



## CLEARING PERMIT

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

### PERMIT DETAILS

Area Permit Number: 8801/1  
File Number: DWERVT5303  
Duration of Permit: From 9 October 2020 to 9 October 2028

### PERMIT HOLDER

Martin Hermann Wiehl  
Tammy Denise Wiehl

### LAND ON WHICH CLEARING IS TO BE DONE

Lot 4858 on Deposited Plan 157283, Woogenellup

### AUTHORISED ACTIVITY

The Permit Holder shall not clear more than two hectares of native vegetation within the area cross-hatched yellow on attached Plan 8801/1a.

### PERIOD DURING WHICH CLEARING IS AUTHORISED

The Permit Holder shall not clear any native vegetation after 9 October 2022.

### CONDITIONS

#### 1. Avoid, minimise and reduce the impacts and extent of clearing

In determining the amount of native vegetation to be cleared authorised under this Permit, the Permit Holder must have regard to the following principles, set out in order of preference:

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

#### 2. Fauna management - black cockatoo nesting trees

The Permit Holder shall not clear the *black cockatoo nesting tree* located within Plan 8801/1b during the *breeding season* for *black cockatoos*.

#### 3. Fauna management – artificial black cockatoo nest hollows

- (a) Within three months of clearing of the *black cockatoo nesting tree* within the area cross-hatched red on attached Plan 8801/1b, and before the following *breeding season*, the Permit Holder shall install one artificial black cockatoo nest hollow within one of the two areas cross-hatched red on attached Plan 8801/1c;
- (b) The artificial black cockatoo nest hollow required by condition 3(a) of this Permit must:
  - (i) be designed and placed in accordance with the guidelines provided in Schedule 1 to this Permit; and
  - (ii) be monitored and maintained in accordance with the guidelines provided in Schedule 2 to this Permit, for a period of at least ten years.

#### 4. Offset – Revegetation requirements

The Permit Holder shall undertake the following actions for the purpose of *revegetation*:

- (a) within 12 months of the commencement of clearing and at an *optimal time*, commence *revegetating* and *rehabilitating* 2.12 hectares within the area cross-hatched red on Plan 8801/1d, by way of:

- (i) deliberately *planting* the high priority foraging species for black cockatoos listed in the approved plant species list for this clearing permit provided in Schedule 3 to this Permit;
  - (ii) ensuring only *local provenance seeds* and propagating material are used to *revegetate* and *rehabilitate* the area;
  - (iii) *planting* a total native stem density of 1-2 plants/m<sup>2</sup> in the *rehabilitated* area; and
  - (iv) ensuring a survival rate of 70 per cent of the species planted is achieved after 5 years.
- (b) water planted vegetation at the *optimal time* for the first two years post planting as required;
- (c) implement hygiene protocols by cleaning earth-moving machinery of soil and vegetation prior to entering and leaving the site;
- (d) undertake annual monitoring to ensure *revegetation* and *rehabilitation* requirements under condition 4(a)(iii) and (iv) have been met; and
- (e) where *revegetation* and *rehabilitation* requirements under condition 4(a)(iii) and (iv) have not been met, the Permit Holder must undertake remedial activities including additional planting until the requirements under condition 4(a)(iii) and (iv) are met.

#### 5. Revegetation area conservation covenant

Within 12 months of the commencement of clearing and after the commencement of *revegetating* and *rehabilitating* activities required under condition 4(a) of this Permit, the Permit Holder shall:

- (a) give a conservation covenant under section 30B of the *Soil and Land Conservation Act 1945* setting aside the *rehabilitated* area hatched red on Plan 8801/1d for the protection of vegetation in perpetuity; and
- (b) provide to the *CEO* a copy of the executed conservation covenant.

#### 6. Records must be kept

The Permit Holder must maintain the following records for activities done in pursuant to this Permit:

- (a) In relation to the clearing of native vegetation authorised under this Permit:
  - (i) 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;
  - (ii) the date that the area was cleared; and
  - (iii) the size of the area cleared (in hectares);
  - (iv) actions taken to avoid, minimise and reduce the impacts and extent of clearing in accordance with condition 1 of this Permit; and
  - (v) actions taken to minimise the risk of the introduction and spread of *weeds* and *dieback* in accordance with condition 2 of this Permit; and
  - (vi) the date the *black cockatoo nesting tree* within the area cross-hatched red on attached Plan 8801/1b was cleared.
- (b) In relation to the installation of artificial *black cockatoo* nest hollow pursuant to condition 3 of this Permit:
  - (i) the date the artificial *black cockatoo* nest hollow was installed;
  - (ii) the location where the artificial *black cockatoo* nest hollow was installed recorded using a GPS unit set to GDA94, expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (iii) a photo of the installed artificial *black cockatoo* nest hollow;
  - (iv) the date the artificial *black cockatoo* nest hollow installed was monitored;
  - (v) a description of the monitoring methods employed for the artificial *black cockatoo* nest hollow installed;
  - (vi) a description of the monitoring observations for the artificial *black cockatoo* nest hollow installed;
  - (vii) the date the artificial *black cockatoo* nest hollow installed was maintained; and
  - (viii) a description of the maintenance activities undertaken for the artificial *black cockatoo* nest hollow installed.

- (c) In relation to the *revegetation* of areas pursuant to condition 4 of this Permit:
  - (i) a description of the *revegetation* and *rehabilitation* activities undertaken;
  - (ii) the size of the area *revegetated* and *rehabilitated* (in hectares);
  - (iii) the date that the area was *revegetated* and *rehabilitated*
  - (iv) a description of the monitoring and remedial activities undertaken within the *revegetation* and *rehabilitation* area.

## 7. Reporting

- (a) The Permit Holder must provide to the *CEO* on or before 30 June of each year, a written report:
  - (i) of records required under condition 6 of this Permit; and
  - (ii) concerning activities done by the Permit Holder under this Permit between 1 January to 31 December of the preceding calendar year.
- (b) If no clearing authorised under this Permit was undertaken between 1 January to 31 December of the preceding calendar, a written report confirming that no clearing under this permit has been carried out, must be provided to the *CEO* on or before 30 June of each year.
- (c) Prior to 9 July 2027, the Permit Holder must provide to the *CEO* a written report of records required under condition 6 of this Permit where these records have not already been provided under condition 7(a) of this Permit.

## DEFINITIONS

The following meanings are given to terms used in this Permit:

***black cockatoo(s)*** means Carnaby's cockatoo (*Calyptorhynchus latirostris*), Baudin's cockatoo (*Calyptorhynchus baudinii*) and forest red-tailed black cockatoo (*Calyptorhynchus banksii naso*);

***black cockatoo nesting tree/s*** means trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater (or 30 centimetres or greater for *Euclayptus salmonophloia* or *Eucalyptus wandoo*) that contain hollows suitable for nesting by Carnaby's cockatoo, Baudin's cockatoo or forest red-tailed black cockatoo;

***breeding season*** means the period from 1 June to 29 February of any given year;

***CEO***: means the Chief Executive Officer of the Department responsible for the administration of the clearing provisions under the *Environmental Protection Act 1986*;

***dieback*** means the effect of *Phytophthora* species on native vegetation;

***fill*** means material used to increase the ground level, or fill a hollow;

***local provenance*** means native vegetation seeds and propagating material from natural sources within 100 kilometres and the same Interim Biogeographic Regionalisation for Australia (IBRA) subregion of the area cleared;

***mulch*** means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation;

***optimal time*** means the period from April to June for undertaking planting and seeding.

***planting*** means the re-establishment of vegetation by creating favourable soil conditions and planting seedlings of the desired species;

***rehabilitate/ed/ion*** means actively managing an area containing native vegetation in order to improve the ecological function of that area;

**revegetate/ed/ion** means the re-establishment of a cover of *local provenance* native vegetation in an area using methods such as natural *regeneration*, *direct seeding* and/or *planting*, so that the species composition, structure and density is similar to pre-clearing vegetation types in that area; and

**weed/s** means any plant -

- (a) that is a declared pest under section 22 of the *Biosecurity and Agriculture Management Act 2007*;  
or
- (b) published in a Department of Biodiversity, Conservation and Attractions Regional Weed Rankings Summary, regardless of ranking; or
- (c) not indigenous to the area concerned.



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Meenu Vitarana  
A/MANAGER  
NATIVE VEGETATION REGULATION

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

15 September 2020

## 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*

## 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.
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## 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**

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

#### **Further information**

Last updated 28/04/2015

Contact [fauna@dpaw.wa.gov.au](mailto:fauna@dpaw.wa.gov.au) or your local office of the Department of Parks and Wildlife

See the department's website for the latest information: [www.dpaw.wa.gov.au](http://www.dpaw.wa.gov.au)

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## 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**

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Further information

Last updated 28/04/2015

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## CPS 8801/1 – Schedule 3

Approved List of species for revegetation offset for CPS 8801/1
<i>Banksia sessilis</i>
<i>Banksia speciosa</i>
<i>Banksia squarrosa</i>
<i>Banksia undata</i>
<i>Corymbia calophylla</i>
<i>Banksia attenuata</i>
<i>Banksia grandis</i>
<i>Banksia ilicifolia</i>
<i>Banksia littoralis</i>
<i>Banksia menziesii</i>
<i>Banksia nivea</i>
<i>Banksia prionotes</i>
<i>Hakea prostrata</i>
<i>Hakea trifurcata</i>
<i>Hakea undulata</i>
<i>Eucalyptus salmonophloia</i>

# Plan 8801/1a

117°50'24.000"E

117°50'42.000"E

117°51'0.000"E

117°51'18.000"E




117°50'24.000"E

117°50'42.000"E


117°51'0.000"E

117°51'18.000"E

## CPS layers

 CPS areas approved to clear

## base layers

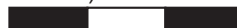
 Road Centrelines

Cadastre - LGATE 218

 Local Government Authority (LGA) Boundaries (LGATE-233)



0 100 200 300 m



1:9109

MGA Zone 50  
Geocentric Datum of Australia 1994

Meenu Vitarana

2020.09.15

11:20:10

+08'00'

Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA

# Plan 8801/1b

117°50'42.000"E

117°51'0.000"E



117°50'42.000"E

117°51'0.000"E


## CPS layers

 CPS subject to conditions

## base layers

 Road Centrelines

Cadastral - LGATE 218

 Local Government Authority (LGA) Boundaries (LGATE-233)



Meenu Vitarana

2020.09.15

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Officer delegated under section 20 of the Environmental Protection Act 1986

0 50 100 150 m



1:3000

MGA Zone 50  
Geocentric Datum of Australia 1994



GOVERNMENT OF  
WESTERN AUSTRALIA



# Plan 8801/c

117°50'24.000"E

117°50'42.000"E

117°51'0.000"E



117°50'24.000"E

117°50'42.000"E

117°51'0.000"E


## CPS layers

 CPS subject to conditions

## base layers

 Road Centrelines

Cadastre - LGATE 218

 Local Government Authority (LGA) Boundaries (LGATE-233)

0 50 100 150 200 m



1:5365



Meenu Vitarana

2020.09.15

11:21:09 +08'00'

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GOVERNMENT OF WESTERN AUSTRALIA

MGA Zone 50  
Geocentric Datum of Australia 1994

# Plan 8801/1d

117°50'24.000"E

117°50'42.000"E

117°51'0.000"E

117°51'18.000"E

117°51'36.000"E

34°31'48.000"S

34°32'6.000"S

34°32'24.000"S

34°32'42.000"S

34°31'48.000"S

34°32'6.000"S

34°32'24.000"S

34°32'42.000"S

117°50'24.000"E

117°50'42.000"E

117°51'0.000"E

117°51'18.000"E

117°51'36.000"E




## CPS layers

 CPS subject to conditions

## base layers

 Road Centrelines

Cadastre - LGATE 218

 Local Government Authority (LGA) Boundaries (LGATE-233)



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MGA Zone 50  
Geocentric Datum of Australia 1994

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Officer delegated under section 20 of the  
Environmental Protection Act 1986



GOVERNMENT OF  
WESTERN AUSTRALIA



## 1. Application details and outcome

### 1.1. Permit application details

<b>Permit number:</b>	CPS 8801/1
<b>Permit type:</b>	Area permit
<b>Applicant name:</b>	Martin and Tammy Wiehl
<b>Application received:</b>	6 February 2020
<b>Application area:</b>	Two hectares (ha) of native vegetation
<b>Purpose of clearing:</b>	Cleaning up paddocks and realigning run lines
<b>Method of clearing:</b>	Mechanical removal
<b>Property:</b>	Lot 4858 on Deposited Plan 157283, Woogenellup
<b>Location (LGA area/s):</b>	Shire of Plantagenet
<b>Localities (suburb/s):</b>	Woogenellup

### 1.2. Description of clearing activities

The application area comprises of three isolated patches of remnant native vegetation within a farm paddock approximately 145.30 hectares in size. The proposed clearing of two hectares (ha) is for the purpose of cleaning up paddocks and realigning run lines. The extent of the proposed clearing is indicated in Figure 1 (see Section 1.5).

### 1.3. Decision on application and key considerations

<b>Decision:</b>	Granted
<b>Decision date:</b>	15 September 2020
<b>Decision area:</b>	Two 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 6 February 2020. DWER advertised the application for public comment and no submissions were received.

In undertaking the assessment, the Delegated Officer had regard for the site characteristics (see Appendix B), relevant datasets (see Appendix G), the photographs provided by the applicant (see Appendix E), the clearing principles set out in Schedule 5 of the EP Act (see Appendix C), and any other matters considered relevant to the assessment (see Section 3). The assessment identified that the proposed clearing will result in the loss of vegetation that:

- contains approximately 1.46 hectares of foraging habitat for threatened black cockatoo species; and
- contains one potential nesting tree with hollows that may be suitable for black cockatoo breeding habitat.

The Delegated Officer has determined that:

- the applicant has suitably demonstrated avoidance and minimisation measures (see Section 3.1);
- installation of an artificial black cockatoo nest hollow will mitigate the impacts of clearing a potential black cockatoo breeding tree; and

- the offset provided clearly counterbalances the impacts to black cockatoo foraging habitat (see Section 4).

After consideration of the available information, as well as the applicant's minimisation and mitigation measures, the Delegated Officer determined that the impacts of the proposed clearing could be minimised and managed to be environmentally acceptable. In determining to grant a Clearing Permit subject to conditions, the Delegated Officer found that the proposed clearing is unlikely to lead to an unacceptable risk to the environment.

### 1.5. Site map



**Figure 1. Map of areas approved to clear.**

The areas cross-hatched yellow indicate the areas authorised to be cleared under the granted clearing permit.



**Figure 2: Map showing revegetation offset area (area to north west), location of the potential black cockatoo nesting tree and locations for installing an artificial nesting hollow.**

The area cross-hatched red indicates area within which specific conditions apply.

## 2. Legislative context

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

In addition to the matters considered in accordance with section 51O of the EP Act (see Section 1.3), 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);
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act); and

- *Soil and Land Conservation Act 1945* (WA)

Relevant policies considered during the assessment were:

- *WA Environmental Offsets Policy* (2011)

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); and
- *WA Environmental Offsets Guidelines* (August 2014)

### **3. Detailed assessment of application**

#### **3.1. Avoidance and mitigation measures**

The applicant indicated on the application form that they propose to revegetate and fence off an area located in north eastern corner of the property as shown in Figure 3 of Appendix C (Wiehl, 2020a). The applicant also proposed to protect an estimated 50 hectares of native vegetation elsewhere on the property (Wiehl, 2020b). This will help to improve the quality of the native vegetation in this location and stabilise the area which has been subject to past eroded loose sands (Commissioner of Soil and Land Conservation (CSLC), 2020).

After consideration of avoidance and mitigation measures, it was determined that an offset to counterbalance the significant residual impacts to black cockatoo foraging habitat was necessary. In accordance with the WA State Government's *Environmental Offsets Policy* and *Environmental Offsets Guidelines*, these significant residual impacts have been addressed through the conditioning of environmental offset requirements on the permit. The nature and suitability of the offset provided is summarised in Section 4. The proposed revegetation offset area is shown in Figure 2 under Section 1.5 above.

The applicant proposed to install two artificial nesting hollows at two different locations on the property in order to mitigate the impacts to black cockatoo breeding habitat. However, the Delegated Officer determined that the installation of one artificial nesting hollow was adequate to mitigate the impacts to potential black cockatoo breeding habitat and was consistent with requirements for other clearing permit approvals.

#### **3.2. Assessment of environmental impacts**

In assessing the application in accordance with section 51O of the EP Act, the Delegated Officer has examined the application and site characteristics (Appendix B) and considered whether the clearing poses a risk to environmental values. The assessment against the Clearing Principles is contained in Appendix C.

This assessment identified that the clearing may pose a risk to the environmental values of biological values and land and water resources, and that these 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:

According to available databases, there are seven Threatened fauna species; four Priority fauna species; and one specially protected fauna species within the local area (Appendix B). There are no fauna records within the application area. Based on photographs of the application area submitted by the applicant, fauna habitat preferences, and records from the local area; a likelihood of occurrence assessment determined that the application area may provide suitable habitat for five conservation significant fauna listed under the *Biodiversity Conservation Act 2016* (BC Act) within the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* (WC Notice) including:

- Carnaby's Cockatoo (*Calyptorhynchus latirostris*) (listed as Endangered under the EPBC Act and the BC Act);
- forest red-tailed black cockatoo (*Calyptorhynchus banksii* subsp. *naso*); (listed as Vulnerable under the EPBC Act and the BC Act);
- Baudins cockatoo (*Calyptorhynchus baudinii*) (listed as Endangered under the EPBC Act and the BC Act);
- Peregrine falcon (*Falco peregrinus*) (listed as specially protected under the BC Act); and
- Western Brush Wallaby (*Macropus irma*) (state listed as Priority 4).

Carnaby's cockatoo, Baudin's cockatoo and forest red-tailed black cockatoo (collectively referred to as black cockatoos within the report) forage on the seeds, nuts and flowers of a large variety of plants including Proteaceae

species (Banksia, Hakea, Grevillea), Eucalyptus, Corymbia species and a range of introduced species (Valentine and Stock, 2008). The application area is mapped as 'requiring investigation as feeding habitat in the jarrah forest IBRA region'. There are fifteen confirmed black cockatoo roosting sites within the local area, with the closest site located one kilometre North West from the application area.

As described under Appendix B 'Site characteristics', the application area contains *Eucalyptus* sp. which are the preferred food source for all three species. Upon review of the photographs provided by the applicant, Area 3 contains low foraging value noting the small number of alive and suitable species (Wiehl, 2020a). However, Areas 1 and 2 (totalling approximately 1.46 hectares) are considered to contain suitable foraging habitat of a greater value given the number of *Eucalyptus* sp. that occur in these areas (Wiehl, 2020). In consideration of the known number of roosting sites recorded within the local area, the extensively cleared area within five kilometres of the application area, and the majority of remnant native vegetation in the local area being in private tenure (not protected), the application area is considered to provide significant foraging habitat for black cockatoo species.

Black cockatoos breed in large hollow-bearing trees, generally within woodlands or forests or in isolated trees (Commonwealth of Australia, 2012). These species nest in hollows in live or dead trees of karri (*Eucalyptus diversicolor*), marri, wandoo, tuart (*Eucalyptus gomphocephala*), salmon gum (*Eucalyptus salmonophloia*), jarrah, flooded gum, York gum (*Eucalyptus loxophleba*), powder bark (*Eucalyptus accedens*), bullich (*Eucalyptus megacarpa*) and blackbutt (*Eucalyptus* spp.) (Commonwealth of Australia, 2012). To be suitable as a black cockatoo breeding site, trees require a suitable nest hollow or need to be of a suitable diameter at breast height (DBH) to develop a nest hollow. For most tree species, a suitable DBH is 500 millimetres (Commonwealth of Australia, 2012). Upon review of photographs of the application area provided by the applicant, Area 3 appears to contain one tree (photo 4 of Appendix E) that may have suitable nesting hollows for black cockatoo species (Wiehl, 2020b). Given this, the application area may provide suitable breeding habitat for black cockatoo species. To mitigate the impacts to potential black cockatoo breeding habitat, the applicant has committed to installing one artificial nesting hollow in one of the two locations shown in Figure 2.

The habitat type within the application area may provide suitable foraging habitat for the peregrine falcon. Although suitable habitat was identified within the application area, it is not likely the proposed clearing will significantly impact on the conservation status of this species given the species is a highly mobile avian species with an extremely wide home range.

The western brush wallaby inhabits open forest or woodland, particularly favouring open, seasonally wet flats with low grasses and open scrubby thickets. It is also found in some areas of mallee and heathland. Noting that this species is highly mobile and doesn't rely on specialist niche habitats, the proposed clearing is not likely to impact on significant habitat for this species.

#### Outcome:

Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable subject to relevant conditions (see below) in relation to this environmental value.

#### Conditions:

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

- Fauna management - black cockatoo nesting trees: To mitigate the impacts to potential black cockatoo breeding habitat, the applicant will be required to install one artificial nesting hollow within one of the two areas cross-hatched red shown on Plan 8801/1c which must be monitored and maintained for a period of at least ten years.
- Offset – Revegetation requirements: To mitigate the impacts to significant foraging habitat, the applicant will be required to revegetate 2.12 hectares of native vegetation comprising of high priority foraging species for black cockatoos within the area cross-hatched red shown on Plan 8801/1d.

### **3.2.2 Environmental value: biological values (flora) – Clearing Principle (a)**

#### Assessment

According to available databases, a total of 34 conservation significant flora species, comprising nine threatened flora species and 18 priority (P) flora species have been recorded within the local area (10 kilometre radius) (Table 1). No records of conservation significant flora have been recorded within the application area. No previous biological surveys have been undertaken in the application area.

A likelihood of occurrence assessment determined that nine priority flora species (comprising of a P2, P3 and P4 species) and one threatened flora species have the potential to occur within the application area based on habitat preference and proximity of known records. The closest of these is the P3 species known as '*Verticordia huegelii* var. *tridens*' mapped approximately 1.1 kilometres north east of the application area. This is a perennial shrub species that commonly grows within sandy or gravelly loam within winter-wet areas or low hills (Western Australian Herbarium, 1998-). A review of records on the WA Herbarium database indicates that this species has a preference for disturbed sites (Western Australian Herbarium, 1998-). Although suitable habitat for this species occurs within the application area, photographs submitted by the applicant demonstrate the application area is void of native understorey species and dominated by grassy weeds (Wiehl, 2020).

Noting the application area contains vegetation that has been significantly disturbed through clearing, grazing and weed invasion, it is unlikely that the application area would support any threatened or priority flora taxa that have been recorded within the local area.

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable in relation to this environmental value.

Conditions: No management conditions required.

### **3.2.3 Environmental values: land and water resources – Clearing Principle (g)**

#### Assessment:

DPIRD's land degradation assessment report determined that the proposed clearing may increase the risk of land degradation in the form of nutrient export (eutrophication) and soil erosion due to the leached sandy/gravelly soils associated to the mapped subsystem (CSLC, 2020). The assessment concluded that the risk of appreciable land degradation in the form of eutrophication is considered to be minimal and can be avoided if best management land practices are implemented (CSLC, 2020).

The assessment noted that the risk of soil loss through water erosion is considered to be low in the areas identified as Areas 1 and 3 (See Figure 3; Appendix B) due to the landscape position and gentle undulating slope in which these areas occur (CSLC, 2020). Area 2 is located in close proximity to erosion scars from past flooding events which are easily visible in the north eastern corner of the property (CSLC, 2020). As discussed under Section 3 of this report, the applicant is proposing to fence off the area located in the north eastern corner of the property highlighted in green illustrated in Figure 3 and revegetate a portion of this area (the area cross-hatched red shown in Figure 2). The CSLC supports the applicant's initiative as an option for management of the erosion scarred area located adjacent to Area 2 and proposed that the fencing is extended out to ensure sufficient coverage and protection of this area (CSLC, 2020).

Outcome: Based on the above assessment, the Delegated Officer has determined that the proposed clearing is considered acceptable in relation to this environmental value.

Conditions: No management conditions required. The revegetation offset will mitigate potential water erosion impacts to Area 2.

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

The Shire of Plantagenet advised that the proposed clearing is consistent with the Shire's Local Planning Scheme (Shire of Plantagenet, 2020). The Shire do not have any objections to the proposed clearing (Shire of Plantagenet, 2020).

Aboriginal sites of significance have been mapped within the application area.

## **4. Suitability of offsets**

Through the detailed assessment outlined in Section 3.2 above, the Delegated Officer has determined that the following significant residual impacts remain after the application of the avoidance and mitigation measures summarised in Section 3.1:

- 1.46 hectares of black cockatoo feeding habitat and one potential black cockatoo breeding tree.

The Delegated Officer determined that an environmental offset is required to counterbalance the significant residual impacts listed consisting of:

- Revegetation of 2.12 hectares of native vegetation within Lot 4858 on Deposited Plan 157283, Woogenellup to a good (Keighery, 1994) or better condition, with high priority black cockatoo foraging species from the approved species list outlined in Appendix F.



The offset site will be managed in perpetuity via a conservation covenant placed on the property title under section 30B of the *Soil and Land Conservation Act 1945*. The offset site will be fenced off to ensure the revegetation works are protected from farming practices and weed invasion.

The offset area is completely void of native vegetation, therefore is in a completely degraded (Keighery, 1994) condition. It is assumed that the condition of the vegetation would change to a good (Keighery, 1994) condition or higher following extensive revegetation practices and once a conservation covenant is placed over the offset area.

In assessing whether the proposed offset is adequately proportionate to the significant environmental values listed above, DWER undertook a calculation using the Commonwealth Offsets Assessment Guide. Noting the vegetation condition of the offset area described above, DWER's calculations determined that the revegetation of 2.12 hectares of native vegetation within Lot 4858 to a good or better condition will adequately offset the significant residual impacts associated to black cockatoo foraging habitat. The applicant has proposed to revegetate an area of 3.7 hectares. Noting the proposed clearing only requires an offset of 2.12 hectares, the remaining 1.58 hectares has been banked for any future clearing permit applications that requires an offset.

### Appendix A – Additional information provided by applicant

DWER's requests for further information	Response from applicant
<p>On 15 June 2020, DWER wrote to the applicant requesting further information to verify the impacts of the proposed clearing including:</p> <ul style="list-style-type: none"> <li>• Additional information on measures taken to avoid or minimise the impacts to the higher quality black cockatoo foraging habitat located in Areas 1 and 2 of the application area; and</li> <li>• Whether the one potential nesting tree identified in Area 3 of the application area can be retained; and</li> <li>• If the potential nesting tree and foraging habitat for black cockatoos can not be avoided or reduced in size, a suitable revegetation offset of 2.87 hectares containing black cockatoo foraging species (discussed further in Appendix E) is required to be provided to adequately mitigate the significant residual impacts of the proposed clearing to 1.46 hectares of black cockatoo foraging habitat.</li> </ul>	<p>On 26 June 2020, the applicant advised in a telephone conversation to DWER the following information:</p> <ul style="list-style-type: none"> <li>• The impacts of removing a potential nesting tree suitable for black cockatoos will be mitigated through the installation of two artificial nesting boxes on the property; and</li> <li>• The impacts to black cockatoo foraging habitat will be mitigated through the commitment to provide a revegetation offset of 2.87 hectares on the property.</li> </ul>
<p>On 2 July 2020, DWER wrote to the applicant requesting the following information in relation to the proposed revegetation offset and artificial hollow installation:</p> <ul style="list-style-type: none"> <li>• A map showing the proposed location of the 2.87 hectare revegetation offset on the property with the associated GPS coordinates; and</li> <li>• A list of the proposed black cockatoo foraging species to be planted (preferable high priority plant species) at the revegetation offset area.</li> </ul>	<p>On 7 July 2020, the applicant provided a response to DWER's email including the following information:</p> <ul style="list-style-type: none"> <li>• The proposed revegetation offset site will be four hectares in size, which is more than the required 2.87 hectare area.</li> <li>• A map showing the location of the proposed revegetation offset area; and</li> <li>• Advice on the appropriate seed mix for the proposed revegetation is currently being sought and the applicant is happy to include as many of the high priority plant species for black cockatoos as practicable as well as others.</li> </ul> <p>Note: The size of the revegetation offset was subsequently reduced to 2.12 hectares following a second offset calculation, given there is no native vegetation present within the proposed offset area.</p>

DWER's requests for further information	Response from applicant
<p>On 10 July 2020, DWER wrote to the applicant seeking additional advice on the proposed revegetation offset and artificial hollow installation:</p> <ul style="list-style-type: none"> <li>• Further clarification on the location of the proposed revegetation offset site, as the file that was sent through indicated the site would be located within the proposed clearing area. A map was provided to the applicant showing a suggested location for the offset area;</li> <li>• A list of plant species that are proposed to be planted within the revegetation offset area; and</li> <li>• Written confirmation that the applicant agrees to install two artificial nesting boxes at the property.</li> </ul>	<p>On 16 July 2020, the applicant provided the additional information as requested in DWER's email which included:</p> <ul style="list-style-type: none"> <li>• A map clearly delineating the proposed revegetation offset area;</li> <li>• A list of the plant species proposed to be planted within the revegetation offset area; and</li> <li>• Confirmation that two artificial nesting boxes will be installed at the property.</li> </ul>
<p>On 17 July 2020, DWER requested that the applicant provide the locations of where the two artificial nesting boxes will be installed on the property.</p>	<p>On 17 July 2020, the applicant provided a map showing the locations of where the two artificial nesting boxes are proposed to be installed.</p>
<p>On 20 July 2020, DWER wrote to the applicant requesting the following information:</p> <ul style="list-style-type: none"> <li>• GPS coordinates for the proposed locations of the two artificial nesting boxes; and</li> <li>• Confirmation that the location of the proposed revegetation offset area is accurate based on the applicants map provided on 16 July 2020.</li> </ul>	<p>On 21 July 2020, the applicant provided the following information to finalise the assessment of the application:</p> <ul style="list-style-type: none"> <li>• GPS coordinates for the proposed locations of the two artificial nesting boxes; and</li> <li>• Confirmation that the map provided by DWER depicting the location of the proposed revegetation offset area is correct.</li> </ul>
<p>On 28 August 2020, DWER provided an approved list of plant species for the revegetation offset site that are high priority foraging habitat for black cockatoo species. DWER provided a draft clearing permit for the applicant's review and noted that the proposed fauna management condition will require a fauna specialist to inspect the potential black cockatoo nesting tree 48 hours prior to clearing to identify evidence of past or current breeding use. Alternative fauna management options were provided to the applicant which included:</p> <ul style="list-style-type: none"> <li>• A condition being placed on the permit that stipulates no clearing of the potential breeding tree may occur during breeding season;</li> <li>• To contact the local DBCA office or Landcare Group and enquire whether they would assist in determining whether the hollow is suitable to be utilised by black cockatoos; and</li> <li>• To obtain clearer photographs of the hollow and provide them to DWER to determine if the hollow is suitable for nesting by black cockatoos.</li> </ul>	<p>On 8 September 2020, the applicant confirmed that they would prefer to commit to the fauna management condition that stipulates that no clearing of the potential nesting tree may occur until post breeding season (commencing in March 2021). The applicant also requested to remove one of the sub conditions for the revegetation condition on the permit which relates to removing the topsoil from the cleared area to the revegetation offset site as it is not practicable for farming practices.</p>

## 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 information available to DWER at the time of this assessment. This information was used to inform the assessment of the clearing against the Clearing Principles, contained in Appendix C.

## 1. Site characteristics

Site characteristic	Details
Local context	The application area comprises of three small isolated remnant patches of native vegetation with cleared surroundings. The local area, being that within a 10 kilometre radius of the application area, retains approximately 11,770 ha of native vegetation. This represents approximately 34.85 per cent of the pre-European vegetation extent.
Vegetation description	<p><i>Vegetation mapping</i></p> <p>The vegetation within the application area is mapped as Beard Vegetation Association 968, which is described as a medium woodland; jarrah, marri and wandoo (Government of Western Australia, 2019).</p> <p>Figure 3 shows representative photographs of the vegetation within the application area which were provided by the applicant (Wiehl, 2020a).</p>
Vegetation condition	The condition and structure of the vegetation within the application area was obtained via photographs provided by the applicant (Wiehl, 2020). The vegetation within the application area appears to be in a completely degraded (Keighery, 1994) condition on the scale described by Keighery (1994) scale (see Appendix D).
Soil and landform description	<p>The application area is located within a dissected sand plain, comprising flat areas to very gently undulating rises and valley floors (CSLC, 2020). Slopes within the site do not generally exceed three per cent (CSLC, 2020).</p> <p>As illustrated in Figure 1, the application area has been mapped by the Department of Primary Industries and Regional Development (DPIRD) as the following soil-landscape map unit:</p> <ul style="list-style-type: none"> <li>• Pillenorup Subsystem (Map Unit 242PrPn): Hills of granite with a fringe of sedimentary rocks;&lt;60m relief; rounded crests and smooth gentle slopes; some granite. Gravelly yellow duplex soils, sands and laterite; Jarrah-Marri-Yate low forest (Schoknecht et al., 2004).</li> </ul> <p>The application area is dominated by sandy to gravelly soils area (CSLC, 2020). Topsoils are light textured fine to medium sands that are often compacted and generally water repellent (CSLC, 2020). The sandy top soil to the gravel or clay is usually around 15 to 30 centimetres in depth (CSCL, 2020).</p>
Waterbodies	The desktop and aerial imagery indicate that no water courses or wetlands are recorded within the application area. A minor non-perennial water course is mapped approximately 70 metres east of the proposed clearing (Area 2, Figure 3).
Land Degradation Risk	The proposed clearing may increase the risk of land degradation in the form of nutrient export (eutrophication) and soil erosion due to the leached sandy/gravelly soils associated to the mapped subsystem (CSLC, 2020). However, the risk of appreciable land degradation in the form of eutrophication is considered to be minimal and can be avoided if best management land practices are implemented which includes maintaining an adequate ground cover of the site (CSLC, 2020).
Conservation areas	The closest conservation area to the application area is the Stirling Range National Park located more than six kilometres north from the application area.

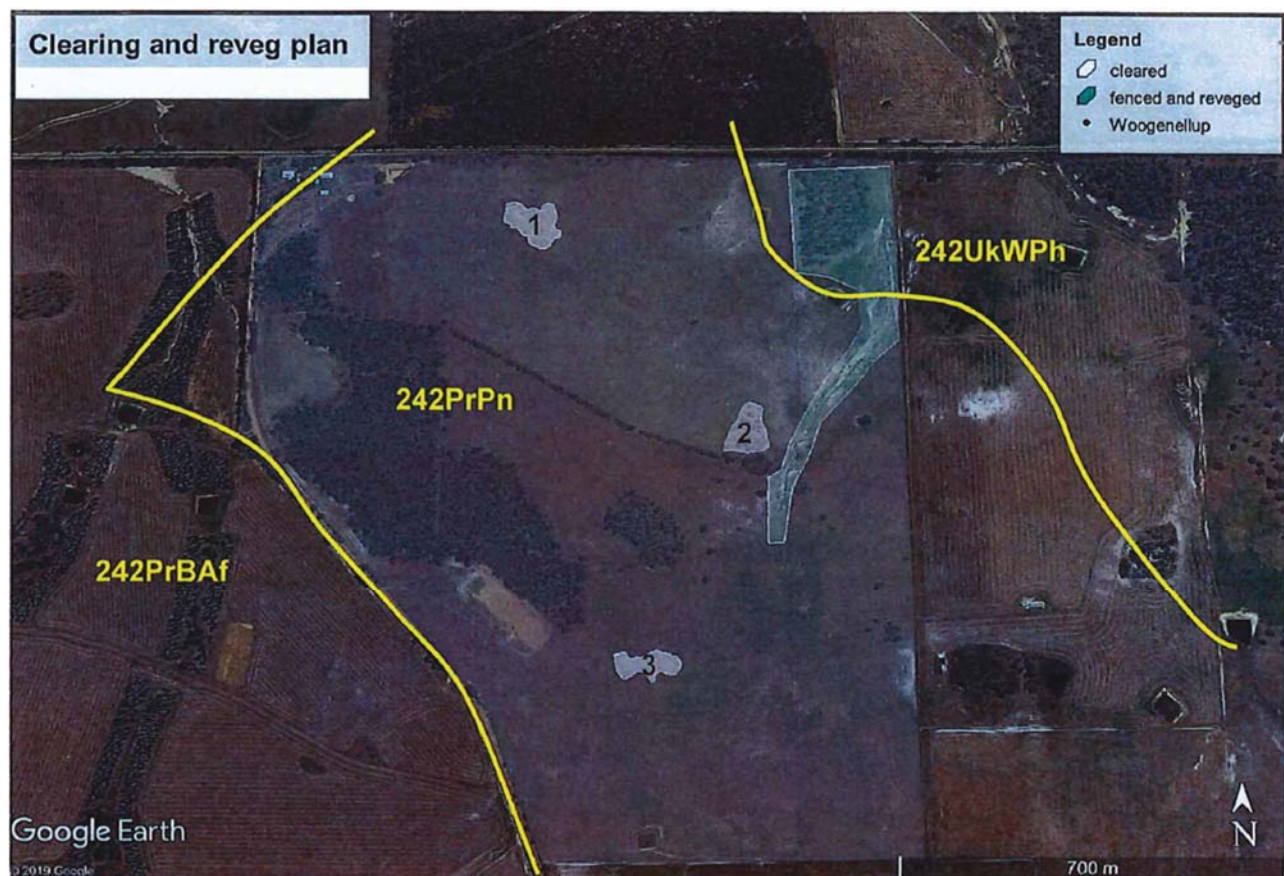


Figure 3: Map showing areas proposed to clear (white), area to be fenced (green) and soil/landscape units (Wiehl, 2020a, CSLC, 2020)

## 2. Flora, fauna and ecosystem analysis

The following conservation-significant species and ecological communities have been recorded from the local area. With consideration for the site characteristics set out above, relevant datasets (see Appendix G), and photographs provided by the applicant (see Appendix E), the likelihood of their occurrences within the application area has been assessed.

Flora of conservation significance recorded within 10km of the application area (blue shaded = may occur in application area)

Species	Conservation code*	Likelihood of occurrence within the application area	Distance to application area (km) (closest record)
<i>Acacia veronica</i>	3	Unlikely - due to no watercourses occurring within the application area.	3.09
<i>Adenanthos linearis</i>	2	Possible - prefers sandy/gravelly soils	6.9
<i>Banksia anatona</i>	T	Unlikely – translocated population	4.5
<i>Banksia brownii</i>	T	Unlikely – same soil type, however grows in gullies which do not occur within the application area	4.5
<i>Banksia foliolata</i>	4	Unlikely due to soil type – requires sandy soils with rocky quartzitic slopes.	6.5
<i>Banksia ionthocarpa subsp. ionthocarpa</i>	T	Unlikely due to soil type – requires gravelly sandy clay-loam or red-brown loam over spongolite.	7.7
<i>Banksia montana</i>	T	Unlikely – translocated population and prefers sandy clay, rocky soils.	4.5
<i>Banksia parva</i>	4	Unlikely – different soil type to application area	5.2
<i>Banksia pseudoplumosa</i>	T	Possible – same soil type as application area	6.3
<i>Banksia sphaerocarpa var. latifolia</i>	2	Unlikely - Historical WAHerb record located in cleared paddock	1.1

<i>Calothamnus microcarpus</i>	4	Possible – prefers lateritic clay, sandy soils.	5.4
<i>Chordifex ornatus</i>	2	Unlikely due to soil type – requires grey-white sand, sandy clay with sandy rises.	9.2
<i>Eucalyptus erectifolia</i>	4	Possible – same soil type as application area	7.1
<i>Eucalyptus x kalganensis</i>	4	Unlikely due to soil type – requires Sand/sandy clay over laterite/limestone.	6.7
<i>Hakea lasiocarpa</i>	3	Unlikely – prefers hill tops, valleys.	9.8
<i>Hakea oldfieldii</i>	3	Unlikely due to soil type – requires red clay or sand over laterite associated to seasonally wet flats.	5.1
<i>Hibbertia selkii</i>	2	Sandy clay, rocky silt. Rocky slopes.	6.9
<i>Jacksonia calycina</i>	4	Possible – prefers gravelly sandy or clayey soils.	5.4
<i>Lambertia echinata</i> subsp. <i>echinata</i>	T	Unlikely – due to no rock outcrops, slopes and hill crests occurring within the application area.	4.5
<i>Melaleuca ordinifolia</i>	2	Unlikely – requires sandy loam or clay.	9.2
<i>Orthrosanthus muelleri</i>	4	Possible – prefers sands	7.6
<i>Persoonia micranthera</i>	T	Unlikely – prefers sandy, stony soils within summit of plateau	4.5
<i>Petrophile carduacea</i>	2	Possible – same soil type as application area	9.6
<i>Sphenotoma drummondii</i>	T	Unlikely – prefers stony or shallow soils over granite or quartzite associated to steep rocky slopes, crevices of rocks.	2.9
<i>Stylidium diplectroglossum</i>	1	Unlikely – prefers clayey loam sands	4.7
<i>Stylidium lepidum</i>	3	Unlikely – prefers winter wet depressions	3.4
<i>Stylidium pseudohirsutum</i>	3	Unlikely due to preferred soil and vegetation type	4.5
<i>Styphelia blepharolepis</i> F. Muell. (formally known as <i>Leucopogon pogonocalyx</i> )	4	Possible – Prefers yellow sand & gravel, laterite.	6.5
<i>Stylidium tylosum</i>	2	Unlikely – prefers sandy clay within hillslopes, or adjacent to granite outcrops which does not occur within application area.	4.3
<i>Tecticornia uniflora</i>	4	Unlikely – requires clay, sandy clay, loam associated to salt lakes and creeks.	5.4
<i>Thelymitra psammophila</i>	T	Unlikely – Prefers sandy clay, loam.	6.7
<i>Thysanotus brevifolius</i>	2	Historical WAHerb record in cleared paddock– Unlikely to occur within application area	3.9
<i>Thysanotus gageoides</i>	3	Possible – prefers sand, clay, granite, sandstone, laterite.	9.2
<i>Verticordia huegelii</i> var. <i>tridens</i>	3	Possible – prefers sandy or gravelly loam	1.1

\*[Conservation Codes for Western Australia Flora](#)

**Fauna of conservation significance recorded within 10km of the application area (blue shaded = may occur in application area)**

Species	Common name	Likelihood of occurrence	Conservation code*
<i>Bettongia penicillata ogilbyi</i>	woylie, brush-tailed bettong	Unlikely – record in local area is historic (1929).	CR
<i>Calyptorhynchus baudinii</i>	Baudin's cockatoo	Highly likely due to suitable foraging habitat and known records in local area.	EN
<i>Calyptorhynchus banksii naso</i>	Forest red-tailed black cockatoo		VU
<i>Calyptorhynchus latirostris</i>	Carnaby's cockatoo		EN

<i>Falco peregrinus</i>	Peregrine falcon	Possible - due to recent record from 2000 and suitable foraging habitat within the application area.	OS
<i>Isoodon fusciventer</i>	quenda, southern brown bandicoot	Unlikely – due to absence of a dense understorey associated with wetland vegetation	P4
<i>Leipoa ocellata</i>	Malleefowl	Unlikely – prefers habitat that is dominated by Mallee vegetation which does not occur within the application area.	VU
<i>Macrotis lagotis</i>	Bilby	Unlikely – records in local area are historic (1909 and 1930)	VU
<i>Notamacropus irma</i>	Western brush wallaby	Possible – inhabits open forest or woodland which is present in the application area. Known records in local area from 2014.	P4
<i>Pseudocheirus occidentalis</i>	Western Ringtail Possum	Unlikely – one historic record in local area from 1902, canopy within application area is not continuous	CR
<i>Thinomis rubricollis</i>	Hooded plover	Unlikely – due to the absence of salt lakes within the application area and distance to open ocean beaches	P4
<i>Tyto novaehollandiae novaehollandiae</i>	Masked Owl (southwest)	Unlikely – records in local area are historic (1934) and absence of tall hollow-bearing trees within the application area.	P3

\*[Conservation Codes for Western Australia Fauna](#)

### 3. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	% remaining	Current extent in all DBCA <sup>1</sup> managed land (ha)	% current extent in all DBCA managed land (proportion of pre-European extent)
IBRA <sup>2</sup> bioregion					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	69.74
Beard Vegetation complex					
968	140,823.45	68,154.69	48.40	35,355.87	51.88

<sup>1</sup> Department of Biodiversity, Conservation and Attractions. Current extent as proportion of pre-European extent within DBCA-managed lands.

<sup>2</sup> Interim Biogeographic Regionalisation for Australia.

## Appendix C – 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> “Native vegetation should not be cleared if it comprises a high level of biodiversity.”</p> <p><u>Assessment:</u> While nine Priority flora species and one threatened flora species have the potential to occur within the application area based on habitat preference and proximity of known records, they are not likely to occur within the application area given the completely degraded (Keighery, 1994) condition understorey and historical disturbance of the site.</p>	Not likely to be at variance.	Yes Refer to Section 3.2.2 above

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<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 proposed clearing area contains significant foraging habitat and potential breeding habitat for conservation significant fauna recorded within the local area.</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 application area is not likely to contain threatened flora species listed under the <i>Environmental Protection and Biodiversity Protection Act 1999</i> (EPBC Act) or the <i>Biodiversity Conservation Act 2016</i> (BC Act).</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> The application area of which comprises of three small isolated remnant patches of native vegetation in a completely degraded (Keighery, 1994) condition, is unlikely to meet the patch size or condition requirements of any state listed TEC that has been recorded within the local area.</p>	Not likely to be at variance.	No
<b>Environmental values: 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> A review of available databases has determined that the local area (10km radius) and mapped Beard vegetation association 968 retains approximately 34.85 per cent and 48.40 per cent of their pre-European clearing extent respectively, which is consistent with the national objectives and targets for biodiversity conservation in Australia. The area proposed for clearing is not considered to be part of a significant ecological linkage in the local area given the application area comprises of three small patches of remnant native vegetation surrounded by cleared paddocks.</p>	Not likely to be at variance.	No
<p><u>Principle (h):</u> <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.”</i></p> <p><u>Assessment:</u> The closest conservation area to the application area is the Stirling Range National Park located more than six kilometres north from the application area. Given the 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 any adjacent or nearby conservation areas.</p>	Not likely to be at variance.	No
<b>Environmental values: 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> No water courses or wetlands are recorded within the application area. A minor non-perennial water course is mapped approximately 70 metres east of the proposed clearing (Area 2, Figure 3). The proposed clearing is unlikely to impact upon vegetation growing in association to this watercourse given the distance between the waterbody and the application area and that the applicant proposes to install fencing along the watercourse.</p>	Not likely to be at variance.	No

Assessment against the Clearing Principles	Variance level	Is further consideration required?
<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> As discussed further under section 3, the Commissioner of Soil and Land Conservation advised that the proposed clearing may increase the risk of nutrient export (eutrophication) and soil loss through water erosion. However, the risk of appreciable land degradation is considered to be minimal and can be managed through best management land practices.</p>	May be at variance.	Yes Refer to Section 3.2.2 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> No water courses or wetlands are recorded within the application area. Noting the high permeability of the soil type under application, the extent of the proposed clearing and the condition of the vegetation within the application area, the proposed clearing is unlikely to impact on 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> Noting the soil type of the application area and flat topography of the site, the proposed clearing is unlikely to contribute to result or exacerbate the incidence or intensity of flooding.</p>	Not likely to be at variance.	No



## Appendix D – Vegetation condition rating scale

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

### Measuring Vegetation Condition for the South West and Interzone Botanical Province (Keighery, 1994)

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

## Appendix E – Photographs of the vegetation

### Sample of photographs of the application area (Weihl, 2020a; Weihl, 2020b)





Photo 3: Area 3 – East side facing West

Photo 4: Area 3 – East side facing west (tree with hollows)

### Appendix F – Approved Revegetation species list

The applicant proposed to plant a mixture of foraging species for black cockatoos within the revegetation offset site from the list below:

Species
<i>Banksia sessilis</i>
<i>Banksia speciosa</i>
<i>Banksia squarrosa</i>
<i>Banksia undata</i>
<i>Corymbia calophylla</i>
<i>Eucalyptus gomphocephala</i>
<i>Banksia attenuata</i>
<i>Banksia grandis</i>
<i>Banksia illcifolia</i>
<i>Banksia littoralis</i>
<i>Banksia menziesii</i>
<i>Banksia nivea</i>
<i>Banksia prionotes</i>
<i>Hakea prostrata</i>
<i>Hakea trifurcata</i>
<i>Hakea undulata</i>
<i>Eucalyptus salmonophloia</i>
<i>Eucalyptus wandoo</i>

On 28 August 2020, DWER approved the following list of plant species for the revegetation offset site that are considered to provide high priority foraging habitat for black cockatoo species. It is noted that *Eucalyptus gomphocephala* and *Eucalyptus wandoo* were excluded from the list as they provide low priority foraging value for black cockatoo species.

Species
<i>Banksia sessilis</i>
<i>Banksia speciosa</i>
<i>Banksia squarrosa</i>
<i>Banksia undata</i>
<i>Corymbia calophylla</i>
<i>Banksia attenuata</i>
<i>Banksia grandis</i>
<i>Banksia illcifolia</i>

<i>Banksia littoralis</i>
<i>Banksia menziesii</i>
<i>Banksia nivea</i>
<i>Banksia prionotes</i>
<i>Hakea prostrata</i>
<i>Hakea trifurcata</i>
<i>Hakea undulata</i>
<i>Eucalyptus salmonophloia</i>

## Appendix G – References and databases

### 1. GIS datasets

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

- Aboriginal Heritage Places (DPLH-001)
- 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)
- IBRA Vegetation Statistics
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Regional Parks (DBCA-026)
- Soil and Landscape Mapping – Best Available

Restricted GIS Databases used:

- ICMS (Incident Complaints Management System) – Points and Polygons
- Threatened Flora (TPFL)
- Threatened Flora (WAHerb)
- Threatened Fauna
- Threatened Ecological Communities and Priority Ecological Communities
- Threatened Ecological Communities and Priority Ecological Communities (Buffers)

### 2. References

Commissioner of Soil and Land Conservation (CSLC) (2020) Direct Interest Advice for Clearing Permit Application CPS 8801/1. Received 20 May 2020 (DWER Ref A1895829).

Commonwealth of Australia (2001) National Objectives and Targets for Biodiversity Conservation 2001-2005, Canberra.

Commonwealth of Australia (2012) EPBC Act referral guidelines for three threatened black cockatoo species, Canberra.

Government of Western Australia (2019). 2018 Statewide Vegetation Complex Statistics. Current as of March 2019. WA Department of Biodiversity, Conservation and Attractions, Perth, <https://catalogue.data.wa.gov.au/dataset/dbca>

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

Shire of Plantagenet (2020) Direct Interest Advice received for Clearing Permit Application CPS 8801/1 (DWER Ref A1883535).

Valentine, L.E. and Stock, W. (2008) Food Resources of Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) in the Gngangara Sustainability Strategy Study Area. Edith Cowan University and Department of Environment and Conservation. December 2008.

Weihl (2020a) Supporting site photos for clearing permit application CPS 8801/1, received on 29 April 2020 (DWER Ref: A1888826).

Weihl (2020b) Additional supporting site photos for clearing permit application CPS 8801/1, received on 28 May 2020 (DWER Ref: A1898085).

Western Australian Herbarium (1998-2019) FloraBase - the Western Australian Flora. Department of Biodiversity, Conservation and Attractions. <https://florabase.dpaw.wa.gov.au/> Accessed July 2020.