



## CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

<b>Purpose Permit number:</b>	CPS 9284/1
<b>Permit Holder:</b>	Shire of Augusta Margaret River
<b>Duration of Permit:</b>	From 23 October 2021 to 23 October 2026

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

### PART I – CLEARING AUTHORISED

**1. Clearing authorised (purpose)**

The permit holder is authorised to clear *native vegetation* for the purpose of widening and upgrades of Jindong-Treeton Road.

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

Jindong Treeton Road Reserve (PINs 11474094 and 11474063), Treeton

**3. Clearing authorised**

The permit holder must not clear more than 0.5 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1, 2 and 3 of Schedule 1.

**4. Period during which clearing is authorised**

The permit holder must not clear any native vegetation after 23 October 2023

### PART II – MANAGEMENT CONDITIONS

**5. Avoid, minimise, and reduce impacts and extent of clearing**

In determining the *native vegetation* authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending 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.

**6. Weed and dieback management**

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

**7. Directional clearing**

The permit holder must conduct clearing activities in a slow, progressive manner towards adjacent native vegetation to allow fauna to escape ahead of the clearing activity.

**8. Wind erosion management**

The permit holder must commence road widening and construction no later than two months after undertaking the authorised clearing activities to reduce the potential for wind erosion.

**PART III - RECORD KEEPING AND REPORTING**

**9. Records that must be kept**

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> <li>(a) the species composition, structure, and density of the cleared area;</li> <li>(b) 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;</li> <li>(c) the date that the area was cleared;</li> <li>(d) the date that construction activities commenced;</li> <li>(e) the direction of clearing;</li> <li>(f) the size of the area cleared (in hectares);</li> <li>(g) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 5; and</li> <li>(h) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 6; and</li> </ul>

**10. Reporting**

The permit holder must provide to the *CEO* the records required under condition 9 of this permit when requested by the *CEO*.

## DEFINITIONS

In this permit, the terms in Table have the meanings defined.

**Table 2: Definitions**

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
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.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; 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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## END OF CONDITIONS



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Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

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

29 September 2021

### Schedule 1

The boundary of the area authorised to be cleared is shown in the maps below (



Figure 1-4).



Figure 1: Map of the boundary of the area within which clearing may occur





**Figure 2: Map of the boundary of the area within which clearing may occur**



**Figure 3: Map of the boundary of the area within which clearing may occur**





**Figure 4: Map of the boundary of the area within which clearing may occur**





## Clearing Permit Decision Report

### 1.1. Permit application details

<b>Permit number:</b>	CPS 9284/1
<b>Permit type:</b>	Purpose permit
<b>Applicant name:</b>	Shire of Augusta Margaret River
<b>Application received:</b>	10 May 2021
<b>Application area:</b>	0.5 hectares of native vegetation within a 1.25 hectare of clearing footprint
<b>Purpose of clearing:</b>	Widening and upgrades of Jindong-Treeton Road
<b>Method of clearing:</b>	Mechanical
<b>Property:</b>	Jindong Treeton Road Reserve (PINs 11474094 and 11474063)
<b>Location (LGA area/s):</b>	Shire of Augusta Margaret River
<b>Localities (suburb/s):</b>	Treeton

### 1.2. Description of clearing activities

The application is to selectively clear up to 0.5 hectares of native vegetation within a 1.25 hectare footprint. The application area consists of four parallel areas of up to 4 metres wide on two separate portions of the Jindong Treeton Road reserves, immediately east of the North-East Margaret River State Forest (F62) (see Figure 1, Section 1.5). The proposed clearing is required to construct and widen an approximately 1.75 kilometre section of the road to improve driver visibility and overall road safety. The works include the widening of the existing sealed road to 7 metres with 1 metre unsealed shoulders on either side, associated drainage and erosion control works and repairing or replacement of existing culverts.

The application was revised during the assessment process in response to DWER's preliminary assessment. The revision resulted in the reduction of the clearing footprint from 5.96 hectares to 1.75 hectares, reduction in length of proposed roadworks by approximately 0.75 km and retention of 38 habitat trees along the stretch of road. Details of the revision are provided in Appendix A.

### 1.3. Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	29 September 2021
<b>Decision area:</b>	Up to 0.5 hectares of native vegetation within a 1.75 hectare clearing footprint as depicted in Figure 1, Section 1.5, below.

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 28 days and no submissions were received.

In undertaking the assessment, and in accordance with section 51O of the EP Act, the Delegated Officer had regard for the site characteristics (see B), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C C), supporting information provided by the applicant including the findings of a flora and vegetation survey (Appendix E),

relevant datasets (see Appendix F), relevant planning instruments and any other matters considered relevant to the assessment (see Section 3). The Delegated Officer also took into consideration that the purpose of the clearing is to improve road safety and the applicant's effort to avoid and minimise clearing and impacts (Section 3.1).

In particular, the Delegated Officer has determined that:

- The application area may contain suitable foraging habitat for conservation significant fauna including Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*) and Forest red-tailed Black cockatoo (*Calyptorhynchus banksii naso*), Red-tailed phascogale (*Phascogale calura*), Numbat (*Myrmecobius fasciatus*), Chudith (*Dasyurus geoffroii*), Quenda (*Isoodon fusciventer*), and Western ringtail possum (WRP). Given the limited extent of clearing, the mostly degraded condition of the vegetation, and the availability of vast, intact and protected habitats within the North East Margaret River State Forest immediately west of the application area, the proposed clearing is unlikely to comprise significant habitat for the above-mentioned fauna species. No breeding habitat was identified for the above-mentioned fauna.
- A flora survey over the application area by Stream Environment and Water (2021) did not identify any Threatened or Priority flora within the application area.
- The proposed clearing area is immediately adjacent to the North-East Margaret River State Forest which is adjoining with the Blackwood State Forest. Although the proposed clearing will not result in a significant reduction to the vegetation cover within the local context, it may indirectly impact on the quality of the State Forest through the introduction and spread of weeds and dieback.
- Parts of the application area are prone to wind erosion, water logging and sub-surface acidification. The applicant has been and is committed to continue to applying measures to mitigate the risks of land and water degradation due to surface water along the road.
- The applicant has demonstrated their commitments and efforts to minimise and avoid clearing and mitigate associated potential impacts. This has been reflected in the roadwork plans that are designed to limit and reduce the extent of clearing, retain 38 potential habitat trees and avoid impacts on environmental values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures and commitments (see Section 3.1), the Delegated Officer determined that the proposed clearing is unlikely to lead to appreciable land degradation or have long-term adverse impacts on the existence and maintenance of the conservation significant fauna and flora within the local context, and the nearby State Forest. The Delegated Officer decided to grant a clearing permit subject to conditions to:

- Avoid, minimise to reduce the impacts and extent of clearing.
- Take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback.
- Slow, one directional clearing to allow fauna individuals to disperse into adjacent habitat.
- Commencement of road works within two months of clearing to mitigate the risks of wind erosion.

## 1.5. Site maps



Figure 1.1. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.



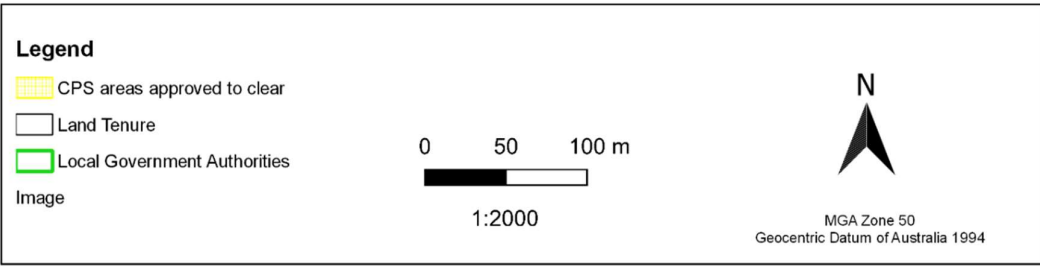





Figure 1.2. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.







**Legend**

-  CPS areas approved to clear
-  Land Tenure
-  Local Government Authorities

Image



1:2000



N

MGA Zone 50  
Geocentric Datum of Australia 1994

Figure 1.3. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.



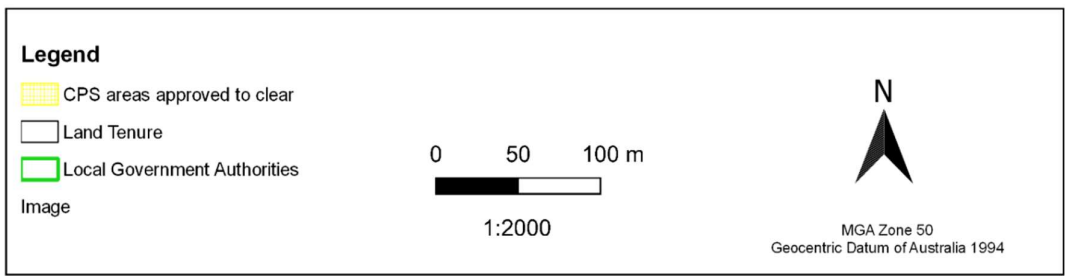


Figure 1.4. The area crosshatched yellow indicates the area authorised to be cleared under the granted clearing permit.



## 2 Legislative context

The clearing of native vegetation in Western Australia is regulated under the EP Act and the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations).

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

- the precautionary principle
- the principle of intergenerational equity
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA,

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

The original application was to clear 0.5 hectares of native vegetation within a 5.95 hectare footprint. During the assessment, in response to a preliminary assessment by DWER, the applicant revised the road design and the application, as follows:

- the road corridor's length reduced by 730 metres
- clearing is limited to mostly the eastern side of the road, adjacent to agricultural land where vegetation is in degraded to completely degraded condition
- thirty-eight trees with a diameter at breast height (DBH) greater than 500 mm are retained
- only three large trees with DBH greater than 500 mm will be removed due to the culvert replacement works on site
- the actual clearing is expected to be approximately 0.25 hectares, however the application will remain at 0.5 hectares for flexibility in case an unexpected requirement occurs (Shire of Augusta Margaret River, 2021b and c).

The applicant has advised that the following avoidance and mitigation measures have been or will be undertaken:

- avoiding the clearing of the three trees with DBH greater than 500 mm where possible during the clearing works
- retrenchment pruning as alternative to tree removal where possible
- clearing will be undertaken in a slow, progressive manner in a single direction
- maintaining existing surface drainage during road reconstruction
- applying best practice weed and dieback hygiene measures
- engaging a fauna specialist to inspect and to install artificial Black cockatoo nest boxes if required (Shire of Augusta Margaret River, 2021b and c).

The Delegated Officer was satisfied that the applicant has made a reasonable effort and commitment to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and

the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to fauna, flora, adjacent vegetation and conservation areas, and land resources. The considerations of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, are set out below.

### **3.2.1. Biological values (Fauna) – Clearing Principle (b)**

#### Assessment:

The application area consists of four patches of roadside vegetation on both sides of two sections of Jindong Treeton Road measuring a total of 1.75 km. On the west side of the road, the two patches of vegetation are bordering with the North-East Margaret River State Forest, and on the east side with cleared farmlands. The roadside trees comprise of isolated stands of Marri (*Corymbia calophylla*) and Jarrah (*Eucalyptus marginata*) as well as planted mix of Eucalypts, garden ornamental and pines (Appendix E; Figures 5 to 8).

The vegetation within the application area is largely in Completely Degraded or Degraded (Keighery 1994) condition with some native understorey including *Kingia australis*, *Xanthorrhoea preissii*, *Podocarpus drouynianus*, *Hibbertia hypericoides* and *Tetraria octandra* scattered along the road verge. A small patch of vegetation on the west side of the southern end of the application area is in Good condition (Appendix E; Figure 3). The proposed road-widening and maintenance works will result in the removal three trees with a DBH greater than 500mm. An observation conducted by the applicant did not find any hollows on the three trees proposed to be cleared (Shire of Augusta Margaret River, 2021b and c).

According to available databases, twenty-two conservation significant fauna species are recorded from within ten kilometres radius of the application area. These records include historical records of fauna species that were made more than fifty years ago. Eight of the recorded species are aquatic species which are unlikely to inhabit the application area. Migratory birds may be utilising or flying over the area, although it is unlikely that these species inhabit the application area. In the absence of a formal fauna survey, assessment has been made on fauna species identified as likely to use the area.

The Vulnerable Chuditch (*Dasyurus geoffroii*) prefers large unfragmented habitats, including dense riparian jarrah forests. Chuditch are prone to predation by feral cats and foxes (Department of Environment and Conservation, 2012). Within the local area, four records of the Chuditch are known, with the closest record or sighting within the North-East Margaret River State Forest approximately 1.7 km west of the application area. The other records are from the adjoining Blackwood Forrest. Given its location on the road verge, the largely degraded vegetation condition, and the availability of intact vegetation within the adjacent State Forests, the application area is unlikely to comprise significant habitat for Chuditch.

Western false pipistrelle (*Falsistrellus mackenziei*) is known to inhabit wet sclerophyll forests of Karri, Jarrah and Tuart eucalypts. This fauna species roosts in hollows of old trees, branches and stumps. Only one record of this species is known from the local area, which was made in 2018 at approximately 8.4 km from the application area. Whilst the application area exhibits the habitat characteristic of the Western false pipistrelle, given the absence of hollow bearing trees within the application area and the presence of a vast area of intact vegetation within the State Forest, it is unlikely that the application area comprises significant habitat for this species.

Brush-tailed phascogale (*Phascogale tapoatafa wambergeri*) inhabits dry sclerophyll forest and open woodlands with hollow bearing trees. Whilst brush-tailed phascogale may forage into the application area and its vicinity, given the absence of hollow bearing trees within the application area, the mostly degraded vegetation condition, and the presence of an intact forest immediately adjacent to it, the proposed clearing area is unlikely to comprise significant habitat for this species.

The Priority 4 Quenda (*Isodon fusciventer*) may occur in the local area as it contains tall and dense vegetation. The application area, however, does not contain dense understory preferred by Quenda for cover (van Dyck, S., and Strahan, R., 2008; Watson 2018). Although dispersing Quenda may use the habitat, the availability of the densely vegetated area in the adjacent State Forest indicate Quenda is unlikely to prolong inhabitants of the application area.

The Critically Endangered WRP is recorded within the local area. The closest record is located approximately 4.7 km southwest of the application area. The application area is located outside the three key management zones for WRP identified by DPaW (2014) based upon core areas of the known current distribution of the species. The application area is therefore located outside of areas mapped as suitable WRP habitat. WRP is an arboreal folivore, associated

with long unburnt mature remnant peppermint woodlands along the Swan Coastal Plain management zone from Mandurah to Augusta, characterised by high canopy cover and connectivity (DPAW, 2017). The vegetation within the application area, especially those outside the State Forest boundary do not have high canopy connectivity. On the contrary, the State Forest immediately adjacent to the application area is intact with high level of canopy connectivity. Although dispersing WRP may utilise the application area, given the poor canopy connectivity, the distance from the nearest records, and the availability of intact vegetation within the State Forest nearby, it is unlikely that WRP inhabits the application area.

Of the vertebrate fauna species of conservation significance identified, the species most likely to occur over the application area are the Endangered Baudin's cockatoo (*Calyptorhynchus baudinii*), Carnaby's cockatoo (*Calyptorhynchus latirostris*) and the Vulnerable Forest red-tailed Black cockatoo (*Calyptorhynchus banksii naso*), together referred to as Black cockatoos. Numerous records of Black cockatoo are known from the local area, with the nearest record within 100 m from the application area.

Black cockatoo habitat can be considered in terms of breeding habitat, night roosting habitat, and foraging habitat. Black cockatoos will generally forage up to 12 kilometres from an active breeding site (DSEWPaC 2012; DPaW 2013). Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DSEWPaC 2012; DPaW 2013) but may range up to 20 kilometres (Commonwealth of Australia 2017).

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (Commonwealth of Australia 2017). Flocks will use different night roosts, often for weeks, or until the local food supply is exhausted. Flocks show some fidelity to night roosts with sites used in most years to access high-quality feeding sites. However, not all-night roosts are used in every year (DPaW 2013).

Within the local context, four roosting sites are recorded. The nearest record is approximately 3.6 km west of the northern part of the application area and 7.5 km east of the southern part within the Blackwood State Forest.

Food resources within the range of breeding sites and roost sites are important to sustain populations, and foraging resources are therefore viewed in the context of known breeding and night roosting sites, particularly within 12 kilometres of an impact area (Commonwealth of Australia 2017). The *Corymbia calophylla* (marri) trees present within areas of closed scrub vegetation provide suitable foraging habitat for Black cockatoos.

In addition to the observation by the applicant (Shire of Augusta Margaret River, 2021b and c), a review of street imagery and photographs provided by the applicant (Appendix E) indicates that the trees are not suitable for nesting or roosting by Black cockatoos. The foraging habitat being removed within the application area in the context of the large marri trees that will remain within the road reserve and the more than 1,500 hectares of intact vegetation within the reserve immediately west is unlikely to be significant. The proposed clearing is not likely to cause a long-term adverse impact on the existence and maintenance of Black cockatoos and their habitat within the local context.

### Conclusion

Based on the above assessment, the proposed clearing may clear habitat for Black cockatoos, Western false pipitrel, Chuditch, WRP, Quenda, and South-western brush-tailed phascogale. Given the limited number of potential habitat trees to be cleared, and the availability of vast, intact, and more suitable vegetation within the adjacent State Forest; the application area is unlikely to comprise significant habitat for fauna within the local context. The proposed clearing is unlikely to result in a detrimental impact on the conservation of the fauna species. It is considered that the impacts of the proposed clearing on the fauna individuals can be managed through suitable conditions. The applicant would not need to engage a fauna specialist to inspect the trees to be cleared or install artificial Black cockatoo nest boxes.

### Conditions

To address the potential impact to individuals present at the time of clearing, staged and slow directional clearing to allow fauna to move into adjacent vegetation ahead of clearing activity will be required as a condition on the clearing permit.

### **3.2.2. Biological values (Flora and vegetation) – Clearing Principles (a) and (c)**

#### Assessment:

Numerous conservation significant flora species have been recorded within the local area. A flora and vegetation survey was undertaken by Stream Environment and Water (2021) in November 2020 to map the vegetation condition and the presence of conservation significant flora species within the application area. The survey did not find any threatened or priority flora species within the application area. The survey, however, did not target for the threatened and priority flora species *Daviesia elongata* (T), *Grevillea bronwenae* (P3) *Isopogon formosus* subsp. *dasylepis* (P3), *Lasiopetalum laxiflorum* (P3), *Synaphea decumbens* (P3), *Synaphea hians* (P3) and *Chamaelucium erythrochlorum*



(P4) which have been recorded from the local area. The above-mentioned flora species have been recorded to grow in similar soils and habitats to that of the application area that further assessment of the likelihood for their occurrence within the application area has been made.

Threatened flora species *Daviesia elongata* is known to occur in pale brown sand on flat terrain in heath understorey of open forest dominated by *Eucalyptus marginata* and *Corymbia calophylla*. Its distribution area includes the Southern Jarrah Forest sub-region within which the application area is located. The flora species can spread and sprawl with a height of up to 0.4 to 1 m. Its presence could be visible during the timing of the survey, particularly when it blooms between September and February. No individuals were identified by the flora survey, with a review of vegetation photographs also indicated the absence of this species within the application area. Given the above and the distance of the nearest records (7.4 km), it is unlikely this species is present within the application area.

The Priority 3 flora species *Grevillea bronwenae* is a shrub of 0.5 to 1.6 m high that occurs on grey sand over laterite hillslopes. It blooms between June and December and its presence would be identifiable during the survey period. The flora survey did not identify this species. The photographs provided with application also did not indicate the presence of this species within the application area. It is unlikely that this flora species occurs within the application area.

The Priority 3 *Isopogon formosus* subsp. *dasylepis* is a low, bushy or slender, upright, non-lignotuberous shrub, 0.2 to 2 m high with pink-purple flowers that blooms between June and December. The flora species is often found in swampy areas. The closest record of this species is from a wetted area approximately 8km northeast of the application area. Although some parts of the application area may provide habitat for this species, the flora survey and review of photographs provided by the applicant did not indicate the occurrence of this species within the application area. Given the above and the distance of the nearest record, it is unlikely that this species is present within the application area.

The Priority 3 *Synaphea decumbens* is a small shrub with yellow flowers that blooms between September and December. It occurs on sand over laterite soils and has been found in areas with degraded vegetation condition including that of between road and gravel scrape. It has also been found within the *Eucalyptus marginata* and *Corymbia calophylla* woodland. The flora survey did not find this flora species within the application area. Its presence would be identifiable during the survey period.

The Priority 4 *Chamelaucium erythrochlorum* is a perennial shrub of up to 1 m high with red flowers that has been recorded to grow on various types of soils, including those supporting the woodlands of *Eucalyptus marginata* and *Corymbia calophylla*. Noting its perennial nature, their presence in an environment would be noticeable, especially as this species flowers from November to February. The flora survey did not find this species within the application area.

#### Conclusion

Based on the above assessment, it is considered that the proposed clearing is not likely to impact threatened or priority flora.

#### Conditions

Nil conditions

### **3.2.3. Biological values – conservation areas – Clearing Principle (h)**

#### Assessment

The proposed clearing area is not located within any conservation area. The Margaret River State Forest is immediately west of the application area and adjoining the Blackwood Forrest. The proposed clearing may facilitate the spread of weeds and dieback into the State Forest. Given the limited extent of the proposed clearing, it is considered that these impacts can largely be managed through suitable weed and dieback conditions. The applicant has expressed commitment to apply best practice weed and dieback hygiene measures to minimise the likelihood of impacts arising from the clearing. The applicant also advised that existing surface drainage will be maintained during road reconstruction to avoid runoff of water or sediment into the surrounding environment, which will further limit effects of the clearing to the State Forest (Shire of Augusta Margaret River, 2021b).

#### Conclusion

Based on the above assessment, the proposed clearing may result in the spread of weeds and dieback into the adjacent Margaret River State Forest. These impacts can be managed through imposing suitable conditions.

### Conditions

To address impacts to the adjacent Margaret River State Forest, weed and dieback management measures will be required as a condition on the clearing permit.

### **3.2.4. Land and water resources (Wind erosion, water logging, and surface acidification) – principle (f) and (g)**

#### Assessment

The proposed clearing area is mapped as having high to extremely high risks to land degradation due to wind erosion. Road works, particularly on the east side of the road where vegetation is largely in degraded condition or had been cleared for agriculture purposes may lead to increased likelihood of impacts due to wind erosion. However, due to the nature of roadwork design, this impact if present, would be temporarily.

Parts of the application area, especially that of adjacent to the sources of two minor non-perennial watercourses are also prone to waterlogging and soil acidification. The applicant has committed to maintain the existing surface drainage patterns during road reconstruction to prevent any surface hydrology or movement of sediment into the surrounding environment (Shire of Augusta Margaret River, 2021b). Road design has included the use of rock pitching to stabilise drain walls to allow for narrower and steeper drains, which is expected to avoid water logging and the associated soil acidification in the long run (Shire of Augusta Margaret River, 2021b).

#### Conclusion

Based on the above assessment, it is considered that the impacts of the proposed clearing on land and water resources can be managed by applying appropriate measures to minimise and mitigate risks associated with wind erosion, waterlogging and soil acidification. Clearing is unlikely to cause appreciable land degradation.

#### Conditions

To address the above impacts, commencement of road works within two months of clearing to mitigate the risks of wind erosion will be required as a condition on the clearing permit.

### **3.3. Relevant planning instruments and other matters**

The proposed clearing area is bordering with the State Forest No. 62. The Parks and Wildlife Service of the Department of Biodiversity, Conservation and Attractions as the land manager of the State Forest has provided their support for the Shire of Augusta Margaret River short term and long term plans with regard to the portion of the Jindong Treeton Road construction adjacent to the Forest (Shire of Augusta Margaret River, 2021a).

No Aboriginal Heritage Sites are located within close proximity of the proposed clearing.

## Appendix A. Additional information provided by applicant

During the assessment, DWER provided the applicant with the results of a preliminary assessment on the potential impacts of the proposed clearing. The applicant has addressed the concerns raised by DWER and revised the original plan, as follows (Shire of Augusta Margaret River, 2021b and 2021c):

Summary of comments DWER	Considerations of comments	Applicant's comments
<ul style="list-style-type: none"> <li>Given the potential impacts on the environmental values, evidence of additional efforts to avoid and/or mitigate the need for clearing are required to be provided.</li> <li>DWER considers that it may be appropriate to provide a revised application area following the finalisation of road upgrade designs.</li> </ul>	<p>The preliminary assessment has identified that the area in which clearing is proposed:</p> <ul style="list-style-type: none"> <li>May contains nesting trees for threatened black cockatoo species <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo), <i>Calyptorhynchus baudinii</i> (Baudin's cockatoo) and <i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo); and</li> <li>Is immediately adjacent to the North East Margaret River State Forest.</li> </ul>	<ul style="list-style-type: none"> <li>The length of the purpose permit corridor has been reduced by approximately 730 meters.</li> <li>The width of the proposed corridor has been reduced from 20 meters to 8 meters, comprising 4 meter wide edges on each side of the road.</li> <li>Actual clearing area is expected to be half of the proposed clearing area's size of 0.5 hectare.</li> <li>Most of the clearing will now be on the east side of the road adjacent to the agricultural land, where the roadside vegetation is either cleared, planted or in degraded to completely degraded condition.</li> <li>Clearing on the west side of the road, adjacent to the State Forest, will now be minor, limited to the 130 m length on the south side of the application area.</li> <li>The road design has also been revised to reduce the width of the clearing footprint by redesigning the roadside drains. Rock pitching will now be used to stabilize drain walls to allow for narrower and steeper drains, therefore reducing the area of clearing.</li> </ul>
<ul style="list-style-type: none"> <li>Coordinates of all trees with DBH greater than 50 centimetres that that may contain a hollow(s) that may be suitable for breeding by Carnaby's cockatoo, Baudin's cockatoo, and/or forest red-tailed black cockatoo.</li> </ul>	<ul style="list-style-type: none"> <li>the preliminary assessment has identified that the area proposed to be cleared may contains nesting trees for threatened black cockatoo species. For any such trees that cannot be avoided, a condition will be placed on the permit requiring pre-clearing inspection of these trees by a fauna specialist, and artificial hollows may need to be installed to mitigate impacts.</li> </ul>	<ul style="list-style-type: none"> <li>Trees with DBH greater than 500 mm within the application area have been identified. The revised road design has allowed for 38 trees with DBH greater than 500 mm to be retained.</li> <li>Three habitat trees that may require removal due to the required replacement of culverts have been identified. No hollows suitable for Black cockatoo roosting or breeding are identified on these trees.</li> <li>A qualified fauna specialist will be engaged to undertake a pre-clearing inspection of trees, and if required the Shire can install artificial nests in a suitable area of habitat to mitigate impacts.</li> <li>GPS coordinates of the three <i>Corymbia calophylla</i> trees that may be affected by the proposed clearing are provided (See Figure 2).</li> </ul>
<ul style="list-style-type: none"> <li>The flora survey undertaken by Stream Environment and Water (2021) did not include the northernmost portion of the original application area.</li> </ul>	<ul style="list-style-type: none"> <li>The application area may contain habitat for threatened and priority flora species <i>Daviesia elongata</i> (T), <i>Grevillea bronwenae</i> (P3) <i>Isopogon formosus</i> subsp. <i>dasylepis</i> (P3), <i>Lasiopetalum laxiflorum</i> (P3), <i>Synaphea decumbens</i>(P3), <i>Synaphea hians</i> (P3) and <i>Chamelaucium erythrochlorum</i> (P4).</li> </ul>	<ul style="list-style-type: none"> <li>Because the northern section of the original proposed clearing area was not included in the flora survey, the section is now removed from the revised application area.</li> <li>The flora survey undertaken by Stream Environmental and Water (2021) has now covered the entire revised application area.</li> <li>The flora survey did not identify the species mentioned by DWER. An assessment of the likelihood of impacts is under Section 3.2.2.</li> </ul>





Figure 2. Locations of three *Corymbia calophylla* trees with DBH greater than 500 mm (t784, t785, t2946) potentially affected by the proposed clearing



## Appendix B. Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

### B.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is part of an expansive tract of native vegetation in the intensive land use zone of Western Australia. The majority of the proposed clearing footprint area is surrounded by native vegetation to the west/southwest and land cleared for agriculture to the east/northeast.</p> <p>The application area is located immediately east of the North-East Margaret River State Forest (1,543.63 hectares in area) which is connected to the Blackwood State Forest (53,144.93 hectares in area).</p> <p>Spatial data indicates the local area (10-kilometre radius from the centre of the proposed clearing footprint) retains approximately 49 per cent of the original native vegetation cover.</p>
Ecological linkage	<p>A linkage (ID 195) identified in the South West Ecological Linkages (Molloy et al., 2009) is mapped approximately 175 m east of the proposed clearing footprint. This linkage is associated with the Carburnup River.</p>
Conservation areas	<p>The proposed clearing footprint is immediately northeast and east of the North East Margaret River State Forest and approximately 315 m southwest/west of Blackwood State Forest.</p>
Vegetation description	<p>A vegetation survey (Stream Environment and Water, 2021) indicates the proposed clearing footprint contains the following vegetation types:</p> <ul style="list-style-type: none"> <li>• EmCcKa: Open forest of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over shrubland of <i>Kingia australis</i> and <i>Xanthorrhoea preissii</i> over shrubland of <i>Podocarpus drouynianus</i>, <i>Hibbertia hypericoides</i> and <i>Tetraria octandra</i>;</li> <li>• CcEmAs: Open forest of <i>Corymbia calophylla</i> and <i>Eucalyptus marginata</i> over open woodland of <i>Allocasuarina fraseriana</i>, <i>Banksia grandis</i> and <i>Persoonia longifolia</i> over sedgeland/shrubland of <i>Anarthria scabra</i>, <i>Dasypogon hookeri</i> and <i>Podocarpus drouynianus</i>;</li> <li>• Planted - Mix of Eucalypts, garden ornamentals and pines; and</li> <li>• Cleared - Cleared or parkland cleared.</li> </ul> <p>Representative photos and maps are available in Appendix E.</p> <p>This is consistent with the mapped vegetation complexes:</p> <ul style="list-style-type: none"> <li>• Treeton (T) 266, which is described as woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>-<i>Corymbia calophylla</i> with some <i>Allocasuarina fraseriana</i> on mild slopes in the perhumid zone; and</li> <li>• Treeton (Tw) 273, which is described as open forest of <i>Eucalyptus patens</i>-<i>Corymbia calophylla</i>-<i>Eucalyptus marginata</i> subsp. <i>marginata</i> on lower slopes and on floors of minor valleys in the perhumid zone (Mattiske and Havel, 1998).</li> </ul> <p>The mapped vegetation types retain approximately 47 per cent and 34 per cent of the original extent (Government of Western Australia, 2019b).</p>
Vegetation condition	<p>A vegetation survey (Stream Environment and Water, 2021) indicates the vegetation within the proposed clearing area (excluding cleared areas) ranges from Completely Degraded to Excellent (Keighery, 1994) condition.</p> <p>Descriptions of each Keighery (1994) condition rating is provided in Appendix D. Representative photos and mapping are available in Appendix E.</p>

Characteristic	Details
Climate	Rainfall: 1100 mm Evapotranspiration: 800 mm
Topography	Ranges from 95 m AHD in northern extent of proposed clearing footprint to 120 m AHD in southern extent.
Soil description	The soil is mapped as: <ul style="list-style-type: none"> <li>Treeton hillslopes Phase (214ThTRh), described as slopes with gradients generally ranging from 2-15% and gravelly duplex (Forest Grove) and pale grey mottled (Mungite) soils.</li> <li>Treeton wet valley Phase (214ThTRvw) described as Broad U-shaped drainage depressions with swampy floors.</li> </ul>
Land degradation risk	<ul style="list-style-type: none"> <li>Flood risk: <ul style="list-style-type: none"> <li>214ThTRh - &lt;3% of the map unit has a moderate to high flood risk</li> <li>214ThTRvw - 30-50% of the map unit has a moderate to high flood risk</li> </ul> </li> <li>Waterlogging risk: <ul style="list-style-type: none"> <li>214ThTRh - 10-30% of map unit has a moderate to very high waterlogging risk</li> <li>214ThTRvw - &gt;70% of map unit has a moderate to very high waterlogging risk</li> </ul> </li> <li>Salinity risk: &lt;3% of map unit has a moderate to high salinity risk or is presently saline</li> <li>Phosphorus export risk: <ul style="list-style-type: none"> <li>214ThTRh - 3-10% of map unit has a high to extreme phosphorus export risk</li> <li>214ThTRvw - 30-50% of map unit has a high to extreme phosphorus export risk</li> </ul> </li> <li>Subsurface acidification risk: &gt;70% of map unit has a high subsurface acidification risk or is presently acid</li> <li>Water erosion risk <ul style="list-style-type: none"> <li>214ThTRh - 3-10% of map unit has a high to extreme phosphorus export risk</li> <li>214ThTRvw - 30-50% of map unit has a high to extreme phosphorus export risk</li> </ul> </li> <li>Wind erosion: <ul style="list-style-type: none"> <li>214ThTRh - 50-70% of map unit has a high to extreme wind erosion risk</li> <li>214ThTRvw - 10-30% of map unit has a high to extreme wind erosion risk</li> </ul> </li> </ul>
Waterbodies	The desktop assessment and aerial imagery indicated that two minor, non-perennial watercourses transect the proposed clearing footprint area, one through the northern portion and one through the southern portion. Both of these watercourses are within the Carunup River catchment. The watercourse transecting the northern application area is associated with a palusvale multiple use wetland mapped within the Geomorphic wetlands South West (unreviewed) dataset.
Hydrogeography	The proposed clearing footprint area is within the Busselton Capel Groundwater Area and Geographe Bay Rivers Surface Water Area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> .  Hydrogeology: Sedimentary Rocks - Extensive and Deep Aquifers (sand, limestone lithology)  Groundwater salinity: < 500 mg/L TDS
Flora	There are records of seven threatened and 30 priority flora within the local area. The closest to the application area is the priority 2 species <i>Gastrolobium whicherense</i> , located approximately 50 m west of the proposed clearing footprint.

Characteristic	Details
Ecological communities	There are records of one threatened and five priority ecological communities within the local area, the closest of which to the application area is the Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (floristic community type 10b as originally described in Gibson et al. (1994)) threatened ecological community.
Fauna	There are records of 16 threatened, five priority and one conservation dependent fauna species within the local area. The closest record is of the threatened species <i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo), located approximately 10 m west of the proposed clearing footprint.

## B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex					
Treeton (T) 266**	27,420.43	12,798.11	46.67	7,641.00	27.87
Treeton (Tw) 273**	8,676.10	2,926.58	33.73	1,747.41	20.14
Local area					
10km radius	37,561.58	18,278.56	48.66	-	-

\*Government of Western Australia (2019a)

\*\*Government of Western Australia (2019b)

## B.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F), and biological survey information, impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features?	Suitable mapped vegetation type?	Suitable mapped soil type?	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify?
<i>Acacia inops</i>	P3	N	Y	Y	3.5	16	N
<i>Acacia tayloriana</i>	P4	N	Y	Y	2.1	28	N
<i>Andersonia ferricola</i>	1	N	Y	N	5.7	12	N
<i>Banksia mimica</i>	T	N	N	N	6.4	37	N
<i>Banksia nivea</i> subsp. <i>uliginosa</i>	T	N	Y	Y	6.9	29	N
<i>Banksia squarrosa</i> subsp. <i>argillacea</i>	T	N	N	Y	3.8	34	N
<i>Boronia tetragona</i>	P3	N	Y	Y	9.4	15	N
<i>Calothamnus lateralis</i> var. <i>crassus</i>	P3	N	Y	Y	7.1	17	N
<i>Chamelaucium erythrochlorum</i>	P4	Y	Y	Y	0.4	25	N
<i>Dampiera heteroptera</i>	P3	N	Y	Y	0.6	17	N
<i>Daviesia elongata</i>	T	Y	Y	Y	7.4	34	N

Species name	Conservation status	Suitable habitat features?	Suitable mapped vegetation type?	Suitable mapped soil type?	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify?
<i>Drakaea micrantha</i>	T	N	Y	Y	3.9	49	N
<i>Gastrolobium whicherense</i>	P2	N	Y	Y	0.1	14	N
<i>Grevillea brachystylis</i> subsp. <i>grandis</i>	T	N	Y	N	5.1	8	N
<i>Grevillea bronwenae</i>	P3	Y	Y	N	3.8	39	N
<i>Hakea oldfieldii</i>	P3	N	Y	Y	5.3	58	N
<i>Hybanthus volubilis</i>	P2	N	Y	Y	3.5	15	N
<i>Isopogon formosus</i> subsp. <i>dasylepis</i>	P3	Y	Y	Y	2.3	47	N
<i>Johnsonia inconspicua</i>	P3	N	Y	Y	4.8	16	N
<i>Lambertia rariflora</i> subsp. <i>rariflora</i>	P4	N	Y	Y	6.8	11	N
<i>Lasiopetalum laxiflorum</i>	P3	Y	Y	Y	4.2	37	N
<i>Loxocarya magna</i>	P3	N	Y		5.5	44	N
<i>Pultenaea pinifolia</i>	P3	N	Y	Y	0.9	44	N
<i>Synaphea decumbens</i>	P3	Y	Y	Y	7.1	28	N
<i>Synaphea hians</i>	P3	Y	Y	Y	7.1	52	N
<i>Thysanotus formosus</i>	P1	N	Y	Y	9.2	9	N
<i>Verticordia plumosa</i> var. <i>ananeotes</i>	T	N	N	N	7.4	23	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

#### B.4. Fauna analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix F) impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features?	Most recent record	Distance of closest record to application area (km)	Number of records in local area	Are surveys adequate to identify?
<i>Calyptorhynchus banksii</i> naso (forest red-tailed black cockatoo)	VU	Y	2019	0.9	14	N
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	EN	Y	2020	0.4	27*	N
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	EN	Y	2019	0.01	24*	N
<i>Dasyurus geoffroyi</i> (chuditch, western quoll)	VU	Y	2017	1.4	4	N
<i>Falsistrellus mackenziei</i> (Western false pipistrelle, western falsistrelle)	P4	Y	2018	8.4	1	N
<i>Isodon fusciventer</i> (quenda, southwestern brown bandicoot)	P4	Y	2019	3.2	60	N
<i>Notamacropus irma</i> (western brush wallaby)	P4	Y	2014	2.1	3	N
<i>Phascogale tapoatafa wambenger</i> (south-western brush-tailed phascogale, wambenger)	CD	Y	2020	0.7	43	N
<i>Pseudocheirus occidentalis</i> (western ringtail possum, ngwayir)	CR	Y	2020	4.5	52	N



Species name	Conservation status	Suitable habitat features?	Most recent record	Distance of closest record to application area (km)	Number of records in local area	Are surveys adequate to identify?
<i>Setonix brachyurus</i> (quokka)	VU	Y	1965	8.5	4	N
<i>Trichosternus relictus</i> (a ground beetle (Margaret River))	P3	Y	1992	6.1	2	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

\* An additional 16 records of *Calyptorhynchus* sp. 'white-tailed black cockatoo' are present within the local area, which could comprise either of these species

### B.5. Ecological community analysis table

Community name	Conservation status	Suitable habitat features? [Y/N]	Same mapped vegetation type?	Same mapped soil type?	Distance of closest record to application area (km)	Number of records in local area	Are surveys adequate to identify?
Central Whicher Scarp Jarrah woodland	P1	N	Y	Y	8.3	3	N
Shrublands on southern Swan Coastal Plain Ironstones (Busselton area) (floristic community type 10b as originally described in Gibson et al. (1994))	CR	N	Y	Y	3.3	8	N

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

## Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain significant flora, fauna, habitats, or assemblages of plants. Flora survey did not identify and threatened or priority flora. The application area is adjacent to a State Forest which might comprise a high level of biodiversity.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>Several conservation significant fauna have been recorded within the local area. The application area exhibits the habitat characteristics of at least ten of the fauna, including the threatened species of Black cockatoos.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>Seven threatened flora species have been recorded within a 10 km radius from the application area. The flora survey did not indicate the presence of threatened flora within the application area.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain species that resemble a threatened ecological community.</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation types and native vegetation in the local area are consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	Not likely to be at variance	No
<p><u>Principle (h):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The Margaret River State Forest is located immediately west of the proposed clearing. Although no clearing is proposed within the State Forest, the proposed clearing may indirectly impact on the environmental values of the State Forest.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.3, above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing area intersects two mapped minor non perennial watercourses near to their sources. Given the small extent of clearing and the vegetation condition adjacent to these water courses, the proposed clearing is unlikely to impact on- or off-site hydrology and water quality.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (g):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are highly susceptible to wind erosion. Noting the extent of the application area, a condition requiring commencement of road construction activities within two months of clearing is considered adequate to mitigate potential impacts from wind erosion.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.4, above.</i>
<p><u>Principle (i):</u> <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."</i></p> <p><u>Assessment:</u></p> <p>Given the small extent of proposed clearing area in the vicinity of non-perennial courses, the proposed clearing is unlikely to impact surface water or groundwater.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."</i></p> <p><u>Assessment:</u></p> <p>Soils at the northern and southern most of the application area are mapped as having a medium risk to flooding and water logging. Given the small extent of the proposed clearing within the application area, the proposed clearing is unlikely to exacerbate the incidence of flooding.</p>	Not likely to be at variance	No



## Appendix D. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

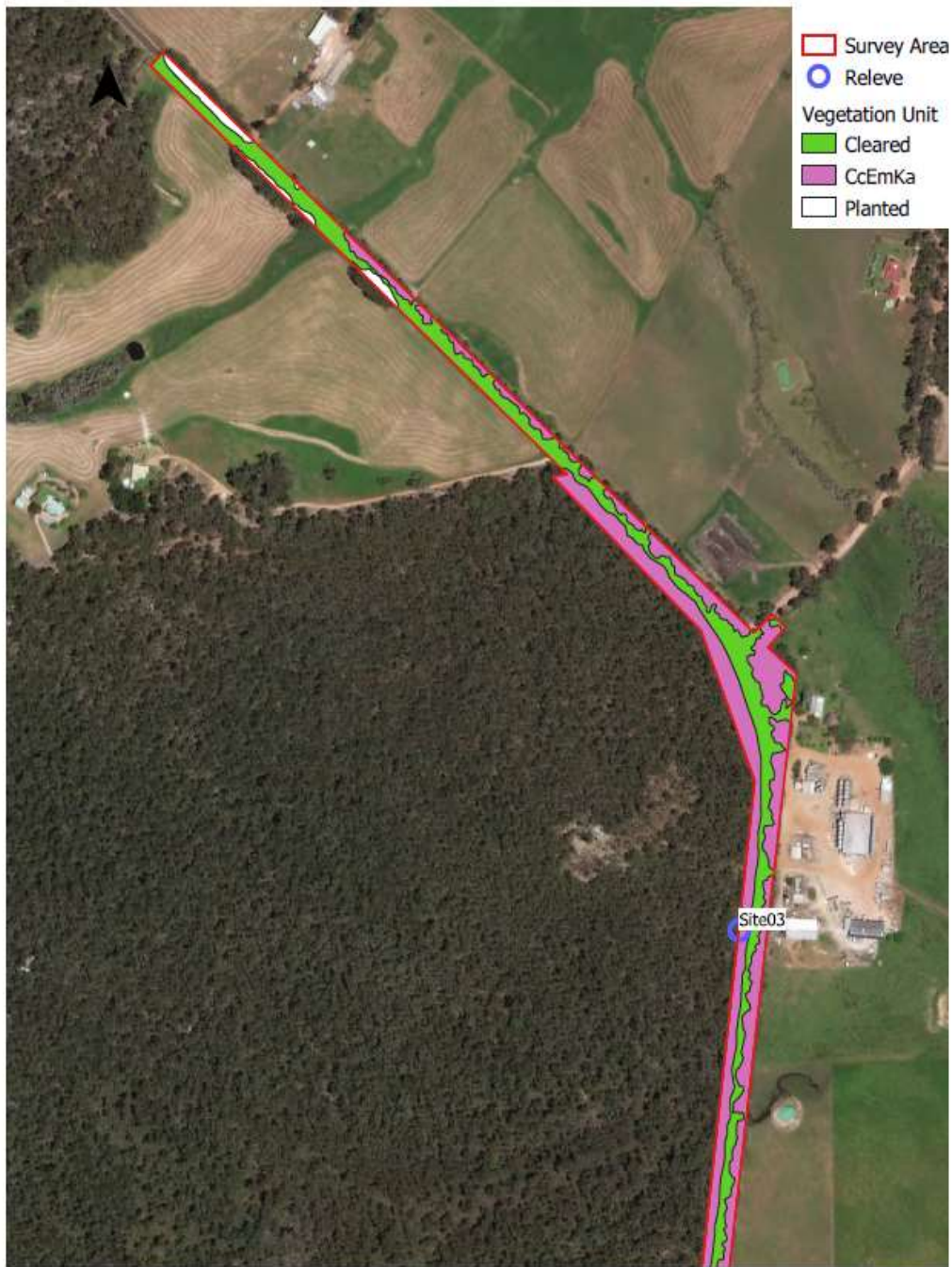
Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

## **Appendix E. Biological survey information excerpts and photographs (Stream Environment and Water, 2021)**

Stream Environment and Water Pty Ltd (Stream Environment and Water, 2021) were commissioned by the Shire of Augusta Margaret River to undertake a flora and vegetation survey within an approximately 2.7 km section of the Jindong-Treeton Road in preparation of this application. The survey was to map vegetation types and condition within the study area as well as any priority or threatened flora and vegetation communities. The survey was conducted in November 2020.



**Figure 5a Vegetation Units (north)**

Jindong-Treeton Road Flora and Vegetation Survey  
 Ref: 202204  
 Date: 10/02/2021 Author: JW

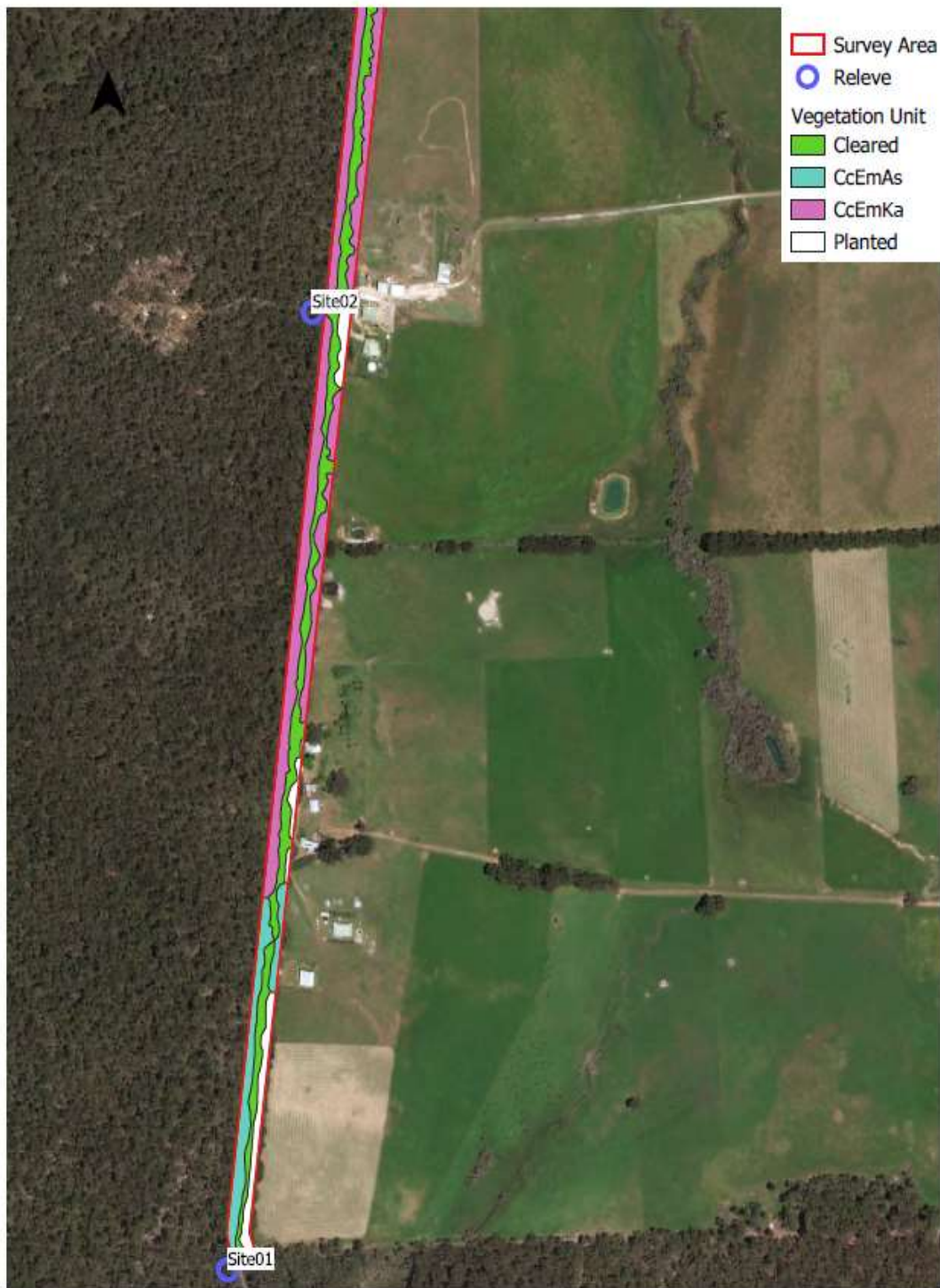
0 75 150 m



Projection: GDA zone 50  
 Source: Base map © ESRI and its data suppliers: Landgate (2020).

Figure 2-1 – Vegetation units mapped within the northern portion of the proposed clearing footprint (Stream Environment and Water, 2021)






**Figure 5b Vegetation Units (south)**  
 Jindong-Treeton Road Flora and Vegetation Survey  
 Ref: 202204  
 Date: 10/02/2021 Author: JW

0 75 150 m  
 Projection: GDA zone 50  
 Source: Base map © ESRI and its data suppliers; Landgate (2020).

Figure 2-2 – Vegetation units mapped within the southern portion of the proposed clearing footprint (Stream Environment and Water, 2021)




**Figure 6a Vegetation Condition (north)**  
 Jindong-Treeton Road Flora and Vegetation Survey  
 Ref: 202204  
 Date: 10/02/2021 Author: JW

0 75 150 m  
 Projection: GDA zone 50  
 Source: Base map © ESRI and its data suppliers. Landgate (2020).

Figure 3-1 – Vegetation condition mapped within the northern portion of the proposed clearing footprint (Stream Environment and Water, 2021)





**Figure 6b Vegetation Condition (south)**

Jindong-Treeton Road Flora and Vegetation Survey

Ref: 202204  
 Date: 10/02/2021 Author: JW

0 75 150 m



Projection: GDA zone 50  
 Source: Base map © ESRI and its data suppliers.  
 Landgate (2020).

Figure 3-2. Vegetation condition mapped within the southern portion of the proposed clearing footprint (Stream Environment and Water, 2021)





Figure 4 –Photographs of vegetation in the southern portion of proposed clearing footprint, facing south on east side of road (left) and facing north on west side of road (Shire of Augusta Margaret River, 2021a)

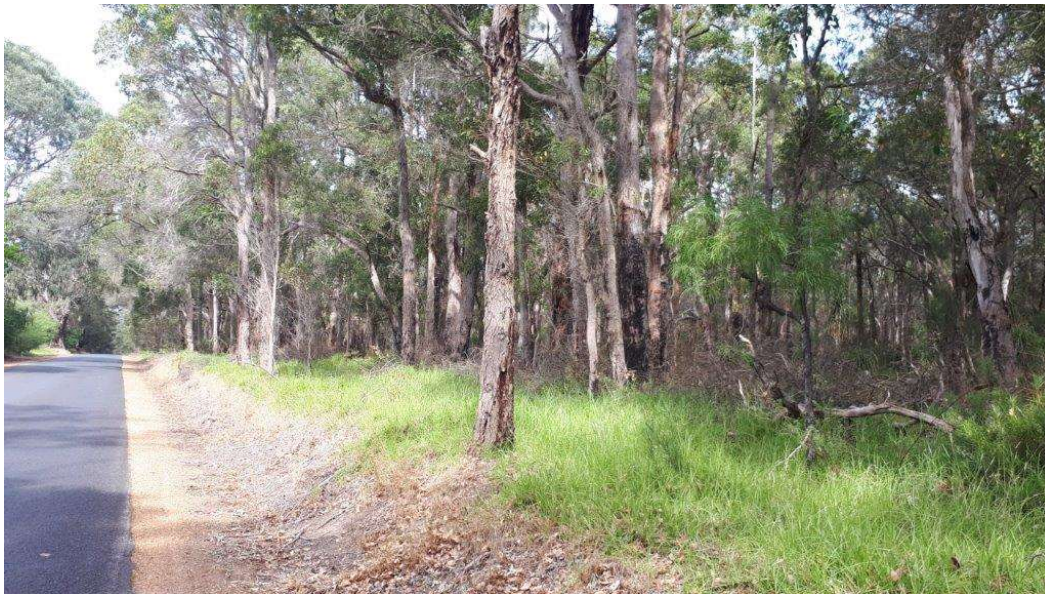


Figure 5 – Photograph of vegetation in the proposed clearing footprint, facing south on west side of road (Shire of Augusta Margaret River, 2021a)





Figure 6 – Photograph of vegetation in the northern portion of proposed clearing footprint, facing north-west (Shire of Augusta Margaret River, 2021a)

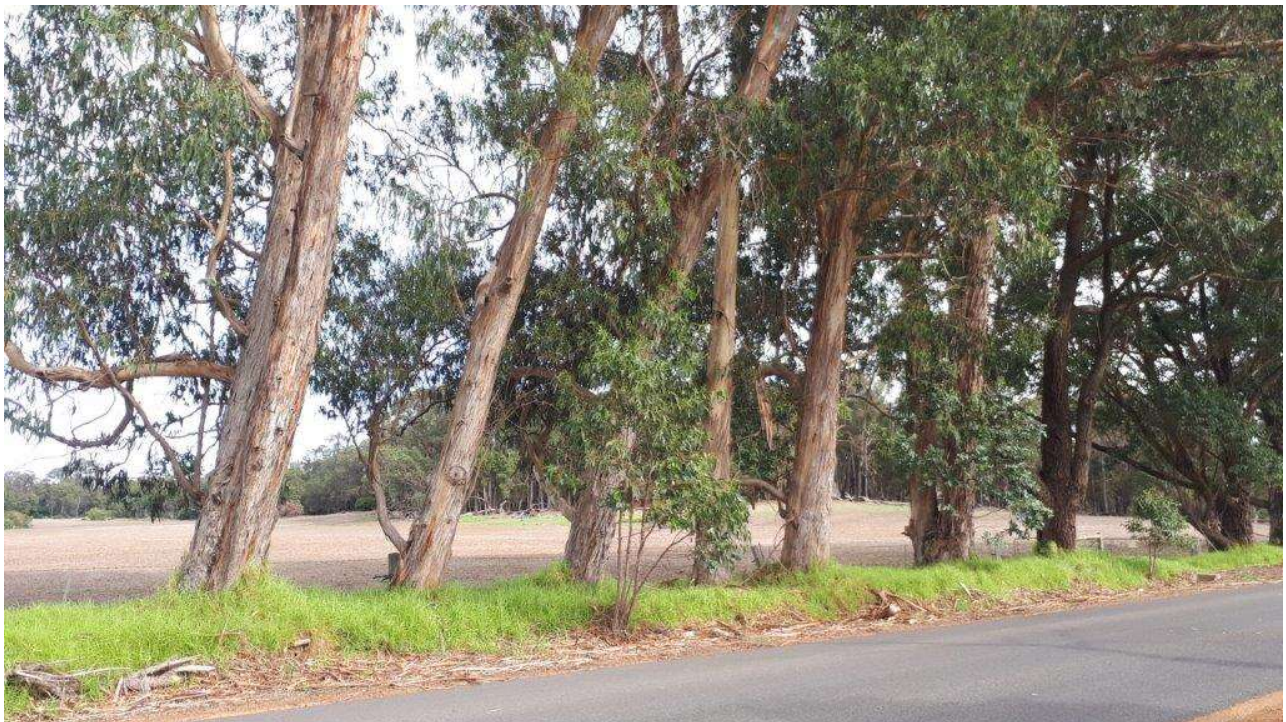


Figure 7 – Photograph of vegetation in the northern portion of proposed clearing footprint, planted Eucalypts (non-local) in northern extent of road reserve on south-western side of road (Shire of Augusta Margaret River, 2021a)





Figure 8. Mari tree (*Corymbia calophylla*) with DBH 75 cm (ID 784) proposed to be cleared (Shire of Augusta Margaret River, 2021c)



Figure 9. Mari tree (*Corymbia calophylla*) with DBH 55 cm (ID 785) proposed to be cleared (Shire of Augusta Margaret River, 2021c)





Figure 10. Mari tree (*Corymbia calophylla*) with DBH 75 cm (ID 2946) proposed to be cleared (Shire of Augusta Margaret River, 2021c)

## Appendix H. Sources of information

### H.1. GIS databases

Publicly available GIS Databases used (sourced from [www.data.wa.gov.au](http://www.data.wa.gov.au)):

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)

- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

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