



CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 10221/1
File Number: DWERVT12768
Duration of Permit: From 15 May 2024 to 15 May 2033

PERMIT HOLDER

Wylco Developments Pty Ltd

LAND ON WHICH CLEARING IS TO BE DONE

Lot 2770 on Deposited Plan 203074, Forest Grove

AUTHORISED ACTIVITY

The permit holder must not clear more than 1.12 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 15 May 2026.

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;
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared; and
- (d) only move soils in dry conditions.

4. Rehabilitation and revegetation

- (a) Within 24 months of undertaking clearing authorised under this permit, the permit holder must undertake *planting* of 1.07 hectares of *native vegetation* within the areas hatched red in Figure 2 of Schedule 1.
- (b) The permit holder must implement and adhere to the ‘2770 Warner Glen Road and 30 Brooks Road, Forest Grove Revegetation Management Plan’ (Oversby, 2024) within the areas hatched red in Figure 2 of Schedule 1, including but not limited to the following actions:
 - (i) deliberately *planting* tube stock at the *optimal time*, comprised of species which provide suitable foraging habitat for *black cockatoo species*;
 - (ii) ensuring only *local provenance* propagating material is used to *revegetate* and rehabilitate;
 - (iii) establish 5 x 5 metre quadrat monitoring sites as specified in the attached Schedule 2 (completion criteria);
 - (iv) undertake *weed* control activities prior to *planting*, bi-annually thereafter until the completion criteria in the attached Schedule 2 have been met;
 - (v) achieve the completion criteria specified in the attached Schedule 2 after a five-year monitoring period for areas *revegetated* and *rehabilitated* under this permit;
 - (vi) undertake remedial actions for areas *revegetated* and *rehabilitated*, where monitoring indicated that *revegetation/rehabilitation* has not met the completion criteria detailed in the attached Schedule 2 (completion criteria), including:
 - A. *revegetate/rehabilitate* the area by deliberately *planting* tube stock that will result in the minimum completion criteria detailed in the attached Schedule 2 and ensuring only *local provenance* propagating material are used;
 - B. additional *weed* control activities; and
 - C. monitoring of the *revegetated* and *rehabilitated* areas by an *environmental specialist*, until the completion criteria in the attached Schedule 2 are met.
- (c) where an *environmental specialist* determines that the completion criteria in the attached Schedule 2 has been met, a report shall be submitted to the *CEO* within three months of the determination being made.

5. 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 GDA2020, 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); and (e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2; and (f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 3.
2.	In relation to the <i>rehabilitation</i> and <i>revegetation</i> activities, pursuant to condition 4	<ul style="list-style-type: none"> (a) a description of the <i>rehabilitation</i> and <i>revegetation</i> activities undertaken; (b) the size of the area <i>rehabilitated</i> and <i>revegetated</i>; (c) the date/s on which the <i>rehabilitation</i> and <i>revegetation</i> was undertaken; (d) the boundaries of the area <i>rehabilitated</i> and <i>revegetated</i> (recorded digitally as a shapefile using a Global Positioning System (GPS) unit set to GDA2020, expressing the geographical coordinates in Eastings and Northings); (e) determinations made by an <i>environmental specialist</i>; and (f) other actions taken in accordance with condition 4.

6. Reporting

The permit holder must provide to the *CEO* the records required under condition 5 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 species	means one or more of the following species: (a) <i>Zanda latirostris</i> (Carnaby's cockatoo); (b) <i>Zanda 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.
environmental specialist	means a person who holds a tertiary qualification in environmental science or equivalent, and has a minimum of two (2) years work 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.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
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.
optimal time	means the period from April to June.
planting	means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species.
rehabilitate/ed/ing/ion	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.
revegetate/ed/ing/ion	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or

Term	Definition
	(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



Ryan Mincham
MANAGER
NATIVE VEGETATION REGULATION

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

SCHEDULE 1



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

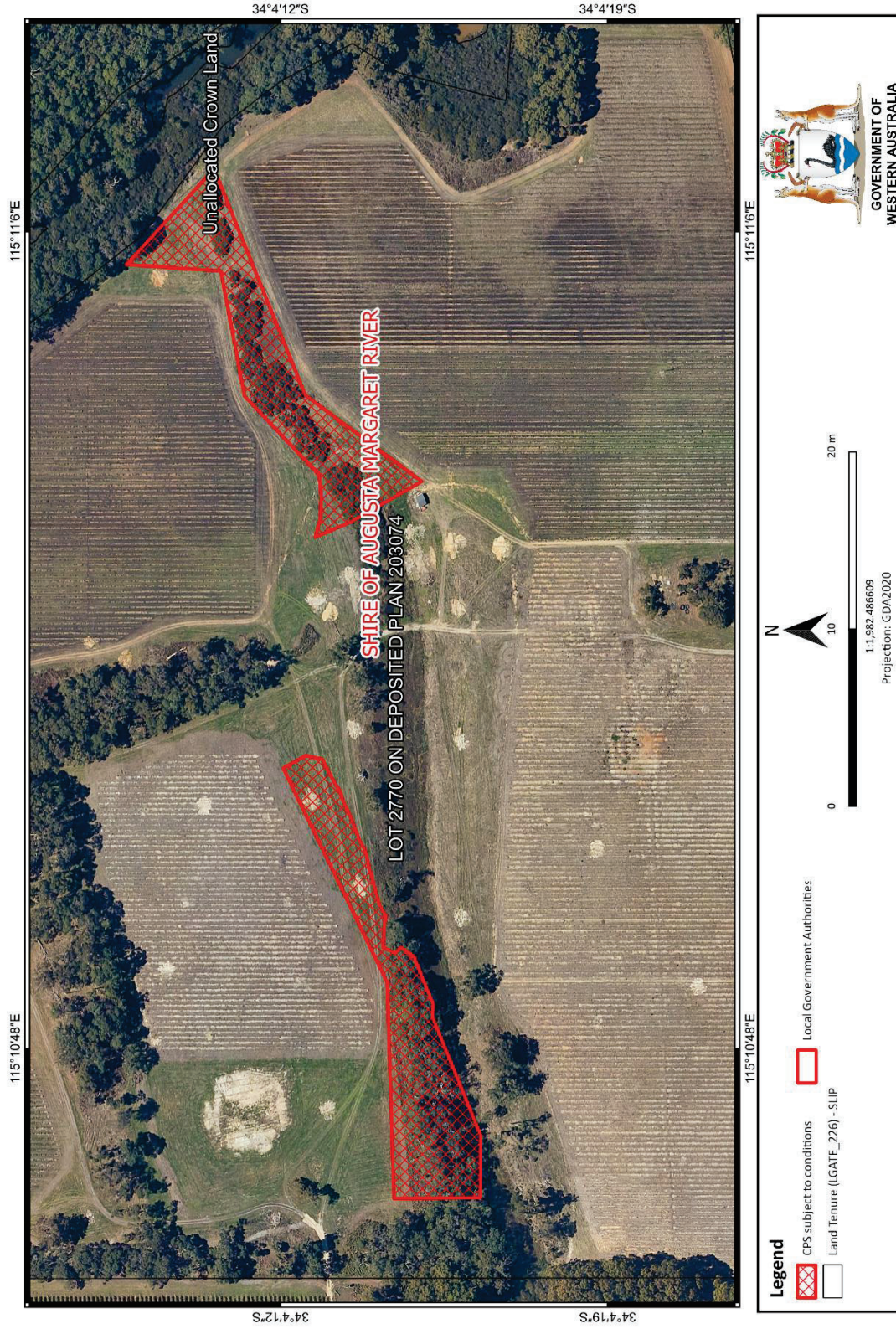


Figure 2: Map of the boundary of the area within which conditions apply.

SCHEDULE 2

Table 1. The revegetation and rehabilitation completion criteria are shown in the table below.

Criteria	Completion targets	Actions and timing	Monitoring
Vegetation – species composition	≥70% of species installed represented in each management zone after 5 years	<p><u>Year 2 - Planting</u></p> <ul style="list-style-type: none"> Conservation Zone B and Conservation Zone E: <ul style="list-style-type: none"> o tube stock will be planted into augered holes (150 mm in diameter and 300 – 500 mm in depth) and/or in deep ripped soil o average density of planted seedlings will be 2.5 plants per 10 m². <p>A native fertiliser tablet will be installed with each seedling (except for species in the Proteaceae family) to provide immediate nutrients to establishing plants.</p> <p>Infill planting will occur as determined by the results of monitoring.</p> <p><u>Weed control:</u></p> <ul style="list-style-type: none"> Will occur for at least one full year prior to seed and tube stock installation across the site, including in areas not requiring in-fill planting or seeding to encourage natural regeneration. Include a final weed control event pre-planting following soil disturbance associated with surface preparation as disturbance can trigger rapid weed germination. Will continue, as a minimum, in autumn and spring each year. 	<p><u>Years 1-3</u> - each monitoring zone will be monitored bi-annually (spring and autumn).</p> <p><u>Years 4-5</u> - each monitoring zone will be monitored annually (spring) (or until required).</p> <p>Monitoring quadrat (5m x 5m) installation per Conservation Zone:</p> <ul style="list-style-type: none"> Conservation Zone B – 2 monitoring quadrats Conservation Zone E – 2 monitoring quadrats <p>Data recorded within monitoring quadrats will record:</p> <ul style="list-style-type: none"> density (stems / m²) installed plants; native species present (species diversity); estimated native foliage cover (% cover); estimated total weed cover (% cover); the health of native vegetation; soil movement; fauna and pest activity; and comparison of quadrats to remainder of site. <p>A photo of the quadrat shall be taken from the NW corner.</p>
Vegetation – density	2,500 stems installed per hectare across the site and/or 70 percent cover of installed plants.		
Vegetation – condition	Vegetation is self-sustaining (i.e., evidence of plant maturity, flowering and seed set observed).		
Weed management	≤20% weed cover of grassy and pasture weeds. No declared weeds or exotic woody weeds present onsite		

	<p><u>Dieback management:</u></p> <ul style="list-style-type: none"> • All personnel, machinery and vehicles are to be cleaned down prior to arriving onsite to prevent any foreign soil or seeds entering the site. 		
<p>Site maintenance</p>	<p><u>Fence installation:</u></p> <ul style="list-style-type: none"> • A livestock exclusion fence will be installed around Conservation Zone B in year 1 • A rabbit proof and livestock exclusion fence will be installed around Conservation Zone E in year 1. 	<p>Rabbit proof fence and livestock exclusion fence intact. No rubbish on site.</p>	<p>Fences will be inspected (quarterly) and repaired when necessary.</p>



Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 10221/1
Permit type:	Area permit
Applicant name:	Wylco Development Pty Ltd
Application received:	31 May 2023
Application area:	1.13 hectares (ha) of native vegetation (later revised to 1.12 ha)
Purpose of clearing:	Dam construction
Method of clearing:	Mechanical
Property:	Lot 2770 on Deposited Plan 203074
Location (LGA area/s):	Shire of Augusta-Margaret River
Localities (suburb/s):	Forest Grove

1.2. Description of clearing activities

The application is to clear trees and shrubs to construct an irrigation dam for a new vineyard. The area proposed to be cleared is an approximately 320-metre strip along a watercourse and is surrounded by previously cleared lands used for agriculture, with dense forested areas to the east of the application (see Figure 1, Section 1.5).

The application was revised during the assessment process as it was identified that individuals of *Corymbia calophylla* (marri) within the original proposed clearing area were of a suitable diameter at breast height (DBH) to develop hollows. The changes included:

- refining the dam footprint to try and avoid marri trees within the western portion of the original proposed clearing area; and
- reduction in the amount of clearing from 1.13 ha to 1.12 ha to avoid and minimise the clearing impacts (see Section 3.1 for further details).

1.3. Decision on application

Decision:	Granted
Decision date:	22 April 2024
Decision area:	1.12 ha of native vegetation as depicted in Section 1.5, below.

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 Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and no submissions were received.

In making this decision, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix I.1.), the findings of a targeted fauna survey (see Appendix E), habitat assessment (see Appendix F) and supporting information (see Appendix G and Appendix H) submitted by the applicant, the clearing

principles set out in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments 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 0.25 ha of native vegetation that is suitable foraging habitat for black cockatoos;
- the potential introduction and spread of weeds and dieback into adjacent conservation areas, which could impact on the quality of the adjacent vegetation and its habitat values; and
- potential impacts to surface water quality from clearing riparian vegetation along a watercourse.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that impacts from the proposed clearing can be minimised and managed to unlikely lead to an unacceptable risk to environmental values.

The Delegated Officer decided to grant a clearing permit subject to conditions to:

- avoid, minimise to reduce the impacts and extent of clearing;
- take hygiene steps to minimise the risk of the introduction and spread of weeds and dieback; and
- planting and ensuring the long-term survival of 1.07 ha of native vegetation composed of species suitable for black cockatoo foraging.

1.5. Site map



Figure 1. Map of the application area

The area cross-hatched yellow indicates the area authorised to be cleared under the granted clearing permit. The areas cross-hatched red indicate areas within which revegetation and rehabilitation conditions apply.

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 polluter pays principle
- the principle of the conservation of biological diversity and ecological integrity.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Conservation and Land Management Act 1984* (WA) (CALM Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Planning and Development Act 2005* (WA) (P&D Act)

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (DER, December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant stated within their application that the shape and size of the dam was selected to avoid areas of better quality vegetation near the proposed clearing and that the site was selected due to the largely degraded condition of the site mainly composed of riparian weed species.

Revegetation and rehabilitation

Several individuals of *Corymbia calophylla* (marri) were identified within the proposed clearing area which represents approximately 0.25 ha of suitable foraging habitat (Western Environmental, 2023). To mitigate the loss of the suitable foraging habitat it was determined that the Applicant will be required to plant vegetation within the property composed of species suitable for black cockatoo foraging.

The applicant has plans to revegetate a number of different areas on the property and has proposed to dedicate specific sites to the planting of black cockatoo foraging species (Oversby, 2024). The Applicant initially proposed three different locations on the property (Figure 2) (Wylco, 2024a). These areas were subject to calculations using the WA Offsets metric which determined that Conservation Zone B and Conservation Zone E (see Section 1.5, Figure 1) would be the most appropriate locations, with a total of 1.07 ha of revegetation across both areas accounting for 100.2 per cent of the foraging habitat impacted by the proposed clearing. These two areas are considered optimal due to their proximity to the proposed clearing area and the potential for the sites to eventually enhance habitat connectivity within the landscape by acting as an ecological linkage.

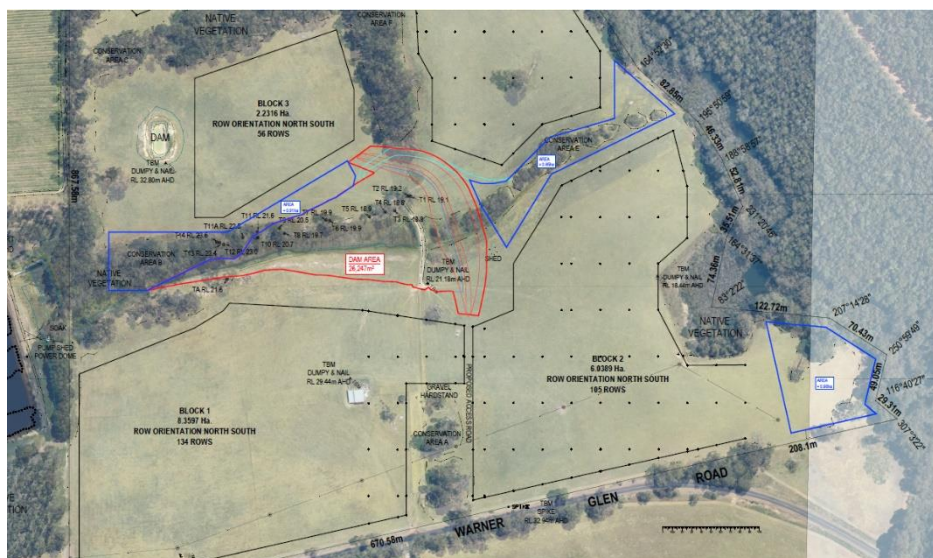


Figure 2. Different areas proposed for revegetation outlined in blue

A Revegetation Management Plan was developed to support the proposal (Oversby, 2024). Details of the plan include:

- Objectives:
 - develop a bushland mitigation and rehabilitation plan focussed on regenerating and improving the condition of remnant vegetation within each zone.
 - to establish plantings in areas that have previously been completely cleared that will connect the bushland corridors and provide appropriate habitat and forage.
 - to plant and establish screening vegetation and a windbreak using locally endemic plants so that all conservation zones are connected.
 - to put in place the mechanisms for native vegetation to become self-sustaining through a comprehensive weed control effort, as well as installing native plants in degraded and cleared patches between bushland remnants, as well as increasing understorey diversity in and around remnant trees.
 - replace vegetation removed for the construction of the onsite dam in line with offset requirements from the Department of Water and Environmental Regulation for CPS 10221/1.
 - the plan also includes an ongoing maintenance schedule based on formal site monitoring until completion criteria are met.
- Implementation strategy:
 - There are a total of nine (9) conservation zones across the property, each with its own implementation strategy. For the purpose of this clearing permit the relevant areas are:
 - Conservation Zone B – River valley bushland – Shallow sand over sandy clay; and
 - Conservation Zone E – Degraded river valley – Deep sandy clay loam
- Signage for public, contractors and employee awareness that rehabilitation works are undergoing will be placed at entry points where sites are not fenced yet and where rehabilitation areas are near access tracks and turn arounds.
- Fencing will be installed around the conservation areas to prevent the vegetation from being grazed, encourage natural recruitment, delineate the area from construction areas and protect from traffic:
 - Conservation Zone E will have a rabbit proof fence along with livestock exclusion fencing installed due to the high number of tube stock that will be planted and proximity to other vegetation.
 - Conservation Zone B will be fenced with standard stock proof fencing to prevent grazing. A rabbit proof fence was not considered necessary for this zone as less tube stock is required to be planted and is further away from the nearby conservation areas where rabbits are likely to be inhabiting.
- Weed management: use herbicides selected for the target species, that consider the surrounding environment. Where appropriate, selective herbicides (i.e. grass or broadleaf-specific) shall be favoured over general knockdown herbicides to keep off-target damage to a minimum. In some instances, alternative control methods such as manual removal shall be considered where appropriate. It is noted that weed management within Conservation Zone B has already commenced in anticipation of planting during Winter 2024.
- Dieback management: the site will be treated as dieback uninterpretable, and all personnel, machinery and vehicles are to be cleaned down prior to arriving onsite to prevent any foreign soil or seeds entering the site.
- Species selection and plant allocations:
 - The species used in this plan has been based on previously conducted flora surveys by other consultants and local bodies, and visual observations made during the on-ground site assessment, and what was available when plants are ordered, and the success of the growing of the tube stock.
- Seedling propagation and planting:
 - All living material to be used in the plan will be sourced from accredited nursery suppliers.
- Site maintenance:
 - On-going weed management,
 - Re-planting in areas of poor response.
 - Fence repair; and
 - Disease and pest control.

The Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the proposed 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 (fauna), significant remnant vegetation and conservation areas, and land and water

resources. 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. Biological values (fauna) - Clearing Principles (b)

Assessment

The desktop assessment identified fourteen species of conservation significant fauna within the local area. Of these species, there are two amphibians, four birds, two fish, one invertebrate, and five mammals.

The survey and habitat assessment (Harewood, 2023) conducted of the proposed clearing area identified two different habitat types described as (Appendix E, Figure 6):

- Lower creek section – Dense but patchy tall shrubland over weeds, bracken and bare ground
- Upper creek section – Sedgeland bordered by scattered trees and woodland.

A map provided by the applicant (See Appendix G) identified the vegetation as primarily riparian including *Corymbia calophylla*, *Taxandria linearifolia*, *Lepidosperma tetraquetrum*, *Leptocarpus scariosus*, and *Juncus pallidus*. The remainder of the clearing area is composed of largely pasture grasses, bracken fern and weed species.

The fauna assessment (Harewood, 2023) found no evidence of threatened or priority fauna within the application area, however, determined that the proposed clearing contains suitable habitat for several fauna species (Appendix E, Figure 7 and 8). Based on a likelihood of occurrence assessment and habitat assessment (Harewood, 2023), there are five conservation significant fauna species that may have suitable habitat within the proposed clearing area, namely:

- *Anstisia alba* (white-bellied frog) (critically endangered)
- *Calyptorhynchus banksii naso* (forest red-tail black cockatoo) (vulnerable)
- *Pseudocheirus occidentalis* (western ringtail possum) (critically endangered)
- *Zanda baudinii* (Baudin's cockatoo) (endangered)
- *Zanda latirostris* (Carnaby's cockatoo) (endangered)

Black cockatoos (VU – EN)

According to available mapping, the application area is located within the known breeding area for *Zanda latirostris* (Carnaby's cockatoo), within the core distribution for *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) and within the known distribution for *Zanda Baudinii* (Baudin's cockatoo). While habitat requirements for the three species of black cockatoos differ, the requirements in general can be categorised as breeding habitat, foraging habitat and night roosting habitat. In the context of the application area, there are two records of Carnaby's and Baudin's within one kilometre, both being 0.61 km away. The nearest forest red-tail black cockatoo is recorded 3.26 km from the application area.

Breeding habitat

Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (DAWE, 2022). The proposed clearing is mapped within the Jarrah Forest bioregion where jarrah and marri forests are utilised by all three black cockatoo species for breeding and is the main breeding region for Baudin's and Forest red-tailed black cockatoos. All three species prefer to breed in woodland or forest but have been known to breed in partially cleared areas including isolated trees (DAWE, 2022). According to available databases there are no confirmed breeding sites recorded within the local area.

Habitat trees considered potentially suitable for Black Cockatoo breeding have a DBH greater than 500 millimetres. The proposed clearing includes the removal of ten marri trees, nine of which were identified as having a suitable DBH to develop a hollow (Appendix F) and may impact on another five marri trees with suitable DBH due their proximity to the dam (Western Environmental, 2023). None of the trees assessed contained hollows (Western Environmental, 2023).

While the marri trees are of suitable DBH, it should be noted that the proposed clearing is in proximity to two conservation areas that are densely forested. These areas are likely to contain suitable trees for breeding and would be preferable sites over the proposed clearing area since black cockatoos prefer forested areas for breeding (DAWE, 2022). Furthermore, given that the vegetation adjacent to the proposed clearing is within conservation tenure including a National Park, the risk that suitable breeding habitat within the local area will be lost within the foreseeable future is low and therefore, it is considered that the trees within the proposed clearing area are not likely to represent potential breeding habitat which is significant for black cockatoos.

Foraging habitat

Foraging habitat differs between the three species of black cockatoos; however, marri are considered to be a primary foraging resource for both Baudin's cockatoo and the forest red-tailed black cockatoo (DAWE, 2022).

Food resources within the range of roosting and breeding sites are important to sustain populations of black cockatoos, and foraging resources should therefore be viewed in the context of the proximity to the known night

roosting and breeding sites to the application area. Black cockatoos will generally forage up to 12 km from an active breeding site. Following breeding, they will flock in search of food, usually within six kilometres of a night roost (DAWE, 2022). Available databases note that there are records of roosting sites within the local area, however, no breeding sites. Therefore, the vegetation within the application area may support foraging by roosting populations.

The fauna assessment (Harewood, 2023) and black cockatoo habitat assessment (Western Environmental, 2023) did not find evidence of foraging by black cockatoos within the proposed clearing area. The black cockatoo assessment does note that the removal of the marri trees will result in the loss of up to 0.25 ha of suitable foraging habitat. While there is no evidence of foraging within the site currently, this does not mean the trees will not be utilised in the future and given that the foraging habitat is within the range of known roosting locations, the application contains foraging habitat which may be utilised by local black cockatoo populations.

Night Roost sites

Black cockatoo night roosts are usually located in the tallest trees of an area, and near both a food supply and surface water (DAWE, 2022). *Corymbia calophylla* (marri), the species proposed to be cleared, is a key roosting species for both Carnaby's cockatoo and the forest red-tailed black cockatoo and riparian habitats are known to be the preferred roosting sites for all three species due to the proximity to freshwater (DAWE, 2022). Four black cockatoo roosting sites were recorded within the local area, the nearest being approximately 3.27 km west of the application area.

Black cockatoos rely upon the availability of night roosting habitat in proximity to foraging resources and rely on access to watering points in selecting night roost sites, with roost sites usually within two kilometres of a watering point. The black cockatoo habitat assessment (Western Environmental, 2023) noted that the size of the marri trees along with their proximity to water and foraging resources are suitable for roosting by black cockatoos, however, no evidence of roosting was identified. Given the number of roosting sites within the local area and the presence of large areas of remnant vegetation nearby, the proposed clearing is not likely to significantly impact on the availability of suitable roost sites for black cockatoos.

Western ringtail possum (CR)

Based on available datasets there are 97 records of *Pseudocheirus occidentalis* (western ringtail possum) in the local area, the nearest being 1.65 km from the proposed clearing.

Habitat critical for the western ringtail possum is generally long unburnt vegetation with high canopy connectivity and habitat connecting patches of remnants (DPAW, 2017). Based on the habitat assessment (Harewood, 2023) and photographs provided by the applicant (Appendix H), both the upper and lower creek sections lack the habitat structure and connectivity required to support the species, furthermore, no evidence of the western ringtail possum was identified within the application area (Harewood, 2023).

In addition to the above, the proposed clearing is adjacent to large areas of vegetation that are more likely to contain habitat that support this species and therefore, given the lack of suitable habitat features, the small size of the application, and its proximity to suitable habitat it is not likely the proposed clearing would have a significant impact on the western ringtail possum.

White-bellied frog (CR)

Anstisia alba (formerly *Geocrinia alba*) (white-bellied frog) is a small, critically endangered frog found in the south-west of Western Australia. Available datasets show the nearest record of this species is 1.51 km from the application, with 101 records within the local area.

The habitat of the white-bellied frog is described as swampy flows along drainage depressions and is typically associated with dense overstorey vegetation dominated by *Homalospermum firmum*, *Taxandria linearifolia* (Swamp Peppermint), *Astartea fascicularis* (False Baeckea), and a dense ground layer of rhizomatous vegetation, usually composed of *Taraxis* sp., *Loxocarya* sp. and *Tetrarrhena laevis* (forest ricegrass) (DPAW, 2015). The white-bellied frog's specific habitat requirements means that it has a highly restricted distribution, with the combined occupied habitat patches totalling to approximately 1.9 km² (DPAW, 2015). This is largely due to extensive clearing of the species' habitat for agricultural uses.

The Recovery Plan for the white-bellied frog (DPAW, 2015) states that critical habitat is anything that is considered to provide suitable hydrology, vegetation structure, and protection from threats, even if the species is not present within it. Unoccupied habitat that may facilitate movement of the species between populations, or other unoccupied habitat is also considered to be necessary for the survival of the frog for genetic exchange (DPAW, 2015).

Male, white-bellied frogs will generally call during the breeding period which is September to November (DPAW, 2015). A targeted survey for the white-bellied frog was conducted between October 2022 and January 2023 using acoustic recording devices set up at various locations along the stream to record any calling males that may be present (Appendix F, Figure 5) (Harewood, 2023). The survey did not record any calling from the white-bellied frog during this period and did not find physical evidence of their presence within the creek, meaning that it is unlikely that there is a population of the species within the proposed clearing area.

The lack of recordings can likely be attributed to the degraded condition of the proposed clearing area. According to the habitat assessment (Harewood, 2023), the lower creek section lacks the habitat structure preferred by this species and the upper creek section, while appearing to be in better condition, does not contain the dense overstorey that is preferred by the frog.

Therefore, based on the habitat composition of the proposed clearing area and lack of individuals, it is not likely that the proposed clearing provides suitable habitat for the white-bellied frog, nor would it act as a linkage between populations since aerial mapping suggests that the proposed clearing is largely disconnected from known populations. In addition, advice from the Department of Biodiversity, Conservation and Attractions (DBCA) to the Shire of Augusta-Margaret River regarding the development approval further stated that based on the condition of the vegetation within the proposed clearing area, it is unlikely the white-bellied frog would be present within the creekline (DBCA, 2024).

Conclusion

Based on the above assessment, the proposed clearing will result in the loss of black cockatoo foraging habitat. For the reasons set out above, it is considered that the impacts of the proposed clearing on black cockatoo habitat can be managed by planting and ensuring the long-term survival of native vegetation suitable for foraging by black cockatoos.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- Plant and ensure the long-term survival of at least 1.07 ha of vegetation suitable for foraging by black cockatoos.

3.2.2. Significant remnant vegetation and conservation areas (conservation areas) and Land and water resources (water quality and riparian vegetation) - Clearing Principles (f), (h), (i)

Assessment

The proposed clearing is mapped along a minor, non-perennial watercourse that drains into Upper Chapman Brook and Blackwood River. Upper Chapman Brook is mapped within two conservation reserves adjacent to the proposed clearing: Chapman forest block and Blackwood River National Park.

Timber Reserves are managed under the *Conservation and Land Management Act 1984* (CALM Act) and are reserved for the purpose of conservation, recreation, timber production, water catchment protection, or other purposes (CPC, 2023). This particular reserve is part of the Chapman Forest block which is currently utilised for public firewood collection (DBCA, 2023) and is located approximately 0.32 km west of the application area.

Blackwood River National Park is home to a portion of the Blackwood River and is popular for camping, kayaking, swimming, and fishing. It was designated a National Park in 2004 to better protect old growth forest in the region (CCWA, 2003). The proposed clearing is located approximately 0.67 km south-west of the National Park.

Topographical contours (Figure 3) suggest that the proposed clearing is on a downward slope towards the conservation areas meaning that impacts from clearing and dam construction on the watercourse within the proposed clearing area may indirectly impact the Timber Reserve and Blackwood River National Park. This could include hazardous material and the introduction and spread of weeds and dieback through the mobilisation of contaminated water from the proposed clearing area.



Figure 3. Topographic contours of the application area showing a downward slope towards the river in the right portion of the map.

The conservation areas are composed of jarrah-marri forests which can be susceptible to dieback. Dieback is a disease caused by *Phytophthora cinnamomi* which is a soil-borne microscopic organism that attacks the roots and collar of susceptible species (Commonwealth of Australia, 2018). The south-west of Western Australia is considered to be vulnerable to dieback due to the Mediterranean climate (Commonwealth of Australia, 2018). *P. cinnamomi* is transmitted through infected soil, water, plant material and often through overland and subsurface water flow with greater movement along clay soils and peat (Commonwealth of Australia, 2018). Humans are considered to be the fastest transmitter of dieback, especially in areas subject to summer rainfall which create ideal conditions for spread and reproduction.

The proposed clearing is located within the Lower Blackwood River Catchment. Agricultural practices are one of the major land uses within this region which has led to nutrient enrichment, dryland salinity and acid sulphate soils, many of which have impacted the health of the catchment (DWER, n.d.). The loss of riparian vegetation during clearing activities may impact the water quality of the Upper Chapman Brook and Blackwood River due to reduced capacity to buffer contaminants and excess nutrients that may be present (DWER, 2023a). The Department's South-West Planning (DWER, 2023a) advised that potential risks to water quality are greater if clearing and construction works take place during periods of increased rainfall, such as winter.

Therefore, the proposed clearing may impact adjacent conservation areas by impacting the water quality of watercourses associated with these areas and through the introduction and spread of weeds and dieback into the conservation areas. However, adopting appropriate hygiene procedures can be used to minimise the risk of impacting these environmental values.

Conclusion

Based on the above assessment, the proposed clearing may result in the introduction and spread of weeds and dieback into adjacent conservation areas and impact on surface water quality of nearby watercourses. For the reasons set out above, it is considered that the impacts of the proposed clearing on adjacent conservation areas and surface water quality can be managed by taking steps to minimise the risk of the introduction and spread of weeds and dieback, and only undergoing clearing activities during dry conditions.

Conditions

To address the above impacts, the following management measures will be required as conditions on the clearing permit:

- weed and dieback hygiene management conditions.

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include:

- Development approval under the *Planning and Development Act 2005* (issued by the Shire of Augusta-Margaret River).
- Licence to abstract water under the *Rights in Water and Irrigation Act 1914* (RIWI Act).

- Permit to interfere with the bed and banks of a watercourse under the RIWI Act.

Development Approval

The Shire of Augusta-Margaret River (the Shire) advised DWER that local government approvals are required and noted that while potential impacts do not appear to be significant, this would need to be reviewed during the assessment for the Development Approval (Shire of Augusta-Margaret River, 2023).

On 13 March 2024, the Shire granted a Development Approval for a dam subject to conditions, including conditions related to managing impacts to native vegetation, namely (Wylco, 2024):

- Retained native vegetation must not be damaged or cleared during any works related to dam construction;
- Local endemic species are to be planted where dam stabilisation is required, and must survive for two summers from initial planting;
- Management actions to minimise the risk of introduction and spread of dieback and weeds;
- Revegetation requirements including the submission of a revegetation plan to the Shire; and
- Requirements to comply with the EP Act

Approvals under the RIWI Act

The proposed clearing is mapped within the Lower Blackwood River Surface Water Area and is located along a watercourse which requires both a surface water licence and permit to interfere with the bed and banks of a watercourse under the RIWI Act.

Advice received from DWER's water licencing stated that the proposed dam is located within the Upper Chapman Surface Water subarea which is considered a relatively small catchment and given that a large dam (constructed prior to proclamation and licencing) is already present on the property, additional allocation would not likely be approved and the applicant would be required to split the existing allocation across both dams (DWER, 2023).

Wylco Developments Pty Ltd have submitted a surface water application for the proposed dam and an amendment to reduce the capacity of the existing dam on 23 November 2023. Based on the designs submitted to the Shire (Shire of Augusta-Margaret River, 2024), both the existing and new dam will include spillways to prevent the storage of water over their approved capacity.

DWER's water licencing have accepted the proposed dam designs and has proposed to approve a licence and permit provided that a Clearing Permit and Development Approval are obtained (DWER, 2024). Noting this, the Delegated Officer was satisfied that the outstanding water licences were not a significant barrier to granting the clearing permit in this instance.

No Aboriginal sites of significance have been mapped within the application area. 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.

End

Appendix A. Additional information provided by applicant

Summary of information	Consideration of information
Fauna assessment including a targeted survey of <i>Anstisia alba</i> (white-bellied frog)	Study did not record any calling of the species during the three month period. See section 3.2.1.
Photographs and DBH assessment of <i>Corymbia calophylla</i> (marri) trees within the proposed clearing area and revised clearing footprint.	See Section 3.2.1. See Appendix F.
Proposed revegetation areas and species to be planted	See Section 3.1. Avoidance and Mitigation Measures.
Development Approval from the Shire of Augusta-Margaret River	See section 3.3. Planning and other matters
Revegetation management plan	See Section 3.1. Avoidance and mitigation Measures.

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	<p>The area proposed to be cleared is a 1.12 ha patch of native vegetation along a watercourse in the intensive land use zone of Western Australia. It is surrounded by previously cleared farmland and adjacent to large, forested areas. The proposed clearing area is a small remnant that connects to important conservation areas.</p> <p>Aerial imagery indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 55 per cent of the original native vegetation cover.</p>
Ecological linkage	The application is not mapped within any formal ecological linkages.
Conservation areas	<p>The application is not within any conservation areas. There are five conservation reserves within the local area (<10 km), two of which are within one kilometre of the proposed clearing:</p> <ul style="list-style-type: none"> • Unnamed timber reserve – 0.29 km east • Blackwood River National Park – 0.56 km east
Vegetation description	<p>Photographs and the fauna assessment (Harewood, 2023) supplied by the applicant indicate the vegetation within the proposed clearing area comprised of <i>Corymbia calophylla</i> and <i>Taxandria linearifolia</i> and weed species. Representative photos and maps are available in Appendix E.</p> <p>This is consistent with the mapped vegetation type(s):</p> <ul style="list-style-type: none"> • Treeton Tw, which is described as Open forest of <i>Eucalyptus patens</i>-<i>Corymbia calophylla</i>-<i>Eucalyptus marginata</i> subsp. <i>marginata</i> on lower slopes and on floors of minor valleys in the perhumid zone. <p>The mapped vegetation type/s retain approximately 33.73 per cent of the original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs supplied by the applicant indicate the vegetation within the proposed clearing area is in degraded to good (Keighery, 1994) condition, described as:</p> <ul style="list-style-type: none"> • 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 • 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. <p>The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.</p>

Characteristic	Details
Climate and landform	<p>Forest Grove is located within a Mediterranean climate. The nearest weather station is Witchcliffe which records a mean maximum temperature of 21.4 degrees Celsius and mean rainfall of 1013.3 mm.</p> <p>The application is located on a slope that ranges between 15 m and 5 m AHD. Landform is characterised by narrow v-shaped open drainage depressions on the bottom of valleys.</p>
Soil description	The soil is mapped as the Treeton Valley Phase which is described as Narrow V-shaped drainage depressions comprised of duplex sandy gravels, loamy gravels, grey deep sandy duplex soils, pale sandy earths, and semi-wet soils.
Land degradation risk	The application is mapped in an area of high wind erosion risk.
Waterbodies	<p>The desktop assessment and aerial imagery indicated that one minor river associated with the Blackwood river intersects the application area.</p> <p>There are two wetlands within one kilometre of the application:</p> <ul style="list-style-type: none"> Rosa Brook (Conservation category) - 214.83 m east Spearwood Creek (Proposed RAMSAR site) – 671.1 m south east
Hydrogeography	The proposed clearing is located within the Lower Blackwood River Surface Water Area and the Blackwood Groundwater area. The site is mapped as low flood risk.
Flora	A total of 185 flora records across 18 species were found in the local area, none of which were recorded within one kilometre of the site. The nearest flora record was <i>Pimelea ciliata</i> subsp. <i>longituba</i> (P3) which was found approximately 2.77 km from the proposed clearing.
Ecological communities	One threatened ecological community was recorded within ten kilometres of the application which is the <i>Reedia spathacea – Empodisma gracillimum – Sporadanthus rivularis</i> dominated floodplains and paluslopes of the Blackwood Plateau Priority 1 community located approximately 5.94 km from the application.
Fauna	<p>There are 403 records of 22 species of conservation significant fauna within the local area. This includes two amphibians, nine birds, two fish, two invertebrates, and seven mammals.</p> <p>Two of these species were recorded within one kilometre of the proposed clearing area:</p> <ul style="list-style-type: none"> <i>Zanda baudinii</i> (Baudin's cockatoo) – 0.51 km <i>Zanda latirostris</i> (Carnaby's cockatoo) – 0.51 km <p>Four black cockatoo roosts are recorded within a ten kilometre radius of the application, the nearest being 2.65 km west of the proposed clearing.</p>

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	proportion (%) of current extent in all DBCA managed land
IBRA bioregion*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	69.74
Vegetation complex**					
Treeton Tw	8,676.10	2,926.58	33.73	1,747.41	20.14
Local area					
10 km	32,166.06	17,691.78	55.00	-	-

*Government of Western Australia (2019a)

**Government of Western Australia (2019b)

B.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Anstisia alba</i> (white-bellied frog)	CR	Y	Y	1.22	88	N/A
<i>Calyptorhynchus banksii naso</i> (Forest red-tailed black cockatoo)	VU	Y	Y	2.72	6	N/A
<i>Calyptorhynchus</i> sp. 'white-tailed black cockatoo'	EN	Y	Y	3.24	45	N/A
<i>Pseudocheirus occidentalis</i> (western ringtail possum, ngwayir)	CR	N	Y	1.32	126	N/A
<i>Zanda baudinii</i> (Baudin's cockatoo)	EN	Y	Y	0.51	54	N/A
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y	Y	0.51	22	N/A

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

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> "Native vegetation should not be cleared if it comprises a high level of biodiversity."</p> <p><u>Assessment:</u></p> <p>The area proposed to be cleared does not contain significant flora, fauna, habitats, assemblages of plants. The site is largely comprised of previously cleared fields with sparse trees.</p>	Not likely to be at variance	No
<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></p> <p>The area proposed to be cleared contains a number of <i>Corymbia callophylla</i> trees which is a species known to provide primary foraging, roosting, and breeding habitat for black cockatoos.</p>	At variance	Yes <i>Refer to Section 3.2.1, above.</i>
<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></p> <p>Given the degraded condition of the site and the distance to the nearest flora record, the area proposed to be cleared is unlikely to contain habitat for threatened flora species listed under the BC Act.</p>	Not likely to be at variance	No
<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."</p> <p><u>Assessment:</u></p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p>The area proposed to be cleared does not contain species indicative of a threatened ecological community (TEC). The nearest TEC is over five kilometres from the application.</p>		
<p>Environmental value: significant remnant vegetation and conservation areas</p>		
<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 and native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia. The vegetation proposed to be cleared is not considered to be part of a significant ecological linkage in the local area.</p>	<p>Not likely to be at variance</p>	<p>No</p>
<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> <p>Given the distance to the nearest conservation area, the proposed clearing may have an impact on the environmental values of a timber reserve and Blackwood National Park downstream from the dam.</p>	<p>May be at variance</p>	<p>Yes</p> <p><i>Refer to Section 3.2.2, above.</i></p>
<p>Environmental value: land and water resources</p>		
<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>A watercourse associated with the Blackwood River intersects the application area, therefore the vegetation within the application area is growing in association with a watercourse</p>	<p>At variance</p>	<p>Yes</p> <p><i>Refer to Section 3.2.2, above.</i></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></p> <p>The mapped soils are highly susceptible to wind erosion. Noting the extent, vegetation condition, and purpose of the application, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	<p>Not likely to be at variance</p>	<p>No</p>
<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>Given that a watercourse associated with the Blackwood River intersects the application area and two wetlands are within one kilometre of the application area, the proposed clearing may impact surface or ground water quality.</p>	<p>May be at variance</p>	<p>Yes</p> <p><i>Refer to Section 3.2.2, above.</i></p>
<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>	<p>Not likely to be at variance</p>	<p>No</p>

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. Biological survey information excerpts



Figure 4. Locations of the acoustic recording sample sites





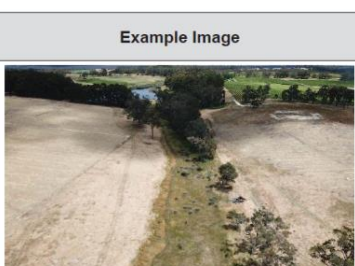



Fauna Habitat Description	Example Image	Fauna Habitat Description	Example Image
<p>Lower Creek Section</p> <p>Dense but patchy tall shrubland over weeds, bracken and bare ground.</p>	 <p>177°S (M) • 50S 332289 6228508 1128 m</p>  <p>ZOO10PIA 10 Jan 2023 18:20:34</p>	<p>Lower Creek Section</p> <p>Dense but patchy tall shrubland over weeds, bracken and bare ground.</p>	 <p>9°N (M) • 50S 332337 6228523 115 m</p>  <p>56°NE (M) • 50S 332503 6228623 124 m</p> <p>ZOO10PIA 01 Nov 2022 11:01:18</p>
<p>Upper Creek Section</p> <p>Sedgeland bordered by scattered trees and woodland.</p>	 <p>231°SW (M) • 50S 332050 6228476 118 m</p>  <p>ZOO10PIA 16 Dec 2022 10:41:26</p>	<p>Upper Creek Section</p> <p>Sedgeland bordered by scattered trees and woodland.</p>	 <p>255°SW (M) • 50S 332109 6228494 132 m</p>  <p>01 Nov 2022 17:24:11</p>

Figure 5. Habitat descriptions and photographs within the survey area (Harewood, 2023).

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act	EPBC Act				
Carter's Freshwater Mussel <i>Westralunio carteri</i>	VU	VU	Occurs in greatest abundance in slower flowing streams with stable sediments that are soft enough for burrowing amongst woody debris and exposed tree roots.	No	Would Not Occur.	The creek running through the survey area is unsuitable habitat for this species. No impact on this species will occur.
Pouched Lamprey <i>Geotria australis</i>	P3	-	This species lives in mud burrows in the upper reaches of coastal streams for the first four years of life until migrating to the sea. Adults migrate up to 60km upstream during spawning.	No	Would Not Occur.	The creek running through the survey area is unsuitable habitat for this species. No impact on this species will occur.
Balston's Pygmy Perch <i>Nannatherina balstoni</i>	VU	VU	Acidic, tannin stained freshwater pools, streams and lakes within 30km of the coast, typically situated amongst peat flats. Prefers shallow water and is commonly found in association with tall sedge thickets.	No	Would Not Occur.	The creek running through the survey area is unsuitable habitat for this species. No impact on this species will occur.
Mud Minnow <i>Galaxiella munda</i>	VU	-	Typically found in small flowing streams near submerged vegetation, occasionally in still water of ponds, swamps and roadside drains. Water is usually darkly tannin stained and acidic (pH 3.0 – 6.0).	No	Would Not Occur.	The creek running through the survey area is unsuitable habitat for this species. No impact on this species will occur.
Dunsborough Burrowing Crayfish <i>Engaewa reducta</i>	EN	CR	Vegetated surface seepages, swamp plains and shallow swampy headwater tributaries.	Yes/Marginal	Would Not Occur.	Outside of documented/known distribution. Much of the creek running through the survey area is too degraded to represent suitable habitat for this species. No evidence of presence found. No impact on this species will occur.
Margaret River Burrowing Crayfish <i>Engaewa pseudoreducta</i>	CR	CE	Narrow creek tributaries of the Margaret River which are densely vegetated on heavy grey/yellow clay soils.	Yes/Marginal	Would Not Occur.	Outside of documented/known distribution. Much of the creek running through the survey area is too degraded to represent suitable habitat for this species. No evidence of presence found. No impact on this species will occur.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act	EPBC Act				
White-bellied Frog <i>Anstisia alba</i>	CR	CR	Inhabit swampy flows along drainage depressions in an area of subdued topography (relief < 80m) near the junction of the Leeuwin-Naturaliste Ridge and Blackwood Plateau. Breeding sites are typically associated with sandy soils, dense overstorey vegetation dominated by <i>Homalosperrum firmum</i> , <i>Agonis linearifolia</i> , <i>Astartea fascicularis</i> , and a dense ground layer of rhizomatous vegetation, usually composed of <i>Pseudoloxocarya sp.</i> , <i>Loxocarya sp.</i> and <i>Tetrarrhena laevis</i> .	Yes/Marginal	Unlikely to Occur	Not detected during three month call recording survey. Appears to be absent. Much of the creek running through the survey area is too degraded to represent suitable habitat for this species. No impact on this species anticipated.
Orange-bellied Frog <i>Anstisia vitellina</i>	VU	VU	Very dense swamp vegetation (to 4 m high) on clay, bordering streams and seeps.	Yes/Marginal	Would Not Occur.	Outside of documented distribution. Not detected during three month call recording survey. Much of the creek running through the survey area is too degraded to represent suitable habitat for this species. No impact on this species anticipated.
Australasian Bittern <i>Botaurus poiciloptilus</i>	EN	EN	Freshwater wetlands, occasionally estuarine; prefers heavy vegetation such as beds of tall dense <i>Typha</i> , <i>Baumea</i> and sedges in freshwater swamps.	No/Marginal	Unlikely to occur	Habitat appears marginal (too open/low) for this species. No impact on this species anticipated.
Migratory Shorebirds/Wetland Species/Marine Species (various reptiles, birds and mammals)	Mig, Various	Ma, Mig, Various	Varies between species but includes open ocean, beaches and permanent/temporary wetlands varying from billabongs, swamps, lakes, floodplains, sewerage farms, saltwork ponds, estuaries, lagoons, mudflats sandbars, pastures, airfields, sports fields and lawns.	No	Would Not Occur.	No suitable habitat. No impact on this range of species will occur.
Hooded Plover <i>Thinomis rubricollis</i>	P4	-	Broad sandy ocean beaches and bays, coastal and inland salt lakes.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Peregrine Falcon <i>Falco peregrinus</i>	OS	-	Diverse from rainforest to arid shrublands, from coastal heath to alpine. Mainly about cliffs along coasts, rivers and ranges and about wooded watercourses and lakes.	Yes	Possibly Occurs.	Loss/modification of small area of foraging habitat. No impact on this species will occur.
Masked Owl (SW population) <i>Tyto n. novaehollandiae</i>	P3	-	Roosts and nests in heavy forest, hunts over open woodlands and farmlands.	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.
Carnaby's Black Cockatoo <i>Zanda latirostris</i>	EN	EN	Forests, woodlands, heathlands, farms; feeds on <i>Banksia</i> , <i>Hakea</i> and <i>Marr.</i>	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.

Species	Conservation Status		Habitat Preferences	Habitat Present	Likelihood of Occurrence	Comments/Possible Impacts
	BC Act	EPBC Act				
Baudin's Black Cockatoo <i>Zanda baudinii</i>	EN	EN	Mainly eucalypt forests where it feeds primarily on the marri seeds.	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.
Forest Red-tailed Black Cockatoo <i>Calyptorhynchus banksii naso</i>	VU	VU	Eucalypt forests, feeds on marri, jarrah, blackbutt, karri, sheoak and snottygobble.	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.
Fork-tailed Swift <i>Apus pacificus</i>	MI	Ma, Mig	Low to very high airspace over varied habitat from rainforest to semi desert.	Yes	Unlikely to Occur, Flyover only on very rare occasions.	May occur very occasionally for brief periods. Entirely aerial. No impact on this species will occur.
Chuditch <i>Dasyurus geoffroii</i>	VU	VU	Forest, mallee shrublands, woodland and desert. The densest populations have been found in riparian jarrah forest.	Yes/Marginal	Unlikely to Occur.	Remnant vegetation likely to be too degraded to support this species, occasional transients only. No impact on this species anticipated.
South-west Brush-tailed Phascogale <i>Phascogale tapoatafa wambenger</i>	CD	-	Dry sclerophyll forests and open woodlands that contain hollow-bearing trees but a sparse ground cover.	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.
Quenda <i>Isodon fusciventer</i>	P4	-	Dense scrubby, often swampy, vegetation with dense cover.	Yes	Possibly Occurs.	Loss/modification of small areas of habitat. Negligible impact anticipated.
Western Ringtail Possum <i>Pseudocheirus occidentalis</i>	CR	CE	Coastal peppermint, coastal peppermint-tuart, jarrah-marri associations, sheoak woodland, and eucalypt woodland and mallee.	Yes	Possibly Occurs.	Area of potential habitat (Woodland) outside of main clearing footprint. No impact on this species anticipated.
Quokka <i>Setonix brahyurus</i>	VU	VU	Currently restricted to densely vegetated coastal heaths, swamps, riverine habitats including tea-tree thickets on sandy soils along creek systems.	No	Would Not Occur.	No suitable habitat. No impact on this species will occur.
Western Brush Wallaby <i>Notamacropus irma</i>	P4	-	Open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets.	No	Would Not Occur.	Fragmented state of habitat within the survey area suggests this species is unlikely to persist. No impact on this species will occur.
Western False Pipistrelle <i>Falsistrellus mackenziei</i>	P4	-	Wet sclerophyll forest dominated by karri and in high rainfall zones of the jarrah and marri forest.	Yes	Possibly Occurs.	Area of potential habitat (woodland) outside of main clearing footprint. No impact on this species anticipated.
Water Rat <i>Hydromys chrysogaster</i>	P4	-	Permanent water, fresh, brackish or marine.	No/Marginal	Unlikely to Occur.	Habitat appears marginal at best for this species. No impact on this species anticipated.

Figure 6. Fauna likelihood assessment (Harewood, 2023).

- Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* – Vulnerable (BC/EPBC Act). No evidence of this species recorded. The creek line itself contains no suitable habitat for this species but it may utilise the nearby scattered marri trees and woodland habitat as foraging habitat. No evidence of roosting observed. Listed as a potential species based on available information.
- Carnaby's Black Cockatoo *Zanda latirostris* – Endangered (BC/EPBC Act). No evidence of this species recorded. The creek line itself contains no suitable habitat for this species but it may utilise the nearby scattered marri trees and woodland habitat as foraging habitat. No evidence of roosting observed. Listed as a potential species based on available information.
- Baudin's Black Cockatoo *Zanda baudinii* – Endangered (BC/EPBC Act). No evidence of this species recorded. The creek line itself contains no suitable habitat for this species but it may utilise the nearby scattered marri trees and woodland habitat as foraging habitat. No evidence of roosting observed. Listed as a potential species based on available information.
- Peregrine Falcon *Falco peregrinus* – OS (BC Act) This species potentially utilises some sections of the entire Lot as part of a much larger home range though it is only likely to occur infrequently. All areas represent potential foraging habitat for this species. Listed as a potential species based on available information.
- Masked Owl *Tyto novaehollandiae* – P3 (BC Act Priority Species) Status in the general area is difficult to determine. The creek line itself represents potential foraging habitat for this species and it may utilise adjacent woodland areas for roosting. Listed as a potential species based on available information.
- South-western Brush-tailed Phascogale *Phascogale tapoatafa wambenger* – CD (BC Act). No evidence of this species recorded. The creek line itself contains no suitable habitat for this species but it may utilise the nearby scattered marri trees and woodland as habitat. Listed as a potential species based on available information.
- Quenda *Isodon fusciventer* – P4 (BC Act Priority Species). No evidence of this species recorded. Areas of dense groundcover along and adjacent to the creek line represent potential habitat for this species. Most of this habitat is located upstream and outside of the likely works footprint. Listed as a potential species based on available information.
- Western Ringtail Possum *Pseudocheirus occidentalis* – Critically Endangered (BC/EPBC Act). No evidence of this species recorded. The creek line itself contains no suitable habitat for this species but it may utilise the nearby woodland habitat. Most of this habitat is located upstream and outside of the likely works footprint. Listed as a potential species based on available information.
- Western False Pipistrelle *Falsistrellus mackenziei* – P4 (BCA Priority Species) Status in the general area is difficult to determine. The creek line itself represents potential foraging habitat for this species and it may utilise adjacent woodland areas for roosting (subject to suitable hollows being present). Listed as a potential species based on available information.

Figure 7. Assessment of fauna considered to 'possibly occur' (Harewood, 2023).

Appendix F. Black cockatoo habitat assessment excerpts

Table 2: Potential Breeding Trees

Tree Identifier	Species and DBH from Feature Survey	Breeding Tree Suitability	Potential to be Impacted
1	Marri. 3.12m Circumference. DBH: 0.99m.	Suitable DBH No hollow formation	Will be removed, in dam footprint
2	Marri. 3.31m Circumference. DBH: 1.05m	Suitable DBH No hollow formation	Will be removed, in dam footprint
3	Marri. 2.49m Circumference. DBH 0.79m	Suitable DBH No hollow formation	Will be removed, in dam footprint
4	Marri. 2.80m Circumference. DBH: 0.89m	Suitable DBH No hollow formation	Will be removed, in dam footprint
5	Marri. 1.23m Circumference. DBH: 0.39m	Not suitable DBH No hollow formation	Will be removed, in dam footprint
6	Marri. 1.98m Circumference. DBH: 0.63m.	Suitable DBH One <10cm in side branch. Not suitable size	Will be removed, in dam footprint
7	Marri. 1.63m Circumference. DBH: 0.52m	Suitable DBH No hollow formation	Will be removed, in dam footprint
8	Marri. 3.86m Circumference. DBH: 1.23m	Suitable DBH One <10cm in side branch. Not suitable size	Will be removed, in dam footprint
9	Marri. 1.75m Circumference. DBH: 0.55m	Suitable DBH No hollow formation	Will be removed, in dam footprint
10	Marri. 3.10m Circumference. DBH: 0.98m	Suitable DBH No hollow formation	Will be removed, in dam footprint
11	Marri clump of 7 trees. (Clump2) Largest 2.87m Circumference. DBH: 0.91m	One tree with suitable DBH. Six with <50cm DBH. No hollow formation	Potentially impacted, on edge of dam water level footprint
12	Marri. 3.18m Circumference. DBH: 1.01m	Suitable DBH No hollow formation	Potentially impacted, 10-15m from water level footprint
13	Marri. 3.05m Circumference. DBH: 0.97m	Suitable DBH No hollow formation	Potentially impacted, 10-15m from water level footprint
14	Marri. 1.98m Circumference. DBH: 0.63m	Suitable DBH No hollow formation	Potentially impacted, 10-15m from water level footprint
A	Marri 3.58m Circumference. DBH: 1.149m	Suitable DBH Snapped upwards facing dead stag and snapped upwards facing branch. Inspected with pole camera. No hollow formation in stag or snapped hanging branch. See images Below	Potentially impacted, on edge of dam water level footprint

Figure 8. *Corymbia calophylla* (marri) measurements (Western Environmental, 2023)



Pole Camera images Tree A, no hollows present

Figure 9. Example photo of one of the marri trees with no hollows (Western Environmental, 2023).



Figure 2 Marri Foraging Habitat Extent

Figure 10. Location of suitable foraging habitat within the proposed clearing area (Western Environmental, 2023).

Potential impacts comprise:

- Removal of nine suitable DBH trees within dam footprint. No trees contain suitable breeding hollows.
- Potential impact to five suitable DBH trees growing 5-15m from edge of dam footprint. No trees contain suitable breeding hollows.
- Removal/impacts to approximately 0.25ha of suitable foraging habitat comprising Marri canopy extent. Up to 21 Marri trees impacted. No evidence of foraging recorded on the site.
- Removal of potential roosting habitat. No evidence of use as a roost site.

Local and regional habitat outside of the area of impact comprises:

- Extensive suitable breeding, foraging and roosting habitat present immediately to the east of the site. Comprising several reserves and state forest including Blackwood River National Park, South Blackwood State Forest, Pagett Nature Reserve and the Wiltshire Butler National Park.
- Within Lot 2770 a significant number of large Marri trees are present and are proposed to be retained. The dam footprint has been designed to minimise impacts on large Marri trees along the creekline.

Figure 11. Potential impacts of the proposed clearing on black cockatoo habitat according to the black cockatoo assessment (Western Environmental, 2023).

Appendix G. Photographs of the Marri trees



Figure 12. Tree 1



Figure 13. Tree 2



Figure 14. Tree 3



Figure 15. Tree 4

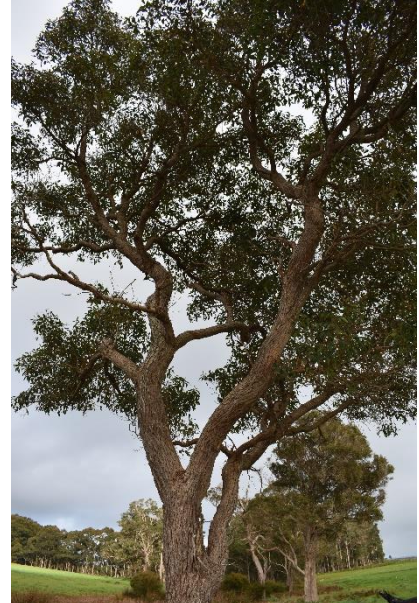


Figure 16. Tree 5

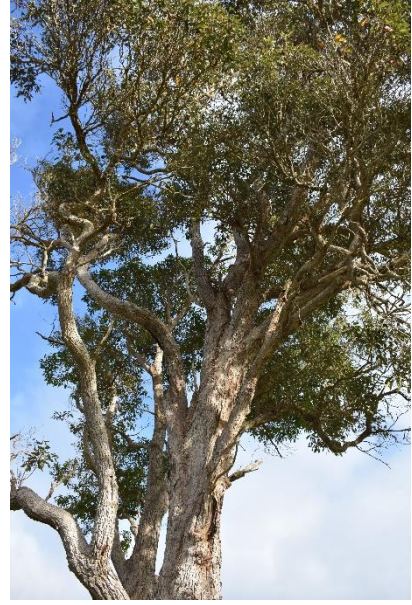


Figure 17. Tree 6



Figure 18. Tree 7



Figure 19. Tree 8



Figure 20. Tree 9



Figure 21. Tree 10



Figure 22. Tree 11



Figure 23. Tree 12

Appendix H. Photographs and maps of the vegetation

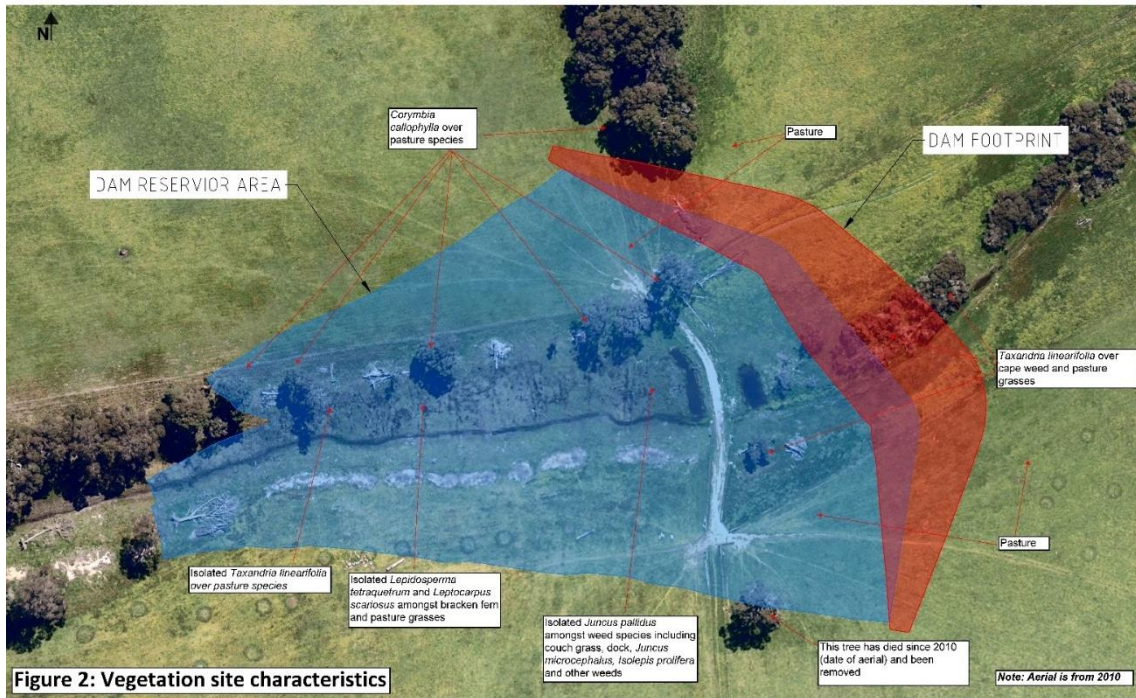
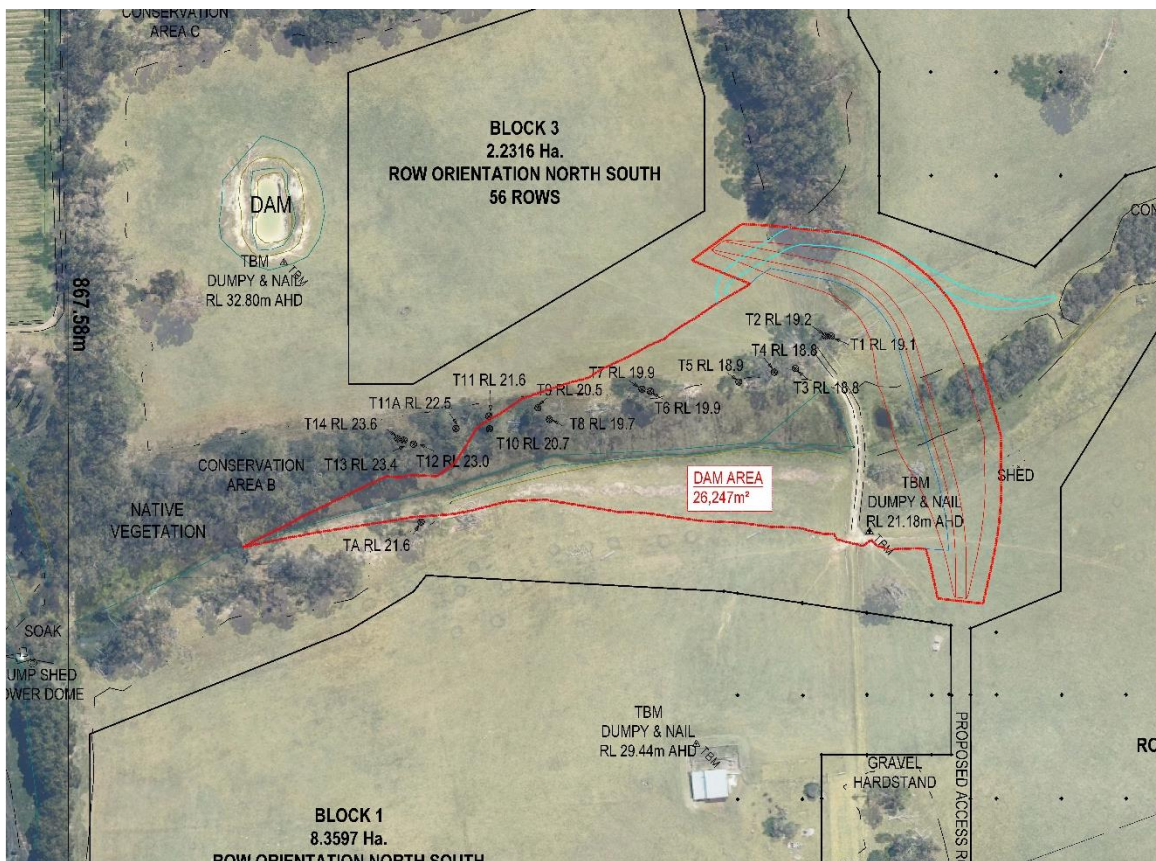


Figure 24. Map of the vegetation within the original dam footprint



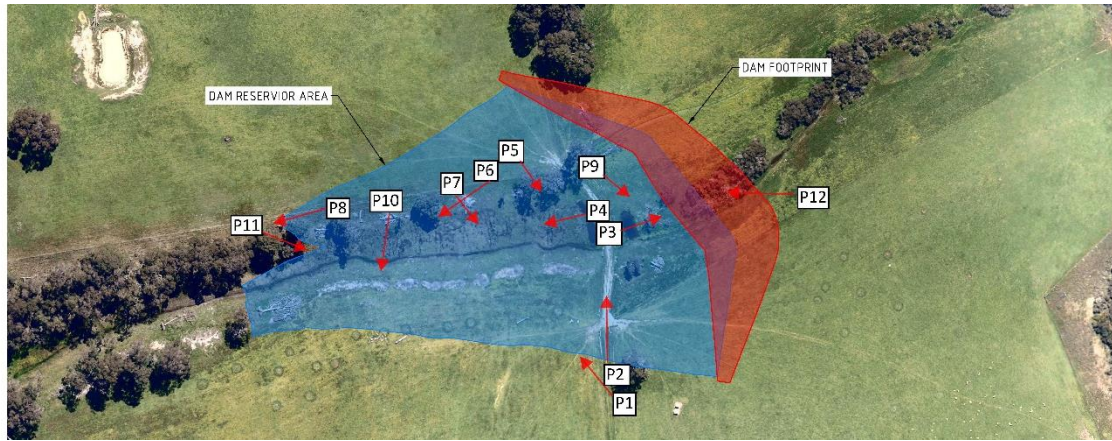


Figure 26. Map outlying the location and direction the site photographs in Figure 11 below were taken.

<p>P1.</p>	<p>P2.</p>	<p>P3.</p>
<p>P4.</p>	<p>P5.</p>	<p>P6.</p>
<p>P7.</p>	<p>P8.</p>	<p>P9.</p>
<p>P10.</p>	<p>P11.</p>	<p>P12.</p>



Figure 27. Photographs of the vegetation within and around the proposed clearing. Numbers correspond to the locations in Figure 26.

Appendix I. Sources of information

I.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)
- Cadastre (LGATE-218)
- 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

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)

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