



Mr Ross Ryan
Owner
C.A. Ryan Pty Ltd (ACN 008 726 583)
PO Box 529
MANJIMUP WA 6258

via email: ross@manjimup.com

Dear Mr Ryan,

APPLICATION TO CLEAR NATIVE VEGETATION UNDER THE *ENVIRONMENTAL PROTECTION ACT 1986* – CLEARING PERMIT CPS 9032/1 GRANTED

I refer to your application for a permit under section 51E(1) of the *Environmental Protection Act 1986* (the EP Act), to clear 49.99 hectares of native vegetation within Lot 1486 on Deposited Plan 115192, Balbarrup, for the purpose of silviculture thinning and fuel load reduction burning. The application was received by the Department of Water and Environmental Regulation (the department) on 2 September 2020, and assigned the reference CPS 9032/1. The application was amended during a assessment, with the final clearing area being 49.82 hectares.

The Delegated Officer has assessed your application and determined that a clearing permit be granted under section 51E(5) of the EP Act. This permit authorises the permit holder to clear native vegetation, subject to the terms, conditions, and restrictions specified.

A copy of the permit and the associated decision report are attached to this notification, and are now also available on the department's website (at <https://www.der.wa.gov.au/our-work/clearing-permits/clearing-permits-available-for-public-appeal>) for the public to view, as required under regulation 8 of the *Environmental Protection (Clearing of Native Vegetation) Regulations 2004*.

Please read the conditions on the permit carefully and note that there are penalties for non-compliance with those conditions. If you wish to discuss this permit and/or its conditions, please contact the department.

Subject to compliance with any pre-clearing conditions on the permit, clearing must not be undertaken before the permit duration commencement date stated on the permit.

Please also note that in undertaking the clearing authorised under this permit, the permit holder must have regard to avoiding clearing, minimising clearing, and reducing the impacts of clearing on any environmental value.

Please note that as the permit requires the submission of a report on specified matters, this should be provided electronically via email to: info@dwer.wa.gov.au.

Please be aware that a license under the *Biodiversity Conservation Act 2016* from the Department of Biodiversity, Conservation and Attractions (DBCA) will be required to lawfully sell any timber cleared under this permit. For further information on this matter please contact DBCA's Wildlife Licensing Section on (08) 9219 9831 or email wildlifelicensing@dbca.wa.gov.au, or view the Wildlife Licensing Section's website at www.dbca.wa.gov.au.

It is noted that the permit covers an area in which there exists a registered Aboriginal Heritage Site. It is the responsibility of the permit holder to ensure that no Aboriginal Sites of Significance are damaged as a result of the clearing process. In implementing this permit please liaise with the Department of Planning, Lands and Heritage regarding the relevant obligations under the *Aboriginal Heritage Act 1972*.

If you are aggrieved by any of the conditions of the permit, an appeal may be lodged with the Minister for Environment, via the Office of the Appeals Convenor. If lodging an appeal, it must be in writing, setting out the grounds of the appeal, and be received within 21 calendar days of being notified of the decision. For further information or to lodge an appeal, please contact the Office of the Appeals (see contact details below):

Office of the Appeals Convenor
Level 22 Forrest Centre
221 St George's Terrace, PERTH WA 6000
Tel: 6364 7990 Fax: 6364 7999
Email: admin@appealsconvenor.wa.gov.au
Website: www.appealsconvenor.wa.gov.au

Note that third parties may also appeal against the grant of this permit or its conditions. Please note that, while an appeal is lodged by a third party is under consideration:

- if the appeal is against the grant of this permit, then under section 101A(9) of the EP Act, the permit is deemed not to have been granted and clearing cannot commence until the appeal is determined; and
- if the appeal is regarding a condition(s) of the permit, then under section 101A(6), the permit continues to have effect and clearing can commence in accordance with the conditions of the permit.

For more information about complying with your permit to clear native vegetation, please refer to *Fact Sheet 4: Complying with your clearing permit* found at: <https://www.der.wa.gov.au/our-work/clearing-permits/49-fact-sheets>.

Compliance with the terms, conditions, or restrictions of this permit does not absolve the permit holder from responsibility for compliance with the requirements of all Commonwealth, State, and local government legislation.

If you have any queries, please contact the Environmental Officer, as listed above.

Yours sincerely



Mathew Gannaway
MANAGER
NATIVE VEGETATION REGULATION

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

22 August 2022

Attached: Clearing permit with plan (CPS 9032/1)
Decision report for CPS 9032/1



Clearing Permit Decision Report

1. Application details and outcome

1.1. Permit application details

Permit number:	CPS 9032/1
Permit type:	Area permit
Applicant name:	C.A. Ryan Pty Ltd
Application received:	02 September 2020
Application area:	49.82 hectares (revised) of native vegetation
Purpose of clearing:	Silvicultural thinning and fuel load reduction burning
Method of clearing:	Mechanical
Property:	Lot 1486 on Deposited Plan 115192
Location (LGA area/s):	Manjimup
Localities (suburb/s):	Balbarrup

1.2. Description of clearing activities

The vegetation applied to be cleared is contained within three separate areas (see Figure 1, Section 1.5). The clearing is to comprise thinning of *Eucalyptus marginata* (jarrah) and *Corymbia calophylla* (marri) trees such that a basal area of at least 15 m² per hectare is retained, culling and burning of unsaleable trees, clearing for log landings and burning of understorey on one occasion.

The application was revised during the assessment process from an original area of 49.99 hectares (refer to Figure 2, Section 1.5) following a request that the applicant retain vegetation surrounding watercourses within the application area (refer to Section 3.1 for further details). The changes included:

- Areas surrounding the watercourses were removed from the application area; and
- Additional areas were added to the original application area.

1.3. Decision on application and key considerations

Decision:	Granted
Decision date:	22 August 2022
Decision area:	49.82 hectares (ha) of native vegetation as depicted in Section 1.5 below.

1.4. Reasons for decision

This clearing permit application was made in accordance with section 51E of the *Environmental Protection Act 1986* (EP Act) and was received by the Department of Water and Environmental Regulation (DWER) on 2 September 2020. DWER advertised the application for public comment and no submissions were received. The application was re-advertised following revision of the application area for an additional 7 days, and no submissions were received.

In undertaking their assessment, and in accordance with section 51O of the EP Act, the Delegated Officer has given consideration to the Clearing Principles in Schedule 5 of the EP Act (see Appendix C), relevant planning instruments, site inspection (DWER, 2020) and any other pertinent matters they deemed relevant to the assessment (see Section 3).

In particular, the Delegated Officer has determined that:

- The proposed clearing will result in loss of foraging and potential roosting habitat for forest red-tailed black cockatoo, Baudin's cockatoo and Carnaby's cockatoo, however this habitat loss is not considered significant and will be mitigated through conditions placed on the permit;
- While the application area may contain significant breeding habitat for black cockatoo species, conditions placed on the permit will ensure this breeding habitat is not cleared;
- The application area may also contain suitable habitat for western ringtail possum, numbat, woylie, quokka, chuditch, masked owl, quenda, tammar wallaby, western brush wallaby, southwestern brush-tailed phascogale, Muir's corella and peregrine falcon, however, impacts of the proposed clearing on habitat for these species is not considered to be significant, and will be mitigated through conditions placed on the permit;
- While conservation significant flora species *Calytrix pulchella* and *Thysanotus unicus* may be present within the application area, the proposed clearing is not likely to significantly impact these species, and conditions placed on the permit will further reduce the risks of any impacts;
- The proposed clearing is not likely to significantly impact an ecological linkage, and conditions on the permit to retain habitat features will also help to ensure that the vegetation can continue to function as an ecological linkage;
- The proposed clearing has a small risk of impacting the adjacent Palgarrup State Forest through the spread of dieback and weeds resulting from the clearing. This risk can be mitigated through a condition requiring the permit holder to manage weeds and dieback; and
- The proposed clearing may result in soil compaction; however these impacts are expected to be mitigated subject to the below conditions being imposed on the permit.

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 can be minimised and managed such that it is unlikely lead to an unacceptable risk to environmental values, and that the applicant has suitably demonstrated avoidance and minimisation measures.

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

- All trees with a diameter at breast height (DBH) of greater than 50 centimetres are required to be inspected, and any such trees containing hollows suitable for black cockatoo breeding and the south-west brush tailed phascogale are required to be retained, to mitigate impacts to black cockatoo and south-west brush tailed phascogale habitat;
- A minimum of five habitat trees (trees with a DBH greater than 50 centimetres) per hectare are required to be retained, to mitigate impacts to fauna species;
- All woody fuels present within a 1 metre radius of each retained habitat tree are required to be removed;
- A minimum of one 30 metre diameter patch of healthy representative understorey, on average, per hectare, is required to be retained, preferencing healthy representative understorey, where present containing suitable western ringtail possum habitat, to mitigate impacts to western ringtail possums and other fauna species;
- A minimum of one ground habitat log per hectare is required to be retained, and all woody fuels present within a 1 metre radius of these logs are to be removed, to mitigate impacts to fauna species;
- Clearing is to be undertaken in a slow, progressive one directional manner to mitigate impacts to fauna;
- Where there is evidence that understorey will not recover and develop towards its pre-clearing composition, structure and density, remedial measures are required to be undertaken to ensure re-establishment of understorey and mitigate impacts to any conservation significant flora species that may be present;
- Weed and dieback control conditions to mitigate impacts of the clearing to the adjacent Palgarrup State Forest and any conservation significant flora species that may be present;
- Rehabilitation of established log landings and extraction tracks by scarifying the soil surface is required to reduce compaction and facilitate natural regeneration of vegetation; and
- Operation of logging machinery used to undertake clearing activities must only be performed during dry conditions to reduce the risk of soil compaction.

1.5. Site maps

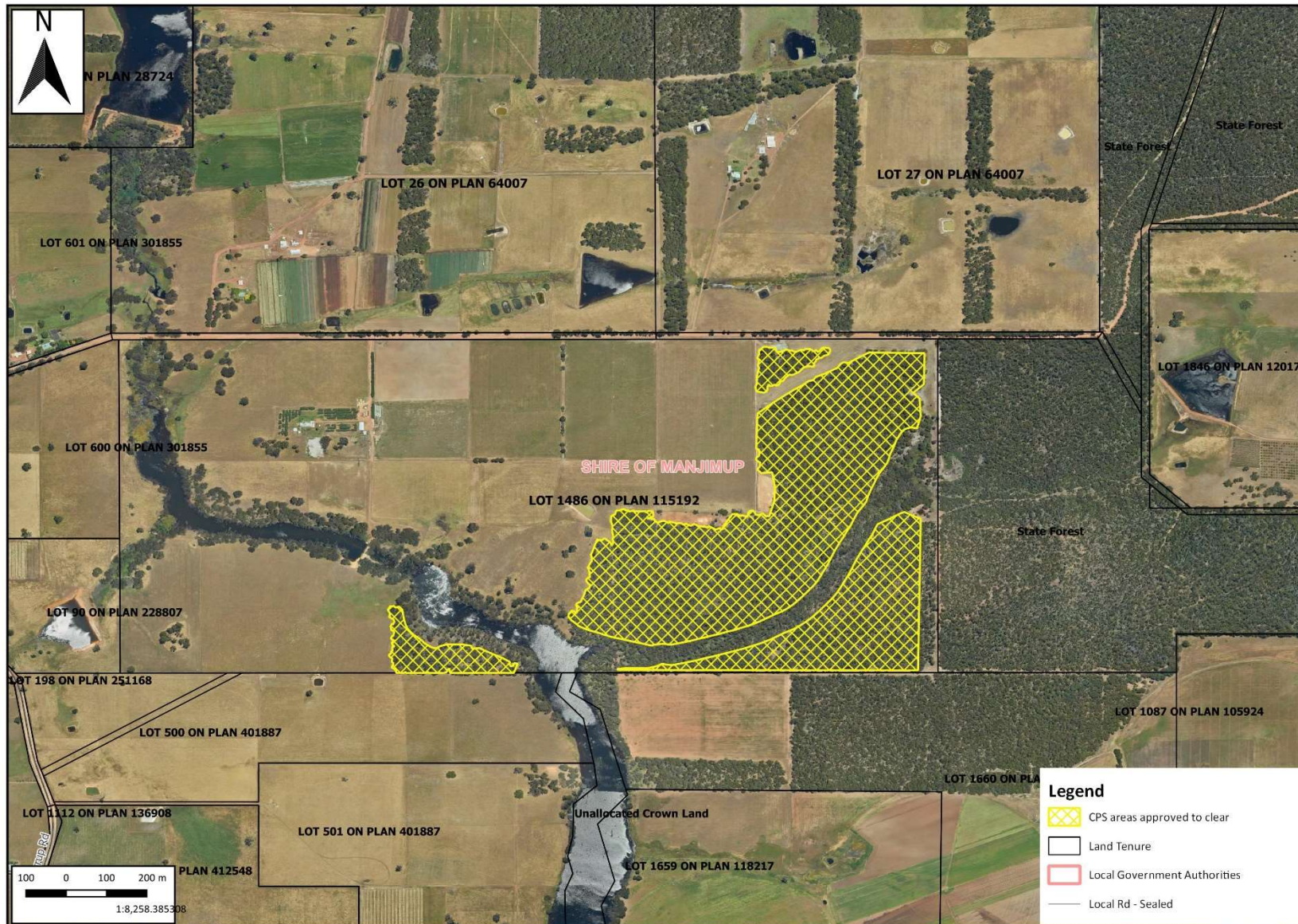


Figure 1. Map of the areas authorised to be cleared under the granted clearing permit (cross-hatched yellow).



Figure 2. Map of the area applied to clear (cross-hatched blue).

2. Legislative context

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

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

1. the precautionary principle;
2. the principle of intergenerational equity;
3. the principle of the conservation of biological diversity and ecological integrity; and
4. the polluter pays principle.

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- *Country Areas Water Supply Act 1947* (WA) (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)

Relevant policies considered during the assessment were:

The key guidance documents which inform this assessment are:

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

3. Detailed assessment of application

3.1. Avoidance and mitigation measures

The applicant submitted the following information regarding avoidance and mitigation considerations (Clarke, 2020b), including several actions outlined in a forest management plan provided (Clarke, 2020a):

- That there is no alternative that can be considered to avoid or minimise the need for clearing
- That the application is not to clear the forest, but to silviculturally thin it to improve its health and vitality;
- An average of five habitat trees or potential habitat trees per hectare will be retained;
- Harvesting machinery will be cleaned of any soil and plant matter before entering the property to minimise any risk of introducing jarrah dieback disease;
- Extraction tracks will, where necessary, be created by the tree harvester and will follow the natural longitudinal alignment of the remnant patches of forest and will maximise use of natural gaps between trees;
- Harvesting slash will be removed from around the bases of retained trees during harvesting;
- All harvesting activity will be conducted in accordance with the WA timber industry Codes of Practice.

Following a preliminary assessment of the environment impacts of the originally proposed clearing area, DWER requested that the applicant exclude areas of vegetation surrounding watercourses present within the original application area. The applicant agreed to exclude these areas, and as such the area approved to be cleared under this permit excludes watercourses and associated riparian areas. DWER also requested that the applicant provide further evidence of efforts taken to avoid and or mitigate impacts of the clearing, noting that the application area may provide suitable habitat for multiple fauna species. The final granted permit includes multiple conditions to mitigate impacts to fauna species (refer to Section 3.2.1 below). Subsequently, the Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

3.2. Assessment of environmental impacts

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

This assessment identified that the risks of the clearing to the environmental values of biological values (fauna and flora), significant remnant vegetation and conservation areas, and land and water resources, required further consideration. The detailed consideration and assessment of the clearing impacts against the specific environmental values is provided below. Where the assessment found that the clearing presents an unacceptable risk to environmental values, conditions aimed at controlling and/or ameliorating the impacts have been imposed under sections 51H and 51I of the EP Act. These are also identified below.

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

Assessment:

Noting the habitat requirements, distribution of recorded species within the local area and vegetation type and condition present within the application area, it was considered that the application area is likely to comprise suitable habitat for the following conservation significant fauna species:

- *Bettongia penicillata ogilbyi* (Woylie, brush-tailed bettong) (Critically endangered);
- *Pseudocheirus occidentalis* (Western ringtail possum, ngwayir) (Critically endangered);
- *Zanda* (formerly *Calyptorhynchus*) *baudinii* (Baudin's cockatoo) (Endangered);
- *Zanda* (formerly *Calyptorhynchus*) *latirostris* (Carnaby's cockatoo) (Endangered);
- *Calyptorhynchus banksii naso* (Forest red-tailed black cockatoo) (Vulnerable);
- *Myrmecobius fasciatus* (Numbat, walpurti) (Endangered);
- *Setonix brachyurus* (Quokka) (Vulnerable);
- *Dasyurus geoffroii* (Chuditch, western quoll) (Vulnerable);
- *Tyto novaehollandiae* (masked owl (southwest)) (Priority 3);
- *Isodon fusciventer* (Quenda, southwestern brown bandicoot) (Priority 4);
- *Notamacropus eugenii derbianus* (Tammar wallaby) (Priority 4);

- *Notamacropus irma* (Western brush wallaby) (Priority 4);
- *Phascogale tapoatafa wambenger* (South-western brush-tailed phascogale, wambenger) (Conservation Dependent);
- *Cacatua pastinator* (Muir's corella) (Conservation dependent); and
- *Falco peregrinus* (Peregrine falcon) (Other specially protected).

Black cockatoos

The application area is within both the known ranges and known breeding ranges of Baudin's cockatoo, Carnaby's cockatoo and Forest red-tailed black cockatoo (Department of Agriculture, Water and Environment (DAWE), 2022 and Department of Environment and Conservation (DEC), 2008a). All of these species nest in hollows of live or dead Eucalypt trees, including marri, jarrah and blackbutt (red-tailed black cockatoos) (DAWE, 2022). For most species of trees, including marri, jarrah and blackbutt, suitable nest hollows are only found in trees with a diameter at breast height (DBH) of at least 50 centimetres, with a DBH of 30 centimetres or greater considered suitable to develop a nest hollow in the future (DAWE, 2022). A site inspection (DWER, 2020) found a few trees with a DBH greater than 50 centimetres within the application area. The DBH of most of the vegetation was found to be in the range of 10-30 centimetres, with a small portion (~10-15%) having a DBH of 30-50 centimetres. Several large stag trees were observed within the application area. Noting the above, it is considered that the application area may contain some trees that are likely to provide suitable breeding habitat for black cockatoo species presently and in the future. Noting the conservation status and declining habitat for black cockatoo species, all current breeding habitat for black cockatoos is considered significant. To mitigate impacts to black cockatoo breeding habitat, it is required as a condition of this permit that all trees with a DBH of greater than 50 centimetres are to be inspected, and any such trees containing hollows suitable for black cockatoo breeding are required to be retained. A condition requiring that the applicant retain a minimum of five habitat trees (trees with a DBH greater than 50 centimetres) per hectare will also mitigate impacts to future black cockatoo breeding habitat.

It is also considered that although no known roosting trees are present within the application area, the application area would likely contain trees suitable for black cockatoo roosting, given the presence of suitable species and that the application area is close to riparian areas (DAWE, 2022). A condition placed on this permit requiring the permit holder to retain a minimum of five habitat trees per hectare will ensure that the application area would retain the most suitable trees for roosting, such that impacts to black cockatoo roosting habitat would not be significant. The applicant has also avoided the riparian areas.

Marri (for all three black cockatoo species) and jarrah (mainly for the forest red-tailed black cockatoo) trees present within the application area are also likely to provide foraging habitat for black cockatoo species (DAWE, 2022). Black cockatoos are known to forage within 20 kilometres of night roost sites (DAWE, 2022), and the application area is within 20 kilometres of two known roost sites for white tailed black cockatoos (which could comprise either Carnaby's and/or Baudin's cockatoos) and one known roost site for the forest red-tailed black cockatoo. Black cockatoos will also forage in areas up to 12 km from their nest during the breeding season, although it is noted that no known breeding trees are recorded within 20 kilometres of the application area. Noting the relative absence of black cockatoo habitat information in the south-west region of Western Australia, the presence of unrecorded breeding trees and roost trees within the vicinity of the application area cannot be ruled out. It is also noted that waterbodies able to be used for drinking are within 1 kilometre of the application area, further increasing the likelihood that vegetation within the application area would comprise suitable foraging habitat for black cockatoo species (DAWE, 2022). The vegetation within the application area is considered "critical" habitat for all three black cockatoo species according to the *Forest Black Cockatoo (Baudin's Cockatoo Calyptorhynchus baudinii and Forest Red tailed Black Cockatoo Calyptorhynchus banksii naso) Recovery Plan* (DEC, 2008a) and *Carnaby's Cockatoo (Calyptorhynchus latirostris) Recovery Plan* (Department of Parks and Wildlife (DPAW), 2013). Noting the above, the application area is considered to contain foraging habitat significant for all three black cockatoo species.

Notwithstanding the above, the proposed clearing is thinning and not complete clearing, with the applicant required to retain a minimum basal area of 15 m² of trees per hectare, as well as a minimum of five habitat trees (that are likely to provide better quality foraging habitat than smaller trees) per hectare. Thinning trees may provide the capacity for remaining trees to become larger, and in turn increase the amount of foraging material for black cockatoos. The application area was also considered in the context of the local area, of which 48 per cent contains remnant vegetation, a large proportion of which is within lands managed by DBCA. Noting the above, it is considered unlikely that the proposed clearing would significantly impact black cockatoo foraging habitat.

The applicant may have notification responsibilities under the EPBC Act for impacts to Baudin's cockatoo, Carnaby's cockatoo, and forest red-tailed black cockatoo and their habitats, as set out in the EPBC Act *Referral guideline for 3 WA threatened black cockatoo species Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest Red-tailed Black-cockatoo (Calyptorhynchus banksii naso)* (DAWE, 2022). The applicant has been

advised to contact the federal Department of Climate Change, Energy the Environment and Water (DCCEW) to discuss EPBC Act referral requirements.

Western ringtail possums

The application area is within the Southern Forest Management zone for the western ringtail possum (WRP) (DPAW, 2017a). Populations of WRP in the southern forest management zone occur mainly in jarrah or marri dominated forests, in adjacent stands of riparian vegetation often with an overstorey of flooded gum (*Eucalyptus rudis*) and extending to wandoo (*Eucalyptus wandoo*) forests to the north-east of Manjimup and karri (*Eucalyptus diversicolor*) forests from Northcliffe to west of Manjimup (DPAW, 2017a). Habitat critical to the survival of the WRP comprises forests with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history) that are intensively fox baited and have low incidents of fragmentation (DPAW, 2017a). While the application area may provide potential suitable habitat for WRP, the proposed clearing is not considered likely to have a significant impact on WRP habitat, noting the following:

- Riparian areas are not included within the application area;
- The abundance of native vegetation in the vicinity of the application area within lands managed by DBCA for conservation, which are likely to comprise vegetation in similar or better condition than that present within the application area; and
- Information provided by the applicant indicates that foxes are abundant on the applicant's property and within the vicinity of the local area, and that native fauna species would consequently be very unlikely to occur within the application area (Clarke, 2020c).

The following conditions placed on the permit will further mitigate impacts to WRP habitat and individuals (should they be present):

- A minimum of one 30 metre diameter patch of healthy representative understorey, on average, per hectare, is required to be retained, preferencing healthy representative understorey, where present containing suitable WRP habitat;
- A minimum of five habitat trees per hectare is required to be retained, and all trees with suitable hollows for black cockatoo species and brush-tailed phascogales (which may also provide suitable refuge sites for WRP);
- A minimum of one ground habitat log per hectare is required to be retained, and all woody fuels present within a 1 metre radius of these logs are to be removed;
- Clearing is to be undertaken in a slow, progressive one directional manner, which would allow WRP, if present, to disperse ahead of the clearing activity.

Other fauna

Vegetation within the application area is also considered likely to provide habitat for the numbat, quokka, chuditch, masked owl, quenda, Muir's corella, southwestern brush-tailed phascogale, and peregrine falcon, noting the habitat requirements and distributions of these species:

- **Numbat** occupy various vegetation types, including eucalypt forest, that contain a sufficient abundance of termites, have dense enough understorey to provide protection from predators yet open enough to allow feeding and contain eucalypt trees (DPAW, 2017b). The only remaining original numbat subpopulations are at Dryandra Woodland (150 km south-east of Perth) and the Upper Warren area (including Tone-Perup Nature Reserve, Greater Kingston National Park and adjoining State Forest) (280 km south-south-east of Perth) (DPAW, 2017b). Given that the application area is adjacent to state forest that is next to Tone Perup Nature Reserve and Kingston National Park, and the application area may provide suitable habitat features, the application area may provide habitat for numbat. However, the level of predator control within the application area is unlikely to be sufficient to sustain populations of this species.
- **Woylie** inhabit tall eucalypt forest and woodland, dense myrtaceous shrubland and kwongan or mallee heath, including within the Upper Warren region (Yeatman and Groom, 2012). The application area may provide habitat for woylie, however the level of predator control within the application area is unlikely to be sufficient to sustain populations of this species.
- **Quokka** most commonly inhabit jarrah, marri and karri forests or riparian habitats with sedge understorey in the southwest of Western Australia (DEC, 2013).
- **Chuditch** use a range of habitats including forest, mallee shrublands, woodland and desert, with the most dense populations found in riparian jarrah forest. Most chuditch are now found in varying densities throughout the jarrah forest and south coast of Western Australia (DEC, 2012a).
- **Masked owl** inhabit forests, woodlands, timbered waterways and open country on the fringe of these areas and usually roosts in vertical hollows in large trees. The main requirements are tall trees with suitable hollows for nesting and roosting and adjacent areas for foraging (Birdlife Australia, 2020).

- **Quenda** inhabit dense scrubby, often swampy, vegetation with dense cover and adjacent forest and woodland (DPAW, 2012b).
- **Tammar wallaby** prefer dense, low vegetation for daytime shelter and open grassy areas for feeding. This species inhabits coastal scrub, heath, dry sclerophyll forest and thickets in mallee and woodland (DEC, 2012c)
- **Western brush wallaby** inhabit open forest or woodland, particularly favouring open, seasonally-wet flats with low grasses and open scrubby thickets, also found in some areas of mallee and heath-land, and is uncommon in karri forest (DEC, 2012d).
- **Southwestern brush-tailed phascogale** inhabit dry sclerophyll forests and open woodlands that contain hollow bearing trees but a sparse groundcover. In the south-west, this species is typically found in jarrah forest (DEC, 2012e). While understorey vegetation within application area is not sparse, it is considered possible that the southwestern brush-tailed phascogale may still inhabit the application area.
- Critical habitat for **Muir's Corella** comprises large live or dead eucalypts, particularly marri and jarrah, flooded gum, yate (*Eucalyptus cornuta*) and moonah in forested areas or as lone trees in paddocks and along roadsides in the region from Boyup Brook, McAlinden and Qualeup, south to Lake Muir and the lower Perup River, and east to Frankland and Rocky Gully (DEC, 2008b). It is noted that the application area is to the west of this region, however it is considered that Muir's corella may still occur. Nesting is in large hollows in eucalypts of an estimated minimum age of 160 years.
- **Peregrine falcon** are found in most habitats, from rainforests to the arid zone and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Australian Museum, 2020). This species is widespread, highly mobile and is found in various habitats.

Although the application area contains suitable habitat for the above species, the proposed clearing is not likely to result in significant impacts to habitat for these species, noting the following:

- The abundance of native vegetation in the vicinity of the application area within lands managed by DBCA for conservation, which are likely to comprise vegetation in similar or better condition than that present within the application area;
- That the proposed clearing is thinning of trees and associated activities only, and not complete clearing, and a minimum basal area of 15 m² per hectare is required to be retained;
- Riparian areas, which provide optimum habitat for the quokka, chuditch, western brush wallaby and quenda, have been excluded from the application area; and
- Information provided by the applicant indicates that foxes are abundant on the applicant's property and within the vicinity of the local area, and that native fauna species would consequently be very unlikely to occur within the application area (Clarke, 2020c).

The following conditions placed on the permit will further mitigate impacts to fauna species:

- A minimum of one 30 metre diameter patch of healthy representative understorey, on average, per hectare, is required to be retained, preferencing healthy representative understorey. This will ensure habitat diversity is retained within the application area and provide refuge areas for ground dwelling fauna species.
- A minimum of one ground habitat log per hectare is required to be retained and all woody fuels present within a 1 metre radius of these logs are to be removed. These retained ground habitat logs will provide habitat for ground dwelling fauna species.
- A minimum of five habitat trees per hectare and all trees with hollows suitable for black cockatoos and southwestern brush tailed phascogales are required to be retained. The retention of these hollow bearing trees will also minimise impacts to Muir's corella and masked owl which may also use these trees for nesting and roosting.
- Clearing is to be undertaken in a slow, progressive one directional manner. This will allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing

Conclusion: Based on the above assessment, the proposed clearing will result in loss of foraging and roosting habitat for forest red-tailed black cockatoo, Baudin's cockatoo and Carnaby's cockatoo, however this habitat loss is not considered significant and will be mitigated through conditions placed on the permit. While the application area may contain significant breeding habitat for black cockatoo species, conditions placed on the permit will ensure this breeding habitat is not cleared. The application area may also contain suitable habitat for WRP, numbat, woylie, quokka, chuditch, masked owl, quenda, tammar wallaby, western brush wallaby, southwestern brush-tailed phascogale, Muir's corella and peregrine falcon. However, the proposed clearing is unlikely to have significant impacts on the above species subject to the below conditions being imposed on the permit.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- All trees with a DBH of greater than 50 centimetres are required to be inspected, and any such trees containing hollows suitable for black cockatoo breeding are required to be retained;
- A minimum of five habitat trees (trees with a DBH greater than 50 centimetres) per hectare are required to be retained;
- All woody fuels present within a 1 metre radius of each retained habitat tree are required to be removed;
- A minimum of one 30 metre diameter patch of healthy representative understorey, on average, per hectare, is required to be retained, preferencing healthy representative understorey, where present containing suitable western ringtail possum habitat;
- A minimum of one ground habitat log per hectare is required to be retained, and all woody fuels present within a 1 metre radius of these logs are to be removed;
- Clearing is to be undertaken in a slow, progressive one directional manner.

3.2.2. Environmental value: biological values (flora) – Clearing Principles (a), (c) and (d)

Assessment: Noting the mapped soil type, vegetation type and habitats present within the application area, the application area may provide suitable habitat for the following conservation significant flora species:

- *Calytrix pulchella* (P3); and
- *Thysanotus unicus* (P3).

Calytrix pulchella is found in grey or white sand over laterite on ridges and flats and often in jarrah/marri forest (Western Australian Herbarium, 1998-). *Thysanotus unicus* is found in dry lateritic and grey sandy soils in moderately sunny places within jarrah/marri forests (Sirisena et al., 2009). As such, the application area may provide suitable habitat for these species. It is noted that the proposed clearing will only entail the removal of understorey as required to undertake thinning activities and one occasion of understorey burning. If populations of these species were to be present within the application area, it would be unlikely that thinning activities would result in the complete removal of these species. The understorey of Jarrah forests has also been shown to be resilient to fire (Burrows et al., 2019). It is therefore considered that these species, if present, would have the capacity to regenerate over time should the clearing result in their disturbance. Furthermore, it is noted that in the vicinity of the application area, the majority of records of these species have been recorded in DBCA managed lands and as such any clearing of these species within the application area would be unlikely to impact the conservation status of these species.

A condition to be placed on the permit requiring the applicant to undertake remedial action in the event that understorey will not recover and develop towards its pre-clearing composition, structure and density will ensure that should the clearing result in impacts to the above species, these impacts are mitigated. Weed control and soil management measures conditioned on the permit will prevent weeds and soil compaction from inhibiting the regeneration of these species following the clearing.

Outcome: Based on the above assessment, while conservation significant flora species *Calytrix pulchella* and *Thysanotus unicus* may be present within the application area, the proposed clearing is not likely to significantly impact these species, and the below conditions placed on the permit will further reduce the risks of any impacts.

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

- Weed and dieback management control;
- Where there is evidence that understorey will not recover and develop towards its pre-clearing composition, structure and density, remedial measures are required to be undertaken to ensure re-establishment of understorey; and
- Rehabilitation of established *log landings* and *extraction tracks* by scarifying the soil surface is required to reduce compaction and facilitate natural regeneration.

3.2.3. Environmental value: Significant remnant vegetation and conservation areas – Clearing Principles (e) and (h)

Assessment: Vegetation within the application area is associated with an identified regional ecological linkage mapped in the *South West Regional Ecological Linkages* (Molloy et al., 2009), linking vegetation to the north to the Wilgarrup River to the south, and is also likely to act as a local ecological linkage linking the Wilgarrup River to the west and Palgarup State Forest to the east. Given that the clearing comprises thinning and associated activities and that some vegetation will remain within the application area, and that a central area of riparian vegetation likely to function as an ecological linkage will remain completely uncleared, the proposed clearing is considered unlikely to

significantly impact an ecological linkage. Conditions on the permit requiring the applicant to retain habitat features, such as areas of healthy understorey, habitat trees and ground habitat logs will help to ensure that the vegetation can continue to function as an ecological linkage for fauna.

The application area is approximately 40 metres west of the Palgarrup State Forest. The application area is downgradient from the State Forest, which reduces the risk of any erosion resulting from the clearing impacting this State Forest. Although there is some vegetation within the 40 metres between the application area and Palgarrup State Forest, there is a small risk of the clearing having impacts to this forest through the spread of dieback and weeds introduced during clearing activities and resulting from clearing disturbance. Conditions requiring the applicant to manage weeds and dieback is considered to mitigate these impacts.

Outcome: Based on the above assessment, the proposed clearing is not likely to significantly impact an ecological linkage, and conditions on the permit to retain habitat features will also help to ensure that the vegetation can continue to function as an ecological linkage. The proposed clearing has a small risk of impacting the adjacent Palgarrup State Forest through the spread of dieback and weeds resulting from the clearing, however this risk can be mitigated through a condition requiring the permit holder to manage weeds and dieback.

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

- A minimum of five habitat trees (trees with a DBH greater than 50 centimetres) per hectare are required to be retained and all woody fuels present within a 1 metre radius of each retained habitat tree are required to be removed;
- A minimum of one 30 metre diameter patch of healthy representative understorey, on average, per hectare, is required to be retained, preferencing healthy representative understorey, where present containing suitable western ringtail possum habitat;
- A minimum of one ground habitat log per hectare is required to be retained, and all woody fuels present within a 1 metre radius of these logs are to be removed; and
- Weed and dieback control conditions.

3.2.4. Environmental value: land and water resources (land degradation) – Clearing Principle (g)

Assessment: Soil types within the application area have high risks of subsurface acidification and wind erosion, and moderate risks of subsurface compaction, phosphorus export, waterlogging and water erosion. Given that the proposed clearing is thinning and burning, a reasonable amount of vegetation will remain within the application area. The risk that the clearing will result in appreciable subsurface acidification, wind erosion, phosphorus export, waterlogging or water erosion is considered low.

Activities associated with jarrah forest silviculture, such as establishment of extraction tracks and log landings, can result in soil compaction, particularly when undertaken during moist soil conditions (DPAW, 2014). It is therefore considered that the proposed clearing may result in soil compaction. To mitigate soil compaction impacts, as a condition of this permit the applicant will only be permitted to operate logging machinery during dry conditions and will be required to rehabilitate log landings and extraction tracks by scarifying the soil surface.

Outcome: Based on the above assessment, the proposed clearing may result in soil compaction, however these impacts are expected to be mitigated subject to the below conditions being imposed on the permit.

Conditions: To address the above impacts, the following conditions will be added to the permit:

- Operation of logging machinery used to undertake clearing activities must only be performed during dry conditions; and
- Rehabilitation of established log landings and extraction tracks by scarifying the soil surface is required to reduce compaction and facilitate natural regeneration.

3.3. Relevant planning instruments and other matters

The Shire of Manjimup advised DWER that local government approvals are not required and that the clearing is consistent with the Shire's Local Planning Scheme No 4 (Shire of Manjimup, 2020). The Shire did not have any objections to the clearing.

The proposed clearing site lies within the 1 September 1978 CAWS Act 1947 gazetted Warren River Water Reserve. The site is not currently within a Public Drinking Water Source Area and no priority source protection is proposed for this location. The water reserve has however been subject to CAWS Act clearing controls since December 1978 to prevent the salinisation of water resources.

The proposed silvicultural thinning is located in Zone B, a high salinity risk part of the catchment where DWER Policy and Guidelines for the “Granting of Licences to Clear Indigenous Vegetation” provide for the granting of licences for the purpose of silvicultural thinning of compensated bush subject to:

- A lodgement of a suitable Forest Management Plan (FMP);
- The fencing of the silviculture area to exclude grazing by stock;
- No clearing to occur within 30 metres of a riparian or wetland area;
- A minimum basal area of 15 square metres per hectare is retained;
- An inspection of the thinning area by a DWER officer (DWER, 2020b).

DWER (2020b) advised that whilst the proponent submitted a mostly acceptable FMP (Clarke, 2020a), the following issues should be addressed prior to an EP Act clearing permit being granted:

- A commitment to fence the area and protect the remnant native vegetation from grazing by stock.
- Exclusion of the riparian and wetland areas from the silvicultural treatment
- Whether or not the land holder intends to manage resulting coppice.

The applicant has advised that the application area is fenced, and that they intend to manage coppice resulting from the clearing (Clarke, 2020c). Riparian areas have also been excluded from the final clearing permit area (refer to Section 3.1 for further information). As such, a CAWS Act licence is planned to be granted by DWER concurrently with the clearing permit (DWER 2022).

The application area intersects a mapped Aboriginal site of Significance: Muirs Highway Ethnographic Site 3. 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.

Appendix A – Additional information provided by applicant

Additional information provided by the applicant during the assessment of this application is summarised in the table below.

Summary of comments	Consideration of comment
Evidence of consideration of avoidance and mitigation measures (Clarke, 2020b)	Refer to Section 3.1
Information regarding the presence of conservation fauna species within the application area (Clarke, 2020c)	Refer to Section 3.2.1
The application area is fenced to exclude livestock and the applicant intends to manage coppice (Clarke, 2020c)	Refer to Section 3.3

Appendix B – Site characteristics

The information provided below describes the key characteristics of the area proposed to be cleared and is based on the best available information to DWER at the time of this assessment. This information was used to inform the assessment against the Clearing Principles, contained in Appendix C.

B.1. Site characteristics

Site characteristic	Details
Local context	The proposed clearing area is surrounded by cleared agricultural land to the northwest and north, an expansive tract of native vegetation to the east and southeast, a small area of cleared land to the south and a strip of native vegetation and then the Wilgarrup River to the southwest. Spatial data indicates the local area (10 km radius of the proposed clearing area) retains approximately 48% of the original native vegetation cover.
Ecological linkage	An axis line mapped within the South West Regional Ecological Linkages (Molloy et al., 2009) is mapped within the application area. Vegetation within the application area is likely to act as a local ecological linkage between vegetation associated with the Wilgarrup River to the west and Palgarup State Forest to the east.
Vegetation description	<p>Photographs and information supplied by the applicant and the findings of a site inspection conducted by DWER (2020) indicates the vegetation within the proposed clearing area predominantly consists of mixed <i>Eucalyptus marginata</i> (jarrah) and <i>Corymbia calophylla</i> (marri) trees with minimal understorey. Some <i>Eucalyptus patens</i> (blackbutt) trees occur on the far eastern side along a slight gully. Understorey consisting of <i>Pteridium esculentum</i> (bracken) and <i>Xanthorrhoea preissii</i> (balga, grass trees) are present throughout the area.</p> <p>This is consistent with the mapped vegetation types:</p> <ul style="list-style-type: none">• Bevan 2 (15), which is described as Open forest to woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i> with some <i>Corymbia calophylla</i> on lateritic uplands in humid and subhumid zones.• Pemberton 2 (222), which is described as Open forest of <i>Corymbia calophylla</i>-<i>Eucalyptus marginata</i> subsp. <i>marginata</i> on slopes and open forest of <i>Eucalyptus patens</i>-<i>Corymbia calophylla</i> on lower slopes in the humid zone.• Wheatley 2 (299), which is described as Woodland of <i>Eucalyptus marginata</i> subsp. <i>marginata</i>-<i>Eucalyptus wandoo</i> on slopes with woodland of <i>Eucalyptus rudis</i> on valley floors in the humid zone (Mattiske and Havel, 1998). <p>Representative photos are available in Appendix E.</p>
Vegetation condition	<p>Photographs and information supplied by the applicant and the findings of a site inspection conducted by DWER (2020) indicate the vegetation within the proposed clearing area is in Very Good condition (Keighery, 1994) condition.</p> <p>The full Keighery condition rating scale is provided in Appendix D. Representative photos are available in Appendix E.</p>
Soil description	<p>Soil within the application area is mapped as:</p> <ul style="list-style-type: none">• Bevan Subsystem (Dwalganup) (254DwBE), described as broad, gently sloping (3-15%) divides on laterite, soils are sandy gravels and loamy gravels.• Pemberton Subsystem (Dwalganup) (254DwPM) described as 20 to 40 m deep. Flat to gently sloping floors. Few channels. 3 to 10 deg. Smooth slopes. Red or yellow gradational soils, not calcareous with some red duplex soils.• Wheatley Subsystem (Dwalganup) (254DwWH) described as shallow (20-40 m) minor valleys with low sideslopes (5-20%) and narrow swampy floors with a slightly incise stream channel. Soils are loamy gravels, sandy gravels and loamy earths (DPIRD, 2017).

Site characteristic	Details
	A site inspection (DWER, 2020) found that soils within the application area consisted of shallow gravel over caprock, with deeper gravel/sands found in the eastern portion.
Land degradation risk	<p>Soil within the application area is mapped as:</p> <ul style="list-style-type: none"> • Bevan Subsystem (Dwalganup) (254DwBE): <ul style="list-style-type: none"> ○ Wind erosion - >70% of map unit has a high to extreme wind erosion risk ○ Water erosion - 3-10% of map unit has a high to extreme water erosion risk ○ Waterlogging - <3% of map unit has a moderate to very high waterlogging risk ○ Subsurface acidification - >70% of map unit has a high subsurface acidification risk or is presently acid ○ Phosphorus export - 10-30% of map unit has a high to extreme phosphorus export risk ○ Salinity - <3% of map unit has a moderate to high salinity risk or is presently saline ○ Flood risk - <3% of map unit has a moderate to high flood risk ○ Subsurface compaction – 10-30% of the map unit has a high subsurface compaction risk • Pemberton Subsystem (Dwalganup) (254DwPM) <ul style="list-style-type: none"> ○ Wind erosion - 30-50% of map unit has a high to extreme wind erosion risk ○ Water erosion - 10-30% of map unit has a high to extreme water erosion risk ○ Waterlogging - 3-10% of map unit has a moderate to very high waterlogging risk ○ Subsurface acidification - >70% of map unit has a high subsurface acidification risk or is presently acid ○ Phosphorus export - 30-50% of map unit has a high to extreme phosphorus export risk ○ Salinity - <3% of map unit has a moderate to high salinity risk or is presently saline ○ Flood risk - <3% of map unit has a moderate to high flood risk ○ Subsurface compaction – 10-30% of the map unit has a high subsurface compaction risk • Wheatley Subsystem (Dwalganup) (254DwWH) <ul style="list-style-type: none"> ○ Wind erosion - 50-70% of map unit has a high to extreme wind erosion risk ○ Water erosion - 10-30% of map unit has a high to extreme water erosion risk ○ Waterlogging - 3-10% of map unit has a moderate to very high waterlogging risk ○ Subsurface acidification - >70% of map unit has a high subsurface acidification risk or is presently acid ○ Phosphorus export - 30-50% of map unit has a high to extreme phosphorus export risk ○ Salinity - <3% of map unit has a moderate to high salinity risk or is presently saline ○ Flood risk - <3% of map unit has a moderate to high flood risk ○ Subsurface compaction - 30-50% of the map unit has a high subsurface compaction risk
Conservation areas	The Palgarup State Forest is 30-40 m east of the eastern boundary of the application area, separated by either native vegetation (majority of the eastern boundary) or cleared land (northernmost 190m of the eastern boundary) and a track/firebreak.

Site characteristic	Details
Topography	Topography within the application area ranges from 215 m AHD in the southwestern corner to 270-275m in the northeastern, northwestern and southeastern corners of the application area.
Climate	Mean Rainfall: 900 mm Evapotranspiration: 800 mm
Surface water	The Wilgarrup River and a minor non-perennial watercourse that is a tributary of this river runs between the application areas, with buffer distances of 50 m and 30 m respectively between these waterbodies and the application area. No comprehensive wetland mapping data is available within the local area; however, watercourse mapping suggests that the nearest wetlands to the application area are areas associated with the Wilgarrup River and man-made dams in properties adjacent to the application area. The application area is mapped within the Warren River and Tributaries Surface Water area proclaimed under the <i>Rights in Water and Irrigation Act 1914</i> .
Hydrogeography	Hydrogeology: Rocks of low permeability, fractured and weathered rocks - local Aquifers. Gneiss, migmatite lithology. Groundwater Salinity (Total Dissolved Solids): 500-1000 mg/L. The application area is within Zone B of the Warren River Water Reserve gazetted under the CAWS Act.
Flora	Two threatened and ten priority flora species have been recorded within the local area, the closest of which is threatened species <i>Caladenia harringtoniae</i> located approximately 3.5 km northwest of the application area.
Fauna	Ten threatened, six priority, two conservation dependent, one migratory, and one other specially protected fauna species have been recorded within the local area, the closest of which is threatened species <i>Myrmecobius fasciatus</i> (numbat) located approximately 1.7 km east of the application area.
Ecological communities	No threatened or priority ecological communities have been recorded within the local area.

B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA bioregion					
Jarrah Forest*	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Vegetation complex					
Bevan 2 (15)**	45,828.05	40,360.14	88.07	38,982.75	85.06
Pemberton 2 (222)**	3,741.25	1,769.02	47.28	1,514.76	40.49
Wheatley 2 (299)**	6,443.50	3,614.78	56.10	2,820.41	43.77
Local area					

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
10 km radius	34,563.49	16,572.66	47.95	-	-

*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 Table F.1), impacts to the following conservation significant flora required further consideration.

Species name	BC Act listing	Suitable habitat features ?	Suitable mapped vegetation type?	Suitable mapped soil type?	Distance of closest record to application area (km)	Number of records in local area	Number of total known records	Are surveys adequate to identify?
<i>Caladenia christineae</i>	T	N	Y	Y	7.3	3	55	N/A
<i>Caladenia harringtoniae</i>	T	N	N	N	3.5	5	40	N/A
<i>Caladenia longicauda</i> subsp. <i>extrema</i>	P1	N	N	N	9.2	2	4	N/A
<i>Calytrix pulchella</i>	P3	Y	Y	Y	7.3	1	20	N/A
<i>Chamelaucium forrestii</i>	P2	N	Y	Y	7.5	1	31	N/A
<i>Deyeuxia inaequalis</i>	P1	N	N	N	8.3	1	11	N/A
<i>Drosera occidentalis</i>	P4	N	N	N	3.8	1	18	N/A
<i>Hemigenia microphylla</i>	P3	N	Y	Y	4.5	3	25	N/A
<i>Microtis quadrata</i>	P4	N	N	N	7.5	1	18	N/A
<i>Schoenus natans</i>	P4	N	N	N	5.2	1	66	N/A
<i>Stylidium roseonanthum</i>	P3	N	Y	Y	7.3	1	8	N/A
<i>Thysanotus unicus</i>	P3	Y	Y	N	7.9	1	13	N/A

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 Table 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)	Most recent record	Number of records in local area	Are surveys adequate to identify? [Y, N, N/A]
<i>Actitis hypoleucos</i> (Common Sandpiper)	IA	N	7.3	2007	1	N/A
<i>Bettongia penicillata</i> <i>ogilbyi</i> (Woylie, brush-tailed bettong)	CR	Y	6.3	2017	51	N/A
<i>Cacatua pastinator</i> (Muir's corella)	CD	Y	3.0	2011	3	N/A
<i>Zanda banksii</i> <i>naso</i> (Forest red-tailed black cockatoo)	VU	Y	2.0	2006	18	N/A
<i>Zanda baudinii</i> (Baudin's cockatoo)	EN	Y	1.9	2018	45*	N/A

Species name	Conservation status	Suitable habitat features?	Distance of closest record to application area (km)	Most recent record	Number of records in local area	Are surveys adequate to identify? [Y, N, N/A]
<i>Zanda latirostris</i> (Carnaby's cockatoo)	EN	Y	4.9	2018	8*	N/A
<i>Zanda</i> sp. 'white-tailed black cockatoo' (White-tailed black cockatoo)	EN	Y	6.4	2000	7	N/A
<i>Dasyurus geoffroyi</i> (Chuditch, western quoll)	VU	Y	4.0	2016	55	N/A
<i>Falco peregrinus</i> (Peregrine falcon)	OS	Y	3.0	1999	7	N/A
<i>Hydromys chrysogaster</i> (Water-rat, rakali)	P4	N	4.1	2010	2	N/A
<i>Isodon fusciventer</i> (Quenda, southwestern brown bandicoot)	P4	Y	3.7	2000	24	N/A
<i>Myrmecobius fasciatus</i> (Numbat, walpurti)	EN	Y	1.7	2016	18	N/A
<i>Notamacropus eugenii derbianus</i> (Tammar wallaby)	P4	Y	7.5	1999	2	N/A
<i>Notamacropus irma</i> (Western brush wallaby)	P4	Y	6.2	2016	92	N/A
<i>Oxyura australis</i> (Blue-billed duck)	P4	N	4.3	2011	7	N/A
<i>Phascogale tapoatafa wambenger</i> (South-western brush-tailed phascogale, wambenger)	CD	Y	2.1	2016	44	N/A
<i>Pseudocheirus occidentalis</i> (Western ringtail possum, ngwayir)	CR	Y	2.4	2007	46	N/A
<i>Setonix brachyurus</i> (Quokka)	VU	Y	4.8	2007	12	N/A
<i>Tyto novaehollandiae</i> (masked owl (southwest))	P3	Y	6.3	1999	7	
<i>Westralunio carteri</i> (Carter's freshwater mussel)	VU	N	5.1	1905	1	

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

* An additional 7 records of *Zanda* sp. 'white-tailed black cockatoo' (White-tailed black cockatoo) were recorded in the local area, which may comprise either of these species.

Appendix C – Assessment against the Clearing Principles

Assessment against the Clearing Principles	Variance level	Is further consideration required?
Environmental value: biological values		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u> The proposed clearing area may contain conservation significant flora species and provides habitat for multiple conservation significant fauna species.</p>	May be at variance	Yes Refer to Sections 3.2.1 and 3.2.2 above.
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u> The application area contains vegetation that is suitable foraging habitat for threatened black cockatoo species and may also contain roosting and breeding habitat for these species. The application area also contains suitable habitat for other conservation significant fauna species.</p>	Is at variance	Yes Refer to Section 3.2.1 above.
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u> The proposed clearing area is unlikely to contain Threatened flora.</p>	Not likely to be at variance	No
<p><u>Principle (d):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of or is necessary for the maintenance of a threatened ecological community.”</i></p> <p><u>Assessment:</u> Vegetation within the application area proposed clearing is unlikely to comprise a threatened ecological community or be necessary for the maintenance of one.</p>	Not likely to be at variance	No
Environmental values: significant remnant vegetation and conservation areas		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u> Extents of the mapped vegetation type and native vegetation in the local area are consistent with the national objectives and targets for biodiversity conservation in Australia.</p> <p>While vegetation within the application area is associated with an identified regional ecological linkage and is also likely to act as a local ecological linkage, given that the clearing is thinning and that vegetation will remain within the application area and that riparian vegetation acting as a linkage has been excluded from the application area, the proposed clearing is considered unlikely to impact ecological linkages.</p>	Not likely to be at variance	Yes Refer to Section 3.2.3 above.
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> The proposed clearing may impact the adjacent Palgarrup State Forest through the spread of weeds and dieback associated with the clearing.</p>	May be at variance	Yes Refer to Section 3.2.3 above.
Environmental values: land and water resources		

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<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> No watercourses or wetlands are mapped within the application area, and vegetation within the application area is not consistent with riparian vegetation. Riparian areas have been excluded from the application area.</p>	Not likely to be at variance	No
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u> Soil types within the application area have high risks of subsurface acidification and wind erosion, and moderate risks of subsurface compaction, phosphorus export, waterlogging and water erosion. Given that the proposed clearing is thinning and burning, and therefore that a reasonable amount of vegetation will remain within the application area, the risk the clearing resulting in appreciable subsurface acidification, wind erosion, phosphorus export, waterlogging or water erosion are low. Timber harvesting activities may result in soil compaction.</p>	May be at variance	Yes Refer to Section 3.2.4 above.
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u> Given that a buffer of vegetation has been retained surrounding the nearest watercourses to the application area, and that the application is thinning and not clearing, and is not within a Public Drinking Water Source Area, the proposed clearing is unlikely to impact surface or ground water quality.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u> The mapped soils and topographic contours in the surrounding area, distance to nearby waterbodies and the nature of the proposed clearing (i.e., thinning and not complete clearing) indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding or waterlogging.</p>	Not likely to be at variance	No

Appendix D – Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types. Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery (1994).

Measuring Vegetation Condition for the Southwest and Interzone Botanical Province (Keighley, 1994)

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very Good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
Good	Vegetation structure significantly altered by very obvious signs of multiple disturbances. Retains basic vegetation structure or ability to regenerate it. For example, disturbance to vegetation structure caused by very frequent fires, the presence of some very aggressive weeds at high density, partial clearing, dieback and/or grazing.
Degraded	Basic vegetation structure severely impacted by disturbance. Scope for regeneration but not to a state approaching good condition without intensive management. For example, disturbance to vegetation structure caused by very frequent fires, the presence of very aggressive weeds, partial clearing, dieback and/or grazing.
Completely Degraded	The structure of the vegetation is no longer intact and the area is completely or almost completely without native species. These areas are often described as 'parkland cleared' with the flora comprising weed or crop species with isolated native trees or shrubs.

Appendix E – Photographs of the vegetation



Figure E-1 – Photograph of vegetation within the application area. Vegetation includes jarrah and marri forest with understorey including balga and bracken (DWER, 2020a).



Figure E-2 – Photograph of vegetation within the application area. Vegetation includes jarrah and marri forest with understorey including bracken and *Macrozamia riedlei* (zamia) (DWER, 2020a).



Figure E-3 – Photograph of vegetation within the application area. Stag tree in the foreground, background vegetation includes jarrah and marri forest with understorey of bracken (DWER, 2020a).



Figure E-4 – Photograph of vegetation within the application area. Vegetation includes jarrah and marri forest with understory of bracken, large stag tree also visible (DWER, 2020a).



Figure E-5 - Photograph of vegetation within the application area. Includes canopy of large eucalypt tree, *Banksia grandis* in left of photograph (DWER, 2020a).

Appendix F – References and databases

F.1. GIS datasets

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
- South West Regional Ecological Linkages Axis Lines

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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