GOVERNMENT OF
WESTERN AUSTRALIA

CLEARING PERMIT

Granted under section 51E of the Environmental Protection Act 1986

PERMIT DETAILS

Area Permit Number: CPS 9247/1

File Number: DWERVT7703

Duration of Permit: From 19 December 2022 to 19 December 2024

PERMIT HOLDER

Mr Nathanial James Muir and Amanda Leah Muir

LAND ON WHICH CLEARING IS TO BE DONE

Lot 9064 on Deposited Plan 201680, Glenoran

AUTHORISED ACTIVITY

The permit holder must not clear more than 1.65 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

CONDITIONS

1. 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.

2. 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.

3. Directional clearing

The permit holder must conduct clearing activities in a slow, progressive manner from south to north to allow fauna to move into adjacent *native vegetation* ahead of the clearing activity.

4. Fauna management – western ringtail possums

(a) In relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to inspect that area immediately prior to, and for the duration of clearing activities, for the presence of western ringtail possum(s) (*Pseudocheirus occidentalis*).

(b) Clearing activities must cease in any area where fauna referred to in condition 4(a) are identified until either:

(i) the western ringtail possum(s) individual has moved on from that area to adjoining *suitable habitat*; or

(ii) the western ringtail possum(s) individual has been removed by a *western ringtail possum specialist*.

(c) Any western ringtail possum(s) individual removed in accordance with condition 4(b)(ii) must be relocated by a *western ringtail possum specialist* to a *suitable habitat.*

(d) Where fauna is identified under condition 4(a), the permit holder must within 14 calendar days provide the following records to the *CEO*:

(i) the number of individuals identified;

(ii) the date each individual was identified;

(iii) the location where each individual was identified recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994/2020(GDA94/GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;

(iv) the number of individuals removed and relocated;

(v) the relevant qualifications of the *western ringtail possum specialist* undertaking removal and relocation;

(vi) the date each individual was removed;

(vii) the method of removal;

(viii) the date each individual was relocated;

(ix) the location where each individual was relocated to, recorded using a GPS unit set to GDA94/GDA2020, expressing the geographical coordinates in Eastings and Northings or decimal degrees; and

(x) details pertaining to the circumstances of any death of, or injury sustained by, an individual.

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	(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 1994/2022 (GDA94/GDA2022), 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 1; and (f) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 2; and (g) actions taken in accordance with condition 3; and (h) actions taken to manage and mitigate impacts to western ringtail possums 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 have the meanings defined.

Table 2: Definitions

Term	Definition
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*.
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.
fill	means material used to increase the ground level, or to fill a depression.
dieback	means the effect of *Phytophthora* species on native vegetation.
department	means the department established under section 35 of the *Public Sector Management Act 1994* (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	*Environmental Protection Act 1986* (WA)
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.
suitable habitat (western ringtail possum)	means habitat known to support western ringtail possums (*Pseudocheirus occidentalis*) within the known current distribution of the species, typically characterised by abundant foliage, presence of suitable nesting structures such as tree hollows, as well as high canopy cover and continuity. Known habitat includes peppermint (*Agonis flexuosa*) dominated woodlands, jarrah (*Eucalyptus marginata*) and marri (*Corymbia calophylla*) forests, riparian vegetation with a canopy of Bullich (*Eucalyptus megacarpa*) or flooded gum (*Eucalyptus rudis*), karri (*Eucalyptus diversicolor*) forests, sheoak (*Allocasuarina fraseriana*) dominated woodlands, and other stands of myrtaceous trees growing near swamps, watercourses or floodplains.
weeds	means any plant – (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*; or (b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

Term	Definition
western ringtail possum specialist	means a *fauna specialist* who holds a tertiary qualification specialising in environmental science or equivalent, has a minimum of two years of work experience in western ringtail possum (*Pseudocheirus occidentalis*) identification, surveys of western ringtail possums and capture and handling of western ringtail possums, and holds a valid fauna licence issued under the *Biodiversity Conservation Act 2016*.

END OF CONDITIONS

Meenu Vitarana
Manager
NATIVE VEGETATION REGULATION

Officer delegated under Section 20
of the Environmental Protection Act 1986

24 November 2022

SCHEDULE 1

The boundary of the area authorised to be cleared is shown in the map below (Figure 1)

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

Government of Western Australia
Department of Water and Environmental Regulation

Clearing Permit Decision Report

1 Application details and outcome

1.1. Permit application details

Permit number:	CPS 9247/1
Permit type:	Area permit
Applicant name:	Nathanial James Muir and Amanda Leah Muir
Application received:	24 March 2021
Application area:	1.62 hectares of native vegetation
Purpose of clearing:	Dam construction
Method of clearing:	Mechanical
Property:	Lot 9064 on Deposited Plan 201680
Location (LGA area/s):	Shire of Manjimup
Localities (suburb/s):	Glenoran

1.2. Description of clearing activities

The vegetation proposed to be cleared is contained within a single contiguous area (see Figure 1, Section 1.5) for the construction of a dam. A previous permit CPS 7703/1 was granted for the clearing of 1.5 hectares over a majority of the application area in 2017 for the same purpose. The previous permit was amended once to provide additional time to undertake the clearing and dam construction, however the works hadn't been undertaken.

1.3. Decision on application

Decision:	Granted
Decision date:	24 November 2022
Decision area:	1.62 hectares 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 F.1), the findings of a flora survey and a black cockatoo habitat survey (see Appendix A), advice received from the Department of Biodiversity Conservation and Attractions and 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 native vegetation that is suitable habitat for western ringtail possum; and
- the potential introduction and spread of weeds into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined the proposed clearing is unlikely to have long-term adverse impacts on flora or fauna values and can be minimised and managed to be unlikely to lead to an unacceptable risk to these 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
- clear in a slow progressive manner from south to north a allow fauna to move into adjacent vegetation
- manage impacts to western ringtail possums which may be within the area at the time of clearing

1.5. Site map

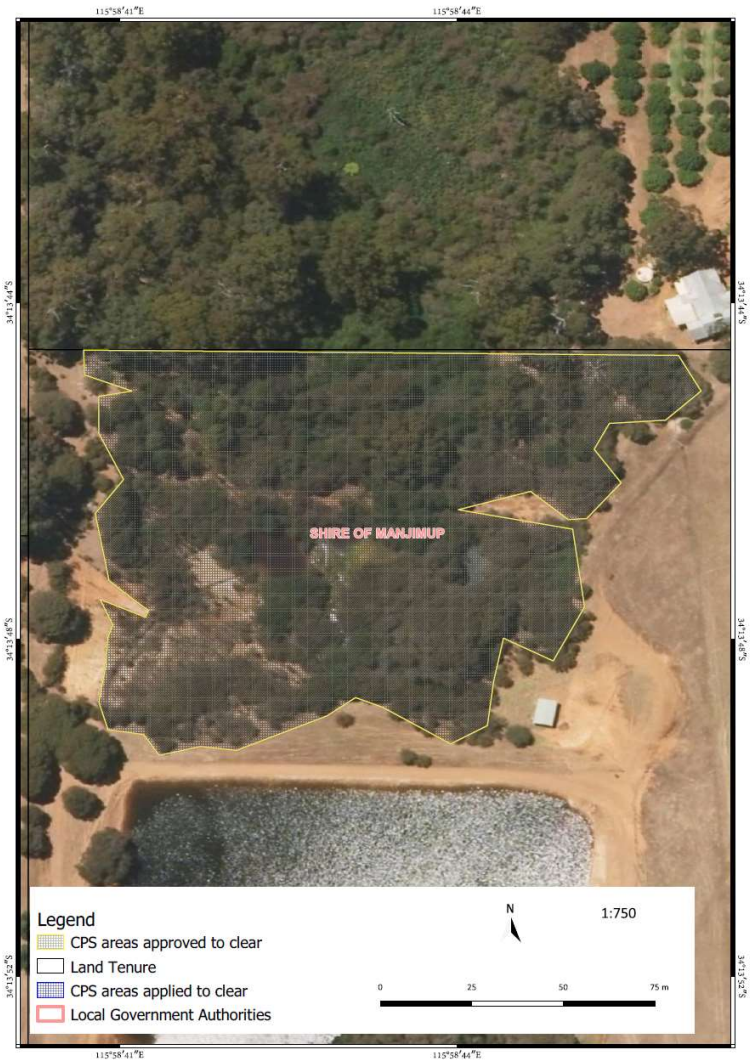

Figure 1 Map of the application area

The area crosshatched 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)
- *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 – *Flora and Vegetation Surveys for Environmental Impact Assessment* (EPA, 2016)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (EPA, 2016)

3 Detailed assessment of application

3.1. Avoidance and mitigation measures

Evidence was submitted by the applicant, demonstrating that the site of the dam is the most suited for the purpose. This is consistent with the topographic contours of the landscape and the existing dam south of the application area.

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 fauna (if present at the time of clearing) and adjacent vegetation through the potential spread of weeds. 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 (flora) - Clearing Principles (a and c)

Assessment - Flora

A preliminary assessment determined the application area had a likelihood of the following flora species occurring based on similarities between records of occurrences and the vegetation type preferences and soil type preferences of the species and confirmed with advice received from Department of Biodiversity Conservation and Attractions (DBCA, 2021)

- *Caladenia harringtoniae* (T)
- *Deyeuxia inaequalis* (P1)
- *Pultenaea pinifolia* (P3) and
- *Stylidium ireneae* (P4)

The applicant engaged a consultant to undertake a targeted survey for the species above. The results of the survey effort yielded no findings of the species listed above. The survey found none of the Threatened or Priority taxa, nor any other plant species of conservation significance. “Most of the site had been previously disturbed and the vegetation had been modified over much of the survey area. A small portion of the survey area was inaccessible because of a thick blackberry infestation or the presence of quagmire. Ecoedge is confident, nonetheless, that no Threatened or Priority flora occurs within the survey area” (Ecoedge, 2022,). An extract from the survey effort can be seen in Appendix A.

Noting the findings of the targeted survey, no impacts to priority of threatened flora species are expected and therefore no conditions related to flora are required.

3.2.2. Biological values (fauna) - Clearing Principle (b)

Assessment – Black cockatoos

The preliminary assessment considered that the application area may provide habitat for *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo); *Zanda baudinii* (Baudin's cockatoo); and *Zanda latirostris* (Carnaby's cockatoo) as the application area is within the known breeding range of Baudin's and Carnaby's black cockatoo and the 'core' habitat of FRTBC, and therefore, is within the known range for all three back cockatoo species. The habitat preferences for the three species are described in the table below (from Referral guideline for 3 WA threatened black cockatoo species' (Commonwealth of Australia, 2022)):

Breeding habitat		
Baudin's cockatoo	Carnaby's cockatoo	FRTBC
Generally, in woodland or forest, but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of karri Eucalyptus diversicolor, marri Corymbia calophylla, wandoo E. wandoo and tuart E. gomphocephala.	Generally, in woodland or forest, but also breeds in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of salmon gum E. salmonophloia, wandoo, tuart, jarrah E. marginata, flooded gum E. rudis, York gum E. loxophleba subsp. loxophleba, powder bark E. accedens, karri and marri.	Generally, in woodland or forest, but may also breed in former woodland or forest now present as isolated trees. Nest in hollows in live or dead trees of marri, karri, wandoo, bullish E. megacarpa, blackbutt E. patens, tuart, and jarrah
Foraging habitat		
Baudin's cockatoo	Carnaby's cockatoo	FRTBC
Mostly marri (seeds, flowers, nectar, and grubs) and proteaceous trees and shrubs. Also, other native seeds and introduced fruits; insects and insect larvae; pith of kangaroo paw Anigozanthos flavidus; juice of ripe persimmons; tips of Pinus spp. and seeds of apples and pears.	Seeds, flowers, and nectar of native proteaceous plant species (for example, Banksia spp., Hakea spp., Dryandra spp, and Grevillea spp), eucalypts and Callistemon. Also seeds of introduced species including Pinus spp., Erodium spp., wild radish, canola, almonds, and pecan nuts; insects and insect larvae; occasionally flesh and juice of apples and persimmons	Mostly seeds of marri and jarrah, also Eucalyptus caesia, illyarrie E. erythrocorys and some introduced eucalypts such as river red gum E. camaldulensis and flooded gum E. grandis, Allocasuarina cones, fruits of snottygobble Persoonia longifolia and mountain marri Corymbia haematoxylon
Night roosting		
Baudin's cockatoo	Carnaby's cockatoo	FRTBC
Generally, in or near riparian environments or other permanent water sources. Any tall trees may provide roosting habitat, but particularly Jarrah, Flooded Gum, Blackbutt, Tuart and introduced eucalypts (Blue Gum (E. globulus), Lemon Scented Gum (Corymbia citriodora).	Generally, in or near riparian environments or natural and artificial permanent water sources. Any tall trees may provide roosting habitat, but particularly Flat-topped Yate (E. occidentalis), Salmon Gum, Wandoo, Marri, Karri, Blackbutt, Tuart, introduced eucalypts and introduced pines.	Any tall trees may provide roosting habitat, but particularly tall Jarrah, Marri, Blackbutt, Tuart and introduced eucalypt trees or large trees on the edges of forests

Breeding habitat for species of black cockatoos is described as trees of species known to support breeding within the range of the species which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, suitable DBH is 500 millimetres (Commonwealth of Australia, 2022).

The applicant was requested to provide detailed information about the presence, location, and size of eucalyptus trees with a diameter at breast height (130 cm) of greater than 50 centimeters within the application area. The applicant engaged a consultant to undertake a survey of trees within the application area. The survey noted the vegetation within the application area appears to be regrowth and consists of a mosaic of peppermint forming a low closed forest in association with areas of tall shrubland. The northern section of the survey area contains an open woodland of various densities of emergent karri and marri. Furthermore, the survey area contains one small area of eucalyptus open woodland with most trees being relatively young. The survey identified six trees with a diameter at

breast height of 50 centimeters or greater, none of which appeared to contain hollows of any size (Harewood,2022). Photographs from the survey undertaken are contained within Appendix A.

The application area is close to riparian environments (dams) and contains some tall trees which may be suitable as night roosting habitat for all three species of black cockatoo. The closest confirmed roosting site is 14 kilometers away. The loss of some trees which are potential night roosting habitat (not confirmed habitat) is not likely to be significant given that the local area retains approximately 54 percent remnant vegetation, and much vegetation remains in the property to the north.

The application area provides some limited foraging habitat in the form of some emergent marri and a small area of eucalyptus open woodland, however noting the presence of approximately 54 per cent coverage of remnant vegetation in the local area, it is considered that abundant foraging resources are available within the local area. Therefore, the proposed clearing is unlikely to represent a significant impact to local foraging resources for black cockatoos.

Assessment – other species

The quokka is known from mainland populations with the application area being within the southern forest subpopulation. The mainland population is within high rainfall areas including areas of jarrah, marri and karri forest that have a thick understory and area close to water sources. It is considered that the application area may present some of the preferred habitat characteristics for the species. However, the local area provides a large amount of habitat for the species, with records aligned with large areas of continuous remnant vegetation. It is considered unlikely that the species would occur within the application area.

The application area is considered suitable to contain habitat for western ringtail possum noting that the application area contains a portion of vegetation that has a connected canopy, is near sources of water (including a manmade dam). This is consistent with the previous assessment of the application area (CPS 7703/). DBCA noted that there are records of western ringtail possum within 600 metres of the application area (DBCA, 2017). There are 11 records of western ringtail possum in the local area (refer Table B.3). The application area is not likely to provide significant habitat for the species, noting the vegetation appears to be regrowth from several stages of historical clearing (Harewood, 2022), and that the surrounding areas provide better quality habitat for the species. However, individuals could be impacted if present at the time of clearing and management measures are required to avoid impacts to individuals.

The priority four species *Hydromys chrysogaster* (water-rat, rakali) is known from six records within the local area and has habitat preferences of burrows on low banks of rivers, lakes, wetlands, estuaries and even along the coast. Intact riparian vegetation and associated bank stability is critical to their survival (DWER, 2022). The species hunts for macroinvertebrates, fish and crustaceans, molluscs, frogs, birds, and bird eggs. The species has the potential to occur within the application area however suitable habitat is present in much of the surrounding areas particularly within the state forest and its watercourses. Impacts to individuals may occur if they are present at the time of clearing.

The priority four species *Isoodon fusciventer* (quenda, southwestern brown bandicoot) is known from 35 records within the local area and commonly occurs in areas that have sufficient understory and are close to water sources. The application area is likely to provide suitable habitat for the species although the habitat is not considered significant as a large quantity of intact vegetation remains within the local area. Impacts to individuals may occur if they are present at the time of clearing.

Conclusion

Based on the above assessment, the proposed clearing will result in impacts of individual fauna if present at the time of clearing.

For the reasons set out above, it is considered that the impacts of the proposed clearing on these potentially occurring fauna can be managed by conducting slow directional clearing to allow fauna to move into adjacent vegetation and by actively checking the area for western ringtail possums and removing individuals prior to clearing.

Conditions

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

- Directional clearing
- Fauna management (western ringtail possums) – inspection of application area and relocation of individuals as required

3.3. Relevant planning instruments and other matters

Other relevant authorisations required for the proposed land use include a permit to interfere with bed and banks under the *Rights in Water and Irrigation Act 1914*. The Department's water licence branch advised that a bed and banks permit for the proposed works will be issued to the applicant very soon (DWER, 2022).

The Shire of Manjimup advised DWER that the land is zoned as 'Priority Agriculture' under Local Planning Scheme No.4 and that no planning approval for expanding the existing dam is required if there is 20 meters between the lot boundary and the extent of the dam. While it is noted that the area approved extends to the boundary, the applicant has informed the department that this is to allow machinery access during dam construction and that no part of the dam will be within the 20-meter boundary of the lots (Muir, 2022).

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.

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End

Appendix A. Additional information provided by applicant

During the assessment, the applicant was requested to provide the following information:

- A targeted flora survey for Caladenia *harringtoniae, Deyeuxia inaequalis, Pultenaea pinifolia* and *Stylidium ireneae*
- Photographs of vegetation and of individual trees within the application area and locations of any eucalyptus trees with a diameter at breast height of any tree with a diameter at breast height of 130 centimeters.

The applicant provided documentation of a targeted flora survey and a black cockatoo habitat assessment in response to the request. The information from these surveys is discussed within Section 3.2.

> 2 Results
>
> None of the Threatened or Priority taxa was found, nor was any other plant species of conservation significance found.
>
> Most of the site had been previously disturbed and the vegetation had been modified over much of the survey area.
>
> A small portion of the survey area was inaccessible because of a thick blackberry infestation or the presence of quagmire.
>
> Ecoedge is confident, nonetheless, that no Threatened or Priority flora occurs within the survey area.

Extract from Ecoedge, 2022

Figure 2: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	406005 mE	6211961 mN	Tree Species	Dead Marri	Survey Date	14/09/2022
25	Comments	Dead marri - no hollows evident.				Classification	No Hollows.

Figure 3: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	405993 mE	6211967 mN	Tree Species	Marri	Survey Date	14/09/2022
26	Comments	Marri – no hollows evident.				Classification	No Hollows.

Figure 4: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	405986 mE	6211957 mN	Tree Species	Marri	Survey Date	14/09/2022
27	Comments	Marri – no hollows evident.				Classification	No Hollows.

Figure 5: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	405978 mE	6211948 mN	Tree Species	Karri	Survey Date	14/09/2022
28	Comments	Karri – no hollows evident.				Classification	No Hollows.

Figure 6: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	405994 mE	6211954 mN	Tree Species	Karri	Survey Date	14/09/2022
29	Comments	Karri – no hollows evident.				Classification	No Hollows.

Figure 7: Habitat trees within the application area (Harewood, 2022)

ID	Coordinates (MGA 94/Z50)	405944 mE	6211953 mN	Tree Species	Karri	Survey Date	14/09/2022
30	Comments	Karri – no hollows evident.				Classification	No Hollows.

Figure 8: Habitat trees within the application area (Harewood, 2022)

Appendix B. Site characteristics

B.1. Site characteristics

Characteristic	Details
Local context	The area proposed to be cleared is part of an approximate 22-hectare patch of native vegetation in the intensive land use zone of Western Australia. It is adjacent to agricultural land to the west and east, native vegetation to the north and an existing dam to the south. Spatial data indicates the local area (10-kilometre radius from the centre of the area proposed to be cleared) retains approximately 54 per cent of the original native vegetation cover.
Ecological linkage	The application area is approximately 750 meters southwest of an axis line identified by the Southwest Regional Ecological Linkages (Molloy et al, 2009). The application area is not considered to be an integral part of an ecological linkage.
Conservation areas	The closest conservation area to the application area is the Donnelly State Forest approximately 530 meters southeast.
Vegetation description	A site inspection (DWER, 2017) indicates the vegetation within the proposed clearing area consists of dense mature *Agonis flexuosa* (peppermint) trees with some riparian vegetation emerging near the watercourse, including *Pteridium esculentum* (bracken), myrtaceous shrubs, sedges and (exotic) blackberry. A description of vegetation within the application area was also provided with a black cockatoo habitat survey which noted 'almost all the vegetation appears to be regrowth from several stages of historical clearing possibly associated with the construction of the original dam. Over half of the survey area contains a mosaic of peppermint forming a low closed forest in association with areas of tall shrubland. The northern section of the survey area contains an open woodland of various densities of emergent karri and marri. The two types of vegetation area separated by an area of more recent disturbance that is in the early stages or regeneration and contains dense infestations of blackberry (Harewood, 2022) This is inconsistent with the mapped vegetation type Pemberton, PM1 (221), which is described as tall open forest of *Eucalyptus diversicolor* with mixtures of *Corymbia calophylla* on valley slopes and low forest of *Agonis juniperina-Banksia seminuda-Callistachys lanceolata* on valley floors in the perhumid zone (Mattiske and Havel, 1998). The mapped vegetation type/s retain approximately 64.6 per cent of the original extent (Government of Western Australia, 2019).
Vegetation condition	A site inspection (DWER, 2017) and information provided within descriptions within the surveys provided (Ecoedge, 2022 and Harewood, 20220 indicates the vegetation within the proposed clearing area is in Very Good (Keighery, 1994) to degraded condition, described below: Very good: described as 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 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 The full Keighery (1994) condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.
Climate and landform	Rainfall: 968 millimetres per year (taken from Manjimup data)

Characteristic	Details
Topography	Falls from 260 meters (Australian Height Datum) in the west, south and east of the application area to 250 meters AHD along the centre of the northern boundary of the application area.
Soil description	The soil is mapped as Pemberton Subsystem (Pimelaia) (254PvPM), described as 20 to 40 meters deep. Flat to gently sloping floors. Few channels. 3 to 10 degrees. Smooth slopes. Red or yellow gradational soils, not calcareous with some red duplex soils.
Land degradation risk	The soils within the application area have an insignificant risk of flood, waterlogging, salinity and water erosion, a moderate risk of phosphorus export risk, a moderate risk of wind erosion and a high risk of subsurface acidification.
Waterbodies	A minor perennial watercourse, a tributary of the Donnelly River approximately four kilometres to the west, flows northwards through the application area. A small area of open water associated with this watercourse is present in the centre of the application area. The closest mapped wetland to the application area is a palusplain wetland approximately 2.5 kilometres to the southeast.
Hydrogeography	Hydrogeology: Rocks of Low Permeability, Fractured and Weathered Rocks - Local Aquifers, metamorphic rocks lithology Groundwater salinity: 500-1000 milligrams per litre total dissolved solids The application area is mapped within the Donnelly River System surface water area proclaimed under the *Rights in Water and Irrigation Act 1914.* The application area is mapped within a "Priority not assigned" area within the Donnelly River Water Reserve gazetted under the *Country Areas Water Supply Act 1947*.
Flora	There are records of five priority and one threatened flora species within the local area, the closest of which to the application area is P1 species *Deyeuxia inaequalis* approximately three kilometers south.
Ecological communities	There are records of one priority ecological community within the local area (Epiphytic Cryptogams of the karri forest), the closest record of which to the application area is 2.6 kilometers west.
Fauna	There are records of 10 threatened, seven priority, one conservation dependent, one migratory and one other specially protected fauna species within the local area, the closest of which to the application area is threatened species *Pseudocheirus occidentalis* approximately one kilometer northeast.

B.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 all DBCA managed land
IBRA bioregion*					
Warren	833,985.56	659,432.21	79.07	558,485.38	66.97
Vegetation complex					
Mattiske vegetation complex 221**	25,801.16	16,661.53	64.58	15,021.45	58.22
Local area					
10km radius			54	-	-

*Government of Western Australia (2019a); **Government of Western Australia (2019b)

B.3. Flora analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix F.1) impacts to the following conservation significant flora required further consideration.

Species name	Conservation status	Suitable habitat features?	Suitable vegetation type?	Suitable soil type?	Distance of closest record to application area (km)	Number of known records in local area	Number of records in Florabase	Are surveys adequate to identify?
Amanita kalamundae	3	N	Y	N	4.3	1	19	NA
Caladenia harringtoniae	T	Y	Y	N	9.8	1	40	NA
Deyeuxia inaequalis	1	Y	Y	N	3.0	2	11	NA
Pultenaea pinifolia	3	Y	Y	N	6.8	1	44	NA
Rorippa cygnorum	2	N	Y	Y	7.3	1	15	NA
Stylidium ireneae	4	Y	Y	N	8.1	1	25	NA

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

B.4. Fauna analysis table

With consideration for the site characteristics set out above and relevant datasets (see Appendix F.1) impacts to the following conservation significant fauna required further consideration.

Species name	Conservation status	Suitable habitat features?	Distance of closest record to application area (km)	Number of known records in local area	Most recent record (year)	Are surveys adequate to identify?
Calyptorhynchus banksii naso (forest red-tailed black cockatoo)	VU	Y	1.7	45	2018	Y
Calyptorhynchus baudinii (Baudin's cockatoo)	EN	Y	3.8	14	2017	Y
Calyptorhynchus latirostris (Carnaby's cockatoo)	EN	Y	7.7	3	2018	Y
Galaxiella nigrostriata (black-stripe minnow, black-striped dwarf galaxias)	EN	N	9	1	1996	NA
Geocrinia lutea (Nornalup frog)	P4	Y	7.9	4	1985	NA
Hydromys chrysogaster (water-rat, rakali)	P4	Y	3.5	6	2012	N
Isoodon fusciventer (quenda, southwestern brown bandicoot)	P4	Y	3.6	10	2010	N
Oxyura australis (Blue-billed duck)	P4	Y	9.9	1	1980	NA
Pseudocheirus occidentalis (western ringtail possum, ngwayir)	CR	Y	1	11	2018	N
Setonix brachyurus (Quokka)	VU	Y	2.4	35	2017	NA
Westralunio carteri (Carter's freshwater mussel)	VU	Y	3.7	5	2019	NA

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

B.5. Ecological community analysis table

With consideration for the site characteristics set out above, relevant datasets (see Appendix F.1) impacts to the following conservation significant ecological communities required further consideration.

Community name	Conservation status	Suitable habitat features?	Suitable vegetation type?	Suitable soil type?	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify?
Epiphytic Cryptogams of the karri forest	P3	N	N	Y	2.6 (to PEC buffer)	27	NA

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		
Principle (a): *"Native vegetation should not be cleared if it comprises a high level of biodiversity."* Assessment: The area proposed to be cleared does not contain locally or significant flora, fauna, habitats, assemblages of plants.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (b): *"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."* Assessment: The area proposed to be cleared may contain limited habitat for conservation significant fauna.	May be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (c): *"Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora."* Assessment: The area proposed to be cleared is unlikely to contain habitat for flora species listed under the BC Act.	Not likely to be at variance	Yes *Refer to Section 3.2.1, above.*
Principle (d): *"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."* Assessment: The area proposed to be cleared does not contain species that can indicate a threatened ecological community.	Not likely to be at variance	No
Environmental value: significant remnant vegetation and conservation areas		
Principle (e): *"Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared."* Assessment: 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.	Not likely to be at variance	No
Principle (h): *"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."* Assessment: Given the distance to the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.	Not likely to be at variance	No
Environmental value: land and water resources		
Principle (f): *"Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland."* Assessment: Given a minor perennial water course is recorded within the application area the proposed clearing may impact on- site hydrology and water quality but is not considered likely to have impacts offsite.	At variance	No .

Assessment against the clearing principles	Variance level	Is further consideration required?
Principle (g): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation."* Assessment: The mapped soils are moderately susceptible to wind erosion, have an elevated risk or subsurface acidification and phosphorus export risk and have a low susceptibility to other forms of land degradation. Noting intact vegetation will remain to the north of the application area and the final land use is a dam, the proposed clearing is not likely to cause appreciable land degradation.	Not likely to be at variance	No
Principle (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."* Assessment: A minor non-perennial watercourse runs through the application area from north to south. The proposed clearing may impact water quality in the watercourse in the short term, but this is likely to be limited to onsite impacts given there is an existing dam to the south. Any impacts are likely to be minimal and short-term.	May be at variance	No
Principle (j): *"Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding."* Assessment: 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. A non-perennial watercourse runs through the application area. The mapped soil types have a low risk of flooding and waterlogging which is not expected to increase significantly because of the clearing or the future land use as a dam.	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.

Condition	Description
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

Vegetation Description	Example Image
Peppermint Low Closed Forest and Tall Shrubland . Appears to be regrowth from several historical clearing events in various stages of regeneration. Occupies most of the southern half of the survey area	  

Figure 9: Vegetation within the application area (Harewood, 2022)

Vegetation Description	Example Image
Existing cleared ground in early stages of regrowth including infestation of blackberries. Located in the central eastern section of the survey area.	 
Eucalyptus (marri and karri) open woodland – present across the northern section of the survey area. Most trees are relatively young and appear to be regrowth for a historical clearing event.	

Figure 10: Vegetation within the application area (Harewood, 2022)

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)

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