



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 8918/1
File Number: DWERT5820
Duration of Permit: From 2 September 2020 to 2 September 2022

PERMIT HOLDER

Shire of Serpentine-Jarrahdale

LAND ON WHICH CLEARING IS TO BE DONE

Nettleton Road reserve (PIN 11539583), Jarrahdale
Lot 2657 on Deposited Plan 91418, Jarrahdale

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.78 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8918/1a, Plan 8918/1b, Plan 8918/1c, Plan 8918/1d and Plan 8918/1e and Plan 8918/1f.

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.



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION


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



10 August 2020

Plan 8918/1a





Legend

CPS layers
 CPS areas approved to clear

base layers
 Road Centrelines
 Cadastre - LGATE 218


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

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Officer delegated under section 20 of the
 Environmental Protection Act 1986



**GOVERNMENT OF
 WESTERN AUSTRALIA**

Plan 8918/1b



Legend

CPS layers

- CPS areas approved to clear

base layers

- Road Centrelines
- Cadastre - LGATE 218

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

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Officer delegated under section 20 of the Environmental Protection Act 1986

GOVERNMENT OF WESTERN AUSTRALIA

Plan 8918/1c



Legend

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base layers
 Road Centrelines
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Local Government Authority (LGA) Boundaries (LGATE-233)

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**GOVERNMENT OF
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Plan 8918/1d

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
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Plan 8918/1e

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
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
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Plan 8918/1f




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GOVERNMENT OF
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Clearing Permit Decision Report

1. Application details and outcome

1.1 Permit application details

Permit number:	CPS 8918/1
Permit type:	Area permit
Applicant name:	Shire of Serpentine-Jarrahdale
Application received:	22 May 2020
Proposed clearing:	0.78 hectares (ha) of native vegetation (as revised)
Purpose of clearing:	Road upgrades
Method of clearing:	Mechanical removal
Property:	Nettleton Road reserve (PIN 1153583) and Lot 2657 on Deposited Plan 91418
Location (LGA area/s):	Shire of Serpentine-Jarrahdale
Localities (suburb/s):	Jarrahdale

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 area¹. The application form states that the total area of clearing is 0.9678 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. During validation, this was revised to 0.78 ha of proposed clearing. The extent of the proposed clearing is indicated in Figure 1 (see Section 1.5).

1.3 Decision on application

Decision:	Granted
Decision date:	10 August 2020
Decision area:	0.78 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). The application was advertised 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), and any other matters considered relevant to the assessment (see Section 3). The assessment identified that the proposed clearing will result in the loss of vegetation that:

- is growing in association with a mapped watercourse that traverses the application area
- contains 'high quality' foraging habitat for threatened black cockatoo species (but not significant habitat)
- may comprise suitable habitat for a priority flora taxon
- may be necessary for the maintenance of the environmental values of an adjacent conservation area.

The proposed clearing also has the potential to result in the introduction and spread of weeds and dieback into adjacent vegetation, which could impact on its habitat quality.

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 watercourse, and that weed and dieback management practices will mitigate impacts to adjacent vegetation. It is considered that the proposed clearing of 'high quality' foraging habitat for threatened black cockatoo species is not significant, noting the amount of suitable foraging

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

habitat within the local area. Noting the number of records and range of *Pimelea rara* (Priority 4), it is considered that the proposed clearing is not likely to impact on its conservation status if present within the application area.

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

1.5 Site map

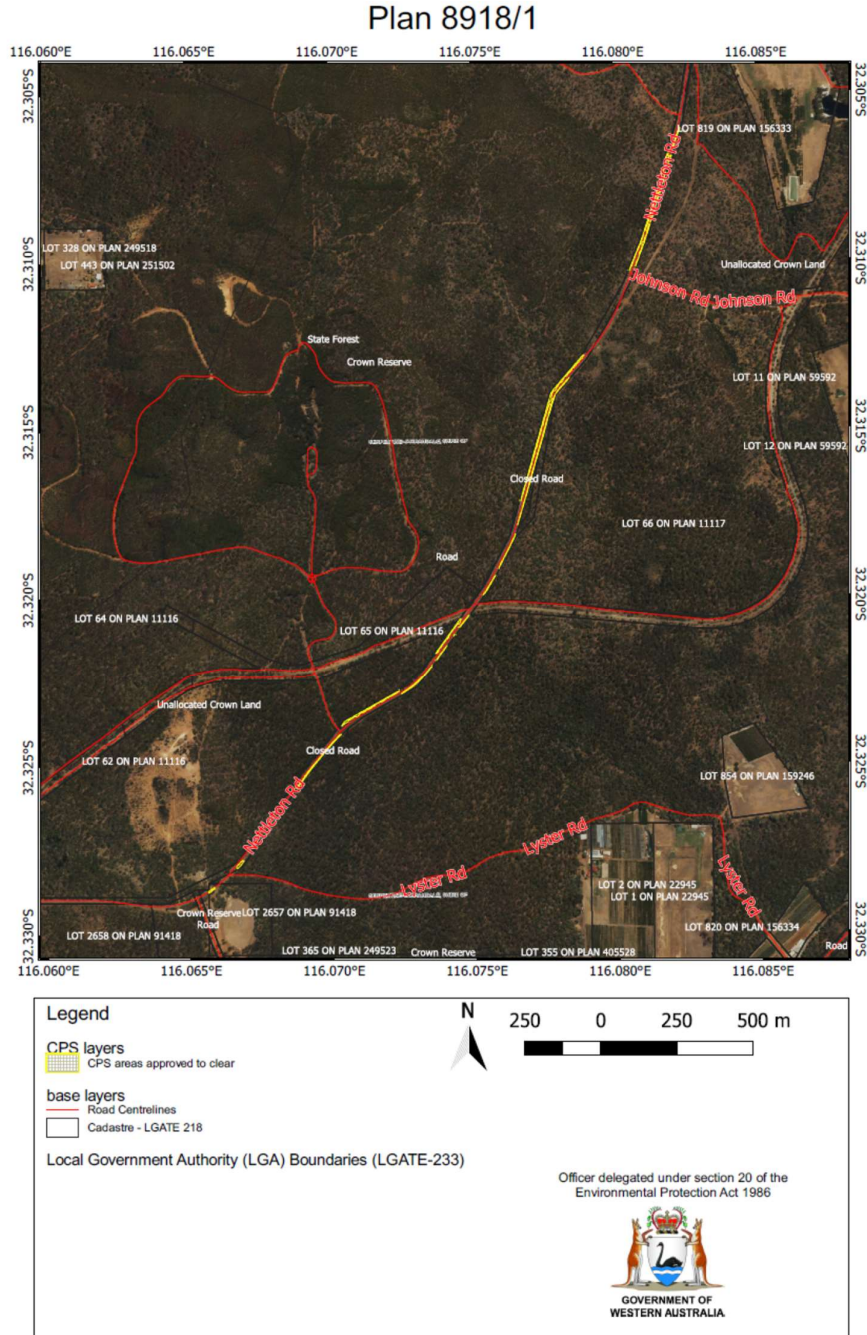


Figure 1: Map of area approved to clear

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)
- *Conservation and Land Management Act 1984* (WA)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
- *Rights in Water and Irrigation Act 1914*.

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, that the applicant will prioritise pruning to removal when possible, and that kerbing and crash barriers will be installed to reduce the amount of clearing where possible. Further, the applicant reduced the extent of the proposed clearing from 0.9678 ha initially applied for to 0.78 ha.

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 habitat, watercourse habitat, the environmental values of a nearby conservation area, and adjacent vegetation. 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 vegetation proposed to be cleared includes marri (*Corymbia calophylla*), jarrah (*Eucalyptus marginata*) and bull banksia (*Banksia grandis*) over a mixed native understorey including one-sided bottlebrush (*Calothamnus quadrifidus*), parrotbush (*Banksia sessilis*), *Allocasuarina* species, *Kunzea* species, *Jacksonia* species, *Macrozamia riedlei*, *Xanthorrhoea* species, *Hakea* species, *Acacia* species, Myrtaceae species, bracken (*Pteridium esculentum*), small shrubs, sedges and emergent plants; withfew weeds evident.

Mapping undertaken by the Roadside Conservation Committee in September 2005 identified that the vegetation within the Nettleton Road reserve had mainly 'high' conservation value (including the whole of the application area). This mapping took into account the condition of the vegetation at that time based on structure, composition, floristic diversity and weed cover (Roadside Conservation Committee, 2006). The vegetation condition currently appears to be in good to degraded (or completely degraded) condition.

Available aerial imagery and spatial datasets indicate that the vegetation within the Nettleton Road reserve (including that proposed to be cleared) is contiguous with adjacent extensive patches of remnant vegetation contained in Jarrahdale State Forest managed by the Department of Biodiversity, Conservation and Attractions (DBCA) (see section 3.2.5). No mapped ecological linkages occur in the local area.

Nine threatened, 11 priority, two 'conservation dependent' and one 'other specially protected' fauna 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.

Two threatened and two priority fauna recorded within 2 km from the application area are associated with vegetation and/or habitats that do not occur within the application area (densely vegetated creeks and granite outcrops, continuous canopy, dense shrub layer, aquatic habitats). A further three threatened and one priority fauna may utilise the application area while moving through the landscape; with regard for the adjacent Jarrahdale State Forest, the application area is otherwise unlikely to be utilised as habitat by these species.

Three threatened, two priority, two 'conservation dependent' and one 'other specially protected' fauna have been recorded within or in close proximity to the application area and from similar vegetation/habitat as found within the application area, and are considered in more detail.

- Forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*; Vulnerable), Carnaby's black cockatoo (*Calyptorhynchus latirostris*; Endangered) and Baudin's black cockatoo (*Calyptorhynchus baudinii*; Endangered): Published literature sets out the habitat preferences of these species, which includes *Banksia*, marri and/or jarrah for foraging, roosting and breeding (Department of Environment and Conservation, 2008a; Department of Parks and Wildlife, 2013; Department of Sustainability, Environment, Water, Population and Communities, 2012; Department of the Environment and Energy, 2017; Department of the Environment, Water, Heritage and the Arts, 2009; Environmental Protection Authority, 2019; Johnstone et al., 2011; Shah, 2006; Valentine and Stock, 2008). The forest red-tailed black cockatoo and Carnaby's black cockatoo have been recorded approximately 510 m from the application area, and Baudin's black cockatoo has been recorded approximately 520 m from the application area respectively. In relation to Carnaby's black cockatoo, the application area is approximately 920 m from the nearest confirmed roosting site, within 6 km of unconfirmed breeding sites, and approximately 25 km from a confirmed breeding site. Photographs provided by the applicant indicate that the marri and jarrah trees within the application area are unlikely to be of sufficient size to contain hollows suitable for breeding by these species. The *Banksia*, marri and jarrah within the application area have value as foraging and potential roosting habitat for these species; this foraging habitat is considered to be of 'high quality' based on Commonwealth guidance, that is, the vegetation proposed to be cleared comprises *Eucalyptus* woodland and forest that contains foraging species, including along roadsides (Department of the Environment and Energy, 2017).
- Masked owl (*Tyto novaehollandiae* subsp. *novaehollandiae*; Priority 3): This species is a nocturnal, secretive bird. It roosts by day in dense foliage of tall trees (forest and woodland with adjacent clearings) or in hollow tree trunks, or sometimes in caves and holes between rocks (Owl Pages, 2016). The nearest record is approximately 3.9 km from the application area. The application area may comprise suitable habitat for this species (in particular roosting and as a vantage point for hunting).
- South-western brown bandicoot/quenda (*Isodon fusciventer*, Priority 4): This species typically prefers dense understorey (DBCA, 2017; Department of Environment and Conservation, 2012b). The nearest record is adjacent to (approximately 30 m from) the application area. The application area is likely to be utilised by this species while moving through the landscape and as habitat.
- 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 has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees (Department of Environment and Conservation, 2012a). The nearest record is approximately 1.5 km from the application area, in the Gooralong Conservation Park. The application area may contain suitable habitat for this species.
- Muir's corella (*Cacatua pastinator* subsp. *pastinator*; Conservation Dependent): The habitat critical to survival and important populations of Muir's Corella comprises large live or dead eucalypts, particularly marri and jarrah, flooded gum (*Eucalyptus rudis*), yate (*Eucalyptus cornuta*) and moonah (*Melaleuca preissiana*) in forested areas or as lone trees in paddocks and along roadsides in the region from Boyup Brook, McAlinden and Qualeup, south to Lake Muir and the lower Perup River, and east to Frankland and Rocky Gully (Department of Environment and Conservation, 2008b). The nearest record is approximately 1.6 km from the application area, in the adjacent Jarrahdale State Forest. The application area includes marri and jarrah, however noting that the record is historical and that the species now appears to occur further south, this species is unlikely to utilise the application area.
- Peregrine falcon (*Falco peregrinus*; Other Specially Protected): 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 approximately 3.6 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.

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 narrow, linear shape of the application area and with regard for adjacent large patches of remnant vegetation, the application area is unlikely to be significant for the survival of indigenous fauna, including the conservation-significant fauna listed above, or be necessary for the maintenance of significant habitat.

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 its habitat quality.

Conclusion

From the above, the application area comprises suitable habitat for indigenous fauna, including species of conservation significance, however is unlikely to comprise significant habitat.

Conditions

It is considered that potential impacts to adjacent vegetation 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

Eight threatened and 27 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.

Eight threatened and 15 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. Eight priority flora occur in a soil type mapped within the application area, however are associated with a habitat form (granite outcrops, watercourses, winter-wet areas) and/or vegetation type (*Banksia* shrubland) that does not occur within the application area. Based on similar habitat qualities and/or proximity, the application area might contain suitable habitat for four priority flora, and these are considered in further detail.

- *Grevillea crowleyae* (Priority 2): The Florabase website (Western Australian Herbarium, 1998-) indicates that this species is known from 9 recorded populations (some records may overlap) in the local government areas of West Arthur and Williams, associated with sand or clay loam, lateritic gravel and granite in or near marri and/or wandoo (*Eucalyptus wandoo*) woodland. The nearest record is about 1.2 km from the application area, from a soil type mapped within the application area, associated with wandoo woodland in shallow granite soil near a granite outcrop. Noting the absence of wandoo and granite within the application area, this species is unlikely to be present.
- *Amanita kalamundae* (Priority 3): The Florabase website indicates that this species is known from 17 recorded populations (some records may overlap) ranging from the Shire of Kalamunda to the Shire of Denmark and inland to the Shire of Kellerberrin. The nearest record is about 1.7 km from the application area, from a different mapped soil type. Noting the different habitat within the application area, this species is unlikely to be present.
- *Stackhousia* sp. Red-blotched corolla (A. Markey 911) (Priority 3): The Florabase website indicates that this species is known from 9 recorded populations (some records may overlap) from the local government areas of Armadale, Dandaragan, Gosnells, Kalamunda, Murray, Serpentine-Jarrahdale and York. The nearest record is about 7.5 km from the application area, recorded in 1993 from a soil type mapped within the application area, associated with jarrah forest in open shrubland of roadside teatree (*Leptospermum erubescens*) with occasional marri and sheoak. The application area may include suitable habitat for this species. However, noting the distance to the nearest record, and taking into account that this species was not recorded during a survey by the Roadside Conservation Committee in September 2005, this species is unlikely to be present.
- *Pimelea rara* (Priority 4): The Florabase website indicates that this species is known from 52 recorded populations (some records may overlap) ranging from the Shire of Kalamunda to the Shire of Wandering, typically associated with lateritic soils. The nearest record is about 1.9 km from the application area, from a soil type mapped within the application area, along Kingsbury Drive. The application area may include suitable habitat for this species. The application area may include suitable habitat for this species. Noting the number of records and range of this species, it is considered that the proposed clearing is unlikely to impact on its conservation status if present within the application area.

Conservation-significant ecological communities

Eight threatened and three priority ecological communities (TEC and PEC respectively) have been recorded in the local area. In forming a view on the likelihood of these ecological communities occurring within the application area, the composition and habitat types of these ecological communities and their recorded proximity to the application area were considered, along with the vegetation/soil types and landforms within the application area.

The nearest conservation-significant ecological community is the 'Granite communities of the northern Jarrah Forest' PEC (Priority 3), located approximately 3.6 km from the application area and from a soil type mapped within the application area. Little published information about this PEC is available, however this occurrence is associated with granite outcropping, a habitat type that is not present within the application area.

Noting the composition of the vegetation proposed to be cleared and the mapped soil types within the application area, the vegetation proposed to be cleared is unlikely to be representative of the TECs and PECs recorded within the local area, and given the separation distance is unlikely to be necessary for their maintenance.

Conclusion

From the above, the vegetation within the application area may comprise suitable habitat for a priority flora taxon, however impacts will not be significant if present within the application area.

Conditions

As set out under section 3.2.1, 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 its habitat quality. It is considered that impacts to adjacent vegetation 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.

3.2.3 Land and water resources

Assessment

Most of the application area is located within a water catchment under the Metropolitan Region Scheme. A minor perennial watercourse traverses the application area. The potential for an increase in surface water run-off has the potential to lead to sedimentation of this watercourse and surface water quality within the catchment.

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 watercourse 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 watercourse. No clearing permit conditions are necessary in relation to this matter.

3.2.4 Conservation areas

Assessment

A number of nature reserves, conservation parks, national parks, State forests and other Crown lands managed by DBCA occur within the local area, along with a number of privately-managed conservation areas. The nearest of these is Jarrahdale State Forest located adjacent to the Nettleton Road reserve (including the application area), managed by DBCA for purposes including conservation.

Conclusion

The application area is located adjacent to a conservation area, being the Jarrahdale State Forest.

Conditions

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 environmental values of these conservation areas.

As set out under section 3.2.1, it is considered that impacts to adjacent vegetation 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.

Relevant planning instruments and other matters

A number of Aboriginal heritage places occur within the local area, however none are mapped within the application area. The nearest is a registered site known as 'Serpentine River', located approximately 2.8 km from the application area. Given the separation distance, the proposed clearing is unlikely to impact on this site. In any event, 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 three clearing applications under assessment and three recently granted clearing permits at the time of this decision, also for the purpose of road upgrades:

- Clearing Permit CPS 8895/1 to clear 0.31472 ha of marri, flooded gum (*Eucalyptus rudis*), moonah (*Melaleuca preissiana*), WA Christmas tree (*Nuytsia floribunda*) and stinkwood (*Jacksonia* sp.) in the Punrak Road reserve (granted on 29 June 2020)
- Clearing Permit CPS 8896/1 to clear 0.189 ha of swamp sheoak (*Casuarina obesa*) and robin redbreast bush (*Melaleuca lateritia*) in the Kargotich Road reserve (granted on 30 June 2020)
- Clearing Permit CPS 8903/1 to clear 0.188 ha of marri, moonah, flooded gum and swamp cypress (*Callitris pyramidalis*) in the Hopkinson Road reserve (granted on 3 July 2020)
- Application CPS 8908/1 to clear approximately 0.51 ha (as revised) of marri, swamp sheoak and moonah in the Mundijong Road reserve
- Application CPS 8919/1 to clear approximately 0.722 ha (as revised) of native vegetation in the Anketell Road reserve
- Clearing Permit CPS 8920/1 to clear approximately 0.217 ha (as revised) of marri, flooded gum, moonah, swamp sheoak and orange wattle (*Acacia saligna*) in the Keirnan Street reserve (granted on 10 August 2020).

The combined extent of clearing proposed by the current and above applications is approximately 2.92 ha, of which approximately 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 the Department of Water and Environment Regulation 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 native vegetation adjacent to an existing road formation, within a broader road reserve that is for most of its length adjacent to Jarrahdale State Forest.</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 approximately 70.26 per cent of native vegetation cover.</p>
Vegetation description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> Dwellingup 2 Complex (D2) described as an open forest of jarrah-marri on lateritic uplands in subhumid and semiarid zones (mapped across approximately 0.68 hectares (ha) / 87.3 per cent of the application area) Yarragil 2 Complex (Yg2) described as an open forest of blue-leaved jarrah (<i>Eucalyptus marginata</i> subsp. <i>thalassica</i>)-marri on slopes, woodland of Swan River blackbutt (<i>Eucalyptus patens</i>)-flooded gum (<i>Eucalyptus rudis</i>) with harsh hakea (<i>Hakea prostrata</i>) and mohan (<i>Melaleuca viminea</i>) on valley floors in subhumid and semiarid zones (mapped across approximately 0.07 ha / 8.8 per cent of the application area and the northern end) Swamp (S) described as a mosaic of low open woodland of moonah (<i>Melaleuca preissiana</i>)-swamp banksia (<i>Banksia littoralis</i>), closed scrub of Myrtaceae spp., closed heath of Myrtaceae spp. and sedgeland of <i>Baumea</i> and <i>Leptocarpus</i> spp. on seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones (mapped across 0.03 ha / 3.9 per cent of the application area at the northern end). <p>Vegetation composition was determined from available aerial imagery and supporting information (photographs) provided by the applicant. The vegetation proposed to be cleared includes marri, jarrah and bull banksia (<i>Banksia grandis</i>) over a mixed native understorey including one-sided bottlebrush (<i>Calothamnus quadrifidus</i>), parrotbush (<i>Banksia sessilis</i>), <i>Allocasuarina</i> sp., <i>Kunzea</i> sp., <i>Jacksonia</i> sp., <i>Macrozamia riedlei</i>, <i>Xanthorrhoea</i> sp., <i>Hakea</i> spp., <i>Acacia</i> spp., Myrtaceae spp., bracken (<i>Pteridium esculentum</i>), small shrubs, sedges and emergent plants; few weeds evident.</p>
Vegetation condition	<p>Vegetation condition was determined from available aerial imagery and supporting information (photographs) provided by the applicant. The vegetation proposed to be cleared appears to be in good to degraded (or completely degraded) condition on the scale described by Keighery (1994) (see Appendix C).</p>
Soil description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> Dwellingup 2 Phase (255DpDW2) described as a very gently to gently undulating terrain (<10%) with well drained, shallow to moderately deep gravelly brownish sands, pale brown sands and earthy sands overlying lateritic duricrust (mapped across approximately 0.68 hectares (ha) / 87.3 per cent of the application area) Yarragil 1 Phase (255DpYG1) described as a very gentle to moderately inclined concave sideslopes; moderately well drained yellow duplex soils and yellow and brown massive earths and gravels; woodlands of wandoo (<i>Eucalyptus wandoo</i>), jarrah, powderbark wandoo (<i>Eucalyptus accedens</i>); swamp sheoak (<i>Casuarina obesa</i>) on salt affected areas (mapped across approximately 0.1 hectares (ha) / 12.7 per cent of the application area at the northern end).

Site characteristic	Details		
Land degradation risk	Mapped land degradation risk factors (as percentage of map unit)		
	Risk categories	255DpDW2	255DpYG1
	Wind erosion	30-50% has a high to extreme risk	<3% has a high to extreme risk
	Water erosion	<3% has a high to extreme risk	<3% has a high to extreme risk
	Salinity	30-50% has a moderate to high risk	10-30% has a moderate to high risk
	Subsurface Acidification	<3% has a high risk	<3% has a high risk
	Flood risk	<3% has a moderate to high risk	<3% has a moderate to high risk
	Waterlogging	<3% has a moderate to very high risk	<3% has a moderate to very high risk
Phosphorus export risk	<3% has a high to extreme risk	<3% has a high to extreme risk	
Waterbodies	The application area is located within the broader Little Dardanup consanguineous wetland suite.		
	Forty-one mapped lakes, wetlands, rivers and other water bodies occur within the local area, including a minor perennial watercourse that traverses the application area. Those within two km of the application area are outlined below.		
	Type of inland water	Description	Proximity (metres (m))
	Hydrography, linear	Watercourse - minor, perennial	0
	Rivers	Significant Stream	262
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Not Applicable - No Longer a Wetland	281
	Rivers	Gooralong Brook : Significant Stream	505
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Palusplain	571
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Resource Enhancement - Palusplain	1469
	Rivers	Medulla Brook : Major Trib	1603
	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Dampland	1763
Rivers	Manjedal Brook : Insignificant Trib	1787	
Conservation areas	There are 53 records of conservation areas within the local area, comprising of lands managed by DBCA, privately-managed conservation areas, and Bush Forever sites/nominated sites (some of these overlap). Those within two km of the application area are outlined below.		
	Theme	Description	Proximity (m)
	DBCA Managed Lands	Jarrahdale State Forest; Conservation Commission of WA	0
	DBCA Managed Lands	Executive Director Department of DBCA	777

Site characteristic	Details		
	DBCA Managed Lands	Gooralong Conservation Park; Conservation Commission of WA	1137
	DBCA Managed Lands	Serpentine National Park; Conservation Commission of WA	1215
Climate and landform	Rainfall: 1,200 millimetres (mm) per annum Evapotranspiration: 800 mm per annum Geology: Granite and gneiss Acid Sulfate Soil Risk: No Groundwater Salinity (Total Dissolved Solids): 500-1,000 milligrams per litre		
Hydrology and hydrogeology	The application area is within the 'Western Darling Range' Hydrological Zone, and the 'Peel Estuary – Serpentine River' Hydrographic Catchment. The application area is also within the mapped 'Serpentine River System' Surface Water Area and Irrigation District under the <i>Rights in Water and Irrigation Act 1914</i> .		

Flora, fauna and ecosystem analysis

Ecological Linkages: No mapped significant ecological linkages within the local area.²

Roadside Conservation Committee roadside conservation values: High (September 2005).

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 to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Fauna					
South-western brown bandicoot/quenda (<i>Isoodon fusciventer</i> ; Priority 4)	Adjacent (approximately 0.03 km)		Y	Y	N/A
Southern death adder (<i>Acanthophis antarticus</i> ; Priority 3)	Approximately 0.51 km		N	N	N/A
Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii</i> subsp. <i>naso</i> ; Vulnerable)	Approximately 0.51 km		Y	Y	N/A
Carnaby's black cockatoo (<i>Calyptorhynchus latirostris</i> ; Endangered)	Approximately 0.51 km		Y	Y	N/A
Baudin's black cockatoo (<i>Calyptorhynchus baudinii</i> ; Endangered)	Approximately 0.52 km		Y	Y	N/A
Chuditch/western quoll (<i>Dasyurus geoffroyi</i> ; Vulnerable)	Approximately 0.69 km		Y	Y Corridor	N/A
Western brush wallaby (<i>Notamacropus irma</i> ; Priority 4)	Approximately 0.91 km		Y	Y Corridor	N/A

² As described in: Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*. Western Australian Local Government Association (WALGA) and Department of Environment and Conservation (DEC), Perth.

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Carter's freshwater mussel (<i>Westralunio carteri</i> ; Vulnerable)	Approximately 0.96 km			N	N/A
Western ringtail possum (<i>Pseudocheirus occidentalis</i> ; Critically Endangered)	Approximately 1.4 km			Y	N/A
South-western brush-tailed phascogale/wambenger (<i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> ; Conservation Dependent)	Approximately 1.5 km			Y	N/A
Muir's corella (<i>Cacatua pastinator</i> subsp. <i>pastinator</i> ; Conservation Dependent)	Approximately 1.6 km			Y	N/A
Dell's skink/Darling Range southwest ctenotus (<i>Ctenotus delli</i> ; Priority 4)	Approximately 1.8 km		Y	N	N/A
Quokka (<i>Setonix brachyurus</i> ; Vulnerable)	Approximately 1.9 km			Y Corridor	N/A
Numbat (<i>Myrmecobius fasciatus</i> ; Endangered)	Approximately 2.7 km			Y Corridor	N/A
Peregrine Falcon (<i>Falco peregrinus</i> ; Other Specially Protected)	Approximately 3.6 km			Y	N/A
Masked owl (<i>Tyto novaehollandiae</i> subsp. <i>novaehollandiae</i> ; Priority 3)	Approximately 3.9 km			Y	N/A
Jarrah forest freshwater snail (<i>Glacidorbis occidentalis</i> ; Priority 3)	Approximately 5.6 km			N	N/A
Water-rat/rakali (<i>Hydromys chrysogaster</i> ; Priority 4)	Approximately 6.3 km			N	N/A
Pouched lamprey (<i>Geotria australis</i> ; Priority 3)	Approximately 6.7 km			N	N/A
Western false pipistrelle (<i>Falsistrellus mackenziei</i> ; Priority 4)	Approximately 7 km			N	N/A
Inornate trapdoor spider (northern jarrah forest) (<i>Euoplos inornatus</i> ; Priority 3)	Approximately 7.7 km			N	N/A
Malleefowl (<i>Leipoa ocellata</i> ; Vulnerable)	Approximately 8 km			N	N/A
Swan Coastal Plain shield-backed trapdoor spider (<i>Idiosoma sigillatum</i> ; Priority 3)	Approximately 8.4 km			N	N/A
Flora					
<i>Grevillea crowleyae</i> (Priority 2)	Approximately 1.2 km	Y		N	N/A
<i>Amanita kalamundae</i> (Priority 3)	Approximately 1.7 km	N			N/A
<i>Pimelea rara</i> (Priority 4)	Approximately 1.9 km	Y		Y	N/A
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (Priority 3)	Approximately 3.8 km	Y	N	N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<i>Andersonia</i> sp. <i>audax</i> (F. Hort, B. Hort & J. Hort 3179) (Priority 3)	Approximately 3.8 km	Y	N	N	N/A
<i>Grevillea manglesii</i> subsp. <i>ornithopoda</i> (Priority 2)	Approximately 4 km	Y		N	N/A
<i>Grevillea pimeleoides</i> (Priority 4)	Approximately 4.1km	Y		N	N/A
<i>Acacia horridula</i> (Priority 3)	Approximately 4.3 km	N			N/A
<i>Lasiopetalum pterocarpum</i> (Threatened)	Approximately 4.3 km	N		N	N/A
<i>Pithocarpa corymbulosa</i> (Priority 3)	Approximately 4.8 km	N		N	N/A
<i>Bossiaea modesta</i> (Priority 2)	Approximately 4.9 km	N		N	N/A
<i>Millotia tenuifolia</i> var. <i>laevis</i> (Priority 2)	Approximately 5.2 km	Y		N	N/A
<i>Paracaleana gracilicordata</i> (Priority 1)	Approximately 5.4 km	Y		N	N/A
<i>Paracaleana granitica</i> (Priority 1)	Approximately 5.4 km	Y		N	N/A
<i>Tetraria australiensis</i> (Threatened)	Approximately 6.3 km	N		N	N/A
<i>Amanita wadjukiorum</i> (Priority 3)	Approximately 6.7 km	N			N/A
<i>Amanita carneiphylla</i> (Priority 3)	Approximately 7 km	N			N/A
<i>Amanita fibrillopes</i> (Priority 3)	Approximately 7.4 km	N			N/A
<i>Stackhousia</i> sp. Red-blotched corolla (A. Markey 911) (Priority 3)	Approximately 7.5 km	Y			N/A
<i>Parsonsia diaphanophleba</i> (Priority 4)	Approximately 7.8 km	N		N	N/A
<i>Drakaea elastica</i> (Threatened)	Approximately 8 km	N		N	N/A
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182) (Threatened)	Approximately 8 km	N		N	N/A
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i> (Priority 3)	Approximately 8.2 km	N			N/A
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103) (Threatened)	Approximately 8.5 km	N		N	N/A
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) (Threatened)	Approximately 8.8 km	N		N	N/A
<i>Xanthoparmelia darlingensis</i> (Priority 1)	Approximately 8.8 km	N		N	N/A
<i>Chorizema ulotropis</i> (Priority 4)	Approximately 8.9 km	Y		N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<i>Diuris purdiei</i> (Threatened)	Approximately 9 km	N		N	N/A
<i>Drosera occidentalis</i> (Priority 4)	Approximately 9.1 km	N			N/A
<i>Calectasia grandiflora</i> (Priority 2)	Approximately 9.3 km	N		N	N/A
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2)	Approximately 9.3 km	N		N	N/A
<i>Synaphea odocoileops</i> (Priority 1)	Approximately 9.5 km	N		N	N/A
<i>Verticordia plumosa</i> var. <i>ananeotes</i> (Threatened)	Approximately 9.6 km	N			N/A
<i>Isopogon autumnalis</i> (Priority 3)	Approximately 9.6 km	N		N	N/A
<i>Grevillea manglesii</i> subsp. <i>dissectifolia</i> (Priority 3)	Approximately 9.9 km	N		Y	N/A
Ecological communities					
Granite communities of the northern Jarrah Forest (Priority 3)	Approximately 3.6 km	Y		N	N/A
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA region (Priority 3)	Approximately 4.5 km	N	N	N	N/A
<i>Corymbia calophylla</i> – <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain (floristic community type ³ (FCT) 3b) (Threatened)	Approximately 5.9 km	N	Y	N	N/A
<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (FCT 20b) (Threatened)	Approximately 6.1 km	N	N No <i>Banksia attenuata</i>	N	N/A
<i>Corymbia calophylla</i> – <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain (FCT 3a) (Threatened)	Approximately 6.3 km	N	N No <i>Kingia australis</i>	N	N/A
Southern wet shrublands, Swan Coastal Plain (FCT 2) (Threatened)	Approximately 7.1 km	N	N	N	N/A
<i>Corymbia calophylla</i> – <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (FCT 3c) (Threatened)	Approximately 7.9 km	N	Y	N	N/A
Litter dependant invertebrate community of the northern Jarrah Forest (Priority 2)	Approximately 8.8 km	N		N	N/A

³ Floristic community types as described in: Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994) *A Floristic Survey of the Southern Swan Coastal Plain*. Department of Conservation and Land Management and Conservation Council of Western Australia, Perth, Western Australia.

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Shrublands on dry clay flats (FCT 10a) (Threatened)	Approximately 9.1 km	N	N	N	N/A
Herb rich shrublands in clay pans (FCT 8) (Threatened)	Approximately 9.2 km	N	N	N	N/A
Herb rich saline shrublands in clay pans (FCT 7) (Threatened)	Approximately 9.3 km	N	N	N	N/A

Vegetation extent

	Pre-European (ha)	Current extent (ha)	Current extent (%)	Current extent (ha) in DBCA ⁴ -managed lands	Current extent (%) in DBCA-managed lands
IBRA⁵ bioregion (as at March 2019)					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,177,041.28	39.43
Vegetation Complex					
Dwellingup 2	86,128.33	71,055.96	82.50	60,965.73	68.47
Yarragil 2	50,259.16	46,475.31	92.47	46,091.14	87.43
Swamp	53,658.24	40,612.97	75.69	35,753.82	64.19
Local area					
10-kilometre radius	37,448.86	26,314.44	70.26	N/a	N/a

⁴ Department of Biodiversity, Conservation and Attractions. Current extent as proportion of pre-European extent within DBCA-managed lands.

⁵ 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.”⁶</p> <p><u>Assessment:</u> None of the threatened flora or threatened and priority ecological communities recorded in the local area are likely to occur within the application area, however the application area may include suitable habitat for a priority flora taxon, however if found, impacts will not be significant. The application area is adjacent to large patches of remnant vegetation (Jarrahdale State Forest). The application area is unlikely to comprise significant habitat for indigenous fauna, including species of conservation significance.</p>	May be at variance	Yes Sections 3.2.1, 3.2.2 and 3.2.4
<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> The application area contains suitable habitat for indigenous fauna, including species of conservation significance. Noting the narrow, linear shape of the application area and with regard for adjacent large patches of remnant vegetation, the application area is unlikely to be significant for the survival of indigenous fauna or be necessary for the maintenance of significant habitat.</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> Eight threatened flora have been recorded in the local area, however are unlikely to occur within the application area.</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.”⁷</p> <p><u>Assessment:</u> Eight TEC’s have been recorded in the local area. Noting the soil and vegetation types within the application area, and the distance to the nearest occurrence, the vegetation proposed to be cleared is unlikely to be representative of, or be necessary for the maintenance of, a TEC.</p>	Not likely to be at variance	Yes Section 3.2.2

⁶ 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’.

⁷ 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.

<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> 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 mapped vegetation types have between 67.10 per cent to 92.47 per cent of their pre-European extents remaining. The vegetation proposed to be cleared comprises habitat for threatened fauna (black cockatoos), however is not below the national target and objective for biodiversity conservation, is not mapped as a significant ecological linkage, is unlikely to be required to maintain ecosystem services (such as hydrological processes) or compensate for a high degree of fragmentation, and is unlikely to be biologically diverse.</p>	Not likely to be at variance	No
<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> A minor perennial watercourse traverses the application area. The vegetation within a portion of the application area is growing in association with this watercourse.</p>	Is at variance	Yes Section 3.2.3
<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 risks associated with the soil types mapped across the application area are a high to extreme risk of wind erosion, and moderate to high risk of salinity. 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> Jarrahdale State Forest is located adjacent to the Nettleton Road reserve (including the application area), managed by DBCA for purposes including conservation. There is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into this adjacent conservation area, which could impact on its environmental values.</p>	May be at variance	Yes Section 3.2.4
<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 a minor perennial watercourse that traverses the application area. 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 underground water quality.</p>	Not likely to be at variance	Yes Section 3.2.3
<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 soil types mapped across the application area have a low flood risk.</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 Nettleton Road reserve provided as supporting information by the applicant, heading north from the intersection of Millars Road. This supporting information is published on the Department of Water and Environmental Regulation's website at: <ftp://ftp.dwer.wa.gov.au/permit/8918/>.









Appendix E – References and databases

GIS datasets

Publicly available GIS Databases used (sourced from 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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