



## CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

### PERMIT DETAILS

Area Permit Number: CPS 8908/1  
File Number: DWERVT5789  
Duration of Permit: From 26 September 2020 to 26 September 2027

### PERMIT HOLDER

Shire of Serpentine-Jarrahdale

### LAND ON WHICH CLEARING IS TO BE DONE

Mundijong Road reserve (PINs 11610712, 11610713, 11614350 and 11752666), Oldbury, Mundijong and Mardella.

### AUTHORISED ACTIVITY

The Permit Holder shall not clear more than 0.51 hectares of native vegetation within the areas cross-hatched yellow on attached Plan 8908/1a, Plan 8908/1b, Plan 8908/1c, Plan 8908/1d, Plan 8908/1e and Plan 8908/1f.

### CONDITIONS

#### 1. Period within which clearing is authorised

The Permit Holder shall not clear any native vegetation after 26 September 2022.

#### 2. 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.

#### 3. 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.

#### 4. Revegetation

- (a) The Permit Holder shall establish and maintain native vegetation within the areas cross-hatched red on attached Plan 8908/1g and Plan 8908/1h in accordance with the following conditions:
  - (i) the *revegetation* shall be established and maintained to an average planting density of 1,000 plants per hectare;
  - (ii) the *revegetation* composition shall include the species authorised to be cleared under this Permit and/or resemble pre-clearing vegetation types in that area;
  - (iii) the *revegetation* is to commence before 26 September 2022.

- (b) Within twelve months of undertaking *revegetation* in accordance with condition 4(a) of this Permit, the Permit Holder must:
  - (i) determine the species composition, structure and density of the *revegetation*; and
  - (ii) where, in the opinion of an *environmental specialist*, the composition, structure and density determined under condition 4(b)(i) of this Permit will not result in a similar composition, structure and density to that set out in condition 4(a) of this Permit, the Permit Holder must undertake additional *planting* or *direct seeding* of native vegetation to achieve this outcome.

## 5. 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 2 of this Permit;
- (e) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 3 of this Permit; and
- (f) in relation to the *revegetation* of areas in accordance with condition 4 of this Permit:
  - (i) the location of the *revegetation*, 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;
  - (ii) a description of the *revegetation* activities undertaken;
  - (iii) the species composition, structure and density of *revegetation*; and
  - (iv) a copy of the *environmental specialist*'s report.

## 6. Reporting

The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:

- (a) of records required under condition 5 of this Permit;
- (b) concerning activities done by the Permit Holder under this Permit between 1 January and 31 December of the preceding calendar year.
- (c) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar year, a written report confirming that no clearing under this Permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (a) Prior to 23 June 2027 the Permit Holder must provide to the *CEO* a written report of records required under condition 5 of this Permit where these records have not already been provided under condition 6(a) of this Permit.

## 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;

***direct seeding*** means a method of re-establishing vegetation through the establishment of a seed bed and the introduction of seeds of the desired plant species;

***environmental specialist***: means a person who holds a tertiary qualification in environmental science or equivalent, and has experience relevant to the type of environmental advice that an environmental specialist is required to provide under this Permit, or who is approved by the *CEO* as a suitable environmental specialist;

**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;

**planting** means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

**regeneration** means re-establishment of vegetation from in situ seed banks and propagating material (such as lignotubers, bulbs, rhizomes) contained either within the topsoil or seed-bearing *mulch*;

**revegetation** means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area;

**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  
SENIOR MANAGER  
NATIVE VEGETATION REGULATION

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


3 September 2020

# Plan 8908/1a




## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines


 Cadastre - LGATE 218

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



50 0 50 100 m



  
 Mathew Gannaway  
 2020.09.03  
 15:41:09 +08'00'

Officer delegated under section 20 of the  
 Environmental Protection Act 1986



GOVERNMENT OF  
 WESTERN AUSTRALIA

# Plan 8908/1b



**Legend**

**CPS layers**

- CPS areas approved to clear

**base layers**

- Road Centrelines
- Cadastre - LGATE 218

N

50      0      50      100 m

Mathew  
Gannaway  
2020.09.03  
15:41:44  
+08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986


**GOVERNMENT OF  
WESTERN AUSTRALIA**

# Plan 8908/1c





## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines

 Cadastre - LGATE 218

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



50 0 50 100 m



Mathew

Gannaway

2020.09.03

15:42:16

+08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986




GOVERNMENT OF  
WESTERN AUSTRALIA

# Plan 8908/1d




## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines

 Cadastre - LGATE 218

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



50 0 50 100 m



Mathew

Gannaway

2020.09.03

15:42:47

+08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986




GOVERNMENT OF  
WESTERN AUSTRALIA

# Plan 8908/1e




## Legend

### CPS layers

 CPS areas approved to clear

### base layers

 Road Centrelines


 Cadastre - LGATE 218

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



50 0 50 100 m



  
 Mathew Gannaway  
 2020.09.03  
 15:43:19 +08'00'

Officer delegated under section 20 of the  
 Environmental Protection Act 1986




GOVERNMENT OF  
 WESTERN AUSTRALIA





# Plan 8908/1f





**Legend**


**CPS layers**  
 CPS areas approved to clear

**base layers**  
 Road Centrelines  
 Cadastre - LGATE 218

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

Mathew  
 Gannaway  
 2020.09.03  
 15:43:47  
 +08'00'  
 Officer delegated under section 20 of the  
 Environmental Protection Act 1986





**GOVERNMENT OF  
 WESTERN AUSTRALIA**

# Plan 8908/1g



## Legend

**CPS layers**  
 CPS subject to conditions


**base layers**  
 Road Centrelines  
 Cadastre - LGATE 218

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



100 0 100 200 300 m



  
 Mathew Gannaway  
 2020.09.03  
 15:44:18 +08'00'

Officer delegated under section 20 of the Environmental Protection Act 1986




GOVERNMENT OF WESTERN AUSTRALIA

# Plan 8908/1h




## Legend

### CPS layers

 CPS subject to conditions

### base layers

 Road Centrelines

 Cadastre - LGATE 218

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



100 0 100 200 300 m




Mathew  
Gannaway  
2020.09.03  
15:44:51 +08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



# Clearing Permit Decision Report

## 1. Application details and outcome

### 1.1 Permit application details

<b>Permit number:</b>	CPS 8908/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Shire of Serpentine-Jarrahdale
<b>Application received:</b>	15 May 2020
<b>Proposed clearing:</b>	0.51 hectares (ha) of native vegetation (as revised)
<b>Purpose of clearing:</b>	Road upgrades
<b>Method of clearing:</b>	Mechanical removal
<b>Property:</b>	Mundijong Road reserve (PINs 11610712, 11610713, 11614350 and 11752666)
<b>Location (LGA area/s):</b>	Shire of Serpentine-Jarrahdale
<b>Localities (suburb/s):</b>	Oldbury, Mundijong and Mardella

### 1.2 Description of clearing activities

The application area comprises selected trees and shrubs adjacent to an existing road formation, within a broader road reserve that has a part in maintaining connectivity between remnants in the local area<sup>1</sup>. The application form states that the total area of clearing is 0.3722 ha of native vegetation for the purpose of road upgrades and widening to make the road safer, with the final land use being road corridor and maintenance area. On digitising, this was amended to 0.51 ha of proposed clearing. The extent of the proposed clearing is indicated in Figure 1 (see Section 1.5).

### 1.3 Decision on application

<b>Decision:</b>	Granted
<b>Decision date:</b>	3 September 2020
<b>Decision area:</b>	0.51 ha of native vegetation (see Figure 1, Section 1.5)

### 1.4 Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The application was advertised for 21 days and no public submissions were received.

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

- is considered to be significant as a remnant of native vegetation in an extensively cleared area because it includes habitat for threatened fauna (specifically, foraging habitat (but not significant habitat) for threatened black cockatoo species) and is below the national target and objective for biodiversity conservation
- is growing in association with a mapped 'resource enhancement' wetland (dampland)
- is within Bush Forever area 360 and may be necessary for the maintenance of the environmental values of adjacent vegetation within this conservation area.

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

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 to adjacent vegetation.

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

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

- avoid, minimise and reduce the impacts and extent of clearing
- take steps to minimise the risk of the introduction and spread of weeds and dieback
- revegetate within the Mundijong Road reserve a similar-sized area as that proposed to be cleared and incorporating the species proposed to be cleared.

### 1.5 Site map

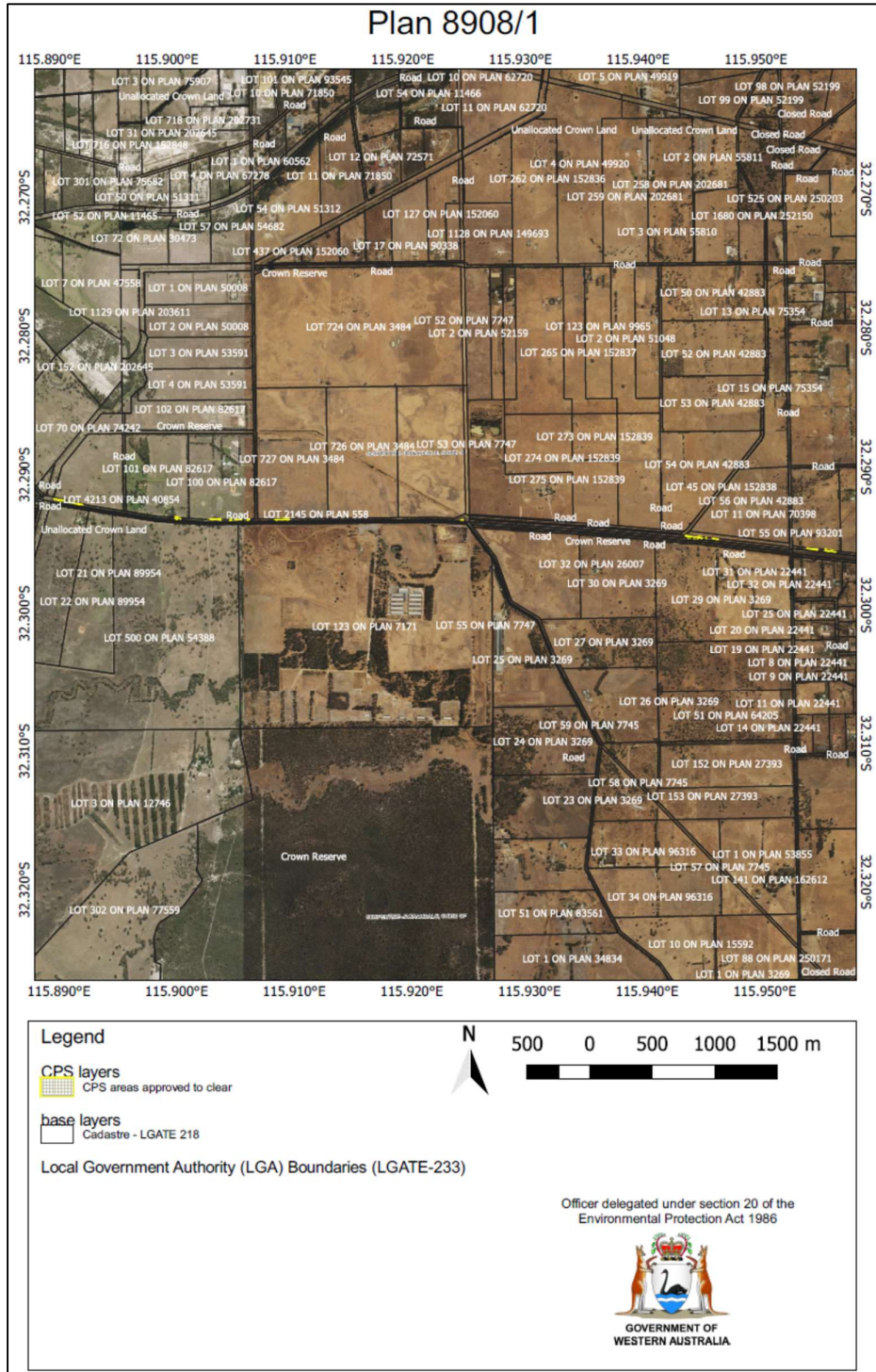


Figure 1: Map of area approved to clear

The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

## 2. Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA)
- *Conservation and Land Management Act 1984* (WA)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth)
- *Rights in Water and Irrigation Act 1914*.

Relevant policies considered during the assessment were:

- State Planning Policy 2.8: *Bushland Policy for the Perth Metropolitan Region* (2010)<sup>2</sup>
- *WA Environmental Offsets Policy* (2011)<sup>3</sup>

The key guidance documents which inform this assessment are:

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

## 3. Detailed assessment of application

### 3.1 Avoidance and mitigation measures

The application form states that only those plants that are too close to the road works will be removed, that the applicant will prioritise pruning to removal when possible, and that kerbing and crash barriers will be installed to reduce the amount of clearing where possible.

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 adequately managed. The assessment against the clearing principles is contained in Appendix B.

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

#### 3.2.1 Fauna

##### Assessment

The application form states that the vegetation proposed to be cleared includes marri (*Corymbia calophylla*), moonah (*Melaleuca preissiana*) and swamp sheoak (*Casuarina obesa*). A site inspection undertaken by DWER also noted the presence of jarrah (*Eucalyptus marginata*) and sheoak (*Allocasuarina fraseriana*) within portions of the road reserve (including the application area), and that the ground layer is dominated by grassy weeds.

The proposed clearing is limited to the northern side of the Mundijong Road reserve, from Duckpond Road to east of Kargotich Road. Mapping undertaken by the Roadside Conservation Committee in September 2005 identified that the vegetation within the sections of road reserve in which the application area is located had 'medium high' conservation value (approximately 0.22 ha / 42.8 per cent of the application area) and 'low' conservation value (the balance of the application area). This mapping took into account the condition of the vegetation at that time based on structure, composition, floristic diversity and weed cover (Roadside Conservation Committee, 2006). Since then the vegetation condition has declined, and is currently in degraded to completely degraded condition.

<sup>2</sup> Available at: <https://www.dplh.wa.gov.au/spp2-8>

<sup>3</sup> Available at: <http://www.epa.wa.gov.au/policies-guidance/wa-environmental-offsets-policy-2011-and-guidelines>

Available aerial imagery and spatial datasets indicate that the vegetation within the Mundijong Road reserve (including that proposed to be cleared) has connection with patches of remnant vegetation on adjacent private property and linkages with conservation areas. No mapped significant ecological linkages occur in the local area, although it is acknowledged that the vegetation within the broader road reserve has a part in providing a buffer to and maintaining connectivity between adjacent and nearby remnants.

Ten threatened, 13 priority, one 'conservation dependent' and one 'other specially protected' fauna, and 11 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.

One priority fauna and one species protected under an international agreement have been recorded approximately 0.1 km from the application area, however both are associated with aquatic habitats and were recorded from a man-made drain that traverses the Mundijong Road reserve; the application area is unlikely to comprise suitable habitat for these species.

Five threatened, three priority, one 'conservation dependent' and one 'other specially protected' fauna have been recorded within or in close proximity to the application area, within an adjacent remnant (noting that the vegetation is contiguous) and/or from similar vegetation/habitat as found within the application area:

- 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 and jarrah for foraging, roosting and breeding (Department of Environment and Conservation, 2008; Department of Parks and Wildlife, 2013; Department of Sustainability, Environment, Water, Population and Communities, 2012; Department of the Environment and Energy, 2017c; Department of the Environment, Water, Heritage and the Arts, 2009; Environmental Protection Authority, 2019; Johnstone et al., 2011; Shah, 2006; Valentine and Stock, 2008). These species have been recorded 2.5 km, 1.2 km and 2 km from the application area respectively. In relation to Carnaby's black cockatoo, the application area is approximately 2.4 km from the nearest confirmed roosting site, approximately 12 km from the nearest unconfirmed breeding sites, and approximately 256 km from a confirmed breeding site. 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 (confirmed during the site inspection), however have value as foraging and roosting habitat along with other suitable plants within the application area. This foraging habitat is considered to be of '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 (Department of the Environment and Energy, 2017).
- Numbat (*Myrmecobius fasciatus*; Endangered): Numbats have historically been present in a large variety of habitat types, including eucalypt forest, eucalypt woodland, *Acacia* woodland and *Triodia* grassland. Numbats need large areas of natural woodland vegetation because of their relatively large home ranges and limited food resources. Habitat that allows for natural expansion of the species distribution and habitat linking existing subpopulations are also considered critical (Department of Parks and Wildlife, 2017). The nearest record is approximately 5.5 km from the application area. Photographs provided by the applicant and available aerial photography indicate that the broader road reserve (including the application area) may be utilised by this species as a corridor for moving between remnants.
- Chuditch/western quoll (*Dasyurus geoffroii*; Vulnerable): Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The most dense populations have been found in riparian jarrah forest. Chuditch require adequate numbers of suitable den and refuge sites (horizontal hollow logs or earth burrows) and sufficient prey biomass (large invertebrates, reptiles and small mammals) to survive. They are capable of travelling long distances and have large home ranges, and even at their most abundant, chuditch are generally present in low numbers. For this reason they require habitats that are of a suitable size and not excessively fragmented (Department of Environment and Conservation, 2012a). The nearest record is approximately 2.5 km from the application area. Photographs provided by the applicant and available aerial photography indicate that the broader road reserve (including the application area) may be utilised by this species as a corridor.
- South-western brown bandicoot/quenda (*Isoodon fusciventer*; Priority 4): This species typically prefers dense understorey (Department of Biodiversity, Conservation and Attractions, 2017; Department of Environment and Conservation, 2012c). There are a number of records in close proximity to the application area, associated with the Mundijong Road reserve and adjacent remnant vegetation; the nearest record is approximately 90 m from the application area. Photographs provided by the applicant and available aerial photograph indicate that the broader road reserve (including the application area) may be utilised by this species as a corridor.

- Tammar wallaby (*Notamacropus eugenii* subsp. *derbianus*; Priority 4): This species typically prefers dense, low vegetation for daytime shelter and open grassy areas for feeding. This species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland (Department of Environment and Conservation, 2012d). The nearest record is approximately 50 m from the application area, of a deceased individual in the Mundijong Road reserve in 2015; the certainty of this sighting is stated as 'Not Sure'. It is possible that this individual was a western brush wallaby (*Notamacropus irma*; Priority 4), a species with a number of records in the local area. Photographs provided by the applicant and available aerial photograph indicate that the broader road reserve (including the application area) may be utilised by this species as a corridor.
- Western brush wallaby (*Notamacropus irma*; Priority 4): Optimum habitat is open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets, also found in some areas of mallee and heath-land, and is uncommon in karri forest (Department of Environment and Conservation, 2012e). The nearest record is approximately 4.3 km from the application area. Photographs provided by the applicant and available aerial photography indicate that the broader road reserve (including the application area) may be utilised by this species as a corridor.
- South-western brush-tailed phascogale/wambenger (*Phascogale tapoatafa* subsp. *wambenger*; Conservation Dependent): In the south-west, this species is typically found in jarrah forest, and has been observed in dry sclerophyll forests and open woodlands that contain hollow-bearing trees (Department of Environment and Conservation, 2012b). The nearest record is approximately 90 m from the application area, within the Mundijong Road reserve. Photographs provided by the applicant and available aerial photograph indicate that broader road reserve (including the application area) may be utilised by this species as a corridor.
- 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 4.4 km from the application area. This species is widespread and highly mobile, and is found in various habitats, and may utilise the application 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 that the understorey within the application appears to be sparse and dominated by weeds, and that native vegetation will remain within the road reserve, the application area is unlikely to be significant for the survival of indigenous fauna or be necessary for the maintenance of significant habitat.

There is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into remaining pockets of vegetation within the Mundijong Road reserve, which could impact on the quality of habitat values.

### Conclusion

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

It is considered that potential impacts to adjacent vegetation can be managed by requiring the applicant to take steps to minimise the risk of the introduction and spread of weeds and dieback. Rehabilitating within the Mundijong Road reserve a similar-sized area as that proposed to be cleared and incorporating the species proposed to be cleared will assist in improving the quality of the vegetation corridor. These will be required as a condition on the clearing permit.

### **3.2.2 Flora and vegetation**

#### Assessment

##### *Conservation-significant flora*

Eleven threatened and 37 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 28 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. Based on similar habitat qualities and/or close proximity, the application area might contain suitable habitat for four threatened and nine priority flora, and these are considered in further detail.

- *Lepidosperma rostratum* (Threatened): The Florabase website (Western Australian Herbarium, 1998-) indicates that this species is known from 31 recorded populations (some records may overlap) in the Shire of Victoria Plains to the Shire of Serpentine-Jarrahdale, typically associated with peaty sand and clay. Florabase



describes this species as a tufted perennial grass-like sedge to 0.5 m high. The nearest record is about 250 m from the application area, from a soil type mapped within the application area, associated with *Melaleuca* shubland in very good condition on clay on a seasonally wet poorly-drained flat in the Mundijong Road reserve.

- *Synaphea* sp. Pinjarra Plain (A.S. George 17182) (Threatened): The Florabase website indicates that this species is known from 63 recorded populations (some records may overlap) ranging from the Shire of Murray to the Shire of Capel, typically associated with grey/brown sandy loam, clayey sand or clayey loam and laterite on flat seasonally-wet areas. The nearest record is about 490 m from the application area, from a soil type mapped within the application area, associated with *Melaleuca* and open *Hakea* shubland on moist brown clay loam in a 'Flora Road' reserve.
- *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 about 100 m from the application area, from a soil type mapped within the application area, associated with dense heath on seasonally moist littered brown clay and a wetland.
- *Tetraria australiensis* (Threatened): The Florabase website indicates that this species is known from 37 recorded populations (some records may overlap) ranging from City of Canning to the City of Busselton and inland to the Shire of Wandering. Florabase describes this species as a tufted perennial grass-like sedge to 1 m high generally occurring in locally-abundant populations, typically associated with sandy, loamy and clayey soils on flat or gently sloping areas. The nearest record is about 590 m from the application area, from a soil type mapped within the application area, associated with sedgeland and edging marri woodland on grey sand over clay on winter wet flats.
- *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 about 160 m from the application area, from a soil type mapped within the application area, associated with dense heath on seasonally moist littered black clay and a wetland in the Mundijong Road reserve.
- *Angianthus drummondii* (Priority 3): The Florabase website indicates that this species is known from 19 recorded populations (some records may overlap) ranging from the Shire of Serpentine-Jarrahdale to the City of Busselton and inland to the Shire of West Arthur, typically associated with grey or brown clay soils and ironstone on seasonally wet flats. The nearest record is about 340 m from the application area, from a soil type mapped within the application area, associated with a diverse *Melaleuca* shrubland on brown clay on a seasonally wet poorly drained flat in a TEC on the southern side of the Mundijong Road reserve.
- *Babingtonia urbana* (Priority 3): The Florabase website indicates that this species is known from 26 recorded populations (some records may overlap) ranging from the Shire of Dandaragan to the Shire of Serpentine-Jarrahdale. The nearest record is adjacent to (approximately 10 m from) the application area, from a soil type mapped within the application area, associated with *Verticordia* and *Melaleuca* shrubland in a winter-wet depression and a TEC on the southern side of the Mundijong Road reserve. Noting that this record is a shrub to 1 m tall and 1.5 m wide, it is likely to have been identified during the site inspection if present within the application area.
- *Jacksonia gracillima* (Priority 3): The Florabase website indicates that this species is known from 30 recorded populations (some records may overlap) ranging from the City of Wanneroo to the City of Busselton. Florabase describes this species as a prostrate, spreading or scrambling shrub. The nearest record is adjacent to (about 3 m from) the application area, from a soil type mapped within the application area, associated with dense heath on seasonally moist littered black clay and a wetland in the Mundijong Road reserve.
- *Schoenus capillifolius* (Priority 3): The Florabase website indicates that this species is known from 27 recorded populations (some records may overlap) ranging from the Shire of Goomalling to the Shire of Dardanup, also from some inland areas, typically associated with brown mud and claypans. The nearest record is about 340 m from the application area, from a soil type mapped within the application area, associated with *Melaleuca* shubland in very good condition on clay on a seasonally wet poorly-drained flat in the Mundijong Road reserve.
- *Schoenus* sp. Waroona (G.J. Keighery 12235) (Priority 3): The Florabase website indicates that this species is known from 11 recorded populations (some records may overlap) ranging from the City of Swan to the Shire of Harvey, typically associated with clay or sandy clay on winter-wet flats. The nearest record is about 340 m from the application area, from a soil type mapped within the application area, associated with *Melaleuca* shubland in very good condition on clay on a seasonally wet poorly-drained flat in the Mundijong Road reserve.
- *Stylidium aceratum* (Priority 3): The Florabase website indicates that this species is known from 26 recorded populations (some records may overlap) ranging from the Shire of Dandaragan to the Shire of Waroona,

typically associated with sandy soils in swamp heathland. The nearest record is about 120 m from the application area, from a soil type mapped within the application area, associated with shubland in very good condition on clay on a seasonally wet poorly-drained flat and a TEC on the southern side of the Mundijong Road reserve.

- *Aponogeton hexatepalus* (Priority 4): The Florabase website indicates that this species is known from 30 recorded populations (some records may overlap) ranging from the City of Canning to the Shire of Bridgetown-Greenbushes, typically associated with mud, claypans and freshwater ponds and rivers. The nearest record is about 310 m from the application area, from a soil type mapped within the application area, associated with a diverse *Melaleuca* shrubland on red loam and a seasonal wetland on the northern side of the Mundijong Road reserve.

Photographs from the site inspection indicate the presence of standing water within the application area (see Appendix D), associated with largely bare ground and introduced grasses. Noting the composition and condition of the vegetation proposed to be cleared, in particular that the ground layer within the application area is dominated by grassy weeds, it is considered that the above conservation-significant flora are unlikely to be occur within the application area.

#### *Conservation-significant ecological communities*

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

The vegetation within the application area is unlikely to be representative of most of the TECs and PECs recorded within the local area. However, the application area is in close proximity to four TECs which occur on soil types mapped within the application area, and these are considered in further detail.

- Herb rich shrublands in clay pans (floristic community type<sup>4</sup> (FCT) 8) (Threatened): The clay pan basins and clay flats of south-western WA are collectively termed clay pans, and occur where clay soils form an impermeable layer close to the surface. Wetlands in clay pans rely on rainfall and surface runoff to fill and are probably not connected to groundwater. These wetlands contain a rich suite of geophytes and annual species that flower at different times as the clay pans dry towards summer. The clay pans are the most diverse of the Swan Coastal Plain wetlands and contain high numbers of local endemics (Department of Biodiversity, Conservation and Attractions, 2019). This TEC is a component of the Commonwealth-listed 'Clay Pans of the Swan Coastal Plain' threatened ecological community under the *Environment Protection and Biodiversity Conservation Act 1999*. The nearest record is approximately 0.01 km from the application area, from a soil type mapped within the application area, within the southern portion of the Mundijong Road reserve opposite the eastern portion of the application area.
- *Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands, Swan Coastal Plain (FCT 3c) (Threatened): This TEC is located on heavy soils of the eastern side of the Swan Coastal Plain between Bullsbrook and Stratham. Dominant species in the TEC are marri and grasstree/balga (*Xanthorrhoea preissii*), and occasionally wandoo (*Eucalyptus wandoo*), typically over *Gompholobium marginatum*, white myrtle (*Hypocalymma angustifolium*) and couch honeypot (*Banksia dallanneyi*), over *Burchardia congesta*, *Cyathochaeta avenacea*, foxtail mulga grass (*Neurachne alopecuroidea*), and a number of other herb, grass and sedge species (Department of the Environment and Energy, 2017b; Department of Biodiversity, Conservation and Attractions, 2020b). The nearest record is approximately 0.09 km from the application area, within the southern portion of the Mundijong Road reserve. Available aerial imagery indicates that the application area and the TEC are separated by a drain corridor and do not have contiguous vegetation.
- *Corymbia calophylla* - *Kingia australis* woodlands on heavy soils, Swan Coastal Plain (FCT 3a) (Threatened): This TEC is located on heavy soils of the eastern side of the Swan Coastal Plain between Chittering and Capel. Typical native flora taxa in the TEC are: marri, over couch honeypot, (pepper and salt (*Philothea spicata*), *Kingia australis* and grasstree/balga, over *Cyathochaeta avenacea*, *Dampiera linearis*, *Haemodorum laxum*, *Desmocladius fasciculatus*, semaphore sedge (*Mesomelaena tetragona*) and *Tetralix octandra* (Department of the Environment and Energy, 2017a; Department of Biodiversity, Conservation and Attractions, 2020a). The nearest record is approximately 0.5 km from the application area, within the southern portion of the Mundijong Road reserve. Available aerial imagery indicates that the application area and the TEC are connected by vegetation within the broader road reserve.

---

<sup>4</sup> 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.

- Dense shrublands on clay flats (FCT 9) (Threatened): refer description for 'Herb rich shrublands in clay pans' TEC above. The nearest record is about 0.32 km from the application area, from a soil type mapped within the application area, within the northern portion of the Mundijong Road reserve wholly surrounded by an occurrence of the '*Corymbia calophylla* - *Xanthorrhoea preissii* woodlands and shrublands' TEC.

The application area includes marri, however noting the different floristic composition of these TECs compared with the vegetation proposed to be cleared, these TECs are unlikely to occur within the application area. Further, the vegetation proposed to be cleared is unlikely to be necessary for the maintenance of these TECs.

#### Conclusion

From the above, the vegetation within the application area is unlikely to include or be necessary for the continued existence of threatened or priority flora, or be representative of or necessary for the maintenance of a TEC or PEC. 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 TECs in close proximity.

As set out under section 3.2.1, it is considered that impacts to adjacent vegetation can be managed 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 Significance as a remnant**

#### Assessment

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 (EPA, 2008).

The application area is located within the Perth Metropolitan Region Scheme boundary, which the EPA recognises to be a constrained area within which a minimum 10 per cent representation threshold for ecological communities is recommended (EPA, 2008).

The mapped Vegetation Complex has less than 10 per cent of its pre-European extent remaining (at 5.09 per cent), and is considered to be extensively cleared. The local area retains approximately 23.55 per cent of its pre-European native vegetation cover, and is also considered to be extensively cleared.

The application area does not include a significant ecological linkage, is unlikely to be required to maintain ecosystem services (such as hydrological processes) or compensate for a high degree of fragmentation, and with regard for the composition and condition of the vegetation, is unlikely to be biologically diverse. However, the application area includes vegetation that comprises habitat for threatened fauna (specifically, foraging habitat for black cockatoos) and is below the national target and objective for biodiversity conservation. On this basis, the application area is considered to be a significant remnant.

#### Conclusion

For the reasons set out above, it is considered that the application area is significant as a remnant in an extensively cleared area. Noting the extent of the proposed clearing, in particular that it involves individual trees and shrubs along the northern portion of the road reserve adjacent to an existing road, and with regard for the applicant's avoidance and minimisation measures, it is considered that the impact of the proposed clearing does not constitute a significant residual impact. Rehabilitating within the Mundijong Road reserve a similar-sized area as that proposed to be cleared and incorporating the species proposed to be cleared will assist in minimising impacts from the loss of native vegetation.

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

#### Assessment

The application area is located within a wetland (palusplain), within the broader Keysbrook consanguineous wetland suite. The portions of the wetland in which the application area is located have 'conservation' and 'multiple use' management categories. The portions of the Mundijong Road reserve in which the application area is located are adjacent to man-made drains, and a natural watercourse traverses the Mundijong Road reserve approximately 68 m from the central portion of the application area. 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, watercourses 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 and watercourses. No clearing permit conditions are necessary in relation to this matter.

### **3.2.5 Conservation areas**

#### Assessment

The application area is wholly located within Bush Forever area 360, which extends across both sides of the Mundijong Road reserve between Wright Road and Duckpond Road. The western half of the application area also overlaps a portion of the Mundijong Road reserve that is subject to environmental conditions relating to Bush Forever under the Metropolitan Region Scheme.

State Planning Policy 2.8 *Bushland Policy for the Perth Metropolitan Region* sets out that proposals and decision-making in respect of Bush Forever areas on government lands or public infrastructure (including roads) should, among other things, seek to protect regionally significant bushland as a priority, except where a proposal or decision 'is consistent with the overall purpose and intent of an existing reserve, existing approved uses and/or existing planning or environmental commitments or approvals, in particular, existing reserves for roads (regional or local), railways, pipelines, water or drainage services and any associated emergency maintenance works, with any impacts minimised and managed, where practical, in accordance with existing environmental management plan best practice requirements' (Western Australian Planning Commission, 2010). The proposed clearing is consistent with the purpose of the road reserve. The Policy also sets out that unavoidable adverse impacts on regionally significant bushland within a Bush Forever area should be offsets at a ratio of at least 1:1 in habitat hectares.

The Department of Planning, Lands and Heritage (DPLH) was invited to provide advice on this matter. DPLH noted that the proposed clearing would not impact vegetation in good or better condition or TECs in the southern portion of the road reserve, and advised that it had no objection to the proposed clearing (DPLH, 2020).

With regard for the extent of the proposed clearing, the composition and condition of the vegetation proposed to be cleared, and the applicant's measures to avoid and minimise impacts, it is considered that the proposed clearing is unlikely to have a significant environmental impact on Bush Forever area 360 and does not constitute a significant residual impact in this regard, and that an offset is not required in this instance. However, it is considered that revegetation within the same road reserve, of a similar-sized area as that proposed to be cleared and incorporating the species proposed to be cleared, will mitigate impacts to the Bush Forever area consistent with State Planning Policy 2.8.

A number of nature reserves, conservation parks, national parks, State forest, Crown freehold and other lands managed by the Department of Biodiversity, Conservation and Attractions (DBCA), as well as privately-managed conservation areas, occur within the local area. The nearest of these is a privately-managed conservation covenant site and an un-named Nature Reserve (colloquially known as 'Lowlands'), located approximately 1.5 km and 1.6 km from the application area respectively.

#### Conclusion

From the above, the application area is within and adjacent to a conservation area. There is potential that the proposed clearing activities could result in the introduction or spread of weeds and dieback into adjacent vegetation, which could impact on the environmental values of this conservation area.

As set out under section 3.2.1, it is considered that impacts to adjacent vegetation can be managed by requiring the applicant to take steps to minimise the risk of the introduction and spread of weeds and dieback. It is also considered that impacts to Bush Forever area 360 can be addressed through revegetation within the same road reserve, of a similar-sized area as that proposed to be cleared and incorporating the species proposed to be cleared. These will be required as conditions on the clearing permit.

### **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 'Mandogalup Swamp/Spectacles', located approximately 2 km from the application area. Given the separation distance, the proposed clearing is unlikely to impact on this site. In any event, it is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972 (WA)* and ensure that no Aboriginal sites of significance are damaged through the clearing process.

The applicant has six recently granted clearing permits at the time of this decision, also for the purpose of road upgrades:

- Clearing Permit CPS 8895/1 to clear 0.31472 ha of marri, flooded gum (*Eucalyptus rudis*), moonah, WA Christmas tree (*Nuytsia floribunda*) and stinkwood (*Jacksonia* sp.) in the Punrak Road reserve (granted on 29 June 2020)
- Clearing Permit CPS 8896/1 to clear 0.189 ha of swamp sheoak and robin redbreast bush (*Melaleuca lateritia*) in the Kargotich Road reserve (granted on 30 June 2020)
- Clearing Permit CPS 8903/1 to clear 0.188 ha of marri, moonah, flooded gum and swamp cypress (*Callitris pyramidalis*) in the Hopkinson Road reserve (granted on 3 July 2020)
- Clearing Permit CPS 8918/1 to clear 0.78 ha of native vegetation in the Nettleton Road reserve (granted 10 August 2020)
- Clearing Permit CPS 8919/1 to clear 0.2267 ha (as revised) of native vegetation in the Anketell Road reserve (granted 19 August 2020)
- Clearing Permit CPS 8920/1 to clear 0.217 ha of marri, flooded gum, moonah, swamp sheoak and orange wattle (*Acacia saligna*) in the Keirnan Street reserve (granted 10 August 2020).

The combined extent of clearing proposed by the current and above applications is approximately 2.42 ha, of which more than 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 (DWER) at the time of this assessment, and described the key characteristics of the application area. This information was used to inform the assessment of the clearing against the clearing principles (see Appendix B).

### Site characteristics

Site characteristic	Details			
Local context	<p>The application area comprises selected trees and shrubs adjacent to an existing road formation, within a broader road reserve that has a part in maintaining connectivity between remnants in the local area.</p> <p>The local area considered in the assessment of this application is defined as a 10-kilometre (km) radius from the perimeter of the application area, and retains approximately 23.55 per cent of native vegetation cover.</p>			
Vegetation description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> <li>• Guildford Complex, described as a mixture of open forest to tall open forest of marri (<i>Corymbia calophylla</i>) - wandoo (<i>Eucalyptus wandoo</i>) - jarrah (<i>Eucalyptus marginata</i>) 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>).</li> </ul> <p>Vegetation composition was determined from supporting information (photographs) provided by the applicant and the findings of a site inspection undertaken by DWER. The application form states that the vegetation proposed to be cleared includes marri, moonah (<i>Melaleuca preissiana</i>) and swamp sheoak (<i>Casuarina obesa</i>). A site inspection undertaken by DWER also noted the presence of jarrah and sheoak (<i>Allocasuarina fraseriana</i>) within portions of the road reserve (including the application area), and that the ground layer is dominated by grassy weeds (DWER, 2020).</p>			
Vegetation condition	<p>Vegetation condition was determined from available aerial imagery, photographs provided by the applicant, and the findings of the site inspection. The vegetation proposed to be cleared is considered to be in degraded to completely degraded condition on the scale described by Keighery (1994) (see Appendix C).</p>			
Soil description	<p>The application area is mapped as:</p> <ul style="list-style-type: none"> <li>• Pinjarra P4 Phase (213Pj_P4), described as poorly drained flats, sometimes with gilgai microrelief and with moderately deep to deep black, olive grey and some yellowish brown cracking clays and less commonly non-cracking friable clays with generally acidic subsoils (mapped across approximately 0.189 hectares (ha) / 37.2 per cent of the application area)</li> <li>• Pinjarra P1d Phase (213Pj_P1d), described as flat to very gently undulating plain with deep acidic mottled yellow duplex (or 'effective duplex') soils comprising shallow pale sand to sandy loam over clay; imperfect to poorly drained and moderately susceptible to salinity (mapped across approximately 0.187 ha / 36.8 per cent of the application area)</li> <li>• Pinjarra P3 Phase (213Pj_P3), described as flat to very gently undulating plain with deep, imperfect to poorly drained acidic gradational yellow or grey-brown earths and mottled yellow duplex soils, with loam to clay loam surfaces (mapped across approximately 0.132 ha / 26 per cent of the application area).</li> </ul>			
Land degradation risk	Mapped land degradation risk factors (as percentage of map unit)			
	<b>Risk categories</b>	<b>213Pj_P4</b>	<b>213Pj_P1d</b>	<b>213Pj_P3</b>
	Wind erosion	<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% has a high to extreme risk	<3% has a high to extreme risk	<3% has a high to extreme risk
Salinity	10-30% has a moderate to high risk	50-70% has a moderate to high risk	3-10% has a moderate to high risk	

Site characteristic	Details																																	
	Subsurface Acidification	10-30% has a high risk	<3% has a high risk	<3% has a high risk																														
	Flood risk	<3% has a moderate to high risk	<3% has a moderate to high risk	<3% has a moderate to high risk																														
	Waterlogging	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	<3% has a high to extreme risk	<3% has a high to extreme risk	<3% has a high to extreme risk																														
Waterbodies	<p>The application area is located within the broader Keysbrook consanguineous wetland suite. A man-made drain is located adjacent to the portions of the Mundijong Road reserve in which the application area is located, and a non-perennial minor river traverses the Mundijong Road reserve approximately 68 metres (m) from the central portion of the application area. A further 37 mapped lakes, wetlands, rivers and other water bodies occur within the local area. Those within two km of the application area are outlined below.</p> <table border="1" data-bbox="378 659 1435 1283"> <thead> <tr> <th data-bbox="378 659 846 732">Type of inland water</th> <th data-bbox="846 659 1289 732">Description</th> <th data-bbox="1289 659 1435 732">Proximity (m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="378 732 846 806">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="846 732 1289 806">Multiple Use - Palusplain</td> <td data-bbox="1289 732 1435 806">0</td> </tr> <tr> <td data-bbox="378 806 846 848">Rivers</td> <td data-bbox="846 806 1289 848">Manjedal Brook: Minor Trib</td> <td data-bbox="1289 806 1435 848">136</td> </tr> <tr> <td data-bbox="378 848 846 921">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="846 848 1289 921">Conservation - Palusplain</td> <td data-bbox="1289 848 1435 921">154</td> </tr> <tr> <td data-bbox="378 921 846 995">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="846 921 1289 995">Multiple Use - Sumpland</td> <td data-bbox="1289 921 1435 995">251</td> </tr> <tr> <td data-bbox="378 995 846 1068">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="846 995 1289 1068">Conservation - Sumpland</td> <td data-bbox="1289 995 1435 1068">682</td> </tr> <tr> <td data-bbox="378 1068 846 1142">Geomorphic Wetlands (Classification), Swan Coastal Plain</td> <td data-bbox="846 1068 1289 1142">Resource Enhancement - Palusplain</td> <td data-bbox="1289 1068 1435 1142">1207</td> </tr> <tr> <td data-bbox="378 1142 846 1184">Rivers</td> <td data-bbox="846 1142 1289 1184">Gingagup Brook: Insignificant Trib</td> <td data-bbox="1289 1142 1435 1184">1610</td> </tr> <tr> <td data-bbox="378 1184 846 1226">Rivers</td> <td data-bbox="846 1184 1289 1226">: Insignificant Trib</td> <td data-bbox="1289 1184 1435 1226">1835</td> </tr> <tr> <td data-bbox="378 1226 846 1283">Rivers</td> <td data-bbox="846 1226 1289 1283">Medulla Brook: Major Trib</td> <td data-bbox="1289 1226 1435 1283">1910</td> </tr> </tbody> </table>				Type of inland water	Description	Proximity (m)	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Palusplain	0	Rivers	Manjedal Brook: Minor Trib	136	Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Palusplain	154	Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Sumpland	251	Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Sumpland	682	Geomorphic Wetlands (Classification), Swan Coastal Plain	Resource Enhancement - Palusplain	1207	Rivers	Gingagup Brook: Insignificant Trib	1610	Rivers	: Insignificant Trib	1835	Rivers	Medulla Brook: Major Trib	1910
Type of inland water	Description	Proximity (m)																																
Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Palusplain	0																																
Rivers	Manjedal Brook: Minor Trib	136																																
Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Palusplain	154																																
Geomorphic Wetlands (Classification), Swan Coastal Plain	Multiple Use - Sumpland	251																																
Geomorphic Wetlands (Classification), Swan Coastal Plain	Conservation - Sumpland	682																																
Geomorphic Wetlands (Classification), Swan Coastal Plain	Resource Enhancement - Palusplain	1207																																
Rivers	Gingagup Brook: Insignificant Trib	1610																																
Rivers	: Insignificant Trib	1835																																
Rivers	Medulla Brook: Major Trib	1910																																
Conservation areas	<p>There are 88 records of conservation areas within the local area, comprising of lands managed by the Department of Biodiversity, Conservation and Attractions (DBCA), privately-managed conservation areas, and Bush Forever areas/nominated sites (some of these overlap). Those within two km of the application area are outlined below.</p> <table border="1" data-bbox="378 1409 1435 1713"> <thead> <tr> <th data-bbox="378 1409 792 1482">Theme</th> <th data-bbox="792 1409 1289 1482">Description</th> <th data-bbox="1289 1409 1435 1482">Proximity (m)</th> </tr> </thead> <tbody> <tr> <td data-bbox="378 1482 792 1524">Bushforever</td> <td data-bbox="792 1482 1289 1524">360</td> <td data-bbox="1289 1482 1435 1524">0</td> </tr> <tr> <td data-bbox="378 1524 792 1566">DBCA Covenants</td> <td data-bbox="792 1524 1289 1566">H833333: 05/10/2001</td> <td data-bbox="1289 1524 1435 1566">1536</td> </tr> <tr> <td data-bbox="378 1566 792 1608">Bushforever</td> <td data-bbox="792 1566 1289 1608">70</td> <td data-bbox="1289 1566 1435 1608">1550</td> </tr> <tr> <td data-bbox="378 1608 792 1650">DBCA Managed Lands</td> <td data-bbox="792 1608 1289 1650">Conservation Commission Of WA</td> <td data-bbox="1289 1608 1435 1650">1658</td> </tr> <tr> <td data-bbox="378 1650 792 1713">Bushforever</td> <td data-bbox="792 1650 1289 1713">368</td> <td data-bbox="1289 1650 1435 1713">1676</td> </tr> </tbody> </table>				Theme	Description	Proximity (m)	Bushforever	360	0	DBCA Covenants	H833333: 05/10/2001	1536	Bushforever	70	1550	DBCA Managed Lands	Conservation Commission Of WA	1658	Bushforever	368	1676												
Theme	Description	Proximity (m)																																
Bushforever	360	0																																
DBCA Covenants	H833333: 05/10/2001	1536																																
Bushforever	70	1550																																
DBCA Managed Lands	Conservation Commission Of WA	1658																																
Bushforever	368	1676																																
Climate and landform	<p>Rainfall: 1,000 and 900 millimetres (mm) per annum  Evapotranspiration: 800 and 900 mm per annum  Geology: Alluvial, shoreline, and aeolian deposits  Acid Sulfate Soil Risk: Moderate to low risk  Groundwater Salinity (Total Dissolved Solids): 1,000-3,000 milligrams per litre</p>																																	

Site characteristic	Details
	The application area is on a broad flat. Topography is approximately 10-20 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 under the <i>Rights in Water and Irrigation Act 1914</i> .

### Flora, fauna and ecosystem analysis

Ecological Linkages: No significant ecological linkages are mapped within the local area.<sup>5</sup>

Roadside Conservation Committee roadside conservation values: Low, Medium high (September 2005).

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

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<b>Fauna</b>					
Tammar wallaby ( <i>Notamacropus eugenii</i> subsp. <i>derbianus</i> ; Priority 4)	Approximately 0.05 km			Y	N/A
South-western brown bandicoot/quenda ( <i>Isoodon fusciventer</i> ; Priority 4)	Approximately 0.09 km			Y	N/A
South-western brush-tailed phascogale/wambenger ( <i>Phascogale tapoatafa</i> subsp. <i>wambenger</i> ; Conservation Dependent)	Approximately 0.09 km			Y	N/A
Blue-billed duck ( <i>Oxyura australis</i> ; Priority 4)	Approximately 0.1 km			N	N/A
Common sandpiper ( <i>Actitis hypoleucos</i> ; International Agreement)	Approximately 0.1 km			N	N/A
Baudin's black cockatoo ( <i>Calyptorhynchus baudinii</i> ; Endangered)	Approximately 1.2 km		Y	Y	N/A
Forest red-tailed black cockatoo ( <i>Calyptorhynchus banksii</i> subsp. <i>naso</i> ; Vulnerable)	Approximately 2 km		Y	Y	N/A
Carnaby's black cockatoo ( <i>Calyptorhynchus latirostris</i> ; Endangered)	Approximately 2.5 km		Y	Y	N/A
Chuditch/western quoll ( <i>Dasyurus geoffroyi</i> ; Vulnerable)	Approximately 2.5 km			Y	N/A
Swan Coastal Plain shield-backed trapdoor spider ( <i>Idiosoma sigillatum</i> ; Priority 3)	Approximately 2.6 km			N	N/A
Curlew sandpiper ( <i>Calidris ruficollis</i> ; International Agreement)	Approximately 2.9 km			N	N/A

<sup>5</sup> As described in: Molloy, S., Wood, J., Hall, S., Wallrodt, S. and Whisson, G. (2009) *South West Regional Ecological Linkages Technical Report*. Western Australian Local Government Association (WALGA) and Department of Environment and Conservation (DEC), Perth.



Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Common greenshank ( <i>Tringa nebularia</i> ; International Agreement)	Approximately 2.9 km			N	N/A
Perth slider/lined skink ( <i>Lerista lineata</i> ; Priority 3)	Approximately 3 km			N	N/A
Black-striped burrowing snake ( <i>Neelaps calonotus</i> ; Priority 3)	Approximately 3 km			N	N/A
Curlew sandpiper ( <i>Calidris ferruginea</i> ; Critically Endangered)	Approximately 3.2 km			N	N/A
Wood sandpiper ( <i>Tringa glareola</i> ; International Agreement)	Approximately 3.2 km			N	N/A
Western brush wallaby ( <i>Notamacropus irma</i> ; Priority 4)	Approximately 4.3 km			Y	N/A
Peregrine Falcon ( <i>Falco peregrinus</i> ; Other Specially Protected)	Approximately 4.4 km			Y	N/A
Caspian tern ( <i>Hydroprogne caspia</i> ; International Agreement)	Approximately 4.6 km			N	N/A
Sharp-tailed sandpiper ( <i>Calidris acuminata</i> ; International Agreement)	Approximately 4.8 km			N	N/A
Long-toed stint ( <i>Calidris subminuta</i> ; International Agreement)	Approximately 4.9 km			N	N/A
Fork-tailed swift/Pacific swift ( <i>Apus pacificus</i> ; International Agreement)	Approximately 5 km			N	N/A
Glossy ibis ( <i>Plegadis falcinellus</i> ; International Agreement)	Approximately 5 km			N	N/A
Carter's freshwater mussel ( <i>Westralunio carteri</i> ; Vulnerable)	Approximately 5.4 km			N	N/A
Crested tern ( <i>Thalasseus bergii</i> ; International Agreement)	Approximately 5.4 km			N	N/A
Numbat ( <i>Myrmecobius fasciatus</i> ; Endangered)	Approximately 5.5 km			Y	N/A
Inornate trapdoor spider (northern jarrah forest) ( <i>Euoplos inornatus</i> ; Priority 3)	Approximately 5.8 km			N	N/A
Water-rat/rakali ( <i>Hydromys chrysogaster</i> ; Priority 4)	Approximately 6.3 km			N	N/A
Marsh sandpiper/little greenshank ( <i>Tringa stagnatilis</i> ; International Agreement)	Approximately 7.2 km			N	N/A
Quokka ( <i>Setonix brachyurus</i> ; Vulnerable)	Approximately 7.6 km			N	N/A
Southern death adder ( <i>Acanthophis antarticus</i> ; Priority 3)	Approximately 8 km			N	N/A
Graceful sun-moth ( <i>Synemon gratiosa</i> ; Priority 4)	Approximately 9.3 km			N	N/A
Hooded dotterel/hooded plover ( <i>Thinornis rubricollis</i> ; Priority 4)	Approximately 9.3 km			N	N/A
Pouched lamprey ( <i>Geotria australis</i> ; Priority 3)	Approximately 9.5 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?
Eastern curlew ( <i>Numenius madagascariensis</i> ; Critically Endangered)	Approximately 9.6 km			N	N/A
Western ringtail possum ( <i>Pseudocheirus occidentalis</i> ; Critically Endangered)	Approximately 9.8 km			N	N/A
<b>Flora</b>					
<i>Jacksonia gracillima</i> (Priority 3)	Adjacent (approximately 0.003 km)	Y			N/A
<i>Babingtonia urbana</i> (Priority 3)	Adjacent (approximately 0.01 km)	Y	N		N/A
<i>Synaphea</i> sp. Serpentine (G.R. Brand 103) (Threatened)	Approximately 0.1 km	Y	N		N/A
<i>Stylidium aceratum</i> (Priority 3)	Approximately 0.12 km	Y			N/A
<i>Calectasia grandiflora</i> (Priority 2)	Approximately 0.16 km	Y			N/A
<i>Lepidosperma rostratum</i> (Threatened)	Approximately 0.25 km	Y	N		N/A
<i>Aponogeton hexatepalus</i> (Priority 4)	Approximately 0.31 km	Y		N	N/A
<i>Angianthus drummondii</i> (Priority 3)	Approximately 0.34 km	Y	N		N/A
<i>Schoenus capillifolius</i> (Priority 3)	Approximately 0.34 km	Y	N		N/A
<i>Schoenus</i> sp. Waroona (G.J. Keighery 12235) (Priority 3)	Approximately 0.34 km	Y	N		N/A
<i>Synaphea</i> sp. Pinjarra Plain (A.S. George 17182) (Threatened)	Approximately 0.49 km	Y	N		N/A
<i>Tetraria australiensis</i> (Threatened)	Approximately 0.59 km	Y	N		N/A
<i>Acacia lasiocarpa</i> var. <i>bracteolata</i> long peduncle variant (G.J. Keighery 5026) (Priority 1)	Approximately 2.2 km	Y		N	N/A
<i>Johnsonia pubescens</i> subsp. <i>cygnorum</i> (Priority 2)	Approximately 2.4 km	N		N	N/A
<i>Diuris purdiei</i> (Threatened)	Approximately 2.5 km	N		N	N/A
<i>Boronia juncea</i> subsp. <i>juncea</i> (Priority 1)	Approximately 3 km	N		N	N/A
<i>Cyathochaeta teretifolia</i> (Priority 3)	Approximately 3 km	N		N	N/A
<i>Dillwynia dillwynioides</i> (Priority 3)	Approximately 3 km	N		N	N/A
<i>Amanita fibrillopes</i> (Priority 3)	Approximately 3.2 km	N		N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<i>Stylidium longitubum</i> (Priority 4)	Approximately 3.2 km	N		N	N/A
<i>Amanita wadjukiorum</i> (Priority 3)	Approximately 3.4 km	N		N	N/A
<i>Caladenia huegelii</i> (Threatened)	Approximately 3.5 km	N		N	N/A
<i>Acacia horridula</i> (Priority 3)	Approximately 4.3 km	N		N	N/A
<i>Amanita carneiphylla</i> (Priority 3)	Approximately 4.5 km	N		N	N/A
<i>Parsonsia diaphanophleba</i> (Priority 4)	Approximately 4.6 km	N		N	N/A
<i>Carex tereticaulis</i> (Priority 3)	Approximately 4.8 km	N		N	N/A
<i>Eucalyptus rudis</i> subsp. <i>cratyantha</i> (Priority 4)	Approximately 5 km	N		N	N/A
<i>Verticordia lindleyi</i> subsp. <i>lindleyi</i> (Priority 4)	Approximately 5 km	N		N	N/A
<i>Drakaea elastica</i> (Threatened)	Approximately 5.6 km	N		N	N/A
<i>Dodonaea hackettiana</i> (Priority 4)	Approximately 5.6 km	N		N	N/A
<i>Tetraria</i> sp. <i>chandala</i> (G.J. Keighery 17055) (Priority 2)	Approximately 6.2 km	N		N	N/A
<i>Diuris micrantha</i> (Threatened)	Approximately 6.5 km	N		N	N/A
<i>Amanita wadulawitu</i> (Priority 2)	Approximately 6.6 km	N		N	N/A
<i>Pithocarpa corymbulosa</i> (Priority 3)	Approximately 7 km	N		N	N/A
<i>Stylidium ireneae</i> (Priority 4)	Approximately 7 km	N		N	N/A
<i>Eryngium pinnatifidum</i> subsp. <i>palustre</i> (G.J. Keighery 13459) (Priority 3)	Approximately 7.2 km	N			N/A
<i>Drosera occidentalis</i> (Priority 4)	Approximately 7.2 km	N			N/A
<i>Millotia tenuifolia</i> var. <i>laevis</i> (Priority 2)	Approximately 7.8 km	N		N	N/A
<i>Acacia oncinophylla</i> subsp. <i>patulifolia</i> (Priority 4)	Approximately 7.8 km	N		N	N/A
<i>Verticordia plumosa</i> var. <i>ananeotes</i> (Threatened)	Approximately 7.9 km	N		N	N/A
<i>Isopogon autumnalis</i> (Priority 3)	Approximately 7.9 km	N		N	N/A
<i>Synaphea</i> sp. Fairbridge Farm (D. Papenfus 696) (Threatened)	Approximately 8 km	N		N	N/A

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
<i>Stylidium paludicola</i> (Priority 3)	Approximately 8.2 km	N		N	N/A
<i>Synaphea odocoileops</i> (Priority 1)	Approximately 8.3 km	N		N	N/A
<i>Schoenus pennisetis</i> (Priority 3)	Approximately 8.5 km	N		N	N/A
<i>Senecio leucoglossus</i> (Priority 4)	Approximately 8.7 km	N		N	N/A
<i>Lasiopetalum pterocarpum</i> (Threatened)	Approximately 8.9 km	N		N	N/A
<i>Amanita kalamundae</i> (Priority 3)	Approximately 9.3 km	N		N	N/A
<b>Ecological communities</b>					
Herb rich shrublands in clay pans (floristic community type <sup>6</sup> (FCT) 8) (Threatened)	Approximately 0.01 km	Y	N	N	N/A
<i>Corymbia calophylla</i> – <i>Xanthorrhoea preissii</i> woodlands and shrublands, Swan Coastal Plain (FCT 3c) (Threatened)	Approximately 0.09 km	Y	N		N/A
Dense shrublands on clay flats (FCT 9) (Threatened)	Approximately 0.32 km	Y	N	N	N/A
<i>Corymbia calophylla</i> – <i>Kingia australis</i> woodlands on heavy soils, Swan Coastal Plain (FCT 3a) (Threatened)	Approximately 0.5 km	Y	N No <i>Kingia australis</i>		N/A
Banksia Dominated Woodlands of the Swan Coastal Plain IBRA region (Priority 3)	Approximately 1.6 km	Y	N		N/A
Communities of Tumulus Springs (Organic Mound Springs, Swan Coastal Plain) (Threatened)	Approximately 2.1 km	N	N		N/A
Low lying <i>Banksia attenuata</i> woodlands or shrublands (Priority 3)	Approximately 2.6 km	N	N		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 2.9 km	N	N		N/A
<i>Banksia attenuata</i> and/or <i>Eucalyptus marginata</i> woodlands of the eastern side of the Swan Coastal Plain (FCT 20b) (Threatened)	Approximately 2.9 km	N	N		N/A
Southern wet shrublands, Swan Coastal Plain (FCT 2) (Threatened)	Approximately 3.8 km	N	N		N/A
Tuart ( <i>Eucalyptus gomphocephala</i> ) woodlands and forests of the Swan Coastal Plain (Priority 3)	Approximately 5.5 km	N	N		N/A

<sup>6</sup> Floristic community types as described in: Gibson, N., Keighery, B.J., Keighery, G.J., Burbidge, A.H. and Lyons, M.N. (1994) *A Floristic Survey of the Southern Swan Coastal Plain*. Department of Conservation and Land Management and Conservation Council of Western Australia, Perth, Western Australia.

Species / Ecological Community	Distance to nearest record (km)	Suitable soil type?	Suitable vegetation type?	Suitable habitat features?	Surveys adequate to identify?
Shrublands on dry clay flats (FCT 10a) (Threatened)	Approximately 7.3 km	N	N		N/A
Herb rich saline shrublands in clay pans (FCT 7) (Threatened)	Approximately 7.3 km	N	N		N/A
Northern Spearwood shrublands and woodlands (FCT 24) (Priority 3)	Approximately 8.1 km	N	N		N/A
Woodlands over sedgeland in Holocene dune swales of the southern Swan Coastal Plain (Threatened)	Approximately 9.3 km	N	N		N/A

### Vegetation extent

	Pre-European (ha)	Current extent (ha)	Current extent (%)	Current extent (ha) in DBCA <sup>7</sup> -managed lands	Current extent (%) in DBCA-managed lands
<b>IBRA<sup>8</sup> bioregion (as at March 2019)</b>					
Swan Coastal Plain	1,501,221.93	579,813.47	38.62	269,964.76	17.98
<b>Vegetation Complex</b>					
Guildford Complex	90,513.13	4,607.91	5.09	390.92	0.32
<b>Local area</b>					
10-kilometre radius	43,988,28	10,363.04	23.55	N/a	N/a

<sup>7</sup> Department of Biodiversity, Conservation and Attractions. Current extent as proportion of pre-European extent within DBCA-managed lands.

<sup>8</sup> Interim Biogeographic Regionalisation for Australia.

## Appendix B – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Principle (a):</u> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”<sup>9</sup></p> <p><u>Assessment:</u> The vegetation proposed to be cleared is limited to individual trees and shrubs over a ground layer dominated by grassy weeds, and is considered to be in degraded to completely degraded condition. The application area is in close proximity to four TECs which occurs on the same soil types, however is unlikely to be representative of these TECs. None of the threatened and priority flora recorded in the local area are likely to occur within the application area. The application area is unlikely to comprise significant habitat for fauna.</p>	Not likely to be at variance	Yes Sections 3.2.1 and 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> The application area comprises habitat for three threatened and one ‘other specially protected’ fauna recorded in the local area. Noting its location in a road reserve and proximity to other remnants in the local area, the application area may be utilised by a further two threatened, three priority and one ‘conservation dependent’ fauna and as a corridor for moving between remnants. Noting the narrow, linear shape of the application area and the vegetation composition and condition, the application area is unlikely to be significant for the survival of indigenous fauna or be necessary for the maintenance of significant habitat.</p>	Not likely to be at variance	Yes Section 3.2.1
<p><u>Principle (c):</u> “Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</p> <p><u>Assessment:</u> 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.”<sup>10</sup></p> <p><u>Assessment:</u> Eleven TECs have been recorded in the local area, four in close proximity to the application 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, these TECs.</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 includes vegetation that comprises habitat for threatened fauna and is mapped as types that are below the national target and objective for biodiversity conservation (that is, less than 30 per cent pre-European extent remaining). On this basis the vegetation proposed to be cleared is considered to be significant as a remnant in an extensively cleared area.</p>	Is at variance	Yes Section 3.2.3
<p><u>Principle (f):</u> “Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</p>	Is at variance	Yes Section 3.2.4

<sup>9</sup> The *Biodiversity Conservation Act 2016* defines ‘biodiversity’ as ‘the variability among living organisms and the ecosystems of which those organisms are a part and includes the following – (a) diversity within native species and between native species; (b) diversity of ecosystems; (c) diversity of other biodiversity components’.

<sup>10</sup> The *Biodiversity Conservation Act 2016* defines ‘threatened ecological community’ as ‘an ecological community that – (a) is listed as a threatened ecological community under section 27(1); or (b) is to be regarded as a threatened ecological community under section 33’. Section 27(1) refers to TECs listed by the WA Minister for Environment; section 33 refers to the listing and de-listing of collapsed TECs.

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<p><u>Assessment:</u> The application area is located within a wetland (palusplain). The vegetation within the application area is growing in association with these wetlands.</p>		
<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 moderate to high risks of waterlogging (affecting the whole application area) and salinity (affecting approximately 36.8 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 application area is wholly located within Bush Forever area 360, which extends across both sides of the Mundijong Road reserve between Wright Road and Duckpond Road. With regard for the extent of the proposed clearing, the composition and condition of the vegetation proposed to be cleared, and the applicant’s measures to avoid and minimise impacts, it is considered that the proposed clearing is unlikely to have a significant environmental impact on Bush Forever area 360.</p>	Is at variance	Yes Section 3.2.5
<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 (palusplain) in which the application area is located. Noting the extent and purpose of the proposed clearing and its location adjacent to an existing road, impacts to surface water quality are expected to be minimal and limited to the duration of the proposed clearing activities. Taking into account the topography and the underlying groundwater salinity, the proposed clearing is unlikely to cause deterioration in underground water quality.</p>	Not likely to be at variance	Yes Section 3.2.4
<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 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

### Applicant photographs

Photographs of the Mundijong Road reserve provided as supporting information by the applicant, heading east from the intersection of Duckpond Road. This supporting information is published on the Department of Water and Environmental Regulation's website at: <ftp://ftp.dwer.wa.gov.au/permit/8908/>.

From Duckpond Road heading east:









From King Road heading east:



Lightbody Road intersection:





East of Kargotich Road:



## Site inspection

Photographs (and map of photograph locations) from the report of a site inspection undertaken within the application area by the Department of Water and Environmental Regulation (DWER) on 2 July 2020.<sup>11</sup>



Map showing location of photos from DWER site inspection.



Photo 1: looking east from the western end of the application area



Photo 2: looking into the western end of the application area

<sup>11</sup> Department of Water and Environmental Regulation (2020) *Site Inspection Report – Native Vegetation Regulation – CPS 8908/1*. Report of a site inspection undertaken on 2 July 2020.





Photo 3: A small hollow located within the western end of the application area



Photo 4: vegetation located within the central area of the application near the intersection with Lightbody Road



Photo 5: *Allocasuarina* stand located within the eastern end of the application area before Kargotich Road intersection



Photo 6: recent clearing at the intersection with Kargotich Road



Photo 7: standing water within the application area



Photo 8: vegetation within the eastern extent of the application area

## Appendix E – References and databases

### GIS datasets

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Consanguineous Wetlands Suites (DBCA-020)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Geomorphic Wetlands, Swan Coastal Plain (DBCA-019)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- Offsets Register – Offsets (DWER-078)
- Pre-European Vegetation Statistics
- Public Drinking Water Source Areas (DWER-033)
- Ramsar Sites (DBCA-010)
- Remnant Vegetation, All Areas
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- RIWI Act, Groundwater Areas (DWER-034)

Restricted GIS Databases used:

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

### References

Australian Museum (2020) *Peregrine Falcon*. Government of New South Wales. Available at: <https://australianmuseum.net.au/learn/animals/birds/peregrine-falcon/>.

Commonwealth of Australia (2001) *National Objectives and Targets for Biodiversity Conservation 2001-2005*. Commonwealth of Australia, Canberra.

Department of Biodiversity, Conservation and Attractions (2007-) *NatureMap: Mapping Western Australia's Biodiversity*. Department of Parks and Wildlife. Available at: <http://naturemap.dpaw.wa.gov.au/> (accessed June 2020).

Department of Biodiversity, Conservation and Attractions (2017) *Fauna Notes - Living with Quenda*. Government of Western Australia.

Department of Biodiversity, Conservation and Attractions (2019) *National Recovery Plan for the Clay pans of the Swan Coastal Plain Ecological Community*. Department of Biodiversity, Conservation and Attractions, Perth, Western Australia.

Department of Biodiversity, Conservation and Attractions (2020a) *Fact Sheet - Corymbia calophylla - Kingia australis woodlands on heavy soils, Swan Coastal Plain (floristic community type 3a as originally described in Gibson et al. (1994))*. Government of Western Australia.

Department of Biodiversity, Conservation and Attractions (2020b) *Fact Sheet - Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands, Swan Coastal Plain (floristic community type 3c as originally described in Gibson et al. (1994))*. Government of Western Australia.

Department of Environment and Conservation (2008) *Forest black cockatoo (Baudin's cockatoo Calyptorhynchus baudinii and forest red-tailed black cockatoo Calyptorhynchus banksii naso) Recovery Plan*. Department of Environment and Conservation, Western Australia.

Department of Environment and Conservation (2012a) *Chuditch (Dasyurus geoffroii) Recovery Plan*. Wildlife Management Program No. 54. Department of Environment and Conservation, Perth, Western Australia.

Department of Environment and Conservation (2012b) *Fauna profiles - Brush-tailed Phascogale - Phascogale tapoatafa*. Department of Environment and Conservation, Western Australia.

Department of Environment and Conservation (2012c) *Fauna profiles - Quenda - Isoodon obesulus*. Department of Environment and Conservation, Western Australia.

Department of Environment and Conservation (2012d) *Fauna profiles - Tammar Wallaby - Macropus eugenii*. Department of Environment and Conservation, Western Australia.

Department of Environment and Conservation (2012e) *Fauna profiles - Western Brush Wallaby - Macropus irma*. Department of Environment and Conservation, Western Australia.

Department of Parks and Wildlife (2013) *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan*. Department of Parks and Wildlife, Western Australia.

Department of Parks and Wildlife (2017) *Numbat (Myrmecobius fasciatus) Recovery Plan*. Wildlife Management Program No. 60. Prepared by J.A. Friend and M.J. Page, Department of Parks and Wildlife, Perth, WA.

Department of Primary Industries and Regional Development (2017) *NRInfo Digital Mapping*. Available at: <https://maps.agric.wa.gov.au/nrm-info/> (accessed June 2020).

Department of Sustainability, Environment, Water, Population and Communities (2012) *Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered) Calyptorhynchus latirostris, Baudin's cockatoo (vulnerable) Calyptorhynchus baudinii, Forest red-tailed black cockatoo (vulnerable) Calyptorhynchus banksii naso*. Commonwealth of Australia, Canberra.

Department of the Environment and Energy (2017a) *Approved Conservation Advice for Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain*. Canberra: Department of the Environment and Energy.

Department of the Environment and Energy (2017b) *Approved Conservation Advice for Corymbia calophylla - Xanthorrhoea preissii woodlands and shrublands of the Swan Coastal Plain*. Canberra: Department of the Environment and Energy.

Department of the Environment and Energy (2017c) *Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo (Endangered) Calyptorhynchus latirostris Baudin's Cockatoo (Vulnerable) Calyptorhynchus baudinii Forest Red-tailed Black Cockatoo (Vulnerable) Calyptorhynchus banksii naso*. Commonwealth of Australia, Canberra.

Department of the Environment, Water, Heritage and the Arts (2009) *Approved Conservation Advice for Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo)*. Canberra: Department of the Environment, Water, Heritage and the Arts.

Department of Water and Environmental Regulation (2020) *Site Inspection Report – Native Vegetation Regulation – CPS 8908/1*. Report of a site inspection undertaken on 2 July 2020.

Environmental Protection Authority (2019) *EPA Technical Report: Carnaby's Cockatoo in Environmental Impact Assessment in the Perth and Peel Region*. Advice of the Environmental Protection Authority under Section 16(j) of the *Environmental Protection Act 1986*. May 2019. Government of Western Australia.

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.

Johnstone, R.E., Johnstone, C. and Kirkby, T. (2011) *Black Cockatoos on the Swan Coastal Plain*. Report for the Department of Planning, Western Australia.

Keighery, B.J. (1994) *Bushland plant survey - A guide to plant community survey for the community*. Wildflower Society of WA (Inc.), Nedlands, Western Australia.

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

Roadside Conservation Committee (2006) *Roadside Vegetation and Conservation Values in the Shire of Serpentine-Jarrahdale*. Department of Environment and Conservation, Perth. Western Australia.

Shah, B. (2006) *Conservation of Carnaby's Black-Cockatoo on the Swan Coastal Plain, Western Australia*. December 2006. Carnaby's Black-Cockatoo Recovery Project. Birds Australia, Western Australia.

Shepherd, D.P., Beeston, G.R. and Hopkins, A.J.M. (2001) *Native Vegetation in Western Australia, Extent, Type and Status*. Resource Management Technical Report 249. Department of Agriculture, Western Australia.

Threatened Species Scientific Committee (2016). *Approved Conservation Advice (incorporating listing advice) for the Banksia Woodlands of the Swan Coastal Plain ecological community*. Canberra: Department of the Environment and Energy.

Threatened Species Scientific Committee (2018). *Conservation Advice Calyptorhynchus baudinii Baudin's cockatoo*. Canberra: Department of the Environment and Energy.

Valentine, L.E. and Stock, W. (2008) *Food Resources of Carnaby's Black Cockatoo (Calyptorhynchus latirostris) in the Gnarara Sustainability Strategy Study Area*. Edith Cowan University and Department of Environment and Conservation. December 2008.

Western Australian Herbarium (1998–) *FloraBase—the Western Australian Flora*. Department of Biodiversity, Conservation and Attractions. Available at: <https://florabase.dpaw.wa.gov.au/> (accessed June 2020).