



## CLEARING PERMIT

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

<b>Purpose Permit number:</b>	CPS 9769/1
<b>Permit Holder:</b>	Shire of York
<b>Duration of Permit:</b>	From 28 June 2023 to 28 June 2038

### ADVICE NOTE

#### Allocation of offset site

In relation to condition 10 of this Permit, it is noted that 0.12 hectares of Unnamed road reserve (PINs 11429958 and 11429960), Mount Observation, will be attributed to the offset for this project. The remaining balance of the property (approximately 0.927 hectares) may be used as a banked offset for other projects.

It must also be noted that condition 10 includes the offset to balance the significant residual impact for both black cockatoo foraging and salinity.

The permit holder is authorised to clear *native vegetation* subject to the following conditions of this permit.

### **PART I – CLEARING AUTHORISED**

#### **1. Clearing authorised (purpose)**

The permit holder is authorised to clear *native vegetation* for the purpose of road hazard reduction.

#### **2. Land on which clearing is to be done**

Lot 3060 on Plan 36442 (R 47883, PIN 11398134) Talbot West Road, Flynn and Mount Observation

#### **3. Clearing authorised**

The permit holder must not clear more than six (6) native trees within the area cross-hatched yellow in Figure 1 of Schedule 1.

#### **4. Period during which clearing is authorised**

The permit holder must not clear any *native vegetation* after 28 June 2028.

## **PART II – MANAGEMENT CONDITIONS**

### **5. 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.

### **6. 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.

### **7. Vegetation Management**

- (a) Prior to undertaking any clearing authorised under this permit in relation to the area cross-hatched yellow in Figure 1 of Schedule 1, the permit holder must demarcate the *Eucalyptus wandoo* (wandoo) tree at the location in Table 1 and indicated by the area cross-hatched red in Figure 2 of Schedule 1.

**Table 1: Locations of habitat trees to be retained**

<b>Tree</b>	<b>Tree species</b>	<b>Longitude</b>	<b>Latitude</b>
1	<i>Eucalyptus wandoo</i> (wandoo)	118.30441041	-31.49089871

- (b) The permit holder must not clear the tree as described in condition 7(a).

### **8. Fauna management – black cockatoos**

- (a) Prior to undertaking any clearing authorised under this permit within the combined areas cross-hatched yellow on Figure 1 of Schedule 1, the permit holder must engage a *fauna specialist* to conduct a *fauna survey* of the permit area to identify *black cockatoo habitat tree/s* being utilised by *black cockatoo species* listed below:
  - (i) *Zanda lateriosis* (Carnaby’s cockatoo);
  - (ii) *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo); and
  - (iii) *Zanda baudinii* (Baudin’s cockatoo).
- (b) 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*.
- (c) Where a *black cockatoo habitat tree* with no *evidence* of current use by *black cockatoo species* is identified in accordance with condition 8(b) of this permit, that tree must only be cleared immediately after the inspection.

- (d) Where a *black cockatoo habitat tree* is identified within the combined areas cross-hatched yellow on Figure 1 of Schedule 1 and that tree shows *evidence* of current breeding use by *black cockatoo species* under condition 8(b), 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.
- (e) Any *black cockatoo breeding tree* with *evidence* of current breeding use by *black cockatoo species* must not be cleared whilst it is in use for that breeding season as determined by the *fauna specialist* under condition 8(d).
- (f) Within two months of clearing authorised under this permit within the combined areas 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*.
- (g) 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 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees;
  - (ii) the location of any fauna species listed in condition 8(a), if identified, recorded using a GPS unit set to GDA2020, 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)*.

## 9. Offset – Black cockatoo hollows

- (a) The permit holder must install at least 30 artificial black cockatoo nest hollow(s) within the area cross-hatched red on Figure 3 of Schedule 1, in consultation with the Department of Biodiversity, Conservation and Attractions.
- (b) The artificial hollows required by condition 9(a) of this permit must:
  - (i) Be installed prior to commencement of the next black cockatoo breeding season following clearing of the related *black cockatoo breeding tree(s)*.
  - (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 2, for a period of at least ten years.
- (c) Within two months of installing the artificial hollows required by condition 9(a) of this permit, the permit holder must provide the following information in a report to the *CEO*:
  - (i) the location of the artificial hollows recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings or decimal degrees

## 10. Offset – Revegetation (Black cockatoo foraging and salinity mitigation)

The permit holder must within 24 months of undertaking clearing authorised under this permit:

- (a) establish and maintain a minimum of 0.12 hectares of *native vegetation* within the areas cross-hatched red in Figure 4 of Schedule 1, Unnamed road reserve (PINs 11429958 and 11429960), Mount Observation, including the *planting* of at least 11 (eleven) *Eucalyptus wandoo* (wandoo) or *Eucalyptus marginata* (jarrah) seedlings;
- (b) ensure only *local provenance* species are used;
- (c) ensure planting is undertaken at the *optimal time*;
- (d) the permit holder must within 24 months of *planting* a minimum of 0.12 hectares of *native vegetation*, including eleven *Eucalyptus wandoo* (wandoo) or *Eucalyptus marginata* (jarrah) seedlings, in accordance with condition 10(a) of this permit;
  - (i) engage an *environmental specialist* to make a determination that at least 0.12 hectares of *native vegetation*, including eleven *Eucalyptus wandoo* (wandoo) or *Eucalyptus marginata* (jarrah) seedlings will survive;
  - (ii) if the determination made by the *environmental specialist* under condition 10(d)(i) that at least 0.12 hectares of *native vegetation*, including eleven *Eucalyptus wandoo* (wandoo) or *Eucalyptus marginata* (jarrah) seedlings will not survive, the permit holder must *plant* additional native seedlings that will result in at least 0.12 hectares of *native vegetation*, including eleven *Eucalyptus wandoo* (wandoo) or *Eucalyptus marginata* (jarrah) seedlings persisting within Unnamed road reserve (PINs 11429958 and 11429960), Mount Observation.
  - (iii) undertake weed control activities on an 'as needs' basis to ensure success of *revegetation*;
  - (iv) the *revegetation* is to commence before 30 June 2025.
- (e) where additional *planting* of native seedlings is undertaken in accordance with condition 10(d)(ii), the permit holder must repeat the activities required by condition 10(b), 10(c) and 10(d) of this permit.

## 11. Offset – Tenure change

Within 24 months of the commencement of clearing authorised under this permit and no later than 30 June 2025, the permit holder must provide to the *CEO* a copy of the executed change in purpose of Unnamed road reserve (PINs 11429958 and 11429960), Mount Observation, from 'road' to 'conservation' within the area cross-hatched red in Figure 4 of Schedule 1.

## **PART III - RECORD KEEPING AND REPORTING**

### 12. 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 <i>clearing</i> 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 GDA2020, 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 <i>condition 5</i>; and</li> <li>(f) actions taken to minimise the risk of the introduction and spread of weeds and dieback in accordance with <i>condition 6</i>.</li> <li>(g) actions taken in accordance with <i>condition 11</i> of this permit.</li> </ul>
2.	In relation to the required <i>revegetation</i> activities pursuant to <i>condition 10</i>	<ul style="list-style-type: none"> <li>(a) the species composition, structure, and density of the <i>revegetation</i> area;</li> <li>(b) the location where the <i>revegetation</i> occurred, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings;</li> <li>(c) a copy of the <i>environmental specialist's</i> report;</li> <li>(d) a description of the <i>revegetation</i> activities undertaken; and</li> <li>(e) any remedial actions required to be undertaken.</li> </ul>
3.	In relation to black cockatoo fauna management pursuant to <i>conditions 8 and 9</i>	<ul style="list-style-type: none"> <li>(f) the time(s) and date(s) of inspection(s) of the suitable <i>black cockatoo habitat tree</i> by the <i>fauna specialist</i>;</li> <li>(g) a description of the inspection methodology employed by the <i>fauna specialist</i>;</li> <li>(h) the species name of any fauna determined by the <i>fauna specialist</i> to be occupying the suitable <i>black cockatoo habitat tree</i>;</li> <li>(i) where the suitable <i>black cockatoo habitat tree</i> is determined by the <i>fauna specialist</i> to be occupied by <i>black cockatoo species</i>: <ul style="list-style-type: none"> <li>(i) the time and date that it was determined to be no longer occupied; and</li> </ul> </li> </ul>

No.	Relevant matter	Specifications
		<ul style="list-style-type: none"> <li>(ii) a description of the evidence by which it was determined to be no longer occupied;</li> <li>(j) the time and date that the suitable <i>black cockatoo habitat tree</i> was cleared</li> <li>(k) a copy of the <i>fauna specialist</i> report;</li> <li>(l) the location where artificial black cockatoo hollows were installed, recorded using a Global Positioning System (GPS) unit set to Geocentric Datum Australia 2020 (GDA2020), expressing the geographical coordinates in Eastings and Northings;</li> <li>(m) the date when each artificial nesting hollow was monitored and maintained; and</li> <li>(n) a description of the monitoring and maintenance activities undertaken.</li> </ul>

### 13. Reporting

The permit holder must provide to the *CEO* the records required under *condition 12* of this permit when requested by the *CEO*.

## DEFINITIONS

In this permit, the terms in Table have the meanings defined.

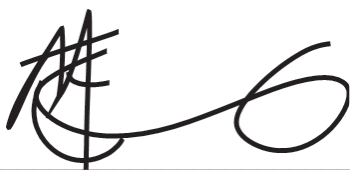
**Table 2: Definitions**

Term	Definition
black cockatoo habitat trees	means trees that have a diameter, measured 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> ) that contain hollows suitable for breeding by black cockatoo species.
black cockatoo species	means one or more of the following species: <ul style="list-style-type: none"> <li>(a) <i>Zanda lateriosis</i> (Carnaby's cockatoo);</li> <li>(b) <i>Zanda baudinii</i> (Baudin's cockatoo); and/or</li> <li>(c) <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).</li> </ul>
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.

<b>Term</b>	<b>Definition</b>
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
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 <i>CEO</i> as a suitable fauna specialist for the bioregion, and who holds a valid fauna licence issued under the <i>Biodiversity Conservation Act 2016</i> .
fill	means material used to increase the ground level, or to fill a depression.
local provenance	means native vegetation seeds and propagating material from natural sources within 50 kilometres and the same IBRA subregion of the area cleared.
mulch	means the use of organic matter, wood chips or rocks to slow the movement of water across the soil surface and to reduce evaporation.
native vegetation	has the meaning given under section 3(1) and section 51A of the EP Act.
optimal time	means the period from May to July for undertaking planting and seeding.
rehabilitate	means actively managing an area containing native vegetation in order to improve the ecological function of that area.
revegetate	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.
weeds	means any plant – <ul style="list-style-type: none"> <li>(a) that is a declared pest under section 22 of the <i>Biosecurity and Agriculture Management Act 2007</i>; or</li> <li>(b) published in a Department of Biodiversity, Conservation and Attractions species-led ecological impact and invasiveness ranking summary, regardless of ranking; or</li> <li>(c) not indigenous to the area concerned.</li> </ul>

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**END OF CONDITIONS**




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Mathew Gannaway  
MANAGER  
NATIVE VEGETATION REGULATION

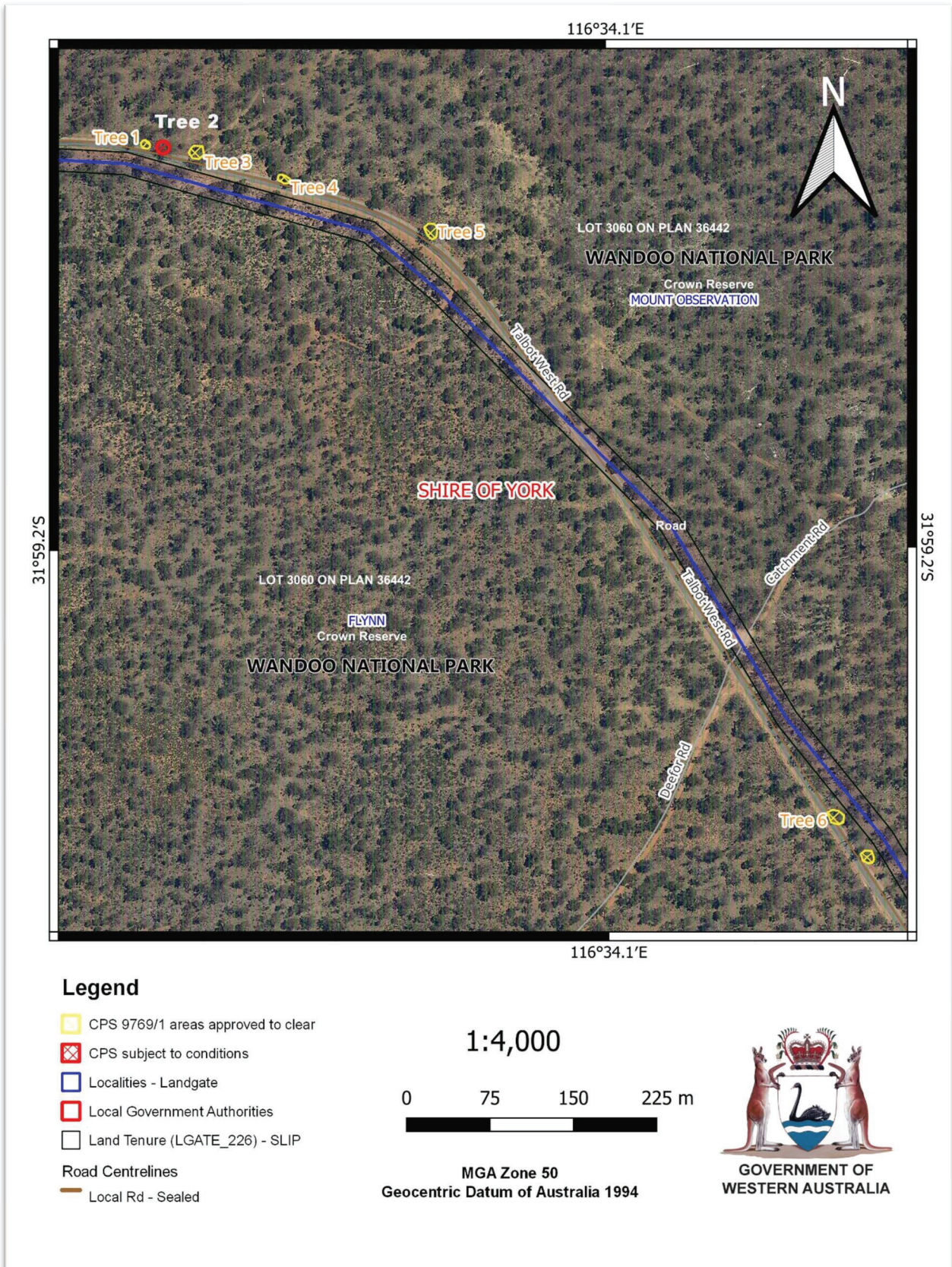
*Officer delegated under Section 20  
of the Environmental Protection Act 1986*

2 June 2023



# Schedule 1

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



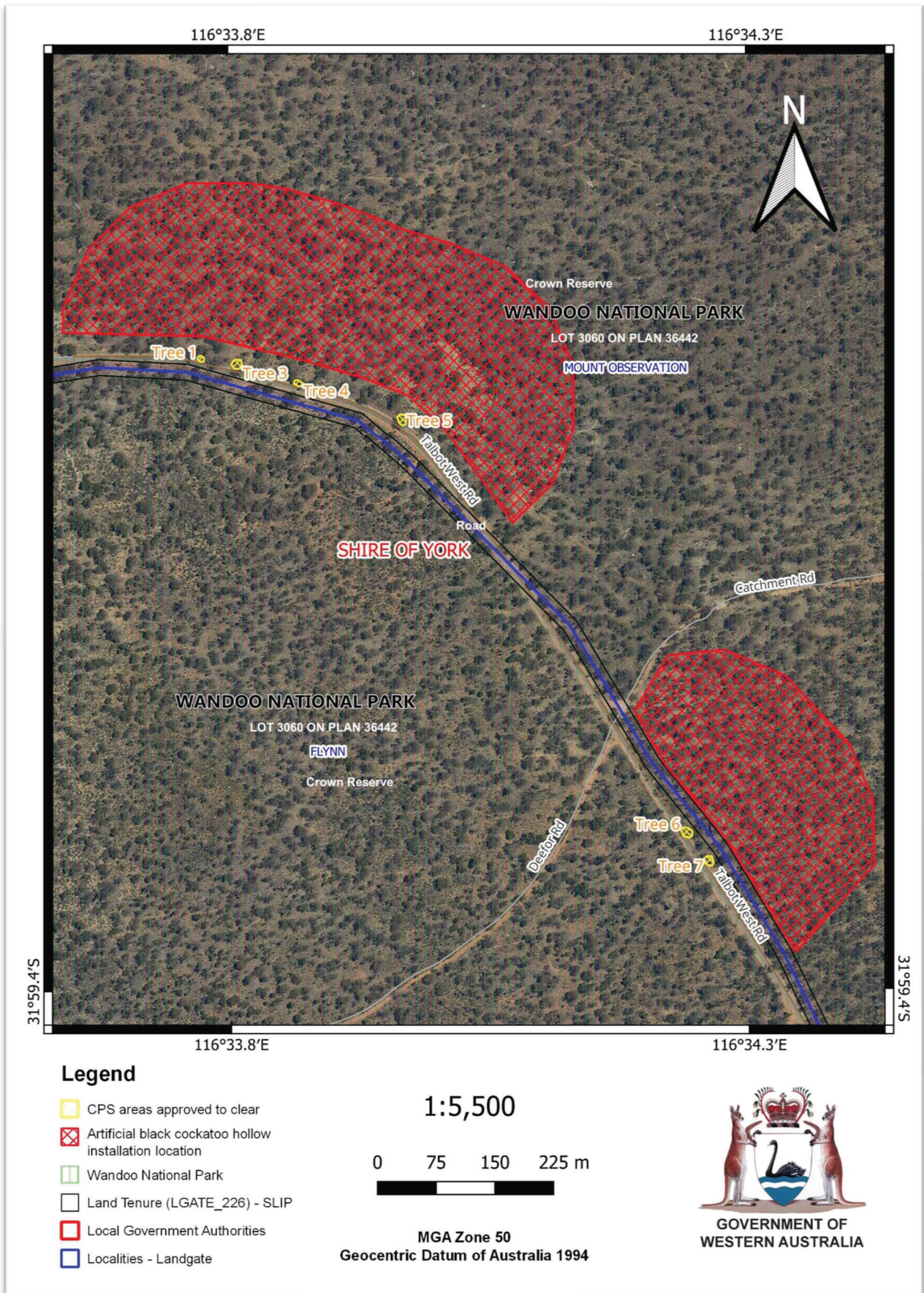
**Figure 1: Map of the boundary of the area within which clearing may occur, indicated by the area cross-hatched yellow**





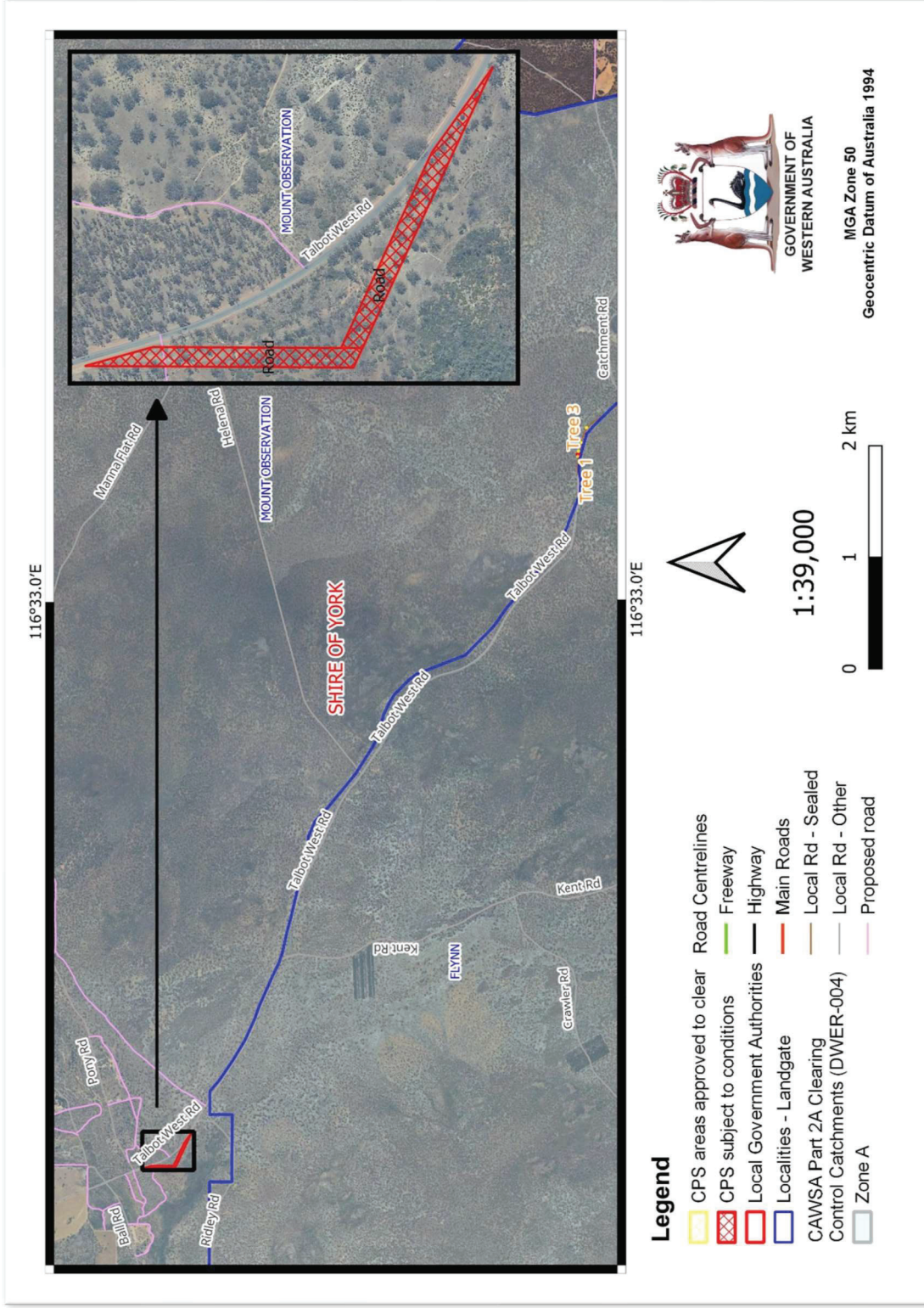
Figure 2: Map of the boundary of the area within which clearing may not occur, indicated by the area cross-hatched red





**Figure 3: Map of the boundary of the area within which artificial hollows should be installed, indicated by the area cross-hatched red**





**Figure 4: Map of the boundary of the area within which offset planting for black cockatoo foraging habitat and salinity mitigation is to take place, indicated by the area cross-hatched red**



## Schedule 2



Department of Biodiversity,  
Conservation and Attractions

## FAUNA NOTES

### Artificial Hollows for Black Cockatoos

There are three species of threatened black cockatoos in the southwest of Western Australia (WA): Baudin's cockatoo *Zanda baudinii* (previously *Calyptorhynchus baudinii*), Carnaby's cockatoo *Zanda latirostris* (previously *Calyptorhynchus latirostris*) and forest red-tailed black cockatoo *Calyptorhynchus banksii naso*. Some of the main threats to the three species include nest hollow shortages due to ongoing and extensive habitat loss and degradation, lack of recruitment of new hollow bearing trees, and competition with galahs, corellas, and feral European honey bees.

Artificial hollows can be used to help conserve these threatened black cockatoos by enabling them to breed in areas where natural hollows are limited. This Fauna Note provides advice on how to select an appropriate site, guidelines on how to design and place artificial hollows, and advice on how to maintain and monitor artificial hollows.

The information presented here is based on experience with Carnaby's cockatoo which have many examples of successful use of artificial hollows and forest red-tailed black cockatoo which have a few known examples of use. However, to date there are no records of Baudin's cockatoo using artificial nest hollows.

Sometimes a site may not be suitable for artificial hollows. This Fauna Note includes options for alternative conservation actions that are important to the conservation of black cockatoos and can also be used to complement the placement of artificial hollows.

It is important to remember that the retention of both old and dead trees (stags) that have suitable hollows for black cockatoos is crucial for breeding, and natural replacement of hollow bearing trees for future breeding is vital for the long-term survival of the species. The installation of artificial hollows should not be used to justify the removal of natural hollow-bearing trees.

### When to Use Artificial Hollows

Artificial hollows may be useful at sites where natural hollows are a limiting resource. However, cockatoos may not always use artificial hollows, for example if provided in non-traditional nesting areas. Artificial hollows that are installed within 2 km of current breeding sites are regularly taken up. There are ways to select sites for artificial hollows that will increase the chance that they will be used and that birds will be able to successfully raise chicks.

### Where do black cockatoos nest?

Black cockatoos nest in the hollows of mature trees in uncleared or remnant Eucalypt woodland or forest, as well as in remnant paddock trees. Trees may take more than 120 years to develop hollows that are a suitable size, and cockatoos use hollows in both living and dead trees. Refer to the maps at the end of this document for the known breeding range of the three species of black cockatoo.

Carnaby's cockatoos generally breed in Wandoo and Salmon Gum in the Wheatbelt, Marri in forested areas, and Tuart along the Swan Coastal Plain. They are also known to nest in Jarrah, Flooded Gum, York Gum, Gimlet, Powderbark Wandoo, and Karri.

Baudin's cockatoos generally nest in Jarrah, Marri, and Karri in densely forested areas. They are also known to nest in hollows in Wandoo and Tuart.



Carnaby's cockatoo nestlings in an artificial hollow. Note this chewing post will require replacement following breeding.

Photo: Rick Dawson



### FAUNA NOTES – Artificial Hollows for Black Cockatoos

The breeding habitat for forest red-tailed black cockatoos is in uncleared forest or remnant patches of old Marri. They are also known to nest in Karri, Wandoo, Bullich, Blackbutt, Tuart, and Jarrah.

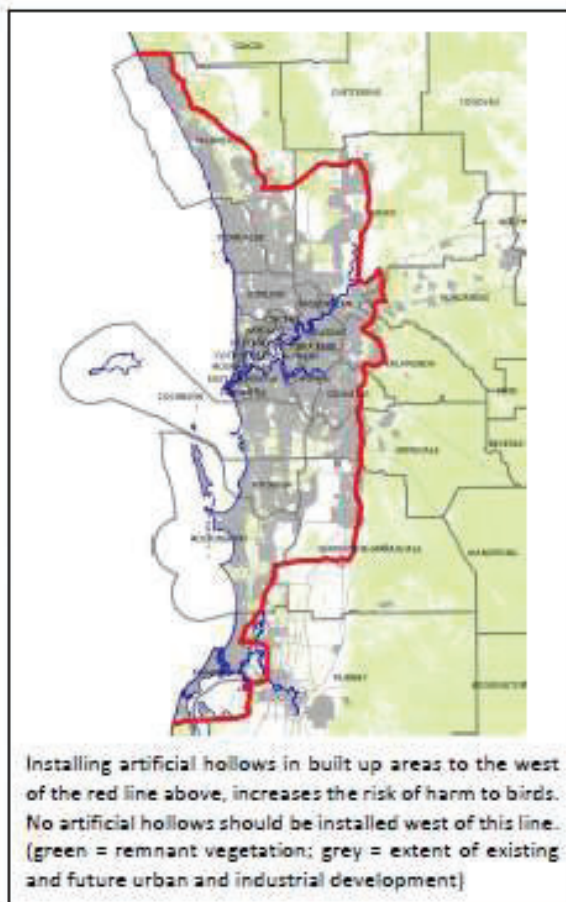
#### Is my site suitable for artificial hollows?

It is recommended that artificial hollows be used in known nesting areas where there has been a decrease in the availability of natural nesting hollows. Trials have shown that Carnaby's cockatoo and forest red-tailed black cockatoos will nest in artificial hollows if installed in suitable areas and are of a satisfactory design. However, putting up artificial hollows may not be the best way to help black cockatoos in your area.

Indeed, attracting birds to attempt to breed in unsuitable areas may result in increased risk of harm to adult birds or their chicks. The installation of artificial hollows in built up and urbanized areas of the metropolitan Perth and Peel regions, and other urban centres in the southwest is not recommended and should not be undertaken. This is due to the increased risk in this area, including car strike to young inexperienced birds, attack by predators such as Australian ravens and pets, and in highly urbanised and cleared areas there may not be sufficient food resource for the adults to successfully raise chicks).

To decide if your site is suitable for artificial hollows you need to consider five essential criteria (Table 1). If your site does not match all criteria, you may wish to consider alternative conservation actions including:

- protecting habitat by fencing and/or rabbit and stock control to encourage regeneration of native vegetation;
- controlling competitive species such as galahs, corellas and feral bees that may occupy hollows;
- repairing old and damaged natural nesting hollows;
- providing access to fresh water;
- revegetating with preferred food species and nesting trees; and/or
- creating linkages of vegetation between nesting and feeding areas.



**Table 1: Essential criteria for a site to be considered suitable for installation of artificial hollows, with alternative conservation actions suggested for each criterion that is not met.**

1.	<b>The site is Eucalypt woodland or forest within the known breeding range of the species</b>	
	<i>Important consideration</i>	Carnaby's cockatoos tend to nest in Wandoo and Salmon Gum in the Wheatbelt, Marri in forested area and Tuart along the Swan Coastal Plain. Baudin's cockatoos generally nest in Jarrah, Marri, and Karri and forest red-tailed black cockatoos usually nest in Marri.
	<i>Alternative conservation actions</i>	If the site is not within the known current breeding range of black cockatoos, then it is unlikely that the installation of artificial hollows will attract the birds to the site.  However, black cockatoos are highly mobile species that also require habitat for feeding and roosting which means that it is important to protect and manage habitat visited by the cockatoos by fencing, and carrying out other management, such as rabbit and stock control, to retain existing habitat, and to encourage regeneration of native vegetation. It is also important to revegetate areas within the breeding and non-breeding areas with preferred food species, and to create linkages of vegetation to assist the movement of the birds through the landscape.
2.	<b>Breeding by Black cockatoos is known or suspected at the site. There must also be evidence that a lack of suitable available tree hollows is preventing breeding that would otherwise occur in the area.</b>	



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	<i>Important consideration</i>	If the lack of available hollows is due to nest competitors such as galahs, western long-billed corellas or feral bees then any attempt to install artificial hollows must be accompanied by efforts to deter or control these competitors. Alternatively, successful control of competitors may mean that artificial hollows are not needed.
	<i>Alternative conservation actions</i>	<p>If sufficient suitable natural hollows are available in an area, then there is no need to install artificial hollows. This overcomes the need for ongoing maintenance of unnecessary artificial hollows.</p> <p>If breeding is already occurring at the site and there are plenty of available hollows, efforts can be redirected towards caring for existing or future nesting hollows. This may involve repairing old or damaged nesting hollows by covering cracks, removing debris blocking access to hollows or replacing rotted wood in the hollow so that the depth of the nest floor is manageable for the birds. Future hollows can be protected by preventing compaction of ground around trees, fencing and/or rabbit and stock control to encourage regeneration to produce future nesting trees, fire management, and the strategic pruning of limbs to prevent limbs breaking and tearing open hollows. Efforts can also be aimed at enhancing the success of existing breeding by revegetating with preferred food and nesting species, as well as creating linkages of suitable vegetation and fresh water between nesting and feeding areas.</p> <p>If breeding is not occurring at the site despite hollows being available, then there may be a range of factors making the site unsuitable for breeding. These factors must be identified and addressed before breeding can resume in the area (if at all possible). Lack of sufficient food could be the cause, and this can be addressed by revegetating with preferred food species and increasing connectivity in the landscape.</p> <p>To compile a list of plant species suitable for revegetation at your site, refer to the document <a href="#">Plants Used by Carnaby's Black Cockatoo</a> available on the Department of Biodiversity, Conservation and Attractions (DBCA) <a href="#">black cockatoo webpage</a>.</p>
3.	<b>The artificial hollows can be located in close proximity to adequate feeding areas – within a 12 km radius.</b>	
	<i>Important consideration</i>	Feeding areas commonly contain proteaceous species such as banksias (including dryandras) and hakeas. A list of food plants can be obtained by use of the document <a href="#">Plants Used by Carnaby's Black Cockatoo</a> .
	<i>Alternative conservation actions</i>	If the site is not close to adequate food, then the black cockatoos will not be able to successfully raise young. Cockatoos require sufficient food close to nesting areas in order to be able to forage during the day and return to feed nestlings. Existing feeding habitat close (within 12km) to breeding areas can be protected by fencing and/or undertaking rabbit and stock control to encourage regeneration of native vegetation. The amount of feeding habitat in an area can be increased by planting or revegetating with preferred food species.
4.	<b>The hollows are placed in secure locations and the owner/manager of these areas is supportive and willing to provide the necessary long-term security and annual maintenance for the entire time that the artificial hollow will be in place.</b>	
	<i>Important consideration</i>	For advice on the monitoring and maintenance requirements, please refer to the section on how to monitor and maintain artificial hollows.
	<i>Alternative conservation actions</i>	Artificial hollows can be subject to nest robbing and vandalism. It is highly recommended that artificial hollows are not put in exposed or easily accessible areas such as road verges unless they are above 8m and placed on the side of trees away from roads. If the site is considered at high risk of nest robbing or vandalism then alternative actions to assist the conservation of the species are recommended including: revegetation, fencing, repairing old or damaged natural nesting hollows and planting vegetation linkages to connect nesting and feeding areas.
5.	<b>A suitable artificial hollow design is used.</b>	
	<i>Important consideration</i>	For greatest chance of success, please refer to the sections below on how to design and place artificial hollows.
	<i>Alternative conservation actions</i>	If an alternative design is proposed, it is recommended that Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or WA Museum are contacted to discuss and approve design.



## How to Design and Place Artificial Hollows

A wide variety of artificial hollow designs have been previously used with mixed success. Evidence suggests that, while artificial hollows 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.

Successful artificial hollows have been constructed from sections of salvaged natural hollows, or black and white industrial pipe. Research results show that the most effective artificial hollows are made of plastic culvert pipe which is readily available, durable, light, cheap, and easy to install and maintain (see right picture below). When using non-natural materials care must be taken to ensure there are no toxic residues, and that the materials are safe to ingest.

Below are three examples of successful artificial hollows that have been used by black cockatoos for nesting:

- natural log with cut side entrance (left);
- white industrial pipe with top entrance (centre); and
- DBCA recommended polypropylene pipe design (right)



Photo: Christine Groom (left), Rick Dawson (centre and right)

The notes below provides general guidance on design and construction of artificial hollows for black cockatoos. Additional specifications are provided at the end of this Fauna Note which outline current best practice and may be considered recommendations for minimum requirements.

### Walls, size, base, and entrance design

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

- durable enough to withstand exposure to elements for at least 20 years; and
- able to simulate the thermal properties of a natural tree hollow.

Artificial hollows should be:

- not less than 375 mm in internal diameter; and
- preferably 1200 mm deep overall with 200 mm of substrate/nesting material covering the base.

The base of the artificial hollow must be:

- securely fixed to the walls and able to support the weight of an adult and nesting(s);
- durable enough to last the life of the nest, and survive chewing by cockatoos;
- free draining;



#### FAUNA NOTES – Artificial Hollows for Black Cockatoos

- at least 375 mm in diameter; and
- covered with 200 mm of sterile, dry, free draining substrate/nesting 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<sup>®</sup>), thick hard plastic, thick hardwood timber slab or marine ply (not chipboard or MDF). The base material must be cut to fit internally with sharp or rough edges ground away or curled inwards, be fixed securely to the walls and have small drainage holes.

The entrance of the artificial hollow:

- must have a diameter of at least 375 mm; and
- preferably be top entry which will minimise use by non-target species.

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

#### Adding ladders and sacrificial chewing posts

For artificial hollows made of non-natural materials, or of processed boards, it is necessary to provide a ladder to enable the birds access to the hollow, and sacrificial chewing posts so that birds can chew material, and so that non-target species can exit the hollow. The post can also assist in providing further material to the substrate, however research has shown that not all posts are heavily chewed.

The ladder must be:

- securely mounted to the inside of the hollow;
- made from an open heavy wire mesh with a mesh size of 30 - 50 mm (such as WeldMesh™); or heavy chain; and
- reach to, or below the level of substrate/nesting material.

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.

Do not use material for ladders that the birds can chew, including galvanised metal because the birds may grip or chew the ladder, and ingest harmful compounds.

The sacrificial chewing posts must be:

- made of untreated hardwood such as Jarrah, Marri or Wandoo;
- thick enough to satisfy the birds' needs between maintenance visits;
- extended beyond the top of the hollow as an aid to see whether the nest is being used and reach to the floor of the hollow;
- placed on the inside of the hollow; and
- attached in such a way that they are easy to replace (e.g. a 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 one chewing post is provided. Posts 70 x 50 mm have been used but require monitoring at least every second breeding season when the nest is active and replacing when found to be no longer reaching the nesting material or otherwise significantly chewed. Birds do vary in their chewing habits, and therefore the frequency at which the chewing posts require replacement will also vary.

#### Mounting and placement

It is important that artificial hollows are placed where they will be accessible for future monitoring and maintenance, but preferably not conspicuous to the general public.

The height at which artificial hollows should be placed is variable, between 4 - 8m for Carnaby's cockatoo, and the average height of natural hollows in dominant tree species in the area is a good guide. If located in an area that the general public cannot access, such as a private property, the hollows can be placed as low as 4 m from the ground so that they are easily accessible by ladder. If located in an area where the general public are allowed access, hollows should be placed at least 8 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.



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Black cockatoos 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; and
- fitted on the side where the most shade can be obtained.

Artificial hollows must be mounted such that:

- the fixings used will last the duration of the nest e.g. galvanized bracket or chain and fixed with galvanized coach screws;
- it is secured by more than one anchor for security and stability;
- it is positioned vertically or near vertically; and
- where possible living trees are to be used to provide shade.

Artificial hollows should not be placed in the open on poles, as this may result in excessive exposure to sun during very hot weather.

### Safety

Care needs to be taken when placing artificial hollows to ensure human safety is paramount.

## Monitoring and Maintaining Artificial Hollows

It is important to monitor and maintain artificial hollows after they have been erected to ensure their effectiveness and so that problems with pest species or maintenance requirements can be identified and resolved. This will ensure the artificial hollow continues to provide opportunities to be used and that birds will be able to successfully raise chicks

Without regular maintenance, artificial hollows are likely to fail to achieve their objective to provide safe nesting opportunities for threatened black cockatoos. Therefore, it is important to continue a regime of regular maintenance for however long the artificial hollow is required. It may be several (to many) decades until a natural replacement hollow is available. Artificial hollows erected as a condition of development to offset the loss of natural hollows may be required to be available and maintained for the life of the development approval.

### How do I monitor artificial hollows?

Before undertaking monitoring of artificial hollows for black cockatoos, it is recommended that you seek advice from the Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or the WA Museum. It is also important to contact the Department's Wildlife Licensing Section, to determine if a lawful authority required (<https://www.dbca.wa.gov.au/licences-permits>).

Monitoring artificial hollows requires keen observation, and naturalist skills. It is often not possible to observe direct evidence of breeding (i.e. nestlings or eggs) and therefore inferences must be made based on other observations. It is also important to limit disturbance to breeding birds. There are many techniques available to monitor artificial hollows, and a combination of several is likely to achieve the best results (*Table 2*).

Monitoring of artificial hollows should consider and record:

- the condition of the tree, hollow fixings and general hollow condition;
- condition and connection of sacrificial chewing posts, ladder and substrate/nesting material inside hollow;
- any use by black cockatoos and nature of activity (adult birds, chewing, eggs, chicks etc.)
- details of use by non-target species (native or pest);
- identify any problems with pest species or maintenance requirements; and
- maintenance actions undertaken to resolve any problems.

The information collected from monitoring should be written down and reported. There are standard fauna report forms available on the Department's website (<https://www.dpaw.wa.gov.au/plants-and-animals/threatened-species-and-communities/threatened-animals>) that can be used to record the details of your sighting. Alternatively, if you are



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frequently monitoring a larger number of artificial hollows, you can put the details into a spreadsheet or use the black cockatoo monitoring forms available on the [DBCA website](#). Records should be submitted to the Department by emailing [fauna\\_data@dbca.wa.gov.au](mailto:fauna_data@dbca.wa.gov.au). The Department will put the records into the Threatened and Priority Fauna Database, and it will be used to inform conservation and management decisions. Any other opportunistic sightings of Threatened and Priority species can also be reported via the same email.

**Table 2: Techniques for monitoring artificial hollows**

Technique	Description of Technique								
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.								
Observing parent behaviour around a hollow	The behaviour of parent birds around a hollow can indicate an approximate age of young in the nest.								
	<table border="1"> <thead> <tr> <th>Parent Behaviour</th> <th>Approximate Stage and Age of Young</th> </tr> </thead> <tbody> <tr> <td>Prospecting for hollow</td> <td>Unborn</td> </tr> <tr> <td>Male only seen out of hollow</td> <td>Egg or very young nestling (&lt; 3 - 4 weeks)</td> </tr> <tr> <td>Both parents seen entering/exiting the hollow</td> <td>Nestling(s) has hatched (&gt; 3 - 4 weeks)</td> </tr> </tbody> </table>	Parent Behaviour	Approximate Stage and Age of Young	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) has hatched (> 3 - 4 weeks)
	Parent Behaviour	Approximate Stage and Age of Young							
	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) has hatched (> 3 - 4 weeks)								
Observing feeding flocks	Flocks of all male birds can indicate that 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).								
Tapping to flush female	When females are sitting on eggs they will usually respond to tapping or scraping at the base of their tree by appearing at the entrance or flying from the hollow opening. This is not a guarantee of breeding activity, but an indication that breeding is possibly occurring in the hollow.  Tapping or scraping is best undertaken between 10 am - 3 pm when females will most likely to be sitting.								
Observing insect activity around a nest	Faecal matter produced by nestlings attracts insects, especially flies and ants. The type and number of these insects will help to 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 the entrance of a nest usually indicate that a death has occurred.								
Listening for nestling	With experience it is possible to determine if nestlings are present, and a broad estimate of age based on the type and volume of noises they make.								
Looking inside a 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 organize. Also keep in mind that it is important to limit disturbance to breeding birds. 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 to reach nests to undertake observations.								

### When do 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, frequency, and timing of monitoring (Table 3).

Breeding by the three southwest black cockatoos varies, and the timing of monitoring of artificial hollows should accommodate the breeding of the likely target species. The Commonwealth Department of Climate Change, Energy,



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the Environment and Water (DCCEEW) Species Profile and Threats Database (SPRAT) database records the breeding periods of each of the species as:

- Carnaby's cockatoo - July to November (with peak between August to September)
- Baudin's cockatoo - October to January
- Forest red-tailed black cockatoo - every month, with peaks in April to June and August to October

The age of Carnaby's cockatoo nestlings can be determined by using the following publication:

Saunders, D. A., Dawson, R. and Nicholls, A. O. (2015). Aging nestling Carnaby's cockatoo, *Calyptorhynchus latirostris*, and estimating the timing and length of the breeding season. *Nature Conservation* 12: 27-42  
<http://dx.doi.org/10.3897/natureconservation.12.4863>

This document provides a series of photographs to illustrate changes in size and plumage of nestlings over the 10–11 weeks of the nestling period which can be used to estimate the approximate age of Carnaby's cockatoo nestlings, up to about nine weeks, by comparing appearance with the nestlings illustrated in the photographs.

Any monitoring that involving disturbance or handling of black cockatoos, requires lawful authority (<https://www.dbca.wa.gov.au/licences-permits>). Such activity requires specialist skills and authorisation under the *Biodiversity Conservation Act 2016*.

**Table 3: Recommended frequency for monitoring artificial hollows, as determined by the aim of the monitoring**

Monitoring Aim	Frequency of Visits	Monitoring Techniques
To determine possible use by black cockatoos	At least once during peak breeding season.	<ul style="list-style-type: none"> <li>• Looking for signs of use (evidence of chewing)</li> <li>• Observing behaviour of adults around a hollow</li> <li>• Tapping or scraping to flush female</li> <li>• Listening for nestlings</li> <li>• Looking inside nest</li> </ul>
To confirm use by black cockatoos	At least two visits during peak breeding season.	<ul style="list-style-type: none"> <li>• Looking for signs of use (evidence of chewing)</li> <li>• Observing behaviour of adults around a hollow</li> <li>• Tapping or scraping to flush female</li> <li>• Listening for nestlings</li> <li>• Looking inside a nest</li> </ul> <p>Observing breeding evidence from at least two of the techniques confirms use by black cockatoos.</p>
To determine nesting success by black cockatoos	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>• Observing insect activity around a nest</li> <li>• Listening for nestlings</li> <li>• Looking inside a nest</li> </ul> <p>The presence of eggs or nestlings inside a nest will help to determine nesting success.</p>
To determine use by any species	As often as possible.	<p>As a minimum, inspection from the ground:</p> <ul style="list-style-type: none"> <li>• Looking for signs of use</li> </ul> <p>To confirm:</p> <ul style="list-style-type: none"> <li>• Looking inside a nest</li> </ul>
To determine maintenance requirements	At least every two years and preferably annually.	<p>A basic maintenance check can be undertaken from the ground. Looking inside the nest using a telescopic pole with camera or mirror enables inspection of the sacrificial chewing posts and level of substrate/nesting material. A ladder or elevated work platform will be required for a comprehensive check, and to replace sacrificial chewing posts and carry out other maintenance.</p>



## How do I maintain artificial hollows?

Natural hollows used by black cockatoos are typically present for many decades and if artificial hollows are expected to provide a similar role, then they will require maintenance to ensure they continue to function as potential nesting locations for black cockatoos for the long term.

In many cases artificial hollows are required as a condition of development to offset loss of natural hollows, in which case State and Commonwealth offset policy expects that the artificial hollows continue to provide that function for the duration of the impact (or alternatively the expected period of time the natural hollow would have persisted, or the life of the environmental approval). As part of establishing artificial hollows the responsibility and regime for long term monitoring and maintenance should also be established.

Periodic maintenance checks should be undertaken at least every two years, preferably annually, for as long as the artificial hollow is required. Maintenance actions should be completed prior to the breeding season.

Any problems identified during monitoring or maintenance checks should be addressed as soon as possible and will require similar specialist skills and equipment as used in installation. If breeding is currently occurring, maintenance may need to be delayed if it is likely to disturb the parents or nestling. 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. Likely maintenance includes:

- replacement of sacrificial chewing posts (frequently);
- top-up or replacement of nesting substrate to ensure it reaches the ladder and chewing posts (occasionally);
- replacement of nest bases (occasionally);
- repair or replacement of attachment points (infrequently); and/or
- repair of any cracks to wooden hollows (infrequently).

For artificial hollows known to be used, spare chewing posts should be taken into the field when undertaking maintenance checks as these are likely to need replacement.

Artificial hollows are likely to need to be completely replaced after many years, and other circumstances may require the relocation of artificial hollows (e.g. if the tree they are in becomes damaged).



Artificial hollow base needing repair.  
Photo by Christine Groom

## Applying this guidance to forest red-tailed black cockatoo and Baudin's cockatoo

The information presented here is based on experience with Carnaby's cockatoo, for which many examples of successful use of artificial hollows exist, and forest red-tailed black cockatoo for which a few known examples of use exist. However, to date there are no records of Baudin's cockatoo using artificial nest hollows.

A definite reason for this lack of use is not yet known but may relate to the location of artificial hollows installed to date (few or none placed in Baudin's cockatoo breeding sites where breeding is occurring and natural hollows are limiting) or design or installation issues, such as hollows not being installed high enough in tall forest canopy.

Before deciding to install artificial hollows for forest red-tailed black cockatoo or Baudin's cockatoo, it is recommended that you discuss your proposal with, and/or seek advice from, the Department of Biodiversity, Conservation and Attractions, BirdLife Australia, or the WA Museum.

## Maps of Black Cockatoo Breeding Range



## FAUNA NOTES – Artificial Hollows for Black Cockatoos



Image: Commonwealth of Australia, 2011

The maps show the modelled distributions of Carnaby's cockatoo (left), Baudin's cockatoo (centre) and forest red-tailed black cockatoo (right). For Baudin's cockatoo, the breeding range is indicated by the red (known breeding areas) and yellow (predicted breeding range), and for Carnaby's cockatoo, the breeding range is indicated by the orange.

## Artificial Hollows – best current design and installation specifications

The specifications below outline the most recent detailed specifications for artificial hollow construction installation and maintenance. These would provide for a well-constructed and installed artificial hollow that is most likely to have an adequate lifespan (minimum 50-years). To ensure longevity, regular maintenance will be required on the nesting material, sacrificial post, and removal of debris from the hollow.

It is highly recommended that any artificial hollows installed as a condition of environmental approval (for example where the artificial hollow is expected to provide benefit for a long period), or installed on DBCA managed lands would meet these specifications as a minimum.

### Artificial Hollow Construction Specifications

- Dimensions:** internal diameter 375mm (430 mm external), 1200 mm in height, and installed a minimum of 4 m above ground on private property and 8 m on public land.
- Pipe material:** Fifty-year UV rated culvert pipe (polypropylene material used with corrugated outer wall and thin inner sleeve. Recommended brand or similar: The Vinidex StormPRO pipes are twin wall, corrugated, polypropylene pipes for non-pressure stormwater and drainage applications, which meet all the requirements for artificial hollows.
- Chain:** 6 mm galvanised (not zinc plated). The hollows will be attached to the tree by chain and fixed by 4 points.
- Fixings:** Galvanised M10 coach screws four x 75 mm. Two on the weight bearing chain at the top and one each side of the hollow.
- Ladder:** 50 x 50 mm square galvanised weldmesh 4mm thick.
- Chewing posts:** Untreated Jarrah, Marri or Wandoo that meet requirements in "Adding ladders and sacrificial chewing posts" above.

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Artificial hollow design, the fixing method, and the sacrificial chewing post extending above the hollow rim. Left image shows the side chains that are to be at a 30-degree upwards angle to allow the hollow to move up the tree as the tree grows. Right image shows the top weight bearing fixing which is to be 100 mm above the hollow to allow upwards movement.



Left image shows the internal view, including substrate material placed on the floor to line the hollow, and the internal weld mesh ladder. Substrate material must be coarse, hard, wood chips at least 200 mm deep.

Centre image shows one hard wood sacrificial post which is to fit and connect to the rim of the hollow by a hook screwed to the post to ensure it does not come loose, block the hollow or injure the occupants.

Right image shows the hard plastic floor which is to be securely fixed with a minimum of 12 small drainage holes. Larger holes may result in the occupants chewing the base.



## Monitoring and Maintaining Artificial Hollows

It is important to continue a regime of regular maintenance for however long the artificial hollow is required. Artificial hollows erected as a condition of development to offset the loss of natural hollows may be required to be available and maintained for the life of the development approval. As part of establishing artificial hollows the responsibility and regime for long term monitoring and maintenance should also be established.

Periodic maintenance checks should be undertaken at least every two years, preferably annually, for as long as the artificial hollow is required. Maintenance actions should be completed prior to the breeding season.

## Further Reading

DBCA webpage and fauna profiles: [Black cockatoos](#)

Department information sheets: [Fauna Note – Corellas and other flocking cockatoos](#)

BirdLife Australia webpage and brochure: [Identify your Black cockatoo](#)

Western Australian Museum webpage and fact sheets: [Cockatoo Care](#)

Saunders DA et al. (2022) Artificial nesting hollows for the conservation of Carnaby's cockatoo *Calyptorhynchus latirostris*: definitely not a case of erect and forget. *Pacific Conservation Biology* [doi:10.1071/PC21061](https://doi.org/10.1071/PC21061)

## Acknowledgements

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Department of Biodiversity,  
Conservation and Attractions



# Clearing Permit Decision Report

## 1 Application details and outcome

### 1.1. Permit application details

Permit number:	CPS 9769/1
Permit type:	Purpose permit
Applicant name:	Shire of York
Application received:	9 June 2022
Application area:	Six native trees
Purpose of clearing:	Road hazard reduction
Method of clearing:	Mechanical Removal
Property:	Lot 3060 on Plan 36442 (R 47883, PIN 11398134) Talbot West Road
Location (LGA area/s):	Shire of York
Localities (suburb/s):	Flynn and Mount Observation

### 1.2. Description of clearing activities

The clearing application was submitted by the Shire of York (the Shire) on 9 June 2022, for a Purpose Permit to clear six native trees within Lot 3060 on Plan 36442 (R 47883, PIN 11398134), Talbot West Road, Flynn and Mount Observation, for the purpose of road hazard reduction. The Shire proposed to remove six native trees to improve road safety, in combination with other measures including installation of barriers and audible edge line marking where appropriate (Shire of York, 2022a).

### 1.3. Decision on application

Decision:	Granted
Decision date:	5 July 2022
Decision area:	Six native trees

### 1.4. Reasons for decision

This clearing permit application was submitted, accepted, assessed and determined in accordance with sections 51E and 51O of the *Environmental Protection Act 1986* (EP Act). The Department of Water and Environmental Regulation (DWER) advertised the application for 21 days and one submission was received. The consideration of the matters raised in the submission is provided in Appendix A.

In making this decision, the Delegated Officer had regard for the site characteristics (Appendix B), relevant datasets (Appendix G.1), the images from the applicant and a habitat survey (Appendix F), the clearing principles set out in Schedule 5 of the EP Act (Appendix C), relevant planning instruments and any other matters considered relevant to the assessment (Section 3). The Delegated Officer also took into consideration that the purpose of the clearing is to improve community safety and reduce the likelihood and/or severity of crashes by improving road width to accommodate traffic volumes, increase sightlines/driver visibility, remove risks from falling branches and trees being in close proximity to the road (Shire of York, 2022a; 2023b).

The assessment identified that the proposed clearing will result in:

- the loss of native vegetation that is suitable habitat for *Zanda latirostris* (Carnaby's black cockatoo), *Zanda baudinii* (Baudin's black cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo) (collectively known as black cockatoos);
- loss of six native trees which contain hollows suitable for black cockatoos;
- loss of six native trees within Zone A, *Country Areas Water Supply Act 1947* (CAWS Act) catchment, which would have a significant residual impact on the salinity risk; and
- the potential introduction and spread of weeds and dieback into adjacent vegetation, which could impact on the quality of the adjacent vegetation and its habitat values.

After consideration of the available information, as well as the applicant's minimisation and mitigation measures (see Section 3.1), the Delegated Officer determined that some of the impacts of the proposed clearing, including the potential to facilitate the introduction of weeds and dieback, can be minimised and managed to unlikely lead to an unacceptable risk to environmental values through permit conditioning. However, impacts to habitat for black cockatoos and Zone A CAWS Act catchment remained significant even after the application of minimisation and mitigation measures and constituted a significant residual impact.

The Delegated Officer determined that the following measures was sufficient to counterbalance the significant residual impacts of the proposed clearing (see Section 4).

- the installation of 30 artificial hollows within Wandoo National Park, in consultation with the Department of Biodiversity, Conservation and Attractions (DBCA), to offset the loss of ten hollows suitable for black cockatoo breeding (Figure 3).
- the revegetation of 0.12 hectares at a density of four stems per square metre, within the 1.047 hectares of land on Unnamed road reserve (PINs 11429958 and 11429960), as salinity mitigation requirements to offset the loss of six native trees within a catchment controlled under the CAWS Act (Figure 4). The revegetation is to include 11 native trees suitable for black cockatoo foraging, including wandoo and jarrah, to offset the loss of six native trees suitable for black cockatoo foraging habitat.
- Unnamed road reserve (PINs 11429958 and 11429960) will be rezoned from the purpose of a road to conservation within 24 months of clearing (Figure 4).

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

- Avoid and minimise to reduce the impacts and extent of clearing.
- Installation of 30 artificial hollows in Wandoo National Park, in consultation with DBCA, to offset the significant residual impact of clearing six native trees containing ten hollows suitable for black cockatoos.
- Planting of 11 trees suitable for black cockatoo foraging, consisting of *Eucalyptus wandoo* (wandoo) and *Eucalyptus marginata* (jarrah), to balance the significant residual impact from the loss of six native trees suitable for black cockatoo foraging habitat.
- A salinity mitigation offset of 0.12 hectares of revegetation at a density of four stems per square metre within a Zone A CAWS Act catchment.
- Conserve the offset area in perpetuity, within 24 months of the clearing taking place.
- Weeds and dieback management measures as specified in the clearing permit for clearing and revegetation.



1.5. Site map

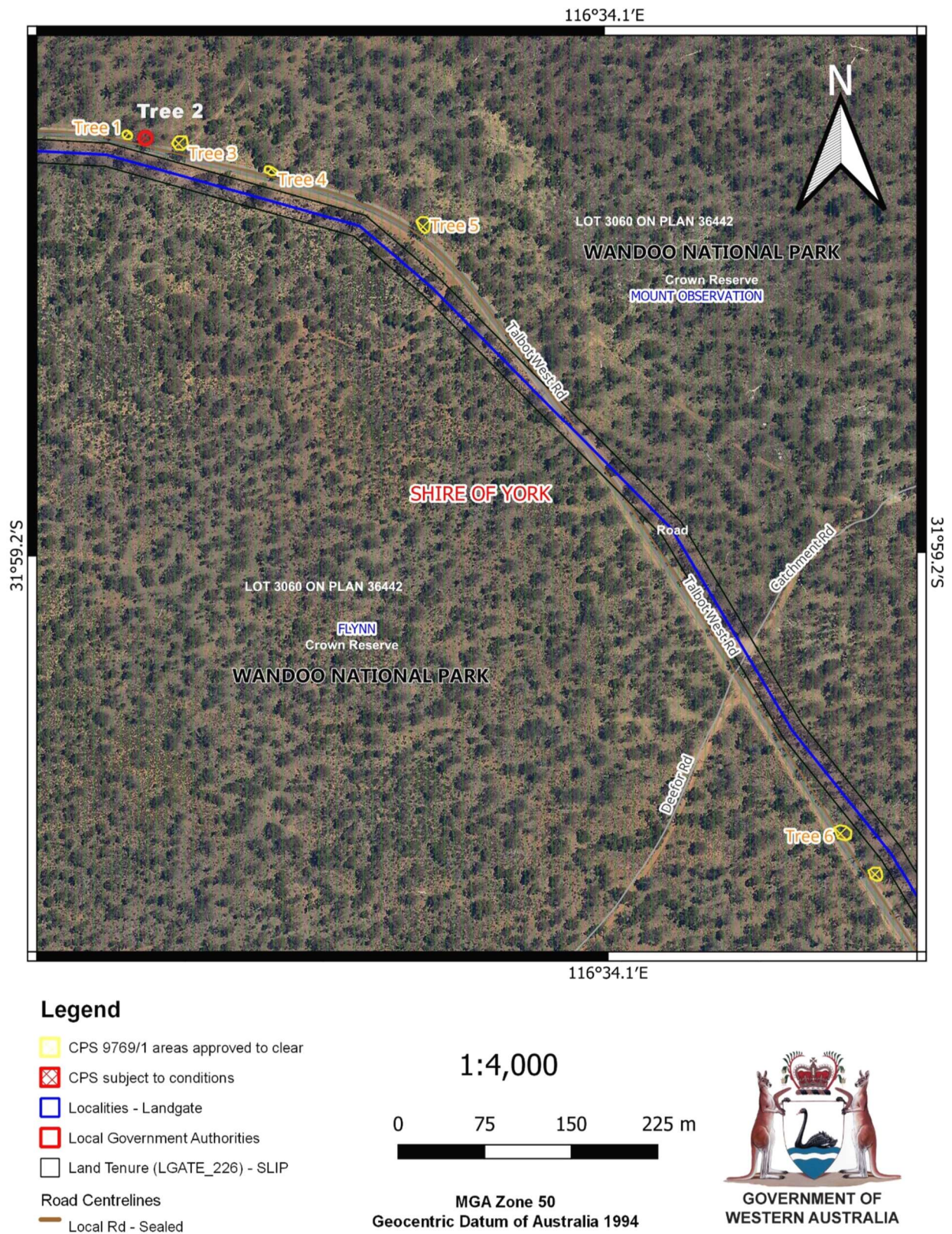


Figure 1: Map of the application area CPS 9769/1. The areas crosshatched yellow indicates the areas authorised to be cleared under the granted clearing permit. The area crosshatched red indicates the area not authorised to be cleared.



# Clearing Permit Decision Report

## 2 Legislative context

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

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

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

Other legislation of relevance for this assessment include:

- *Biodiversity Conservation Act 2016* (WA) (BC Act).
- *Country Areas Water Supply Act 1947* (CAWS Act)
- *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act)
- *Rights in Water and Irrigation Act 1914* (RIWI Act)

The key guidance documents which inform this assessment are:

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

## 3 Detailed assessment of application

### 3.1. Avoidance and mitigation measures

Evidence was submitted by the Shire, demonstrating that avoidance and mitigation measures have been taken (Shire of York, 2022).

#### Avoidance

- The road reserve has been purposefully surveyed by both the Shire and Main Road WA in order to determine the minimum clearing requirements, whilst ensuring public safety. As far as practicable, roadside vegetation has been retained.
- It was identified that the proximity of the trees to the road surface increase both the likelihood and severity of potential vehicular impacts. Clearing of the road shoulder has been considered a critical aspect to key safety upgrades along Talbot West Rd.
- As the final outcome of the project is to implement audible edge line marking and centre line marking and the fact that the presence of such line marking may exacerbate the risk of tree impacts, as drivers will avoid crossing the centre line, bringing them closer to the trees, the removal of the selected trees is of utmost importance to ensure driver safety.
- The Shire of York along with Main Roads WA discussed in depth any alternative mitigations which would avoid tree removal, but it was determined that adding road barriers may deter drivers away from the edges and further towards the centreline. Placing barriers in front of the trees creates an additional hazard that is closer to the road surface. Main Roads WA have indicated that all safety hazards will need to be addressed for line marking to proceed.
- The Shire received independent advice from DBCA on 14 March 2022, which advised to remove Tree 2 (31° 58' 57.98" S, 116° 33' 49.74" E) from the application as it contains one medium and three small hollows (DBCA, 2022). As a result, the Shire removed this tree from the clearing application (Figure 2).
- It is proposed to only remove the trees that are presenting a significant safety risk, thus limiting the amount of clearing.



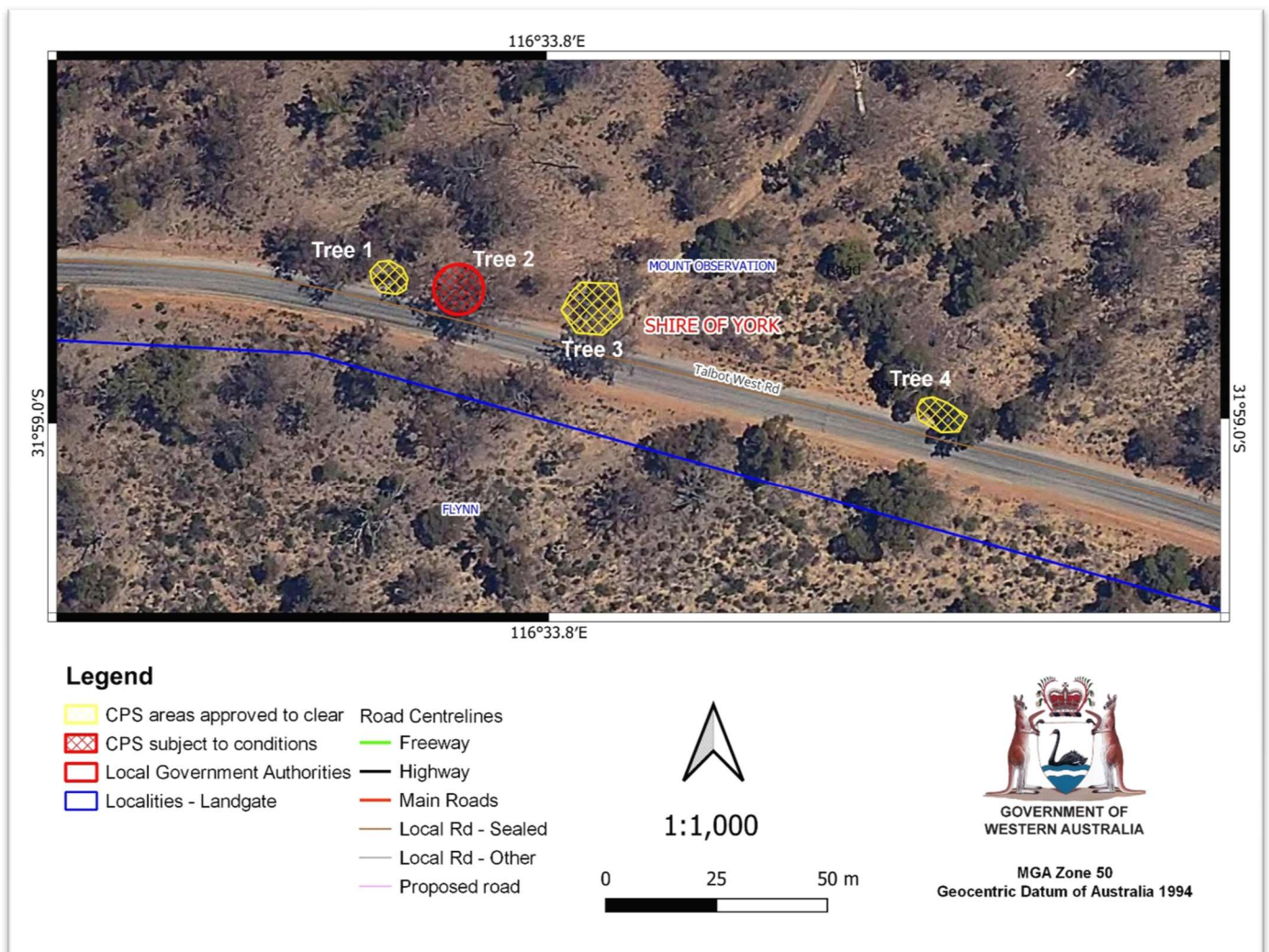


Figure 2: Map of location of 'Tree 2' (31° 58' 57.98" S, 116° 33' 49.74" E) which the Shire of York avoided, due to DBCA advice received prior to DWER assessment, advising of critical black cockatoo habitat of hollows within this tree. The areas crosshatched yellow indicate the areas authorised to be cleared and area crosshatched red indicates the area not authorised to be cleared under the granted clearing permit CPS 9769/1.

**Mitigation**

To avoid any direct or indirect impacts to other vegetation within or adjacent to these trees, the applicant has committed to the following mitigation measures:

- Prior to clearing commencing, the trees will be clearly demarcated with flagging tape;
- No vehicular access or parking within vegetated areas in the reserve; and
- No stockpiling of cleared vegetation or storage of equipment within the reserve.

After DWER requested further avoidance and mitigations measures to be considered, the Shire responded with the following measures (Shire of York, 2023a:2023b):

- A black cockatoo habitat assessment was undertaken in response to DWER's request for further information. This assessment identified the environmental values of the area proposed to be cleared (Del Botanics, 2022).
- The Shire will commit to the installation of 30 artificial hollows to offset the removal of a total of ten hollows suitable for black cockatoos.
- In consultation with DBCA, the artificial hollows have been approved to be installed within the Wandoo National Park, directly adjacent to the application area (Section 4: Figure 3).
- The Shire will commit to planting a minimum of 0.12 hectares of vegetation at a density of four stems per metre squared as recommended by DWER (Section 4: Figure 4).
- The Shire has committed to creating an offset for the trees proposed for removal. As stated above, they will work closely with DWER and DBCA to ensure that a suitable outcome is achieved which will satisfy the requirements set out in the permit.



- The Shire is committed to engaging a suitable subject matter expert to inspect all trees nominated for removal, prior to removal, to confirm and provide evidence that there will not be any hollows in use at the time leading up to the tree removal. The inspections and removal will be scheduled to take place outside of Carnaby's black cockatoo breeding seasons. Should a hollow be in use at the time, the tree will not be removed, and the Shire will wait for the occupants to leave prior to removal.

The Delegated Officer was satisfied that the applicant has made a reasonable effort to avoid and minimise potential impacts of the proposed clearing on environmental values.

### 3.2. Assessment of impacts on environmental values

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

The assessment against the clearing principles (Appendix C) identified that the impacts of the proposed clearing present a risk to fauna, potential for land degradation and conservation areas. The consideration of these impacts, and the extent to which they can be managed through conditions applied in line with sections 51H and 51I of the EP Act, is set out below.

#### 3.2.1. Biological values (fauna) - Clearing Principle (b)

##### Assessment

Within the local area (10 kilometre radius of the application area), five conservation significant fauna species have been recorded. As the clearing application is for the removal of tree habitat, it is only likely for the proposed clearing to impact the arboreal species recorded in the local area, which are the black cockatoos. The tree species proposed to be cleared include four *Eucalyptus wandoo* (one was reported as illegally cleared during the assessment of the application) and two *Eucalyptus marginata* (jarrah) (Del Botanics, 2022). These trees are likely to provide habitat for *Zanda latirostris* (Carnaby's black cockatoo), *Zanda baudinii* (Baudin's black cockatoo) and *Calyptorhynchus banksii naso* (forest red-tailed black cockatoo), which are listed as endangered and/or vulnerable under the BC Act and the Commonwealth EPBC Act. It must be noted that *Calyptorhynchus sp.* (white-tailed black cockatoo) have been recorded in the local area. These records were obtained when the data collector could not definitively distinguish if they spotted a Carnaby's or Baudin's black cockatoo, therefore the white-tailed black cockatoo category was created to incorporate these records.

##### **Black Cockatoo species**

According to available mapping, the application area is located within the known breeding area for Carnaby's cockatoos, within the distribution for forest red-tailed black cockatoos and adjacent to the known distribution for Baudin's cockatoo. While habitat requirements for the three species of black cockatoos differ, the requirements in general can be categorised as breeding habitat, foraging habitat and night roosting habitat.

##### Breeding habitat

Suitable breeding habitat for black cockatoos includes trees which either have a suitable nest hollow or are of a suitable diameter at breast height (DBH) to develop a nest hollow (DCCEEW, 2022). The application area is located within an area with known breeding habitat for Carnaby's cockatoo. This species generally occurs in woodland or forest and nests in hollows in live or dead trees of *Eucalyptus salmonophloia* (salmon gum), *Eucalyptus wandoo* (wandoo), *Eucalyptus gomphchelea* (tuart), *Eucalyptus marginata* (jarrah), *Eucalyptus rudis* (flooded gum), *Eucalyptus loxophleba* subsp. *loxophleba* (York gum), *Eucalyptus accedens* (powderbark), *Eucalyptus diversicolor* (karri) and *Corymbia calophylla* (marri) (Del Botanics, 2022). Habitat trees considered potentially suitable for Black Cockatoo breeding have a DBH greater than 500 millimetres (for salmon gum and wandoo, suitable DBH is 300 millimetres) (Del Botanics, 2022).

The black cockatoo habitat assessment completed along Talbot West Road, confirmed that all trees proposed to be cleared have a DBH greater than 500 millimetres and contain hollows, with four of the trees currently containing hollows a suitable size for black cockatoo breeding (Appendix F: Tables 1 -3) (Del Botanics, 2022). The habitat assessment placed hollows in three categories: large – greater than 20 centimetres; medium – between 10 and 20 centimetres; and small – less than 10 centimetres. For this survey range, DWER considers both large and medium hollows to be suitable for black cockatoos. The habitat assessment determined that six medium (between 10 and 20 centimetres) and four large (greater than 20 centimetres) were located in the trees proposed to be cleared. These ten hollows were deemed suitable for black cockatoo breeding.

##### Foraging habitat

Foraging habitat differs between the three species of black cockatoos:

- Baudin's cockatoo - Mostly marri (seeds, flowers, nectar and grubs) and proteaceous trees and shrubs. Also other native seeds and introduced fruits; insects and insect larvae; pith of *Anigozanthos flavidus* (kangaroo paw); juice of ripe persimmons; tips of *Pinus* spp. and seeds of apples and pears.
- Carnaby's cockatoo - Seeds, flowers and nectar of native proteaceous plant species (for example, *Banksia* spp., *Hakea* spp., and *Grevillea* spp.), eucalypts and *Callistemon*. Also seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds and pecan nuts; insects and insect larvae; occasionally flesh and juice of apples and persimmons.
- Forest red-tailed black cockatoo - Mostly seeds of marri and jarrah, also *Eucalyptus caesia*, *E. erythrocorys* and some introduced eucalypts such as *E. camaldulensis* (river red gum) and *E. grandis* (flooded gum), *Allocasuarina* cones, fruits of *Persoonia longifolia* (snottygobble) and *Corymbia haematoxylon* (mountain marri).

The black cockatoo habitat assessment undertaken (Del Botanic, 2022) noted the species proposed to be cleared include wandoo and jarrah. Noting the above listed foraging preferences of black cockatoo species, the application area may provide foraging habitat for Carnaby's and forest red-tailed black cockatoo. The application area is also located within the mapped black cockatoo feeding distribution.

#### Night Roost sites

Black cockatoo night roosts are usually located in the tallest trees of an area, and in close proximity to both a food supply and surface water (DCCEEW, 2022). Jarrah and wandoo, the species proposed to be cleared, are known night roosting species for one or more of the three black cockatoo species (DCCEEW, 2022). Given the fact that the trees proposed to be cleared are mature trees (DBH greater than 500 millimetres) (Del Botanic, 2022), they are likely to provide night roosting habitat for black cockatoos now or into the future.

#### Ecological linkage

The application area may function as an ecological linkage for fauna moving between larger remnants of native vegetation within the local area. However the ecological linkage values will not likely be severed by the proposed clearing, noting native vegetation will remain within the road reserve and the presence of the adjacent conservation reserve.

#### Conclusion

Based on the above assessment, the application area is likely to provide significant habitat for black cockatoos. For the reasons set out above, it is considered that the impacts of the proposed clearing to significant habitat for Carnaby's cockatoo constitutes a significant residual impact. In accordance with the Government of Western Australia's Environmental Offsets Policy (2011) and Environmental Offsets Guidelines (2014), this significant residual impact has been addressed through the conditioning of environmental offset requirements, as outlined under Section 4.

#### Conditions

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

- Avoidance and minimisations measures.
- Provision of an offset (see Section 4) for the significant residual impacts of the loss of ten hollows suitable for black cockatoos and the loss of six native trees suitable for black cockatoo foraging habitat.
- Pre-clearance - A fauna specialist to be present to monitor clearing and to take steps as specified in the permit conditions if black cockatoo species are present at the time of the clearing.

### **3.2.2. Environmental values (land degradation) - Clearing Principles (g and j)**

#### Assessment

According to available databases, the application area is located within the Mundaring Weir Catchment Area which is within: a priority one (P1) Public Drinking Water Source Area (PDWSA); the Mundaring Weir Surface Water Area proclaimed under the RIWI Act (UFI – 43); and a Zone A clearing control catchment area for the prevention of salinisation of water resources. The area is approximately 25-30 kilometres east of this dam's Reservoir protection zone (RPZ). The management priority for P1 areas is primarily in place for risk avoidance (DWER, 2022b). Advice was received from DWER Water Source Protection Branch (WSPP), that clearing within the catchment is subject to the CAWS Act conditions.

#### Conclusion

Due to the potential significant impact clearing may have on the increased risk of salinity within this catchment, through guidance from the CAWS Act and WSPP, a salinity mitigation offset is required when granting this clearing (DWER, 2022b). Further details on suitability of offsets can be found in Section 4.



DWER do not foresee any issues providing the implementation of the salinity offset outlined in the clearing permit and best management practice guidance is applied for all stages of the clearing and end use. Further details can be found in Section 3.2.5.

#### Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Provision of an offset (Section 4) for clearing within a Zone A clearing control catchment area.

### **3.2.3. Environmental values (conservation area) - Clearing Principle (h)**

#### Assessment

According to available databases, the trees proposed to be cleared occur adjacent to the environmental conservation reserve, Wandoo National Park (R 47883). As a result, the application area is a part of an ecological linkage where the trees proposed to be cleared may aid in facilitating the movement of fauna into this local conservation area and along the road reserve. Given that several mature trees will be retained amongst the trees proposed to be cleared and that the environmental conservation reserve is directly adjacent to the application area, it is not likely that the clearing will significantly alter vegetation connectivity in the local area or sever connectivity between areas of suitable habitat and the local conservation area.

The proposed clearing may impact on the environmental values of local conservation area by facilitating the spread of weeds and dieback, particularly to DBCA managed land adjacent to the application area.

#### Conclusion

The proposed clearing is not likely to impact on dispersal through any adjacent or nearby conservation area. A weed and dieback management condition will minimise impacts to the adjacent conservation reserve.

#### Conditions

To address the above impacts, the following management measure will be required as a condition on the clearing permit:

- Weeds and dieback management measures as specified in the clearing permit.

### **3.2.4. Relevant planning instruments and other matters**

The application area is located within the Mundaring Weir Surface Water Area - UFI 43 and Mundaring Weir Catchment Area, both proclaimed under the RIWI Act. As no watercourses are present within the application area, a RIWI licence or permit is not required (DWER, 2022a).

The proposed clearing is located within the Mundaring Weir Catchment which is a 'Zone A - very high salinity risk' catchment. It is controlled under the CAWS Act. In Zone A catchments, DWER Policy and Guidelines for the "Granting of Licences to Clear Indigenous Vegetation" provide for clearing licences to be granted for Government works, subject to an equivalent area within Zone A of the catchment being revegetated to prevent further land degradation through salinity intrusion. Further details of the offset conditions to balance the significant residual impacts for clearing within this catchment can be found within Section 4 and Appendix E.

The application area is located within the gazetted priority one (P1) PDWSA (UFI – 271) outlined within the Mundaring Weir Catchment Area drinking water source protection plan, June 2007 (DOW, 2007). The construction of roads are compatible with conditions in P1 PDWSAs in DWER's [WQPN 25: Landuse compatibility in PDWSAs](#), with Condition 37 applicable. This condition is about not using recycled road base in P1 areas and recycled drainage rock in PDWSAs, which may be applicable when widening the road or constructing a road shoulder. Other applicable guidance documents include [WQPN 44: Roads near sensitive water resources](#) (DOW, 2006) and [WQPN 10: Contaminant spills - emergency response](#) (DWER, 2010). It is the Shire's responsibility to comply with the WQPN's to minimise impacts to the PDWSA.

On the 26 July 2022, the Shire notified DWER that one of the trees proposed to be cleared had been illegally cleared overnight (-31.988173, 116.570148) (Appendix F: Figure 10; Shire of York, 2022d). The DWER investigated the matter and issued a letter of warning to the Shire. The advised DWER that the tree that was cleared is required to be maintained as a part of the road upgrades. The tree has remained within the application and DWER has assessed the impact on the pre-clearing values.

The application area is located within the boundaries of the Ballardong People Indigenous Land Use Agreement (WI2017/012). No Aboriginal Heritage Places have been mapped within the application area.

There are several Aboriginal Heritage Places within the local area (10 kilometre radius from the centre of the area proposed to be cleared) with the closest being the Helena River (Place ID - 3758) Ceremonial, Mythological, Repository / Cache (approximately 300 metres east of the application area). It is the permit holder's responsibility to comply with the *Aboriginal Heritage Act 1972 (WA)* and ensure that no Aboriginal Sites of Significance are damaged through the clearing process.

#### 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:

- six native trees that provide significant black cockatoo foraging habitat;
- six potential black cockatoo breeding trees containing ten hollows suitable for black cockatoos;
- salinity risk from clearing six native trees within a catchment controlled area under the CAWS Act.

To balance these significant residual impacts, the applicant has proposed the following environmental offsets, which have been conditioned on the clearing permit:

- the installation of 30 artificial hollows within Wandoo National Park, in consultation with DBCA, to offset the loss of ten hollows suitable for black cockatoo breeding (Figure 3).
- the revegetation of 0.12 hectares at a density of four stems per square metre, within the 1.047 hectares of land on Unnamed road reserve (PINs 11429958 and 11429960), as salinity mitigation requirements to offset the loss of six native trees within a catchment controlled under the CAWS Act (Figure 4). Within the 0.12 hectare area, plant 11 native trees suitable for black cockatoo foraging, including wandoo and jarrah, to offset the loss of six native trees suitable for black cockatoo foraging
- Unnamed road reserve (PINs 11429958 and 11429960) will be rezoned from the purpose of a road to conservation within 24 months of clearing (Figure 4).

The DBCA has provided the below species list for revegetation within Unnamed road reserve (PINs 11429958 and 11429960).

- *Eucalyptus wandoo* (wandoo – nesting /roosting)
- *Allocasuarina campestris* (common tammar) - foraging
- *Banksia sessilis* (parrot Bush) – foraging
- *Banksia squarrosa* (pingle) – foraging
- *Grevillea bipinnatifida* (fuchsia grevillea) – foraging
- *Hakea lissocarpa* (honeybush) – foraging
- *Hakea undulata* (wavy leafed hakea) – foraging
- *Hakea trifurcate* (two leafed hakea) – foraging

In assessing whether the proposed offset is adequately proportionate to the significance of the habitat values being impacted, DWER undertook a calculation using the WA Environmental Offsets Metric. The calculation determined that the revegetation and conservation in perpetuity of at least 0.12 hectares of native vegetation that provides 11 trees of suitable foraging habitat for black cockatoo and provides 30 artificial hollows for black cockatoos is adequate to counterbalance the significant residual impacts.

The Delegated Officer considers that the proposed offset is consistent with the Environmental Offsets Policy (2011) and the Environmental Offsets Guidelines (2014), and adequately counterbalances the significant residual impacts to Carnaby's cockatoo foraging and breeding habitat and clearing within a Zone A control catchment area. The justification for the values used in the offset calculation is provided in Appendix E.

The Unnamed road reserve (PIN 11429958 and 11429960) that will be rezoned from the purpose of 'road' to 'conservation' within 24 months of the clearing associated with CPS 9769/1, includes an area of approximately 1.047 hectares of land. Once this land has been secured in perpetuity, the remaining balance of the property (approximately 0.927 hectares) may be used as a banked offset for other projects.



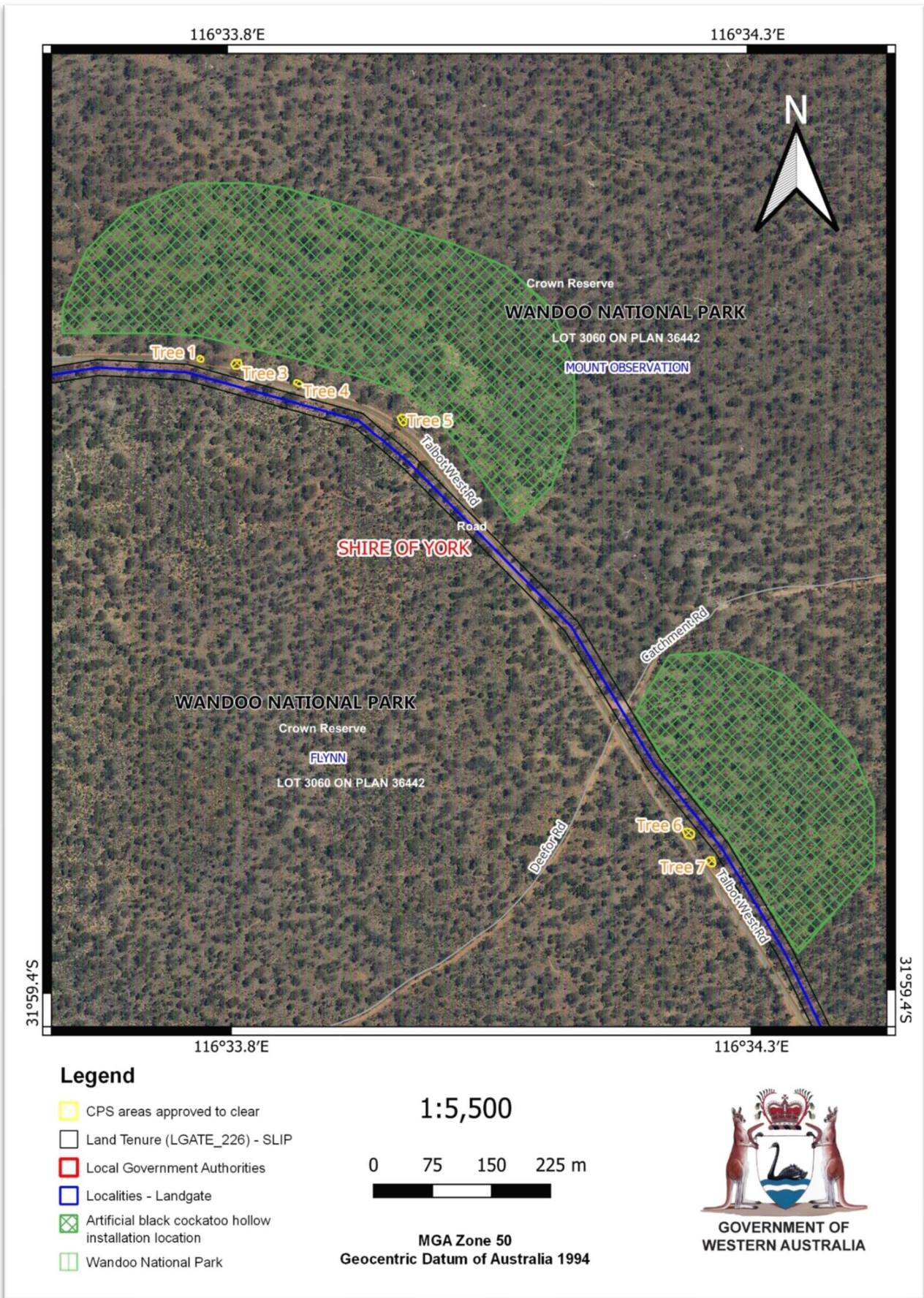


Figure 3: Crosshatched green area indicates the approved artificial hollow installation area for black cockatoo breeding habitat offset within Wandoo National Park (R 47883).



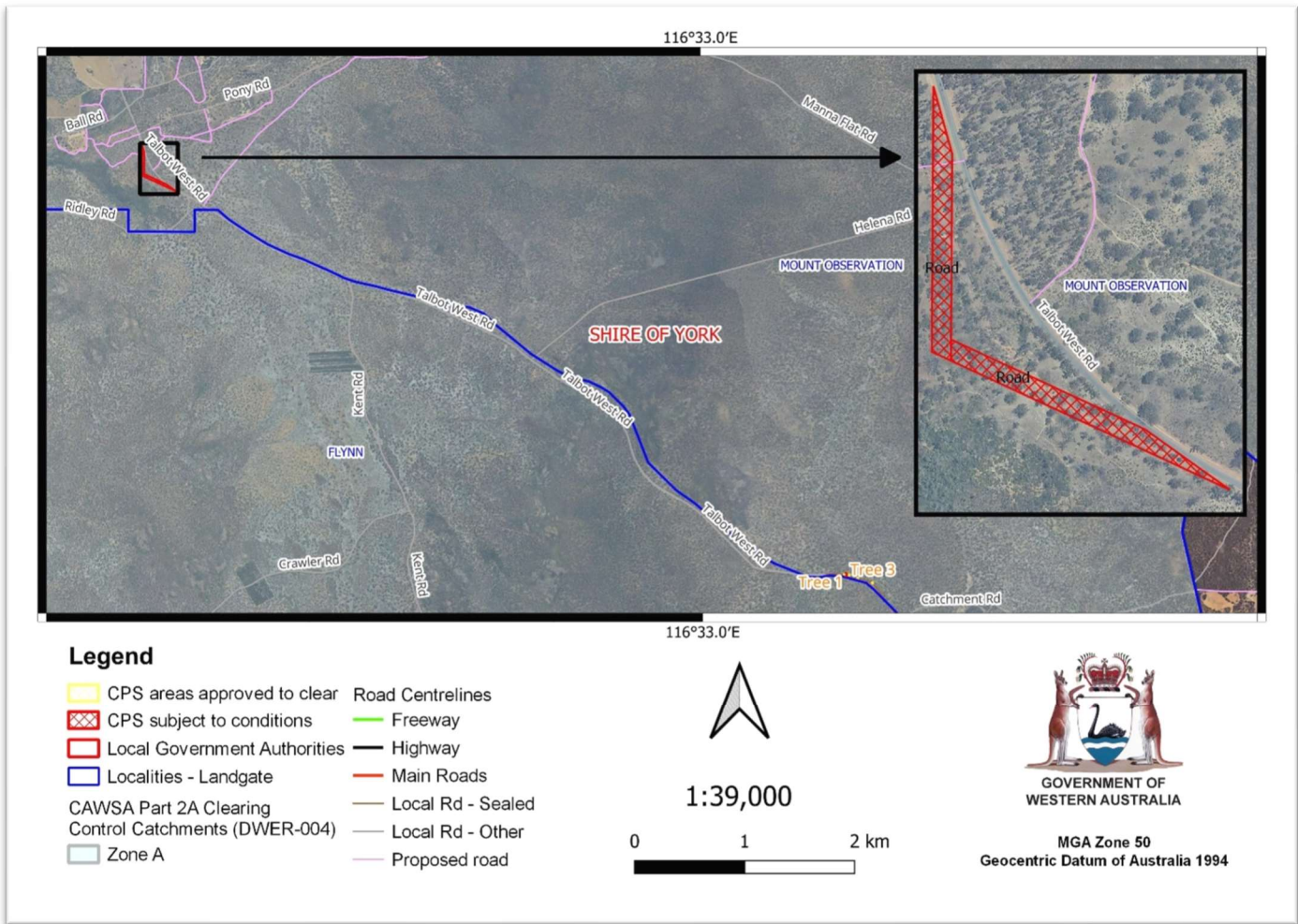


Figure 4: Crosshatched red area indicates the approved offset area for CAWS Act salinity mitigation and black cockatoo foraging habitat offset. Located within a current road reserve (PIN 11429958 and 11429960), this area will be rezoned to a purpose of conservation within 24 months of the clearing being granted.

**End**



## Appendix A. Details of public submission

Summary of comments	Consideration of comment
Talbot West Road hardly has any traffic on it, particularly the portion where the six trees in question are.	The Delegated Officer has relied on the expert advice of the Shire and Main Roads in purposefully surveying the stretch of Talbot West Road and identifying the location as a priority safety project for audible line marking and upgrades.
Every time I have travelled that road, I have come across big four-wheel drives with trailers full of motorbikes clearly intended on illegal activity. This is a big issue on West Talbot Road. Facilitating that illegal trail biking is stupid.	The Delegated Officer notes your concerns. However, these issues are outside of the scope of the assessment of this clearing application.
The public submission questioned where the removal of these trees is in fact an act of road hazard reduction. The trees as a cause of accidents was questioned, as there will still be trees remaining along the roadside post clearing.	The Delegated Officer relies on the expert advice of the Shire and Main Roads in purposefully surveying the stretch of Talbot West Road in order to determine the minimum clearing requirements, whilst ensuring public safety. As far as practicable, roadside vegetation has been retained. It has been identified that the close proximity to the expanded road surface will increase both the likelihood and severity of potential vehicular impacts. Clearing of the road shoulder has been considered a critical aspect to key safety upgrades along Talbot West Road. Main Roads WA have indicated that all safety hazards will need to be addressed for audible line marking to proceed.
Every single tree matters.	Both DWER and the Shire have sought advice from DBCA and other relevant branches within DWER to adequately assess, mitigate and offset the removal of the critical habitat and environmental value these trees were assessed to have. These issues are outlined in Section 3 of this report.  Detailed in Section 4 and Appendix E of this report, are the Offset conditions which will be included in the Permit to reduce the significant residual impact.
Public submissions are not very important in the rubberstamping process.	The Delegated Officer assesses and determines an outcome for clearing applications in accordance with sections 51E and 51O of the EP Act. The Delegated Officer considers all public submissions received during the advertisement period and addresses all issues raised in the decision report.

## 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.

### B.1. Site characteristics

Characteristic	Details
Local context	The native vegetation, comprised of six native trees proposed to be cleared, is located along a road reserve surrounded by an environmental conservation reserve in Western Australia.  Aerial imagery and Spatial data indicate the local area (10 kilometre radius from the centre of the area proposed to be cleared) retains approximately 78.1 percent of the original remnant vegetation cover.
Ecological linkage	Talbot West Road was surveyed as a roadside conservation – road centreline (DBCA-030) area in April 1997, as weeds were identified.

Characteristic	Details																		
	The area proposed to be cleared contributes to an ecological linkage along the roadside and with the adjacent conservation reserve.																		
Conservation areas	The application area is located along the perimeter of the Wandoo National Park (R 47883). The Wandoo National Park covers approximately 60 percent of the local area (10 kilometre radius of the centre of the application area).																		
Vegetation description	<p>The black cockatoo habitat assessment undertaken along Talbot West Road, identified the trees proposed to be cleared as four <i>Eucalyptus wandoo</i> (wandoo) and two <i>Eucalyptus marginata</i> (jarrah) (Del Botanics, 2022). Representative photos and survey descriptions are available in Appendix F.</p> <p>Available databases indicated that the application area is located within the Jarrah Forest IBRA region, the Southwest Sub-region of the Darling Plateau and has a vegetation complex of Yalanbee, Y6, described as a Woodland of <i>Eucalyptus wandoo-Eucalyptus accedens</i>, less consistently open forest of <i>Eucalyptus marginata</i> subsp. <i>thalassica-Corymbia calophylla</i> on lateritic uplands and breakaway landscapes in arid and perarid zones. The application area represents this complex.</p> <p>Yalanbee, Y6, vegetation type retains approximately 46.54 per cent of the original extent (Government of Western Australia, 2019).</p>																		
Vegetation condition	<p>A survey of the application area has assessed the trees proposed to be cleared to be in Good to Very Good condition, with one assessed as dead (Del Botanics, 2022). The tree condition rating scale used is outlined in the table below:</p> <table border="1"> <thead> <tr> <th>Tree Health</th> <th>Information</th> </tr> </thead> <tbody> <tr> <td>Very Good</td> <td>Tree overall health is excellent</td> </tr> <tr> <td>Good</td> <td>Tree presents minor signs of stress</td> </tr> <tr> <td>Degraded/Stressed</td> <td>Tree has some markers of its health deteriorating</td> </tr> <tr> <td>Dead</td> <td>Tree has no alive branches</td> </tr> </tbody> </table> <p>Based on the photographs provided by the Shire and Del Botanics survey (Appendix D) (Del Botanics, 2022) the vegetation condition of the application area appears to be Degraded to Completely Degraded condition according to the Keighery scale (Appendix D) (Keighery, 1994).</p>	Tree Health	Information	Very Good	Tree overall health is excellent	Good	Tree presents minor signs of stress	Degraded/Stressed	Tree has some markers of its health deteriorating	Dead	Tree has no alive branches								
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Very Good	Tree overall health is excellent																		
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Degraded/Stressed	Tree has some markers of its health deteriorating																		
Dead	Tree has no alive branches																		
Climate	York has an annual average rainfall of approximately 406 millimetres, with the wettest month being July (70.5 millimetres), and the driest month February (12.4 millimetres) (BOM 2023).																		
Soil description	The application area is located within the Boyagin System - Yalanbee Subsystem - 253ByYA - Undulating, Darling Range upland. This is described as pisolitic gravelly, yellowish-brown soils that vary from loamy sands to clays, with pockets of pale sands and rock. <i>Eucalyptus marginata</i> and <i>Corymbia calophylla</i> and <i>Banksia</i> on sand, <i>E. wandoo</i> clays and <i>E. accedens</i> on crests. (Schoknecht, <i>et al.</i> 2004).																		
Land degradation risk	<table border="1"> <thead> <tr> <th>Risk categories</th> <th>Application Area - Yalanbee Subsystem - 253ByYA</th> </tr> </thead> <tbody> <tr> <td>Wind erosion</td> <td>H2: &gt;70% of map unit has a high to extreme wind erosion risk</td> </tr> <tr> <td>Water erosion</td> <td>L1: &lt;3% of map unit has a high to extreme water erosion risk</td> </tr> <tr> <td>Water logging</td> <td>L1: &lt;3% of map unit has a moderate to very high waterlogging risk</td> </tr> <tr> <td>Water Repellence</td> <td>L2: 3-10% of map unit has a high water repellence risk</td> </tr> <tr> <td>Sub-surface Acidification</td> <td>H2: &gt;70% of map unit has a high subsurface acidification risk or is presently acid</td> </tr> <tr> <td>Phosphorous export</td> <td>M1: 10-30% of map unit has a high to extreme phosphorus export risk</td> </tr> <tr> <td>Salinity</td> <td>L1: 30-50% of map unit has a moderate to high salinity risk or is presently saline</td> </tr> <tr> <td>Flooding</td> <td>L1: &lt;3% of the map unit has a moderate to high flood risk</td> </tr> </tbody> </table>	Risk categories	Application Area - Yalanbee Subsystem - 253ByYA	Wind erosion	H2: >70% of map unit has a high to extreme wind erosion risk	Water erosion	L1: <3% of map unit has a high to extreme water erosion risk	Water logging	L1: <3% of map unit has a moderate to very high waterlogging risk	Water Repellence	L2: 3-10% of map unit has a high water repellence risk	Sub-surface Acidification	H2: >70% of map unit has a high subsurface acidification risk or is presently acid	Phosphorous export	M1: 10-30% of map unit has a high to extreme phosphorus export risk	Salinity	L1: 30-50% of map unit has a moderate to high salinity risk or is presently saline	Flooding	L1: <3% of the map unit has a moderate to high flood risk
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Flooding	L1: <3% of the map unit has a moderate to high flood risk																		



Characteristic	Details
Waterbodies	<p>No wetlands or waterways are mapped as occurring within the application area.</p> <p>The nearest waterbody is a natural, non-perennial, unnamed swamp wetland, that is a part of the wider Helena River system, located approximately 340 metres east of the application area.</p> <p>Several natural, minor, nonperennial, river tributaries of the Helena River are located around the application area. The two closest tributaries are located approximately 110 metres north of 'Tree 6' within the current application and the other approximately 179 metres to the northwest of the most northern tree proposed to be cleared.</p>
Hydrogeography	<p>The application area is in the Eastern Darling Range Hydrological Zone - Groundwater discharge may occur in drainage lines and on valley floors in cleared catchments within the hydrozone (George and Bennett, 1998). Discharge associated with dolerite dykes is the dominant discharge process in mid- to upper-slope landscape positions. Mainly low-yielding saprolite aquifers (brackish to saline). Palaeochannels and sandy Eocene aquifers occur in some valleys (fresh to brackish). The application area also lies within the Swan Avon - Lower Swan (UFI 162) in the South West Catchment Division (Division No. 6).</p> <p>The application area is located within the Mundaring Weir Surface Water Area - UFI 43 proclaimed under the RIWI Act, the Mundaring Weir Catchment Protection Area – P1 PDWSA - UFI 271 and also within a CAWS Act controlled catchment.</p> <p>According to available databases, the groundwater salinity ranges from 7000 to 14000 milligrams to litres total dissolved solids which can be described as brackish to saline.</p>
Flora	<p>There are records of 35 conservation significant flora within the local area, 30 Priority listed and five listed on the Threatened species list. The closest record is a Priority 4 species <i>Schoenus natans</i>, recorded approximately 320 metres from the application area.</p> <p>There are no records of conservation significant flora within the application area.</p> <p>The application is for the removal of tree species, with conservation significant flora not likely to be impacted.</p>
Ecological communities	<p>There is one conservation significant ecological community within the local area, the Eucalypt woodlands of the Western Australian Wheatbelt - Wheatbelt Woodlands (P3/CR), which is located approximately 8.78 kilometres southeast of the application area.</p> <p>No significant ecological communities are mapped as occurring within the application area.</p>
Fauna	<p>There are records of six conservation significant fauna species found in the local area.</p> <p>The application area is within the mapped Carnaby's cockatoo and forest red-tailed black cockatoo distribution area, and approximately two kilometres from the mapped Baudin's distribution. Records of Baudin's, Carnaby's and white-tailed black cockatoo have been recorded in the local area.</p> <p>The closest confirmed black cockatoo roost is approximately 11.37 kilometres to the east-south-east of the application area, the closest confirmed forest red-tailed black breeding site is approximately 32.25 kilometres southwest of the proposed clearing and the closest confirmed white-tailed black cockatoo breeding site is approximately 28.30 kilometres south-west of the application area.</p> <p>A detailed fauna table can be found in Appendix B.3.</p>

## B.2. Vegetation extent

	Pre-European extent (ha)	Current extent (ha)	Extent remaining (%)	Current extent in all DBCA managed land (ha)	Current proportion (%) of pre-European extent in all DBCA managed land
<b>IBRA bioregion**</b>					
Jarrah Forest	4,506,660.25	2,399,838.15	53.25	1,673,614.25	37.14
<b>Vegetation complex</b>					
Yalanbee, Y6	197,849.01	92,080.88	46.54	41,703.16	21.08
<b>Remnant vegetation*</b>					
Remnant vegetation mapped within 10 km	31,456	24,570	78.1	-	-

\*Government of Western Australia (2019a)

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

## B.3. Fauna analysis table

Species name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Distance of closest record to application area (km)	Number of known records (total)	Are surveys adequate to identify? [Y, N, N/A]
<i>Calyptorhynchus baudinii</i> (Baudin's cockatoo)	EN	Yes	Yes	1.98	5	Yes
<i>Calyptorhynchus latirostris</i> (Carnaby's cockatoo)	EN	Yes	Yes	4.82	3	Yes
<i>Calyptorhynchus sp. 'white-tailed black cockatoo'</i> (white-tailed black cockatoo)	EN	Yes	Yes	5.03	3	Yes
<i>Falco peregrinus</i> (Peregrine falcon)	OS	No	No	7.72	1	N/A
<i>Leipoa ocellata</i> (malleefowl)	VU	No	No	8.52	3	N/A
<i>Notamacropus irma</i> (western brush wallaby)	P4	No	No	9.19	1	N/A

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

## B.4. Ecological community analysis table

Community name	Conservation status	Suitable habitat features ? [Y/N]	Suitable vegetation type? [Y/N]	Suitable soil type? [Y/N]	Distance of closest record to application area (km)	Are surveys adequate to identify? [Y, N, N/A]
Eucalypt woodlands of the Western Australian Wheatbelt - Wheatbelt Woodlands	Priority 1/CR	N	N	N	8.89	NA

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



## Appendix C. Assessment against the clearing principles

Assessment against the clearing principles	Variance level	Is further consideration required?
<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 area proposed to be cleared is not likely to contain local or regionally significant flora or assemblages of plants. However the application area contains suitable habitat and potential occurrences of conservation significant fauna.</p>	May 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 area proposed to be cleared contains foraging habitat and potential breeding habitat for black cockatoos.</p>	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 area proposed to be cleared is not likely to contain any threatened flora, due to the degraded condition of the area proposed to be cleared. Due to the extent of the clearing, it is not at variance with this principle.</p>	Not 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 vegetation within the application area is in degraded condition and no TECs listed under the BC Act or EPBC Act were recorded within the proposed clearing area.</p>	Not 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 extent of the mapped vegetation type and the native vegetation in the local area is consistent with the national objectives and targets for biodiversity conservation in Australia.</p>	Not 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></p> <p>Given the trees proposed to be cleared are directly adjacent to a conservation reserve, the proposed clearing may have an impact on the environmental values of the adjacent conservation area.</p>	May be at variance	Yes <i>Refer to Section 3.2.3. above.</i>

Assessment against the clearing principles	Variance level	Is further consideration required?
<p><u>Principle (f)</u>: <i>“Native vegetation should not be cleared if it is growing in, or in association with, an environment associated with a watercourse or wetland.”</i></p> <p><u>Assessment</u>:</p> <p>Given no water courses or wetlands are recorded within the application area, and the distance from any waterbody within the local area, the proposed clearing is unlikely to impact an environment associated with a watercourse or wetland.</p>	Not likely to be at variance	No
<p><u>Principle (g)</u>: <i>“Native vegetation should not be cleared if the clearing of the vegetation is likely to cause appreciable land degradation.”</i></p> <p><u>Assessment</u>:</p> <p>The application area is mapped within a very high salinity risk catchment. Noting the location of the application area, the proposed clearing may have an appreciable impact on land degradation.</p>	At variance	Yes <i>Refer to Section 3.2.2. above.</i>
<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>The application area is located within a priority one (P1) Public Drinking Water Sources Area (PDWSA), a surface water area proclaimed under the RIWI Act and a Zone A clearing control catchment area. Proposed clearing may increase the risk of salinisation.</p>	At variance	Yes <i>Refer to Section 3.2.2. above.</i>
<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 at variance	No



## Appendix D. Vegetation condition rating scale

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

Considering its location, the scale below was used to measure the condition of the vegetation proposed to be cleared. This scale has been extracted from Keighery, B.J. (1994) *Bushland Plant Survey: A Guide to Plant Community Survey for the Community*. Wildflower Society of WA (Inc). Nedlands, Western Australia.

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

Condition	Description
Pristine	Pristine or nearly so, no obvious signs of disturbance.
Excellent	Vegetation structure intact, with disturbance affecting individual species; weeds are non-aggressive species.
Very good	Vegetation structure altered, with obvious signs of disturbance. For example, disturbance to vegetation structure caused by repeated fires, the presence of some more aggressive weeds, dieback, logging and/or grazing.
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. Offset Calculation and Justification (WA Environmental Offset Calculator, 2022)

### WA Environmental Offsets Calculator Rationale for scores used in the offset calculator

#### Black cockatoo foraging habitat

Calculation	Score (Area)	Rationale
<b>Conservation significance</b>		
Description	Black cockatoo	Application area contains significant foraging habitat for <i>Zanda latirostris</i> (Carnaby's black cockatoo) and <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
Type of environmental value	Species (Flora/Fauna)	Known foraging habitat for both <i>Zanda latirostris</i> (Carnaby's black cockatoo) and <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
Conservation significance of environmental value	Rare/Threatened Species - endangered	Carnaby's cockatoo is listed as endangered under the BC Act and EPBC Act, so have used the highest conservation ranking.
Landscape level value impacted	Yes/No	Yes
<b>Significant impact</b>		
Description	Foraging habitat	Quality foraging habitat was identified within the application area.
Significant impact (hectares)	Loss of foraging habitat	Trees which are suitable foraging habitat for black cockatoos
Number	6	Six trees proposed to be cleared
<b>Rehabilitation credit</b>		
N/A	N/A	
<b>Offset</b>		
Description	Revegetation of black cockatoo foraging trees	Revegetation of eleven native trees which are species known as black cockatoo foraging habitat.
proposed offset (area in hectares)	N/A	
Current quality of offset site	0	Condition of revegetation site in a degraded to completely degraded (Keighery, 1994) condition with minimal value for black cockatoos
Future quality WITHOUT offset	0	Condition of revegetation site in a degraded to completely degraded (Keighery, 1994) condition with minimal value for black cockatoos. Condition not likely to change without intervention.
Future quality WITH offset	11	It is expected for vegetation to improve to good condition (Keighery, 1994) and provide low to moderate quality foraging habitat in 15 years.
Time until ecological benefit (years)	17	15 years minimum to achieve foraging resource, plus 2 years for revegetation to commence
Confidence in offset result (%)	80	80% confidence due to the purpose of the land in which the revegetation is taking place will be changing from road to conservation within 24 months of the clearing. Known success of planting black cockatoo foraging species.
Duration of offset implementation (maximum 20 years)	N/A	
Time until offset site secured (years)	N/A	



Calculation	Score (Area)	Rationale
Risk of future loss WITHOUT offset (%)	N/A	
Risk of future loss WITH offset (%)	N/A	
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

### **Black cockatoo breeding habitat**

-Calculation	Score (Area)	Rationale
<b>Conservation significance</b>		
Description	Black cockatoo	Application area contains breeding hollows suitable for <i>Zanda latirostris</i> (Carnaby's black cockatoo), <i>Zanda baudinii</i> (Baudin's black cockatoo) and <i>Calyptorhynchus banksii naso</i> (forest red-tailed black cockatoo).
Type of environmental value	Vegetation/habitat	Supporting breeding habitat for all three species of black cockatoos.
Conservation significance of environmental value	Rare/Threatened Species - endangered	Carnaby's and Baudin's cockatoo are listed as endangered under the BC and EPBC Acts, so have used the highest conservation ranking.
Landscape level value impacted	Yes/No	Yes
<b>Significant impact</b>		
Description	Black cockatoo breeding habitat	Available breeding habitat was identified within the application area.
Significant impact (hectares)	Loss of breeding hollows	Removal of trees containing ten hollows suitable for black cockatoos.
Number	10	Six trees proposed to be cleared, containing ten hollows suitable for breeding.
<b>Rehabilitation credit</b>		
N/A	N/A	
<b>Offset</b>		
Description	Artificial hollow installation	30 artificial hollows will be installed within the Wandoo National Park.
proposed offset (area in hectares)	N/A	
Current quality of offset site	0	It is not known whether there are any hollows within the area identified where hollows will be installed.
Future quality WITHOUT offset	0	It is not known whether there are any hollows within the area identified where hollows will be installed.
Future quality WITH offset	30	30 artificial hollows will be installed, monitored and maintained within the Wandoo National Park
Time until ecological benefit (years)	1	Artificial hollows will be installed prior to the next breeding season
Confidence in offset result (%)	80	80% confidence that with an adequate installation and maintenance, the artificial hollows will be successful.
Duration of offset implementation (maximum 20 years)	N/A	

-Calculation	Score (Area)	Rationale
Time until offset site secured (years)	N/A	
Risk of future loss WITHOUT offset (%)	N/A	
Risk of future loss WITH offset (%)	N/A	
Offset ratio (Conservation area only)	N/A	
Landscape level values of offset?	N/A	

#### **Zone A Clearing control area**

The WA Environmental Offsets Calculator was not used in determining an adequate offset for clearing 6 trees within a Zone A clearing control catchment area. Within a Zone A, the manage the impacts of salinity, revegetation is to occur at a ratio of 2:1 (DWER, 2022a). The area of 0.12 hectares was calculated based on each tree being cleared representing 0.01 hectare (i.e. 0.06 hectares in total).



## Appendix F. Biological survey information excerpts and photographs of the vegetation

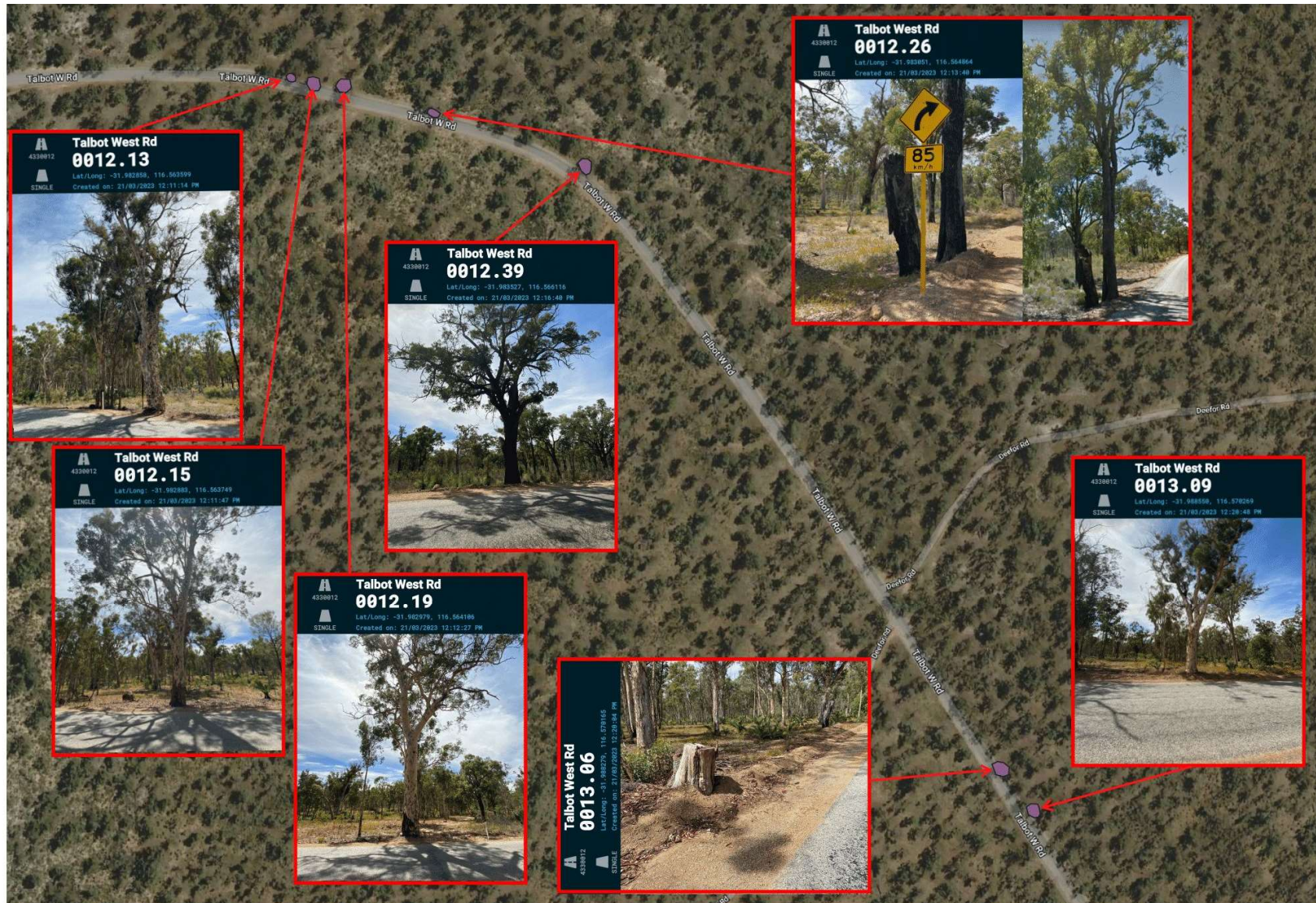


Figure 5: Location maps of trees proposed to be cleared, supplied as supporting evidence with clearing application CPS 9769/1 (Shire of York, 2023c) (note: Tree 6 was illegally cleared during clearing application assessment period (Shire of York, 2022d))





Figure 6: Photographs of Tree 1, supplied as supporting evidence with application CPS 9769/1 (Shire of York, 2022b, 2022c)





Figure 7: Photograph of Tree 2, supplied as supporting evidence with application CPS 9769/1. This tree was removed from the application, through avoidance measures, after advice from DBCA (Shire of York, 2022c)



Figure 8: Photographs of Tree 3, supplied as supporting evidence with application CPS 9769/1 (Shire of York, 2022b, 2022c)



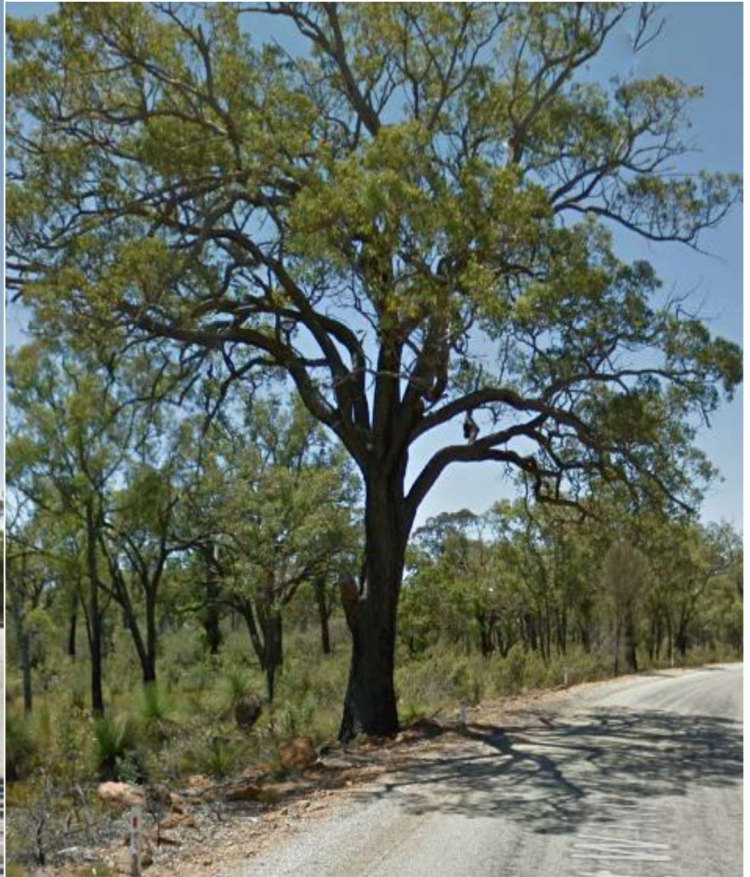


Figure 9: Photograph of Tree 4 and 5, supplied as supporting evidence with application CPS 9769/1 (Shire of York, 2022c)



**A**  
4330012  
**Talbot West Rd**  
**0013.05**  
Lat/Long: -31.988173, 116.570148  
Created on: 22/07/2022 2:08:30 PM  
**SINGLE**



Figure 10: Photographs of tree 6, supplied as supporting evidence with application CPS 9769/, which was illegally cleared during clearing application assessment period. The Shire notified DWER on 25 July 2022 (Shire of York, 2022d).



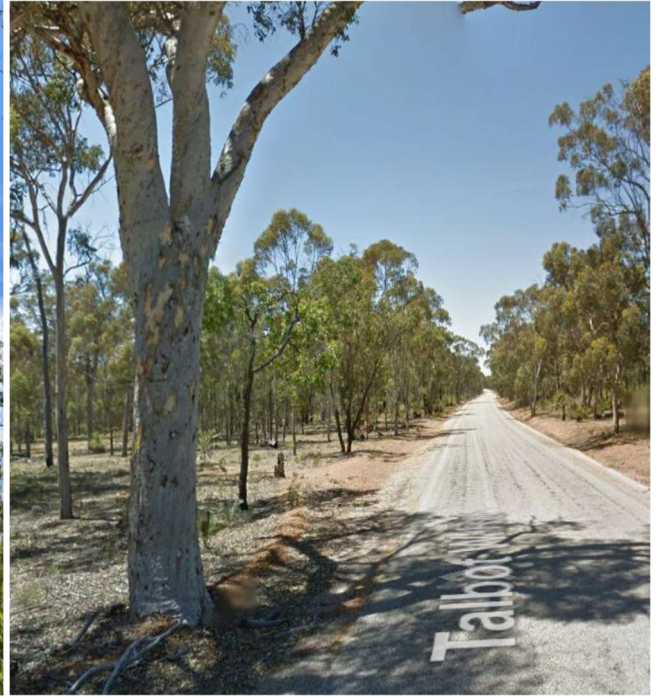


Figure 11: Photographs of Tree 7, supplied as supporting evidence with application CPS 9769/1 (Shire of York, 2022c)

Table 1: extract from Black Cockatoo Habitat Assessment of Talbot West Road, displaying results for Trees 1, 3, 4, 5 and 6, proposed to be cleared in clearing application CPS 9769/1 (Del Botanics, 2022).

Photo	Tree species	Location (Eastings/Northings) WG84 (50)	Health (Very Good, Good, Stressed, Dead)	Approx. height (m)	DBH (mm)	Hollows	Comments
	<i>Eucalyptus wandoo</i> <b>TREE 1</b>	50 J 458764.17 6461399.475	Very Good	30	853.50	1 medium 5 small	na
	<i>Eucalyptus wandoo</i> <b>TREE 2</b> - removed from application	50 J 458792.24 6461390.730	Very Good	30	955.41	1 medium 3 small	na
	<i>Eucalyptus wandoo</i> <b>TREE 3</b>	50 J 458828.27 6461385.958	Very Good	30	1114.65	10 small 3 medium 1 large	na
	<i>Eucalyptus marginata</i> <b>TREE 4</b>	50 J 458829.97 6461396.083	Very Good	30	735.67	na	na
	<i>Eucalyptus marginata</i> <b>TREE 5</b>	50 J 459034.31 6461318.098	Very Good	30	1324.84	1 large	na
	<i>Eucalyptus wandoo</i> <b>TREE 6</b> - illegally cleared	50 J 459295.12 6460936.844	Very Good	25	853.50	na	2 main trunks same size



Table 2: extract from Black Cockatoo Habitat Assessment of Talbot West Road, displaying results for Tree 7, proposed to be cleared in clearing application CPS 9769/1 (Del Botanics, 2022).


Photo	Tree species	Location (Eastings/Northings) WG84 (50)	Health (Very Good, Good, Stressed, Dead)	Approx. height (m)	DBH (mm)	Hollows	Comments
	<i>Eucalyptus wandoo</i>  <b>TREE 7</b>	50 J 459410 6460756	Very Good	25	1091	5 small 2 medium 2 large	na

Table 3: Extract from advice received from DBCA regarding the trees proposed to be cleared in clearing application CPS 9769/1 (DBCA, 2023).

Trees Number Application	Tree Number in Report	Habitat Assessment	Action
1	10	1 medium, 5 small	Remove – Mitigate via an offset
2	11	1 medium, 3 small hollows	Removed from scope at request of DBCA - <b>avoidance</b>
3	12	10 small, 3 medium, 1 large hollow	Remove – Mitigate via an offset
4	13	13	Remove – Mitigate via an offset
5	14	14 – 1 large hollow	Remove – Mitigate via an offset
6	N/A	N/A	N/A
7	16	5 small, 2 medium, 2 large hollows	Remove – Mitigate via an offset

## Appendix G. Sources of information

### G.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)
- Aboriginal Heritage Places (DPLH-001)
- Cadastre (LGATE-218)
- Cadastre Address (LGATE-002)
- DBCA – Lands of Interest (DBCA-012)
- DBCA Legislated Lands and Waters (DBCA-011)
- Directory of Important Wetlands in Australia – Western Australia (DBCA-045)
- Environmentally Sensitive Areas (DWER-046)
- Flood Risk (DPIRD-007)
- Groundwater Salinity Statewide (DWER-026)
- Hydrography – Inland Waters – Waterlines
- Hydrological Zones of Western Australia (DPIRD-069)
- IBRA Vegetation Statistics
- Imagery
- Local Planning Scheme – Zones and Reserves (DPLH-071)
- Native Title (ILUA) (LGATE-067)
- 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)



## G.2. References

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