gully Road Reserve - 11674884, Hill River
Jurien East Road Reserve – PINs 11674877, 11674878, 11675290, 11675289, 11675288, 11674841, 11674837, 11674838, 11674839, Hill River
Munbinea Road Reserve – PIN 11674882, Hill River

Local Government Authority: Dandaragan, Shire of
Localities: Hill River and Jurien Bay

1.4. Application

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

1.5. Decision on application

Decision on Permit Application: Grant
Decision Date: 28 August 2018
Reasons for Decision: The clearing permit application has been assessed against the clearing principles, planning instruments and other matters in accordance with section 51O of the *Environmental Protection Act 1986* (EP Act). It has been concluded that the proposed clearing is at variance to principle (f), may be at variance to principles (a), (c) and (d), and is not likely to be at variance to the remaining clearing principles.

The Delegated Officer took into consideration the purpose of the clearing, being road upgrades for public safety.

The assessment determined that the proposed clearing will impact vegetation growing in association with a watercourse and priority flora individuals. The Delegated Officer determined that the loss of a defined number of priority flora individuals is not likely to impact on the conservation status of these species and is not likely to have a significant impact.

The assessment determined that the proposed clearing may indirectly impact upon rare flora and a threatened ecological community (TEC). Weed and dieback management practices and a flora management condition to demarcate rare and priority flora individuals will mitigate indirect impacts to rare flora, priority flora, the TEC and adjacent remnant native vegetation.

After consideration of the above, the Delegated Officer determined that the proposed clearing of 2.4 hectares of native vegetation is not likely to have any significant environmental impacts.

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

2. Site Information

Clearing Description The application is to clear 2.4 hectares of native vegetation within Jurien East Road reserve, Munbinea Road reserve and Cockleshell Gully Road reserve, Hill River and Jurien Bay, for the purpose of road upgrades (figure 1).

Vegetation Description Five Beard vegetation associations are mapped within the application area (Shepherd et al., 2001):

- **1032:** medium woodland; marri,wandoo, powderbark / shrublands; *Banksia* heath;
- **1034:** medium woodland; marri, wandoo and powderbark;
- **1030:** low woodland; *Banksia attenuata* and *B. menziesii;*

- **1031**: mosaic: Shrublands; *Hakea* scrub-heath / shrublands; *Banksia* heath; and
- **4:** medium woodland; marri and wandoo.

A flora, vegetation and vertebrate survey identified nine vegetation types within the application area (Maia, 2017):

- ***Banksia* Forest:** open low forest of *Banksia prionotes* with a mixed open low shrubland mainly of *Melaleuca leuropoma*, *Hibbertia hypericoides* and *Conospermum stoechadis* subsp. *stoechadis* and an open sedgeland of *Mesomelaena pseudostygia* and *Lepidosperma Agricola;*
- ***Corymbia* Forest:** open low forest of *Corymbia calophylla* with a mixed open low shrubland mainly of *Calothamnus quadrifidus* subsp. *quadrifidus*, *Xanthorrhoea preissii* and *Hibbertia hypericoides* and a sparse sedgeland of *Ecdeiocolea monostachya* and *Mesomelaena pseudostygia;*
- ***Eucalyptus* and *Banksia* Woodland:** low woodland of *Banksia attenuata*, *Banksia menziesii* and *Eucalyptus todtiana* with a mixed open mid shrubland mainly of *Melaleuca leuropoma*, *Allocasuarina humilis* and *Xanthorrhoea preissii* with an open sedgeland of *Mesomelaena pseudostygia* and *Georgeantha hexandra;*
- ***Eucalyptus*/*Corymbia* Forest:** open tall forest of *Eucalyptus rudis* +/- *Corymbia calophylla* with an open tall shrubland of *Melaleuca rhaphiophylla* and either a tussock grassland of Poaceae sp. and **Eragrostis curvula* or a sparse sedgeland of *Baumea juncea* and *Lepidosperma ?squamatum;*
- ***Eucalyptus* Forest:** open tall forest of *Eucalyptus wandoo* subsp. *pulverea* with an open low shrubland of *Acacia pulchella* var. *glaberrima*, *Hakea lissocarpha* and *Hibbertia hypericoides;*
- **Mixed Heathland:** low mixed heathland mainly of *Hibbertia hypericoides*, *Petrophile macrostachya* and *Xanthorrhoea* sp. Lesueur (G.J. Keighery 16404) with a sparse sedgeland of *Mesomelaena pseudostygia;*
- ***Mesomelaena* sedgeland:** sedgeland of *Mesomelaena pseudostygia* with an open low shrubland of *Daviesia angulata*, *D. nudiflora* and *Eremaea violacea* subsp. *rhaphiophylla;*
- **Mixed Shrubland:** mixed low shrubland mainly of *Melaleuca leuropoma*, *Leucopogon conostephioides* and *Hypocalymma xanthopetalum* with an open mid shrubland of *Banksia attenuata*, *Adenanthos cygnorum* and *Eremaea ?pauciflora* x *beaufortioides* and a sparse sedgeland of *Mesomelaena pseudostygia* and *Lepidobolus preissianus;* and
- **Mixed Shrubland:** mixed open low shrubland mainly of *Beaufortia squarrosa*, *Stirlingia latifolia* and *Hibbertia hypericoides* with a mixed sparse mid shrubland mainly of *Banksia candolleana*, *Allocasuarina humilis* and *Banksia incana* and isolated tall shrubs of *Hakea psilorrhyncha* and/or *Banksia attenuata* or isolated Mallee trees of *Eucalyptus todtiana.*

Vegetation Condition

Very Good; Vegetation structure altered; obvious signs of disturbance (Keighery, 1994).

To

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

The local area is defined as 10 kilometres from the perimeter of the application area.

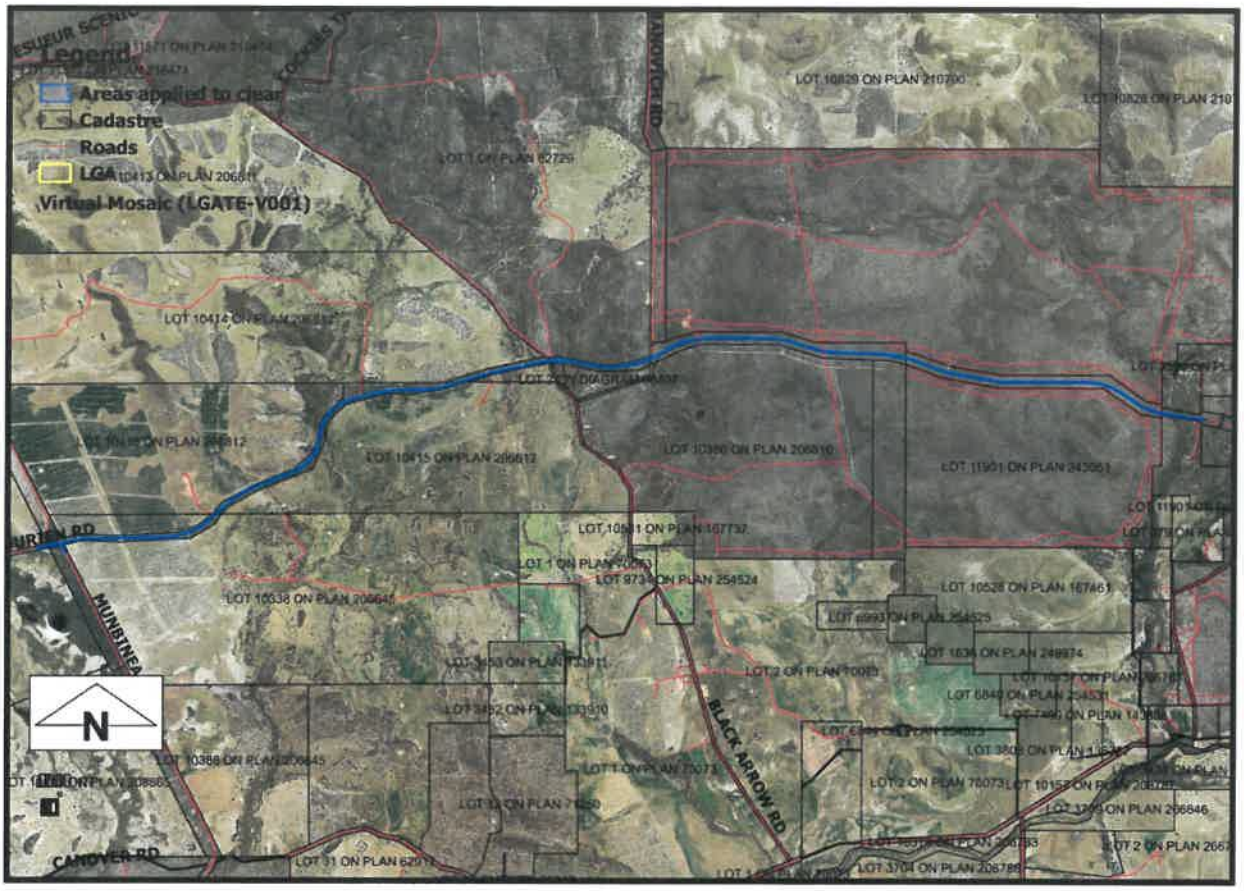

Fig 1: Application area

3. Minimisation and mitigation measures

The applicant undertook a flora, vegetation and vertebrate survey within the entire Jurien Bay East road reserve prior to submitting the application area (Maia, 2017).

The applicant has minimised impacts of the proposed clearing by:

- avoiding all known occurrences or rare flora;
- avoiding entire populations of some priority flora identified within the application area and only clearing a small number of priority flora individuals from other populations that could not be further avoided, and
- only clearing 0.47 hectares of native vegetation comprising foraging habitat and 0.15 hectares of potential breeding habitat for Carnaby's cockatoo.

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 may be at variance to this Principle

According to available databases, 12 rare flora species and 94 priority flora species have been recorded within the local area.

A flora, vegetation and vertebrate survey undertaken within the application area in Autumn and Spring 2016 by Maia Environmental Consultancy (Maia) , identified seven priority flora species within the application area being: *Acacia retrorsa* (P2), *Synaphea sparsiflora* (P2), *Haemodorum loratum* (P3), *Patersonia argyrea* (P3), *Synaphea endothrix* (P3), *Thysanotus vernalis* (P3), *Hemiandra* sp. *Watheroo* (P4) (Maia, 2017).

The Department of Biodiversity, Conservation and Attractions (DBCA) advised that based on currently available information, potential impacts to *Acacia retrorsa*, *Synaphea sparsiflora*, *Patersonia argyrea* and *Thysanotus vernalis* may be significant (DBCA, 2017a).

Twenty nine of the 48 individuals of *Synaphea sparsiflora* are recorded within the application area and the remaining individuals appear to occur in close proximity to the application area. This species was previously only known from two disjunct locations, northeast of Eneabba and west of Gillingarra, with no populations recorded in between. This new population is located between the two previously known disjunct locations and is therefore potentially locally significant. Based on current data, the proposal would have a high proportional direct impact locally (approximately 60 per cent of the known number of individuals at this location). Given that the majority of individuals appear to occur in proximity to the application area, indirect impacts may also be significant (DBCA, 2017a). DBCA advised that direct impacts should be minimised and indirect impacts should be avoided through application of appropriate buffers and management measures (DBCA, 2017a).

Direct impacts to *Acacia retrorsa* may be potentially significant, with two of the seven individuals recorded by Maia (2017) likely to be impacted. The remaining individuals outside of the application area all appear to occur in close proximity to the application area and may be subject to indirect impacts. This species has a restricted range of approximately 58 kilometres north-south. This species is associated with creekline habitats. DBCA advised that the direct loss of two individuals is unlikely to impact on the conservation of the species (DBCA, 2017a).

Direct impacts to *Patersonia argyrea* may be potentially significant with six of the 28 individuals recorded by Maia (2017) occurring within the application area. This species has a range of about 60 kilometres north-south and is known from few records over this restricted range. DBCA advised that the direct loss of six individuals is unlikely to impact the conservation status of the species (DBCA, 2017a).

Thysanotus vernalis has a restricted range, with many records being old and with little information available on population sizes. This species appears to be associated with drainage lines and winter wet depressions. This species was recorded by Maia (2017) largely form stretches of the road reserve surrounded by cleared lands. DBCA advised that proposed direct impacts are proportionally low (DBCA, 2017a), however, indirect impacts, particularly from altered drainage, have the potential to be significant. Indirect impacts to this species should be avoided or minimised, with particular attention to maintenance of the hydrology in the remaining restricted habitat within the road reserve (DBCA, 2017a).

An additional seven priority flora species were identified by Maia (2017) within the road reserve, however they are located outside of the application area. DBCA has advised that *Grevillea amplexans* subsp. *adpressa* (P1) and *Lechenaultia juncea* (P3) appear to occur just outside of the proposed clearing area and any direct impacts have the potential to be significant (DBCA, 2017a).

Any direct or indirect impacts to the remaining individuals of the above-mentioned species should be avoided through the application of appropriate buffers and management measures (DBCA, 2017a).

As assessed under Principle (c), one rare flora and one potential rare flora species have been identified within the road reserve, outside of the application area. The proposed clearing may indirectly impact the individuals of rare flora through edge effects including the spread of weeds and dieback.

As assessed under Principle (b), the application area comprises of foraging and potential breeding habitat for the Carnaby's Cockatoo (*Calyptorhynchus latirostris*). The proposed clearing will impact 0.47 hectares of native vegetation comprising high quality foraging habitat and 0.15 hectares of potential breeding habitat (Maia, 2017). Given that the local area retains 56 per cent native vegetation cover and that approximately 10 – 80 metres of vegetation will remain either side of the road reserve post clearing, the proposed clearing is not likely to have an impact on significant habitat for this species.

As assessed under Principle (d), the proposed clearing may indirectly impact an occurrence of the Banksia Woodlands of the Swan Coastal Plain threatened ecological community (TEC) located outside of the application area, through edge effects including the spread of weeds and dieback.

Given the above, the application area comprises priority flora, may comprise of supporting habitat for rare flora and an occurrence of a TEC. Therefore, the application area may be considered to comprise a high biological diversity and the proposed clearing may be at variance to this Principle.

Flora management practices, weed and dieback management practices, demarcating known occurrences of rare and priority flora and the requirement to obtain a licence to take rare flora prior to clearing will help mitigate impacts to rare flora, priority flora and the TEC.

(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 likey to be be at variance to this Principle

According to available databases, one fauna species, Carnaby's Cockatoo, listed as rare or likely to become extinct under the *Wildlife Conservation Act 1950* has been recorded within the local area (DBCA, 2007-).

The Carnaby's cockatoo species forage on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species (Valentine and Stock, 2008). A flora, vegetation and vertebrate survey undertaken within the application area observed Carnaby's cockatoo foraging within the application area (Maia, 2017).

According to available databases the closest known breeding area is located approximately 6.5 kilometres north west of the application area. The recovery plan for Carnaby's cockatoo defines breeding habitat as including nesting sites, and the foraging habitat and water sources within foraging distance of nesting sites (Department of Parks and Wildlife, 2013). These areas are considered to be habitat critical to the survival for Carnaby's cockatoo (Department of Parks and Wildlife, 2013). The loss or degradation of feeding habitat within 12 kilometres of nesting sites is considered to pose the greatest risk to Carnaby's cockatoo (Saunders and Ingram, 1998; Department of Parks and Wildlife, 2013). As the application area contains foraging habitat within close proximity of a known nesting site, the application area may comprise of significant foraging habitat for black cockatoos.

To be suitable as a black cockatoo breeding site, trees require a suitable nest hollow or be of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, a suitable DBH is 500 millimetres. For salmon gum and wandoo, suitable DBH is 300 mm (Commonwealth of Australia, 2012). A flora, vegetation and vertebrate survey identified 16 trees with a suitable DBH within the application area, 11 flooded gums and five wandoo trees. An additional 65 trees with a suitable DBH were identified outside of the application area. No hollows suitable for breeding by the Carnaby's cockatoo were observed within the16 identified habitat trees (Maia, 2017).

Maia advised that approximately 0.47 hectares of native vegetation located within the three high value foraging habitats present within the application area is proposed to be cleared. This includes vegetation types identified as being *Banksia* Forest, *Eucalyptus* and *Banksia* Woodland and mixed shrublands. Approximately 0.15 hectares of potential breeding habitat is also proposed to be cleared (Maia, 2017).

The local area retains approximately 56 per cent native vegetation and a vegetated road reserve approximately 10 - 80 metres wide will remain post clearing either side of the existing road. Suitable foraging and potential breeding habitat will remain within the road reserve and is located elsewhere in the local area in similar or better condition. Given the small size of foraging habitat and potential breeding habitat, the application area is not considered significant habitat for indigenous fauna species.

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 may be at variance to this Principle

According to available databases, 12 rare flora species have been recorded within the local area. A flora, vegetation and vertebrate survey undertaken within the application area in Autumn and Spring 2016, identified one rare flora species within the road reserve. Nineteen records of this species were identified, all of which occur outside of the proposed clearing area (Maia, 2017).

In addition, one flora identified within the survey area was not definitively identified due to the time of year and has the potential to be a rare flora species. Two individuals of this species was identified within the road reserve, however they were outside of the proposed clearing area (Maia, 2017).

The Maia (2017) report notes that although no rare flora species were recorded within the proposed clearing area, clearing is likely to occur within 50 metres of identified occurrences and therefore the proposed clearing may indirectly impact known individuals through edge effects including the spread of weed and dieback (DBCA, 2017a).

DBCA advised that the following measures should be undertaken to mitigate impacts to rare flora:

- the proponent should clearly demarcate all known locations of threatened taxa in proximity to the application area and their buffers for avoidance;
- any indirect impacts to threatened taxa in proximity to the application area, such as impacts from dust or altered drainage, should be avoided through implementation of appropriate management measures e.g. dust suppression, drainage designed to ensure hydrology of any conservation significant taxa in proximity to the road is maintained; and
- appropriate hygiene measures should also be implemented to ensure that weeds are not further distributed by the works. It is recommended that control of weeds be included in the road management program to maintain the quality of the adjacent flora habitat, in particular with respect to the Coomallo Nature Reserve (DBCA, 2017a).

Given the above, the proposed clearing may impact upon rare flora. Therefore the proposed clearing may be at variance to this Principle.

Flora management practices, weed and dieback management practices, demarcating known occurrences of rare flora and the requirement to obtain a licence to take supporting habitat for rare flora, prior to clearing will help mitigate impacts to rare flora.

(d) Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.

Proposed clearing may be at variance to this Principle

According to available databases the western portion of the application area is mapped as 'likely to occur' as the Banksia Woodlands of the Swan Coastal Plain TEC (DBCA, 2017b).

DBCA has advised that approved conservation advice states that the 'Banksia Woodlands ecological community primarily occurs in the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion. This covers the coastal plain from around Jurien Bay south, through Perth, to around Dunsborough. It also includes the Dandaragan Plateau. Pockets of the Banksia Woodlands ecological community also extend into the adjacent lower parts of the Darling and Whicher escarpments that lie within the Jarrah Forest IBRA bioregion to the immediate east and south of the Swan Coastal Plain' (DBCA, 2017b).

The application area occurs within Geraldton Sandplain bioregion, and the Conservation Advice indicates that the TEC does not extend into that IBRA region. The Department of the Environment and Energy's mapping of areas likely to be the TEC does, however, extend very marginally into the proposal area, immediately adjacent to Munbinea Road. However, the 'likely to occur' mapping is indicative only, and given the description of the range of this TEC, the application area is not likely to comprise of this TEC (DBCA, 2017b).

The most western edge of the application area is located approximately three metres from the Swan Coastal Plan IBRA bioregion and also vegetation mapped as likely to be the abovementioned TEC. The Conservation Advice also recommends a minimum 20-50 metre buffer zone (DBCA, 2017b). Therefore the proposed clearing may indirectly impact an occurrence of this TEC through edge effects including the spread of weeds and dieback. Weed and dieback management practices will help mitigate this risk.

Given the above, the application area may be necessary for the maintenance of a TEC and therefore the proposed clearing may 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 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001).

The local area (10 kilometre radius) retains approximately 56 per cent native vegetation. The application area is located within the Geraldton Sandplains IBRA bioregion and within the Shire of Dandaragan which retain approximately 45 per cent and 44 per cent of their pre-European vegetation extents respectively (Government of Western Australia, 2017).

The application area is mapped as Beard vegetation associations 4, 1030, 1031, 1032 and 1034 of which retain 40, 73, 34, 78 and 62 per cent of their pre-European vegetation extents within the Geraldton Sandplains IBRA bioregion (Government of Western Australia, 2017).

Given the vegetation representations outlined above, the application area is not considered to be located within an extensively cleared landscape.

The proposed clearing may impact upon rare flora, priority flora and TEC and therefore the application area may be considered to be a significant remnant of native vegetation, but is not considered to be in an extensively cleared area.

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

	Pre-European (ha)	Current Extent (ha)	Remaining (%)	Extent in DBCA Managed Lands (%)
IBRA Bioregion				
Geraldton Sandplains	3,136,038	1,404,373	45	11
Local government authority				
Shire of Dandaragan	671,022	296,632	44	43
Beard Vegetation Association in Bioregion*				
4	5,337	2,130	40	19
1030	3,849	2,791	73	75
1031	241,350	83,155	34	44
1032	8,317	6,472	78	79
1034	1,763	1,091	62	59

(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, four watercourses intersect the application area. Maia advised that approximately 0.03 hectares of native vegetation associated with Coomallo Creek and 0.06 hectares of native vegetation associated with Munbinea Creek is proposed to be cleared (Maia, 2017).

Given the above, the application area is considered to be growing in association with a watercourse and therefore the proposed clearing is at variance to this Principle.

However, given the linear nature of the proposed clearing, that approximately 10 – 80 metres of vegetation will remain either side of the road reserve post clearing and that there are likely to be culverts or existing drainage infrastructure in place, the proposed clearing is not likely to have a significant impact on the environmental values of the abovementioned watercourses.

(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

Three soils types have been mapped within the application area which are described as (Northcote et al., 1960 – 1968):

- Wd9: Broad valleys and undulating interfluvial areas with some discontinuous breakaways and occasional mesas; lateritic materials mantle the area: chief soils are sandy acidic yellow mottled soils, containing much ironstone gravel;

- Wd10: Broad valleys and undulating interfluvial areas; some evenly sloping pediments with exposures of sandstone and shale: chief soils are sandy acidic yellow mottled soils, containing much ironstone gravel; and
- CB39: Subdued dune-swale terrain: chief soils are leached sands on the low dunes. Associated are small areas of other sand soils.

Given the abovementioned mapped soil types, the clearing of 2.4 hectares of native vegetation along a 17 kilometre linear stretch of road in is not likely to lead to land degradation through water erosion, water logging, wind erosion, salinity or eutrophication.

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
The most eastern portion of the application area is mapped approximately 80 metres from Coomallo Nature Reserve. A vegetated nature reserve ranging between approximately 80 -100 metres is located between the proposed clearing area and this nature reserve. Given this, the proposed clearing is not likely to have any direct impacts on this nature reserve.

The application area may provide an ecological linkage allowing fauna to move between conservation areas and remnant vegetation within the local area. However, the local area retains approximately 56 per cent native vegetation and a vegetated road reserve between approximately 10 - 80 metres wide either side of the existing road will remain post clearing and therefore vegetation will remain within the road reserve that will function as an ecological linkage. Therefore, the proposed clearing is not likely to have a significant impact on the movement of fauna across the landscape.

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
According to available databases, four watercourses intersect the application area.

The proposed clearing may increase run-off and sedimentation into the watercourses intersecting the application area, however this impact is likely to minimal and short term. In addition, there are likely to already be culverts in place which will ensure that surface water flow is not disturbed.

Groundwater salinity is mapped between 500 - 1000 milligrams per litre total dissolved solids which is considered to be marginal. Given the low salinity levels and due to the small size and linear nature of the proposed clearing, and that native vegetation is to remain within the road corridor, the proposed clearing is not likely to cause deterioration in the quality of underground water.

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
Given the mapped soil types present and that vegetation remains within the road reserve, the proposed clearing is not likely to cause, or exacerbate, the incidence or intensity of flooding.

While four watercourses intersect the application area, the proposed clearing is not likely to be of a size or scale as to cause or exacerbate flooding.

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

Planning instruments and other relevant matters.

The application area is located within the Hill river and Tributaries Catchment which is a Proclaimed Surface Water Area under the *Rights in Water and Irrigation Act 1914* (RIWI Act), as such, a Permit to Interfere with Bed and Banks was obtained from DWER for the water resource 'Hill River and tributaries' (Permit no PMB201652(1)).

The application area is located within the Jurien Groundwater Area also proclaimed under the RIWI Act. If the clearing activity requires any groundwater for construction purposed, any supply or bore construction will require the applicant to obtain a Licence to Take Water and to Construct a Well.

The western portion of the application area lies within a potential groundwater dependant ecosystem which is of high ecological value. Works should be designed and carried out so they do not impede the natural flow of the watercourses.

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

The clearing permit application was advertised on the DWER website on 11 August 2017 with a 21 day submission period.

Two submissions were received in relation to this application, which raised concerns regarding impacts to rare flora and native orchid habitat, fauna habitat and unnecessary road upgrades These matters have been addressed under principles (a), (b) and (c).

5. References

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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.

6. GIS Datasets

Aboriginal Sites of Significance
DBCA, Tenure
Groundwater salinity
Hydrology, linear
NLWRA, Current Extent of Native Vegetation
SAC Bio datasets (accessed November 2017)
Soils, statewide