Black Cockatoo
Habitat Assessment

Proposed Clearing Area
(CPS 9523/1)

Lot 500 (879)
Coronation Road
Waroona

May 2022
V1

On behalf of:
Lovegrove Turf Services

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SUMMARY

This report details the results of a black cockatoo habitat assessment carried out over a section of Lot 500 Coronation Road Waroona (Figure 1).

The Landowner (Lovegrove Investments Pty Ltd) has applied for a permit to clear vegetation from within the lot (CPS 9523/1) for the purpose of creating additional pasture. Upon review the Department of Water and Environmental Regulation (DWER) have advised the Landowner that in order to determine the impacts to conservation significant fauna a black cockatoo habitat tree and foraging habitat assessment is required of the proposed 6 hectare clearing area as depicted on the attached figure (the survey area) (Figure 2).

The fauna assessment detailed in this report seeks to satisfy this requirement.

The daytime field component of the fauna assessment was carried out on the 10 April 2022. All field work was carried out by Greg Harewood (Zoologist) using methods described in the sections below.

Key Findings

The survey area has a total extent of about 6 hectares the majority of which consists of mosaic of remnant and regrowth native vegetation of varying densities and composition including areas of grassland or bare sand.

The western most section of the survey area consists largely of a highly degraded sheoak (*Allocasuarina fraseriana*) low very open woodland with many dead/fallen trees over an open grassland/bare sand. This grades into a slightly better quality sheoak (*A. fraseriana*) low open woodland with occasional scattered *banksia* spp. (*Banksia attenuata* and *B. ilicifolia*) and very occasional emergent jarrah (Eucalyptus marginata). Other trees present in low densities are WA Christmas tree (*Nuytsia floribunda*) and woody pear (*Xylomelum occidentale*).

Sheoak densities decrease eastwards and grades into a spearwood (*Kunzea glabrescens*) tall shrubland with very occasional emergent trees (e.g. jarrah, WA Christmas tree and woody pear). Bordering this area along its northern boundary are a small number of scattered and groves of planted non-endemic eucalypts (Eucalyptus spp.) and flooded gum (Eucalyptus rudis).

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance (e.g. partial clearing, livestock grazing and weed invasion,) with much of the vegetation present (i.e. Kunzea) appearing to be regrowth from historical clearing. The majority of the larger trees present are planted non-endemic species or flooded gum and do not contain any hollows. The remnant native eucalypt trees present (only jarrah recorded) are limited in number and generally small in size. There is almost no native ground cover vegetation present.

The assessment identified 12 trees within the survey area with a DBH of >50cm. Over half (7) appeared to not contain hollows of any size. Five (5) trees contained apparent or obvious hollows, all of which were assessed as being unlikely to be suitable for black cockatoos to

currently use for nesting purposes, due to the hollows apparent small size, unsuitable orientation and/or height above ground level.

Evidence of black cockatoos foraging with the survey area was observed at a small number of locations. The evidence was all in the form of chewed fruits from sheoak and to a lesser extent chewed banksia cones. Given the absence or the limited quantity of favoured foraging species (e.g. marri) the vegetation present cannot be regarded as representing high quality foraging habitat for any of the black cockatoo species known to frequent the general area.

It has been estimated that the survey area contains less than 1 hectare of foraging habitat (based on canopy coverage) though this is possibly an overestimation given that some areas included contain very sparse foraging species with many dead/dying specimens.

No roost sites were identified within the survey area with the closest documented roost site being located about nine kilometres east of the survey area.

Based on available mapping there is about 7,100 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2022). Much of this is likely to contain black cockatoo habitat of some type.

In summary the survey area overall can be regarded as containing relatively low quality black cockatoo habitat, it value being limited by an absence of existing nest hollows, a limited extent of relatively low quality foraging habitat and no apparent roost sites.

1. INTRODUCTION

This report details the results of a black cockatoo habitat assessment carried out over a section of Lot 500 Coronation Road Waroona (Figure 1).

The Landowner (Lovegrove Investments Pty Ltd) has applied for a permit to clear vegetation from within the lot (CPS 9523/1) for the purpose of creating additional pasture. Upon review the Department of Water and Environmental Regulation (DWER) have advised the Landowner that in order to determine the impacts to conservation significant fauna a black cockatoo habitat tree and foraging habitat assessment is required of the proposed 6 hectare clearing area as depicted on the attached figure (the survey area) (Figure 2).

The fauna assessment detailed in this report seeks to satisfy this requirement.

2. SCOPE OF WORKS

The request for additional information from DWER (2022) states:

- A black cockatoo habitat tree assessment and foraging habitat. assessment is required for the area proposed to be cleared

The assessment/survey is to be carried out by a fauna specialist, and the survey is required to identify all trees that have a diameter, measured at 1.5 metres from the base of the tree, of 50 centimetres or greater that contain a hollow or hollows that may be suitable for breeding by Carnaby's cockatoo, Baudin's cockatoo, and forest red-tailed black cockatoo. The survey must document:

- the date(s) of the survey;
- the GPS locations (i.e. eastings and northings or decimal degrees) of all trees identified as containing hollows which may be suitable for black cockatoos;
- the methodology for determining the evidence of use of each hollow; and
- a description/photo of the evidence of use.

An assessment of foraging habitat available over the application area in the local and regional context is also required.

Note: For the purposes of this proposal the term black cockatoo is in reference to Baudin's black cockatoo *Zanda baudinii*, Carnaby's black cockatoo *Zanda latirostris* and the forest red-tailed black cockatoo *Calyptorhynchus banksii naso.*

3. METHODS

3.1 FIELD SURVEYS

The daytime field component of the fauna assessment was carried out on the 10 April 2022. All field work was carried out by Greg Harewood (Zoologist) using methods described in the sections below.

3.1.1 FAUNA HABITAT ASSESSMENT

Vegetation units, landforms and soils observed during the site reconnaissance survey have been used to define broad fauna habitat types across the survey area.

3.1.2 BLACK COCKATOO HABITAT ASSESSMENT

The following methods were employed to comply with the defined scope of works and are based on Commonwealth of Australia (2012) guidelines which state that surveys for Carnaby's, Baudin's and forest red-tailed black cockatoo habitat should:

- be done by a suitably qualified person with experience in vegetation or cockatoo surveys, depending on the type of survey being undertaken;
- maximise the chance of detecting the species' habitat and/or signs of use;
- determine the context of the site within the broader landscape—for example, the amount and quality of habitat nearby and in the local region (for example, within 12 km);
- account for uncertainty and error (false presence and absences); and
- include collation of existing data on known locations of breeding and feeding birds and night roost locations.

The Commonwealth of Australia (2012) places habitats used by black cockatoos into the following three categories:

- Breeding Habitat;
- Foraging Habitat; and
- Night Roosting Habitat.

3.1.2.1 Breeding Habitat Assessment

The black cockatoo breeding habitat assessment identified all suitable breeding tree species within the survey area that have a diameter at breast height (DBH) equal to or greater than 50cm. The DBH of each tree was estimated using a pre-made "caliper".

Target tree species included marri, jarrah, tuart and flooded gum and any other *Corymbia/Eucalyptus* species of a suitable size that was present. Peppermints, *Banksia*,

sheoak and *Melaleuca* tree species (for example) were not assessed as they typically do not develop hollows used by black cockatoos.

The location of each tree identified over the threshold DBH was recorded with a GPS and the following additional details recorded: approximate tree height, number, approximate entrance size of any hollow/possible hollow, evidence of hollow use and likelihood of representing an actual black cockatoo nest hollow. Trees observed to contain hollows (of any size/type) were marked with "H" using spray paint.

Hollow/potential hollows were placed into one of four categories, based on the size of the apparent hollow entrance, these being:

- Small = ~<5cm diameter (i.e. entrance too small for a black cockatoo);
- Medium = ~5cm-10cm diameter (i.e. entrance too small for a black cockatoo);
- Large = ~>10cm diameter (entrance large enough for a black cockatoo but hollow appears unsuitable for nesting i.e. wrong orientation, appears too small, too low or too shallow); or
- Large (cockatoo) = ~>10cm diameter (entrance appears big enough for a black cockatoo to use for nesting).

Based on this assessment, trees present within the survey area were placed into one of four categories:

- Tree <50cm DBH or an unsuitable species (these were not assessed/recorded);
- Tree ≥50cm DBH, no hollows seen;
- Tree ≥50cm DBH, one or more hollows seen, none of which were considered suitable for black cockatoos to use for nesting; or
- Tree ≥50cm DBH, one or more hollows seen, with at least one considered suitable for black cockatoos to use for nesting.

For the purposes of this assessment, a tree containing a potential black cockatoo nest hollow was defined as:

Generally, any tree which is alive or dead that contains one or more visible hollows (cavities within the trunk or branches) or possible hollows suitable for occupation by black cockatoo for the purpose of nesting/breeding. Hollows that had an entrance greater than about 10cm in diameter and would allow the entry of a black cockatoo into a suitably orientated and sized branch/trunk, were recorded as a "potential nest hollow".

Identified hollows were examined using binoculars for evidence of actual use by black cockatoos (e.g. chewing/chipping around hollow entrance, scarring and scratch marks on trunks and branches).

Where the assessment was inconclusive, and if possible, trees identified as having potential black cockatoo nest hollows were subsequently examined and photographed using a drone (DJI Mavic Air/Mini).

Potential nest hollows were initially placed into one of three categories based on the type of hollow entry:

- Chimney: the hollow entry faces directly upwards in the end of the trunk;
- Spout: hollow entry which is at the end of a broken branch; or
- Side: the entry is directly into the side of the trunk or a branch with no protrusions.

After inspection with the drone suspected hollows have then been placed into one of five categories based on the observable characteristics of each hollow. The categories used were:

- Confirmed Hollow: Black cockatoos observed utilising the hollow for breeding purposes;
- Chewed Hollow: The hollow shows signs of chewing ("chipping" around or near entrance and/or internally) attributed to black cockatoo activity (in most cases indicating nesting activity, but in some cases possibly marks left by black cockatoos investigating ("prospecting") hollows);
- Unused Hollow: The hollow appears to be of a suitable size for black cockatoos to use for nesting, but no conclusive evidence of this activity seen. It should be noted that chew marks/chipping are not always evident or present on some hollows that have been used for nesting. Hollows classified as "unused" may therefore have been used for nesting but cannot be specifically classified as such. Alternatively, some "unused" hollows may not be suitable for black cockatoos as a range of characteristics, not all of which can be seen or measured, ultimately determined if a hollow will ever actually be used;
- Unsuitable Hollow: The hollow has been assessed, based on information obtained, as being unlikely to be suitable for black cockatoos (generally because of the entrance appearing to be too small or because the actual hollow or accommodating branch/tree trunk appears to be too small or as having an unfavourable orientation);
- No Hollow: A possible hollow was found upon closer inspection to not be present.

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo breeding habitat areas in the vicinity of the survey area.

3.1.2.2 Foraging Habitat Assessment

Foraging habitat is represented by plant species that are known to provide a food source for black cockatoos. This can be in the form of seeds, flowers and also boring grubs that are extracted from some plant species.

The location and nature of black cockatoo foraging evidence (e.g. chewed fruits around base of trees) observed during the field survey was recorded. The nature and extent of potential

foraging habitat present was also documented irrespective of the presence of any actual foraging evidence.

A review of available literature was carried out to determine the location/extent of any known/likely Black Cockatoo foraging habitat areas in the vicinity.

3.1.2.3 Night Roosting Habitat Assessment

Direct and indirect evidence of black cockatoos roosting within trees on site was noted where observed (e.g. branch clippings, droppings or moulted feathers).

A review of available literature was carried out to determine the location/extent of any known/likely black cockatoo roosting habitat areas in the vicinity.

4. SURVEY LIMITATIONS

No seasonal sampling was carried out as part of this fauna assessment. The conclusions presented are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of the field assessments. It should be recognised that site conditions can change with time.

Lack of observational data on some species should also not necessarily be taken as an indication that a species is absent from the site or does not utilise it for some purpose at times.

During the survey, habitat trees with hollows were searched for. It should be noted that identifying hollows suitable for fauna species from ground level has limitations. Generally, the full characteristics of any hollow seen are not fully evident (e.g. internal dimensions). It is also difficult to locate all hollows within all trees as some are not observable from ground level.

The location of observations was recorded using a handheld GPS. The accuracy of the GPS cannot be guaranteed above a level of about 5 to 10 metres, though it should be noted that in some circumstance the accuracy can increase or decrease beyond this range.

5. RESULTS

5.1 FIELD SURVEYS

5.1.1 FAUNA HABITAT ASSESSMENT

The survey area has a total extent of about 6 ha, the majority of which consists of mosaic of remnant and regrowth native vegetation of varying densities and composition including areas of grassland or bare sand.

The western most section of the survey area consists largely of a highly degraded sheoak (*Allocasuarina fraseriana*) low very open woodland with many dead/fallen trees over an open grassland/bare sand. This grades into a slightly better quality sheoak (*A. fraseriana*) low open woodland with occasional scattered *banksia* spp. (*Banksia attenuata* and *B. ilicifolia*) and very

occasional emergent jarrah (*Eucalyptus marginata*). Other trees present in low densities are WA Christmas tree (*Nuytsia floribunda*) and woody pear (*Xylomelum occidentale).*

Sheoak densities decrease eastwards and grades into a spearwood (*Kunzea glabrescens)* tall shrubland with very occasional emergent trees (e.g. jarrah, WA Christmas tree and woody pear). Bordering this area along its northern boundary are a small number of scattered and groves of planted non-endemic eucalypts (*Eucalyptus* spp.) and flooded gum (*Eucalyptus rudis*).

Example images of the various fauna habitats present are provided in Table 1. The approximate location of each of the main habitat units are shown in Figure 3.

Table 1: Example images of the fauna habitats within the survey area

Fauna Habitat Description	Example Image
Bare ground/grassland with scattered dead trees/fallen trees.	
Sheoak open woodland with occasional scattered *banksia* spp. and very occasional jarrah WA Christmas tree and woody pear.	
Spearwood tall shrubland with very occasional emergent trees (e.g. jarrah, WA Christmas tree and woody pear)	

Fauna Habitat Description	Example Image
Scattered and small groves of planted non-endemic eucalyptus and flooded gum over a grassland and/or weeds.	

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance (e.g. partial clearing, livestock grazing and weed invasion,) with much of the vegetation present (i.e. *Kunzea*) appearing to be regrowth from historical clearing. The majority of the larger trees present are planted non-endemic species or flooded gum and do not contain any hollows. The remnant native eucalypt trees present (only jarrah recorded) are limited in number and generally small in size. There is almost no native ground cover vegetation present.

Given the degree of disturbance the original fauna assemblage within the survey area is likely to be extremely depauperate in many aspects, in particular with respect to ground dwelling species which rely on dense native understory (midstorey and ground cover) vegetation, which is almost entirely absent.

5.1.2 BLACK COCKATOO HABITAT ASSESSMENT

5.1.2.1 Breeding Habitat Assessment

Trees considered potentially suitable for black cockatoos to use as nesting habitat (subject to a suitable hollow being present and other factors) found within the survey area comprised the following species:

- Flooded Gum – *Eucalyptus rudis (planted);*
- Jarrah – *Eucalyptus marginata*;
- Unknown Eucalypts - *Eucalyptus* spp. (non-endemic, planted); and
- Dead Unidentified - *Eucalyptus* spp. (planted ?)

A summary of the habitat trees observed is provided in Table 2. The locations of habitat trees are shown in Figure 3. Additional details on these trees are provided in Appendix A.

Table 2: Summary of potential habitat trees (DBH ≥50cm) within the survey area

Total Number of Habitat Trees (DBH > 50cm)	Number of Habitat Trees with No Hollows Observed	Number of Habitat Trees with Possible Hollows considered Unsuitable for Black Cockatoos	Number of Habitat Trees with Possible Hollows considered Potentially suitable for Black Cockatoos	Tree Species			
				Flooded Gum	Jarrah	Unknown Euc.	Dead Unidentified
12	7	5	0	4	3	3	2

The assessment identified 12 trees within the survey area with a DBH of ≥50cm. Over half (7) appeared to not contain hollows of any size. Five (5) trees contained apparent or obvious hollows, all of which were assessed as being unlikely to be suitable for black cockatoos to currently use for nesting purposes, due to the hollows apparent small size, unsuitable orientation and/or height above ground level.

Initially, one tree was assessed as containing possible large hollows. This tree was subsequently examined in better detail using a drone. Upon closer inspection all of the possible hollows in this tree were found to be unsuitable for black cockatoos. This conclusion was based on the hollows actually being non-existent or too shallow/open. More details on this tree (including photographs of possible hollows) are provided in Appendix A.

Based on available mapping, there is approximately 7,000 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2022). Much of this is likely to contain "potential" breeding habitat as defined by DWER (i.e. suitable tree species with a DBH ≥50cm).

DWER (2022) state that there are at least 12 documented breeding sites with 12 kms of the survey area though specific information on their exact location appears not to be publicly available. It is however the Authors understanding that at least some of these are most likely located ~10km east of the survey area, in or near Yalgorup National Park.

5.1.2.2 Foraging Habitat Assessment

The following flora species are known to be or are potentially used as a direct food source (e.g. seeds, flowers, nectar, bark or grubs) by one or more species of black cockatoo and were recorded within the survey area:

- Sheoak – *Allocasuarina fraseriana*;
- Flooded Gum – *Eucalyptus rudis;*
- Jarrah – *Eucalyptus marginata*;
- Unknown Eucalypts - *Eucalyptus* spp. (non-endemic);
- Candlestick Banksia - *Banksia attenuata;*

- Holly-leaved Banksia - *Banksia ilicifolia;* and
- Woody Pear – *Xylomelum occidentale.*

It should be noted that some of the above-mentioned species (e.g. flooded gum, *Eucalyptus* spp., woody pear and holly leaved banksia) while foraged upon on occasions would make up only a small proportion of any one bird's diet relative to more favoured plant species (such as marri which is absent from the survey area). Some tree species are also only represented by a small number of specimens (e.g. flooded gum, jarrah and *banksia* spp.) and therefore do not contribute to the overall foraging resource to a significant degree.

Evidence of black cockatoos foraging with the survey area was observed at a small number of locations. The evidence was all in the form of chewed fruits from sheoak and to a lesser extent chewed banksia cones. The foraging activity has been attributed to the forest red-tailed black cockatoo and/or Carnaby's black cockatoos depending on the nature of the evidence. Examples of the foraging debris observed are provided in the table below.

Table 3: Foraging Evidence Examples

Foraging Evidence Description	Example Image
Sheoak fruits – foraging activity attributed to Carnaby's or the Forest Red-tailed Black Cockatoo.	
Banksia Cone – foraging activity attributed to Carnaby's Black Cockatoo.	

Given absence (e.g. marri) and/or the limited quantity (e.g. banksia, jarrah) of favoured foraging species the vegetation present cannot be regarded as representing high quality foraging habitat for any of the black cockatoo species known to frequent the general area. The dominant tree species present (sheoak) is foraged upon on occasions by black cockatoos but is not a major component of any single bird's diet. This conclusion is supported by the fact that only a few examples of it being utilised were observed within the survey area. The survey area also only contains a low density of banksia and jarrah trees and therefore these species do not contribute significantly to the overall foraging resource present.

It is difficult to quantify the actual extent of foraging habitat present given the generally sparse nature of the vegetation and the varying, though generally low, densities of favoured species (e.g. jarrah and banksia). If one estimates the total extent of sheoak open woodland (which also contains the most banksia and jarrah) to be about 3.5 ha and using a canopy cover of 20% a foraging habitat extent of about 0.7 ha is obtained. This is possibly an overestimation given that some areas included contain very sparse sheoak with many dead/dying specimens.

Based on available mapping there is about 7,100 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2022). Much of this is likely to contain black cockatoo foraging habitat of some type.

5.1.2.3 Night Roosting Habitat Assessment

No evidence of black cockatoos roosting within trees located within the survey area was observed during the survey period. It is difficult to determine if trees or groves of trees within the survey area represent potential roosting habitat as a range of factors, not all of which can be observed, determine suitability. Some of the larger trees may be suitable for roosting but as indicated no actual evidence of use was seen.

A review of the 2019 Great Cocky Count database shows no documented roost sites within the survey area. The 2019 Great Cocky Count recorded the closest active roost, approximately 9.2 kilometres east of the survey area (Site ID: WARWARR002). This roost was being used by 63 forest red-tailed black cockatoos during the April 2019 survey (Peck *et al.* 2019). Another two documented roost sites (but not necessarily in current use) are indicated by Peck *et al.* (2019) as occurring within 12 km of the survey area. DWER (2022) state that there are five documented roots sites within 12 km of the survey area though no specific details are provided as to their location or current status, though at least some are likely to be those documented by Peck *et al.* (2019).

6. CONCLUSION

The assessment reported on here was primarily undertaken to document black cockatoo habitat within the survey area so as to allow for the sites value in a regional context to be better understood.

Vegetation within the survey area was found in broad terms to consist of a sheoak open woodland in the west and a spearwood tall shrubland in the east. There are a small number of associated tree species in both areas including *banksia* and jarrah. Some planted non-endemic and endemic eucalypts are present along the survey areas northern boundary. Native ground cover vegetation is almost totally absent with introduced grasses or bare sand dominating.

Overall, the fauna habitats present are highly degraded with all areas appearing to have been subject to considerable disturbance (e.g. partial clearing, livestock grazing and weed invasion,) with much of the vegetation present (i.e. *Kunzea*) appearing to be regrowth from historical clearing.

No existing or potential black cockatoo nest hollows were recorded within the survey area with the small number of habitat trees identified (12 in total) either having no apparent hollows or only unsuitably sized/orientated hollows.

Evidence of black cockatoos foraging with the survey area was observed at a small number of locations. The evidence was all in the form of chewed fruits from sheoak and to a lesser extent chewed banksia cones. Given the absence or the limited quantity of favoured foraging species (e.g. marri) the vegetation present cannot be regarded as representing high quality foraging habitat for any of the black cockatoo species known to frequent the general area.

It has been estimated that the survey area contains less than 1 hectare of foraging habitat (based on canopy coverage) though this is possibly an overestimation given that some areas included contain very sparse foraging species with many dead/dying specimens.

No roost sites were identified within the survey area with the closest documented roost site being located about nine kilometres east of the survey area.

Based on available mapping there is about 7,100 ha of remnant native vegetation within 12 km of the survey area (DPIRD 2022). Much of this is likely to contain black cockatoo habitat of some type.

In summary the survey area overall can be regarded as containing relatively low quality black cockatoo habitat, it value being limited by an absence of existing nest hollows, a limited extent of relatively low quality foraging habitat and no apparent roost sites.

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7. REFERENCES

Commonwealth of Australia (2012). *EPBC Act* Referral guidelines for three threatened Black Cockatoo species: Carnaby's cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's cockatoo (vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksii naso*.

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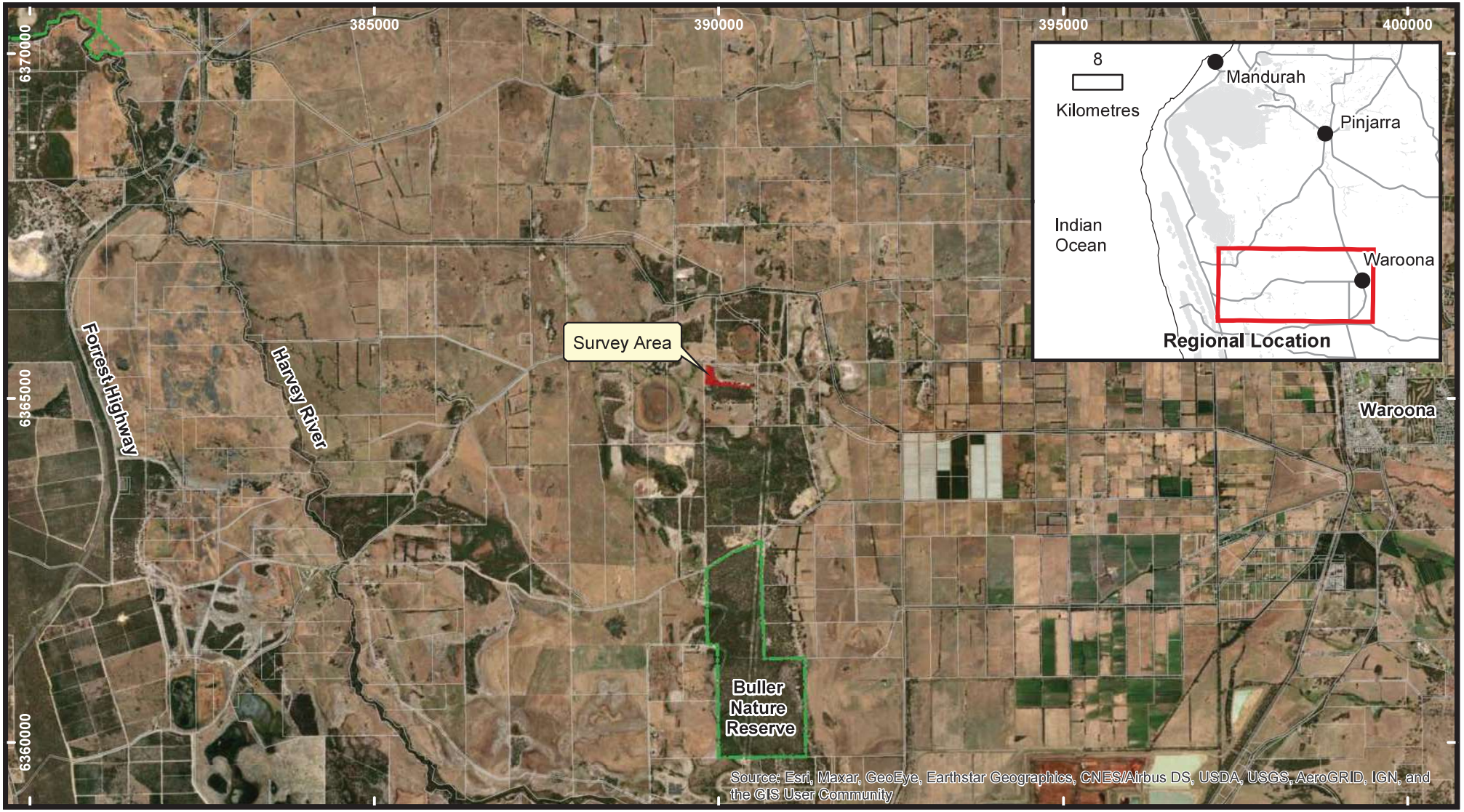
Department of Water and Environmental Regulation (DWER) (2022). Application to Clear Native Vegetation under the Environmental Protection Act 1986 – Request for Further Information – 9 March 2022.

Peck, A., Barrett, G. & Williams, M. (2019). The 2019 Great Cocky Count: a community-based survey for Carnaby's Black-Cockatoo *(Calyptorhynchus latirostris),* Baudin's Black-Cockatoo *(Calyptorhynchus baudinii)* and Forest Red-tailed Black-Cockatoo *(Calyptorhynchus banksii naso)*. BirdLife Australia, Floreat, Western Australia.

FIGURES



Legend

Survey Area (CPS 9423/1)

N

0 2 4 6 8 10

Kilometres

Fauna Survey

CPS 9423/1
Lot 500 Coronation Road
Waroona

Survey Area and Surrounds

Drawn: G Harewood
Date: 20-Apr-22
Scale: 1:75,000
Projection/Coordinate System: UTM/MGA Zone 50

Figure: 1

Legend

Survey Area (CPS 9423/1)

0 50 100 150 200 250

Metres

Fauna Survey

CPS 9423/1
Lots 500 Coronation Road
Waroona

Survey Area Aerial Photograph

Drawn: G Harewood	
Date: 20-Apr-22	
Scale: 1:2,500	
Projection/Coordinate System: UTM/MGA Zone 50	Figure: 2

Legend

- Survey Area (CPS 9423/1)
- Habitat Tree - One or more hollows, none suitable for black cockatoos
- Habitat Tree - No hollows observed

0 50 100 150 200 250

Metres

Fauna Survey

CPS 9423/1
Lot 500 Coronation Road
Waroona

Habitat & Habitat Trees (DBH >50cm)

Drawn: G Harewood
Date: 11-May-22
Scale: 1:2,500
Projection/Coordinate System: UTM/MGA Zone 50

Figure: 3

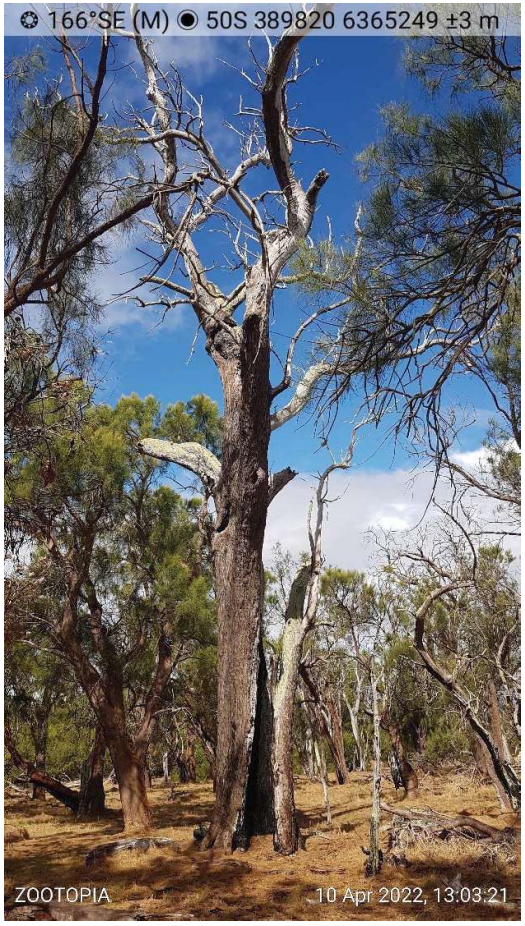
APPENDIX A

HABITAT TREE DETAILS

Habitat Trees
Datum - GDA94
Entrance Size Ranges - Small = >5cm, Medium = 5 to 10cm, Large = >10cm

Waypoint Number	Zone	mE	mN	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Estimate Hollow Entrance Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt003	50H	390146	6365231	Flooded Gum	15-20	>50	0					Planted
wpt004	50H	390233	6365218	Unknown Eucalypt	15-20	>50	0					Planted
wpt005	50H	390277	6365216	Dead Unknown	15-20	>50	2+	Small	No Signs	No Signs	No	Planted ?
wpt006	50H	390288	6365220	Dead Unknown	15-20	>50	2+	Small	No Signs	No Signs	No	Planted ?
wpt007	50H	390308	6365210	Unknown Eucalypt	15-20	>50	0					Planted
wpt008	50H	390352	6365175	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	
wpt009	50H	390449	6365186	Flooded Gum	15-20	>50	0					Planted
wpt010	50H	390455	6365191	Flooded Gum	15-20	>50	0					Planted
wpt011	50H	390467	6365189	Flooded Gum	15-20	>50	0					Planted
wpt012	50H	390484	6365189	Unknown Eucalypt	15-20	>50	0					Planted
wpt013	50H	389829	6365246	Dead Jarrah	15-20	>50	2+	Small, Medium & Large	No Signs	No Signs	No	Examined with drone - no suitable hollows
wpt014	50H	389813	6365236	Jarrah	15-20	>50	2+	Small	No Signs	No Signs	No	

WPT	Coordinates (MGA 94/Z50)	389829 mE	6365246 mN	Tree Species	Dead Jarrah	Survey Date	10/04/2022
13	**Comments**	Dead jarrah with a possible side entry hollow and two large spouts. When examined with a drone all of the potential hollows were found to be unsuitable because of being too sallow/non-existent No evidence of use by fauna of any type				**Classification**	Unsuitable/No Hollow.



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The conclusions are based upon field data and the environmental monitoring and/or testing carried out over a limited period of time and are therefore merely indicative of the environmental condition of the site at the time of preparing the report. Also it should be recognised that site conditions, can change with time.

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