



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 8903/1
File Number: DWERT5754
Duration of Permit: From 28 July 2020 to 28 July 2022

PERMIT HOLDER

Shire of Serpentine-Jarrahdale

LAND ON WHICH CLEARING IS TO BE DONE

Hopkinson Road reserve (PINs 11610393, 11610395, 11610396 and 11753956), Cardup

AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.188 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8903/1a, Plan 8903/1b, Plan 8903/1c, Plan 8903/1d and Plan 8903/1e.

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*

3 July 2020

Plan 8903/1a

115.972°E

115.974°E




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
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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 8903/1b

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
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Legend

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 Road Centrelines

 Cadastre - LGATE 218

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GOVERNMENT OF
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


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Legend

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 Cadastre - LGATE 218

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



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GOVERNMENT OF
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Plan 8903/1d

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


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Legend

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 Road Centrelines

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GOVERNMENT OF
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Plan 8903/1e

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
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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



Clearing Permit Decision Report

1. Application details and outcome

1.1 Permit application details

Permit number:	CPS 8903/1
Permit type:	Area permit
Applicant name:	Shire of Serpentine-Jarrahdale
Application received:	12 May 2020
Application area:	0.188 hectares (ha) of native vegetation
Purpose of clearing:	Road upgrades
Method of clearing:	Mechanical removal
Property:	Hopkinson Road reserve (PINs 11610393, 11610395, 11610396 and 11753956)
Location (LGA area/s):	Shire of Serpentine-Jarrahdale
Localities (suburb/s):	Cardup

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 0.1944 hectares (ha) of native vegetation for the purpose of road upgrades and sealing of the road shoulder/widening to make the road safer, with the final land use being road, road shoulder and maintenance area. On digitising, this was amended to 0.188 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:	3 July 2020
Decision area:	0.188 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), street view photographs (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 following:

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

The Delegated Officer considered the impacts of the proposed clearing are unlikely to have any long-term adverse impacts on the hydrological and ecological values of the wetland, and that 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:

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

1.5 Site map

Plan 8903/1

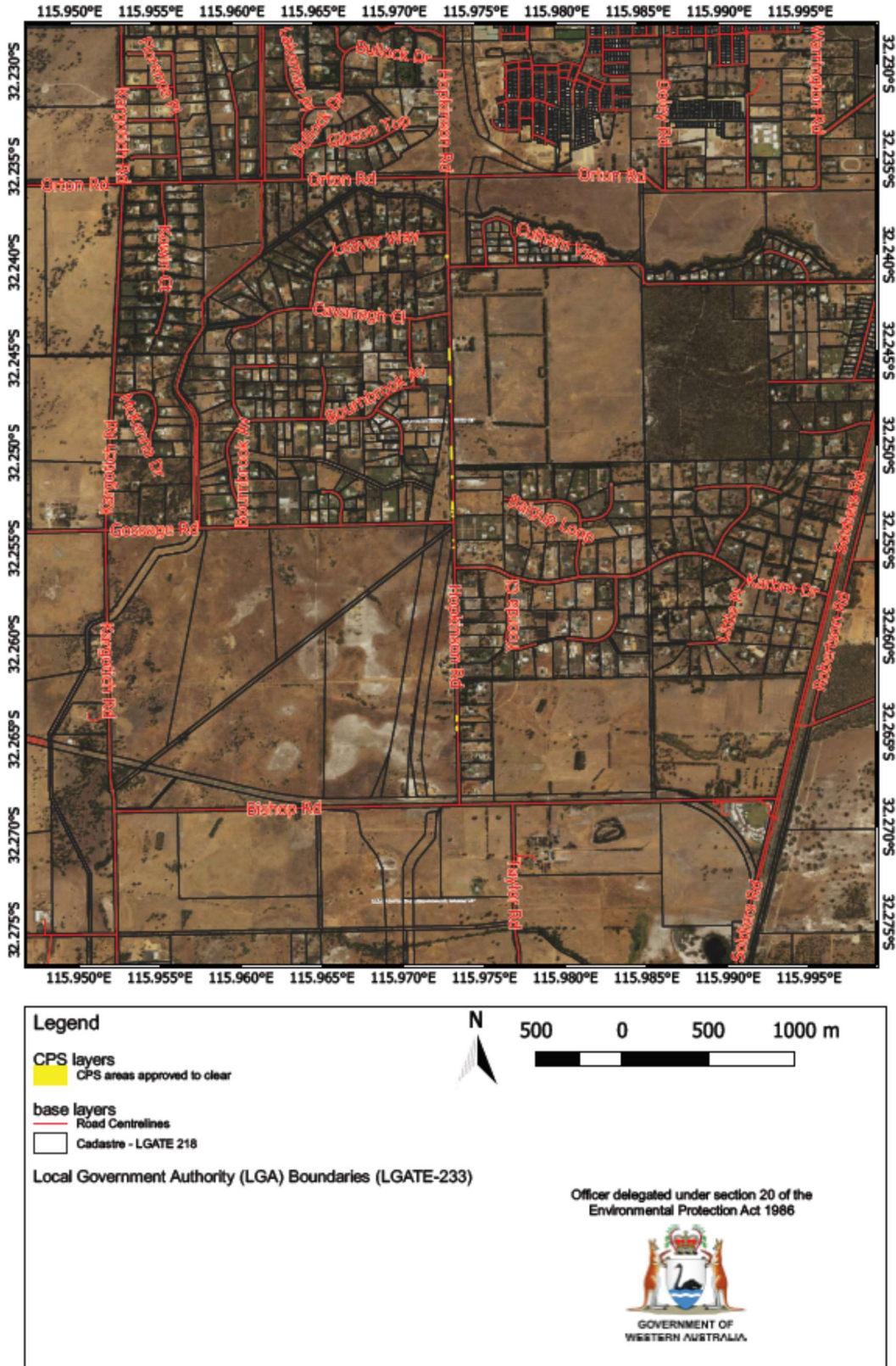


Figure 1: Map of area approved to clear

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

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1 Avoidance and mitigation measures

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

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

3.2 Assessment of environmental impacts

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

This assessment identified that the impacts of the proposed clearing present a risk to fauna, adjacent flora and vegetation and wetland habitat. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

3.2.1 Fauna

Assessment

The value of the application area as fauna habitat is primarily associated with individual marri (*Corymbia calophylla*), flooded gum (*Eucalyptus rudis*), moonah (*Melaleuca preissiana*), swamp cypress (*Callitris pyramidalis*) and stinkwood (*Jacksonia* sp.), given the absence of intact lower structures. Available aerial photography and spatial datasets indicate that patches of remnant vegetation occur 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 and dieback into adjacent vegetation, which could impact on the quality of the habitat values.

Thirteen threatened, 13 priority, one 'conservation dependent' and one 'other specially protected' fauna, and 16 fauna protected under an international agreement, have been recorded in the local area. In forming a view on the likelihood of these species occurring within the application area, the preferred habitat types and typical home ranges of these species and their recorded proximity to the application area were considered, along with the type and condition of the vegetation within the application area.

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

- 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 approximately 1.4 kilometres (km), 750 metres (m) and 1.5 km 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 Commonwealth guidance, that is, the vegetation proposed to be cleared comprises individual foraging plants or a small stand of foraging plants (Commonwealth of Australia, 2017). 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). The nearest record is approximately 0.92 km from the application area. Photographs provided by the applicant and available aerial photography indicate that the application area may be utilised as a corridor for movement of this species. Noting that the understorey within the application appears to be sparse and dominated by weeds, that the application area is in close proximity to patches of remnant vegetation, and that native vegetation will remain within the road reserve, the application area is unlikely to comprise 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 approximately 3.9 km from the application area. Noting the habitat preferences of this species, the application area is unlikely to comprise suitable/significant habitat.
- 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 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, however noting habitat preferences and the extent of the proposed clearing, the application area is unlikely to comprise a significant habitat for this species.

Conclusion

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

3.2.2 Flora and vegetation

Assessment

Conservation-significant flora

Ten threatened and 33 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.

Seven threatened and 25 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. One priority flora occurs within 1.5 km of the application area, however is associated with a mapped soil type and a vegetation type (*Eucalyptus/Banksia* woodland) that do not occur within the application area. Two threatened and four priority flora occur within the same mapped soil type, however are located more than 3.5 km from the application area. Based on similar habitat qualities and/or proximity, the application area might contain suitable habitat for one threatened and four priority flora, and these are considered in further detail.

- *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) (noting that some records might overlap) ranging from the City of Armadale to the Shire of Capel, typically associated with sand, loam and clay soils in low-lying areas. The nearest record is approximately 1.9 km from the application area, several records are from

a soil type mapped within the application area, associated with brown clay loam. Noting the absence of an intact understorey (this species is a small shrub) and minimal swampy areas within the application area, this species is unlikely to be present.

- *Calectasia grandiflora* (Priority 2): The Florabase website indicates that this species is known from seven recorded populations (some records may overlap) ranging from the City of Perth to the Shire of Serpentine-Jarrahdale, and the Shire of Wyalkatchem, and the Shire of Woodanilling, typically associated with white, grey or yellow sand, sandy clay, gravel, laterite and granite on swampy areas, rock outcrops, flats, slopes and ridges. The nearest record is approximately 3.6 km from the application area, from a soil type mapped within the application area, associated with dense heath and a seasonal wetland on black clay. Noting the different habitat within the application area, and the absence of an intact understorey (this species is a small shrub), this species is unlikely to be present.
- *Johnsonia pubescens* subsp. *cygnorum* (Priority 2): The Florabase website indicates that this species is known from 12 recorded populations (some records may overlap) around the Perth Metropolitan Region, typically associated with grey-white-yellow sand on flats and seasonally-wet sites. The nearest record is approximately 1.4 km from the application area, several records are from a soil type mapped within the application area, associated with low jarrah and Banksia woodland. Noting the different habitat within the application area, and the absence of an intact understorey, this species is unlikely to be present.
- *Babingtonia urbana* (Priority 3): The Florabase website indicates that this species is known from 26 recorded populations (some records may overlap) ranging from the Shire of Dandaragan to the Shire of Serpentine-Jarrahdale (Western Australian Herbarium, 1998–). The nearest record is approximately 1.5 km from the application area, several records are from a soil type mapped within the application area, associated with shrubland. Noting the absence of an intact understorey (this species is a low spreading shrub), this species is unlikely to be present.
- *Verticordia lindleyi* subsp. *lindleyi* (Priority 4): The Florabase website indicates that this species is known from 82 recorded populations (some records may overlap), ranging from the Shire of Dandaragan to the Shire of Serpentine-Jarrahdale (with an outlier near Busselton), typically associated with sandy and sandy clay in winter-wet depressions. The nearest record is approximately 2.2 km from the application area, from a soil type mapped within the application area, associated with heath on sandy clay soil and a seasonal wetland/dry summer swamp. Noting the different habitat within the application area, and the absence of an intact understorey (this species is a small shrub), this species is unlikely to be present.

Conclusion

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

3.2.3 Significance as a remnant

The national objectives and targets for biodiversity conservation in Australia has a target to prevent clearance of ecological communities with an extent below 30 per cent of that present pre-1750, below which species loss appears to accelerate exponentially at an ecosystem level (Commonwealth of Australia, 2001). The Environmental Protection Authority (EPA) recommends a minimum 10 per cent representation threshold for ecological communities in constrained areas (Environmental Protection Authority, 2008).

The application area is located within the Perth Metropolitan Region Scheme boundary, being a constrained area. All of the mapped vegetation types have less than 10 per cent (5.09 to 6.67 per cent) of their pre-European extents remaining, and are considered to be extensively cleared. The local area retains approximately 28.25 per cent of its pre-European native vegetation cover, and is also considered to be extensively cleared (despite being within a constrained area).

The application area is unlikely to comprise a significant habitat for fauna including conservation-significant species, or be a part of a significant ecological linkage, or be necessary to maintain ecosystem services (such as hydrological processes). On this basis, and with regard for the composition and condition of the vegetation present, the application area is unlikely to be a significant remnant.

Conclusion

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

3.2.4 Land and water resources

Assessment

The application area is located within a wetland (palusplain) that has a 'multiple use' management category, and is within the broader Keysbrook consanguineous wetland suite. A man-made drain traverses the central portion of the application area, and a non-perennial watercourse traverses the southern end. The potential for an increase in surface water run-off has the potential to lead to sedimentation of the wetland and 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 'South-east Corridor', located approximately 14 m from the application area, on private property adjacent to the opposite side of the Hopkinson Road reserve. 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 four clearing applications under assessment and two 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, moonah, WA Christmas tree (*Nuytsia floribunda*) and stinkwood 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)
- Application CPS 8908/1 to clear approximately 0.51 ha of swamp sheoak, marri and moonah in the Mundijong Road reserve
- Application CPS 8918/1 to clear approximately 0.97 ha of native vegetation in the Nettleton Road reserve
- Application CPS 8919/1 to clear approximately 0.72 ha of native vegetation in the Anketell Road reserve
- Application CPS 8920/1 to clear approximately 0.217 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 approximately 3.1 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 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 approximately 28.25 per cent of native vegetation cover.</p>
Vegetation description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> • Guildford Complex, described as mixture of open forest to tall open forest of marri – wandoo - jarrah and woodland of wandoo (with rare occurrences of salmon white gum (<i>Eucalyptus lane-poolei</i>)); minor components include flooded gum (<i>Eucalyptus rudis</i>) – swamp paperbark (<i>Melaleuca raphiophylla</i>). (mapped across approximately 0.167 ha of the application area) • Beermullah Complex, described as mixture of low open forest of swamp sheoak (<i>Casuarina obesa</i>) and open woodland of marri - wandoo - jarrah; minor components include closed scrub of <i>Melaleuca</i> species and occurrence of swamp cypress (<i>Callitris pyramidalis</i>) (mapped across approximately 0.021 ha of the southern portion of the application area). <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>), swamp cypress and stinkwood (<i>Jacksonia</i> sp.).</p>
Vegetation condition	<p>Vegetation condition was determined from 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 B1 Phase (213Bs_B1) described as: Extremely low to very low relief dunes, undulating sandplain and discrete sand rises with deep bleached grey sands sometimes with pale yellow B horizon or a weak iron-organic hardpan at depths generally greater than 2 m; banksia dominant (mapped across approximately 0.0750 ha of the application area) • Pinjarra B2 Phase (213Pj_B2) described as: Flat to very undulating sandplain with well to moderately well drained deep bleached grey sands with a pale yellow B horizon or a weak iron-organic hardpan 1-2 m (mapped across approximately 0.0561 ha of the application area) • Pinjarra P1d Phase (213Pj_P1d) described as: Flat to very gently undulating plain with deep acidic mottled yellow duplex soils; shallow pale sand to sandy loam over clay; imperfect to poorly drained and moderately susceptible to salinity (mapped across approximately 0.0296 ha of the application area) • Pinjarra P3 Phase (213Pj_P3) described as: Flat to very gently undulating plain with deep, imperfect to poorly drained acidic or gradational yellow or grey-brown earths and mottled yellow duplex soils, with loam to clay loam surface horizons (mapped across approximately 0.0157 ha of the application area) • Bassendean B3 Phase (213Bs_B3) described as: Closed depressions and poorly defined stream channels with moderately deep, poorly to very poorly drained bleached sands with an iron-organic pan, or clay subsoil; surfaces are dark grey sand or sandy loam (mapped across approximately 0.0097 ha of the application area)

Site characteristic	Details						
	<ul style="list-style-type: none"> Pinjarra P1c Phase (213Pj_P1c) described as: Flat to very gently undulating plain with deep acidic mottled yellow duplex soils; deep pale brown to yellowish sand to sandy loam over clay; imperfectly drained and moderately susceptible to salinity in limited areas (mapped across approximately 0.0020 ha of the application area). 						
Land degradation risk	Mapped land degradation risk factors (as percentage of map unit)						
	Risk categories	212Bs_B1	213Pj_B2	213Pj_P1d	213Pj_P3	213Bs_B3	213Pj_P1c
	Wind erosion	>70% has a high to extreme risk	>70% has a high to extreme risk	10-30% has a high to extreme risk	<3% has a high to extreme risk	10-30% has a high to extreme risk	<3% has a high to extreme risk
	Water erosion	3-10% has a high to extreme risk	<3% has a high to extreme risk	<3% has a high to extreme risk	<3% has a high to extreme risk	30-50% has a high to extreme risk	<3% has a high to extreme risk
	Salinity	30-50% has a moderate to high risk	<3% has a moderate to high risk	50-70% has a moderate to high risk	3-10% has a moderate to high risk	30-50% has a moderate to high risk	10-30% has a moderate to high risk
	Subsurface Acidification	<3% has a high risk	>70% has a high risk	<3% has a high risk	<3% has a high risk	<3% has a high risk	30-50% has a high risk
	Flood risk	<3% has a moderate to high risk	<3% has a moderate to high risk	<3% has a moderate to high risk	<3% has a moderate to high risk	30-50% has a moderate to high risk	<3% has a moderate to high risk
	Waterlogging	3-10% has a moderate to very high risk	3-10% has a moderate to very high risk	>70% has a moderate to very high risk	>70% has a moderate to very high risk	>70% has a moderate to very high risk	>70% has a moderate to very high risk
	Phosphorus export risk	>70% has a high to extreme risk	>70% has a high to extreme risk	<3% has a high to extreme risk	<3% has a high to extreme risk	>70% has a high to extreme risk	30-50% has a high to extreme risk
Waterbodies	<p>The application area is located within the broader Keysbrook consanguineous wetland suite. A man-made drain (extending a natural minor non-perennial watercourse) traverses the central portion of the application area, and a minor non-perennial watercourse traverses the southern end. Both are tributaries of the Serpentine River.</p> <p>A further 48 mapped lakes, wetlands, rivers and other water bodies occur within the local area. Those within two kilometres of the application area are outlined below.</p>						
	Type of inland water		Description			Proximity (m)	
	Geomorphic Wetlands (Classification), Swan Coastal Plain		Multiple Use - Palusplain			0	
	Geomorphic Wetlands (Classification), Swan Coastal Plain		Resource Enhancement - Creek			239	
	Rivers		Cardup Brook : Minor Trib			257	
	Geomorphic Wetlands (Classification), Swan Coastal Plain		Conservation - Palusplain			1125	
	Rivers		Manjedal Brook : Minor Trib			1179	
	Geomorphic Wetlands (Classification), Swan Coastal Plain		Multiple Use - Sumpland			1720	
	Geomorphic Wetlands (Classification), Swan Coastal Plain		Conservation - Sumpland			1888	
Conservation areas	<p>There are 66 records of conservation areas within the local area, comprising of lands managed by the Department of Biodiversity, Conservation and Attractions, privately-managed conservation areas, and Bush Forever sites (some of these overlap). Those within two kilometres of the application area are outlined below.</p>						

Site characteristic	Details		
	Theme	Description	Proximity (m)
	Bushforever	351	223
	DER/DPaW Managed Lands	Cardup Nature Reserve; Conservation Commission Of WA (J432917)	1116
	Bushforever	352	1116
	DEC Land for Wildlife Sites	604	1443
	Bushforever	350	1886
	Bushforever	65	1986
Climate and landform	Rainfall: 1000 Evapotranspiration: 900 Geology: Alluvial, shoreline, and aeolian deposits Acid Sulfate Soil Risk: Moderate to low risk Groundwater Salinity (Total Dissolved Solids): 500-1000 mg/L The application area is on a broad flat. Topography is between 20-30 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 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, 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 to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Fauna					
Baudin's black cockatoo (<i>Calyptorhynchus baudinii</i> ; Endangered)	Approximately 0.75 km		Y	Y	N/A
South-western brown bandicoot/quenda (<i>Isoodon fusciventer</i> ; Priority 4)	Approximately 0.92 km			Y	N/A
Carnaby's black cockatoo (<i>Calyptorhynchus latirostris</i> ; Endangered)	Approximately 1.4 km		Y	Y	N/A
Forest red-tailed black cockatoo (<i>Calyptorhynchus banksii</i> subsp. <i>naso</i> ; Endangered)	Approximately 1.5 km		Y	Y	N/A
Chuditch/western quoll (<i>Dasyurus geoffroyi</i> ; Vulnerable)	Approximately 2 km			N	N/A
Curlew sandpiper (<i>Calidris ferruginea</i> ; Critically Endangered)	Approximately 2.5 km			N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Marsh sandpiper/little greenshank (<i>Tringa nebularia</i> ; International Agreement)	Approximately 2.5 km			N	N/A
Southern death adder (<i>Acanthopis antarcticus</i> ; Priority 3)	Approximately 2.6 km	N		N	N/A
Caspian tern (<i>Hydroprogne caspia</i> ; International Agreement)	Approximately 3 km			N	N/A
Numbat (<i>Myrmecobius fasciatus</i> ; Endangered)	Approximately 3.6 km			N	N/A
Quokka (<i>Setonix brachyurus</i> ; Threatened)	Approximately 3.6 km			N	N/A
Inornate trapdoor spider (northern jarrah forest) (<i>Euoplos inornatus</i> ; Priority 3)	Approximately 3.6 km			N	N/A
Western brush wallaby (<i>Notamacropus irma</i> ; Priority 4)	Approximately 3.6 km			N	N/A
Peregrine Falcon (<i>Falco peregrinus</i> ; Other Specially Protected)	Approximately 3.6 km			Y	N/A
South-western brush-tailed phascogale/wambenger (<i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> ; Conservation Dependent)	Approximately 3.9 km			Y	N/A
Swan Coastal Plain shield-backed trapdoor spider (<i>Idiosoma sigillatum</i> ; Priority 3)	Approximately 4 km			N	N/A
Carter's freshwater mussel (<i>Westralunio carteri</i> ; Vulnerable)	Approximately 4.7 km			N	N/A
Dell's skink/Darling Range southwest ctenotus (<i>Ctenotus delli</i> ; Priority 4)	Approximately 5 km			N	N/A
Blue-billed duck (<i>Oxyura australis</i> ; Priority 4)	Approximately 5.2 km			N	N/A
Glossy ibis (<i>Plegadis falcinellus</i> ; International Agreement)	Approximately 5.2 km			N	N/A
Tammar wallaby (<i>Notamacropus eugenii</i> subsp. <i>derbianus</i> ; Priority 4)	Approximately 5.5 km			N	N/A
Perth slider/lined skink (<i>Lerista lineata</i> ; Priority 3)	Approximately 6.7 km			N	N/A
Malleefowl (<i>Leipoa ocellata</i> ; Vulnerable)	Approximately 7.3 km			N	N/A
Graceful sun-moth (<i>Synemon gratiosa</i> ; Priority 4)	Approximately 8 km			N	N/A
Black-striped burrowing snake (<i>Neelaps calonotus</i> ; Priority 3)	Approximately 8.5 km			N	N/A
Common sandpiper (<i>Actitis hypoleucos</i> ; International Agreement)	Approximately 8.5 km			N	N/A
Short-tongued bee (<i>Neopasiphae simplicior</i> ; Endangered)	Approximately 8.6 km			N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Short-tongued bee (<i>Leioproctus douglasiellus</i> ; Endangered)	Approximately 8.7 km			N	N/A
Sharp-tailed sandpiper (<i>Calidris acuminata</i> ; International Agreement)	Approximately 8.8 km			N	N/A
Long-tailed jaeger/long-tailed skua (<i>Stercorarius longicaudus</i> ; International Agreement)	Approximately 8.9 km			N	N/A
Western false pipistrelle (<i>Falsistrellus mackenziei</i> ; Priority 4)	Approximately 9.1 km			N	N/A
Australasian bittern (<i>Botaurus poiciloptilus</i> ; Threatened)	Approximately 9.2 km			N	N/A
Pacific golden plover (<i>Pluvialis fulva</i> ; International Agreement)	Approximately 9.2 km			N	N/A
Pectoral sandpiper (<i>Calidris melanotos</i> ; International Agreement)	Approximately 9.3 km			N	N/A
Wood sandpiper (<i>Tringa glareola</i> ; International Agreement)	Approximately 9.3 km			N	N/A
Greater sand plover/large sand plover (<i>Charadrius leschenaultii</i> ; Vulnerable)	Approximately 9.4 km			N	N/A
Fork-tailed swift/Pacific swift (<i>Apus pacifica</i> ; International Agreement)	Approximately 9.4 km			N	N/A
Ruddy turnstone (<i>Arenaria interpres</i> ; International Agreement)	Approximately 9.4 km			N	N/A
Grey plover (<i>Pluvialis squatarola</i> ; International Agreement)	Approximately 9.4 km			N	N/A
Water-rat/rakali (<i>Hydromys chrysogaster</i> ; Priority 4)	Approximately 9.5 km			N	N/A
Black-tailed godwit (<i>Limosa limosa</i> ; International Agreement)	Approximately 9.5 km			N	N/A
Marsh sandpiper/little greenshank (<i>Tringa stagnatilis</i> ; International Agreement)	Approximately 9.5 km			N	N/A
Curlew sandpiper (<i>Calidris ruficollis</i> ; International Agreement)	Approximately 9.9 km			N	N/A
Long-toed stint (<i>Calidris subminuta</i> ; International Agreement)	Approximately 9.9 km			N	N/A
Flora					
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2)	Approximately 1.4 km	Y			N/A
<i>Amanita wadulawitu</i> (Priority 3)	Approximately 1.5 km	N	N		N/A
<i>Babingtonia urbana</i> (Priority 3)	Approximately 1.5 km	Y		N	N/A
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103) (Threatened)	Approximately 1.9 km	Y		Y	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182) (Threatened)	Approximately 2 km	N			N/A
<i>Tetraria australiensis</i> (Threatened)	Approximately 2.1 km	N			N/A
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i> (Priority 4)	Approximately 2.2 km	Y		N	N/A
<i>Amanita wadjukiorum</i> (Priority 3)	Approximately 2.5 km	N		N	N/A
<i>Schoenus pennisetis</i> (Priority 3)	Approximately 2.9 km	N			N/A
<i>Drosera occidentalis</i> (formerly <i>Drosera occidentalis</i> subsp. <i>occidentalis</i>) (Priority 4)	Approximately 3 km	N			N/A
<i>Drakaea elastica</i> (Threatened)	Approximately 3.5 km	N			N/A
<i>Calectasia grandiflora</i> (Priority 2)	Approximately 3.6 km	Y		N	N/A
<i>Lepidosperma rostratum</i> (Threatened)	Approximately 3.7 km	Y			N/A
<i>Diuris purdiei</i> (Threatened)	Approximately 3.8 km	N			N/A
<i>Jacksonia gracillima</i> (Priority 3)	Approximately 3.9 km	Y		N	N/A
<i>Angianthus drummondii</i> (Priority 3)	Approximately 4.1 km	N			N/A
<i>Schoenus capillifolius</i> (Priority 3)	Approximately 4.1 km	N			N/A
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235) (Priority 3)	Approximately 4.1 km	N			N/A
<i>Stylidium aceratum</i> (Priority 3)	Approximately 4.1 km	N	N		N/A
<i>Amanita fibrillopes</i> (Priority 3)	Approximately 4.6 km	N		N	N/A
<i>Pithocarpa corymbulosa</i> (Priority 3)	Approximately 4.6 km	N		N	N/A
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) (Priority 1)	Approximately 4.7 km	N			N/A
<i>Amanita carneiphylloides</i> (Priority 3)	Approximately 5.2 km	N		N	N/A
<i>Millotia tenuifolia</i> var. <i>laevis</i> (Priority 2)	Approximately 6.1 km	N		N	N/A
<i>Acacia ocnophylla</i> subsp. <i>ocnophylla</i> (Priority 3)	Approximately 6.7 km	N			N/A
<i>Banksia kippistiana</i> var. <i>paenepeccata</i> (Priority 3)	Approximately 6.7 km	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>Eucalyptus x balanites</i> (Threatened)	Approximately 7.5 km	N			N/A
<i>Dillwynia dillwynioides</i> (Priority 3)	Approximately 8.1 km	Y	N		N/A
<i>Drakaea micrantha</i> (Threatened)	Approximately 8.1 km	N			N/A
<i>Aponogeton hexatepalus</i> (Priority 4)	Approximately 8.6 km	N		N	N/A
<i>Thelymitra stellata</i> (Threatened)	Approximately 8.7 km	N		N	N/A
<i>Caladenia huegelii</i> (Threatened)	Approximately 8.9 km	Y			N/A
<i>Meionectes tenuifolia</i> (Priority 3)	Approximately 9 km	N		N	N/A
<i>Ornduffia submersa</i> (Priority 4)	Approximately 9 km	N		N	N/A
<i>Stylidium paludicola</i> (Priority 3)	Approximately 9 km	N			N/A
<i>Boronia juncea</i> subsp. <i>juncea</i> (Priority 1)	Approximately 9.3 km	Y		N	N/A
<i>Cyathochaeta teretifolia</i> (Priority 3)	Approximately 9.3 km	N		N	N/A
<i>Amanita kalamundae</i> (Priority 3)	Approximately 9.5 km	N		N	N/A
<i>Stylidium longitubum</i> (Priority 4)	Approximately 9.6 km	N			N/A
<i>Parsonsia diaphanophleba</i> (Priority 4)	Approximately 9.7 km	N		N	N/A
<i>Ptilotus sericostachyus</i> subsp. <i>roseus</i> (Priority 1)	Approximately 9.8 km	N			N/A
<i>Thelymitra magnifica</i> (Priority 1)	Approximately 9.8 km	N		N	N/A
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i> (Priority 4)	Approximately 9.9 km	N		N	N/A
Ecological communities					
<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (floristic community type ² (FCT) 20b) (Threatened)	Approximately 1.1 km	Y	N No <i>Banksia</i> or jarrah		N/A
<i>Corymbia calophylla</i> – <i>Eucalyptus marginata</i> woodlands on sandy clay soils of the southern Swan Coastal Plain (FCT 3b) (Threatened)	Approximately 1.1 km	Y	N No jarrah		N/A

² 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?
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA region (Priority 3)	Approximately 1.9 km	Y	N No <i>Banksia</i>		N/A
<i>Corymbia calophylla</i> – <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain (FCT 3a) (Threatened)	Approximately 2 km	Y	N No <i>Kingia</i>		N/A
Herb rich shrublands in clay pans (FCT 8) (Threatened)	Approximately 2 km	Y	N No understorey		N/A
Dense shrublands on clay flats (floristic community type 9) (Threatened)	Approximately 2.8 km	N	N		N/A
<i>Corymbia calophylla</i> – <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (FCT 3c) (Threatened)	Approximately 3.2 km	Y	N No grasstrees		N/A
Southern wet shrublands, Swan Coastal Plain (floristic community type 2) (Threatened)	Approximately 4.3 km	N	N		N/A
Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) (Threatened)	Approximately 7.9 km	N	N		N/A
Low lying <i>Banksia attenuata</i> woodlands or shrublands (Priority 3)	Approximately 9.4 km	Y	N		N/A
Shrublands on dry clay flats (FCT 10a) (Threatened)	Approximately 9.4 km	N	N		N/A

Vegetation extent

	Pre-European (ha)	Current extent (ha)	Current extent (%)	Current extent (ha) in DBCA ³ -managed lands	Current extent (%) in DBCA-managed lands
IBRA⁴ bioregion (as at March 2019)					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	269,964.76	17.98
Vegetation Complex					
Guildford	90,513.13	4,607.91	5.09	390.92	0.32
Beermullah	6,707.27	447.21	6.67	144.89	2.13
Local area					
10-kilometre radius	36,972.84	10,445.97	28.25	N/a	N/a

³ Department of Biodiversity, Conservation and Attractions. Current extent as proportion of pre-European extent within DBCA-managed lands.

⁴ 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.”⁵</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>Melaleuca preissiana</i>), swamp cypress (<i>Callitris pyramidalis</i>) and stinkwood (<i>Jacksonia</i> sp.) over a sparse understorey dominated by weeds, in degraded to completely degraded condition. None of the threatened and priority flora and ecological communities recorded in the local area are likely to occur within the application area. The application area does not contain significant habitat for fauna.</p>	Not likely to be at variance	Yes Section 3.2.2
<p><u>Principle (b):</u> “Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</p> <p><u>Assessment:</u> Thirteen threatened, 13 priority, one ‘conservation dependent’ and one ‘other specially protected’ fauna, and 16 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> Ten threatened flora have been recorded in the local area, however are unlikely to occur within the application area. Noting the type and condition of the vegetation, the application area is unlikely to be necessary for the continued existence of threatened flora.</p>	Not likely to be at variance	Yes Section 3.2.2
<p><u>Principle (d):</u> “Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of a threatened ecological community.”⁶</p> <p><u>Assessment:</u> Nine threatened ecological communities (TEC) have been recorded in the local area. Noting the composition and condition of the vegetation within the application area, the application area is unlikely to be representative of, or be necessary for the maintenance of, a TEC.</p>	Not likely to be at variance	No
<p><u>Principle (e):</u> “Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</p> <p><u>Assessment:</u> The application area is located within the Perth Metropolitan Region Scheme boundary, which the Environmental Protection Authority recognises to be a constrained area within which a minimum 10 per cent representation threshold for ecological communities is recommended (Environmental Protection Authority, 2008). All of the mapped vegetation types have less than 10 per cent (5.09 to 6.67 per cent) of their pre-European extents remaining, and are considered to be extensively cleared. However noting that the application area is unlikely to comprise a significant habitat for</p>	Not likely to be at variance	Yes Section 3.2.3

⁵ 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’.

⁶ 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?
fauna including conservation-significant species, or be a part of a significant ecological linkage, or be necessary to maintain ecosystem services (such as hydrological processes), and with regard for the composition and condition of the vegetation, it is unlikely to be a significant remnant.		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u> The application area is located within a wetland (palusplain). A man-made drain traverses the central portion of the application area, and a non-perennial watercourse traverses the southern end. The vegetation within the application area is growing in association with these waterbodies.</p>	Is at variance	Yes Section 3.2.4
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> The main land degradation risks associated with the soil types mapped across the application area are high to extreme risks of wind erosion and phosphorus export (affecting approximately 70 per cent of the application area), moderate to high risk of salinity (affecting approximately 56 per cent of the application area), and moderate to very high risk of waterlogging (affecting approximately 31 per cent of the application area). 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 351 located approximately 220 metres north of the application area, and Cardup Nature Reserve located approximately 1.1 km from the application area. These conservation areas are connected to the application area and with each other by vegetation within road reserves and on private property. 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 3.2.4
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The soil types mapped across approximately 95 per cent of 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 Hopkinson Road reserve provided as supporting information by the applicant, heading north from the intersection of Bishop Road. This supporting information is published on the Department of Water and Environmental Regulation's website at: <ftp://ftp.dwer.wa.gov.au/permit/8903/>.















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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