



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9081/1
File Number: DWERVT6714
Duration of Permit: From 4 March 2022 to 4 March 2032

PERMIT HOLDER

Mr Jonathan David William Rowe

LAND ON WHICH CLEARING IS TO BE DONE

Lot 56 on Diagram 61012, Big Grove

AUTHORISED ACTIVITY

The permit holder must not clear more than 1.8 hectares of native vegetation within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. Period during which clearing is authorised

The Permit Holder must not clear any native vegetation after 4 March 2027.

2. Avoid, minimise, and reduce impacts and extent of clearing

In determining the native vegetation authorised to be cleared under this permit, the permit holder must apply the following principles, set out in descending 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. Weed and dieback management

When undertaking any clearing authorised under this permit, the permit holder must take the following measures to minimise the risk of 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. Directional clearing

The permit holder must:

- a) conduct *clearing* activities authorised under this permit in one direction towards adjacent *native vegetation*; and
- b) allow a reasonable time for fauna present within the area being cleared to move into that adjacent *native vegetation* ahead of the *clearing* activity.

5. Fauna management – black cockatoo habitat

This permit does not authorise the permit holder to *clear black cockatoo habitat trees*.

6. Eutrophication management – stocking rate

The permit holder must limit the stocking rate within the area cross-hatched yellow in Figure 1 of Schedule 1 to two (2) Dry Sheep Equivalents per hectare.

7. Eutrophication management – fertiliser use

The permit holder must:

- a) use *Nutrient calculator for high rainfall pastures in Western Australia* to determine fertiliser application rates; and
- b) apply suitable slow-release fertiliser based on the requirements determined by the *soil test*.

8. Records that must be kept

The permit holder must maintain records relating to the listed relevant matters in accordance with the specifications detailed in Table 1.

Table 1: Records that must be kept

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> (a) the species composition, structure, and density of the cleared area (b) 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 (c) the date that the area was cleared (d) the size of the area cleared (in hectares) (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance

No.	Relevant matter	Specifications
		<p>with condition 2 of this permit</p> <p>(f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with condition 3 of this permit</p> <p>(g) direction of the clearing in accordance with condition 4 of this permit</p> <p>(h) the size of trees cleared (measured in diameter at breast height in centimetres)</p> <p>(i) stocking rate within the area cross-hatched yellow in Figure 1 of Schedule 1</p> <p>(j) the amount of fertiliser used within the area cross-hatched yellow in Figure 1 of Schedule 1 in accordance with condition 7(a) of this permit; and</p> <p>(k) type of fertiliser used in accordance with condition 7(b) of this permit.</p>

9. Reporting

The permit holder must provide to the *CEO* the records required under condition 8 of this permit when requested by the *CEO*.

DEFINITIONS

In this permit, the terms in Table 2 have the meanings defined.

Table 2: Definitions


Term	Definition
black cockatoo habitat trees	means trees that have a diameter measured over bark measured at 130 centimetres from the base of the tree of 50 centimetres or greater (or 30 centimetres or greater for <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus wandoo</i>) or that contain hollows suitable for breeding by <i>black cockatoo species</i> .
black cockatoo species	means one or more of the following species: (a) <i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo); (b) <i>Calyptorhynchus baudinii</i> (Baudin's cockatoo); and/or (c) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.

Term	Definition
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.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
Nutrient calculator for high rainfall pastures in Western Australia	means calculator available at the Department of Primary Industries and Regional Development website: https://www.agric.wa.gov.au/soil-nutrients/introduction-nutrient-calculator-high-rainfall-pastures-western-australia
soil test	means sampling of soils at Lot 56 on Diagram 61012, Big Grove, by Bio Diverse Solutions (2021) and subsequent analysis of soil test results.
weeds	means any plant – <ul style="list-style-type: none"> (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

END OF CONDITIONS

REFERENCE

Bio Diverse Solutions. (2021). *Soils sampling and analysis of soil test results*. Commissioned by Mr Jonathan Rowe to support clearing permit application CPS 9081/1. Received by DWER on 15 June 2021. DWER ref: DWERDT465301. Available at <https://ftp.dwer.wa.gov.au/permit/9081/>


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Ryan Mincham
 MANAGER
 NATIVE VEGETATION REGULATION

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

9 February 2022

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below.



Figure 1: Map of the boundary of the area within which clearing may occur



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9081/1
Permit type:	Area permit
Applicant name:	Mr Jonathan David William Rowe
Application received:	9 October 2020
Application area:	2.76 hectares (as revised) of native vegetation
Purpose of clearing:	Agriculture
Method of clearing:	Mechanical
Property:	Lot 56 on Diagram 61012
Location (LGA area/s):	City of Albany
Localities (suburb/s):	Big Grove

1.2. Description of clearing activities

The original application was to clear 2.76 hectares of native vegetation in the centre of an approximately 14-hectare property. The applicant intended to use the application area for rural residential purposes which include:

- constructing a dwelling, chicken pen and vegetable patch
- planting fruit trees; and
- grazing sheep for grass and weed reduction.

On 10 March and 24 May 2021, the Department of Water and Environmental Regulation (DWER) sent correspondence to the applicant which outlined the environmental impacts identified during the assessment of the proposed clearing. The applicant subsequently:

- engaged Bio Diverse Solutions to investigate the geological and hydrological conditions of the application area to evaluate the potential impacts (particularly eutrophication) of the proposed clearing and to analyse soil testing results;
- commissioned Southern Ecology to undertake:
 - a vegetation assessment of Lot 56; and
 - targeted flora survey of the application area (hereafter referred to as the flora survey); and
- reduced the amount of clearing by approximately 35 per cent, that being, from 2.76 hectares to approximately 1.8 hectares (see Figures 1 and 2 in Section 1.4).

Refer to Appendix A for more information about the additional information which the applicant provided during the assessment.

Decision:	Granted
Decision date:	9 February 2022
Decision area:	1.8 hectares of native vegetation, as depicted in Section 1.4, below.

1.3. Reasons for decision

In undertaking the assessment, the Delegated Officer had regard for:

- actions taken by the applicant which resulted in the avoidance and minimisation of the extent of the clearing area and the mitigation of the impacts of clearing (see Section 3.1 of this report)
- a detailed assessment of the impacts of the clearing on environmental values (see Section 3.2 of this report)
- other matters considered relevant to the assessment (see Section 3.3 of this report). This included:
 - advice from City of Albany (2022) on matters regulated under its jurisdiction
 - advice from the Commissioner of Soil and Land Conservation (the Commissioner) (2020; 2021b; 2021b and 2021c) regarding the potential for land degradation impacts that may occur as a result of the proposed clearing activities and adequate mitigation measures
- the application area site characteristics (see Appendix B)
- the 10 Clearing Principles set out in Schedule 5 of the *Environmental Protection Act 1986* (EP Act) (see Appendix C)
- a summary of:
 - a targeted flora survey and vegetation assessment of the application area (Southern Ecology, 2021)
 - geotechnical and hydrological investigation of the application area (Bio Diverse Solutions, 2021a)
 - analysis of soil testing results of the application area
- relevant datasets available at the time of the assessment (Appendix F).

The clearing permit application was submitted, accepted, assessed and determined in accordance with section 51E and 51O of the EP Act. DWER advertised the application for 21 days. No public submissions were received.

After consideration of the above information, the Delegated Officer determined that the proposed clearing:

- a) may increase the risk of spread of weed and dieback into native vegetation adjacent to the application area
- b) will impact on native vegetation which provides habitat for conservation significant fauna. Noting the small extent of the proposed clearing relative to the surrounding native vegetation, the applicant's commitment to retain mature trees, that the local area is highly vegetated and the adjacent vegetation is likely to comprise vegetation in similar or better condition than that present within the application area, the Delegated Officer determined that the fauna habitat is not considered significant in the local context
- c) result in an increased runoff and loss of nutrient from the site.

Taking this into account, the Delegated Officer decided to grant a clearing permit subject to the following conditions:

- avoid, minimise to reduce the impact and extent of clearing
- weed and dieback management to minimise the risk of introduction and spread of weeds and dieback
- fauna management to provide fauna an opportunity to move into adjacent native vegetation ahead of the clearing activity;
- black cockatoo management to ensure that the proposed clearing will not adversely impact breeding trees for Carnaby's cockatoo (*Calyptorhynchus latirostris*), forest red-tailed black cockatoo (*Calyptorhynchus banksia* subsp. *naso*) and Baudin's cockatoo (*Calyptorhynchus baudinii*) (collectively referred to as 'black cockatoos' herein this report); and
- eutrophication management to ensure that the clearing will not result in appreciable land degradation.

The Delegated Officer considered that the impacts of the proposed clearing are unlikely to have any long-term adverse impacts on the environmental values in the local area and that the abovementioned management practices will adequately mitigate any potential impacts.

1.4. Site map



Figure 1: Map of the original application area.

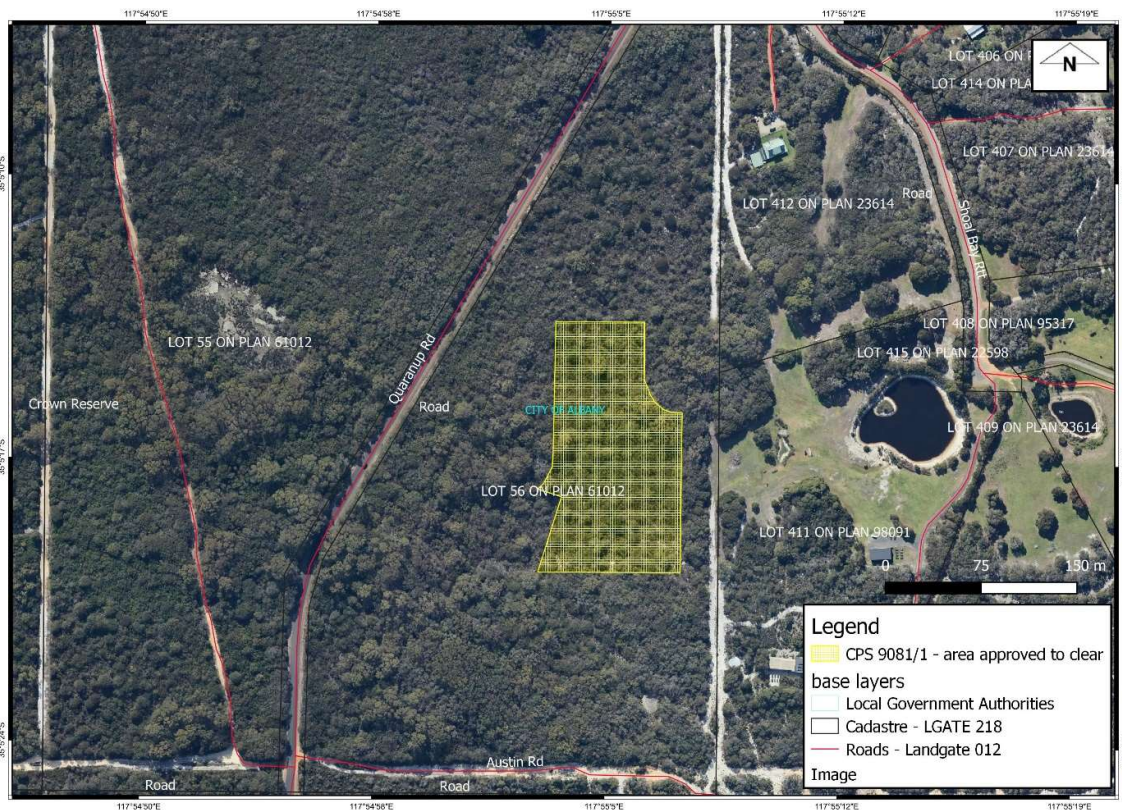


Figure 2: The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit.

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 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- EPBC Act
- *Planning and Development Act 2005* (WA) (P&D Act)
- *Soil and Land Conservation Act 1945* (WA).

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Flora and Vegetation Surveys for Environmental Impact Assessment* (Environmental Protection Authority, 2016).

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

In relation to any actions which had been considered to avoid or minimise the need for clearing, the applicant (2020) advised that they applied to clear the portion of the property with a high load of *Acacia longifolia* (Sydney Golden Wattle) and the least amount of vegetation to minimise the disruption to the ecosystem. The applicant also advised that no trees with a diameter at breast height (DBH) greater than 500 millimetres will be cleared.

In response to DWER correspondence detailing the environmental impacts identified during the assessment of the proposed clearing and following the flora survey (Southern Ecology, 2021), the applicant revised the application area. The applicant (2022) amended the boundary of the proposed clearing to retain a 25-metre buffer distance to the conservation significant flora identified during the flora survey (Southern Ecology, 2021) and reduced the application area by approximately 35 per cent, that being from 2.76 hectares to approximately 1.8 hectares. Noting this, the Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the clearing on environmental values.

3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix B) and the extent to which the impacts of the proposed clearing present a risk to biological, conservation, or land and water resource values.

The assessment against the clearing principles (see Appendix C) identified that the impacts of the proposed clearing present a risk to biological values (flora and fauna) and land. 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. Environmental value: biological values (flora) - Clearing Principles (a) and (c)

Assessment outcomes

The proposed clearing may impact adjacent native vegetation through an increase of weeds and dieback.

Conditions

The Delegated Officer imposed a weed and dieback management condition on the clearing permit to minimise the risk of introduction and spread of weeds and dieback.

Assessment

According to the Department of Biodiversity, Conservation and Attractions (DBCA) (2022a), eight threatened and 45 Priority flora species are known to occur within the local area. Based on the similarities shared between the soil and vegetation types in habitats for these flora taxa and within the application area, four threatened and 18 Priority flora had a potential to occur within the application area. To confirm the presence/absence of these species within the application area, the applicant commissioned Southern Ecology (2021) to undertake:

- a) a vegetation assessment of the property (approximately a 14-hectare area); and
- b) a targeted flora survey of the original application area (approximately 2.76 hectares).

The Southern Ecology (2021) flora survey undertaken in September, which is considered an appropriate month for vegetation surveys in South-West and Interzone Botanical Provenance (EPA, 2016), identified a total of 106 species from 35 families. Of these, *Adenanthos x cunninghamii* listed as Priority 4 by DBCA was identified within the original application area.

Adenanthos x cunninghamii is an erect open shrub, up to 3-metres high, which flowers in March or from September to October. The species occupies sandy soils on coastal dunes and sandplains (WA Herbarium, 1998-). *A. cunninghamii* is known from 79 records with a spatial distribution of approximately 120 kilometres north-south and 60 kilometres east-west in Shire of Broomehill-Tambellup and City of Albany (DBCA, 2022a). Southern Ecology (2021) identified one individual of this species within the original application area. To avoid impacts on this individual, the applicant revised the boundaries of the proposed clearing to retain a 25-metre vegetated buffer for this individual. Given this, the proposed clearing will unlikely cause direct or indirect impacts to *A. cunninghamii*, or any other conservation significant flora.

Noting the survey efforts, survey timing and flowering periods of the species considered as potentially occurring within the application area, the Delegated Officer considered that the application area is unlikely to provide habitat for other conservation significant flora known to occur within the local area.

3.2.2. Environmental value: biological values (fauna) – Clearing Principle (b)

Assessment outcomes

The application area provides foraging habitat for black cockatoos. Noting the applicant's commitment to retain all mature trees and the extent of native vegetation in the local area (a majority of which occurs within Torndirrup National Park), the foraging habitat was not considered significant in the local context.

The Delegated Officer acknowledged that although the application area is not likely to provide significant habitat for chuditch, dibbler, main's assassin spider, quenda, western ringtail possum (WRP) and woollybush bee, these species may use the vegetation in the application area for dispersal.

Conditions

The Delegated Officer determined that the following management conditions on the clearing permit will adequately mitigate the potential impacts of the proposed clearing on the above environmental values:

- black cockatoo management condition to avoid clearing of all trees with a DBH greater than 500 millimetres
- fauna management condition to provide fauna an opportunity to move into adjacent native vegetation ahead of the clearing activity
- weed and dieback hygiene measures to mitigate the risk of impacts to adjacent fauna habitat.

Assessment:

According to DBCA (2022b), a total of 80 conservation significant fauna species are known to occur within the local area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type and the condition of the vegetation within the application area, the application area may comprise suitable habitat for:

- Baudin's cockatoo (*Calyptorhynchus baudinii*)
- Carnaby's cockatoo (*Calyptorhynchus latirostris*)
- Chuditch, western quoll (*Dasyurus geoffroii*)
- Dibbler (*Parantechinus apicalis*)
- Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*)
- Main's assassin spider (*Zephyrarchaea mainae*)
- Peregrine falcon (*Falco peregrinus*)
- Quenda, southwestern brown bandicoot (*Isodon fusciventer*)

- Western ringtail possum, ngwayir (*Pseudocheirus occidentalis*); and
- woolybush bee (*Hylaeus globuliferus*).

Black cockatoos

The application area falls within the modelled distribution of all three black cockatoo species. Black cockatoos are classified as threatened under the BC Act. Under the EPBC Act, the Carnaby's and Baudin's cockatoo are listed as Endangered and the forest red-tailed black cockatoo is listed as Vulnerable. The seasonal movements of black cockatoos mean they require large areas of habitat for breeding, night roosting and foraging, as well as connectivity between these habitats to assist their movement through the landscape (Commonwealth of Australia, 2012). The assessment has considered the potential impacts of the proposed clearing on all types of black cockatoo habitat.

The proposed clearing will not impact suitable breeding habitat for black cockatoos. Suitable breeding habitat for these species includes trees which either have a suitable nest hollow, or are of a suitable DBH to develop a nest hollow. Suitable DBH for nest hollows is 500 millimetres for most tree species, however, is reduced to 300 millimetres for wandoo and salmon gum (Commonwealth of Australia, 2012). Carnaby's cockatoo typically nests in eucalypt woodlands, primarily in the hollows of wandoo (*Eucalyptus wandoo*), salmon gum (*E. salmonophloia*) and marri (*Corymbia calophylla*) (Groom, 2015). The most important breeding trees for forest red-tailed black cockatoos throughout their range are large, mature marri trees, approximately 120-150 years in age with a mean overall height of 20.24 metres (Johnston, Kirkby and Sarti, 2013). The applicant committed to avoiding clearing of all habitat trees within the application area. The Delegated Officer reflected this commitment into a management condition and imposed it on the clearing permit.

Noting typical food resources for black cockatoos, the application area contains approximately:

- 1.8 hectares of foraging habitat for Carnaby's cockatoo in the form of coastal *Banksia ilicifolia*/peppermint low woodland, coastal yate forest and marri/jarrah coastal hill forest; and
- 0.12 hectares of foraging habitat for Baudin's and forest red-tailed black cockatoo in the form of marri/jarrah coastal hill forest.

Carnaby's cockatoo feeds on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (*Banksia*, *Hakea* and *Grevillea*), as well as *Allocasuarina* and *Eucalyptus* species, *Corymbia calophylla* and a range of introduced species (Valentine and Stock, 2008). Forest red-tailed black cockatoo forages within jarrah and marri woodlands and forest, and edges of karri forests including wandoo and blackbutt, within the range of the subspecies. The species largely feeds on seeds of marri and jarrah, as well as other *Eucalyptus* species and *Allocasuarina* cones (Commonwealth of Australia, 2012). Baudin's cockatoo prefer foraging within *Eucalypt* woodlands and forest, and proteaceous woodland and heath. During the breeding season (October to late January/early February) this species prefers marri seeds. Outside the breeding season the species may feed in fruit orchards and tips of *Pinus* spp. (Commonwealth of Australia, 2012).

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. The Australian Department of the Environment (2013) notes that an action is likely to have significant impacts on critically endangered or endangered species, which include black cockatoos, if there is real possibility that it will (including but not limited):

- lead to a long-term decrease in the size of a population
- fragment an existing population into two or more populations
- decrease the availability or quality of habitat to the extent that the species is likely to decline.

Considering the extent of native vegetation remaining within the local area relative to the extent of foraging habitat present within the application area, the proposed clearing is not likely to cause significant impacts upon the viability of the local populations of black cockatoos. The local area comprises approximately 66 per cent of its original vegetated cover (approximately 6,596.2 hectares). The application area represents approximately 0.027 per cent of this extent. Approximately 60 per cent (3,977.6 hectares) of the vegetation in the local area occurs within DBCA managed estate, particularly within Torndirrup National Park (Figure 3).



Figure 3: Map of vegetated areas within the local area

The vegetation within application area does not contain black cockatoo foraging habitat which supports its breeding. While breeding, black cockatoos will generally forage within a 6–12 kilometre radius of their nesting site (Commonwealth of Australia, 2012). The application area is not located within the mapped confirmed breeding area for Carnaby’s cockatoo. There are no confirmed black cockatoo breeding points within the local area. The closest confirmed breeding site is a natural, potential breeding tree located approximately 45 kilometres northwest of the application area.

The assessment further identified that the application area provides foraging habitat that supports black cockatoo roosting. Roosting habitat is defined as a suitable tree (generally the tallest) or group of tall trees, native or introduced, usually close to an important water source, within an area of quality foraging habitat within the range of each black cockatoo species which provide black cockatoos with shelter during the heat of the day and safe resting places at night (Department of the Environment and Energy, 2017). Individual night roosting sites need suitable foraging habitat and water within six kilometres (EPA, 2019). Overlapping foraging ranges within 12 kilometres also support roosting sites and maintain habitat connectivity and movement across the landscape (EPA, 2019).

The foraging habitat within the application area that supports black cockatoo roosting is not considered significant in the local area. There are nine black cockatoo roosting sites mapped within the local area. Of these, six occur within a 6-kilometre buffer of the application area. Of these, three sites have shown evidence of past use for roosting. The last black cockatoo roosting within a 6-kilometre buffer of the application area was observed in 2017. The 6-kilometre buffers of these sites retain approximately 83 per cent of their original vegetation cover, a majority of which occurs within Torndirrup National Park. This conservation area is likely to provide similar, or better habitat for black cockatoos than that present in the application area.

Considering the relatively small extent of the application area and that native vegetation within adjacent properties provides similar habitat, the proposed clearing is not likely to restrict the ability of black cockatoos to move across the landscape.

Peregrine falcon

The 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). This

species is widespread, highly mobile and is found in various habitats. The application area may comprise suitable habitat for this species, however, noting habitat preferences and the small extent of the proposed clearing, the application area is unlikely to comprise a significant habitat for this species.

Chuditch, dibbler, main's assassin spider, quenda, western ringtail possum (WRP) and woolybush bee

Noting the vegetation identified (Southern Ecology, 2021) within the application area and its quality, the habitat requirements and distribution of the above species, the application area provides suitable habitat for each of these species. Taking into consideration the small extent of the proposed clearing relative to the surrounding native vegetation and the abundance of native vegetation within lands managed by DBCA for conservation which are likely to comprise vegetation in similar or better condition than that present within the application area, the habitat within the application area is not considered significant in the local context. Whilst not considered significant habitat, impacts to individuals of chuditch, dibbler, main's assassin spider, quenda, WRP and woolybush bee may occur at the time of clearing. To minimise these potential impacts, the applicant will be required to undertake slow, progressive one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.

Chuditch use a range of habitats including forest, mallee shrublands, woodland and desert. The most dense populations have been found in riparian jarrah forest which does not occur within the application area. 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 (Department of Environment and Conservation, 2021). The closest record of chuditch within the local area is recorded approximately 8.9 kilometres north of the application area.

Dibbler is a carnivorous marsupial which occupies a diverse range of habitats. Dibblers seem to prefer vegetation with a dense canopy greater than one metre high which has been unburnt for at least 10 years or more. Mainland habitat is characterised by the presence of long-unburnt heathland, typified by sandy substrates and occasionally lateritic soils. This generalisation applies to records from Cheyne Beach, Torndirrup National Park and most records from Fitzgerald River National Park (Department of the Environment, 2022). The closest record of dibbler within the local area is recorded approximately one kilometre south of the application area within Torndirrup National Park.

Main's assassin spider favours peppermint coastal habitats where it inhabits shaded, long unburnt groves with an understorey of sedges (*Lepidosperma*), grasses and 'wiry' herbs (*Restionaceae*). Its microhabitat within these Agonis groves is the elevated leaf-litter layer which collects amongst the crowns of the understorey plants (Rix and Harvey, 2011). The closest record of main's assassin spider within the local area is recorded approximately 2.8 kilometre southwest of the application area within Torndirrup National Park.

Quenda is known to inhabit scrubby, swampy vegetation with low, dense understorey, located nearby water courses, pasture, or forest/woodland that is regularly burnt and is in areas of pasture and cropland lying close to dense cover. Populations which inhabit jarrah and wandoo forests are usually associated with watercourses. Quendas will thrive in more open habitat subject to exotic predator control. Quenda have become abundant in Lake Magenta Nature Reserve (Western Australia) in Mallee scrub and woodland following fox control (Department of Environment and Conservation, 2012). The closest record of quenda within the application area is recorded approximately 650 metres west of the application area.

WRP generally occurs within coastal or near coastal forest that includes peppermint trees (*Agonis flexuosa*) as a major component. Habitat critical to survival for WRP is not well understood but commonly contains high nutrient foliage availability food, suitable structure for protection/nesting and canopy continuity to avoid/escape predation and other threats (Department of Parks and Wildlife (DPaW), 2014). The application area contains peppermint low woodland and discontinuous marri-*Eucalyptus* sp. vegetation. WRPs generally prefer sites with canopy connectivity to provide for movement across the landscape (DPaW, 2014). In close proximity of the application area is approximately 4,200 hectares of remnant native vegetation in Torndirrup National Park. This conservation area likely provides better quality habitat and connectivity for WRP.

Woolybush bee, listed as Priority 3 by DBCA, favours flowers of *Adenanthos cygnorum* for feeding but has also been recorded on *Banksia attenuata* (Houston, 2018). Southern Ecology (2021) identified *B. attenuata* within the application area. Woolybush bee is highly mobile and have access to suitable habitat adjacent to the application

area. The closest record of woollybush bee is recorded approximately 6.9 kilometres northwest of the application area.

Ecological linkage

The proposed clearing is not likely to have an impact on vegetation acting as an ecological linkage or significant stepping stone for fauna movement. The application area is mapped approximately 1.4 kilometre northeast of a mapped South Coast Ecological Linkage. Given the separation distance and the extent of remnant vegetation within the application area and local area, the proposed clearing is not likely to have an impact on the environmental values of this linkage.

3.2.3. Environmental value: land – Clearing Principles (g)

Outcome:

The proposed clearing enhances the volume of runoff and loss of nutrients from the application area.

Conditions:

Based on the consultation with the Commissioner of Soil and Land Conservation (the Commissioner) who reviewed the results of soil tests taken within the application area (Bio Diverse Solutions, 2021b), the Delegated Officer imposed the following management conditions on the clearing permit to address the above impacts:

- limiting the stocking rate to two (2) Dry Sheep Equivalents per hectare
- applying suitable slow-release fertiliser based on the requirements determined by the soil tests and calculations using the 'nutrient calculator for high rainfall pastures in Western Australia' developed by the Department of Primary Industries and Regional Development (DPIRD).

Assessment:

On 11 December 2020, DPIRD inspected the proposed clearing area. The inspection noted that the application area was located on coastal sandplain and comprised of gently undulating rises, sand dunes, swales and the occasional granite outcrop. The vegetation was dense and impenetrable in places. DPIRD did not observe any evidence of grazing from agriculture livestock but thickets of *Acacia longifolia* (commonly known as Sydney Golden Wattle), were observed. DPIRD concluded that the application area had a low to very low capability for the proposed land use.

The assessment report identified a high risk of eutrophication if fertiliser application was to occur within the application area. This would likely remain if the application area was cleared of vegetation. The applicant had not provided sufficient information about these risks and how they can be managed, on which basis the Commissioner (2020) advised that further information about the chemistry of the soil was required to determine nutrient holding capacity and depth to the shallowest watertable onsite, along with the proposed nutrient management (phosphorus and nitrate application).

The land degradation risks in the form of water erosion, salinity and flooding (including waterlogging) were considered low (the Commissioner, 2020).

Taking into consideration the Commissioner's (2020) advice, the applicant commissioned Bio Diverse Solutions to investigate the geological and hydrological conditions of the application area to evaluate the potential impacts, particularly eutrophication, of the proposed clearing and land use on the environment. The investigation consisted of three test pits to 1,600 millimetres depth and identified that (Bio Diverse Solutions, 2021a):

- the soils within the application area consisted of sands/silty sands over coffee rock over clay. The sand profile (0 – 4 metres) allows for adequate infiltration and prevents surface water runoff from the site avoiding potential transportation of nutrients. The silts, deeper coffee rock and clay layers were generally associated with a high phosphorus retention index, and therefore, an increased ability to uptake any nutrients that may percolate through the surface.
- the groundwater was found to be six metres below ground level in the centre of the application area. Given this, it was estimated that at least two metres of separation to maximum groundwater level was achieved across the majority of the application area which reduces the nutrient transport potential via groundwater flow.
- there was no evidence of reoccurring/seasonal surface water runoff from the application area. It was considered likely that the majority of surface water runoff was contained onsite where it was lost via infiltration, evaporation and transportation. The investigation noted that any potential surface runoff from the site would be directed towards Shoal Bay Retreat roadside drain via the neighbouring property allowing for

further infiltration/evaporation/transportation. Shoal Bay Retreat did not appear to discharge directly to Princess Royal Harbour.

DPIRD reviewed the above information and raised concerns in relation to the nutrient stripping capacity of the retained vegetation, depth to groundwater, the direction of groundwater flows and the nutrient retention capacity of the soil. Due to the potential risk of eutrophication, the absence of soil tests, the soil nutrient levels available and the potential impacts on Princess Royal Harbour which occurs 300 metres from the application area, the Commissioner (2021a) advised that a clear understanding of the direction of the subsurface water flows was required. In particular, the Commissioner noted a comprehensive agronomic soils test was required, which would include an assessment of the topsoil (0 – 10 centimetres) for phosphorus retention PBI, PRI and plant available phosphorus and potassium (Colwell P and K), pH (CaCl₂) and sulphur (KCl₄₀S) to assess the nutrient requirement of the site for pasture. It was further recommended that the phosphorus retention (PRI) be analysed down the soil profile to the water table (at 500 millimetre depth increment, or change of soils strata layers).

Subsequently, the applicant engaged Bio Diverse Solutions to analyse soils tests in accordance with the Commissioner's recommendations. Bio Diverse Solutions (2021b):

- took soils samples from various depth increments at two locations (test holes A and B) within the application area
- sampled at various depth increments up to 80 centimetres below ground level (BGL)
- sent the samples from the topsoil, 40-50 centimetres BGL and 70-80 centimetres BGL to CSBP Ltd for testing. The testing parameters included phosphorous (Colwell), potassium (Colwell), Sulfur (KCl₄₀), organic carbon (Walkley – Black), nitrate nitrogen, ammonium nitrogen, electrical conductivity, pH (water), pH (CaCl₂) and texture (in-house method), phosphorus retention index and phosphorus buffering index. Table 1 shows the soil testing results.

Table 1 Soil testing results (Bio Diverse Solutions, 2021b)

Test Hole	Soil depth (cm)	Ammonium Nitrogen (mg/kg)	Nitrate Nitrogen (mg/kg)	Phosphorus Colwell (mg/kg)	Potassium Colwell (mg/kg)	Sulfur (mg/kg)	Organic Carbon (%)	EC (dS/m)	pH Level (CaCl ₂)	pH Level (H ₂ O)	PRI	PBI
A	10-20	4	< 1	< 2	29	2.4	2.67	0.043	3.9	5.4	0.4	< 1.0
	40-50	< 1	< 1	< 2	< 15	0.6	0.38	0.016	4.2	5.9	0.6	7.1
	70-80	< 1	< 1	2	< 15	< 0.5	0.13	0.010	4.6	6.1	0.4	4.4
B	0-10	2	< 1	3	42	1.8	2.42	0.032	4.7	5.8	1.7	4.7
	40-50	1	< 1	< 2	< 15	2.9	0.72	0.034	5.1	6.1	66.4	95.4
	70-80	< 1	1	< 2	< 15	2.8	0.51	0.099	6.6	7.5	26.9	96.6

The Commissioner (2021b) reviewed the above soil testing results and advised that:

- the phosphorus retentive capacity of the soil within the application area was very low throughout the profile of test hole A and in the topsoil of test hole B
- the subsoil at test hole B shows good phosphorus retentive capacity at depth, indicating a change in the soil texture between the topsoil and subsoil. The Commissioner associated this change in texture with a change in texture which inhibits free water movement and subsequently creates a high watertable in winter
- a high watertable, combined with poor phosphorus retention throughout the profile at the test hole A and in the topsoil at test hole B, enhances the volume of runoff and loss of nutrient from the site

Given the above, the Commissioner (2021b) determined that the proposed clearing may cause land degradation in the form of eutrophication.

The Commissioner further advised that the risk of runoff and nutrient loss from the site can be adequately mitigated by limiting the stocking rate to two (2) Dry Sheep Equivalents per hectare and applying suitable slow-release fertiliser based on the requirements determined by the soil tests. The Delegated Officer reflected this advice in a management condition imposed on the clearing permit.

3.3. Relevant planning instruments and other matters

No registered Aboriginal sites of significance have been mapped within the application area. The nearest Aboriginal Heritage Place is Limekilns Point (Fish Trap, Man-Made Structure) located approximately 850 metres northwest of the application area. Given the separation distance, the proposed clearing is unlikely to impact on this site. 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.

On 3 November 2020, in accordance with section 51E(4A) of the EP Act, DWER sought comments on the application from City of Albany (the City). On 28 January 2022, the City advised it had granted Development Approval P2200559 for the property for the purpose of 'Agriculture - Extensive - Storage Shed (farm machinery)'.

DWER notes that the applicant cleared approximately 0.68 hectares of native vegetation at the property to construct:

- a shed and water tank with a bushfire mitigation zones; and
- an access track.

This clearing is consistent with three exemptions that can be found under Regulation 5 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004* (Clearing Regulations):

- Item 1, which allows for clearing for the lawful construction of a building or other structure. DWER notes that the boundaries of the cleared areas align with the approved development approval.
- Item 12, which allows for clearing of a strip of native vegetation to the extent necessary for an access track; and
- Item 15, which allows for clearing for bush fire protection within 20 metres of a building to create or maintain a building protection zone.

Appendix A. Additional information provided by applicant

Item	Summary of information received	Consideration of comment
Assessment of the geological and hydrological conditions of the application area (Bio Diverse Solutions, 2021a).	The information allowed the potential impacts of the proposed clearing and land use on the surrounding environment to be assessed.	To gain a thorough understanding of the potential land degradation risk, DWER sought advice from the Commissioner. The Commissioner advised that additional soils tests were required to accurately determine the land degradation risks.
Soils tests (Bio Diverse Solutions (2021b).	Sampling from various depth increments at two locations up to 800 millimetres (mm) BGL.	To gain a thorough understanding of the potential land degradation risk, DWER sought advice from the Commissioner. The Commissioner reviewed the soil tests results and advised that the proposed clearing will enhance the volume of runoff and loss of nutrients from the clearing area. The Commissioner recommended adequate management measures to mitigate these impacts.
The flora survey (Southern Ecology, 2021).	A vegetation assessment of Lot 56 and targeted flora survey of the application area.	This information allowed DWER to accurately assess the impacts of the proposed clearing on conservation significant flora.

Appendix B. Site characteristics

C.1. Site characteristics

Characteristic	Details
Local context	<p>The application area forms part of the Big Grove – Torndirrup coastal sandplain adjacent to Princess Royal Harbour and at the foot of a coastal promontory leading to the Vancouver Peninsula (an area locally known as Camp Quararup).</p> <p>Spatial data indicate the local area (a 10-kilometre radius of the application area, which is equal to approximately 9,944 hectares (excluding the ocean)) retains approximately 66 per cent (6,600 hectares) of the original native vegetation cover.</p>
Ecological linkage	<p>The application area is not mapped within ecological linkages.</p> <p>The closest ecological linkage is South Coast Linkage mapped approximately 1.5 km southwest of the application area.</p>
Conservation areas	<p>Approximately 60 per cent of the local area (approximately 3,980 hectares) occurs within DBCA managed estate, predominantly within Torndirrup National Park.</p> <p>The application area is not mapped within any conservation area.</p> <p>The closest conservation area is Torndirrup National Park (Class A) located approximately 190 metres south of the application area.</p>
Vegetation description	<p>Southern Ecology (2021) mapped three vegetation units within the application area:</p> <ol style="list-style-type: none"> Coastal <i>Banksia ilicifolia</i>/Peppermint Low Woodland – approximately 1.91 hectares Coastal Yate Forest – approximately 0.35 hectares; and Marri/jarrah coastal hill forest – approximately 0.15 hectares. <p>Representative photos of the above vegetation units are available in Appendix E.</p> <p>Southern Ecology's (2021) mapping is partially consistent with the Beard vegetation association mapped within the application area:</p> <ul style="list-style-type: none"> 22, which is described as low woodland, <i>Agonis flexuosa</i> (Shepherd et al, 2001). <p>The mapped vegetation association retains approximately 85 per cent of its original vegetated extent within the Warren Interim Biogeographic Regionalisation for Australia (IBRA) bioregion (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Southern Ecology (2021) described the vegetation condition within the application area as excellent (Keighery, 1994), given the vegetation was generally long unburnt and relatively undisturbed.</p> <p>The full Keighery (1994) condition rating scale is provided in Appendix D.</p>
Climate and landform	<p>Rainfall – mean annual: 1000 millimetres Evapotranspiration – areal actual: 900 millimetres Groundwater Salinity (Total Dissolved Solids): 500-1000 milligrams per litre total dissolved solids. This level of salinity is classified as marginal by Mayer et al., (2005).</p> <p>A DPIRD site inspection (2020) observed that the landscape, in which the application area occurs, is considered to be a coastal sandplain, comprising flat areas to very gently undulating rises, sand dunes, swales and occasional granite rock outcrop. Slopes generally do not exceed three per cent. The elevation of the application area is between 18 to 26 metres above sea level.</p>
Soil description	<p>DPIRD (2022) mapped the soil within the application area as Gardner sandy Phase, which is described as leached sands and podzols; mallee-heath (Northcote et al., 1968).</p>

Characteristic	Details
	<p>The soils within the application area consists of (Bio Diverse Solutions, 2021a):</p> <ul style="list-style-type: none"> • Topsoil (sand with silt) (0-250 millimetre depth) over • Sand with silt (250-700 millimetre depth) over; and • Sand (700-1600 millimetre depth).
Land degradation risk	<p>Considering the findings of the DPIRD site inspection, the Commissioner (2020) advised that the proposed clearing may cause land degradation in the form of eutrophication.</p> <p>The land degradation risks in the form of soil erosion (water or wind erosion), salinity and flooding (including waterlogging) are considered low (the Commissioner, 2020).</p>
Waterbodies	<p>The application area is not mapped within known wetlands. The closest wetland is Goode Beach Wetland located approximately 420 metres northeast of the application area. Aerial imageries indicate that an unknown lake occurs approximately 150 metres east of the application area.</p> <p>No watercourses intersect the application area. The closest watercourse is a minor non-perennial river approximately 380 metres east of the application area.</p>
Hydrogeography	<p>According to available databases, the application area:</p> <ul style="list-style-type: none"> • is mapped within a proclaimed Albany Groundwater Area • is not mapped within a proclaimed Surface Water Areas and Irrigation Districts; and • occurs approximately 620 metres northeast of Public Drinking Water Source Area 'Limeburners Creek Catchment Area'.
Flora	<p>According to available databases, eight flora species listed as threatened under the BC Act and 45 Priority listed flora by DBCA have been recorded within the local area (DBCA, 2022a). Based on the similarities shared between the soil and vegetation types in habitats for these flora taxa and within the application area, the flora species detailed in Section C3 of this report may occur within the application area.</p>
Ecological communities	<p>Two federally listed TECs and three state listed PECs occurs within the local area. Noting the vegetation identified within the application area (Southern Ecology, 2021) and distribution of the mapped ecological communities, the vegetation proposed to be cleared unlikely represents the mapped TECs and PECs.</p>
Fauna	<p>According to available databases, a total of 80 conservation significant fauna species have been recorded within the local area (DBCA, 2007). Given the boundary of the local area overlaps the ocean, a number of the recorded species are exclusively associated with marine, estuarine or freshwater habitats that do not occur within the application area. Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type and the condition of the vegetation within the application area, the application area is likely to comprise suitable habitat for:</p> <ul style="list-style-type: none"> • Baudin's cockatoo • Carnaby's cockatoo • Chuditch, western quoll • Dibbler • Forest red-tailed black cockatoo • Main's assassin spider • Peregrine falcon • Quenda, southwestern brown bandicoot • Western ringtail possum, ngwayir; and • woolybush bee.

C.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in DBCA managed land
IBRA bioregion*					
Warren	833,985.56	659,432.21	79.07	84.69	66.97
Vegetation association in IBRA bioregion					
22*	3,333.79	2,842.83	85.27	51.97	44.31
Local area					
10-kilometre radius	9,944.34	6,596.18	66.33	-	-

*Government of Western Australia (2019)

C.3. Flora analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F), and biological survey information (Southern Ecology, 2021), impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features ?	Suitable vegetation type?	Suitable soil type?	Distance to application area (m)	Adequate surveys?
<i>Adenanthos x cunninghamii</i>	4	Yes	Yes	Yes	304	Yes
<i>Austrostipa mundula</i>	3	Yes	Yes	Yes	4597	Yes
<i>Caladenia harringtoniae</i>	T	Yes	Yes	Yes	3616	Yes
<i>Calandrinia</i> sp. Torndirrup (S.D. Hopper et al. SDH 8712)	2	Yes	Yes	Yes	4170	Yes
<i>Calectasia cyanea</i>	T	Yes	Yes	Yes	1240	Yes
<i>Conospermum quadripetalum</i>	2	Yes	Yes	Yes	1240	Yes
<i>Conostylis misera</i>	T	Yes	Yes	Yes	8354	Yes
<i>Drosera paleacea</i>	1	Yes	Yes	Yes	614	Yes
<i>Eucalyptus x missilis</i>	4	Yes	Yes	Yes	7433	Yes
<i>Gahnia sclerioides</i>	4	Yes	Yes	Yes	4679	Yes
<i>Gyrostemon thesioides</i>	2	Yes	Yes	Yes	2554	Yes
<i>Hydrocotyle serendipita</i>	2	Yes	Yes	Yes	3998	Yes
<i>Isopogon uncinatus</i>	T	Yes	Yes	Yes	1176	Yes
<i>Lachnagrostis billardierei</i> subsp. <i>billardierei</i>	3	Yes	Yes	Yes	8063	Yes
<i>Lasiopetalum</i> sp. Denmark (B.G. Hammersley 2012)	3	Yes	Yes	Yes	8180	Yes
<i>Spyridium spadiceum</i>	4	Yes	Yes	Yes	3087	Yes
<i>Thelymitra</i> sp. South coast (G. Byrne 5133)	2	Yes	Yes	Yes	7032	Yes
<i>Thomasia multiflora</i>	1	Yes	Yes	Yes	6992	Yes
<i>Thomasia purpurea x solanacea</i>	1	Yes	Yes	Yes	599	Yes
<i>Thomasia quercifolia</i>	4	Yes	Yes	Yes	2554	Yes
<i>Thomasia solanacea</i>	4	Yes	Yes	Yes	579	Yes
<i>Thysanotus isantherus</i>	4	Yes	Yes	Yes	6768	Yes

T: threatened, CR: critically endangered, EN: endangered, VU: vulnerable, P: priority

*The table may include duplicate records. The total number of each species is indicative only.

C.4. Fauna analysis table

Species name	Conservation status	Suitable habitat features?	Distance of closest record to application area (m)	Are surveys adequate to identify?
Baudin's cockatoo	EN	Yes	457	No
Carnaby's cockatoo	EN	Yes	672	No
Chuditch, western quoll	VU	Yes	8,867	No
Dibbler	EN	Yes	1,083	No
Forest red-tailed black cockatoo	VU	Yes	7,737	No
Main's assassin spider	VU	Yes	2,654	No
Peregrine falcon	OS	Yes	457	No
Quenda, southwestern brown bandicoot	P4	Yes	576	No
Western ringtail possum, ngwayir	CR	Yes	2,040	No
woolybush bee	P3	Yes	6,854	No

CR: critically endangered, EN: endangered, VU: vulnerable, EX: Presumed extinct species, IA (M) Migratory birds protected under an international agreement, CD: Conservation dependent fauna, OS: Other specially protected fauna

Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing area is not likely to contain locally or regionally significant flora or assemblages of plants. The revised application area:</p> <ul style="list-style-type: none"> • does not resemble habitat for threatened or priority flora (Southern Ecology, 2021) • provides habitat for conservation significant fauna which has not been deemed significant in the local context; and • does not contain native vegetation which represents a threatened or priority ecological community (TEC or PEC). 	Not likely to be at variance	Yes Refer to Section 3.2.1, above.
<p><u>Principle (b):</u> <i>“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.”</i></p> <p><u>Assessment:</u></p> <p>The application area provides habitat for multiple conservation significant fauna. No mature trees with a DBH greater than 500 millimetres will be cleared. Noting the extent of native vegetation within the local area and the extent of vegetation proposed to be cleared, the application area does not represent significant habitat for any conservation significant species.</p>	Not likely to be at variance	Yes Refer to Section 3.2.2, above.
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The application area does not contain flora species listed as threatened under the BC Act (Southern Ecology, 2021).</p>	Not likely to be at variance	Yes Refer to Section 3.2.1, above.
<p><u>Principle (d):</u> <i>“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.”</i></p> <p><u>Assessment:</u> The proposed clearing area does not contain species composition indicative of a TEC listed under the BC Act or EPBC Act (Southern Ecology, 2021).</p>	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extent of the mapped vegetation type is consistent with the national objectives and targets for biodiversity conservation in Australia. Vegetation in the proposed clearing area is not considered to be part of a significant ecological linkage in the local area.</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></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
Given the separation distance between the application area and the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.		
Environmental value: land and water resources		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>No wetlands or watercourses are mapped within the application area. Vegetation within the application area does not grow in association with a watercourse or wetland.</p>	Not likely to be at variance	No
<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></p> <p>The proposed clearing will increase the volume of runoff and loss of nutrients from the application area. These impacts can be adequately mitigated through management conditions (Commissioner, 2021b and 2021c).</p>	At variance	Yes Refer to Section 3.2.3, above.
<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></p> <p>Noting the relatively flat landscape in the vicinity of the proposed clearing and the distance to the closest watercourse, the clearing is unlikely to impact surface or groundwater quality.</p>	Not likely to be at variance	No
<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></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

Appendix D. 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.

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from:

- Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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 E. Photographs of the vegetation in the application area



Figure 4: Mallee-heath vegetation in the application area (DPIRD, 2020)



Figure 5: Frequent thickets of Sydney golden wattle in the application area (DPIRD, 2020)



Figure 6a

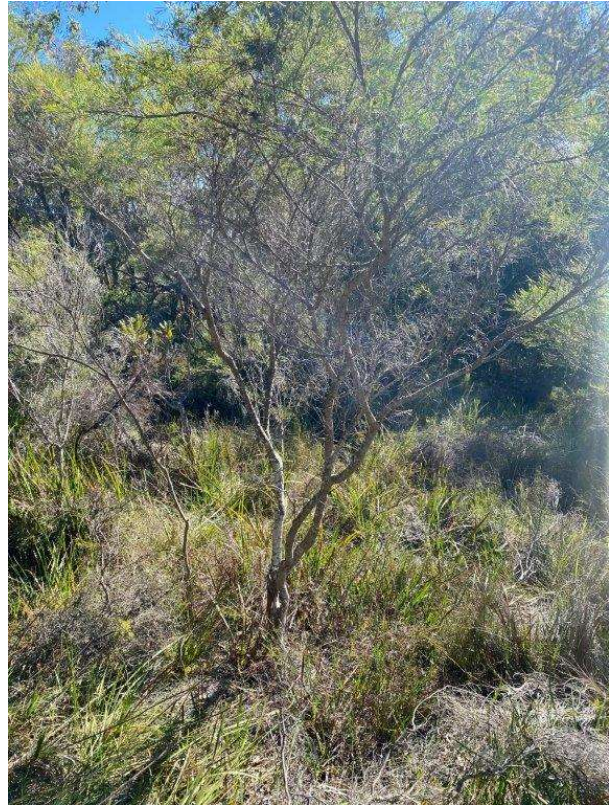


Figure 6b



Figure 6c

Figures 6a – 6c: Representative photos of the vegetation in the application area (Applicant, 2020)

Appendix F. Sources of information

F.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- Contours (DPIRD-073)
- 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)
- Flood Risk (DPIRD-007)
- 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)
- Regional Parks (DBCA-026)
- Remnant Vegetation, All Areas
- RIWI Act, Groundwater Areas (DWER-034)
- RIWI Act, Surface Water Areas and Irrigation Districts (DWER-037)
- Soil Landscape Land Quality – Flood Risk (DPIRD-007)
- Soil Landscape Land Quality – Phosphorus Export Risk (DPIRD-010)
- Soil Landscape Land Quality – Subsurface Acidification Risk (DPIRD-011)
- Soil Landscape Land Quality – Water Erosion Risk (DPIRD-013)
- Soil Landscape Land Quality – Water Repellence Risk (DPIRD-014)
- Soil Landscape Land Quality – Waterlogging Risk (DPIRD-015)
- Soil Landscape Land Quality – Wind Erosion Risk (DPIRD-016)
- Soil Landscape Mapping – Best Available
- Soil Landscape Mapping – Systems
- Wheatbelt Wetlands Stage 1 (DBCA-021)

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
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

F.2. References

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- Bio Diverse Solutions. (2021a). *A site classification for the proposed building envelope*. Lot 56 Quararup Road, Big Grove WA 6330. Performed on the 26 February 2021. Received by DWER on 1 April 2021. DWER ref: DWERDT434948.
- Bio Diverse Solutions. (2021b). *Soils sampling and analysis of soil test results*. Commissioned by Mr Jonathan Rowe to support clearing permit application CPS 9081/1. Received by DWER on 15 June 2021. DWER ref: DWERDT465301. Available at <https://ftp.dwer.wa.gov.au/permit/9081/>
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