



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 8895/1
File Number: DWERT5714
Duration of Permit: From 22 July 2020 to 22 July 2022

PERMIT HOLDER

Shire of Serpentine-Jarrahdale

LAND ON WHICH CLEARING IS TO BE DONE

Punrak Road reserve (PINs 11606801, 11606803, 11606670 and 11606668), Serpentine and Hopeland

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.31472 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8895/1a, Plan 8895/1b, Plan 8895/1c and Plan 8895/1d.

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*

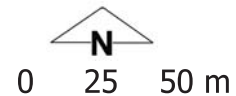
29 June 2020

Plan 8895/1a




Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Roads - Landgate 012
-  Cadastre - LGATE 218



MGA 94
Geocentric Datum of Australia 1994


Mathew
Gannaway
2020.06.29
14:10:19 +08'00'





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

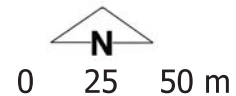


Plan 8895/1b




Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Roads - Landgate 012
-  Cadastre - LGATE 218



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Geocentric Datum of Australia 1994

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

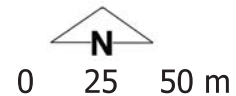


Plan 8895/1c




Legend

-  CPS areas approved to clear base layers
 -  Local Government Authorities
 -  Roads - Landgate 012
 -  Cadastre - LGATE 218
- Image



MGA 94
Geocentric Datum of Australia 1994

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

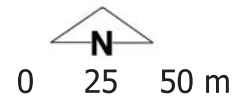


Plan 8895/1d




Legend

-  CPS areas approved to clear base layers
-  Local Government Authorities
-  Roads - Landgate 012
-  Cadastre - LGATE 218



MGA 94
Geocentric Datum of Australia 1994


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





Clearing Permit Decision Report

1. Application details and outcome

1.1 Permit application details

Permit number:	CPS 8895/1
Permit type:	Area permit
Applicant name:	Shire of Serpentine-Jarrahdale
Application received:	30 April 2020
Application area:	0.31472 hectares (ha) of native vegetation
Purpose of clearing:	Road upgrades
Method of clearing:	Mechanical removal
Property:	Punrak Road reserve (PINs 11606801, 11606803, 11606670 and 11606668)
Location (LGA area/s):	Shire of Serpentine-Jarrahdale
Localities (suburb/s):	Serpentine and Hopeland

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 0.28 hectares (ha) of native vegetation for the purpose of road upgrades to make the road safer for higher volumes and different types of traffic, with the final land use being road, road shoulder and table drain. On digitising, this was amended to 0.31473 ha. The extent of the proposed clearing is indicated in Figure 1 (see Section 1.5).

1.3 Decision on application

Decision:	Granted
Decision date:	29 June 2020
Decision area:	0.31472 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 'resource enhancement' wetland (dampland)
- 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.

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:

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

- 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 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 adjacent flora and 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 value of the application area as fauna habitat is primarily associated with individual marri (*Corymbia calophylla*), flooded gum (*Eucalyptus rudis*), moonah (*Melaleuca preissiana*), WA Christmas tree (*Nuytsia floribunda*) and stinkwood (*Jacksonia* sp.), 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 adjacent to and in close proximity to 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 into adjacent vegetation, which could impact on the quality of the habitat values.

Six threatened, seven priority, two 'conservation dependent' and one 'other specially protected' fauna, and nine 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 within or adjacent to the application area or from arboreal/canopy habitat in close proximity:

- Carnaby's black cockatoo (*Calyptorhynchus latirostris*; Endangered), Baudin's black cockatoo (*Calyptorhynchus baudinii*; Endangered) and forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*; Vulnerable): Published literature sets out the habitat preferences of these species, which includes marri for foraging, roosting and breeding (Department of Environment and Conservation, 2008; Department of Parks and Wildlife, 2013; Department of the Environment and Energy, 2013; 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 nearest records are about 1.3 kilometres (km), 915 metres (m) and 915 m from the application area respectively. Photographs provided by the applicant indicate that the marri trees within the application area are unlikely to be of sufficient size to contain hollows suitable for breeding by these species, however are likely to have value as foraging and roosting habitat. The foraging habitat is considered 'low quality' based on guidance within Commonwealth of Australia (2017). That is, individual foraging plants, or a small stand of foraging plants. Noting this, the shape and extent of the proposed clearing, and the location of the application area adjacent/in close proximity to remnant vegetation, the application area is unlikely to comprise or be necessary for the maintenance of a 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). Two records occur within/adjacent to the southern portion of the application area. Photographs provided by the applicant and available aerial photograph indicate that the application area may have value as a corridor for movement of this species. Noting that the understorey within the application area appears to be sparse and dominated by weeds, and is adjacent/in close proximity to patches of remnant vegetation, 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 (Department of Environment and Conservation, 2012a). The nearest record is about 915 m 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 3.7 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. This will be required as a condition on the clearing permit.

3.2.2 Flora and vegetation

Assessment

Conservation-significant flora

Eleven threatened and 35 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 26 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) that does not occur within the application area. Five priority flora have been recorded from one of the soil types mapped within the application area, however are associated with a vegetation type (e.g. *Banksia* woodland) and/or landform that does not occur within the application area and/or was recorded some distance from the application area. Based on similar habitat qualities and/or proximity, the application area might contain suitable habitat for three threatened and two priority flora, and these are considered in further detail.

- *Synaphea* sp. Fairbridge Farm (D. Papenfus 696) (Threatened): The Florabase website indicates that this species is known from 31 recorded populations (some records may overlap) ranging from the City of Canning

to the Shire of Dardanup, typically found near winter-wet flats in low woodland (Western Australian Herbarium, 1998–). The nearest record is 4.4 km from the application area from a soil type mapped within the application area, associated with moist grey-brown clay loam in very degraded marri open woodland. The application area includes marri trees, however noting that this soil type is mapped across about one per cent of the application area and that the local records of this species are to the east (foothills), this species is unlikely to be present.

- *Synaphea* sp. Serpentine (G.R. Brand 103) (Threatened): The Florabase website indicates that this species is known from 36 recorded populations (some records may overlap) ranging from the City of Armadale to the Shire of Capel, typically associated with sand, loam and clay soils in low-lying areas (Western Australian Herbarium, 1998–). The nearest record is about 375 m from the application area from a soil type mapped within the application area, associated with brown loam and a swamp. Noting the different soil mapped within the application area and minimal swampy areas, this species is unlikely to be present.
- *Caladenia huegelii* (Threatened): The Florabase website indicates that this species is known from 41 recorded populations (some records may overlap) ranging from the City of Wanneroo to the City of Busselton, typically associated with grey or brown sand and clay loam (Western Australian Herbarium, 1998–). The nearest record is about 1.3 km from the application area from a soil type mapped within the application area, associated with *Banksia* spp. woodland. Noting the absence of *Banksia* spp. woodland and intact understorey within the application area, this species is unlikely to be present.
- *Acacia lasiocarpa* var. *bracteolata* long peduncle variant (Priority 1): The Florabase website indicates that this species is known from five recorded populations (some records may overlap) ranging from the City of Cockburn to the Shire of Murray (Western Australian Herbarium, 1998–). Florabase describes this species as a low shrub to 0.4-1.5 m high, occurring in grey or black sand over clay in swampy areas and winter-wet lowlands. The nearest record is about 4.7 from the application area from the same soil and vegetation types as mapped within the application area, associated with grey sand over clay in marri woodland. The application area includes marri trees, however noting that this species is a small to medium-sized shrub and that the application area contains a sparse weed-dominated understorey (no small to medium-sized shrubs visible in the photographs), this species is unlikely to be present.
- *Eryngium pinnatifidum* subsp. *palustre* (Priority 3): The Florabase website indicates that this species is known from 11 recorded populations (some records may overlap) ranging from the Shire of Gingin to the Shire of Serpentine-Jarrahdale, also the Shire of Dandaragan (Western Australian Herbarium, 1998–). The nearest record is about 1 km from the application area from a different mapped soil type, associated with brown sand and marri woodland. The application area includes marri trees, however noting the different mapped soil type within the application area, this species is unlikely to be present.

Conservation-significant ecological communities

Ten 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.

Noting the type and condition of the vegetation proposed to be cleared, it is unlikely to be representative of any of the TECs or PECs recorded within the local area. However, the application area might be necessary for the maintenance of a PEC that has been recorded adjacent to the application area, and this is considered in further detail.

- Occurrences of 'Banksia Dominated Woodlands of the Swan Coastal Plain IBRA region' PEC (Priority 3) are located adjacent to the application area, on a range of Bassendean soil types including those present within the application area. This PEC is a component of the Commonwealth-listed 'Banksia Woodlands of the Swan Coastal Plain' TEC under the *Environment Protection and Biodiversity Conservation Act 1999*. The vegetation within the application area does not include *Banksia* species, and the composition and condition of the vegetation are unlikely to meet the criteria for consideration as part of the Commonwealth-listed TEC (Threatened Species Scientific Committee, 2016). Noting the shape of the application area and the condition of the vegetation, in particular the absence of an intact understorey, the value of the vegetation as a buffer for the adjacent PEC/TEC is considered to be limited and it is unlikely that the application area is necessary for the maintenance of this PEC/TEC. Notwithstanding, there is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into the adjacent PEC, which could impact on its quality.

Conclusion

For the reasons set out above, it is considered that the impacts of the proposed clearing on the adjacent PEC 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

The application area is located within a wetland (dampland) that has a 'resource enhancement' management category, and is within the broader Bennett Brook consanguineous wetland suite. The potential for an increase in surface water run-off has the potential to lead to sedimentation of the wetland and nearby watercourses.

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 1.7 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 8896/1 to clear about 0.189 ha of swamp sheoak (*Casuarina obesa*) and robin redbreast bush (*Melaleuca lateritia*) in the Kargotich Road reserve
- 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 radius from the perimeter of the application area, and retains about 20.32 per cent of native vegetation cover.</p>									
Vegetation description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> Vegetation Association 1000, described as mosaic: medium forest; jarrah (<i>Eucalyptus marginata</i>)-marri (<i>Corymbia calophylla</i>)/low woodland; <i>Banksia</i> species/low forest; teatree (<i>Melaleuca</i> species) Southern River Complex, described as open woodland of marri-jarrah-<i>Banksia</i> species with fringing woodland of flooded gum (<i>Eucalyptus rudis</i>)-swamp paperbark (<i>Melaleuca raphiophylla</i>) along creek beds. <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 over a sparse understorey dominated by weeds, and is limited to individual marri, flooded gum, moonah (<i>Melaleuca preissiana</i>), WA Christmas tree (<i>Nuytsia floribunda</i>) and stinkwood (<i>Jacksonia</i> sp.).</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"> Bassendean B4 Phase (212Bs_B4) within the Bassendean System, described as broad poorly-drained sandplain with deep grey siliceous sands or bleached sands, underlain at depths generally greater than 1.5 m by clay or less frequently a strong iron-organic hardpan (mapped across about 0.1927 ha (about 61 per cent) in the southern portion of the application area) Bassendean B6 Phase (212Bs_B6) within the Bassendean System, described as sandplain and broad extremely low rises with imperfectly drained deep or very deep grey siliceous sands (mapped across about 0.0929 ha (about 29.5 per cent) in the northern portion of the application area) Bassendean B1 Phase (212Bs_B1) within the Bassendean System, described as extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with a pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than two metres (m); <i>Banksia</i> dominant (mapped across about 0.0265 ha (about 8.5 per cent) of the central portion in the application area) Pinjarra P2 Phase (213Pj_P2) within the Pinjarra System, described as flat to very gently undulating plain with deep alkaline mottled yellow duplex soils which generally consist of shallow pale sand to sandy loam over clay (mapped across about 0.0026 ha (about one per cent) in the southern portion of the application area). 									
Land degradation risk	Mapped land degradation risk factors									
	<table border="1"> <thead> <tr> <th>Risk categories</th> <th>212Bs_B4</th> <th>212Bs_B6</th> <th>212Bs_B1</th> <th>213Pj_P2</th> </tr> </thead> <tbody> <tr> <td>Wind erosion</td> <td>10-30% of map unit has a high to extreme risk</td> <td>>70% of map unit has a high to extreme risk</td> <td>>70% of map unit has a high to extreme risk</td> <td>>70% of map unit has a high to extreme risk</td> </tr> </tbody> </table>	Risk categories	212Bs_B4	212Bs_B6	212Bs_B1	213Pj_P2	Wind erosion	10-30% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk
Risk categories	212Bs_B4	212Bs_B6	212Bs_B1	213Pj_P2						
Wind erosion	10-30% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk						

Site characteristic	Details																						
	Water erosion	<3% of map unit has a high to extreme risk	<3% of map unit has a high to extreme risk	3-10% of map unit has a high to extreme risk	<3% of map unit has a high to extreme risk																		
	Salinity	30-50% of map unit has a moderate to high risk	<3% of map unit has a high to extreme risk	<3% of map unit has a high to extreme risk	<3% of map unit has a high to extreme risk																		
	Subsurface Acidification	<3% of map unit has a high risk	10-30% of map unit has a high risk	<3% of map unit has a high risk	<3% of map unit has a high risk																		
	Flood risk	<3% of map unit has a moderate to high risk	<3% of map unit has a moderate to high risk	<3% of map unit has a moderate to high risk	<3% of map unit has a moderate to high risk																		
	Waterlogging	>70% of map unit has a moderate to very high risk	10-30% of map unit has a moderate to very high risk	3-10% of map unit has a moderate to very high risk	>70% of map unit has a moderate to very high risk																		
	Phosphorus export risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk	>70% of map unit has a high to extreme risk																		
Waterbodies	<p>The application area is located within the broader Bennett Brook consanguineous wetland suite.</p> <p>There are 40 records of lakes, wetlands, streams or rivers within the local area. Five of these are located in close proximity to the application area, described below.</p> <table border="1" data-bbox="391 1003 1412 1415"> <thead> <tr> <th data-bbox="391 1003 834 1077">Type of inland water</th> <th data-bbox="839 1003 1273 1077">Description</th> <th data-bbox="1278 1003 1412 1077">Proximity (m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="391 1083 834 1150">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="839 1083 1273 1150">Resource Enhancement - Dampland</td> <td data-bbox="1278 1083 1412 1150">0</td> </tr> <tr> <td data-bbox="391 1157 834 1224">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="839 1157 1273 1224">Conservation - Dampland</td> <td data-bbox="1278 1157 1412 1224">12</td> </tr> <tr> <td data-bbox="391 1230 834 1268">Rivers</td> <td data-bbox="839 1230 1273 1268">Karnet Brook : Significant Stream</td> <td data-bbox="1278 1230 1412 1268">25</td> </tr> <tr> <td data-bbox="391 1274 834 1341">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="839 1274 1273 1341">Resource Enhancement - Sumpland</td> <td data-bbox="1278 1274 1412 1341">54</td> </tr> <tr> <td data-bbox="391 1348 834 1415">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="839 1348 1273 1415">Multiple Use - Dampland</td> <td data-bbox="1278 1348 1412 1415">61</td> </tr> </tbody> </table>					Type of inland water	Description	Proximity (m)	Geomorphic Wetlands (Classification), Swan Coastal Plain	Resource Enhancement - Dampland	0	Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Dampland	12	Rivers	Karnet Brook : Significant Stream	25	Geomorphic Wetlands (Classification), Swan Coastal Plain	Resource Enhancement - Sumpland	54	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Dampland	61
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Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Dampland	61																					
Conservation areas	<p>There are 66 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.</p> <table border="1" data-bbox="391 1591 1412 1797"> <thead> <tr> <th data-bbox="391 1591 776 1665">Theme</th> <th data-bbox="781 1591 1273 1665">Description</th> <th data-bbox="1278 1591 1412 1665">Proximity (m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="391 1671 776 1709">Bushforever</td> <td data-bbox="781 1671 1273 1709">74</td> <td data-bbox="1278 1671 1412 1709">516</td> </tr> <tr> <td data-bbox="391 1715 776 1753">DEC Land for Wildlife Sites</td> <td data-bbox="781 1715 1273 1753">982</td> <td data-bbox="1278 1715 1412 1753">1844</td> </tr> <tr> <td data-bbox="391 1759 776 1797">DER/DPaW Managed Lands</td> <td data-bbox="781 1759 1273 1797">Conservation Commission Of WA</td> <td data-bbox="1278 1759 1412 1797">1921</td> </tr> </tbody> </table>					Theme	Description	Proximity (m)	Bushforever	74	516	DEC Land for Wildlife Sites	982	1844	DER/DPaW Managed Lands	Conservation Commission Of WA	1921						
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Bushforever	74	516																					
DEC Land for Wildlife Sites	982	1844																					
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Climate and landform	<p>Rainfall: 1000 Evapotranspiration: 800 Geology: Alluvial, shoreline, and aeolian deposits</p>																						

Site characteristic	Details
	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 m above sea level (Department of Primary Industries and Regional Development, 2017).
Hydrology and hydrogeology	The application area is within the 'Coastal Plain' Hydrological Zone, and the 'Peel Estuary – Serpentine River' Hydrographic Catchment. The application area is also within the mapped 'Serpentine' Groundwater Area and '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 significant mapped linkages within or adjacent to the application area

Roadside Conservation Committee roadside conservation values: Low, Medium low, Medium high (2000-06)

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?
Fauna					
South-western brown bandicoot/quenda (<i>Isodon fusciventer</i> ; Priority 4)	Within/adjacent		Y	Y	N/A
Baudin's black cockatoo (<i>Calyptorhynchus baudinii</i> ; Endangered)	About 0.91 km		Y	Y	N/A
Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii</i> subsp. <i>naso</i> ; Endangered)	About 0.91 km		Y	Y	N/A
South-western brush-tailed phascogale/wambenger (<i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> ; Conservation Dependent)	About 0.91 km		N	Y	N/A
Peregrine Falcon (<i>Falco peregrinus</i> ; Other Specially Protected)	About 0.91 km		Y	Y	N/A
Carnaby's black cockatoo (<i>Calyptorhynchus latirostris</i> ; Endangered)	About 1.3 km		Y	Y	N/A
Chuditch/western quoll (<i>Dasyurus geoffroii</i> ; Vulnerable)	About 3.3 km			N	N/A
Carter's freshwater mussel (<i>Westralunio carteri</i> ; Vulnerable)	About 4 km			N	N/A
Water-rat/rakali (<i>Hydromys chrysogaster</i> ; Priority 4)	About 4.3 km			N	N/A
Caspian tern (<i>Hydroprogne caspia</i> ; International Agreement)	About 4.9 km			N	N/A
Numbat (<i>Myrmecobius fasciatus</i> ; Endangered)	About 7.3 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?
Pouched lamprey (<i>Geotria australis</i> ; Priority 3)	About 7.5 km			N	N/A
Common sandpiper (<i>Actitis hypoleucos</i> ; International Agreement)	About 7.8 km			N	N/A
Marsh sandpiper/little greenshank (<i>Tringa nebularia</i> ; International Agreement)	About 7.8 km			N	N/A
Tammar wallaby (<i>Notamacropus eugenii</i> subsp. <i>derbianus</i> ; Priority 4)	About 8 km		N	N	N/A
Swan Coastal Plain shield-backed trapdoor spider (<i>Idiosoma sigillatum</i> ; Priority 3)	About 8.7 km			N	N/A
Western false pipistrelle (<i>Falsistrellus mackenziei</i> ; Priority 4)	About 8.9 km			N	N/A
Blue-billed duck (<i>Oxyura australis</i> ; Priority 4)	About 9 km			N	N/A
Curlew sandpiper (<i>Calidris ferruginea</i> ; Critically Endangered)	About 9.9 km			N	N/A
Sharp-tailed sandpiper (<i>Calidris acuminata</i> ; International Agreement)	About 9.9 km			N	N/A
Curlew sandpiper (<i>Calidris ruficollis</i> ; International Agreement)	About 9.9 km			N	N/A
Long-toed stint (<i>Calidris subminuta</i> ; International Agreement)	About 9.9 km			N	N/A
Glossy ibis (<i>Plegadis falcinellus</i> ; International Agreement)	About 9.9 km			N	N/A
Wood sandpiper (<i>Tringa glareola</i> ; International Agreement)	About 9.9 km			N	N/A
Marsh sandpiper/little greenshank (<i>Tringa stagnatilis</i> ; International Agreement)	About 9.9 km			N	N/A
Flora					
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i> (Priority 4)	About 0.16 km	N	N	N	N/A
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103) (Threatened)	About 0.36 km	Y		Y	N/A
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182) (Threatened)	About 0.46 km	N	N	N	N/A
<i>Tetraria australiensis</i> (Threatened)	About 1 km	N		N	N/A
<i>Eryngium pinnatifidum</i> subsp. <i>Palustre</i> (G.J. Keighery 13459) (Priority 3)	About 1 km	N	Y	N	N/A
<i>Caladenia huegellii</i> (Threatened)	About 1.3 km	Y	Y	Y	N/A
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2)	About 1.9 km	Y	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?
<i>Verticordia plumosa</i> var. <i>ananeotes</i> (Threatened)	About 3.3 km	N		N	N/A
<i>Senecio leucoglossus</i> (Priority 4)	About 3.3 km	N		N	N/A
<i>Acacia horridula</i> (Priority 3)	About 3.3 km	N			N/A
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i> (Priority 4)	About 3.4 km	N		N	N/A
<i>Drakaea elastica</i> (Threatened)	About 3.7 km	N	N		N/A
<i>Isopogon autumnalis</i> (formerly <i>Isopogon drummondii</i>) (Priority 3)	About 3.8 km	N			N/A
<i>Drosera occidentalis</i> (formerly <i>Drosera occidentalis</i> subsp. <i>occidentalis</i>) (Priority 4)	About 3.8 km	N			N/A
<i>Calectasia grandiflora</i> (Priority 2)	About 3.9 km	Y	N		N/A
<i>Carex tereticaulis</i> (Priority 3)	About 3.9 km	N		N	N/A
<i>Acacia oncinophylla</i> subsp. <i>oncinophylla</i> (Priority 3)	About 3.9 km	N			N/A
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) (Threatened)	About 4 km	Y	Y	Y	N/A
<i>Stylidium longitubum</i> (Priority 4)	About 4.1 km	Y	N		N/A
<i>Synaphea odocoileops</i> (Priority 1)	About 4.2 km	N			N/A
<i>Parsonsia diaphanophleba</i> (Priority 4)	About 4.3 km	N			N/A
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) (Priority 1)	About 4.4 km	Y	Y	Y	N/A
<i>Amanita fibrillopes</i> (Priority 3)	About 4.6 km	N	N		N/A
<i>Dillwynia dillwynioides</i> (Priority 3)	About 4.6 km	N	N		N/A
<i>Lasiopetalum pterocarpum</i> (Threatened)	About 6.7 km	N			N/A
<i>Styphelia filifolia</i> (Priority 3)	About 6.9 km	Y	N		N/A
<i>Stachystemon exilis</i> (formerly <i>Stachystemon</i> sp. Keysbrook) (Priority 1)	About 7.1 km	Y	N		N/A
<i>Lasiopetalum glutinosum</i> subsp. <i>glutinosum</i> (Priority 3)	About 7.2 km	N		N	N/A
<i>Jacksonia gracillima</i> (Priority 3)	About 7.9 km	N	N		N/A
<i>Stylidium aceratum</i> (Priority 3)	About 7.9 km	N	N		N/A
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235) (Priority 3)	About 7.9 km	N			N/A
<i>Angianthus drummondii</i> (Priority 3)	About 7.9 km	N			N/A
<i>Schoenus capillifolius</i> (Priority 3)	About 7.9 km	N			N/A
<i>Babingtonia urbana</i> (Priority 3)	About 8 km	N		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?
<i>Lepidosperma rostratum</i> (Threatened)	About 8.1 km	N			N/A
<i>Halgania corymbosa</i> (Priority 3)	About 8.3 km	N		N	N/A
<i>Diuris purdiei</i> (Threatened)	About 8.8 km	N			N/A
<i>Pimelea rara</i> (Priority 4)	About 9 km	N		N	N/A
<i>Thysanotus anceps</i> (Priority 3)	About 9 km	N		N	N/A
<i>Boronia tenuis</i> (Priority 4)	About 9 km	N		N	N/A
<i>Aponogeton hexatepalus</i> (Priority 4)	About 9.3 km	N		N	N/A
<i>Amanita carneiphyllo</i> (Priority 3)	About 9.6 km	N		N	N/A
<i>Amanita wadjukiorum</i> (Priority 3)	About 9.6 km	N		N	N/A
<i>Anthocercis gracilis</i> (Threatened)	About 9.6 km	N		N	N/A
<i>Hibbertia acrotoma</i> (Priority 1)	About 9.8 km	N		N	N/A
<i>Lepyrodia heleocharoides</i> (Priority 3)	About 10 km	N		N	N/A
Ecological communities					
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA Region (Priority 3)	Adjacent		N No <i>Banksia</i>		N/A
<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 630 m		N No <i>Kingia</i>		N/A
Herb rich shrublands in clay pans (floristic community type 8 as originally described in Gibson et al. (1994)) (Threatened)	About 630 m	N	N		N/A
Shrublands on dry clay flats (floristic community type 10a as originally described in Gibson et al. (1994)) (Threatened)	About 630 m	N	N		N/A
Herb rich saline shrublands in clay pans (floristic community type 7 as originally described in Gibson et al. (1994)) (Threatened)	About 640 m	N	N		N/A
Low lying <i>Banksia attenuata</i> woodlands or shrublands (Priority 3)	About 2.4 km		N No <i>Banksia</i>		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>		N/A
<i>Corymbia calophylla</i> - <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal	About 3.9 km		N No jarrah		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?
Plain (floristic community type 3b as originally described in Gibson et al. (1994)) (Threatened)					
Forests and woodlands of deep seasonal wetlands of the Swan Coastal Plain (floristic community type 15 as originally described in Gibson et al. (1994)) (Threatened)	About 6.4 km		N	N	N/A
<i>Corymbia calophylla</i> - <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. (1994)) (Threatened)	About 6.9 km		N No grasstrees		N/A
Dense shrublands on clay flats (floristic community type 9 as originally described in Gibson et al. (1994)) (Threatened)	About 9.4 km		N	N	N/A
Tuart (<i>Eucalyptus gomphocephala</i>) woodlands and forests of the Swan Coastal Plain (Priority 3)	About 9.4 km		N No tuart		N/A
Southern wet shrublands, Swan Coastal Plain (floristic community type 2 as originally described in Gibson et al. (1994)) (Threatened)	About 9.6 km		N		N/A

Vegetation extent

	Pre-European (ha)	Current extent (ha)	Current extent (%)	Current extent (ha) in DBCA ² -managed lands	Current extent (%) in DBCA-managed lands
IBRA³ bioregion (as at March 2019)					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	269,964.76	17.98
Vegetation Association in bioregion (as at March 2019)					
1000	94,175.31	24,869.20	26.41	7,663.16	8.14
Vegetation Complex					
Southern River	58,781.48	10,832.18	18.43	1,720.68	2.93
Local area					
10-kilometre radius	37,257.56	7,573.75	20.32	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).

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

³ 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.”⁴</p> <p><u>Assessment:</u> The photographs provided by the applicant indicate that the vegetation within the application area comprises individual marri (<i>Corymbia calophylla</i>), flooded gum (<i>Eucalyptus rudis</i>), moonah (<i>Melaueuca preissiana</i>), WA Christmas tree (<i>Nuytsia floribunda</i>) and stinkwood (<i>Jacksonia</i> sp.) over a sparse understorey dominated by weeds, in degraded to completely degraded condition. no threatened or priority flora, TEC or PEC 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> Six threatened, seven priority, two ‘conservation dependent’ and one ‘other specially protected’ fauna, and nine fauna protected under an international agreement, have been recorded in the local area. The application area comprises suitable habitat for three threatened, one priority and one ‘other specially protected’ fauna. Noting the shape and extent of the proposed clearing, its location adjacent/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> Eleven 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.”⁵</p> <p><u>Assessment:</u> Ten threatened ecological communities (TEC) 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 maintenance of a TEC.</p>	Not likely to be at variance	Yes Section 3.2.2
<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 types have less than 30 per cent, but more than 10 per cent, of their pre-European extents remaining. The application area is unlikely to comprise a significant habitat for fauna including conservation-significant species or a part of a</p>	Not likely to be at variance	No

⁴ 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’.

⁵ 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?
significant ecological linkage, or be necessary to maintain ecosystem services (such as hydrological processes).		
<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 (dampland), and is about 25 m from the nearest watercourse. The vegetation within the application area is growing in association with this wetland.</p>	Is at variance	Yes Section 3.2.3
<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 for the soil types mapped across about 90 per cent of the application area are from a high to extreme risk of wind erosion and phosphorus export, 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 74 located about 515 m from the application area, a privately-managed Land for Wildlife site located about 1.8 km from the application area, and an un-named nature reserve (known as ‘Lowlands’) located about 1.9 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 and nearby watercourses. 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 3.2.3
<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> About 90 per cent of the application area is mapped as deep sandy soils. The mapped soil types 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 Punrak Road reserve provided as supporting information by the applicant, heading south from the intersection with Karnup Road. This supporting information is published on the Department of Water and Environmental Regulation's (DWER) website at: <ftp://ftp.dwer.wa.gov.au/permit/8895/>.

Figure 2a



Figure 2b



Figure 2c



Figure 2d



Figure 2e



Figure 2f

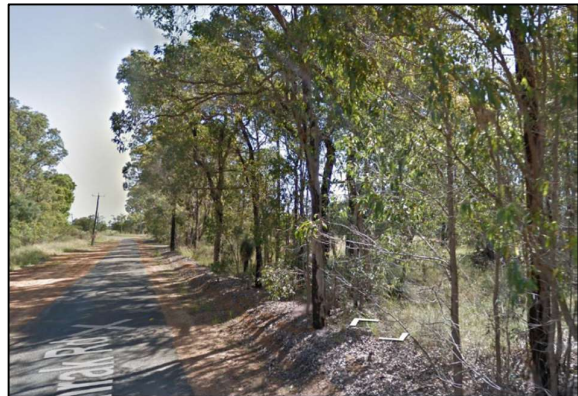


Figure 2g



Figure 2h



Figure 2i



Figure 2j



Figure 2k



Figure 2l



Figure 2m



Figure 2n



Figure 2o



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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