Black Cockatoo Habitat Assessment

Hartford's Farm, Shannon

Prepared for Hanrine Fine Produce Pty Ltd

February 2025

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Report Version	Revision No.	Purpose	Author/reviewer	Submitted to Client	
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Draft Report	1	For client review	Western Ecological / HFP	Electronic	07/02/25
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Executive Summary

Hanrine Fine Produce (HFP) submitted an application to the Department of Water and Environmental Regulation (DWER) to clear 26.9 hectares (ha) of native vegetation in Lots 10293 and 10294 on Deposited Plan 203137, Shannon, Western Australia. The purpose of the clearing is for the expansion of a truffle farm.

Following this application, a request for further information (Schedule 1 – Additional information requested) from DWER was received by HFP, stating the following:

The assessment is to be carried out by a fauna specialist and the survey is required to identify all trees that have a diameter, measured at 1.3 metres from the base of the tree, of 50 centimetres or greater that contain a hollow(s) that may be suitable for breeding by Carnaby's cockatoo, Baudin's cockatoo, and/or forest red-tailed black cockatoo.

The survey area, is located on Deeside Coast Road, Shannon and is in the known distributional range of Baudin's Black Cockatoo (Zanda *baudinii*), listed as Endangered (En) under the BC Act and EPBC Act, Carnaby's Black Cockatoo (*Zanda latirostris*) also listed as Endangered (En) under the BC Act and EPBC Act and the Forest Red-tailed Black Cockatoo (FRTBC - *Calyptorhynchus banksii naso*), listed as Vulnerable (Vu) under the BC Act and EPBC Act.

A search of the Department of Biodiversity, Conservation and Attractions (DBCA) threatened fauna database (based on the centre-point of the survey area), with a 20 km buffer applied, was undertaken to identify records of all three Black Cockatoo species potentially occurring in the survey area. The search identified a total of 49 Black Cockatoo records from within the 20 km buffer. Baudin's Black Cockatoo (26), Carnaby's Black Cockatoo (17), FRTBC (5), White-tailed Black Cockatoo (1). A total of seven records were less than 5 km from the survey area and the most recent record was from 2021. Of the 24 records, 13 were secondary signs (foraging evidence) and one record was a breeding hollow.

The Black Cockatoo habitat assessment was undertaken on 21st and 22nd January 2025 by two qualified Zoologists. The field survey consisted of a series of assessment locations, systematically placed throughout the survey area, to assess potential breeding, foraging and roosting habitat for all three species of Black Cockatoo.

As per the Black Cockatoo guidelines, three species of Eucalypts, Karri, Marri and Jarrah, recorded in the survey area, are considered Black Cockatoo potential breeding habitat, with a diameter at breast height (DBH) of ≥ 500 mm. Within the 31 assessment locations and along additional tracks that were driven and walked, searches for any suitable breeding hollows were looked for. A total of 160 potential breeding trees with a DBH ≥ 500 mm (Karri [127], Marri [21] and Jarrah [12] were recorded. With particular reference to the DWER request for further information – there were no trees recorded during the survey that had a diameter, measured at 1.3 metres from the base of the tree, of 50 centimetres or greater that contain a hollow(s) that may be suitable for breeding by Carnaby's Black Cockatoo, Baudin's Black Cockatoo, and/or FRTBC. Due to previous selective logging, the majority of the remaining trees in the survey contained Karri, Marri and Jarrah trees that had a diameter smaller than 500 mm. Particularly the Marri and Jarrah trees, which in general measured between approximately 300 – 400 mm in diameter.

A total of 7.8 ha of foraging habitat was recorded, which consists primarily of Marri and Jarrah trees (regardless of their DBH), both of which are known forging items, as well as edges of the Karri forest and scattered Banksia and Allocasuarina species. Foraging evidence in the way of chewed Marri nuts, with evidence of FRTBC chew marks, was recorded in a number of locations in the survey area.

The entire survey area is classed as potential night roosting habitat, however, no evidence of night roosts were observed. There are no known night roosts in the survey area in the DBCA database search and the closest known night roost is 40 km to the north-west of the survey area.

Both FRTBC and Baudin's Black Cockatoo were observed in the vicinity of the survey area, in nearby Jarrah-Marri forest, however, no Black Cockatoos were directly recorded in the survey area itself, during the assessment.

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1 Introduction

1.1 Background

Hanrine Fine Produce (HFP) submitted an application to the Department of Water and Environmental Regulation (DWER) to clear 26.9 hectares (ha) of native vegetation in Lots 10293 and 10294 on Deposited Plan 203137, Shannon, Western Australia. The purpose of the clearing is for the expansion of a truffle farm.

Following this application, a request for further information from DWER was received by HFP, who then commissioned Western Ecological to undertake a Black Cockatoo habitat assessment in January 2025.

The survey area, is located on Deeside Coast Road, Shannon and is in the known distributional range of Baudin's Black Cockatoo (Zanda *baudinii*), listed as Endangered (En) under the BC Act and EPBC Act, Carnaby's Black Cockatoo (*Zanda latirostris*) also listed as Endangered (En) under the BC Act and EPBC Act and Forest Red-tailed Black Cockatoo (FRTBC - *Calyptorhynchus banksii naso*), listed as Vulnerable (Vu) under the BC Act and EPBC Act.

This report details the results of the Black Cockatoo habitat assessment that was undertaken in the survey area.

1.2 Scope and Objective

The scope of work (SoW) to be undertaken is understood to be as follows:

- Targeted Black Cockatoo Habitat Assessment
- Document the above in a concise report.

The objectives of the survey were to define the values of Black Cockatoo habitat in the survey area, to assist in the clearing permit application.

Figure 1: Project Location

0 0.3 0.6 km

GDA2020 - MGA Zone 50

Legend

- Survey Area
- Harford's Farm

Ref: 249_001_RevA.qgz

1.3 Legislative Context

Fauna and ecological communities are protected formally and informally by various legislative and non-legislative measures, which are outlined below:

- Legislative Protection:
    - *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act)
    - *Western Australia* (WA*) Biodiversity Conservation Act* (2016) (BC Act)
    - *WA Environmental Protection Act* 1986 (EP Act).
- Non-Legislative Protection:
    - WA Department of Biodiversity, Conservation and Attractions (DBCA) Priority lists.
    - Recognition of locally significant populations by DBCA.

A short description of each is given below. Other definitions, including species conservation categories, are provided in Appendix 1.

EPBC Act

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) aims to protect matters of national environmental significance, which are detailed in Appendix 1. Under the EPBC Act, the Commonwealth Department of Department of Climate Change, Energy, the Environment and Water (DCCEEW) lists protected species and Threatened Ecological Communities (TECs) by criteria set out in the Act. Species are conservation significant if they are listed as Threatened (i.e., Critically Endangered, Endangered and Vulnerable) or Migratory.

Bird species protected as Migratory under the EPBC Act include those listed under international migratory bird agreements relating to the protection of birds, which migrate between Australia and other countries, for which Australia has agreed. This includes the Japan-Australia Migratory Bird Agreement (JAMBA), the China-Australia Migratory Bird Agreement (CAMBA), the Republic of Korea-Australia Migratory Bird Agreement (ROKAMBA) and the Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).

Some marine fauna or terrestrial fauna that use marine habitats are listed as Marine under the EPBC Act. These species are only considered conservation significant when a proposed development occurs in a Commonwealth marine area (i.e., any Commonwealth Waters or Commonwealth Marine Protected Area). Outside of such areas, the EPBC Act does not consider these species to be matters of national environmental significance, so are not protected under the Act.

BC Act

The *Biodiversity Conservation Act 2016* (BC Act) replaced both the *Wildlife Conservation Act 1950* and the *Sandalwood Act 1929* and came into effect on 1 January 2019. The aim of the Act is to conserve and protect biodiversity and to promote the ecologically sustainable use of biodiversity components in the State and will bring more activities within the scope of biodiversity laws.

Taxa listed as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1a, 1b, and 1c), or is a rediscovered species to be regarded as threatened species under section 26(2) of the BC Act. Other categories include extinct or extinct in the wild and they are listed under section 23 (1) of the BC Act (Appendix 1).

If species meet one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection, they are covered under section 13 (1) of the BC Act and are called specially protected species. Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act can't also be listed as Specially Protected species (see Appendix 1 for a more detailed description of each threat category).

Threatened Ecological Communities (TECs) are also covered under the BC Act and are placed into three categories of critically endangered, endangered or vulnerable under section 27(1a, 1b, and 1c) of the BC Act depending on their threat status.

DBCA Priority Species and Communities

DBCA lists species that are possibly threatened but that do not meet criteria for listing under the BC Act, or are otherwise data deficient, and adds them to the Priority Fauna Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna. Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring. Consideration of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations (see Appendix 1 for more detail of the priority codes).

The DBCA also has a list of Priority Ecological Communities (PECs) that have scant information available to be considered a TEC, or which are rare but not currently threatened. Ecological communities that do not meet survey criteria or that are not sufficiently defined are added to the PEC list under priorities 1, 2 and 3. These three categories are ranked in order of priority for survey and/or definition of the community, and evaluation of conservation status, so that consideration can be given to their declaration as a TEC. Ecological communities that are adequately known, and are rare but not threatened or meet criteria for near threatened, or that have been recently removed from the threatened list, are placed in priority 4. These ecological communities require regular monitoring. Conservation dependent ecological communities are placed in priority 5.

Informal Recognition of Threatened Flora and Fauna

Certain populations or communities of fauna may be of local significance or interest because of their patterns of distribution and abundance. For example, fauna may be locally significant because they are range extensions to the previously known distribution or are newly discovered species (and have the potential to be of conservation significance). In addition, many species are in decline as a result of threatening processes (land clearing, grazing, and changed fire regimes) and relict populations of such species assume local importance for DBCA. It is not uncommon for DBCA to make comment on these species of interest.

2 Methods

2.1 Requirements for Fauna Surveys

The fauna survey was completed in accordance with the following Environmental Protection Authority (EPA) and DCCEEW requirements for the environmental surveying and reporting of fauna surveys in WA, where relevant and practical, and as documented in:

- EPA Technical Guidance: Terrestrial Vertebrate Fauna Surveys for Environmental Impact Assessment (EPA 2020).
- Survey Guidelines for Australia's Threatened Birds. EPBC Act survey guidelines 6.2 (2010) (DSEWPaC).
- Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black-cockatoo (DAWE 2022).

2.2 Black Cockatoo Habitat Assessment

The Black Cockatoo habitat assessment was undertaken on 21st and 22nd January 2025 by two qualified Zoologists (Dr Ron Firth and Laura Stevens) with relevant experience as specified in the referral guideline.

The survey area is in the known distributional range of Baudin's Black Cockatoo (*Zanda baudinii*), Carnaby's Black Cockatoo (*Zanda latirostris*) and Forest Red-tailed Black Cockatoo (FRTBC - *Calyptorhynchus banksii naso*), which can be seen in Appendix 2 (Black Cockatoo distribution maps [DAWE 2022]).

Baudin's Black Cockatoo is listed as Endangered (En) under the BC Act and EPBC Act, Carnaby's Black Cockatoo is also listed as En under the BC Act and EPBC Act and FRTBC is listed as Vulnerable (Vu) under the BC Act and EPBC Act.

Database Search

A search of the DBCA threatened fauna database, with a 20 km buffer applied, was undertaken to identify records of all three Black Cockatoo species potentially occurring in the survey area (DBCA 2025) (Appendix 3). The search was centred on the following co-ordinates -34.568393 & 116.341226.

Breeding Assessment

Black Cockatoos breed in large hollow-bearing trees, generally in woodlands or forests. The size of the tree can be a useful indication of the hollow-bearing potential of the tree. During the survey trees considered to be suitable for breeding based on the following criteria were examined (habitat assessment sites will be utilised):

- Native trees (e.g., Marri [*Corymbia calophylla*], Jarrah [*Eucalyptus marginata*], Karri [*E. diversicolor*], Flooded Gum [*E. rudis*] etc.)
- Diameter at breast height (DBH) > 500 mm (300 mm for Wandoo [*E. wandoo*] and Salmon Gum [*E. salmonophloia*)
- GPS co-ordinates were recorded using a GPS
- Suitable Black Cockatoo breeding hollows were assessed (from the ground) if present and based on the following:
  - 120 mm diameter at entrance
  - location of hollow (i.e., situated on main trunk)
  - direction of hollow
  - height of hollow
  - depth of hollow (where possible to assess from the ground)
  - evidence of breeding activity.

As per the DWER Schedule 1 – additional information request which stated, a survey was required to identify all trees that have a diameter, measured at 1.3 metres from the base of the tree, of 50 centimetres or greater that contain a hollow(s) that may be suitable for breeding by Carnaby's cockatoo, Baudin's cockatoo, and/or FRTBC - potential Black Cockatoo breeding habitat was assessed in a series of assessment locations and searches for suitable hollows. The assessment locations were placed systematically throughout the entire survey area, based on a centre point with a 25 m radius. In each assessment quadrat, the number of trees with a DBH > 500 mm, containing a hollow that may be suitable for Black Cockatoo breeding was recorded, as well as the number of Black Cockatoo potential breeding trees with a DBH > 500 mm (without potential hollows), to provide context and further information in each assessment location. When traversing the survey area between

assessment locations and when walking and driving additional tracks, potential breeding hollows were also searched for, with additional searches undertaken in habitat considered most likely to contain potential hollows.

Foraging Assessment

The Black Cockatoo foraging assessment was undertaken in the same assessment locations as the breeding assessment and throughout the survey area. This involved assessing the habitat for tree and shrub species known to be important dietary items e.g., Marri, Jarrah Banksia spp. and other Proteaceous species and included looking for the following (if present):

- Native trees and shrubs (e.g., Eucalypts, Banksia spp. and other Proteaceous species etc.)
- Evidence of feeding (chewed cones, seed and nut material)
- Opportunistic observations of Black Cockatoos in the survey area.

Table 3 provides a foraging habitat scoring tool, which has been taken from the Black Cockatoo guidelines (and simplified) to provide a foraging score for the survey area.

Table 1. Foraging habitat quality scoring tool (taken from DAWE 2022 and modified [only applies to areas ≥ 1 hectare]).

Starting score		**Baudin's Black Cockatoo**	**Carnaby's Black Cockatoo**	**Forest Red-tailed Black-Cockatoo**
10		Native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly **Marri**, within the range of the species.	Native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as ***Banksia* spp.** *Hakea* spp., *Grevillea* spp., native eucalypt woodland/forest that contains foraging species, within the range of the species.	**Jarrah or Marri woodland** and/or forest, **edge of Karri forest**, if Wandoo/ Blackbutt occur, within the range of the species.
Attribute subtractions		Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	-2	No evidence of feeding debris	No evidence of feeding debris	No evidence of feeding debris
Connectivity	-2	No other foraging habitat within 12 km	No other foraging habitat within 12 km	No other foraging habitat within 12 km
Proximity to breeding	-2	More than 12 km from breeding habitat	More than 12 km from breeding habitat	More than 12 km from breeding habitat
Proximity to roosting	-1	More than 20 km from a known night roosting habitat.	More than 20 km from a known night roosting habitat.	More than 20 km from a known night roosting habitat.
Impact from significant plant disease	-1	Disease present (e.g. *Phytophthora* spp. or Marri canker) affecting more than 50% of the preferred foraging species.	Disease present (e.g. *Phytophthora* spp. or Marri canker) affecting more than 50% of the preferred foraging species.	Disease present (e.g. *Phytophthora* spp. or Marri canker) affecting more than 50% of the preferred foraging species.
Total score		*Enter score*	*Enter score*	*Enter score*

Night Roost Assessment

The DBCA threatened fauna database and the Great Cocky Count (GCC) 2021 & 2022 (Pryor *et al.* 2023) were examined to determine if any roosts were in or near the survey area.

3. Results

3.1 DBCA Database Results

The results of the DBCA threatened fauna databases search, with particular reference to Black Cockatoo results, can be seen in Appendix 3.

The DBCA database returned a total of 49 Black Cockatoo records from within a 20 km buffer of the survey area. Baudin's Black Cockatoo (26), Carnaby's Black Cockatoo (17), FRTBC (5), white-tailed Black Cockatoo (1). A total of seven records were less than 5 km from the survey area and the most recent record was from 2021. Of the 24 records, 13 were secondary signs (foraging evidence) and one record was a breeding hollow. The results of this database search can be seen in Figure 2.

3.2 Black Cockatoo Habitat Assessment

As previously stated, the survey area is within the distribution of all three Black Cockatoo species, as can be seen in the DAWE Black Cockatoo distribution maps (Appendix 2).

The survey area was traversed by foot and ATV, along existing tracks and off tracks. During the Black Cockatoo habitat assessment, a total of 31 assessment locations were examined for potential breeding and foraging habitat.

No Black Cockatoos were recorded in the survey area, during the habitat assessment. However, while walking between assessment locations three FRTBC were heard calling and observed in a Marri tree, approximately 10 m outside of the north-east boundary of the survey area. A flock of approximately 30 Baudin's Black Cockatoo were also recorded in the late afternoon, approximately 2 km to the south-west of the survey area.

Potential Breeding Habitat

A total of 31 assessment locations were assessed during the survey and example photographs can be seen in Plates 1 and 2. Three species of Eucalypts, Karri, Marri and Jarrah, recorded in the survey area, are considered Black Cockatoo potential breeding habitat when their DBH is ≥ 500 mm. Within the 31 assessment locations, a total of 160 potential breeding trees with a DBH ≥ 500 mm (Karri [127], Marri [21] and Jarrah [12] were recorded. The locations of the assessment locations and details of the potential breeding trees can be seen in Table 2 and Figure 3.

Potential breeding habitat was also assessed while walking between assessment locations and when walking additional tracks, particularly in the Jarrah-Marri Forest. With reference to the Schedule 1 – additional information request – there were no trees identified that had a DBH of 500 mm or greater that contained a hollow(s) that may be suitable for breeding by Carnaby's Black Cockatoo, Baudin's Black Cockatoo, and/or FRTBC. There were no potentially suitable, observable hollows recorded during the survey (when viewed from the ground).

Plate 1: An example of Karri Forest in the survey area.

Plate 2: An example of Jarrah-Marri Forest in the survey area.

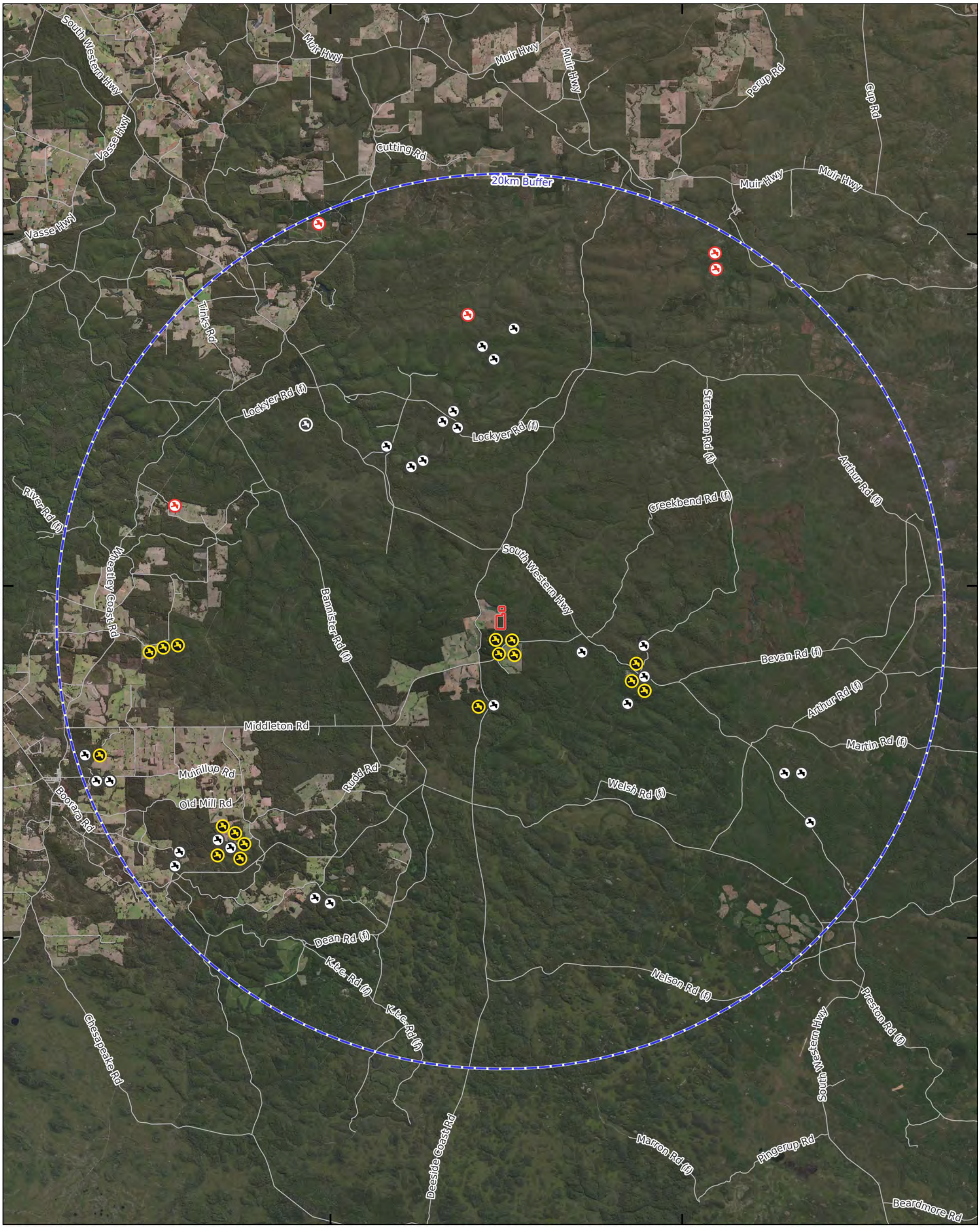

Figure 2: DBCA Threatened Fauna Database - Black Cockatoo Records

0 3,000 6,000 m

GDA2020 - MGA Zone 50

Legend

- Survey Area
- 20km Buffer

DBCA Black Cockatoo Database Records

- Baudin's Cockatoo
- Carnaby's Cockatoo
- Forest Red-tailed Black Cockatoo
- While-tailed Black Cockatoo

Ref: 249_002_RevB.qgz

Table 2: Assessment locations and Black Cockatoo potential breeding habitat.

Assessment No.	Centre-point Co-ordinates		No. of Potential Breeding Trees >500mm DBH			Potential Breeding Hollows
	Northing	Easting	Karri	Marri	Jarrah	
1	439900	6175000	6	0	0	0
2	439900	6174900	3	0	0	0
3	439800	6175000	2	0	0	0
4	439800	6174900	3	0	0	0
5	439700	6175000	5	0	0	0
6	439700	6174900	5	0	0	0
7	439900	6174700	4	0	0	0
8	439600	6174600	5	0	0	0
9	439700	6174600	6	0	0	0
10	439800	6174600	5	0	0	0
11	439900	6174600	8	0	0	0
12	439600	6174500	9	1	0	0
13	439700	6174500	7	0	0	0
14	439800	6174500	7	0	0	0
15	439900	6174500	6	0	0	0
16	439600	6174400	5	0	0	0
17	439700	6174400	8	1	0	0
18	439800	6174400	6	0	0	0
19	439900	6174400	6	0	0	0
20	439600	6174300	5	1	0	0
21	439700	6174300	2	2	1	0
22	439800	6174300	5	2	0	0
23	439900	6174300	3	1	1	0
24	439600	6174200	3	4	0	0
25	439700	6174200	1	3	0	0
26	439800	6174200	0	1	2	0
27	439900	6174200	0	1	2	0
28	439600	6174100	2	2	2	0
29	439700	6174100	0	0	2	0
30	439800	6174100	0	1	2	0
31	439900	6174100	0	1	0	0

Figure 3: Black Cockatoo Habitat and Assessment Locations

0 100 200 m

GDA2020 - MGA Zone 50

Legend

- Survey Area
- Assessment Location
- Survey Track

Black Cockatoo Habitat

- Karri Forest
- Jarrah-Marri Forest

Ref: 249_003_RevC.qgz

Foraging Habitat

In addition to the above potential breeding habitat, the survey area also contains foraging habitat for all three species of Black Cockatoo. There is a total of 7.8 ha of foraging habitat, which consists primarily of Marri and Jarrah trees (regardless of their DBH), which are known forging items. It is important to note, that as per the Black Cockatoo guidelines (DAWE 2022), the edges of Karri forests are also classed as foraging habitat for FRTBC. In addition, known foraging species including Allocasuarina and *Banksia grandis,* were also recorded patchily throughout the survey area.

As per the Black Cockatoo guidelines (DAWE 2022), quality of the foraging habitat varies depending on which Black Cockatoo species is being considered and the extent of the habitat present.

Due to the foraging species present in the survey area, only a single attribute of the scoring tool, could be used to bring the foraging score down from the initial score of 10. This attribute can be seen in Table 3 and is in relation to the distance from a known roost site.

The entire impact area of the proposed action must be considered as a whole, even if it includes different types of foraging habitats. The entire survey area therefore has a foraging quality score of nine.

Table 3. Foraging quality score (DAWE 2022).

	Baudin's Black Cockatoo	Carnaby's Black Cockatoo	Forest Red-tailed Black-Cockatoo
Starting score	10	10	10
Applicable attribute to reduce score	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.	Subtract 1 if you have evidence to conclude that your site is more than 20 km from a known night roosting habitat.
Total score	**9**	**9**	**9**

Foraging evidence in the way of chewed Marri nuts, with evidence of FRTBC chew marks, was recorded in a limited number of locations in the survey area, however it is important to note that the leaf-litter in places was more than 0.5 m deep, so difficult to search in. And example of chewed Marri nuts, with FRTBC chew markings can be seen in Plate 3.

Plate 3: Foraging evidence – chewed Marri nuts, with FRTBC chew markings.

Night Roosting Habitat

Karri, Marri and Jarrah are considered potential roosting habitat for Black Cockatoos and were all recorded in the survey area. A total of 27 ha of potential night roosting habitat is therefore present in the survey area in the way of Karri Forest and Jarrah-Marri Forest. No evidence of night roosting was observed in the survey area.

The 2021 & 2022 GCC data (Pryor *et al.* 2023), as well as the DBCA threatened fauna database were both examined to determine if any known night roosts are in or near the survey area. No known night roost records were located in the survey area. The closest know night roost record is in Manjimup (four locations), which is approximately 40 km to the north-west of the survey area.

While staying overnight in Northcliffe town, we heard Baudin's Black Cockatoo in a night roost. Northcliffe is approximately 20 km to the south-west of the survey area.

4. Discussion

4.1. Black Cockatoo Ecology

All three species of Black Cockatoo, (Baudin's Black Cockatoo, Carnaby's Black Cockatoo and FRTBC), could potentially occur in the survey area. A short discussion of each species ecology is outlined below to provide context for the survey results and the survey area.

Baudin's Black Cockatoo

Baudin's Black Cockatoo is distributed through the south-western humid and subhumid zones, from the northern Darling Range and adjacent far east of the Swan Coastal Plain (south of the Swan River), south to Bunbury and across to Albany (Johnstone *et al.* 2011). Baudin's Black Cockatoo rarely occurs near the coast north of Mandurah and rarely occurs north of the Swan River (Johnstone & Kirkby 2008, Johnstone & Storr 1998). Baudin's Black Cockatoo usually occur in small flocks of up to 30, or occasionally up to 50 and rarely in aggregations of up to 1200 (Johnstone & Kirkby 2008). Baudin's Black Cockatoo is distinguished from Carnaby's Black Cockatoo by its longer bill and slightly different call.

This species forages primarily in Eucalypt forest, where it feeds on Marri seeds, flowers, nectar and buds. They also feed on a wide range of seeds of Eucalyptus, Banksia, Hakea and Pines (*Pinus* sp.) as well as fruiting apples and pears and beetle larvae from under the bark of trees (Johnstone & Kirkby 2008, Johnstone & Storr 1998). Baudin's Black Cockatoo forages at all levels of the forest, from the canopy to the ground, often feeding in the understorey on proteaceous trees and shrubs, especially Banksia, and in orchards both in trees and on dropped or fallen fruit on the ground.

The breeding biology of this species is poorly known. It has been recorded breeding in the deep south-west, north to the Whicher Range and Lowden and also isolated records at Wungong Catchment, Serpentine (hills area), east to Kojonup and near Albany (Johnstone & Kirkby 2008). They nest in large, mostly vertical, hollows of Karri, Marri and Wandoo. Baudin's Black Cockatoos display strong pair bonds are monogamous and most likely mate for life (Johnstone & Kirkby 2008). The pair remains together all year round except when the female is incubating and brooding. Both adults play a part in selecting the nest hollow, but only the female is responsible for renovation and preparing the hollow for breeding. Preparation of the hollow consists of chewing around the entrance of the hollow and down one part of the interior wall. Pairs have also been recorded prospecting for hollows in most months and outside the breeding range (Johnstone & Kirkby 2008).

The total number of Baudin's Black Cockatoo was estimated at 10,000 – 15,000 in 1995 – 2004 and 5,000 – 8, 000 in 2017. The numbers at traditional roost sites supporting 90 – 95% of the population declined by 90 – 100% in the 20 years to 2018 (Johnstone *et al.* 2021, Johnstone & Kirkby 2019) and more recent updates estimate for the species currently are 3,250 (Pryor *et al.* 2023).

Carnaby's Black Cockatoo

Carnaby's Black Cockatoo is endemic to south-west WA and is distributed from the Murchison River to Esperance and inland to Coorow, Kellerberrin and Lake Cronin (Cooper 2002). The species was once common, but the population has declined significantly in the last half century and is now locally extinct in some areas (Johnstone & Storr 1998; Shah 2006). In the 45 years prior to Cale 2003, the species suffered a 50% reduction in its abundance (Cale 2003). More recent information suggests this decline has continued. This reduction is due to the clearing of core breeding habitat in the wheatbelt, the deterioration of nesting hollows, and clearing of food resources on the Swan Coastal Plain (SCP) (Cale 2003). The total population of Carnaby's Black Cockatoo was estimated to be 40,000 in 2008 (Johnstone & Kirkby 2008). Trend analyses of the seven GCC 2010 – 2017 identified strong indications that the population of Carnaby's Black Cockatoo inhabiting the Perth-Peel Coastal Plain continued to decline.

More recently, the GCC 2021 & 2022 (Pryor *et al.* 2023), estimates the changes in the population of Carnaby's Black Cockatoo in the Perth-Peel Coastal Plain, indicates a decline during the early years of the GCC (2010 – 2015) with the population being approximately constant since then. However, the overall change in the estimated population of Carnaby's Black Cockatoos on the Perth-Peel Coastal Plain between 2010 and 2022 is a decline of 25%, or an average of 2% per year. Current population estimates for Carnaby's Black-Cockatoo are 34,000 (Saunders *et al.* 2021)

Trend analysis of roost counts for Carnaby's Black-Cockatoo in the Perth-Peel Coastal Plain found a significant decline in the fraction of occupied roosts over the past twelve GCCs (2010-2022). The average size of roosting flocks is now the same as in 2010, after declining in the early years and increasing in more recent years.

Carnaby's Black Cockatoo feeds on seeds, nuts and flowers of a variety of native and exotic plants. Food plants include a variety of Eucalyptus species, such as Marri, Jarrah, Swan River Blackbutt (*Eucalyptus patens*), Coastal Blackbutt (*Eucalyptus todtiana*), Caesia (*Eucalyptus caesia*) and Salmon Gum, as well as Pine trees (Pinus sp.), Grevillea, Allocasuarina, and Hakea species (Shah 2006). Marri nuts that are damaged extensively, especially on the main body of the nut, are likely to have been chewed by Carnaby's Black Cockatoo. The 'levering' of Marri nuts by Carnaby's Black Cockatoos tends to leave different marks on the fruit casings, particularly in the location of indentations by the lower mandible and in the amount of damage caused to the rim of the fruit casing. Carnaby's Black Cockatoos also generally feed on green Marri nuts that are soft enough for their beaks to manipulate. The seeds from a variety of Banksia species and the cones of Pine trees provide the highest energetic yield (Cooper *et al*. 2002).

Breeding has been recorded from early July to mid-December and primarily occurs in the wheatbelt in the semi-arid and subhumid interior (Johnstone & Storr 1998). However, this species is currently expanding its breeding range westward and south into the Jarrah-Marri forests of the Darling Scarp (e.g., Wungong Dam Catchment) and into the Tuart forests of the SCP including Yanchep, Baldivis, Lake Clifton and near Bunbury *(Johnstone et al. 2011)*.

Carnaby's Black Cockatoo display strong pair bonds and mate for life. They nest in hollows of smooth-barked eucalypts particularly Salmon Gum and Wandoo, but nests have also been found in other Eucalypt species including York Gum (*Eucalyptus loxophleba*), Flooded Gum (*Eucalyptus rudis*), the rough-barked Marri and Tuart *(Johnstone et al. 2011)*. In most nests in Tuart, eggs are laid on a mat of wood chips at the bottom of a large hollow (mostly top entry hollows) ranging from a few cm's to five m deep *(Johnstone et al. 2011)*. Clutch size is 1–2 eggs, more typically two; only one young is reared (Saunders 1986). Incubation lasts for 29 days and only the female incubates and broods. The nestling is brooded by the female during which time both rely on food from the male. Once brooding is complete, the female then leaves the nest each day at dawn, sometimes returning mid-morning (with the male) to feed the chick *(Johnstone et al. 2011)*. After approximately three weeks she ceases to brood and the chick is fed by one or both parents in the morning and in the late evening *(Johnstone et al. 2011)*.

Approximately 87% (525,732 ha) of potential Carnaby's Black Cockatoo habitat (i.e., areas of vegetation that contain flora species and vegetation types that could support the species' breeding, feeding and night roosting activities) has been cleared in the wheatbelt since European settlement. The south-west region is now a severely fragmented landscape and the further loss of foraging habitat, the lack of suitable breeding sites, climate change, alterations in the landscape, changing forest structure with almost every part of the Jarrah-Marri forest logged in the past and with most trees too young to form hollows, and competition with exotic species, exacerbate the future conservation of Carnaby's Black Cockatoo *(Johnstone et al. 2011)*.

Forest Red-tailed Black Cockatoo

The FRTBC is distributed through the humid and subhumid south-west of WA from Gingin through the Darling Ranges to the south-west from Bunbury to Albany (primarily in the hilly interior) (Johnstone & Storr 1998, Johnstone *et al.* 2013a). In these areas, the FRTBC inhabits dense Jarrah, Karri, and Marri forests that receive more than 600 mm average annual rainfall (Johnstone & Storr 1998). However, in recent years the FRTBC has moved on to the SCP to forage in the Perth metropolitan area *(Johnstone et al. 2011)*. The FRTBC occurs in pairs or small flocks, or occasionally large flocks of up to 200 birds (Johnstone & Storr 1998).

With regard to FRTBC population size, in contrast to more recent years demonstrating an increase in FRTBC numbers in both the Greater Perth-Peel and Northern Darling Scarp and Plateau regions, analysis of the GCC data 2014 – 2022 showed no change in population size, with this influenced by an extraordinarily low count of FRTBCs in both regions in 2022. Current population estimates for FRTBC are 16,800 (Johnstone *et al*. 2021b).

The FRTBC feeds primarily on Marri and Jarrah fruit, but also Tuart and to a lesser extent on Blackbutt, Albany Blackbutt (*Eucapyptus staeri*), Karri, Sheoak (*Allocasuarina fraseriana*) and Snottygobble (*Persoonia longifolia*) (Johnstone *et al*. 2013b). The FRTBC can obtain energy faster when feeding on Marri and Jarrah than other food sources (Cooper *et al*. 2002), and these two-plant species make up most of their diet (Johnstone *et al.* 2013b).

FRTBC shear the base of Marri nuts at a 45º angle to remove seeds (the 'bottom slice' method), while Baudin's Black Cockatoos use their elongated upper mandible to pry seeds out, leaving the nut intact (the 'lever') (Johnstone & Kirkby 1999,

Cooper *et al*. 2002). Carnaby's Black Cockatoos may use either technique to feed on Marri nuts, but generally with some modification, e.g., the 'slicing' of fruits may occur along the side of the fruit casing.

The FRTBC is monogamous and pairs nest in tree hollows from 6.5 – 33 m above ground and most nests are in large and old mature Marri, and these trees are the most important nesting tree throughout the FRTBC range (Johnstone *et al.* 2013a). Nest trees of the FRTBC have a mean circumference at breast height of 2.79 m, a mean estimated age of 222 years and a mean overall height of 20.24 m (Johnstone *et al*. 2013a).

Breeding has been recorded in all months, with peaks in April-June and August-October. Only one egg is laid, which the female incubates for 29 to 31 days, before a nestling hatches and weighs between 27 and 32 g. The female remains in the hollow during incubation and only leaves for a short period in the evening to be fed by the male, usually at dusk (Johnstone *et al*. 2013b). Brooding is for up to 10 days, after which the female leaves the nest between dawn and dusk. Pairs of birds appear to recognise each other by calls, not responding to calls by others in the area. Chicks only respond when the parent is heard and are fully feathered at 48 days (Johnstone *et al.* 2013b).

4.2. Black Cockatoo Habitat

Regional Context

As per the Black Cockatoo guidelines, the survey area is on the border of two of the southwest WA referral regions, namely the Jarrah Forest and the South Coast. The Jarrah Forest is characterised by Jarrah and Marri forest, with Marri-Wandoo woodlands towards the eastern edge. All three black cockatoo species breed in this region and this is the main area used by Baudin's Black Cockatoo and the FRTBC for breeding. Baudin's Black Cockatoo has key foraging and wintering areas in this region. Marri is a primary foraging species for Baudin's Black Cockatoo and the FRTBC and foraging areas associated with breeding are important for both species.

The South Coast supports Jarrah-Marri forest, as well as Karri, and areas of low heath, including Banksia spp., and scrub. This region provides foraging resources for all black cockatoo species, as well as some critical breeding habitat for both Baudin's Black Cockatoo and Carnaby's Black Cockatoo.

With regard to a regional context, the survey area is surrounded by a number of National Parks, State Forests and Nature Reserves, as can be seen in Figure 4. These parks, forests and reserves provide large areas of continuous native woodland and also suitable breeding habitat for all three Black Cockatoo species. Shannon National Park for example, which boarders the survey area, provides more than 53,000 ha of continuous habitat, including Karri and Jarrah-Marri forest habitat and a number of permanent water sources. All of which, are important habitat for Black Cockatoos.

The DBCA database returned a total of 49 Black Cockatoo records from within a 20 km buffer of the survey area. Baudin's Black Cockatoo (26), Carnaby's Black Cockatoo (17), FRTBC (5), White-tailed Black Cockatoo (1). A total of seven records were less than 5 km from the survey area. The most recent records (four records) were from 2021, all of which are foraging evidence from Carnaby's Black Cockatoo, recorded during a targeted Black Cockatoo survey in Shannon. Of the 24 records, 13 were secondary signs (foraging evidence) and one record was a breeding hollow, which was the single White-tailed Black Cockatoo record. This record was from the 2019 GCC and does not specify species i.e., Baudin's or Carnaby's. This is due to the fact that Baudin's and Carnaby's are not separated into species during the GCCs in regional areas, due to difficulty of non-experts telling the species apart, species overlap and the possibility of mixed flocks

The closest record of Baudin's Black Cockatoo is 3.5 km from survey area and the most recent record is from 2018. The closest record of Carnaby's Black Cockatoo is 800 m from the survey area and the most recent record is from 2021. The closest record of the FRTBD is 13.4 km from the survey area and the most recent record is from 2015.

It is important to note that fewer surveys of Black Cockatoos have been undertaken in the region because there is less development, compared with the SCP, for example, and so records may not be as up to date or as exhaustive as other regions.

Figure 4: Regional National Parks, State Forests and Nature Reserves

0 5 10 km

GDA2020 - MGA Zone 50

Legend

- Survey Area
- Hartford's Farm
- National Park & Nature Reserve
- State Forest

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Potential Breeding Habitat

Within the 31 assessment locations, a total of 160 potential breeding trees with a DBH ≥ 500 mm (Karri [127], Marri [21] and Jarrah [12] were recorded. As such they are considered potential breeding habitat.

With regard to the Schedule 1 - additional information requested from DWER, which states a request for the identification of all trees that have a diameter, measured at 1.3 metres from the base of the tree, of 50 centimetres or greater that contain a hollow(s) that may be suitable for breeding by Carnaby's Black Cockatoo, Baudin's Black Cockatoo, and/or FRTBC – there were no trees in the survey area, with potentially suitable, observable hollows recorded in any of the trees (when viewed from the ground).

It is important to note that the survey area has been heavily logged (anecdotally, the survey area has been logged for more than 100 years), which has resulted in the much of the survey area having Karri, Marri and Jarrah trees that are < 500 mm DBH (i.e., there is relative uniformity in tree diameter and height). Evidence of this logging can be seen in Plate 4, which shows a large, felled tree (> 500 mm DBH), surrounded by trees that are significantly smaller than 500 mm DBH and Plates 5 - 10, which show many very tall and thin trees and a clear lack of trees > 500 mm DBH throughout the survey area.

Nest hollow shortage is considered the principal threat to Baudin's Black Cockatoo, as suitable hollows are considered scarce, only forming in trees at least 130 to 220 years of age, many of which have been preferentially felled (Chapman 2008).

Plate 4: Logging evidence in the survey area.

Plate 5: An example photograph, highlighting a general lack of trees >500 mm DBH in the survey area.

Plate 6: An example photograph, highlighting a lack of trees >500 mm DBH at Quadrat 13.

Plate 7: An example photograph, highlighting a lack of trees >500 mm DBH at Quadrat 21.

Plate 8: An example photograph, highlighting a lack of trees >500 mm DBH at Quadrat 23.

Plate 9: An example photograph, highlighting a lack of trees >500 mm DBH at Quadrat 29.

Plate 10: An example photograph, highlighting a lack of trees >500 mm DBH at Quadrat 30.

Foraging Habitat

In addition to the above potential breeding habitat, the survey area also contains foraging habitat for all three species of Black Cockatoo. There is a total of 7.8 ha of foraging habitat, which consists primarily of Marri and Jarrah trees (regardless of their DBH), which are known forging items. It is important to note, that as per the Black Cockatoo guidelines (DAWE 2022), the edges of Karri forests are also classed as foraging habitat for FRTBC. In addition, known foraging species including Allocasuarina and *Banksia grandis,* were also recorded throughout the survey area albeit in relatively low densities.

No Black Cockatoos were recorded in the survey area, during the habitat assessment, however foraging evidence in the way of chewed Marri nuts was recorded in a number of locations throughout the Jarrah-Marri Forest.

During the survey, three FRTBC were heard calling and observed in a Marri tree slightly outside the survey area. In addition, a flock of approximately 30 Baudin's Black Cockatoo were also recorded (GPS co-ordinates 6173809/438833) foraging, approximately 2 km to the south-west of the survey area.

As per the Black Cockatoo guidelines (DAWE 2022), quality of the foraging habitat varies depending on which Black Cockatoo species is being considered and the extent of the habitat present. Table 1 in the Methods section, outlines the process for obtaining a forging habitat score for the survey area, for each of the three Black Cockatoo species. This scoring tool was used, with reference to the foraging species recorded during the assessment and each Black Cockatoo species.

Due to the foraging species present in the survey area, only a single attribute of the scoring tool, could be used to bring the foraging score down from the initial score of 10. This attribute can be seen in Table 3 and is in relation to the distance from a known roost site.

The entire impact area of the proposed action must be considered as a whole, even if it includes different types of foraging habitats. The entire survey area therefore has a foraging quality score of nine.

Night Roosting Habitat

In general, Black Cockatoo roosting habitat is considered to be any tall trees, in or near riparian environments or other permanent water sources (< 2 km). In particularly tall Jarrah, Marri, Blackbutt, and Tuart, as well as Flooded Gum, Lemon Scented, Gum Flat-topped Yate, Salmon Gum, Wandoo and other introduced eucalypt trees or large trees on the edges of forests (DAWE 2022).

A total of 27 ha of potential night roosting habitat is present in the survey area in the way of Karri and Jarrah-Marri Forest (< 2 km of a water source).

The 2021 & 22 GCC data (Pryor *et al.* 2023) and the DBCA threatened fauna database were examined to determine if any known night roosts are in or near the survey area. No roost records were recorded in the survey area.

As stated above, during the survey, approximately 30 Baudin's Black Cockatoo were observed, approximately 2 km south-west of the survey area, on two occasions in the late afternoon and it is considered likely they have a night roost nearby.

6 References

Cale, B. (2003). Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan 2000-2009. Western Australian Wildlife Management Program No. 36. Perth, Department of Conservation and Land Management Western Australian Threatened Species and Communities Unit.

Chapman, T. (2008). Forest Black Cockatoo (Baudin's cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed black cockatoo *Calyptorhynchus banksii naso*) Recovery Plan. Department of Environment and Conservation, Western Australia.

Cooper, C.E., Withers, P.C., Mawson, P.R., Bradshaw, S.D., Prince, J. & Robertson, H. (2002). Metabolic ecology of cockatoos in the south-west of Western Australia. Australian Journal of Zoology 50, 67–76.

Department of Agriculture, Water and the Environment (DAWE) (2022). Referral guideline for 3 WA threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black- cockatoo

Department of Biodiversity, Conservation and Attractions (DBCA) (2025). Threatened Fauna Search – Black Cockatoos.

Department of Energy and Environment (DEE) (2017). Revised draft referral guideline for three threatened black cockatoo species: Carnaby's Cockatoo, Baudin's Cockatoo and the Forest Red-tailed Black Cockatoo. Commonwealth of Australia.

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). Environment Protection and Biodiversity Conservation Act 1999 referral guidelines for three black cockatoo species: Carnaby's cockatoo (*Calyptorhynchus latirostris),* Baudin's cockatoo (*Calyptorhynchus baudinii)*, Forest red-tailed black cockatoo (*Calyptorhynchus banksii naso)*, Australian Government, Canberra.

Environmental Protection Authority (EPA) (2020). Guidance Terrestrial Fauna Surveys.

Johnstone, R.E., Kirkby, T., Warren, K., Shephard, J., Rycken, S.J.E, Williams, M.R., Peck, A., Barrett, G. W., Stokes, V., Craig, M., Mawson, P.R., Burbidge, A. H., Bamford, M., Garnett, S.T. (2021). Baudin's Black Cockatoo (*Zanda baudinii*). In The Action Plan for Australian Birds 2020.

Johnstone, R.E. & Kirkby, T. (2019). 'Black Cockatoo Research Project'. Report to the Housing Authority, Perth. In The Action Plan for Australian Birds 2020.

Johnstone, R.E., Kirkby, T. & Sarti, K. (2013a). The breeding biology of the Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* Gould in south-western Australia. I. Characteristics of nest trees and nest hollows. Pacific Conservation Biology 19, 121-142.

Johnstone, R.E., Kirkby, T., & Sarti, K. (2013b). The breeding biology of the Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso* Gould in south-western Australia. II. Breeding behaviour and diet. Pacific Conservation Biology 19, 143-155.

Johnstone, R.E. & Kirkby, T. (2008). Distribution, status, social organisation, movements and conservation of Baudin's Cockatoo (*Calyptorhynchus baudinii*) in South-west Western Australia. Records of the Western Australian Museum 25, 107-118.

Johnstone, R.E., Johnstone C. & Kirkby, T. (2011). Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*), Baudin's Black Cockatoo (*Calyptorhynchus baudinii*) and the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso*) on the Swan Coastal Plain (Lancelin–Dunsborough), Western Australia. Studies on distribution, status, breeding, food, movements and historical changes. Perth: Department of Planning.

Johnstone, R.E. & Kirkby, T. (1999). Food of the Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii naso)* in south-west Western Australia. Western Australian Naturalist 22, 167–177.

Johnstone, R.E. & Storr, G. M. (1998). Handbook of Western Australian Birds. Volume 1 - Non-Passerines (Emu to Dollarbird). Oxford University Press.

Pryor, M., Barrett, G. and Williams, M. (2023). The 2021 and 2022 Great Cocky Count: a community-based survey for Carnaby's Black-Cockatoo (*Zanda latirostris*), Baudin's Black-Cockatoo (*Zanda baudinii*) and Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*). BirdLife Australia, Floreat, Western Australia.

Saunders, D.A., G.T., P.R Mawson, R. Dawson, R.E. Johnstone, T. Kirkby, K. Warren, J. Shephard, S.J.E. Rycken, W.D. Stock, M.R. Williams, C.J. Yates, A. Peck, G.W. Barrett, V. Stokes, M. Craig, A.H. Burbidge, M. Bamford, & S.T. Garnett. (2021). Carnaby's Black-Cockatoo *Zanda latirostris*. In The Action Plan for Australian Birds 2020.

Saunders, D. A., Smith, G. T. & Rowley, I. (1986). The availability and dimensions of tree hollows that provide nest sites for cockatoos (Psittaciformes) in Western Australia. Australian Wildlife Research 9, 541-56.

Shah, D. A., Smith, G. T. & Rowley, I. (1986). The availability and dimensions of tree hollows that provide nest sites for cockatoos (Psittaciformes) in Western Australia. Australian Wildlife Research 9, 541-56.

Shah, B. (2006). Conservation of Carnaby's Black Cockatoo on the Swan Coastal Plain, WA. Perth: Birds Australia.

APPENDICES

Appendix 1: Conservation Categories

Categories of Threatened Flora and Fauna Species under the EPBC Act

Conservation Code	Description
Ex	Extinct Taxa which at a particular time if, at the time, there is no reasonable doubt that the last member of the species has died.
ExW	Extinct in the Wild Taxa which is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; or it has not been recorded in its known and/or expected habitat, at appropriate seasons, anywhere in its past range, despite exhaustive surveys over a time frame appropriate to its life cycle and form.
CE	Critically Endangered Taxa which at a particular time, it is facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with the prescribed criteria.
En	Endangered Taxa which is not critically endangered and it is facing a very high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.
Vu	Vulnerable Taxa which is not critically endangered or endangered and is facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with the prescribed criteria.

Source: Environment Protection and Biodiversity Conservation Act 1999.

Categories of Threatened Flora and Fauna Species under the BC Act

Department of **Biodiversity, Conservation and Attractions**

GOVERNMENT OF WESTERN AUSTRALIA

CONSERVATION CODES

For Western Australian Flora and Fauna

Threatened, Extinct and Specially Protected fauna or flora[1] are species[2] which have been adequately searched for and are deemed to be, in the wild, threatened, extinct or in need of special protection, and have been gazetted as such.

The *Wildlife Conservation (Specially Protected Fauna) Notice 2018* and the *Wildlife Conservation (Rare Flora) Notice 2018* have been transitioned under regulations 170, 171 and 172 of the *Biodiversity Conservation Regulations 2018* to be the lists of Threatened, Extinct and Specially Protected species under Part 2 of the *Biodiversity Conservation Act 2016*.

Categories of Threatened, Extinct and Specially Protected fauna and flora are:

T **Threatened species**

Listed by order of the Minister as Threatened in the category of critically endangered, endangered or vulnerable under section 19(1), or is a rediscovered species to be regarded as threatened species under section 26(2) of the *Biodiversity Conservation Act 2016* (BC Act).

Threatened fauna is that subset of 'Specially Protected Fauna' listed under schedules 1 to 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for Threatened Fauna.

Threatened flora is that subset of 'Rare Flora' listed under schedules 1 to 3 of the *Wildlife Conservation (Rare Flora) Notice 2018* for Threatened Flora.

The assessment of the conservation status of these species is based on their national extent and ranked according to their level of threat using IUCN Red List categories and criteria as detailed below.

CR **Critically endangered species**

Threatened species considered to be "*facing an extremely high risk of extinction in the wild in the immediate future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as critically endangered under section 19(1)(a) of the BC Act in accordance with the criteria set out in section 20 and the ministerial guidelines. Published under schedule 1 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for critically endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for critically endangered flora.

EN **Endangered species**

Threatened species considered to be "*facing a very high risk of extinction in the wild in the near future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as endangered under section 19(1)(b) of the BC Act in accordance with the criteria set out in section 21 and the ministerial guidelines. Published under schedule 2 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for endangered fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for endangered flora.

VU **Vulnerable species**

Threatened species considered to be "*facing a high risk of extinction in the wild in the medium-term future, as determined in accordance with criteria set out in the ministerial guidelines*".

Listed as vulnerable under section 19(1)(c) of the BC Act in accordance with the criteria set out in section 22 and the ministerial guidelines. Published under schedule 3 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for vulnerable fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for vulnerable flora.

Conservation codes for Western Australian flora and fauna

Extinct species

Listed by order of the Minister as extinct under section 23(1) of the BC Act as extinct or extinct in the wild.

EX **Extinct species**

Species where *"there is no reasonable doubt that the last member of the species has died"*, and listing is otherwise in accordance with the ministerial guidelines (section 24 of the BC Act).

Published as presumed extinct under schedule 4 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018* for extinct fauna or the *Wildlife Conservation (Rare Flora) Notice 2018* for extinct flora.

EW **Extinct in the wild species**

Species that *"is known only to survive in cultivation, in captivity or as a naturalised population well outside its past range; and it has not been recorded in its known habitat or expected habitat, at appropriate seasons, anywhere in its past range, despite surveys over a time frame appropriate to its life cycle and form"*, and listing is otherwise in accordance with the ministerial guidelines (section 25 of the BC Act).

Currently there are no threatened fauna or threatened flora species listed as extinct in the wild. If listing of a species as extinct in the wild occurs, then a schedule will be added to the applicable notice.

Specially protected species

Listed by order of the Minister as specially protected under section 13(1) of the BC Act. Meeting one or more of the following categories: species of special conservation interest; migratory species; cetaceans; species subject to international agreement; or species otherwise in need of special protection.

Species that are listed as threatened species (critically endangered, endangered or vulnerable) or extinct species under the BC Act cannot also be listed as Specially Protected species.

MI **Migratory species**

Fauna that periodically or occasionally visit Australia or an external Territory or the exclusive economic zone; or the species is subject of an international agreement that relates to the protection of migratory species and that binds the Commonwealth; and listing is otherwise in accordance with the ministerial guidelines (section 15 of the BC Act).

Includes birds that are subject to an agreement between the government of Australia and the governments of Japan (JAMBA), China (CAMBA) and The Republic of Korea (ROKAMBA), and fauna subject to the *Convention on the Conservation of Migratory Species of Wild Animals* (Bonn Convention), an environmental treaty under the United Nations Environment Program. Migratory species listed under the BC Act are a subset of the migratory animals, that are known to visit Western Australia, protected under the international agreements or treaties, excluding species that are listed as Threatened species.

Published as migratory birds protected under an international agreement under schedule 5 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

CD **Species of special conservation interest (conservation dependent fauna)**

Fauna of special conservation need being species dependent on ongoing conservation intervention to prevent it becoming eligible for listing as threatened, and listing is otherwise in accordance with the ministerial guidelines (section 14 of the BC Act).

Published as conservation dependent fauna under schedule 6 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

OS **Other specially protected species**

Fauna otherwise in need of special protection to ensure their conservation, and listing is otherwise in accordance with the ministerial guidelines (section 18 of the BC Act).

Published as other specially protected fauna under schedule 7 of the *Wildlife Conservation (Specially Protected Fauna) Notice 2018*.

Conservation codes for Western Australian flora and fauna

P **Priority species**

Possibly threatened species that do not meet survey criteria, or are otherwise data deficient, are added to the Priority Fauna or Priority Flora Lists under Priorities 1, 2 or 3. These three categories are ranked in order of priority for survey and evaluation of conservation status so that consideration can be given to their declaration as threatened fauna or flora.

Species that are adequately known, are rare but not threatened, or meet criteria for near threatened, or that have been recently removed from the threatened species or other specially protected fauna lists for other than taxonomic reasons, are placed in Priority 4. These species require regular monitoring.

Assessment of Priority codes is based on the Western Australian distribution of the species, unless the distribution in WA is part of a contiguous population extending into adjacent States, as defined by the known spread of locations.

1 **Priority 1: Poorly-known species**

Species that are known from one or a few locations (generally five or less) which are potentially at risk. All occurrences are either: very small; or on lands not managed for conservation, e.g. agricultural or pastoral lands, urban areas, road and rail reserves, gravel reserves and active mineral leases; or otherwise under threat of habitat destruction or degradation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under immediate threat from known threatening processes. Such species are in urgent need of further survey.

2 **Priority 2: Poorly-known species**

Species that are known from one or a few locations (generally five or less), some of which are on lands managed primarily for nature conservation, e.g. national parks, conservation parks, nature reserves and other lands with secure tenure being managed for conservation. Species may be included if they are comparatively well known from one or more locations but do not meet adequacy of survey requirements and appear to be under threat from known threatening processes. Such species are in urgent need of further survey.

3 **Priority 3: Poorly-known species**

Species that are known from several locations, and the species does not appear to be under imminent threat, or from few but widespread locations with either large population size or significant remaining areas of apparently suitable habitat, much of it not under imminent threat. Species may be included if they are comparatively well known from several locations but do not meet adequacy of survey requirements and known threatening processes exist that could affect them. Such species are in need of further survey.

4 **Priority 4: Rare, Near Threatened and other species in need of monitoring**

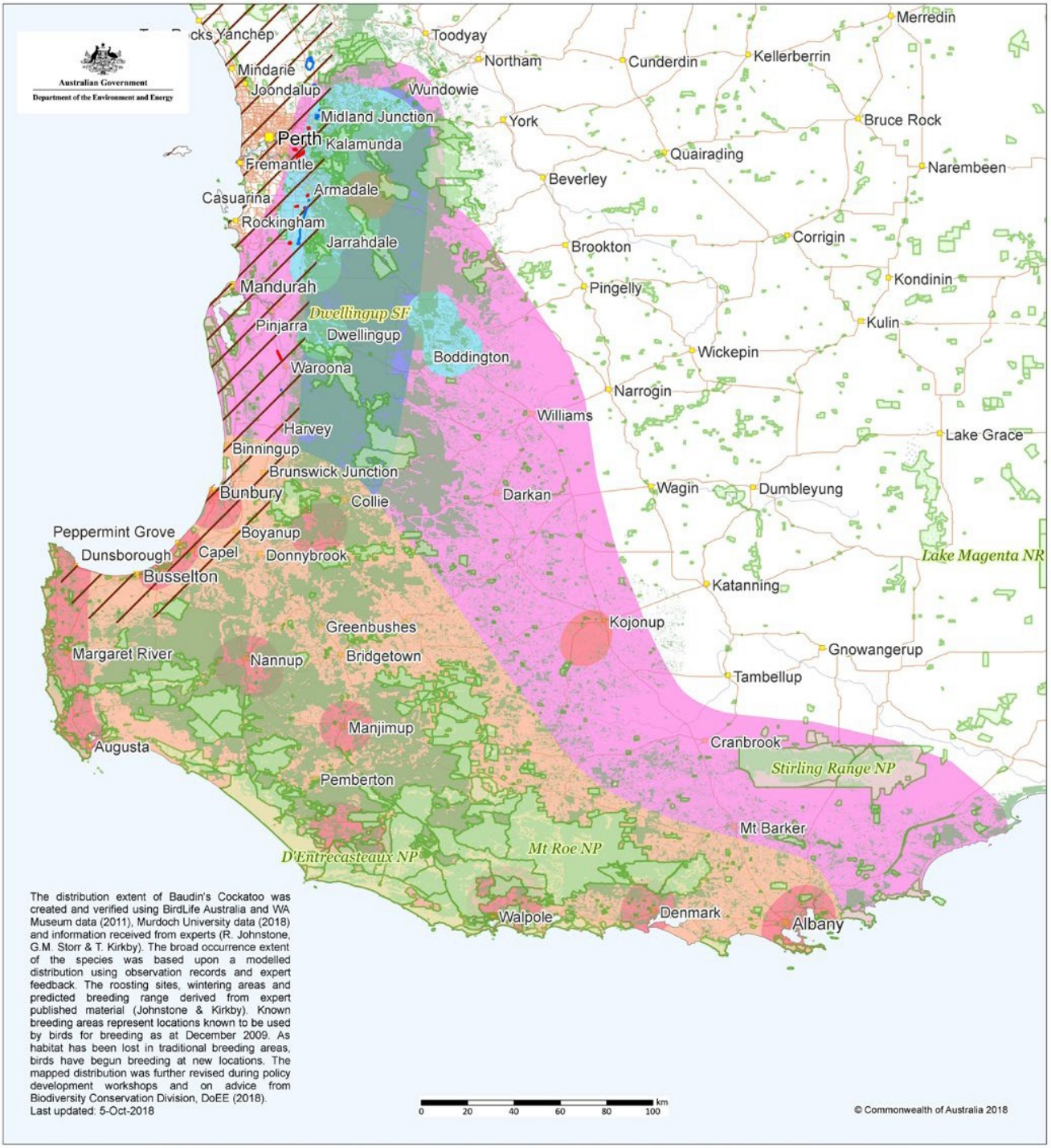
(a) Rare. Species that are considered to have been adequately surveyed, or for which sufficient knowledge is available, and that are considered not currently threatened or in need of special protection but could be if present circumstances change. These species are usually represented on conservation lands.
(b) Near Threatened. Species that are considered to have been adequately surveyed and that are close to qualifying for vulnerable but are not listed as Conservation Dependent.
(c) Species that have been removed from the list of threatened species during the past five years for reasons other than taxonomy.

[1] The definition of flora includes algae, fungi and lichens
[2] Species includes all taxa (plural of taxon - a classificatory group of any taxonomic rank, e.g. a family, genus, species or any infraspecific category i.e. subspecies or variety, or a distinct population).

Last updated 3 January 2019

Appendix 2: Black Cockatoo Distribution Maps (DAWE)

Map 2 Modelled distribution for Baudin's Cockatoo (*Zanda baudinii*)



INDICATIVE MAP ONLY: For the latest departmental information, please refer to the Protected Matters Search Tool and the Species Profiles & Threats Database at

Produced by:
Environmental Resources Information Network 2018

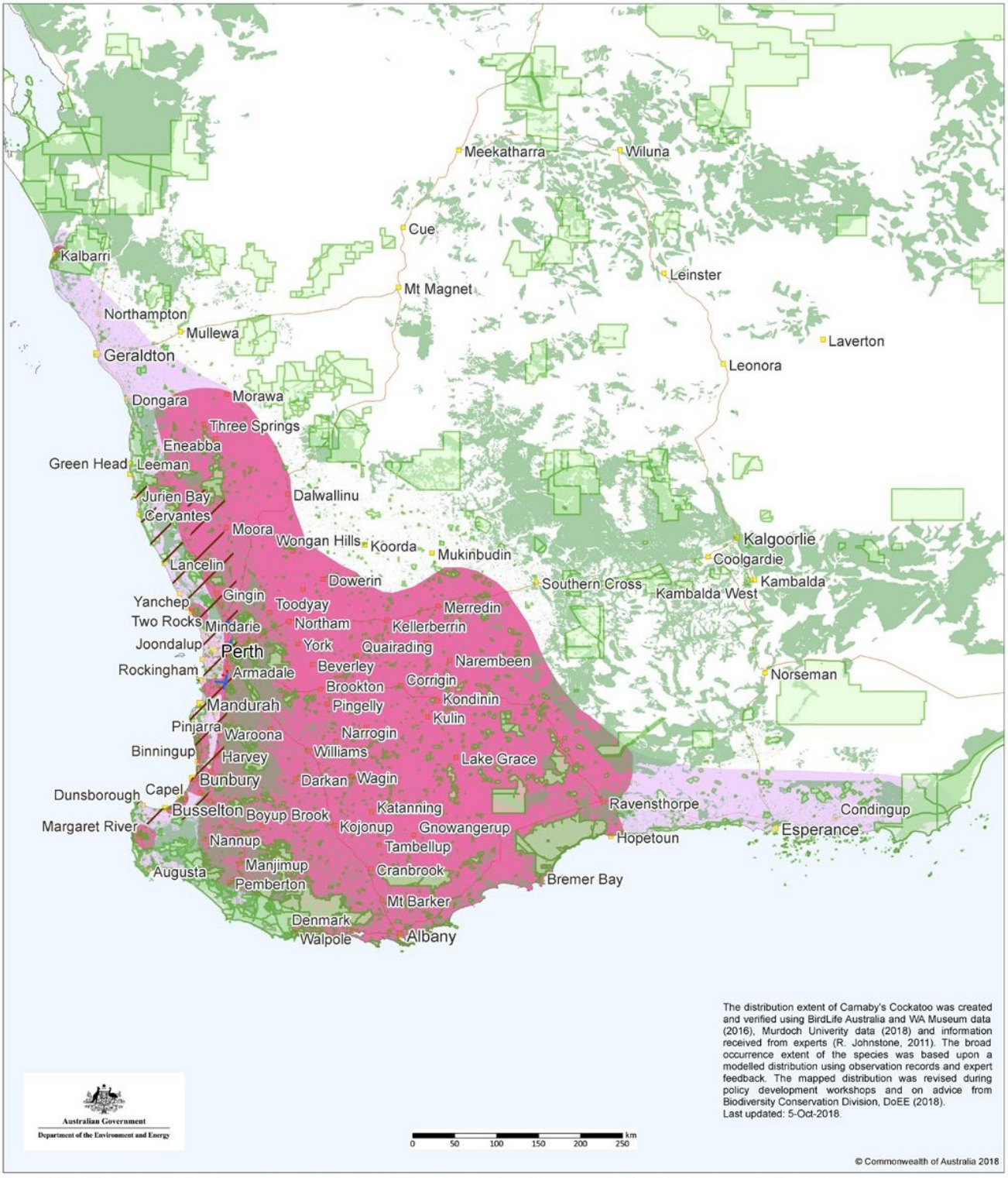
Contextual data source:
National Vegetation Information System (NVIS 5.1) 2018
Interim Biogeographic Regionalisation for Australia (IBRA) version 7 2012
Collaborative Australian Protected Area Database (CAPAD) 2016
Geoscience Australia GEODATA TOPO 250K Topographic Data Series 3 2006

Projection: Geographic
Datum: GDA94

Conservation Areas
Jarrah, Karri and Marri
Species
Known Breeding Areas
Predicted Breeding Range
Known Foraging Areas
Main Wintering Area
Species Likely to Occur
Ecological Communities
Corymbia calophylla - Xanthorrhea preissii woodlands and shrublands of the Swan Coastal Plain
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain
Banksia Woodlands of the Swan Coastal Plain

Cities & Towns
Roads (sealed)
Roads (unsealed)
State Border
Major Rivers
Lakes/Reservoirs
Non-perennial Lakes

Map 3 Modelled distribution for Carnaby's Cockatoo (*Zanda latirostris*)



INDICATIVE MAP ONLY: For the latest departmental information, please refer to the Protected Matters Search Tool and the Species Profiles & Threats Database at http://www.environment.gov.au/biodiversity/threatened/index.html

Produced by:
Environmental Resources Information Network 2018

Contextual data source:
National Vegetation Information System (NVIS 5.1) 2018
Interim Biogeographic Regionalisation for Australia (IBRA) version 7 2012
Collaborative Australian Protected Area Database (CAPAD) 2016
Geoscience Australia GEODATA TOPO 250K Topographic Data Series 3 2006

Projection: Geographic
Datum: GDA94

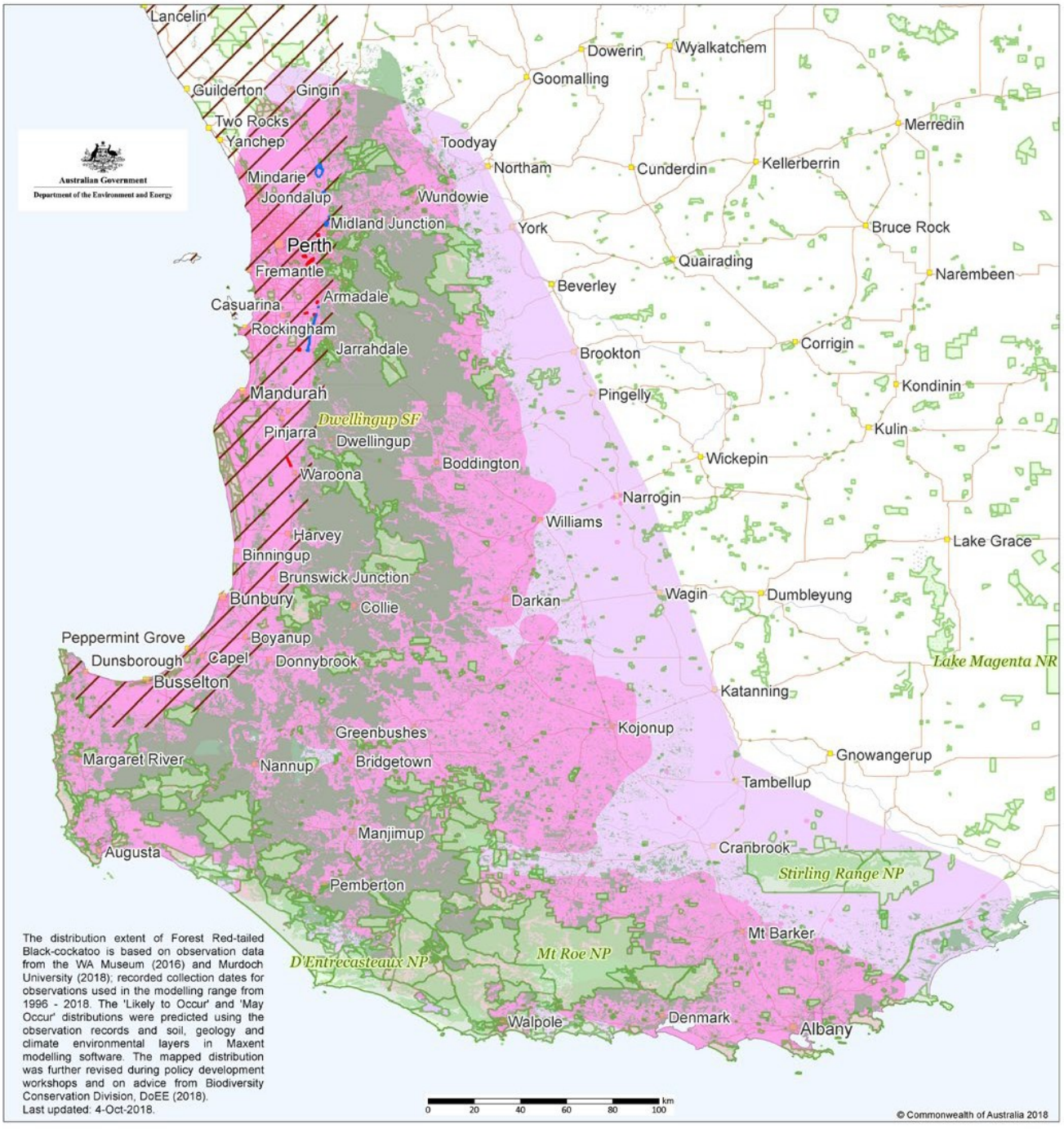
Conservation Areas
Jarrah, Karri, Marri, Salmon Gum, Wandoo, Banksia, Grevillea, Dryandra and Hakea

Species
Breeding Range
Non-breeding Range

Ecological Communites
Corymbia calophylla - Xanthorrhea preissii woodlands and shrublands of the Swan Coastal Plain
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain
Banksia Woodlands of the Swan Coastal Plain

Cities & Towns
Roads (sealed)
Roads (unsealed)
State Border

Map 4 Modelled distribution for Forest Red-tailed Black-Cockatoo (*Calyptorhynchus banksii naso*)



INDICATIVE MAP ONLY: For the latest departmental information, please refer to the Protected Matters Search Tool and the Species Profiles & Threats Database at http://www.environment.gov.au/biodiversity/threatened/index.html

Produced by:
Environmental Resources Information Network 2018

Contextual data source:
National Vegetation Information System (NVIS 5.1) 2018
Interim Biogeographic Regionalisation for Australia (IBRA) version 7 2012
Collaborative Australian Protected Area Database (CAPAD) 2016
Geoscience Australia GEODATA TOPO 250K Topographic Data Series 3 2006

Projection: Geographic
Datum: GDA94

Conservation Areas
Jarrah, Karri and Marri

Species
Likely to Occur
May Occur

Ecological Communities
Corymbia calophylla - Xanthorrhea preissii woodlands and shrublands of the Swan Coastal Plain
Corymbia calophylla - Kingia australis woodlands on heavy soils of the Swan Coastal Plain
Banksia Woodlands of the Swan Coastal Plain

Cities & Towns
Roads (sealed)
Roads (unsealed)
State Border
Major Rivers
Lakes/Reservoirs
Non-perennial Lakes

Appendix 3: DBCA Threatened Fauna Database – Black Cockatoo Records

COM NAME	CLASS	STATUS	WA STATUS	EPBC STATUS	YEAR	CERTAINTY	OBS METHOD	OBS TYPE	SEC SIGN	COUNT	LOCALITY	SITE	ACCURACY M	LAT	LONG
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2015	Not Defined				0	Snake Gully Lookout Deeside coast rd	Snake Gully Lookout Deeside coast rd	30	-34.60470000000	116.33720000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2018	Not Defined				0	Shannon National Park campground	Shannon National Park campground	0	-34.59490000000	116.41270000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2001	Not Defined				0	Shannon Dam	Shannon Dam	100	-34.58080000000	116.41400000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2001	Not Defined				0	Shannon NP campground	Shannon NP campground	5000	-34.58330000000	116.38330000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2001	Not Defined				0	Boorara Brrok Conservation Park	Boorara Brrok Conservation Park	5000	-34.68330000000	116.25000000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1998	Not Defined				0	Kintyre farm	Kintyre farm	100	-34.65990000000	116.20760000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1998	Not Defined				0	NW of Walpole	NW of Walpole	100	-34.65350000000	116.49600000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2004	Not Defined				0	Hollow Butt	Hollow Butt	100	-34.62390000000	116.13640000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2004	Not Defined				0	Boorara CP	Boorara CP	100	-34.68550000000	116.25740000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2006	Not Defined				0	Eco Round Tu It CP	Eco Round Tu It CP	0	-34.63410000000	116.14320000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2008	Not Defined				0	Roundtu-it Caravan Park	Roundtu-it Caravan Park	100	-34.63310000000	116.14310000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2008	Not Defined				0	Shannon Area	Shannon Area	0	-34.60440000000	116.40580000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1999	Not Defined				0	Kintyre farm, Jackson Road, via Northcliffe	Kintyre farm, Jackson Road, via Northcliffe	100	-34.66110000000	116.20610000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1998	Moderately Certain	Opportunistic sighting	Day sighting		6	North Walpole	Karri clearfell boupe, b/w Boodanoo & Watlle Road	1000	-34.63333222000	116.49166250000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2009	Very Certain	Targeted survey	Secondary sign	Feeding residue	0	BOORARA BROOK	Boorara Gardner National Park, Boorara Rd	1000	-34.66970000000	116.18060000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2009	Very Certain	Targeted survey	Secondary sign	Feeding residue	0	BOORARA BROOK	Boorara Gardner National Park, Boorara Rd	1000	-34.66530000000	116.18080000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 18	30	-34.50430000000	116.30510000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 10	30	-34.48410000000	116.32030000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 10	30	-34.48570000000	116.31770000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 06	30	-34.45760000000	116.33490000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	No other signs	1	Sutton	Site 06	30	-34.45040000000	116.35060000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2018	Certain	Opportunistic sighting	Sighting	No other signs	1	Sutton	Site 10	30	-34.49090000000	116.32230000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2018	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 06	30	-34.46290000000	116.34060000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	Feeding residue	1	Sutton	Site 18	30	-34.50560000000	116.30220000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2017	Certain	Opportunistic sighting	Sighting	No other signs	1	Sutton	Site 19	30	-34.49830000000	116.28710000000
Baudin's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1998	WAM Vouchered	Collection	Specimen		1		Northcliffe/Shannon ;	0	-34.63330000000	116.48330000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2014	Not Defined				0	Shannon NPk campground	Shannon NPk campground	0	-34.59530000000	116.41080000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2014	Not Defined				0	Hollow Butt Picnic Area, Northcliffe	Hollow Butt Picnic Area, Northcliffe	0	-34.62580000000	116.13690000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2001	Not Defined				0	Snake Gully Lookout, Shannon NP	Snake Gully Lookout, Shannon NP	100	-34.60330000000	116.33670000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1999	Not Defined				0	Kintyre farm, Jackson Road, via Northcliffe	Kintyre farm, Jackson Road, via Northcliffe	100	-34.66110000000	116.20610000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2001	Not Defined				0	Kintyre farm, Jackson Road, via Northcliffe	Kintyre farm, Jackson Road, via Northcliffe	100	-34.66110000000	116.20610000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1998	Not Defined				0	Kintyre farm	Kintyre farm	100	-34.65990000000	116.20760000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2000	Not Defined				0	Kintyre farm, Jackson Road, via Northcliffe	Kintyre farm, Jackson Road, via Northcliffe	100	-34.66110000000	116.20610000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2009	Not Defined				0	Shannon NP	Shannon NP	100	-34.59640000000	116.41080000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2009	Not Defined				0	Shannon NP	Shannon NP	100	-34.59060000000	116.41140000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	1999	Not Defined				0	Kintyre farm, Jackson Road, via Northcliffe	Kintyre farm, Jackson Road, via Northcliffe	100	-34.66110000000	116.20610000000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2013	Not Sure	Survey	Day sighting		10	Jane National Park	Kwowaup 445 Datchet Road, Crowea 626212 km North of Northcliffe	1000	-34.58043554000	116.17639640000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2013	Not Sure	Survey	Day sighting		10	Jane National Park	Kwowaup 445 Datchet Road, Crowea 626212 km North of Northcliffe	1000	-34.58043554000	116.17639640000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2013	Not Sure	Survey	Day sighting		10	Jane National Park	Kwokaup 445 Datchet Road, Crowea 626212 km North of Northcliffe	1000	-34.58043554000	116.17639640000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2021	Certain	Targeted survey	Secondary sign	Feeding residue	0	South west	Shannon	30	-34.58086829000	116.34405660000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2021	Certain	Targeted survey	Secondary sign	Feeding residue	0	South west	Shannon	30	-34.58065299000	116.34426540000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2021	Certain	Targeted survey	Secondary sign	Feeding residue	0	South west	Shannon	30	-34.58046473000	116.34447410000
Carnaby's Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2021	Certain	Targeted survey	Secondary sign	Feeding residue	0	South west	Shannon	30	-34.58028556000	116.34469350000
Forest Red-tailed Black Cockatoo	BIRD	Threatened - Vulnerable	VU	VU	1996	Certain	Opportunistic sighting	Day sighting		6	TONE	Cnr Cormint and Tone Rds	300	-34.41989613000	116.45032100000
Forest Red-tailed Black Cockatoo	BIRD	Threatened - Vulnerable	VU	VU	1996	Certain	Opportunistic sighting	Sighting		6	TONE	Corner of Cormint and Tone Roads	30	-34.42440745000	116.45082470000
Forest Red-tailed Black Cockatoo	BIRD	Threatened - Vulnerable	VU	VU	2011	Certain	Opportunistic sighting	Day sighting		5		11155 Hillbrook Rd, Crowea WA 6262 Northcliffe - intersection of Hillbrook and Bone Rd	1000	-34.52201966000	116.18191830000
Forest Red-tailed Black Cockatoo	BIRD	Threatened - Vulnerable	VU	VU	2012	Moderately Certain	Opportunistic sighting	Day sighting		5	Upper Warren	Pine Plantation Quinninup - Manjimup (near Parsons Rd)	1000	-34.40676509000	116.25431910000
Forest Red-tailed Black Cockatoo	BIRD	Threatened - Vulnerable	VU	VU	2015	Certain	Opportunistic sighting	Secondary sign	Feeding residue	0	Dordagup	Site 05	30	-34.44460000000	116.32780000000
White-tailed Black Cockatoo	BIRD	Threatened - Endangered	EN	EN	2019	Certain	Survey	Secondary sign	Hollow	1				-34.48914200000	116.24715800000