



## CLEARING PERMIT

*Granted under section 51E of the Environmental Protection Act 1986*

### PERMIT DETAILS

Area Permit Number: CPS 9338/1  
File Number: DWERVT8165  
Duration of Permit: From 5 February 2022 to 5 February 2034

### PERMIT HOLDER

Manjimup KW Pty Ltd

### LAND ON WHICH CLEARING IS TO BE DONE

Lot 101 on Deposited Plan 411364, Wilgarrup

### AUTHORISED ACTIVITY

The Permit Holder must not *clear* more than 6.2 hectares of *native vegetation* within the area cross-hatched yellow in Figure 1 of Schedule 1.

### CONDITIONS

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

The Permit Holder must not *clear any native vegetation* after 5 February 2024.

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

In determining the *native vegetation* authorised to be *cleared* under this permit, the Permit Holder must apply the following principles, set out in descending order of preference:

- (a) avoid the *clearing of native vegetation*;
- (b) minimise the amount of *native vegetation* to be *cleared*; and
- (c) reduce the impact of *clearing* on any environmental value.

#### 3. Weed and dieback management

When undertaking any *clearing* authorised under this permit, the Permit Holder must take the following measures to minimise the risk of introduction and spread of *weeds* and *dieback*:

- (a) clean earth-moving machinery of soil and vegetation prior to entering and leaving the area to be cleared;
- (b) ensure that no known *dieback* or *weed*-affected soil, *mulch*, *fill*, or other material is brought into the area to be cleared; and
- (c) restrict the movement of machines and other vehicles to the limits of the areas to be cleared.

#### 4. Directional clearing

The Permit Holder must:

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

#### 5. Fauna management – black cockatoo habitat

- (a) Prior to undertaking any *clearing* authorised under this permit within the area cross-hatched yellow on Figure 1 of Schedule 1, the Permit Holder must engage a *fauna specialist* to conduct a *fauna survey* of this area to identify *black cockatoo habitat tree/s* being utilised by *black cockatoo species* listed below:
  - (i) *Calyptorhynchus latirostris* (Carnaby’s cockatoo);
  - (ii) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo); and
  - (iii) *Calyptorhynchus baudinii* (Baudin’s cockatoo).
- (b) Where *black cockatoo habitat tree/s* are identified under condition 5(a), the Permit Holder must engage a *fauna specialist* to map *black cockatoo habitat tree/s* within the permit area.
- (c) Each *black cockatoo habitat tree* identified must be inspected by a *fauna specialist* for *evidence* of current or past breeding use by *black cockatoo species*.
- (d) Where a *black cockatoo habitat tree* with no *evidence* of current or past use by *black cockatoo species* is identified in accordance with condition 5(a), that tree must only be cleared immediately after the inspection.
- (e) Where a *black cockatoo habitat tree* is identified within the area cross-hatched yellow on Figure 1 of Schedule 1, and that tree shows *evidence* of current or past breeding use by *black cockatoo species* under condition 5(c), and clearing of that tree cannot be avoided, that tree must be monitored by a *fauna specialist* to determine when it is no longer in use for that breeding season.
- (f) Any *black cockatoo habitat tree* with *evidence* of current breeding use by *black cockatoo species* or other hollow-dependent fauna must not be cleared whilst it is in use for that breeding season as determined by the *fauna specialist* under condition 5(e).
- (g) For each suitably sized hollow for *black cockatoo species* nesting that cannot be avoided, the Permit Holder must install an artificial black cockatoo nesting hollow.
- (h) Each artificial black cockatoo nesting hollow required by condition 5(g) must be installed prior to commencement of the next black cockatoo breeding season following clearing of the related *black cockatoo breeding tree(s)*.
- (i) The artificial black cockatoo nesting hollows required by condition 5(g) of this permit, which includes a minimum of three (3) artificial hollows required to mitigate the loss of three hollows identified by Astron Environmental Services (2021), must:
  - (i) be installed within the area cross-hatched green on Figure 1 of Schedule 1;
  - (ii) be designed and placed in accordance with the specifications detailed in Schedule 2; and
  - (iii) be monitored and maintained in accordance with the specifications detailed in Schedule 3, for a period of at least ten years.
- (j) Within two months of clearing authorised under this permit within the area cross-hatched yellow on Figure 1 of Schedule 1, the Permit Holder must provide the results of the *fauna survey* in a report to the CEO.

- (k) The *fauna survey* report must include the following;
- (i) the location of the *black cockatoo habitat tree(s)* recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (ii) the location of any fauna species listed in condition 5(a), if identified, recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (iii) the name and amount of each fauna species identified;
  - (iv) whether the *black cockatoo habitat tree/s* identified show current or past use by black cockatoo species;
  - (v) the methodology used to survey the permit area;
  - (vi) a photo of the *black cockatoo habitat tree(s)* identified; and
  - (vii) a description of the *black cockatoo habitat tree(s)* identified, including the:
    - (A) species of *black cockatoo habitat tree(s)*; and
    - (B) condition of the *black cockatoo habitat tree(s)*.

## 6. Records that must be kept

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

**Table 1: Records that must be kept**

No.	Relevant matter	Specifications
1.	In relation to the authorised clearing activities generally	<ul style="list-style-type: none"> <li>(a) the species composition, structure, and density of the cleared area;</li> <li>(b) the location where the clearing occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 1994 (GDA94), expressing the geographical coordinates in Eastings and Northings;</li> <li>(c) the date that the area was cleared;</li> <li>(d) the size of the area cleared (in hectares);</li> <li>(e) actions taken to avoid, minimise, and reduce the impacts and extent of clearing in accordance with condition 2 of this Permit;</li> <li>(f) actions taken to minimise the risk of the introduction and spread of <i>weeds</i> and <i>dieback</i> in accordance with condition 3 of this permit; and</li> <li>(g) direction of the clearing activities authorised under this Permit in accordance with condition 4 of this Permit.</li> </ul>

## 7. Reporting

The Permit Holder must provide to the *CEO* the records required under condition 6 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
black cockatoo habitat trees	means trees that have a diameter measured over bark measured at 130 centimetres from the base of the tree of 50 centimetres or greater (or 30 centimetres or greater for <i>Eucalyptus salmonophloia</i> or <i>Eucalyptus wandoo</i> ) or that contain hollows suitable for breeding by <i>black cockatoo species</i> .
black cockatoo species	means one or more of the following species: (a) <i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo); (b) <i>Calyptorhynchus baudinii</i> (Baudin's cockatoo); and/or (c) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
CEO	Chief Executive Officer of the department responsible for the administration of the clearing provisions under the <i>Environmental Protection Act 1986</i> .
clearing	has the meaning given under section 3(1) of the EP Act.
condition	a condition to which this clearing permit is subject under section 51H of the EP Act.
dieback	means the effect of <i>Phytophthora</i> species on native vegetation.
department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> (WA) and designated as responsible for the administration of the EP Act, which includes Part V Division 3.
EP Act	<i>Environmental Protection Act 1986</i> (WA)
evidence	means showing chew marks or scratching on the habitat tree representative of the species being surveyed, the presence of the species entering or leaving the habitat tree, and/or the presence of chicks/young.
fauna specialist	means a person who holds a tertiary qualification specialising in environmental science or equivalent, and has a minimum of 2 years work experience in fauna identification and surveys of fauna native to the region being inspected or surveyed, or who is approved by the CEO as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fauna survey	means a field-based investigation, including a review of established literature, of the biodiversity of fauna and/or fauna habitat of the permit area and where conservation significant fauna are identified in the permit area, also includes a fauna survey of surrounding areas to place the permit area into local context.
fill	means material used to increase the ground level, or to fill a depression.
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.
weeds	means any plant – (a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i> ; or


Term	Definition
	(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or (c) not indigenous to the area concerned.

**REFERENCES**

Astron Environmental Services. (2021). *Targeted Black Cockatoo Assessment*. Fauna survey report prepared for Manjimup KW Pty Ltd’s clearing permit application CPS 9338/1. Received by DWER on 25 October 2021. IBSA reference number: IBSA-2021-0441. DWER reference: A2057205.

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**END OF CONDITIONS**


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Ryan Mincham  
 MANAGER  
 NATIVE VEGETATION REGULATION

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

13 January 2022

# SCHEDULE 1

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



**Figure 1:** The area cross-hatched yellow indicates of the boundary of the area within which clearing may occur. The area cross-hatched green indicates the boundary of the area where a minimum of three black cockatoo nesting hollows must be installed and maintained.

**SCHEDULE 2 – How to design and place artificial hollows for Carnaby’s cockatoo**

## Artificial hollows for Carnaby's cockatoo



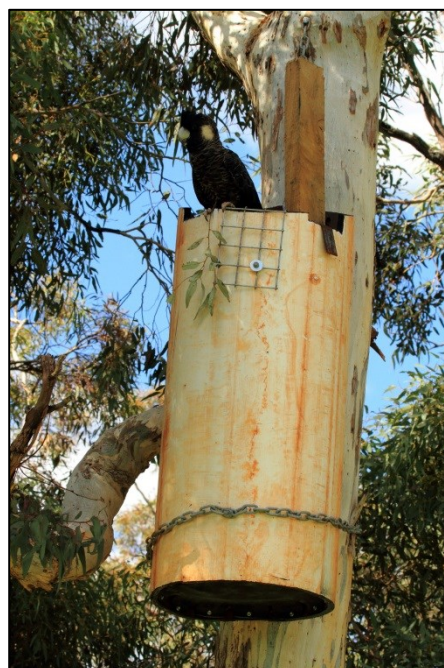
## How to design and place artificial hollows for Carnaby's cockatoo

Artificial hollows can be used to help conserve the threatened Carnaby's cockatoo by enabling the cockatoos to breed in areas where natural hollows are limited.

A wide variety of artificial hollow designs have been used with mixed success. Evidence suggests that, while the hollow must meet some basic requirements, other factors such as proximity to existing breeding areas may be more important in determining the success of artificial hollows. Before using this information sheet to construct or install an artificial hollow, you should refer to the criteria listed in the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

This information sheet contains broad guidelines for the design and placement of artificial hollows for Carnaby's cockatoo.

Below are three examples of successful artificial hollows used by Carnaby's cockatoo for nesting. Artificial hollows made from a natural log with cut side entrance (left), white industrial pipe with top entrance (centre) and natural log with natural side entrance (right).



Photos by Christine Groom (left and right) and Rick Dawson (centre)



## Walls

The walls of the artificial hollow need to be constructed from a material that is;

- Durable enough to withstand exposure to elements for an extended period of time (i.e. 20+ years).
- Able to simulate the thermal properties of a natural tree hollow.
- Not less than 380 mm in internal diameter.
- Preferably 1.2 m deep overall and 1m deep to top of substrate/nesting material.

Successful artificial hollows have been constructed from sections of salvaged natural hollow, black and white industrial pipe. When using non-natural materials care must be taken to ensure there are no toxic residues and that the materials are safe to ingest.

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## Base

The base of the artificial hollow must be;

- Able to support the adult and nestling(s).
- Durable enough to last the life of the nest.
- Free draining.
- At least 380 mm in diameter.
- Covered with 200 mm of sterile, dry, free draining material such as charcoal, hardwood woodchips or wood debris.

### **Do not use:**

- Saw dust or fibre products that will retain moisture.

Example materials that could be used for artificial hollow bases include heavy duty stainless steel, galvanised or treated metal (e.g. Zinalume ®), thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to size to fit internally with sharp or rough edges ground away or curled inwards and fixed securely to the walls.



Carnaby's cockatoo eggs in an artificial hollow.  
*Photo by Rick Dawson*

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## Entrance

The entrance of the artificial hollow must;

- Have a diameter of at least 270 mm).
- Preferably be top entry which will minimise use by non-target species.

Top entry hollows are unattractive to nest competitors such as feral bees, galahs and corellas. Side entry hollows have been successful in areas where feral bees are not a problem and where galahs and corellas are deterred.

## Ladder

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds to climb in and out of the hollow easily.

The ladder must be;

- Securely mounted to the inside of the hollow.
- Made from an open heavy wire mesh such as WeldMesh™ with mesh size of 30 - 50 mm, or heavy chain.

### Do not use:

- A material that the birds can chew.
- Galvanized because the birds may grip or chew the ladder and ingest harmful compounds.

If using mesh for the ladder, the width will depend on the curvature of the nest walls. A minimum width of about 60 - 100 mm is recommended.

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## Sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide sacrificial chewing posts. The birds chew material to prepare a dry base on which to lay their egg(s).

The sacrificial chewing posts must:

- Be made of untreated hardwood such as jarrah, marri or wandoo
- Be thick enough to satisfy the birds' needs between maintenance visits.
- Extend beyond the top of the hollow as an aid to see whether the nest is being used.
- Be placed on the inside of the hollow.
- Be attached in such a way that they are easy to replace e.g. hook over the top of hollow or can slide in/out of a pair of U bolts fitted to the side of the hollow.

It is recommended that at least two posts are provided. Posts 70 x 50 mm have been used, but require replacing at least every second breeding season when the nest is active. Birds do vary in their chewing habits and therefore the frequency at which the chewing posts require replacement will also vary.



Bottom of an artificial hollow showing ladder that is fixed to the wall and a chewed sacrificial post which is 200 mm from the floor.

Photo by Rick Dawson

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## Mountings

The artificial hollows must be mounted such that:

- The fixings used will last the duration of the nest e.g. galvanized bracket or chain fixed with galvanized coach screws.
- It is secured by more than one anchor for security and stability.
- It is positioned vertically or near vertically.

## Placement

Sites should be chosen within current breeding areas and where they can be monitored, but preferably not conspicuous to the general public. It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance. For more detail refer to the separate information sheet; *When to use artificial hollows for Carnaby's cockatoo*.

The height at which artificial hollows should be placed is variable. The average height of natural hollows in dominant tree species in the area is a good guide. Natural hollows used by Carnaby's cockatoos have been recorded as low as 2 m above the ground. If located on private property the hollows can be placed lower to the ground so they are accessible by ladder or a rope and pulley system can be used. Where public access is possible artificial hollows should be placed at least 7 m high (i.e. higher than most ladders) and on the side of the tree away from public view to reduce the chance of interference or poaching.

Carnaby's cockatoo show no preference for aspect of natural hollows, however, it may still be beneficial to place artificial hollows facing away from prevailing weather and where they receive the most shade and protection.

Artificial hollows to be placed in trees require:

- Accessibility of the tree for a vehicle, elevated work platform or cherry picker.
- A section of trunk 2-3 m long suitable for attaching the hollow

If necessary, artificial hollows may be placed on poles, but this may result in excessive exposure to sun during very hot weather. When erected on poles there should be:

- A hinge at the bottom of the pole that can be secured when the pole is in the upright position.
- Access for a vehicle to assist raising the pole.

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## Safety

Care needs to be taken when placing artificial hollows to ensure safety is considered at all times. Artificial hollows are heavy and require lifting and manoeuvring into position up to 7 m above the ground.

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## Maintenance and monitoring

Once artificial hollows have been placed they require monitoring and maintenance to ensure they continue to be useful for nesting by Carnaby's cockatoo. It is important to monitor artificial hollows to determine use by Carnaby's cockatoo, other native species as well as pest species. By undertaking monitoring the success of the design and placement of artificial hollows can be determined and areas for improvement identified for future placement of artificial hollows.

Monitoring can also assess whether any maintenance is required. Without regular maintenance artificial hollows are unlikely to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

For further advice on monitoring and maintenance of artificial hollows please refer to the separate information sheet; *How to monitor and maintain artificial hollows for Carnaby's cockatoo*.



Carnaby's cockatoo female prospecting an artificial hollow.  
Photo by Rick Dawson



Example fixing for artificial hollow  
Photo by Christine Groom

### **Acknowledgements**

This information sheet is a joint initiative of Birdlife Australia, the Western Australian Museum and the Department of Parks and Wildlife. Many individuals have contributed to its preparation. Special acknowledgement is made for the contributions of Ron Johnstone from the WA Museum, Alan Elliott from the Serpentine-Jarrahdale Land care Centre and Denis Saunders. This updated version was compiled by Rick Dawson Department of Parks and Wildlife).

### **Other information sheets in the series: Artificial hollows for Carnaby's cockatoo**

- *How to design and place artificial hollows for Carnaby's cockatoo*
- *How to monitor and maintain artificial hollows for Carnaby's cockatoo*

Information sheets available on the *Saving Carnaby's cockatoo* webpage:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>

## **SCHEDULE 3 – How to monitor and maintain artificial hollows for Carnaby’s cockatoo**

## Artificial hollows for Carnaby's cockatoo



## How to monitor and maintain artificial hollows for Carnaby's cockatoo

It is important to monitor and maintain artificial hollows after they have been erected. Monitoring ensures that the effectiveness of the artificial hollow can be determined. It also means that problems with pest species or any maintenance requirements can be identified and resolved.

Without regular maintenance, artificial hollows are likely to fail to achieve their objective (that is, they will fail to provide nesting opportunities for threatened cockatoos). Therefore it is important to continue a regime of regular maintenance while the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available.

Monitoring should be undertaken in order to detect:

- Use by Carnaby's cockatoo
- Maintenance requirements
- Use by other native species
- Use by pest species (e.g. feral bees, galahs, corellas etc.)



Carnaby's cockatoo female prospecting an artificial hollow.  
*Photo by Rick Dawson*

### **How do I monitor artificial hollows?**

Before undertaking monitoring of artificial hollows for Carnaby's cockatoo it is recommended that you seek advice from BirdLife Australia, the WA Museum or the Department of Parks and Wildlife. It is also important to contact Parks and Wildlife, Wildlife Licensing Section, to determine if a scientific licence is required ([wildlifelicencing@dpaw.wa.gov.au](mailto:wildlifelicencing@dpaw.wa.gov.au)).

Monitoring artificial hollows requires keen observation and naturalist skills. It is often not possible to observe evidence of breeding directly (i.e. nestlings or eggs) and inferences must be made based on observation. There are many techniques available to monitor artificial hollows. A combination of several is likely to achieve the best results.

### **Looking for signs of use**

Cobwebs covering the entrance to the hollow will indicate that the hollow has not been used recently. This would also apply to other light debris that may have fallen to cover the opening partially. Signs of recent use or interest in the hollow include evidence of chewing.

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### **Observing parent behaviour around the hollow**

The behaviour of parent birds around a hollow will indicate an approximate age of young in the nest.

<b>Parent behaviour</b>	<b>Approximate age/stage of young</b>
Prospecting for hollow	Unborn
Male only seen out of hollow	Egg or very young nestling (< 3 - 4 weeks)
Both parents seen entering/exiting the hollow	Nestling(s) have hatched (> 3 - 4 weeks)

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### **Observing feeding flocks**

Flocks of all male birds indicate that the females are incubating eggs. When flocks are mixed it suggests the birds have either not laid yet or that the nestlings have hatched and no longer require brooding (approximately 3 - 4 weeks old).

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### **Tapping**

When females are sitting on eggs they will usually respond to tapping at the base of their tree (or pole) by appearing at the entrance or flying from the hollow opening. This is not a guarantee of breeding activity, but an indication that it is possibly occurring in the hollow.

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### **Observing insect activity around nest**

The faecal matter produced by nestlings in a nest attracts insects, especially flies and ants. The type and number of these insects will help indicate how old any nestlings present may be. Factors such as temperature and humidity will also affect insect activity and so observations of insect activity should only be used as supporting evidence for other indications of age/use. Blowflies around a nest usually indicate that a death has occurred.

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### **Listening for nestlings**

With experience it is possible to determine if one or two nestlings are present and a broad estimate of age based on the type and loudness of noises they make.

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### **Looking inside the nest**

This can be achieved either with the aid of a telescopic pole and camera or mirror, or with the use of a ladder or other climbing equipment. This method can obtain the most detailed monitoring information for artificial hollows. However it is also the most time consuming and difficult to organise. Special equipment is likely to be needed depending on the height and positioning of artificial hollows. There are also safety issues associated with ladder or rope climbing options to reach nests to undertake observations.

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### **How often should I monitor artificial hollows?**

The minimum frequency of monitoring and the techniques used will be determined by the aims of the monitoring and the resources available. It is important to limit disturbance to breeding birds and this should be considered when determining the techniques used and frequency.

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### **How do I maintain artificial hollows?**

Artificial hollows require maintenance to ensure they continue to have the greatest chance of them being used by Carnaby's cockatoos. Periodic maintenance checks should be undertaken at least every two years, preferably annually. These checks should be undertaken prior to the breeding season which is between July and January with breeding occurring later in this period in southern areas. It is important to maintain a regime of regular maintenance as long as the artificial hollow is required. It may take several (to many) decades until a natural replacement hollow is available.

Maintenance checks should assess the following as a minimum:

- Condition of chewing posts (if present)
- Condition of attachment points
- Condition of hollow bases
- Stability of tree or pole used to mount the artificial hollow



Artificial hollow base needing repair.  
*Photo by Christine Groom*

### **Repairing hollows**

Any problems identified during maintenance checks should be addressed, and any repairs required done, as soon as possible. If breeding is currently occurring, maintenance may need to be delayed if it is likely to disturb the parents or nestling. Likely maintenance needs include replacement of chewing posts (frequently) or nest bases (occasionally) and repairing of any cracks (infrequently). Maintenance concerns regarding the security of attachment points or the stability of the tree or pole should be addressed as a priority for safety reasons.

For artificial hollows known to be used, spare chewing posts should be taken into the field when undertaking maintenance checks.

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**Monitoring of artificial hollows:**

Monitoring aim	Frequency of visits	Monitoring techniques
<b>To determine possible use by Carnaby's cockatoo</b>	At least once during peak breeding season (i.e. between September and December)	<ul style="list-style-type: none"> <li>• Observing behaviour of adults around hollow</li> <li>• Tapping to see if female will flush from hollow (best undertaken between 10am and 3pm when females most likely to be sitting)</li> <li>• Listening for nestlings</li> <li>• Looking for evidence of chewing</li> <li>• Looking inside nest</li> </ul>
<b>To confirm use by Carnaby's cockatoo</b>	At least two visits during peak breeding season (i.e. between September and December)	<p>To observe at least two of the following:</p> <ul style="list-style-type: none"> <li>• Breeding behaviour of adults around hollow or evidence of chewing</li> <li>• Female flushed from hollow</li> <li>• Noises from nestlings in hollow</li> </ul> <p>Or to observe:</p> <ul style="list-style-type: none"> <li>• Nestlings or eggs in nest</li> </ul>
<b>To determine nesting success by Carnaby's cockatoo</b>	The more visits, the better. Preferably fortnightly visits between July and December. As a minimum, at least 3 visits spread throughout breeding season.	<ul style="list-style-type: none"> <li>• Looking inside nest to observe eggs or nestlings.</li> </ul>
<b>To determine use by any species</b>	As often as possible.	<ul style="list-style-type: none"> <li>• Inspection from ground as a minimum.</li> <li>• Looking inside nest for detailed observations.</li> </ul>
<b>To determine maintenance requirements</b>	At least every two years and preferably annually if hollow fitted with sacrificial chewing posts, can be longer if without.	<ul style="list-style-type: none"> <li>• A basic maintenance check can be undertaken from the ground. A ladder or elevated work platform will be required for a comprehensive check and to replace sacrificial chewing posts</li> </ul>

**Acknowledgements**

This information sheet is a joint initiative of Birdlife Australia, the Western Australian Museum and the Department of Parks and Wildlife. Many individuals have contributed to its preparation. The updated version was compiled by Rick Dawson (Department of Parks and Wildlife) with assistance from Denis Saunders.

**Other information sheets in the series: Artificial hollows for Carnaby's cockatoo**

- *How to design and place artificial hollows for Carnaby's cockatoo*
- *How to monitor and maintain artificial hollows for Carnaby's cockatoo*

Information sheets available on the *Saving Carnaby's cockatoo* webpage:

<http://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals/208-saving-carnaby-s-cockatoo>



# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 9338/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Manjimup KW Pty Ltd
<b>Application received:</b>	23 June 2021
<b>Application area:</b>	9.12 hectares (as revised) of native vegetation
<b>Purpose of clearing:</b>	Construction of a dam and buildings (as revised)
<b>Method of clearing:</b>	Mechanical
<b>Property:</b>	Lot 101 on Deposited Plan 411364
<b>Location (LGA area/s):</b>	Shire of Manjimup
<b>Localities (suburb/s):</b>	Wilgarrup

### 1.2. Description of clearing activities

The original clearing permit application was to clear native vegetation for the construction of:

- shed and roadway buildings for turnaround access to orchard by trucks (approximately 2.92 hectares); and
- a dam for water storage (approximately 6.2 hectares).

On 26 August 2021, the Department of Water and Environmental Regulation (DWER) sent correspondence to the applicant which outlined the environmental impacts identified during the assessment of the proposed clearing. The applicant subsequently decided not to clear native vegetation to construct buildings, and thereby, reduced the amount of clearing by approximately 32 per cent, that being, from 9.12 hectares to approximately 6.2 hectares (see Figures 1 and 2, Section 1.4).

<b>Decision:</b>	Granted
<b>Decision date:</b>	13 January 2022
<b>Decision area:</b>	6.2 hectares of native vegetation, as depicted in Section 1.5, below.

### 1.3. Reasons for decision

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

- actions taken by the applicant which resulted in the avoidance and minimisation of the extent of the clearing area and the mitigation of the impacts of clearing (see Section 3.1 of this report)
- a detailed assessment of the impacts of the clearing on environmental values (see Section 3.2 of this report)
- other matters considered relevant to the assessment (see Section 3.3 of this report). This included:
  - advice from Shire of Manjimup on matters regulated under its jurisdiction
  - advice from the DWER's Water Source Protection Planning branch on matters regulated under the *Country Area Water Supply Act 1947* (CAWS Act)
  - advice from the DWER's South West Region branch on matters regulated under the *Rights in Water and Irrigation Act 1914* (RIWI Act)
- the application area site characteristics (see Appendix A)

- the 10 Clearing Principles set out in Schedule 5 of the *Environmental Protection Act 1986* (EP Act) (see Appendix B)
- the concerns raised in public submissions (see Appendix C)
- a summary of a targeted black cockatoo tree assessment of the application area conducted by Astron Environmental Services (Astron) (see Appendix E)
- relevant datasets available at the time of the assessment (Appendix F).

The clearing permit application was prepared, submitted, accepted, assessed and determined in accordance with section 51E and 51O of the EP Act. DWER advertised the application for 21 days. Two public submissions were received. Appendix A contains a summary of these submissions and the DWER's advice on how these were considered during the assessment.

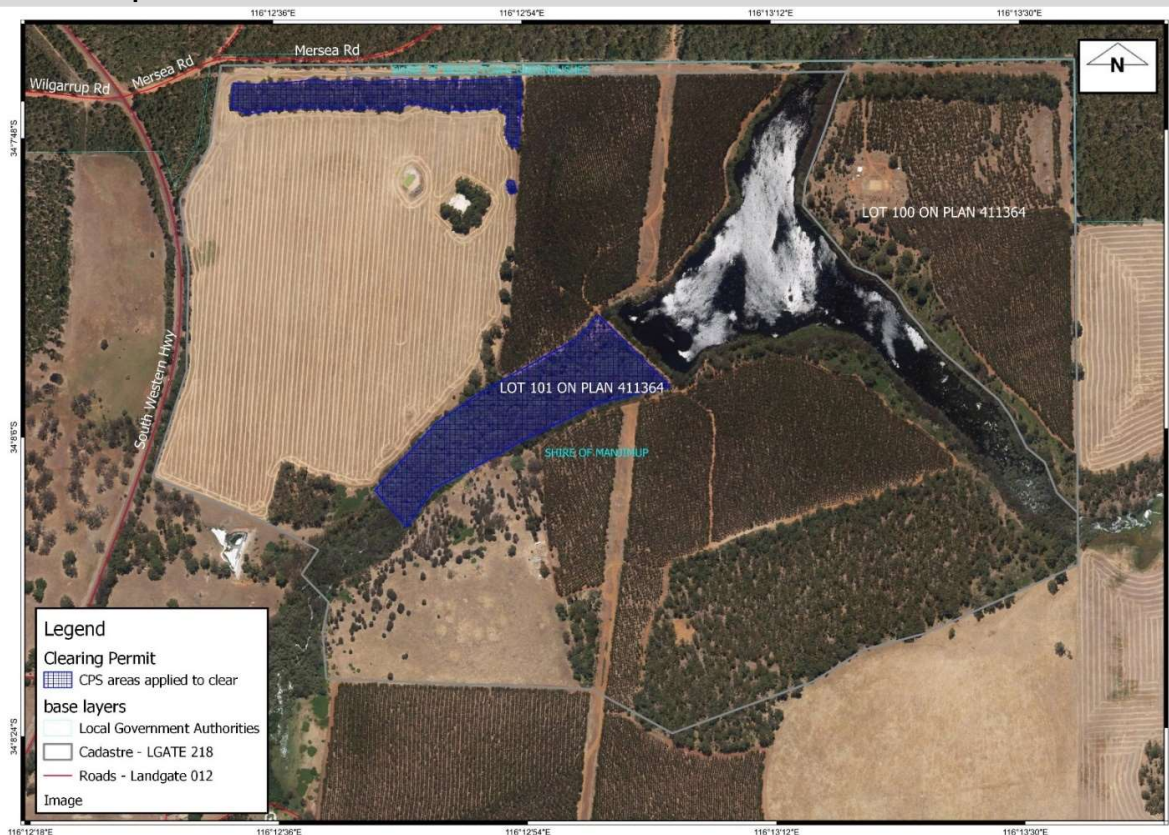
After consideration of the above information, the Delegated Officer determined that the proposed clearing will impact on native vegetation which provides habitat for conservation significant fauna. Noting the small extent of the proposed clearing relative to the surrounding native vegetation, that the local area is highly vegetated and the adjacent vegetation is likely to comprise vegetation in similar or better condition than that present within the application area, the Delegated Officer determined that the fauna habitat is not considered significant in the local context.

Given this, the Delegated Officer has decided to grant a clearing permit subject to the following conditions:

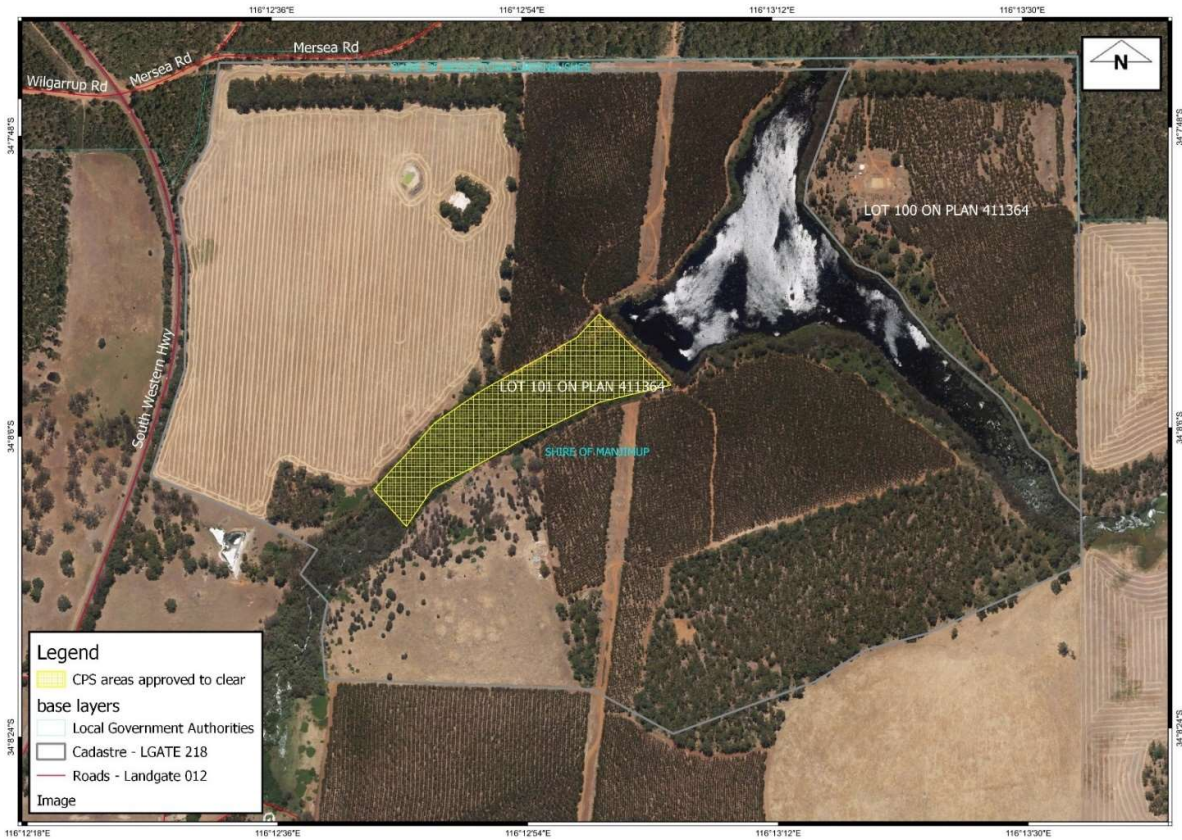
- avoid, minimise to reduce the impact and extent of clearing;
- weed and dieback management to minimise the risk of introduction and spread of weeds and dieback;
- fauna management to provide fauna an opportunity to move to adjacent native vegetation ahead of the clearing activity;
- black cockatoo management to ensure that the proposed clearing will not adversely impact this species, or any individuals present at the time of clearing.

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

#### 1.4. Site map



**Figure 1 - Map of the original application area.**



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

## 2 Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.4), the Delegated Officer has also had regard to the objects and principles under section 4A of the EP Act, particularly:

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

Other legislation of relevance for this assessment include:

- *Aboriginal Heritage Act 1972*
- *Biodiversity Conservation Act 2016* (WA) (BC Act)
- CAWS Act
- EPBC Act
- *Planning and Development Act 2005* (WA) (P&D Act)
- RIWI Act.

The key guidance documents which inform this assessment are:

- *A guide to the assessment of applications to clear native vegetation* (December 2013)
- *Procedure: Native vegetation clearing permits* (DWER, October 2019)
- Technical guidance – *Terrestrial Fauna Surveys for Environmental Impact Assessment* (Environmental Protection Authority ((EPA), 2016)
- Environmental Offsets Guidelines (August 2014).

Relevant policies considered during the assessment include:

- *Environmental Offsets Policy* (2011).

### 3 Detailed assessment of application

#### 3.1. Avoidance and mitigation measures

In relation to any actions which had been considered to avoid or minimise the need for clearing, the applicant (2021a) advised that the native vegetation proposed to be cleared was too close to the neighbour's property boundary and powerlines to allow turn around access for a truck and a shed. The Delegated Officer considered that this did not adequately demonstrate that all reasonable efforts had been taken to avoid and minimise potential impacts on the environmental values. In particular, the Delegated Officer noted that the application area may provide suitable habitat for conservation significant fauna species listed under the BC and EPBC Act.

In response to DWER correspondence detailing the above impacts, the applicant reduced the application area by approximately 32 per cent, that being from 9.12 hectares to approximately 6.2 hectares. Taking this into consideration, the Delegated Officer was satisfied that the applicant has undertaken reasonable measures to avoid and minimise potential impacts of the clearing on environmental values.

#### 3.2. Assessment of impacts on environmental values

In assessing the application, the Delegated Officer has had regard for the site characteristics (see Appendix A) 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 B) identified that the impacts of the proposed clearing present a risk to biological values (fauna) and water resources. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

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

###### Outcome:

Noting the findings of Astron's (2021) targeted black cockatoo habitat tree assessment, the proposed clearing will result in the loss of three suitably sized hollows for black cockatoo nesting.

The Delegated Officer acknowledged that although the application area is not likely to provide significant habitat for masked owl (southwest), Muir's corella, south-western brush-tailed phascogale and western ringtail possum (WRP), it may be used for fauna dispersal.

###### Conditions:

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

- pre-clearance survey for the presence of black cockatoos and other hollow-dependent fauna to ensure that individuals are not harmed at the time of clearing and installation of a minimum of three artificial black cockatoo nesting hollows
- fauna management condition to provide fauna an opportunity to move to adjacent native vegetation ahead of the clearing activity
- weed and dieback hygiene measures to mitigate the risk of impacts to adjacent native vegetation.

###### Assessment:

According to available databases, 18 conservation significant fauna species have been recorded within the local area (Department of Biodiversity, Conservation and Attractions (DBCA), 2021b). Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type, the condition of the vegetation within the application area, as well as the findings of the fauna survey (Astron, 2021), it was considered that the application area is likely to comprise suitable habitat for:

- Baudin's cockatoo (*Calyptorhynchus baudinii*)
- Carnaby's cockatoo (*Calyptorhynchus latirostris*)
- forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*)
- masked owl (southwest) (*Tyto novaehollandiae novaehollandiae*)
- Muir's corella (*Cacatua pastinator pastinator*)
- peregrine falcon (*Falco peregrinus*)
- south-western brush-tailed phascogale, wambenger (*Phascogale tapoatafa wambenger*); and
- WRP (*Pseudocheirus occidentalis*).

## Black cockatoos

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

The application area provides suitable breeding habitat for black cockatoos. Suitable breeding habitat for these species includes trees which either have a suitable nest hollow, or are of a suitable diameter at breast height (DBH) to develop a nest hollow. Suitable DBH for nest hollows is 500 millimetres for most tree species, however, is reduced to 300 millimetres for wandoo and salmon gum (Commonwealth of Australia, 2012). Carnaby's cockatoo typically nests in eucalypt woodlands, primarily in the hollows of wandoo (*Eucalyptus wandoo*), salmon gum (*E. salmonophloia*) and marri (*Corymbia calophylla*) (Groom, 2015). The most important breeding trees for forest red-tailed black cockatoos throughout their range are large, mature marri trees, approximately 120-150 years in age with a mean overall height of 20.24 metres (Johnston, Kirkby and Sarti, 2013). According to Saunders, Mawson and Dawson (2014), black cockatoos show strong nest site fidelity as approximately 43 of female black cockatoos bred in the same hollow over consecutive years, 13 per cent bred within 100 metres of their previous hollows, 32 per cent bred in a hollow between 101-1000 metres from their previous hollow and only 12 per cent bred more than one kilometre from their previous hollow.

Astron (2021) identified 148 habitat trees within the application area. These include:

- 23 marri
- Two jarrah
- 116 flooded gum; and
- Seven dead stags.

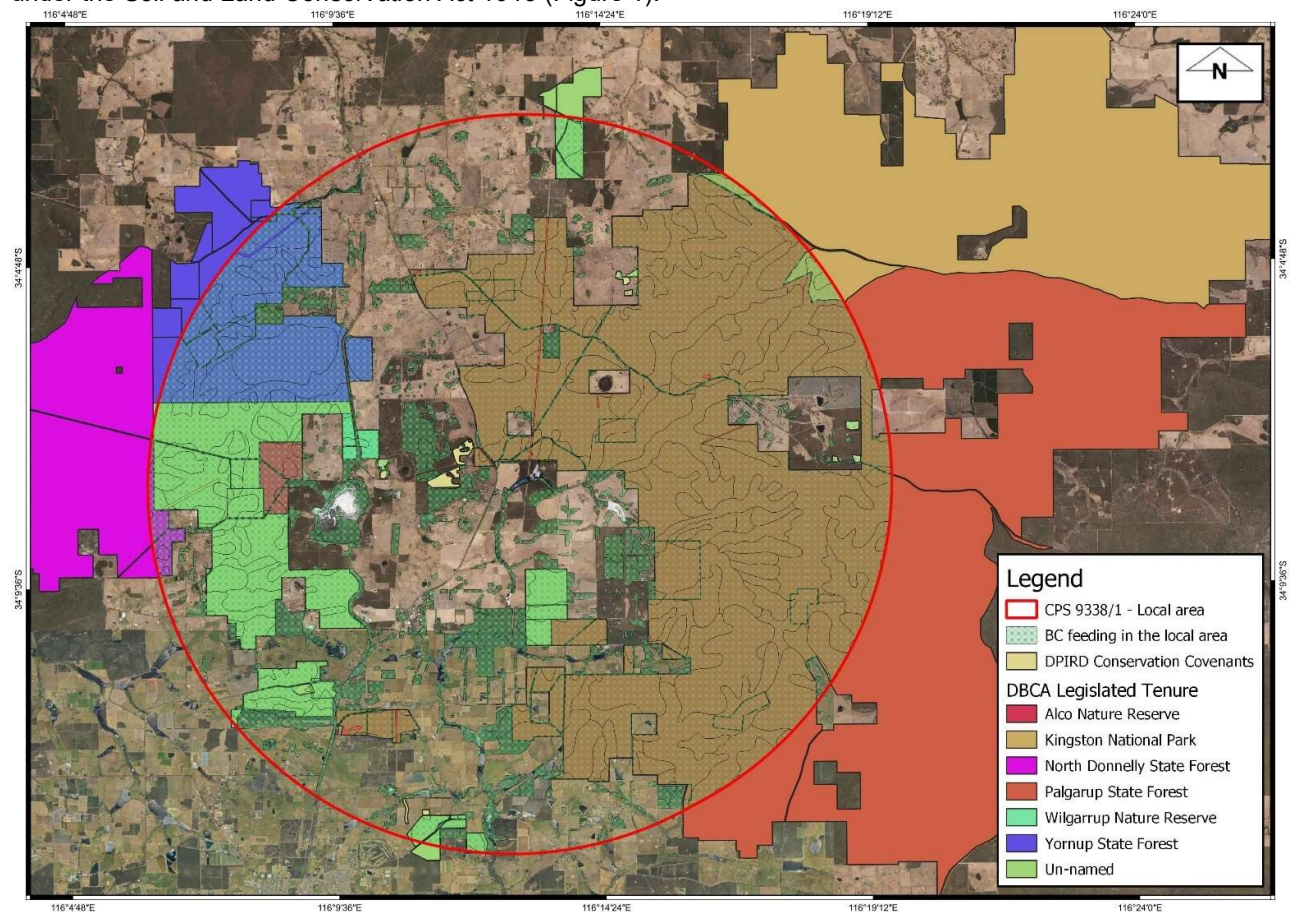
Four of the identified habitat trees contained a total of five hollows. Of these, three hollows were of a suitable size for black cockatoo nesting. An inspection of these hollows did not identify any evidence of current or past breeding use. To mitigate the loss of suitably sized hollows, the Delegated Officer imposed a condition on the clearing permit which requires the permit holder to install three black cockatoo artificial nesting hollows. This mitigation condition is consistent with the EPA advice (2019) which advises that measures for improving habitat values for Carnaby's cockatoo include enhancement of habitat, such as the use of artificial hollows.

Noting typical food resources for black cockatoos, the application area contains approximately 6.2 hectares of foraging habitat for these species. Forest red-tailed black cockatoo forages within jarrah and marri woodlands and forest, and edges of karri forests including wandoo and blackbutt, within the range of the subspecies. The species largely feeds on seeds of marri and jarrah, as well as other Eucalyptus species and Allocasuarina cones (Commonwealth of Australia, 2012). Baudin's cockatoo prefer foraging within Eucalypt woodlands and forest, and proteaceous woodland and heath. During the breeding season (October to late January/early February) this species prefers marri seeds. Outside the breeding season the species may feed in fruit orchards and tips of Pinus spp. (Commonwealth of Australia, 2012). Carnaby's cockatoo feeds on the seeds, nuts and flowers of a large variety of plants including Proteaceous species (Banksia, Hakea and Grevillea), as well as Allocasuarina and Eucalyptus species, Corymbia calophylla and a range of introduced species (Valentine and Stock, 2008).

Significant habitat refers to the resources (breeding, resting and feeding), connectivity or habitat area for a species or community that is critical for its survival. The Australian Department of the Environment (2013) notes that an action is likely to have significant impacts on critically endangered or endangered species, which include black cockatoos, if there is real possibility that it will (including but not limited):

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

Considering the extent of suitable black cockatoo foraging habitat mapped within the local area relative to the extent of foraging habitat present within the application area, the proposed clearing is not likely to cause significant impacts upon the viability of the local populations of black cockatoos. The local area comprises approximately 19,841.38 hectares of native vegetation which is mapped as black cockatoo foraging habitat. The application area represents approximately 0.031 per cent of this extent. Approximately 84.57 per cent (16,779.38 hectares) of the vegetation in the local area occurs within DBCA managed estate, or areas protected under conservation covenant under the *Soil and Land Conservation Act 1945* (Figure 1).



**Figure 3 - Map of black cockatoo foraging habitat within the local area**

The vegetation within application area does not contain black cockatoo foraging habitat which supports its breeding. While breeding, black cockatoos will generally forage within a 6–12 kilometre radius of their nesting site (Commonwealth of Australia, 2012). The application area is not located within the mapped confirmed breeding area for Carnaby’s cockatoo. According to available databases, there are no confirmed black cockatoo breeding points within the local area. The closest confirmed breeding site is a natural, confirmed breeding tree located approximately 43 kilometres northwest of the application area.

The assessment further identified that the application area unlikely provides foraging habitat that supports black cockatoo roosting. Roosting habitat is defined as a suitable tree (generally the tallest) or group of tall trees, native or introduced, usually close to an important water source, within an area of quality foraging habitat within the range of each black cockatoo species which provide black cockatoos with shelter during the heat of the day and safe resting places at night (Department of the Environment and Energy, 2017). Individual night roosting sites need suitable foraging habitat and water within six kilometres (EPA, 2019). Overlapping foraging ranges within 12 kilometres also support roosting sites and maintain habitat connectivity and movement across the landscape (EPA, 2019). There is one confirmed black cockatoo roosting site mapped within the local area. The site occurs within Yornup State Forest approximately 9.4 kilometres from the application area. A 6-kilometre buffer of this roosting retains approximately 46 per cent (approximately 5,162.71 hectares) of its original vegetation extent. A majority of the buffer occurs within conservation areas.

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

**Masked owl (southwest), Muir's corella, South-western brush-tailed phascogale, Western Ringtail Possum**

Noting the vegetation identified within the application area (Astron, 2021), the habitat requirements and distribution of the above species, the application area provides suitable habitat for each of these species. Taking into consideration the small extent of the proposed clearing relative to the surrounding native vegetation, the abundance of native vegetation within lands managed by DBCA for conservation which are likely to comprise vegetation in similar or better condition than that present within the application area, the habitat within the application area is not considered significant in the local context. Whilst not considered significant habitat, impacts to individuals of masked owl (southwest), Muir's corella, south-western brush-tailed phascogale and WRP may occur at the time of clearing. To minimise the potential impacts, the applicant will be required to undertake slow, progressive one directional clearing to allow terrestrial fauna to disperse ahead of the clearing activity should they occur on site at the time of clearing.

Masked owl, listed as Priority 3 by DBCA, inhabits 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).

The habitat critical to survival of 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 (Department of Environment and Conservation, 2008).

South-western brush-tailed phascogale may use the application area for dispersal. The preferred habitat for south-western brush-tailed phascogale in Western Australia is within 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 (Department of Environment and Conservation, 2012). Astron (2021) identified two jarrah trees and a thick groundcover layer dominated by *Rubus* sp. within the survey area.

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 (Department of Parks and Wildlife, 2014).

**Peregrine falcon**

This species is found in most habitats, from rainforests to the arid zone and at most altitudes, from the coast to alpine areas. It requires abundant prey and secure nest sites and prefers coastal and inland cliffs or open woodlands near water and may even be found nesting on high city buildings (Australian Museum, 2020). This species is widespread, highly mobile and is found in various habitats. The application area may comprise suitable habitat for this species, however, noting habitat preferences and the small extent of the proposed clearing, the application area is unlikely to comprise a significant habitat for this species.

**Ecological linkage**

Although the full extent of the application area does not function as an ecological linkage, two axes of South West Regional Ecological Linkage intersect it. Axes 160 and 162 intersect north-western and south-eastern portions of the application area, respectively. These linkages provide values as north-south linkages, particularly between Palgarup State Forest and an un-named reserve vested for the purpose of 'Timber Reserve' under the *Conservation and Land Management Act 1984*. The linkages are likely to facilitate the movement of fauna and ecological processes between these areas. Noting the location of the application area and the mapped South West Regional Ecological Linkage, the proposed clearing will not fragment this linkage but will create a wider barrier for fauna movement. Noting the abundance of native vegetation in the local area, the proposed clearing will not significantly impact the capacity for fauna movement across the landscape.

**3.2.2. Environmental value: water resources – Clearing Principles (f)**

**Outcome:**

The proposed clearing will not significantly impact this environmental value.



**Conditions:**

No clearing permit management conditions are required in relation to this matter.

**Assessment:**

According to available databases, a perennial earth dam of Wilgarrup River abuts the eastern boundary of the application area and Wilgarrup River flows west-east through the application area. The length of the river is approximately 72 kilometres (Figure 4). The applicant intends to clear native vegetation along approximately 545 metres of the river. The vegetation proposed to be cleared include riparian vegetation in the form of 116 *Eucalyptus rudis* (Astron, 2021). The proposed clearing may result in sedimentation, turbidity and/or other water quality impacts. However, noting that the clearing will impact only approximately 0.76 per cent of Wilgarrup River, the impacts will likely be only temporary and no long-term adverse impacts on the ecological functions of the river are anticipated. Advice from South West Region branch, which regulates matters under the RIWI Act, did not raise any concerns in relation to the proposed clearing and its impacts on the mapped watercourses.

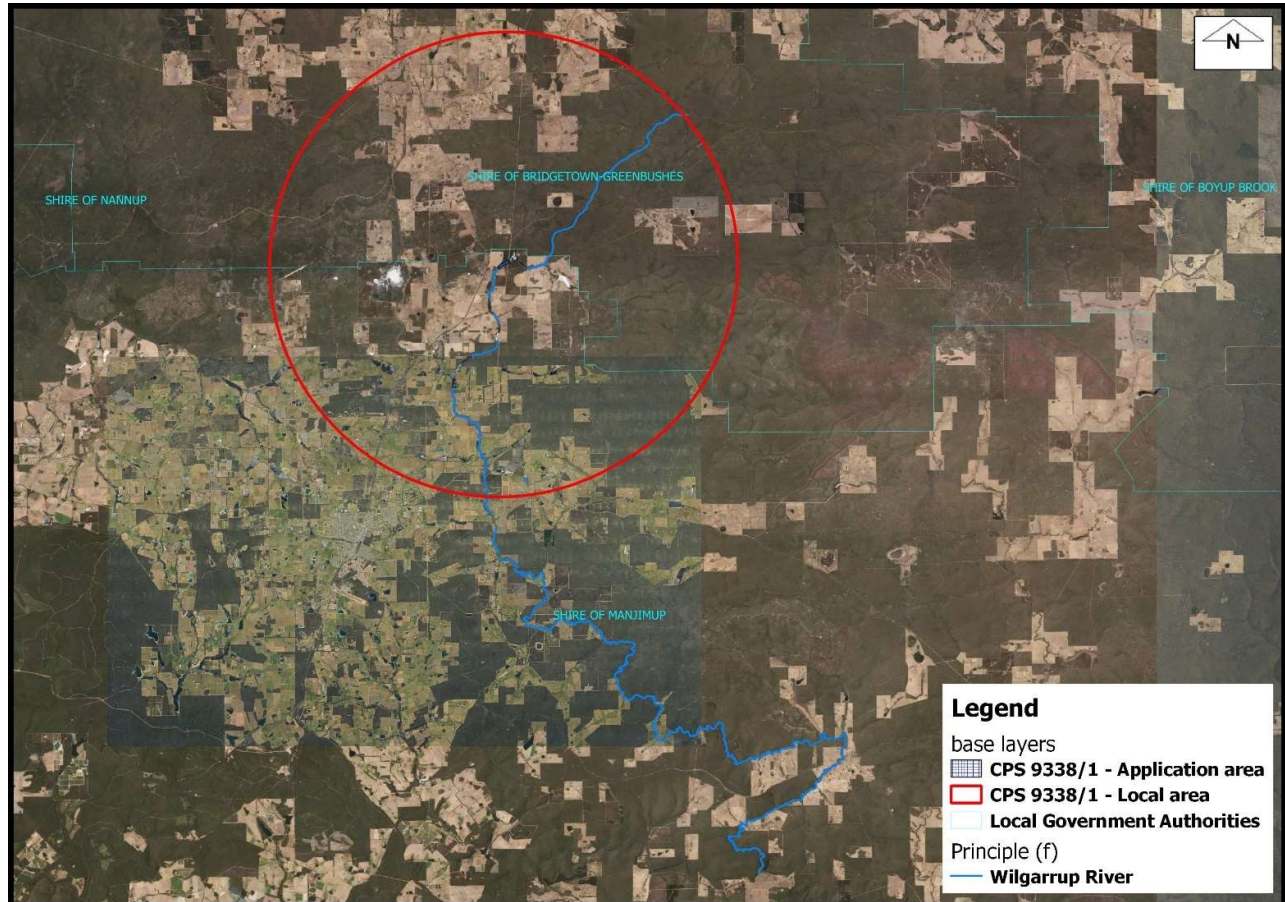


Figure 4 - Map of Wilgarrup River

**3.3. Relevant planning instruments and other matters**

**Planning instruments**

The Shire of Manjimup (the Shire) (2021) advised that the application area falls within a 'Priority Agriculture' area. In this zone, planning approvals for clearing of vegetation are not required. The Shire also advised that given the dam occurs more than 20 metres from any lot boundaries, the Shire's Local Planning Scheme No. 4 exempts the proposed dam development from the need to obtain a development approval.

**RIWI Act**

DWER's South West Region branch noted that applications for relevant licences under the RIWI were being assessed concurrently with the clearing permit application. The branch advised that all requirements under the RIWI Act were met and the licenses could be granted subject to the outcomes of the clearing permit application assessment and requirements under the CAWS Act.

**CAWS Act**

DWER's Water Source Protection branch had no objection to the proposed clearing under the CAWS Act. The branch advised that the application area lies within the 1 September 1978 CAWS Act gazetted Warren River Water Reserve. The area is not within a Public Drinking Water Source Area and no priority source protection is proposed. The catchment has been subject to CAWS Act native vegetation clearing controls since December 1978 to prevent salinisation of water resources. A review of DWER's records identified that the following CAWS Act Licences to Clear have previously been issued for the subject land when it was a part of larger holding that included the current Lot 100 and 102 on Plan 411364:

- LBR979 – 1.25 hectares – 3 April 1998
- LBR1007 – 2.8 hectares – 15 April 1999.

There is no compensation history for the subject land.

Water Source Protection branch further noted that the application area occurs within Zone B of the catchment which is a high salinity risk area where DWER Policy and Guidelines for the "Granting of Licences to Clear Indigenous Vegetation" provide for the grant of a licence to clear native vegetation subject to not more than 10 hectares being cleared within a land holdings from 1978. A further 10-hectare pro-rata clearing allowances was permitted if the landowner could demonstrate that the clearing would not have any adverse impacts on salinisation of waterways.

Analysis of the original land holding clearing history identified that there is approximately 6.5 hectares of pro-rata clearing allowances remaining for Lot 101 which is sufficient for the clearing of approximately 6.2 hectares of native vegetation.

**Other matters**

The application area is mapped within 'Muir's Highway Ethnographic Site 3' Registered Site (Mythological, Natural Feature, Water Source type). This site overlaps with Wilgarrup River. 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. Site characteristics

### C.1. Site characteristics

Characteristic	Details
Local context	Spatial data indicate the local area (10-kilometre radius of the application area, which is equal to approximately 34,092 hectares) retains approximately 57.58 per cent (19,630 hectares) of the original native vegetation cover.
Ecological linkage	South West Regional Ecological Linkage mapped by Molloy et al. (2009) intersects the application area within its north-western and south-eastern portion.
Conservation areas	<p>Approximately 51.21 per cent of the local area (approximately 17,457 hectares) occurs within DBCA managed estate.</p> <p>The closest conservation area is Palgarup State Forest (Class A) located approximately 470 metres north of the application area.</p> <p>Approximately 0.28 per cent of the local area (approximately 94.05 hectares) is protected in perpetuity under Department of Primary Industries and Regional Development's (DPIRD) conservation covenants.</p>
Vegetation description	<p>The application area is mapped as the Wheatly South West Forest vegetation complex 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> <p>Astron (2021) described the vegetation within the application area as a mixture of <i>Corymbia calophylla</i>, <i>Eucalyptus marginata</i> and <i>Eucalyptus rudis</i> over a thick understorey of <i>Rubus</i> sp.</p> <p>Representative photos and a summary of the survey are available in Appendix E.</p> <p>The mapped vegetation complex retains approximately 56.10 per cent of its original extent (Government of Western Australia, 2019).</p>
Vegetation condition	<p>Photographs supplied by the applicant (2021b) and Astron's fauna survey (2021) indicate the vegetation within the application area is in degraded (Keighery, 1994) condition.</p> <p>The full Keighery (1994) condition rating scale is provided in D.</p>
Climate and landform	<p>Rainfall – Mean Annual: 900 millimetres</p> <p>Evapotranspiration – Areal Actual: 800 millimetres</p> <p>Groundwater Salinity (Total Dissolved Solids): 500-1000 milligrams per litre total dissolved solids. This level of salinity is classified as marginal by Mayer et al., (2005).</p>
Soil description	The soils within the application area are mapped by DPIRD (2021) as Wheatley Subsystem (Dwalganup), which is described as shallow (20-40 metres) minor valleys with low sideslopes (5-20 per cent) and narrow swampy floors with a slightly incised stream channel. Soils are loamy gravels, sandy gravels and loamy earths.
Land degradation risk	The mapped soils within the application area have elevated risks of acidification and sub-surface compaction. The risks of land degradation in form of soil erosion (water or wind erosion), salinity, eutrophication and flooding (including waterlogging) are low.
Waterbodies	<p>Wilgarrup River intersects the application area.</p> <p>No wetlands are mapped within the local area. The closest mapped wetland is a palusvale of Geomorphic Wetlands Manjimup to Northcliffe (unreviewed) which occurs approximately 15.9 kilometres southwest of the application area.</p>
Hydrogeography	<p>The application area:</p> <ul style="list-style-type: none"> <li>falls within the Warren River and Tributaries area proclaimed under the RIWI Act</li> </ul>

Characteristic	Details
	<ul style="list-style-type: none"> <li>occurs approximately 2.2 kilometres southeast of Donnelly River Water Reserve Public Drinking Water Source Area</li> <li>lies within Zone B of the 1 September 1978 CAWS Act gazetted Warren River Water Reserve; and</li> <li>is not mapped within a proclaimed Groundwater Areas.</li> </ul>
Flora	<p>According to available databases, two flora species listed as threatened under the BC Act and five Priority listed flora by DBCA are recorded within the local area (DBCA, 2021a).</p> <p>Noting that the understorey within the application area is in degraded (Keighery, 1994) condition and dominated by <i>Rubus sp.</i>, the application area is unlikely to provide suitable habitat for these species.</p>
Ecological communities	No conservation significant ecological communities are mapped within the local area.
Fauna	<p>According to available databases, 18 conservation significant fauna species have been recorded within the local area (DBCA, 2021b). Noting the habitat requirements, distribution of the recorded species, the mapped vegetation type, the condition of the vegetation within the application area, as well as the findings of the fauna survey (Astron, 2021), the application area is likely to comprise suitable habitat for:</p> <ul style="list-style-type: none"> <li>Baudin's cockatoo</li> <li>Carnaby's cockatoo</li> <li>forest red-tailed black cockatoo</li> <li>masked owl (southwest)</li> <li>Muir's corella</li> <li>peregrine falcon</li> <li>south-western brush-tailed phascogale, wambenger; and</li> <li>western ringtail possum.</li> </ul>

### C.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
IBRA bioregion*					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
Mattiske veg complexes **					
Wheatley	6,443.50	3,614.78	56.10	2,820.41	43.77
Local area (calculation - delete if not required)					
10km radius	34,091.80	19,630.09	57.58	-	-

\*Government of Western Australia (2019a)

\*\*Government of Western Australia (2019b)

### C.3. Flora and ecological communities analysis

Given the application area contains jarrah, marri and flooded gum trees over degraded understorey dominated by *Rubus sp.*, the application area is not likely to provide habitat for conservation significant flora or contain native vegetation which represents threatened or priority ecological communities.

#### C.4. Fauna analysis table

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

Species name	Conservation status	Suitable habitat features?	Distance of closest record (m)	Are surveys adequate to identify?
Baudin's cockatoo	EN	Yes	3,998	Yes
Carnaby's cockatoo	EN	Yes	11,381	Yes
forest red-tailed black cockatoo	VU	Yes	652	Yes
masked owl (southwest)	P3	Yes	8,650	No
Muir's corella	CD	Yes	5,573	No
peregrine falcon	OS	Yes	3,860	No
south-western brush-tailed phascogale, wambenger	CD	Yes	539	Yes
western ringtail possum	CR	Yes	1	No

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

## Appendix B. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<b>Environmental value: biological values</b>		
<p><u>Principle (a):</u> <i>“Native vegetation should not be cleared if it comprises a high level of biodiversity.”</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing area is not likely to contain locally or regionally significant flora or assemblages of plants. The application area:</p> <ul style="list-style-type: none"> <li>• contains a mixture of <i>Corymbia calophylla</i>, <i>Eucalyptus marginata</i> and <i>Eucalyptus rudis</i> over a thick understorey of <i>Rubus</i> sp. a degraded (Keighery, 1994) condition</li> <li>• provides habitat for conservation significant fauna which has not been deemed significant in the local context</li> <li>• does not resemble habitat for threatened or priority flora; and</li> <li>• does not contain native vegetation which represents a TEC or PEC.</li> </ul>	Not likely to be at variance	No
<p><u>Principle (b):</u> <i>“Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna.”</i></p> <p><u>Assessment:</u></p> <p>The proposed clearing area provides habitat for conservation significant fauna. Noting the extent of native vegetation within the local area relative to the extent of vegetation proposed to be cleared, the application area does not represent significant habitat for these species.</p>	Not likely to be at variance	Yes <i>Refer to Section 3.2.1, above.</i>
<p><u>Principle (c):</u> <i>“Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, threatened flora.”</i></p> <p><u>Assessment:</u></p> <p>The application area is unlikely to contain habitat for threatened flora species listed under the BC Act due to the degraded condition (Keighery, 1994) of the vegetation within the application area, comprising a thick understorey layer of <i>Rubus</i> sp.</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></p> <p>The proposed clearing area does not contain species representative of a TEC listed under the BC Act or EPBC Act.</p>	Not likely to be at variance	No
<b>Environmental value: significant remnant vegetation and conservation areas</b>		
<p><u>Principle (e):</u> <i>“Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been extensively cleared.”</i></p> <p><u>Assessment:</u></p> <p>The extents of the mapped vegetation type and the vegetation within the local area are consistent with the national objectives and targets for biodiversity conservation in Australia.</p>	Not likely to be at variance	No

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u></p> <p>Given the separation distance between the application area and the nearest conservation area, the proposed clearing is not likely to have an impact on the environmental values of nearby conservation areas.</p>	Not likely to be at variance	No
<b>Environmental value: land and water resources</b>		
<p><u>Principle (f):</u> <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment:</u></p> <p>The vegetation proposed to be cleared is growing in an environment associated with Wilgarrup River. The proposed clearing may cause sedimentation, turbidity and/or changes to other water qualities. Noting the size of the river and extent of the proposed clearing, the impacts will likely be localised and temporary only. No long-term adverse impacts on the ecological functions of the river are anticipated.</p>	At variance	Yes <i>Refer to Section 3.2.2, above.</i>
<p><u>Principle (g):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils are not susceptible to land degradation in the form of soil erosion (water or wind erosion), salinity and eutrophication. Noting the extent of the application area and native vegetation within the local area, the proposed clearing is not likely to have an appreciable impact on land degradation.</p>	Not likely to be at variance	No
<p><u>Principle (i):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause deterioration in the quality of surface or underground water.”</i></p> <p><u>Assessment:</u></p> <p>Given the abundance of native vegetation in the local area and marginal (Mayer et al., 2005) level of salinity mapped within the application area, the proposed clearing will unlikely lead to a perceptible rise in the water table and an increase in groundwater salinity levels.</p> <p>The clearing within Wilgarrup River may increase sediment loads. Given the small extent of vegetation proposed to be cleared relative to the size of the river, the sediment increase is considered to be minor and temporary only. No long-term impacts on quality of surface and underground water are anticipated.</p>	Not likely to be at variance	No
<p><u>Principle (j):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause, or exacerbate, the incidence or intensity of flooding.”</i></p> <p><u>Assessment:</u></p> <p>The mapped soils and topographic contours in the surrounding area do not indicate the proposed clearing is likely to contribute to increased incidence or intensity of flooding.</p>	Not likely to be at variance	No

## Appendix C. Details of public submissions

ID	Summary of comments	Consideration of comment
1	There is inadequate supporting information or consideration of potential impacts and definition of management strategies.	DWER identified that the information supplied was insufficient and subsequently requested the applicant to provide a black cockatoo habitat tree assessment and evidence of actions taken to avoid, minimise and mitigate the impacts of the proposed clearing.
	No assessment of impacts to flora and vegetation, fauna particularly black cockatoo, ringtail possum	<p>The DWER's assessment considered the 10 Clearing Principles set out in Schedule 5 of the EP Act. The assessment identified the proposed clearing area as being unlikely to provide habitat for conservation significant flora.</p> <p>The application area provides habitat for black cockatoos and western ringtail possum. For the reasons detailed in section 3.2 of this report, the habitat was not considered significant.</p>
	Referral and assessment under the EPBC Act should be considered appropriate	The Department has advised the applicant in writing that they may have notification responsibilities under the Commonwealth EPBC Act in relation to black cockatoos and western ringtail possum. The responsibility for notification is with the applicant.
2	The potential importance of foraging habitat in the application area and need for a black cockatoo habitat assessment for the application area	<p>In the absence of a black cockatoo foraging habitat assessment, DWER used geographic information system datasets and the findings of the 'Targeted Black Cockatoo Assessment' (Astron, 2021) to determine that the whole application area was foraging habitat for black cockatoos. A comprehensive black cockatoo assessment set out in section 3.2.1 identified that the vegetation proposed to be cleared was unlikely to comprise significant habitat for this species.</p> <p>Based on the assessment findings and in accordance with the WA Environmental Offset Policy (2011) and WA Environmental Offsets Guidelines (2014), the Delegated Officer determined that the proposed clearing would not result in any significant residual impacts that would require counterbalancing by an offset.</p>
	The importance of considering cumulative impact on black cockatoo populations	DWER considered cumulative impacts in the assessment against clearing principle (e). This principle focusses on the importance of the native vegetation proposed to be cleared in both a regional and local context. The assessment identified that the extents of the mapped vegetation type and vegetation within the local area are consistent with the national objectives and targets for biodiversity conservation in Australia.
	The importance of retaining existing and future breeding trees	Based on the findings of Astron's (2021) targeted black cockatoo habitat tree assessment, the Delegated Officer determined that the proposed clearing will result in the loss of black cockatoo nesting habitat in the form of three suitably sized hollows with no current or past evidence of use. To mitigate this loss, the Delegated Officer required the permit holder to install and maintain three artificial black cockatoo nesting boxes in the proximity of the application area (as conditioned on the permit).
	The need for mitigation measures that are effective for black cockatoo conservation, including a referral under the EPBC Act	<p>As detailed in section 3.1 of this report, the applicant reduced the application area by approximately 32 per cent. As detailed in section 3.2 of this report, the proposed clearing does not result in significant residual impacts that would warrant an environmental offset.</p> <p>The Department has advised the applicant in writing that they may have notification responsibilities under the Commonwealth EPBC Act in relation to black cockatoos and western ringtail possum. The responsibility for notification is with the applicant.</p>



## Appendix C. Vegetation condition rating scale

Vegetation condition is a rating given to a defined area of vegetation to categorise and rank disturbance related to human activities. The rating refers to the degree of change in the vegetation structure, density and species present in relation to undisturbed vegetation of the same type. The degree of disturbance impacts upon the vegetation's ability to regenerate. Disturbance at a site can be a cumulative effect from a number of interacting disturbance types.

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

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

### Measuring vegetation condition for the South West and Interzone Botanical Province (Keighery, 1994)

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

## Appendix D. Fauna survey information excerpt and photographs of the vegetation

The applicant commissioned Astron to undertake a targeted black cockatoo tree assessment within the survey area (Figure 5). The objective of the survey was to identify and record potential habitat and breeding trees (and those with suitably sized hollows) as per Commonwealth Guidelines (Commonwealth of Australia, 2012).



Figure 5 - Survey boundary (Astron, 2021)

Astron's Principal Zoologist traversed the survey area on foot on 20 September 2021 and conducted the black cockatoo breeding assessment in accordance with the Commonwealth Referral guidelines for three black cockatoo species (Commonwealth of Australia, 2012).

The findings of the survey are described throughout the report.

Not all trees within the survey area were accessible for a black cockatoo habitat assessment due to the presence of a thick undergrowth of *Rubus* sp (Figures 5a – 5d). To address this limitation and mitigate the impacts on potential black cockatoo habitat trees within the clearing area, the Delegated Officer imposed a black cockatoo management condition on the permit which requires the permit holder to identify and inspect all habitat trees within the application area prior to undertaking any clearing.



**Figure 5a:** Representative photograph of vegetation proposed to be cleared (Manjimup KW Pty Ltd, 2021)



**Figure 5b:** Representative photograph of vegetation proposed to be cleared (Manjimup KW Pty Ltd, 2021)



**Figure 5c:** Representative photograph of vegetation proposed to be cleared (Manjimup KW Pty Ltd, 2021)



**Figure 5d:** Representative photograph of vegetation proposed to be cleared (Manjimup KW Pty Ltd, 2021)

## Appendix F. Sources of information

### F.1. GIS databases

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

- 10 Metre Contours (DPIRD-073)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- 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)
- 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.

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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