



## CLEARING PERMIT

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

### PERMIT DETAILS

Area Permit Number: CPS 8896/1  
File Number: DWERT5715  
Duration of Permit: From 23 July 2020 to 23 July 2022

### PERMIT HOLDER

Shire of Serpentine-Jarrahdale

### LAND ON WHICH CLEARING IS TO BE DONE

Kargotich Road reserve (PIN 11608178), Mardella

### AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.189 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8896/1.

### CONDITIONS

#### 1. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

- (a) avoid the clearing of native vegetation;
- (b) minimise the amount of native vegetation to be cleared; and
- (c) reduce the impact of clearing on any environmental value.

#### 2. Dieback and weed control

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

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

#### 3. Records to be kept

The Permit Holder must maintain the following records in relation to the clearing of native vegetation authorised under this Permit:

- (a) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
- (b) the date(s) that the area was cleared;
- (c) the size of the area cleared (in hectares);
- (d) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 2 of this Permit.

#### 4. Reporting

The Permit Holder must produce the records required under condition 3 of this Permit when required by the *CEO*.

#### Definitions

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

**CEO** means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

**dieback** means the effect of *Phytophthora* species on native vegetation;

**fill** means material used to increase the ground level, or fill a hollow;

**mulch** means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation; and

**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 Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



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Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

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


30 June 2020

# Plan 8896/1





## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines  
 Cadastre - LGATE 218

Local Government Authority (LGA) Boundaries (LGATE-233)



50 0 50 100 m




Mathew  
 Gannaway  
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Officer delegated under section 20 of the  
 Environmental Protection Act 1986



GOVERNMENT OF  
 WESTERN AUSTRALIA





# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1 Permit application details

<b>Permit number:</b>	CPS 8896/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Shire of Serpentine-Jarrahdale
<b>Application received:</b>	30 April 2020
<b>Application area:</b>	0.189 hectares (ha) of native vegetation
<b>Purpose of clearing:</b>	Road upgrades
<b>Method of clearing:</b>	Mechanical removal
<b>Property:</b>	Kargotich Road reserve (PIN 11608178)
<b>Location (LGA area/s):</b>	Shire of Serpentine-Jarrahdale
<b>Localities (suburb/s):</b>	Mardella

### 1.2 Description of clearing activities

The application area comprises selected trees and shrubs adjacent to an existing road formation, within a broader road reserve that has a part in maintaining connectivity between remnants in the local area<sup>1</sup>. The application form states that the total area of clearing is 0.12 hectares (ha) of native vegetation for the purpose of road upgrades and widening to make the road safer, with the final land use being road corridor and maintenance area. On digitising, this was amended to 0.189 ha. The extent of the proposed clearing is indicated in Figure 1 (see Section 1.5).

### 1.3 Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	30 June 2020
<b>Decision area:</b>	0.189 ha of native vegetation (see Figure 1, Section 1.5)

### 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). DWER advertised the application for 21 days and no public submissions were received.

In undertaking the assessment, the Delegated Officer had regard for the site characteristics (see Appendix A), relevant datasets (see Appendix E), the findings of a site inspection (see Appendix D), the clearing principles set out in Schedule 5 of the EP Act (see Appendix B), relevant planning instruments, the applicant's minimisation and mitigation measures, and any other matters considered relevant to the assessment (see Section 3). The assessment identified that the proposed clearing will result in the following:

- loss of vegetation growing in association with a mapped 'multiple use' wetland (palusplain)
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

The Delegated Officer considered the impacts of the proposed clearing are unlikely to have any long-term adverse impacts on the hydrological and ecological values of the wetland. Weed and dieback management practices will mitigate any potential impacts from the proposed clearing to adjacent vegetation.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures, the Delegated Officer determined that the impacts of the proposed clearing could be minimised and managed to be environmentally acceptable. The Delegated Officer decided to grant a clearing permit subject to conditions to:

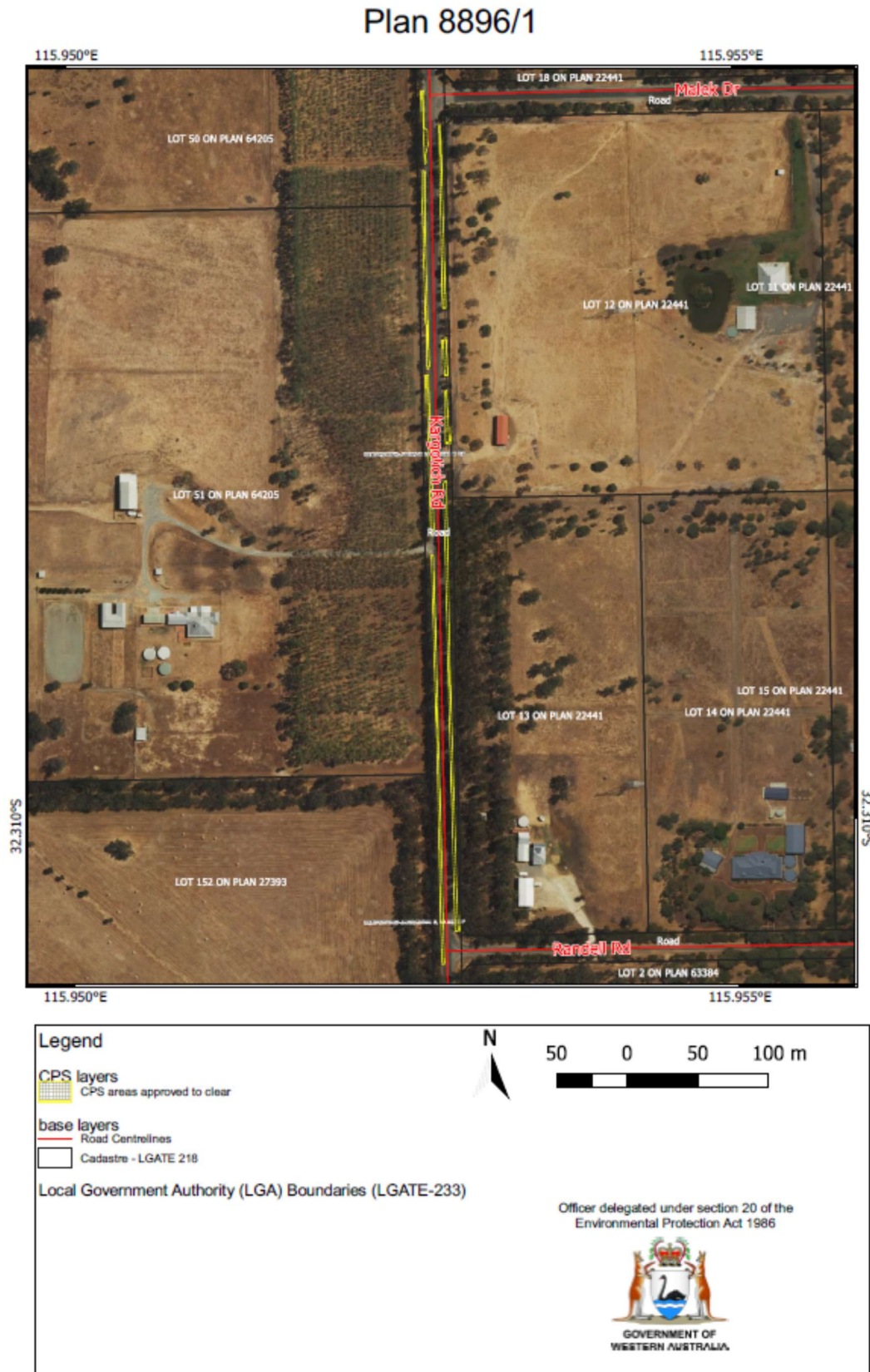
- avoid, minimise and reduce the impacts and extent of clearing

<sup>1</sup> For this application, the local area is defined as a 10-kilometre radius from the perimeter of the application area.

- take steps to minimise the risk of the introduction and spread of weeds and dieback.

## 1.5 Site map

Figure 1: Map of application area



The area cross-hatched 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 1.3), 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)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act).

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DWER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019).

## 3. Detailed assessment of application

### 3.1 Avoidance and mitigation measures

The application form states that only those plants that are too close to the road works will be removed, and that the applicant will prioritise pruning to removal when possible.

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

### 3.2 Assessment of environmental impacts

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A), and considered the extent to which the impacts of the proposed clearing present a risk to environmental values and whether these can be managed to be environmentally acceptable. The assessment against the clearing principles is contained in Appendix B.

This assessment identified that the impacts of the proposed clearing present a risk to fauna, adjacent flora and vegetation and wetland habitat. The consideration 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, is set out below.

#### 3.2.1 Fauna

##### Assessment

The value of the application area as fauna habitat is primarily associated with individual swamp sheoak (*Casuarina obesa*) and robin redbreast bush (*Melaleuca lateritia*), given the absence of intact lower structures. Available aerial photography and spatial datasets indicate that patches of remnant vegetation, comprising mainly of *Banksia* spp. woodlands, occur within 1.4 kilometres (km) of the application area. No mapped ecological linkages occur in the local area, although it is acknowledged that vegetation within the broader road reserve has a part in maintaining connectivity between remnants in the local area.

Significant habitat refers to the resources (breeding, resting and feeding), connectivity or habitat area for a species or community that is critical for its survival. Noting the composition and condition of the vegetation, the application area is likely to contain suitable habitat for some indigenous fauna, however is unlikely to be significant for the survival of species that are not of conservation significance. Notwithstanding, there is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the habitat values.

Nine threatened, 11 priority, one 'conservation dependent' and one 'other specially protected' fauna, and six fauna protected under an international agreement, have been recorded in the local area. In forming a view on the likelihood of these species occurring within the application area, the preferred habitat types and typical home ranges of these species and their recorded proximity to the application area were considered, along with the type and condition of the vegetation within the application area.

Three threatened, one priority, one 'conservation dependent' and one 'other specially protected' fauna have been recorded in close proximity to the application area, and/or from arboreal/canopy habitat in close proximity:

- Forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*; Vulnerable): Published literature sets out the habitat preferences of this species, which includes marri (*Corymbia calophylla*) and jarrah (*Eucalyptus marginata*) in south-west forests and blackbutt (*Eucalyptus patens*), Albany blackbutt (*Eucalyptus staeri*), sheoak (*Allocasuarina fraseriana*), snottygobble (*Persoonia longifolia*) and some non-native plants for foraging (Department of Environment and Conservation, 2008; Department of the Environment and Energy, 2013; Environmental Protection Authority, 2019; Johnstone et al., 2011). The nearest record is about 3 km from the application area. Photographs provided by the applicant indicate that the application area includes swamp sheoak trees, however noting that swamp sheoak is not a preferred foraging plant of this species, the application area is unlikely to comprise or be necessary for the maintenance of a suitable/significant habitat for this species.
- Carnaby's black cockatoo (*Calyptorhynchus latirostris*; Endangered) and Baudin's black cockatoo (*Calyptorhynchus baudinii*; Endangered): Published literature sets out the habitat preferences of this species, which includes Proteaceous woodlands and shrublands for foraging (Department of Environment and Conservation, 2008; Department of Parks and Wildlife, 2013; Department of the Environment and Energy, 2013; Environmental Protection Authority, 2019; Johnstone et al., 2011; Shah, 2006; Threatened Species Scientific Committee, 2018; Valentine and Stock, 2008). The nearest record is about 2.3 km from the application area. Noting the habitat preferences of these species, the application area is unlikely to comprise or be necessary for the maintenance of a suitable/significant habitat for these species.
- South-western brown bandicoot/quenda (*Isodon fusciventer*, Priority 4): This species typically prefers dense understorey (Department of Biodiversity, Conservation and Attractions, 2017; Department of Environment and Conservation, 2012b). The nearest record is about 1 km from the application area. Photographs provided by the applicant and available aerial photography indicate that the application area may be utilised as a corridor for movement of this species. Noting that the understorey within the application area appears to be sparse and dominated by weeds, is in close proximity to patches of remnant vegetation, and native vegetation will remain within the road reserve, the application area is unlikely to comprise or be necessary for the maintenance of a significant habitat for this species.
- South-western brush-tailed phascogale/wambenger (*Phascogale tapoatafa* subsp. *wambenger*; Conservation Dependent): In the south-west, this species is typically found in jarrah forest, and have been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees (Department of Environment and Conservation, 2012a). The nearest record is about 1 km from the application area. Noting the habitat preferences of this species, the application area is unlikely to comprise or be necessary for the maintenance of a suitable/significant habitat for this species.
- Peregrine Falcon (*Falco peregrinus*; Other Specially Protected): The Australian Museum website states that this species 'is found in most habitats, from rainforests to the arid zone, and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites, and prefers coastal and inland cliffs or open woodlands near water, and may even be found nesting on high city buildings' (Australian Museum, 2020). The nearest record is about 4.6 km from the application area. This species is widespread and highly mobile, and is found in various habitats. The application area may comprise suitable habitat for this species, however noting habitat preferences and the extent of the proposed clearing, the application area is unlikely to comprise or be necessary for the maintenance of a significant habitat for this species.

### Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on adjacent fauna habitat can be managed to be environmentally acceptable by requiring the applicant to take steps to minimise the risk of the introduction and spread of weeds and dieback. This will be required as a condition on the clearing permit.

### **3.2.2 Flora and vegetation**

#### Assessment

##### *Conservation-significant flora*

Ten threatened and 34 priority flora have been recorded in the local area. In forming a view on the likelihood of these species occurring within the application area, the preferred habitat types of these species and their recorded proximity to the application area were considered, along with the vegetation/soil types and landforms within the application area.

Six threatened and 27 priority flora are unlikely to occur within the application area due to a combination of proximity and differences in the vegetation/soil types and landforms in which they occur compared to those within the application area. Two threatened and two priority flora occur within 1.5 km of the application area, however are associated with a soil type (e.g. clay/loam) and/or a landform (e.g. winter-wet depression, inundated flat) and/or a vegetation type that does not occur within the application area. Based on similar habitat qualities and/or proximity,

the application area might contain suitable habitat for two threatened and five priority flora, and these are considered in further detail.

- *Tetraria australiensis* (Threatened): The Florabase website indicates that this species is known from 37 recorded populations (some records may overlap) ranging from City of Canning to the City of Busselton and inland to the Shire of Wandering. Florabase describes this species as a tufted perennial grass-like sedge to 1 m high generally occurring in locally-abundant populations, associated with sandy, loamy and clayey soils on flat or gently sloping areas. The nearest record is about 640 metres (m) from the application area from the same mapped soil type, associated with a winter wet flat on grey sand over clay, in sedgeland edging marri woodland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Lepidosperma rostratum* (Threatened): The Florabase website indicates that this species is known from 31 recorded populations (some records may overlap) in the Shire of Victoria Plains to the Shire of Serpentine-Jarrahdale, typically associated with peaty sand and clay. Florabase describes this species as a tufted perennial grass-like sedge to 0.5 m high. The nearest record is about 1 km from the application area from the same mapped soil type, associated with a seasonally wet poorly drained flat on brown clay, in *Melaleuca* shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Babingtonia urbana* (Priority 3): The Florabase website indicates that this species is known from 26 recorded populations (some records may overlap) ranging from the Shire of Dandaragan to the Shire of Serpentine-Jarrahdale. The nearest record is about 1 km from the application area from the same mapped soil type, described as a spreading shrub to 1 m tall and 1.5 m wide, associated with a winter wet depression in shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Schoenus* sp. Waroona (G.J. Keighery 12235) (Priority 3): The Florabase website indicates that this species is known from 11 recorded populations (some records may overlap) ranging from the City of Swan to the Shire of Harvey, typically associated with clay or sandy clay on winter-wet flats. The nearest record is about 1.1 km from the application area from the same mapped soil type, associated with a seasonally wet poorly drained flat on brown clay, in *Melaleuca* shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Angianthus drummondii* (Priority 3): The Florabase website indicates that this species is known from 19 recorded populations (some records may overlap) ranging from the Shire of Serpentine-Jarrahdale to the City of Busselton and inland to the Shire of West Arthur, typically associated with grey or brown clay soils and ironstone on seasonally wet flats. The nearest record is about 1.1 km from the application area from the same mapped soil type, associated with a seasonally wet poorly drained flat on brown clay, in *Melaleuca* shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Schoenus capillifolius* (Priority 3): The Florabase website indicates that this species is known from 27 recorded populations (some records may overlap) ranging from the Shire of Goomalling to the Shire of Dardanup, also from some inland areas, typically associated with brown mud and claypans. The nearest record is about 1.1 km from the application area from the same mapped soil type, associated with a seasonally wet poorly drained flat on brown clay, in *Melaleuca* shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.
- *Stylidium aceratum* (Priority 3): The Florabase website indicates that this species is known from 26 recorded populations (some records may overlap) ranging from the Shire of Dandaragan to the Shire of Waroona, typically associated with sandy soils in swamp heathland. The nearest record is about 1.2 km from the application area from the same mapped soil type, associated with a seasonally wet poorly drained flat on brown clay, in shrubland. Noting the type and condition of the vegetation proposed to be cleared, this species is unlikely to be present.

### Conclusion

For the reasons set out above, it is considered that the proposed clearing is unlikely to impact on conservation-significant flora. No clearing permit conditions are necessary in relation to this matter.

### **3.2.3 Significance as a remnant**

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 Environmental Protection Authority (EPA) recommends a minimum 10 per cent representation threshold for ecological communities in constrained areas (Environmental Protection Authority, 2008).

The application area is located within the Perth Metropolitan Region Scheme boundary, being a constrained area. The mapped Vegetation Complex has less than 10 per cent (6.67 per cent) of its pre-European extents remaining, and is considered to be extensively cleared. The local area retains about 21.08 per cent of its pre-European native vegetation cover, and is also considered to be extensively cleared (despite being within a constrained area).



The application area is unlikely to comprise a significant habitat for fauna including conservation-significant species, or be a part of a significant ecological linkage, or be necessary to maintain ecosystem services (such as hydrological processes). The composition and condition of the vegetation proposed to be cleared is in a Degraded to Completely Degraded condition. The vegetation adjacent to the proposed clearing area is a better representation of the Vegetation Complex. On this basis, the application area is unlikely to be considered a significant remnant.

#### Conclusion

For the reasons set out above, it is considered that the application area is unlikely to be significant as a remnant, despite including an extensively-cleared Vegetation Complex. No clearing permit conditions are necessary in relation to this matter.

### **3.2.4 Land and water resources**

#### Assessment

The application area is within a wetland (palusplain) that has a 'multiple use' management category, and is within the broader Keysbrook consanguineous wetland suite. The potential for an increase in surface water run-off has the potential to lead to sedimentation of the wetland.

By way of context, the existing road formation is constructed to be higher in the landscape than the surrounding land; it is understood that this is to reduce the risk of inundation. The application area is along the edges of the road formation. Noting this, and the extent and purpose of the proposed clearing, impacts to the wetland and surface water quality are expected to be minimal and limited to the duration of the proposed clearing activities.

#### Conclusion

For the reasons set out above, it is considered the impacts of the proposed clearing are unlikely to have any long-term adverse impacts on the hydrological and ecological values of the wetland. No clearing permit conditions are necessary in relation to this matter.

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

No registered Aboriginal sites of significance have been mapped within the application area. The nearest registered site is an Aboriginal Heritage Place known as 'Serpentine River', located about 2.4 km from the application area. This site is separated from the application area by vegetation, cleared agricultural land, and roads, and the proposed clearing is unlikely to impact on it. It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972* (WA) and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

The applicant has a further six clearing applications under assessment at the time of this decision, also for the purpose of road upgrades:

- CPS 8895/1 to clear about 0.31472 ha of marri (*Corymbia calophylla*), flooded gum (*Eucalyptus rudis*), moonah (*Melaleuca preissiana*), WA Christmas tree (*Nuytsia floribunda*) and stinkwood (*Jacksonia* sp.)
- CPS 8903/1 to clear about 0.188 ha of marri, moonah, flooded gum and swamp cypress (*Callitris pyramidalis*) in the Hopkinson Road reserve
- CPS 8908/1 to clear about 0.51 ha of swamp sheoak (*Casuarina obesa*), marri and moonah in the Mundijong Road reserve
- CPS 8918/1 to clear about 0.97 ha of native vegetation in the Nettleton Road reserve
- CPS 8919/1 to clear about 0.72 ha of native vegetation in the Anketell Road reserve
- CPS 8920/1 to clear about 0.19 ha of flooded gum, marri, moonah, swamp sheoak and orange wattle (*Acacia saligna*) in the Keirnan Street reserve.

The combined extent of clearing proposed by the current and above applications is about 3.1 ha, of which about half comprises individual trees and shrubs. In each case the applicant advised that only those plants that are too close to the road works will be removed, and that pruning will be prioritised over removal when possible. The applicant also advised that installation of kerbing and crash barriers will be considered to reduce clearing in the Mundijong Road, Nettleton Road, Anketell Road and Keirnan Street reserves.

## Appendix A – Site characteristics

The information below are the findings of a desktop assessment based on the best information available to DWER at the time of this assessment, and described the key characteristics of the application area. This information was used to inform the assessment of the clearing against the clearing principles (see Appendix B).

### Site characteristics

Site characteristic	Details	
Local context	<p>The application area comprises selected trees and shrubs adjacent to an existing road formation, within a broader road reserve that has a part in maintaining connectivity between remnants in the local area.</p> <p>The local area considered in the assessment of this application is defined as a 10-kilometre (km) radius from the perimeter of the application area, and retains about 21.08 per cent of native vegetation cover.</p>	
Vegetation description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> <li>Vegetation Association 1000, described as 968, described as medium woodland; jarrah (<i>Eucalyptus marginata</i>), marri (<i>Corymbia calophylla</i>) and wandoo (<i>Eucalyptus wandoo</i>)</li> <li>Beermullah Complex, described as mixture of low open forest of swamp sheoak (<i>Casuarina obesa</i>) and open woodland of marri - wandoo - jarrah; minor components include closed scrub of <i>Melaleuca</i> species and occurrence of swamp cypress (<i>Callitris pyramidalis</i>).</li> </ul> <p>Vegetation composition was determined from the application form and supporting information (photographs) provided by the applicant. The photographs indicate that the vegetation proposed to be cleared is primarily trees and shrubs over a sparse understorey dominated by weeds, and is limited to individual swamp sheoak and robin redbreast bush (<i>Melaleuca lateritia</i>).</p>	
Vegetation condition	<p>Vegetation condition was determined from available aerial photography and the photographs provided by the applicant. The vegetation proposed to be cleared ranges from degraded to completely degraded condition on the scale described by Keighery (1994) scale (see Appendix C).</p>	
Soil description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> <li>Pinjarra P4 Phase (213Pj_P4) within the Pinjarra System, described as poorly-drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish-brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils.</li> </ul>	
Land degradation risk	Mapped land degradation risk factors	
	<b>Risk categories</b>	<b>213Pj_P4</b>
	Wind erosion	<3% of map unit has a high to extreme wind erosion risk
	Water erosion	<3% of map unit has a high to extreme water erosion risk
	Salinity	10-30% of map unit has a moderate to high salinity risk
	Subsurface Acidification	10-30% of map unit has a high subsurface acidification risk
	Flood risk	<3% of map unit has a moderate to high flood risk
	Waterlogging	>70% of map unit has a moderate to very high waterlogging risk
Phosphorus export risk	<3% of map unit has a high to extreme phosphorus export risk	
Waterbodies	<p>ANCA Wetland: No  EPP SCP Lake: No  RAMSAR Wetland: No</p> <p>The application area is located within the broader Keysbrook consanguineous wetland suite. There are 29 records of lakes, wetlands, streams or rivers within the local area. Two of these are located in close proximity to the application area, described below.</p>	

Site characteristic	Details		
	<b>Type of inland water</b>	<b>Description</b>	<b>Proximity (m)</b>
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Palusplain	0
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Palusplain	985
Conservation areas	There are 72 records of conservation areas within the local area, comprising of Bushforever, Department of Biodiversity, Conservation and Attractions managed land and conservation covenanted areas. The three closest to the application area are described below.		
	<b>Theme</b>	<b>Description</b>	<b>Proximity (m)</b>
	Bushforever	360 Mundijong Road	981
	DER/DPaW Managed Lands	Conservation Commission Of WA – Nature Reserve R51784 (Lowlands)	2408
	Bushforever	368 Lowlands	2478
Climate and landform	Rainfall: 1000 Evapotranspiration: 900 Geology: Alluvial, shoreline, and aeolian deposits Acid Sulfate Soil Risk: Moderate to low risk Groundwater Salinity (Total Dissolved Solids): 1000-3000 mg/L The application area is on a broad flat. Topography is about 20 metres (m) above sea level (Department of Primary Industries and Regional Development, 2017).		
Hydrology and hydrogeology	The application area is within the 'Coastal Pain' Hydrological Zone, and the 'Peel Estuary – Serpentine River' Hydrographic Catchment. The application area is also within the mapped 'Serpentine' Groundwater Area under the <i>Rights in Water and Irrigation Act 1914</i> .		

### Flora, fauna and ecosystem analysis

Ecological Linkages: No

Roadside Conservation Committee roadside conservation values: Not mapped

The following conservation-significant species and ecological communities have been recorded from the local area. With consideration for the site characteristics set out above, relevant datasets (see Appendix E), and photographs provided by the applicant (see Appendix D), the likelihood of their occurrences within the application area has been assessed.

Species / Ecological Community	Distance of closest record to application area (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features	Surveys adequate to identify?
<b>Fauna</b>					
South-western brown bandicoot/quenda ( <i>Isodon fusciventer</i> ; Priority 4)	About 1 km		N	Y	N/A
South-western brush-tailed phascogale/wambenger ( <i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> ; Conservation Dependent)	About 1 km		N	Y	N/A

Species / Ecological Community	Distance of closest record to application area (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features	Surveys adequate to identify?
Baudin's black cockatoo ( <i>Calyptorhynchus baudinii</i> ; Endangered)	About 2.3 km		N	Y	N/A
Tammar wallaby ( <i>Notamacropus eugenii</i> subsp. <i>derbianus</i> ; Priority 4)	About 2.8 km			N	N/A
Carnaby's black cockatoo ( <i>Calyptorhynchus latirostris</i> ; Endangered)	About 2.9 km		N	Y	N/A
Chuditch/western quoll ( <i>Dasyurus geoffroii</i> ; Vulnerable)	About 2.9 km			N	N/A
Swan Coastal Plain shield-backed trapdoor spider ( <i>Idiosoma sigillatum</i> ; Priority 3)	About 2.9 km			N	N/A
Curlew sandpiper ( <i>Calidris ruficollis</i> ; International Agreement)	About 2.9 km			N	N/A
Forest red-tailed black cockatoo ( <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> ; Endangered)	About 3 km		N	Y	N/A
Peregrine Falcon ( <i>Falco peregrinus</i> ; Other Specially Protected)	About 4.6 km			Y	N/A
Numbat ( <i>Myrmecobius fasciatus</i> ; Endangered)	About 5 km			N	N/A
Water-rat/rakali ( <i>Hydromys chrysogaster</i> ; Priority 4)	About 5 km			N	N/A
Carter's freshwater mussel ( <i>Westralunio carteri</i> ; Vulnerable)	About 5.3 km			N	N/A
Common sandpiper ( <i>Actitis hypoleucos</i> ; International Agreement)	About 6 km			N	N/A
Blue-billed duck ( <i>Oxyura australis</i> ; Priority 4)	About 6.1 km			N	N/A
Caspian tern ( <i>Hydroprogne caspia</i> ; International Agreement)	About 6.1 km			N	N/A
Inornate trapdoor spider (northern jarrah forest) ( <i>Euoplos inornatus</i> ; Priority 3)	About 6.6 km			N	N/A
Glossy ibis ( <i>Plegadis falcinellus</i> ; International Agreement)	About 7 km			N	N/A
Perth slider/lined skink ( <i>Lerista lineata</i> ; Priority 3)	About 7.8 km			N	N/A
Black-striped burrowing snake ( <i>Neelaps calonotus</i> ; Priority 3)	About 7.8 km			N	N/A
Western brush wallaby ( <i>Notamacropus irma</i> ; Priority 4)	About 8.3 km			N	N/A
Pouched lamprey ( <i>Geotria australis</i> ; Priority 3)	About 8.4 km			N	N/A



Species / Ecological Community	Distance of closest record to application area (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features	Surveys adequate to identify?
Quokka ( <i>Setonix brachyurus</i> ; Threatened)	About 8.9 km			N	N/A
Southern death adder ( <i>Acanthophis antarcticus</i> ; Priority 3)	About 9.1 km			N	N/A
Wood sandpiper ( <i>Tringa glareola</i> ; International Agreement)	About 9.1 km			N	N/A
Common greenshank ( <i>Tringa nebularia</i> ; International Agreement)	About 9.1 km			N	N/A
Curlew sandpiper ( <i>Calidris ferruginea</i> ; Critically Endangered)	About 9.2 km			N	N/A
Western ringtail possum ( <i>Pseudocheirus occidentalis</i> ; Threatened)	About 9.6 km			N	N/A
<b>Flora</b>					
<i>Tetraria australiensis</i> (Threatened)	About 0.64 km	Y	N		
<i>Lepidosperma rostratum</i> (Threatened)	About 1 km	Y	N		
<i>Babingtonia urbana</i> (Priority 3)	About 1 km	Y	N		
<i>Jacksonia gracillima</i> (Priority 3)	About 1 km	N	N		
<i>Angianthus drummondii</i> (Priority 3)	About 1.1 km	Y			
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235) (Priority 3)	About 1.1 km	Y			
<i>Schoenus capillifolius</i> (Priority 3)	About 1.1 km	Y			
<i>Stylidium aceratum</i> (Priority 3)	About 1.2 km	Y	N		
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103) (Threatened)	About 1.2 km	N	N		
<i>Calectasia grandiflora</i> (Priority 2)	About 1.2 km	N	N		
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182) (Threatened)	About 1.3 km	N	N		
<i>Amanita fibrillopes</i> (Priority 3)	About 2.7 km	N	N		
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2)	About 2.9 km	N	N		
<i>Diuris purdiei</i> (Threatened)	About 2.9 km	N	N		
<i>Dillwynia dillwynioides</i> (Priority 3)	About 3.1 km	N	N		
<i>Parsonsia diaphanophleba</i> (Priority 4)	About 3.6 km	N	N		
<i>Amanita wadjukiorum</i> (Priority 3)	About 4.2 km	N	N		
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) (Priority 1)	About 4.3 km	N			
<i>Caladenia huegelii</i> (Threatened)	About 4.5 km	N	N		
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i> (Priority 4)	About 4.7 km	N			

Species / Ecological Community	Distance of closest record to application area (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features	Surveys adequate to identify?
<i>Amanita carneiphylla</i> (Priority 3)	About 4.7 km	N			
<i>Carex tereticaulis</i> (Priority 3)	About 5.1 km	N			
<i>Drakaea elastica</i> (Threatened)	About 5.5 km	N	N		
<i>Eryngium pinnatifidum</i> subsp. <i>Palustre</i> (G.J. Keighery 13459) (Priority 3)	About 5.6 km	N			
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i> (Priority 4)	About 5.6 km	N			
<i>Drosera occidentalis</i> (formerly <i>Drosera occidentalis</i> subsp. <i>occidentalis</i> ) (Priority 4)	About 5.8 km	N			
<i>Verticordia plumosa</i> var. <i>ananeotes</i> (Threatened)	About 6.3 km	N			
<i>Acacia horridula</i> (Priority 3)	About 6.3 km	N			
<i>Senecio leucoglossus</i> (Priority 4)	About 6.3 km	N			
<i>Aponogeton hexatepalus</i> (Priority 4)	About 6.4 km	N			
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (Priority 3)	About 6.4 km	N			
<i>Isopogon autumnalis</i> (formerly <i>Isopogon drummondii</i> ) (Priority 3)	About 6.4 km	N			
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) (Threatened)	About 6.8 km	N			
<i>Synaphea odocoileops</i> (Priority 1)	About 6.8 km	N			
<i>Pithocarpa corymbulosa</i> (Priority 3)	About 7.6 km	N			
<i>Amanita wadulawitu</i> (Priority 2)	About 7.7 km	N	N		
<i>Lasiopetalum pterocarpum</i> (Threatened)	About 7.8 km	N			
<i>Millotia tenuifolia</i> var. <i>laevis</i> (Priority 2)	About 8.4 km	N			
<i>Cyathochaeta teretifolia</i> (Priority 3)	About 8.4 km	N			
<i>Boronia juncea</i> subsp. <i>juncea</i> (Priority 1)	About 8.4 km	N			
<i>Stylidium longitubum</i> (Priority 4)	About 9.3 km	N			
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i> (Priority 3)	About 9.4 km	N			
<i>Amanita kalamundae</i> (Priority 3)	About 9.5 km	N			
<i>Schoenus pennisetis</i> (Priority 3)	About 9.5 km	N			
<b>Ecological communities</b>					
<i>Corymbia calophylla</i> - <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in Gibson et al. (1994)) (Threatened)	About 1.2 km		N No marri or <i>Kingia</i>		N/A

Species / Ecological Community	Distance of closest record to application area (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features	Surveys adequate to identify?
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Priority 3)	About 2 km	N	N No <i>Banksia</i>		N/A
<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in in Gibson et al. (1994)) (Threatened)	About 2.6 km		N No marri or grasstrees		N/A
Low lying <i>Banksia attenuata</i> woodlands or shrublands (Priority 3)	About 3.2 km	N	N No <i>Banksia</i>		N/A
<i>Corymbia calophylla</i> - <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type 3b as originally described in Gibson et al. (1994)) (Threatened)	About 3.4 km		N No jarrah or marri		N/A
<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (floristic community type 20b as originally described in Gibson et al. (1994)) (Threatened)	About 3.6 km		N No <i>Banksia</i> or jarrah		N/A
Southern wet shrublands, Swan Coastal Plain (floristic community type 2 as originally described in Gibson et al. (1994)) (Threatened)	About 4.2 km	N	N		N/A
Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) (Threatened)	About 5.6 km	N	N		N/A
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994)) (Threatened)	About 5.6 km	Y	N		N/A
Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994)) (Threatened)	About 5.6 km	N	N		N/A
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. (1994)) (Threatened)	About 6.4 km	N	N	N	N/A
Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain)	About 6.9 km	N	N	N	N/A

## Vegetation extent

	Pre-European (ha)	Current extent (ha)	Current extent (%)	Current extent (ha) in DBCA <sup>2</sup> -managed lands	Current extent (%) in DBCA-managed lands
<b>IBRA<sup>3</sup> bioregion (as at March 2019)</b>					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	269,964.76	17.98
<b>Vegetation Complex</b>					
Beermullah	6,707.27	447.21	6.67	144.89	2.13
<b>Local area</b>					
10-kilometre radius	32,676.84	6,889.22	21.08	N/a	N/a

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 Environmental Protection Authority recommends a minimum 10 per cent representation threshold for ecological communities in constrained areas (Environmental Protection Authority, 2008).

<sup>2</sup> Department of Biodiversity, Conservation and Attractions. Current extent as proportion of pre-European extent within DBCA-managed lands.

<sup>3</sup> Interim Biogeographic Regionalisation for Australia.



## Appendix B – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”<sup>4</sup></p> <p><u>Assessment:</u> The photographs provided by the applicant indicate that the vegetation within the application area comprises individual swamp sheoak (<i>Casuarina obesa</i>) and robin redbreast bush (<i>Melaleuca lateritia</i>) over a sparse understorey dominated by weeds, in degraded to completely degraded condition. None of the threatened and priority flora and ecological communities recorded in the local area are likely to occur within the application area. The application area does not contain significant habitat for fauna.</p>	Not likely to be at variance	Yes Section 3.2.2
<p><u>Principle (b):</u> “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.”</p> <p><u>Assessment:</u> Nine threatened, 11 priority, one ‘conservation dependent’ and one ‘other specially protected’ fauna, and six fauna protected under an international agreement, have been recorded in the local area. The application area comprises suitable habitat for one priority and one ‘other specially protected’ fauna. Noting the shape and extent of the proposed clearing, its location in close proximity to patches of remnant vegetation, and the sparse weed-dominated understorey, the vegetation proposed to be cleared is unlikely to comprise a significant habitat for these or other native fauna.</p>	Not likely to be at variance	Yes Section 3.2.1
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> Ten threatened flora have been recorded in the local area, however are unlikely to occur within the application area. Noting the type and condition of the vegetation, the application area is unlikely to be necessary for the continued existence of threatened flora.</p>	Not likely to be at variance	Yes Section 3.2.2
<p><u>Principle (d):</u> “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.”<sup>5</sup></p> <p><u>Assessment:</u> Ten threatened ecological communities (TEC) have been recorded in the local area, one of which occurs on the same soil type as mapped within the application area. Noting the type and condition of the vegetation within the application area, the application area is unlikely to be representative of, or be necessary for the maintenance of, a TEC.</p>	Not likely to be at variance	No
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u> The application area is located within the Perth Metropolitan Region Scheme boundary, which the Environmental Protection Authority recognises to be a constrained area within which a minimum 10 per cent representation threshold for ecological communities is recommended (Environmental Protection Authority, 2008). The mapped Vegetation Complex has less than 10 per cent (about 6.67 per cent) of its pre-European extent remaining, and is considered to be extensively cleared. However noting that the application area is unlikely to comprise a significant habitat for fauna</p>	Not likely to be at variance	Yes Section 3.2.3

<sup>4</sup> The *Biodiversity Conservation Act 2016* defines ‘biodiversity’ as ‘the variability among living organisms and the ecosystems of which those organisms are a part and includes the following – (a) diversity within native species and between native species; (b) diversity of ecosystems; (c) diversity of other biodiversity components’.

<sup>5</sup> The *Biodiversity Conservation Act 2016* defines ‘threatened ecological community’ as ‘an ecological community that – (a) is listed as a threatened ecological community under section 27(1); or (b) is to be regarded as a threatened ecological community under section 33’. Section 27(1) refers to TECs listed by the WA Minister for Environment; section 33 refers to the listing and de-listing of collapsed TECs.

Assessment against the Clearing Principles	Variance level	Is further consideration required?
including conservation-significant species or a part of a significant ecological linkage, the condition of vegetation proposed to be cleared or be necessary to maintain ecosystem services (such as hydrological processes), it is unlikely to be a significant remnant.		
<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> The application area is located within a wetland (palusplain), and is about 1.4 km from the nearest watercourse. The vegetation within the application area is growing in association with this wetland.</p>	Is at variance	Yes Section 3.2.4
<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> The main land degradation risk for the soil type mapped across the application area is a moderate to very high risk of waterlogging. Noting the extent and purpose of the proposed clearing and its location adjacent to an existing road, the proposed clearing is unlikely to cause appreciable land degradation.</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> The nearest conservation areas are Bush Forever site 360 located about 980 m from the application area, and an un-named Nature Reserve (known as ‘Lowlands’) located about 2.4 km north-west of the application area. Noting the presence of adjacent roadside vegetation, and with regard for the separation distance between the application area and these conservation areas, the proposed clearing is unlikely to impact on their environmental values or connection with other remnants.</p>	Not likely to be at variance	No
<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> The potential for an increase in surface water run-off has the potential to lead to sedimentation of the wetland. Noting the extent and purpose of the proposed clearing and its location adjacent to an existing road, impacts to surface water quality are expected to be minimal and limited to the duration of the proposed clearing activities. Taking into account the topography and the underlying groundwater salinity, the proposed clearing is unlikely to cause deterioration in water quality.</p>	Not likely to be at variance	Yes Section 3.2.4
<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> The application area is mapped as poorly-drained flats. The mapped soil type has a moderate flood risk. Noting the extent and purpose of the proposed clearing and its location adjacent to an existing road, the proposed clearing is unlikely to change existing surface water dynamics.</p>	Not likely to be at variance	No

## Appendix C – 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.

### 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 D – Photographs of the vegetation

Photographs of the Kargotich Road reserve provided as supporting information by the applicant. This supporting information is published on the Department of Water and Environmental Regulation's (DWER) website at: <ftp://ftp.dwer.wa.gov.au/permit/8896/>.

Photos 1-4: Kargotich Road reserve – heading south from the intersection with Malek Drive







Photo 5: Kargotich Road reserve – looking north from Randell Drive



## Appendix E – References and databases

### GIS datasets

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)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Consanguineous Wetlands Suites (DBCA-020)
- 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)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- 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)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- RIWI Act, Groundwater Areas (DWER-034)

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

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