Targeted Fauna Survey: Black Cockatoo and Western Ringtail Possum

Lot 220 Queelup Road, North Boyanup

APRIL 2025

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Abbreviations and acronyms

Common terms	
CBP	Common brushtail possum (*Trichosurus vulpecula*)
CE	Critically Endangered species
DBCA	WA Department of Biodiversity, Conservation and Attractions
DCCEEW	Federal Department of Climate Change, Energy, the Environment and Water
DWER	WA Department of Water and Environmental Regulation
EN	Endangered species
FRTBC	Forest Red-tailed Black Cockatoo (*Calyptorynchus banksi* subsp. *naso*)
Survey Area	28.45 ha area at Lot 220 Queelup Road, North Boyanup
Desktop Survey Area	10 km buffer around Survey Area (general searches), 12 km buffer around Survey Area (black cockatoo records)
Suitable DBH tree	Tree of a suitable species and size Diameter at Breast Height (DBH) to develop large hollows: ≥30 cm for most Wheatbelt species (e.g. Wandoo, Salmon Gum) ≥50 cm most trees in the Southwest (e.g. Jarrah, Marri, Tuart) ≥75 cm for fast growing species (e.g. Karri or Eastern States Eucalypts)
VU	Vulnerable species
WA	Western Australia
WRP	Western ringtail possum (*Pseudocheirus occidentalis*)
Legislation	
BC Act	WA *Biodiversity Conservation Act 2016*
EP Act	WA *Environmental Protection Act 1986*
EPBC Act	Federal *Environment Protection and Biodiversity Conservation Act 1999*
Measurements	
DBH	Diameter at Breast Height in centimetres
cm	Centimetre
ha	Hectare
km	Kilometre
m	Metre

Executive Summary

Accendo Australia have been engaged by JW Cross Maintenance Pty Ltd to assist in in the environmental approvals process regarding a 28.45 ha area (the Survey Area) at Lot 220 Queelup Road, North Boyanup (Shire of Capel). Targeted Black Cockatoo and Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*) surveys were required to identify black cockatoo and WRP habitat values within the Survey Area.

Field work consisted of one diurnal survey on the 3rd of March 2025 and two non-consecutive nocturnal surveys undertaken on the 10th and 19th of March 2025. Surveys were undertaken to validate the desktop review and ground truth fauna habitat.

All three black cockatoo[1] species occur locally. One confirmed white-tailed black cockatoo (WTBC) natural breeding hollow occurs approximately 2.6 km northwest of the Survey Area, along with one potential natural breeding hollow located ~4.6 km southwest of the Survey Area (DBCA, 2025). One WTBC black cockatoo roost has been recorded within 1 km of the Survey Area, CAPNORR001, last surveyed in 2016 (DBCA, 2025). Recent forest red-tailed black cockatoo black cockatoo (*Calyptorhynchus banksii subsp. naso*) (FRTBC) feeding residue was observed widely across the Survey Area.

Two key fauna habitat types were identified within the Survey Area, consisting of predominantly high-quality foraging habitat for all three black cockatoo species:

- Predominately Peppermint (*Agonis flexuosa*) woodland and paddock trees (7.81 ha) – *Agonis flexuosa*, *Xylomelum occidentale*, *Banksia* spp., *Nuytsisa floribunda* over *Kunzea glabrescens* shrubs over *Macrozamia* sp. cycads and *Xanthorrhoea* sp. grass-trees over *Stirlingia latifolia* over various Restionaceae spp. and *Lomandra* sp. Clumps of *Euclayptus marginata*, and *Corymbia calophylla* also occur, (<50 cm DBH) dispersed throughout the habitat type.
- Jarrah Marri paddock trees (1.03 ha) – *Eucalyptus marginata* and occasional *Corymbia calophylla* isolated or clumps of paddock trees (>50 cm DBH) over open clearings with clumps of low shrubs over various weedy herbs and grasses.

Ninety suitable DBH trees both with and without hollows, were identified within the Survey Area (66 Jarrah, 11 Marri and 13 in dead trees). Ten hollow-bearing trees were observed, including four *Trees with suitable DBH with unsuitable hollows*, and two *Trees with potentially suitable size hollows with no signs of use*. Black cockatoos are unlikely to breed within the Survey Area due to the absence of suitable breeding hollows. No evidence of night roosts were observed.

The Survey Area contained 8.84 ha of High-quality foraging habitat for Carnaby's cockatoo and 1.03 ha of High-quality habitat for FRTBC. Additionally, the site contained 8.84 ha of Moderate quality foraging

[1] Black cockatoos collectively refer to

- Forest Red-tailed Black Cockatoo (*Calyptorhynchus banksii subsp. naso*) (Vulnerable)
- Baudin's White-tailed Black Cockatoo (*Zanda baudinii*) (Endangered)
- Carnaby's White-tailed Black Cockatoo (*Zanda latirostris*) (Endangered)

habitat for Baudin's cockatoo, and 7.81 of Moderate quality habitat for FRTBC. Recent FRTBC feeding residue was found widely across the Survey Area.

The Survey Area is within the WRP Swan Coastal Plain Management Zone in the Recovery Plan (DPaW, 2017). WRP are common locally. The Survey Area broadly aligns with Critical habitat as outlined in the Western Ringtail Possum Recovery Plan (DPaW, 2017). Nocturnal surveys identified a total of 12 WRP, with six individuals observed during each night of survey. Additionally, four Brush-tailed Phascogale (*Phascogale tapoatafa*) (Specially Protected) and 16 Common Brushtail Possum (CBP) observations were recorded. Three dreys were identified within the Survey Area.

The following recommendations are made

- Clearing should be minimised, where possible.
- Clearing schedules should be planned to avoid spring breeding peaks, if possible.
- An authorised fauna spotter should be present during clearing.
- Weed management and infill planting could be considered in degraded areas in adjacent vegetation that may be retained.
- Once the final footprint is known then impacts should be assessed against the relevant DCCEEW Significant Impact Guidelines as the following aspects may trigger the need for the project to be referred to the Department under the EPBC Act.

1 Introduction

1.1 Project Background

Accendo Australia have been engaged by JW Cross Maintenance Pty Ltd to assist in the environmental approvals process regarding a 28.45 ha area at Lot 220 Queelup Road, North Boyanup (herein referred to as the 'Survey Area'). The Survey Area (Figure 1) falls within the Local Government Authority (LGA) of the Shire of Capel, located approximately 1.82 km southeast of the intersection between Lilydale Road and the Wilman Wadandi Highway. Targeted black cockatoo and Western ringtail possum (WRP) (*Pseudocheirus occidentalis*) surveys were required to identify black cockatoo and WRP habitat values within the Survey Area.

1.2 Scope

SW Environmental was engaged to undertake a targeted black cockatoo and WRP survey within the circa 28.45 ha Survey Area (Figure 2). The surveys were to include desktop review and fieldwork components in line with relevant guidelines.

1.3 Regulatory Context

Key environmental legislation relevant to the survey is outlined in Table 1-1.

Table 1-1 Environmental legislation that may be relevant to the Project

Legislation	Responsible Government Department	Aspect
Federal Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)	Federal Department of Climate Change, Energy, the Environment and Water (DCCEEW)	Matters of National Environmental Significance including threatened fauna and environmental offsets.
Biodiversity Conservation Act 2016 (BC Act)	WA Department of Biodiversity, Conservation and Attractions (DBCA)	Threatened species habitats, threatening processes, environmental pests and weeds.
Environmental Protection Act 1986 (EP Act)	Environmental Protection Authority or Department of Water and Environmental Regulation (DWER)	Environmental impact assessment and management and offsets.

Fauna in WA may be afforded protection under the WA BC Act and or federal EPBC Act. All three black cockatoo species and WRP targeted in this survey are listed under the BC and EPBC Acts as:

- CE: Critically Endangered species (WRP)
- EN: Endangered species (Baudin's cockatoo and Carnaby's cockatoo)

- VU: Vulnerable species (FRTBC)

1.3.1 Guidelines

Black cockatoo habitat is typically assessed by considering breeding, roosting and foraging habitat. The black cockatoo and WRP survey methodologies were developed with consideration of:

- Commonwealth Matters of National Environmental Significance – *Significant impact guidelines 1.1 Environmental Protection and Biodiversity Conservation Act 1999*, Department of the Environment, Water, Heritage and the Arts (2009).
- Commonwealth *Referral guideline for 3 WA threatened black cockatoo species Carnaby's Cockatoo (Zanda latirostris), Baudin's Cockatoo (Zanda baudinii) and the Forest Red-tailed Black-cockatoo (Calyptorhynchus banksii naso)* Department of Agriculture, Water and the Environment (2022).
- Commonwealth *EPBC Act referral guidelines for three threatened black cockatoo species: Carnaby's cockatoo (endangered), Zanda latirostris, Baudin's cockatoo (vulnerable), Zanda baudinii, and Forest red-tailed black cockatoo (vulnerable) Calyptorhynchus banksii naso* (SEWPaC, 2012)
- Department of Parks and Wildlife (2013). Carnaby's Cockatoo (*Calyptorhynchus latirostris*) Recovery Plan. Department of Parks and Wildlife, Perth, Western Australia.
- Department of Environment and Conservation (2008) Forest Black Cockatoo (Baudin's Cockatoo *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo *Calyptorhynchus banksii naso*) Recovery Plan
- Department of Parks and Wildlife (2017). Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan. Wildlife Management Program No. 58. Department of Parks and Wildlife, Perth, WA.
- Environmental Protection Authority (2002). Terrestrial Biological Surveys as an Element of Biodiversity Protection. Position Statement No. 3.
- Environmental Protection Authority (2020). Technical Guidance – Terrestrial Guidance for Fauna Surveys for Environmental Impact Assessment. Perth, Western Australia.

1.3.2 EPBC Act considerations

The Commonwealth of Australia (DAWE, 2022) guideline applies to the three black cockatoo species listed as threatened species under the EPBC Act. The guideline provides guidance on what actions are likely or unlikely to require referral to the Minister for the Environment regarding significant impact on black cockatoos (SEWPaC, 2012):

- Currently, the overall population trend for all three black cockatoo species is declining and is expected to continue to decline.
- The loss of breeding habitat is likely to require a referral.
- The loss of one or more known or suitable nesting trees is likely to require a referral.

- The loss of a known night roosting site is likely to require a referral.
- The loss of equal to or greater than one ha of high-quality foraging habitat is likely to require a referral (as determined using the foraging quality scoring tool in (Table 2-2, Section 2.2.3).
- The loss of one or more hectares of predominantly exotic habitat (e.g. pines) known to be utilised by black cockatoos is likely to require a referral.
- The loss of under 10 ha of low-quality foraging habitat is unlikely to require a referral (as determined using the foraging quality scoring tool in Section 2.2.3).
- Light pruning or trimming of a night roosting site is unlikely to require a referral.

Once the final impact area (proposed action) is known, the proposal should be assessed against the DAWE (2022) Foraging quality scoring tool (template presented in Appendix B of this report). The scoring tool includes consideration of the three components used in the EPBC Act Offsets Assessment Guide (SEWPaC, 2012) in the calculation of habitat quality (site condition, site context and species stocking rate) by considering contextual factors relating to habitat quality to give a final habitat quality score.

Proposed impacts to WRP and their habitat should be assessed against the Commonwealth Matters of National Environmental Significance – *Significant impact guidelines 1.1* (DEWHA, 2009).

2 Methods

2.1 Desktop Review

A desktop review of breeding, foraging habitat and roosting requirements for all three black cockatoo species within 12 km of the Survey Area was completed prior to field work. It included a review of:

- relevant literature such as recovery plans, journal articles, survey guidelines,
- general consultation with a black cockatoo expert (Tony Kirkby),
- interrogating spatial datasets, such as:
    - Atlas of Living Australia (ALA, 2025),
    - Birdata (BirdLife Australia, 2025),
    - Dandjoo (DBCA, 2024a)
    - Protected Matters Database (DCCEEW, 2024), and
    - Department of Biodiversity, Conservation and Attraction's Threatened, Specially Protected and Priority Fauna Database and black cockatoo breeding and roosting records (DBCA, 2024b).

2.2 Field Survey

2.2.1 Survey Area

The 28.45 ha Survey Area is located at Lot 220 Queelup Road, North Boyanup, approximately 1.82 km southeast of the intersection between Lilydale Road and the Wilman Wadandi Highway. The Survey Area consists of cleared pastural paddock area and remnant native vegetation of varying density. Remnant native vegetation includes predominantly Jarrah (*Eucalyptus marginata*) and Marri (*Corymbia calophylla*) paddock trees over Peppermint (*Agonis flexuosa*), Woody Pear (*Xylomelum occidentale*) and *Nuytsia floribunda* woodland over open shrubland. The Desktop Study Area (DSA) utilised for desktop database searches consisted of a 10-12 km buffer around the Survey Area boundary (Figure 1, Appendix A).

2.2.2 Site Reconnaissance

Field work consisted of a diurnal survey on the 5th of March, and nocturnal spotlighting surveys conducted on the 10th and 19th of March 2025. Field personnel engaged in undertaking surveys included Shane Priddle (Principal Ecologist), Georgia Johnsen (Ecologist), Angela Filardi (Ecologist) and Kelly Paterson (Ecologist). Surveys were undertaken to validate the desktop review and ground truth fauna habitat. Evidence of target fauna, e.g. feed residue, scat, breeding evidence, and sightings were noted. Survey methods for black cockatoos and WRP are described below.

2.2.3 Black Cockatoo Survey Methodology

Black cockatoo surveys (habitat assessment and tree surveys) were conducted during the diurnal survey. The field survey methodology was based on the Commonwealth referral guidelines for black cockatoos (DAWE, 2022; SEWPaC, 2012) and black cockatoo species profiles presented in the Desktop Review (Section 3). The profiles are based on literature review and previous work and consultation with Tony Kirby, a recognised black cockatoo expert. Black cockatoo habitat surveys included an assessment of suitable DBH trees, tree hollow assessment, foraging habitat assessment, and roosting habitat.

Twelve km is referenced as a nominal distance for site context and local vegetation and habitat values and is considered the maximum range that black cockatoos travel from a nesting site to forage (DAWE, 2022).

Suitable DBH Tree and Hollow Survey

Black cockatoos' nest in hollows formed in large, native eucalypt trees, assessed as potential habitat or "Suitable DBH trees". Suitable DBH tree refers to a suitable Diameter at Breast Height measurement. In the Southwest, black cockatoos normally breed in *Corymbia calophylla* (Marri), *Eucalyptus gomphocephala* (Tuart) or Karri (*Eucalyptus diversicolor*). Sometimes *Eucalyptus marginata* (Jarrah), *Eucalyptus rudis* (Flooded gum) or other native trees are used.

Notes on tree records: Trees with a suitable DBH include those with a measurement ≥ 50 cm for most trees in the Southwest, ≥ 30 cm DBH for most Wheatbelt species e.g. *Eucalyptus wandoo* (Wandoo) and *Eucalyptus salmonophloia* (Salmon gum), and ≥75 cm for fast growing trees, such as eastern states eucalypts or Karri (*Eucalyptus diversicolor*).

Mallee form or multi-stemmed trees typically have the largest stem measured. If they are multi-stemmed around head height with under sized DBH on the main trunk, they are not recorded. Planted eastern states eucalypts such as blue gums, e.g. *Eucalyptus saligna* or *Eucalyptus globulus,* are unlikely to develop hollows unless they are at an advanced age (S. Priddle pers obs.). As such, they are not recorded unless they were visibly senescing or large hollows are observed. Trees laying over or considered to have no potential to develop hollows (burnt or close to falling) are not recorded.

Trees were mapped by GPS (~3 m accuracy), with notes made on tree species and DBH size class. A ground-based assessment of each tree was made using binoculars. The black cockatoo breeding suitability of a hollow was assessed based on an assessment of attributes such as hollow angle, access, entry (aperture) size, estimate of chamber size, and use by other animals. European honeybee (*Apis mellifera*) hives may render a hollow unsuitable for the short term, so bees were noted. Hollows that were potentially suitable or likely to provide breeding habitat were further assessed by drone or pole camera. Records *confirmed* or *not confirmed* indicate whether pole cam or drone inspection was conducted. Pole camera and/or use of drones was conducted in line with animal ethics and license requirements.

The number of hollows (limited to the most suitable hollows), aperture size, angle, height, breeding suitability, evidence of use was recorded. Assessment criteria are provided in Table 2-1.

Table 2-1 Suitable DBH tree and hollow classes and descriptions

Class	Description
Tree with suitable DBH without hollows	Suitable DBH tree (described above) that do not have hollows or hollows are too small for black cockatoo entry (<10 cm aperture).
Tree with suitable DBH with unsuitable hollow	Suitable DBH tree with a hollow with multiple attributes that would make the hollow unlikely to be suitable for breeding such as unsuitable entry aperture, internal dimensions, height or angle. Unlikely to be used by black cockatoos in current form.
Tree with potentially suitable size hollow with no signs of use	Suitable DBH tree that may have a suitable hollow but with a single attribute that might reduce the suitability of the hollow for breeding, such as the marginal entry aperture size, coned out internal dimensions, low height or oblique angle. The hollow has no evidence of use (chew marks, scarring, eggs, woodchips, etc). Possible but unlikely to be used by black cockatoos in current form.
Tree with suitable size hollow with no signs of use	Suitable DBH tree with a hollow with suitable attributes for breeding (suitable entry size, internal dimensions, height and angle). The hollow has no evidence of use (chew marks, scarring, eggs, woodchips) and whilst not currently used could be used in future.
Tree with potentially suitable size hollow with signs of use	Suitable DBH tree that may have a suitable hollow but with a single attribute that might reduce the suitability of the hollow for breeding, such as marginal entry aperture size, coned out internal dimensions, low height or oblique angle. The hollow has evidence of use (chew marks, scarring, eggs, woodchips). The evidence may be caused by other species, but black cockatoo use could not be ruled out without further survey.
Tree with suitable size hollow with signs of use	Suitable DBH tree with a hollow with suitable attributes for breeding (suitable entry size, internal dimensions, height and angle). The hollow has evidence of use (chew marks, scarring, eggs, woodchips) consistent with black cockatoo use, previous or current. The evidence may be caused by other species, but use of the hollow by black cockatoo is considered likely.
Known nesting tree	Suitable DBH tree with a known nesting hollow (cockatoos observed using the hollow and assumed to be breeding) or previously recorded as a breeding tree.

Foraging Habitat Assessment

The quality of potential black cockatoo foraging habitat was described based on structural vegetation mapping, with presence or absence of key feed species. Key feed species are defined in the species' profiles in Section 3 and from the plant list classified as primary or secondary foraging plants as assessed in Appendix C. Foraging habitat scores should be used as a high-level guide and in consideration of site context, timing and other factors. For example,

- lower quality foraging habitat may be important during breeding periods if it is located near breeding habitat (the closer the foraging resource the more important it may be),
- certain feed species may may be used in some regions but not in others due to a preference for other plants that may be available – the same feed species in the Jarrah Forest may not be used as heavily on the Swan Coastal Plain,
- as primary feed plants may flower or fruit at certain times, secondary plants may become as important as the primary plants when the primary plants resources are not available.

A high resolution orthophoto (3 cm pixels) and vegetation mapping was ground-truthed and used as a basis for the black cockatoo foraging habitat quality. Feed residue was noted if observed. Foraging categories were assigned to the fauna habitats in line with Table 2-2 for each black cockatoo species.

Table 2-2 Foraging habitat category and description

Category	Description
No foraging habitat	Cleared areas, dead trees, or plant species that are not known to be frequently fed on.
Low quality foraging habitat	Low quality foraging habitat may include one or more of the following • primary feed species that are isolated or disease affected, • some secondary foraging habitat such as trees that are not frequently fed on or are not considered a sustaining resource, • no evidence of foraging, • vegetation in a Completely Degraded or Degraded condition or relatively small areas relative to other higher quality surrounding habitat. Examples include dieback (e.g. *Phytophthora* spp.) affected Jarrah or *Banksia* or severe canker (*Quambalaria coyrecup*) affected Marri or very sparse primary or secondary feed species.
Moderate quality foraging habitat	Moderate quality foraging habitat may include one or more of the following • primary feed species (e.g., *Hakea*, Jarrah, Marri or pine trees) present but patchy or as paddock trees, • habitat dominated by a number of secondary feed species - vegetation communities with very few primary feed species present, • no evidence of recent foraging or some evidence in small amounts, • not near (within 6 km) breeding hollows (known or likely), • native vegetation where few primary or secondary feed species are present in Degraded or Good condition (EPA, 2016a).
High quality foraging habitat	High quality foraging habitat may include one or more of the following depending on the site context and surrounding habitat • primary feed species (e.g. *Hakea*, Jarrah, Marri or pine trees) dominant as paddock trees, patches, or components of a larger patch, • within 6 km breeding hollows (known or likely), • evidence of recent foraging, • native vegetation in Good or better condition (EPA, 2016a).

Roosting Habitat Survey

Roosting cockatoos would have been observed during the diurnal (secondary evidence) and nocturnal surveys (direct observations). Direct and indirect evidence of black cockatoo roosting within trees on site was noted if observed. Secondary evidence was also noted, such as the presence of moulted or preened feathers or down, clipped branches and whitewash.

2.2.4 Western Ringtail Possum Survey Methodology

WRP targeted surveys included diurnal and nocturnal surveys. The diurnal survey on 5th of March 2025 included general habitat assessment and WRP scat searches broadly across the survey area at the base of trees, on fallen timber and bare ground. The presence or absence of dreys and hollows was noted. Photos were taken within all habitat types.

Nocturnal spotlight surveys, conducted on the 10th and 19th of March 2025, aimed to survey the distribution and abundance of WRP within the Survey Area (survey effort shown in (Figure 6, Appendix A). Animals just outside of the Survey Area were also recorded. Surveys were conducted by two experienced surveyors by foot using 1000 lumen LED head torches, over the entire Survey. Transects were established following Eastings as a heading, utilising transect spacing of ~30 m. Weather

conditions were conducive for spotlighting. Common brushtail possum (CBP) (*Trichosurus vulpecula*) and South-western brush-tailed phascogale (*Phascogale tapoatafa)* (Specially Protected) were also recorded.

2.2.5 Animal Ethics

The survey conformed to Section 4 of the *Australian code of practice for the care and use of animals for scientific purposes* (National Health and Medical Research Council 2004). No animals were captured or collected during the survey. Surveys were carried out under Scientific Use License *Animal Welfare Act 2002* Licence to use animals for scientific purposes No: U285/ 2022-2024 and Wildlife Animal Ethics Committee Permit: WAEC 22-08-88. No nesting black cockatoos were disturbed during the survey.

2.3 Limitations

In accordance with *Technical Guidance* (EPA, 2020) potential survey limitations are identified below.

Table 2-3 Limitations of survey adequacy and accuracy

Aspect	Constraint	Comment
Competency / experience	No	Shane Priddle (Ba Science; Certified Environmental Practitioner No.310) led and/or oversaw the surveys. Shane has nearly 25 years' experience surveying black cockatoo and WRP throughout NSW and WA. Other field personnel hold relevant qualifications and experience to conduct fauna surveys
Scope	No	The targeted fauna survey scope is adequate to inform planning and assessment in relation to black cockatoos and WRP site values.
Adequacy of the survey intensity and proportion of survey achieved	No	The survey effort applied was adequate to identify black cockatoo and WRP habitat values. A precautionary approach has been adopted.
The proportion of the task achieved and further work	No	The surveys were completed adequately, to a sufficient level with respect to the scope.
Timing/weather/season	No	The surveys were completed in suitable weather conditions.
Disturbances	No	There were no disturbances that affected the survey.
Intensity	No	The survey effort was adequate to meet the project scope.
Completeness	Negligible	The entire Survey Area was assessed.
Resources	No	The surveys were completed adequately.
Access problems	No	The site was within the public land and accessible.
Identification of hollows	Low	Known limitations inherent in the survey of hollows include bias with surveyors, times, differing familiarity with tree types, levels of expertise, survey conditions such as weather and time of day, and survey technique (Gorrod & Keith, 2008; Rayner et al., 2011). Ground counts of hollows are subjective. Some hollows may be missed, obscured, particularly hollows in branches and vertical hollows. As well as providing inaccurate counts of hollow abundance, ground surveys provide incomplete or inaccurate information on hollow dimensions and use of hollows by fauna (Koch, 2008). Generally, ground-based surveys lead to overestimation of hollows (Rayner et al., 2011, S. Priddle, pers obs.) This

Aspect	Constraint	Comment
		limitation was reduced by checking hollows with a pole camera or drone for suitability where required. Hollow characteristics may change over time. There is some risk, although low, that black cockatoos may breed in a hollow where evidence of use is not visible or hollow characteristics are atypical. Not all active cockatoo hollows show signs of heavy chewing, and active or past breeding hollows may be missed. Also, other animals such as Little corella (*Cacatua sanguinea*) or Galah (*Eolophus roseicapilla*) may use black cockatoo hollows at other times of the year or between years. The author has extensive experience in the identification and assessment of hollows and is considered competent in relation to this skill. The results are provided based on experience and professional judgement though certainty of use cannot be guaranteed without hollow watching during the breeding season.

3 Desktop Review

3.1 Site Context

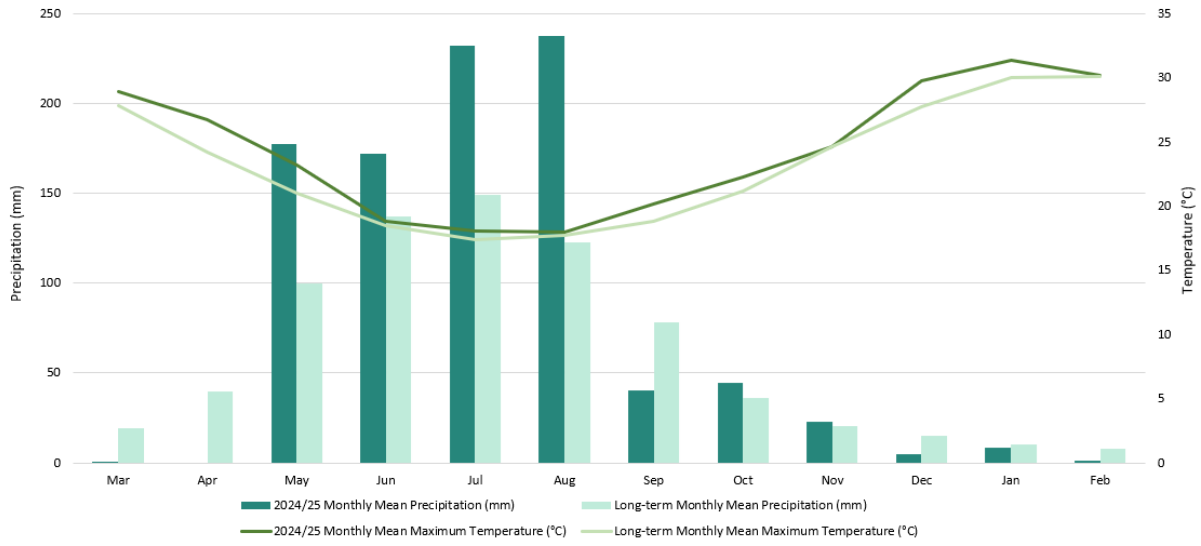
3.1.1 IBRA Region and Climate

The Survey Area is located within the Swan Coastal Plain Interim Biogeographic Regionalisation for Australia (IBRA) bioregion, specifically within the Perth (SWA02) IBRA subregion (DCCEEW, 2022, 2023). The SWA02 IBRA subregion is of a warm, Mediterranean climate, typically experiencing an annual average rainfall of 600 to 1,000 millimeters (mm) (Mitchell et al., 2002a).

Graph 4-1 presents climatic information from the Bunbury WA weather station (station number 9965), the most relevant meteorological station for the Survey Area, situated 9.1 km from North Boyanup (BoM, 2025). The Bunbury weather station contained the most comprehensive weather data, in comparison to other stations within close proximity to the Survey Area. Long-term mean maximum temperatures range from 30.1°C in the hottest month of February, to 17.4°C in the coolest month of July. The long-term average annual rainfall is 737.3 mm.

Precipitation recorded between March 2024 and February 2025 was above average, at 942 mm., exceeding the long-term mean by over 200 mm. Whilst rainfall exceeded long-term averages substantially between the months May to August, it fell below the mean across the months March to April, September, and December (2024), and January to February (2025) (Graph 4-1). The greatest fluctuation in rainfall where records fell below the long-term average was experienced in April 2024, with a difference of 39.7 mm. Winter average rainfall (Jun – August) exceeded long-term averages by ~230 mm.

Weather records from the 12 months preceding the survey period demonstrate temperatures that have exceeded the long-term average over all months, with the exception of November 2024 during which the record matched the long-term average (Graph 4-1).



Graph 4-1 Temperature and rainfall data from the Bunbury weather station (station number 9519) (BoM, 2025)

3.1.2 Local Habitat Remaining

In a local context, the Swan Coastal Plain has historically been heavily over-cleared. Within 5 and 12 km of the Survey Area (similar to the extent typically travelled by breeding black cockatoos), no DBCA-managed areas occur. The area of native vegetation remaining within 10 km of the Survey Area is poorly represented less than 30 % of the total area. The area remaining within 10 km is only slightly higher, at 30 %, as presented in Table 3-1.

Table 3-1 Areas of DBCA reserves and native vegetation remaining within the foraging distances (6-12 km) from the survey area (Landgate, 2024)

Foraging range	Total area (ha)	Reserved (DBCA) %, Area (ha)	Native vegetation (including regrowth) remaining % of total area, Area (ha)
5 km	9,023.50	0 % (0 ha)	30 % (2,712.18 ha)
10 km	33,710.81	0 % (0 ha)	21 % (7,156.69 ha)

3.1.3 Habitat Connectivity

The South West Regional Ecological Linkages (SWREL) project (Molloy et al., 2009) identifies regional scale ecological linkages and aims to respond to the issues of fragmentation and climate change through land use planning policy and procedures. It also seeks to retain native vegetation and fauna habitat and reduce the loss of biodiversity and ecological function in the southwest.

The SWREL axis lines can be summarised as a series of vegetation patches which, due to their proximity, act as habitat stepping stones, thereby facilitating ecological processes and movement of organisms within and across the landscape (i.e. at the landscape scale).

The capacity for fauna to move is generally related to size; the larger the animal generally the greater the ability for the animal to cover a greater area (Molloy et al., 2009). Studies referred to in the SWREL Technical Report generally indicate (simplified) that

- Small mammals may cross widths of up to 100 m while dispersing,
- Small insectivorous passerines may cross gaps up to 20 m but not over 80 m,
- Arthropods and small lizards are generally sedentary in nature and unlikely to move between patches,
- Small invertebrates (as pollinators) will generally not disperse over 100 m,
- Frogs will generally disperse over 150m.

The above indicates that while vegetation gaps will, to some degree, compromise the capacity of fauna to persist, gaps of <100 m will not bring about a significant barrier to the dispersal of many fauna species. A gap of 1000 m between patches of remnant vegetation is recognised as a major barrier to the movement of many fauna species and represents a threshold, of which once crossed, presents a major decline in biotic interaction. The southeast of the Survey Area, particularly across habitat type 1 is represented as having good connectivity, declining towards the north end of the Survey Area and in a pocket of the southeast corner. This section of remnant vegetation is mapped to be in category 1c (with an edge touching or <100 m from a natural area selected in 1b).The southern extent of the Survey Area occurs approximately 1.4 km north of the nearest axis line.

3.2 Black Cockatoos

3.2.1 Species Profiles

The Survey Area falls within Region 1 Swan Coastal Plain (DAWE, 2022), characterised by the dominant presence of *Banksia* spp. and Tuart woodlands, as well as Marri, with Jarrah in the east. Black cockatoos utilise Region 1 primarily for foraging resources, with some small patches of breeding habitat existing (DAWE, 2022). There are scattered records for all three black cockatoo species locally (ALA, 2025; BirdLife Australia, 2025; DBCA, 2024b). Species profiles are provided below for further context.

Baudin's Black Cockatoo (*Zanda baudinii*)
EN (EPBC Act), EN (BC Act)

Baudin's cockatoo is a large forest cockatoo endemic to the southwest of WA. Depending on the region of origin, Baudin's cockatoo is a resident, a post nuptial nomad or migrant, with the bulk of the population vacating the coldest parts of their range (the Karri Forest) in the autumn and migrating northwards during the non-breeding season. Small numbers also appear resident in a few places including Leeuwin – Naturaliste Ridge and Manjimup (Johnstone & Kirkby, 2008). Flock sizes vary from small family groups to large aggregations at roosting sites.

Breeding mainly takes place in forested areas from August to November (egg laying dates) (Tony Kirkby, pers comm.) (DAWE, 2022). Baudin's cockatoo breeds in remnant woodland or forest, but may also breed in partially cleared areas, including isolated trees. Nests are in hollows in live or dead trees particularly Karri, Marri, Jarrah, Wandoo, Bullich and Tuart (DAWE, 2022).

In the non-breeding season, Baudin's cockatoo is mainly an inhabitant of Jarrah Marri Forest but also farmland and orchards. Its main food is Marri from which it takes seeds, flowers, grubs, and nectar. Its long bill is adapted to removing seeds from Marri nuts. It feeds on a variety of other foods, including nectar and seeds from *Hakea* and *Banksia* spp., rarely Jarrah, the pith of Kangaroo Paw (*Anigozanthos flavidus*), tips of *Pinus* spp.; *Macadamia* spp., almonds and pecans, seeds and fruit of apples and pears (DAWE, 2022). Refer to Appendix E.

Roost sites are usually in or near riparian environments or other permanent water sources in tall trees; any tree may provide roosting habitat, but particularly Jarrah, Flooded Gum, Blackbutt, Tuart and introduced *Eucalyptus* spp. (Blue Gum, Lemon Scented Gum) (DAWE, 2022; Johnstone & Kirkby, 2008).

Carnaby's Black Cockatoo (*Zanda latirostris*)
EN (EPBC Act), EN (BC Act)

Carnaby's cockatoo mainly occurs in or near eucalypt woodlands, especially those dominated by Wandoo or Salmon Gum, and sometimes in forests of Marri, Jarrah, Karri and Tuart. It is a postnuptial nomad, moving west after breeding. Nesting occurs mainly in the Wheatbelt but is increasingly occurring on the west and south coast. This species is currently expanding its breeding range westward and south into the Jarrah Marri Forests of the Darling Scarp and into the Tuart forests of the Swan Coastal Plain along with the Capes Region (S. Priddle pers obs.). This may be due to climate change (Cale, 2003; SPRAT, n.d.; WA Museum, 2010).

Breeding occurs mainly from early July to mid-December normally in remnant woodland or forest, but also in partially cleared areas, including isolated trees. Nests are in hollows in live or dead trees, particularly Salmon Gum, Wandoo, Tuart, Jarrah, Flooded Gum, York Gum, Powderbark, Karri and Marri (DAWE, 2022). Breeding success is largely dependent on suitable feeding habitat near the nest site to provide food necessary for the survival of the chick (Johnstone et al., n.d.).

The species forages in native shrubland, kwongan heathland and woodland dominated by proteaceous plant species, on seeds, flowers and nectar of *Banksia* spp., *Hakea* spp. and *Grevillea* spp., as well as *Callistemon* spp. and Marri, and in eucalypt woodland and forest that contains foraging species, individual trees and small stands of these species. It also feeds on seeds of introduced species including *Pinus* spp., *Erodium* spp., wild radish, canola, almonds, macadamia and pecans; insects and insect larvae; occasionally apples and persimmons; and liquidambar (DAWE, 2022). Refer to Appendix E.

Carnaby's cockatoos roost near riparian environments or other natural or artificial permanent water sources. Any tall trees may provide roosting habitat, but particularly Flat-topped Yate, Salmon Gum, Wandoo, Marri, Karri, Blackbutt, Tuart, introduced *Eucalyptus* spp. and introduced *Pinus* spp. (DAWE, 2022).

Forest Red-tailed Black Cockatoo (FRTBC) (*Calyptorhynchus banksii naso*)
VU (EPBC Act), VU (BC Act)

The FRTBC is a large forest cockatoo, endemic to the Southwest. FRTBC occurs throughout the Jarrah Marri Karri forested areas and more recently on the Swan Coastal Plain. Group sizes vary from small family groups and pairs to larger gatherings at roost sites.

FRTBC generally breed in remnant woodland or forest but may also breed in partially cleared areas, including isolated trees. They nest in hollows in live or dead trees particularly Marri, Karri, Wandoo, Bullich, Blackbutt, Tuart and Jarrah (DAWE, 2022; Johnstone et al., 2013). FRTBC have been recorded breeding in all months, but with peaks in Spring and Autumn following Marri (or Jarrah) fruit flushes. There are also years when very little breeding takes place (Johnstone and Kirkby, unpublished data).

FRTBC diet is mostly (90%) seeds of Jarrah and Marri in woodlands and forest, and in the edges of Karri forests, with the remainder made up of Blackbutt, *E. staeri* (Albany Blackbutt), Bullich, *Hakea* spp, Tuart, Western Sheoak *(Allocasuarina fraseriana)*, Snottygobble (*Persoonia longifolia*) and the non-indigenous Australian native *Melia azederach* (Cape Lilac) (Johnstone & Kirkby, 1999). The species forage on cones, the fruits of Snottygobble and Mountain Marri. On the Swan Coastal Plain, the species often feed on introduced *Corymbia maculata* (Spotted Gum), Cape Lilac, *Eucalyptus caesia*, *E. erythrocorys*, Lemon-scented Gum and Kaffir Plum (DAWE, 2022). Refer to Appendix E.

FRTBC are known to roost within any tall trees that may provide roosting habitat, particularly tall Jarrah, Marri, Blackbutt, Tuart and introduced *Eucalyptus* spp. trees or large trees on the edges of forests (DAWE, 2022)

3.2.2 Breeding Requirements

All three black cockatoos rely on large hollows for breeding which take many years to form. The onset of hollow formation is dependent on damage to the tree, from animals (normally termites) or snapped / dropped branches, then further rotting. Fire does not appear to be a hollow-forming process; it may reduce the quality and number of hollows over time (S. Priddle pers obs.). Young and healthy trees can quickly heal after damage and trees less than 100 years old are unlikely to contain large hollows. For nesting, black cockatoos show a preference for:

- Large senescing trees,
- Hollows not angled more than 45 degrees from vertical,
- Entrances of at least 12 cm but usually much larger (20-40 cm),
- Deep or well-sheltered hollows in main trunks, or large branches which can provide a floor space of at least 30 cm diameter or more.

All three species of black cockatoo are of similar size and utilise similar hollows when breeding. The actual species of tree is likely unimportant. For example, Carnaby's cockatoo nest in Marri trees in the Marri Forest and Wandoo in the Wheatbelt. All three species may use the same individual hollows when not occupied in the breeding season by other black cockatoo species (Kirkby pers comm, 2019). Suitable hollows may also be used interchangeably with other medium sized birds such as corellas, Galah, ducks and owls. Marri and Jarrah trees are considered by Commonwealth of Australia (DAWE, 2022; SEWPaC, 2012) to be large enough to develop hollows once they are >50 cm DBH. Wheatbelt species such as Wandoo and Salmon Gum may develop hollows at 30 cm DBH (DAWE, 2022). Planted eastern states *Eucalyptus* spp. such as blue gums are generally unlikely to develop hollows unless they are at an advanced age (at least 75cm DBH but usually much larger).

Hollows suitable for use by black cockatoos are usually in trees that are at least 100 years old but usually much older. Supporting literature identifies suitable breeding hollows as occurring in

- Trees over 150 years old (Koch, 2008),
- Marri trees aged ~200 years and Jarrah (~300 years), with an average tree being inhabited at ~400 years for Marri and ~500 years for Jarrah (Inions et al., 1989),
- Marri trees aged between 140 and 410 years of age (Johnstone et al., 2015),
- Jarrah trees aged between 120 and 150 years (Whitford, 2002),
- Marri trees aged at ~450 years, utilised by the medium sized Long-billed Corella (smaller than black cockatoos) (Mawson & Long, 1994), and
- Jarrah trees aged at over 1000 years (as stags) (Wayne, 2005).

While breeding, black cockatoos will generally forage within a 6–12 km radius of their nesting site. Following breeding, birds assemble into flocks and move through the landscape searching for food, usually within six kms of a night roost (SEWPaC, 2012). Black cockatoos rely on access to watering points in selecting night roost sites, with roost sites usually within two kms of a watering point where they often drink in the afternoon following daytime feeding (DAWE, 2022).

3.2.3 Roosting Behaviour

Most roosts are in a large stand of tall trees, with a dense canopy and close to permanent water. Roosting trees need to be a suitable height, have a leafy canopy to shield the birds and help retain body heat. Smaller roost sites up to eight km away from the main roosts are sometimes used, when foraging distances from the main roost become too great (e.g. Carnaby's cockatoo and FRTBC when Jarrah fruit has been exhausted locally) (S. Priddle pers obs., Johnstone et al., 2010).

Baudin's and Carnaby's cockatoos often roost as individuals (about 30 cm or more apart) in the outermost thin branches of the canopy, often among a clump of dense leaves, and generally in positions that are wind affected. FRTBC however roost side-by-side in family groups and on thick, protected perches under the canopy of tall trees (Johnstone et al., n.d.).

3.2.4 Local Context and Records

There are no Important Bird Areas (IBAs) defined as conservation priorities by Birdlife International near (within 12 km of) the survey area (BirdLife International, 2025).

DBCA (2025) database records included the following within 12 km of the survey area:

- A total of 130 black cockatoo records (20 Baudin's cockatoos, 88 Carnaby's cockatoos and 22 FRTBC).
- Two natural breeding hollows recorded (one confirmed, one potential, taxa unconfirmed), located 2.6 km northwest and ~4.6 km southwest of the Survey Area, respectively.
- Twelve roosts over 65 surveys, mostly Baudin's or Carnaby's cockatoos. One roost record occurs less than 1 km northeast of the Survey Area, CAPNORR001. This roost was last surveyed in 2016, with a maximum count of 26.

Table 3-2 DBCA roosts within 12 km (DBCA, 2025)

Site code	WTBC BC	WTBC max count	FRTBC count	FRTBC max count	No. of surveys
CAPBOYR001	0	0	47	17	5
CAPCROR001	0	0	0	0	2
CAPGELR002	129	89	47	17	6
CAPGELR003	0	0	0	0	1
CAPNORR001	30	26	0	0	7
CAPGELR001	48	38	0	0	8
BUNCOLR002	3	3	0	0	5
BUNCOLR001	49	22	0	0	8
BUNGLER002	156	79	0	0	6
BUNGLER001	96	62	0	0	7
DAREATR001	59	20	0	0	8
DAREATR003	0	0	0	0	2

3.3 Western Ringtail Possum

3.3.1 Species Profile

Western Ringtail Possum (WRP) (*Pseudocheirus occidentalis*)

CE (EPBC Act), CE (BC Act)

WRP mostly inhabit Peppermint and Peppermint-Tuart associations from Bunbury to Albany but also occur in Jarrah Marri forest in lower densities. The highest densities of WRP occur in the Swan Coastal Plain and South Coast (Biota, 2020; Shedley & Williams, 2014). Peppermint leaves form the basis of the WRP diet in coastal areas, but when unavailable, the dominant myrtaceous species are preferred. In the inland forest, Jarrah and Marri are the main food source. Garden plant varieties are also exploited in urban areas. WRP also feed on new shoots, flowers, leaves and/or fruiting bodies from a range of flora including *Nuytsia floribunda, Acacia saligna, Hardenbergia comptoniana, Allocasuarina fraseriana, E. gomphocephala, E. rudis, Melaleuca viminea, M. cuticularis, M. rhaphiophylla, Kunzea glabrescens* and *Xylomelum occidentale* (Shedley & Williams, 2014).

WRP use a range of nest and shelter sites to avoid predators and exposure to the weather. Dreys are constructed in the canopy if hollows are not available. Adequate nest and shelter sites are necessary components of good quality habitat (Jones et al., 1994; Shedley & Williams, 2014).

Fox predation is one of the main threats and causes of mortality to WRP (Wayne, 2005) along with the loss and fragmentation of native vegetation. This is due to their high dependence on midstorey and overstorey vegetation for food, shelter and protection from predators. In the Jarrah Marri forests, for example around Margaret River, the highest relative abundance occurs in areas with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation(DSEWPaC, 2010).

Critical habitat for the species as outlined in the Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (DPaW, 2017) is as follows:

> Habitat critical to survival for WRP is not well understood, and is therefore based on the habitat variables observed where WRP possums are most commonly recorded. These appear to vary between key management zones. The common themes however are high nutrient foliage availability for food, suitable structures for protection/nesting, and canopy continuity to avoid/escape predation and other threats. Long-term survival of the species requires linkages between suitable habitat patches and as such habitat critical to survival incorporates this. Vegetation communities critical to the species include long unburnt mature remnants of peppermint (*Agonis flexuosa*) woodlands with high canopy continuity and high foliage nutrients (high in nitrogen and low toxin levels); Jarrah (*Eucalyptus marginata*)/Marri (*Corymbia calophylla*) forests and woodlands with limited anthropogenic disturbance (unlogged or lightly logged, and a low intensity and low frequency fire history), that are intensively fox-baited and have low indices of fragmentation; coastal heath, Jarrah/Marri woodland and forest, peppermint woodlands, myrtaceous heaths and shrublands, Bullich (*Eucalyptus megacarpa*) dominated riparian zones and karri forest. Any habitat where WRP occur naturally are considered critical and worthy of protection.

The Survey Area is within the Swan Coastal Plain Management Zone in the Recovery Plan (DPaW, 2017).

3.3.2 Local Context and Records

Biota (2020) undertook a regional survey of WRP which estimated a combined number of over 20,000 WRP within the areas surveyed, from the three regional populations. Population estimates within the survey areas included the Swan Coastal Plain management zone at 9,270 individuals, the Southern Forest management zone at 7,500 individuals and the South Coast management zone at 3,340 WRP. The survey area falls within the Swan Coastal Plain management zone, specifically within the SWA02 IBRA subregion subpopulation in Biota (2020). These results were based on density sampling and provide an estimate of population size for subpopulations within the Swan Coastal Plain management zone.

Total WRP habitat in the Swan Coastal Plain IBRA bioregion (south of Myalup), surveyed by Shedley & Williams (2014), combined with the surveyed area of Yalgorup National Park, yielded a total area of 366km^2, of which 12.8 % was surveyed by Biota. 'Manea Park' was the closest Biota (2020) study area to this project's Survey Area, located approximately 3.6 km northwest of the Survey Area. The average encounter rate at Manea Park was 3.63 individuals per kilometre, and a total number of 103 individuals were observed over 28 transects (Biota, 2020). DBCA (2025) database records suggest that WRP are locally abundant, with 3309 records returned within 12 km of the Survey Area.

4 Results and Discussion

4.1 General Habitat Characteristics

The Survey Area, occurring within the Perth (SWA02) subregion of the Swan Coastal Plain IBRA bioregion (DCCEEW, 2022, 2023), is comprised of Heath and/or Tuart woodlands on limestone, *Banksia* and Jarrah-*Banksia* woodlands on marine dunes, and Marri on colluvial and alluvial deposits (Mitchell et al., 2002b). The site contains the same vegetation type and general fauna habitat type throughout, with denser remnant vegetation through the southwestern corner of the site. The northern and eastern areas typically contain paddock trees only. Large (>50 cm DBH) Jarrah and Marri trees have been excised from the remaining habitat due to their higher value to black cockatoos. As such, two key fauna habitat types were identified within the Survey Area, Figure 4 (Appendix A):

1. **Predominately Peppermint (*Agonis flexuosa*) woodland and paddock trees (7.81 ha) –** *Agonis flexuosa, Xylomelum occidentale, Banksia* sp., *Nuytsisa floribunda over Kunzea glabrescens* shrubs *over Macrozamia* sp. cycads and *Xanthorrhoea sp.* grass-trees over *Stirlingia latifolia* over various *Restionaceae* spp. and *Lomandra* sp.. Clumps of *Euclayptus marginata,* and *Corymbia calophylla* also occur. (<50 cm DBH) dispersed throughout the habitat type.



Photo 1 Fauna habitat type 1

2. **Jarrah Marri paddock trees (1.03 ha) –** *Eucalyptus marginata* and occasional *Corymbia calophylla* isolated or clumps of paddock trees (>50 cm DBH) over open clearings with clumps of low shrubs over various weedy herbs and grasses.



Photo 2 Fauna habitat type 2

- **Additional Cleared Areas (19.61 ha) –** Paddock-cleared open space consisting of various grasses and herbs.



Photo 3 Additional cleared paddock area

Vegetation condition ranged from Completely Degraded to Good condition (EPA, 2016a), displaying multiple signs of disturbances, but retaining basic vegetation structure in more densely vegetated areas. Within habitat type 1, the canopy of remnant vegetation displays a better level of connectivity. Isolated paddock trees, have been identified and generally mapped separately where they are >50 cm DBH due to their value for black cockatoo foraging and breeding (described above).

4.2 Habitat Trees

The survey identified 90 suitable DBH trees, inclusive of 66 Jarrah, 11 Marri and 13 unidentified, dead trees. Of the DBH trees, 13 hollows were recorded across 10 trees. A comprehensive list of DBH trees existing within the Survey Area is provided in Appendix D.

4.3 Black Cockatoo Foraging

FRTBC foraging residue was observed widely across the Survey Area (Photos 4, 5, 6). No Baudin's or Carnaby's cockatoo foraging residue was observed. Several plant species within the Survey Area were known as primary or secondary black cockatoo feed species (Table 4-1). The overall Survey Area contained:

- One primary and at least three secondary foraging plant taxa for Baudin's cockatoo,
- At least four primary and two secondary foraging plant taxa for Carnaby's cockatoo, and
- two primary and one secondary foraging plant taxa for FRTBC.



Photo 4 Marri FRTB chewing



Photo 5 Woody Pear FRTB chewing (as confirmed by T. Kirkby, pers comms)



Photo 6 Jarrah FRTBC chewing

Fauna habitat type 1 contains key structural species Jarrah and Marri (small, mostly sparse regrowth < 50cm DBH) and larger Peppermints and Woody pear. Larger Jarrah and Marri trees have been mapped as habitat type 2. Peppermints exist as secondary foraging species for Carnaby's cockatoo (mostly feeding on borers). Other species comprising fauna habitat type 1 include *Banksia* spp., being primary foraging species for Carnaby's cockatoo, and secondary foraging for Baudin's cockatoo (Table 4-1). Foraging habitat value for habitat type 1 would be considered Moderate due to the presence of Woody pear and sparse regrowth of Jarrah and Marri (Primary feed species).

Within habitat type 2, the proportion of Jarrah trees far exceeded the number of Marris. Jarrah and Marri are considered High quality foraging, breeding and roosting habitat for black cockatoos, generally. This habitat type was therefore considered as Moderate quality for Baudin's cockatoo within the context of the site, as the taxa only utilises Jarrah trees as secondary foraging species. Carnaby's cockatoo and FRTBC utilise both Jarrah and Marri as primary foraging species; this habitat type was therefore considered to be of High quality for these species (Table 4-1).

Additional cleared areas provided no habitat value to any black cockatoo species. The habitat quality for this type of area was therefore Nil (Table 4-1).

Table 4-1 Black cockatoo foraging species across habitat types

Species	Primary Foraging Species	Secondary Foraging Species	Habitat Quality
Habitat Type 1 – Peppermint woodland and paddock trees over open shrubland (7.81 ha, Degraded to Good vegetation condition)			
Baudin's cockatoo	*Corymbia calophylla*	*Banksia ilicifolia* *Banksia* spp. *Eucalyptus marginata*	**Moderate**
Carnaby's cockatoo	*Banksia ilicifolia* *Banksia* spp. *Corymbia calophylla* *Eucalyptus marginata*	*Agonis flexuosa* *Xylomelum occidentale*	**High**
FRTBC	*Corymbia calophylla* *Eucalyptus marginata*	*Xylomelum occidentale*	**Moderate**
Habitat Type 2 – Jarrah Marri paddock trees (1.03 ha, Completely Degraded to Degraded vegetation condition)			
Baudin's cockatoo	*Corymbia calophylla*	*Eucalyptus marginata*	**Moderate**
Carnaby's cockatoo	*Corymbia calophylla* *Eucalyptus marginata*	–	**High**
FRTBC	*Corymbia calophylla* *Eucalyptus marginata*	–	**High**
Additional Cleared Areas – Paddock-cleared open space (19.61 ha, Completely Degraded vegetation condition)			
Baudin's cockatoo	–	–	**Nil**
Carnaby's cockatoo	–	–	**Nil**
FRTBC	–	–	**Nil**

4.4 Black Cockatoo Breeding

Habitat Types 1 and 2 contained potential breeding habitat for black cockatoos (consisted of at least one suitable DBH tree). Black cockatoo foraging habitat quality across the Survey Area is presented in Table 4-1, with habitat types mapped in Figure 4 (Appendix A).

A total of 10 hollow-bearing trees were observed within the Survey Area (as outlined in Appendix D). Ninety trees with DBH measuring over 50 cm were recorded. Four of these were *Trees with suitable DBH with unsuitable hollows*, and two were *Trees with potentially suitable size hollows with no signs of use* (10 – 15 cm aperture, Jarrah – ID 576, 120 cm DBH) (10 – 15 cm aperture, Dead tree – ID 1388, 55 cm DBH). Suitable DBH trees (inclusive of *Trees with suitable DBH without hollows*) are presented in Figure 5 (Appendix A). Upon closer investigation of potentially suitable sized hollows (ID 576, ID 1388), they were deemed unlikely to support black cockatoo breeding due to their narrow entry aperture, along with not appearing to contain a suitably large internal chamber (as detailed in Appendix E).

DBCA (2025) dataset of compiled breeding site locations for WTBC show that one confirmed natural breeding hollow exists 2.6 km northwest of the Survey Area (as mentioned in Section 3.2.4). No active breeding trees were recorded within the Survey Area.

Trees recorded with hollows that were deemed as unsuitable for black cockatoos may still be utilised by other target fauna (WRB) or non-target taxa. Tree ID 576 contained a hollow that was inhabited by CBP. All other hollows were vacant during the time of survey.

4.5 Roosts

There was no evidence of black cockatoos roosting within or immediately adjacent to the Survey Area.

4.6 WRP Results

A total of 12 WRP observations were recorded across the nocturnal survey period, occurring on the 10th and 19th of March 2025 (Figure 6, Appendix A). Six WRP were recorded each night. Additionally, four brush-tailed phascogale (*Phascogale tapoatafa*) (Specially Protected) and 16 CPB observations occurred. Three brush-tailed phascogales were recorded on the 10th, and one on the 19th of March 2025.

Three dreys were located during the diurnal survey on the 5th of March 2025. The Survey Area is likely to broadly align with Critical habitat for the species as outlined in the Western Ringtail Possum (*Pseudocheirus occidentalis*) Recovery Plan (DPaW, 2017).

5 Conclusions and Recommendations

The black cockatoo values of the Survey Area are provided below:

- The Survey Area is located within the Region 1 Swan Coastal Plain, and is characterised by the dominant presence of Jarrah, Marri, *Banksia* spp. and Peppermints. All three black cockatoo species occur locally, with one confirmed natural breeding hollow occurring approximately 2.6 km northwest of the Survey Area, and one potential breeding hollow ~4.6 km southwest of the Survey Area (DBCA, 2025). One roost has been recorded within 1 km of the Survey Area, CAPNORR001, last surveyed in 2016 (DBCA, 2025).
- Two key fauna habitat types were identified within the Survey Area:
    - Predominately Peppermint (*Agonis flexuosa*) woodland and paddock trees (7.81 ha) – *Agonis flexuosa*, *Xylomelum occidentale*, *Banksia* spp., *Nuytsisa floribunda* over *Kunzea glabrescens* shrubs over *Macrozamia* sp. cycads and *Xanthorrhoea* sp. grass-trees over *Stirlingia latifolia* over various Restionaceae spp. and *Lomandra* sp.. Clumps of *Euclayptus marginata*, and *Corymbia calophylla* also occur, (<50 cm DBH) dispersed throughout the habitat type.
    - Jarrah Marri paddock trees (1.03 ha) – *Eucalyptus marginata* and occasional *Corymbia calophylla* isolated or clumps of paddock trees (>50 cm DBH) over open clearings with clumps of low shrubs over various weedy herbs and grasses.
- Jarrah and Marri trees are common within and surrounding the Survey Area, providing potential black cockatoo foraging resources.
- Recent FRTBC feeding residue was found to be dispersed widely across the Survey Area. The Survey Area contained 8.84 ha of High-quality foraging habitat for Carnaby's cockatoo and 1.03 ha of High-quality habitat for FRTBC. Additionally, the site contained 8.84 ha of Moderate quality foraging habitat for Baudin's cockatoo, and 7.81 of Moderate quality habitat for FRTBC.
- predominantly High across fauna habitat types 1 – 2 (8.84 ha combined area).
- No feeding residue from WTBC was observed, however plant taxa within the Survey Area is inclusive of multiple primary and secondary foraging species.
- 90 suitable DBH trees, both with and without hollows, were identified within the Survey Area (66 Jarrah, 11 Marri and 13 unidentified, dead trees). Ten hollow-bearing trees were observed, including four *Trees with suitable DBH with unsuitable hollows*, and two *Trees with potentially suitable size hollows with no signs of use*.
- Black cockatoos are unlikely to breed with the Survey Area.
- No evidence of night roosts were observed.

The WRP values of the survey area are as follows:

- The Survey Area is within the Swan Coastal Plain Management Zone in the Recovery Plan (DPaW, 2017). WRP are common locally.
- The Survey Area broadly aligns with Critical habitat as outlined in the Western Ringtail Possum Recovery Plan (DPaW, 2017).

- The nocturnal surveys identified a total of 12 WRP, with six observed during each night of survey. Four brush-tailed phascogales and 16 CPB were additionally observed. Three dreys were recorded during the diurnal survey.

The following recommendations are made

- Clearing should be minimised, where possible.
- Clearing schedules should be planned to avoid spring breeding peaks, if possible.
- An authorised fauna spotter should be present during clearing.
- Weed management and infill planting could be considered in adjacent degraded areas.
- Once the final footprint is known then impacts should be assessed against the relevant DCCEEW Significant Impact Guidelines.

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Appendix A Figures

Figure 1 Location map and Desktop Study Area
Figure 2 Survey Area
Figure 3 Vegetation remaining within 12 km of the survey area
Figure 4 Fauna habitats
Figure 5 Potential black cockatoo breeding trees
Figure 6 WRP nocturnal effort and results

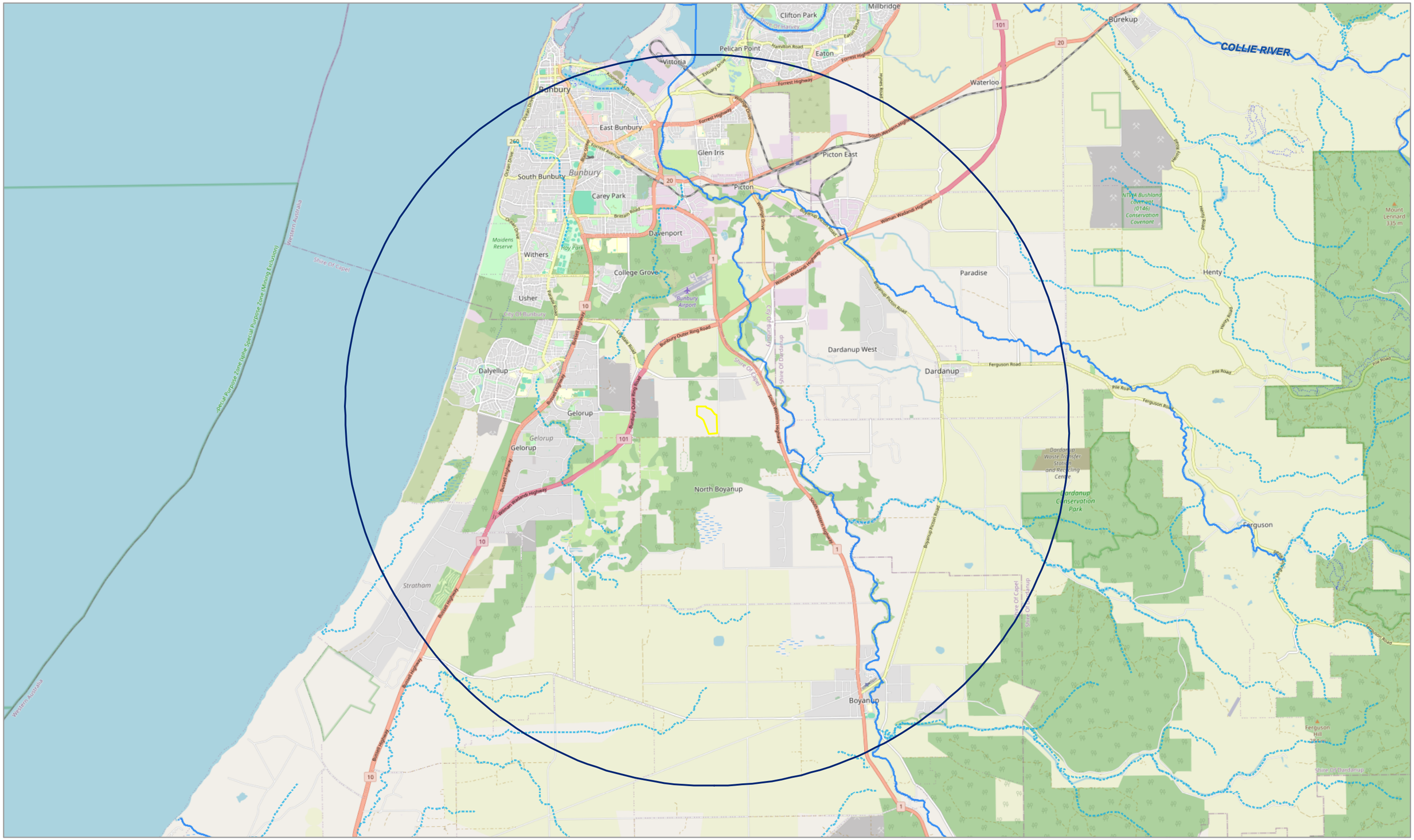


FIGURE 1 LOCATION MAP AND DESKTOP STUDY AREA

LOT 220 QUEELUP ROAD, NORTH BOYANUP

- Desktop Study Area (10 km)
- Study Area
- Major watercourse
- Minor drainage line



A3 @ 1:100000

0 0.5 1 2 km

GRID: GDA2020 zone 50

N

SW environmental
www.swenvironmental.com.au

Ref: SW580
Date: 27/03/2025 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)



FIGURE 2 STUDY AREA

Study Area (Lot 220 Queelup Road, North Boyanup)

Road

LOT 220 QUEELUP ROAD, NORTH BOYANUP



A3 @ 1:3500

0 25 50 100 m

N

GRID: GDA2020 zone 50

SW environmental

www.swenvironmental.com.au

Ref: SW580
Date: 27/03/2025 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

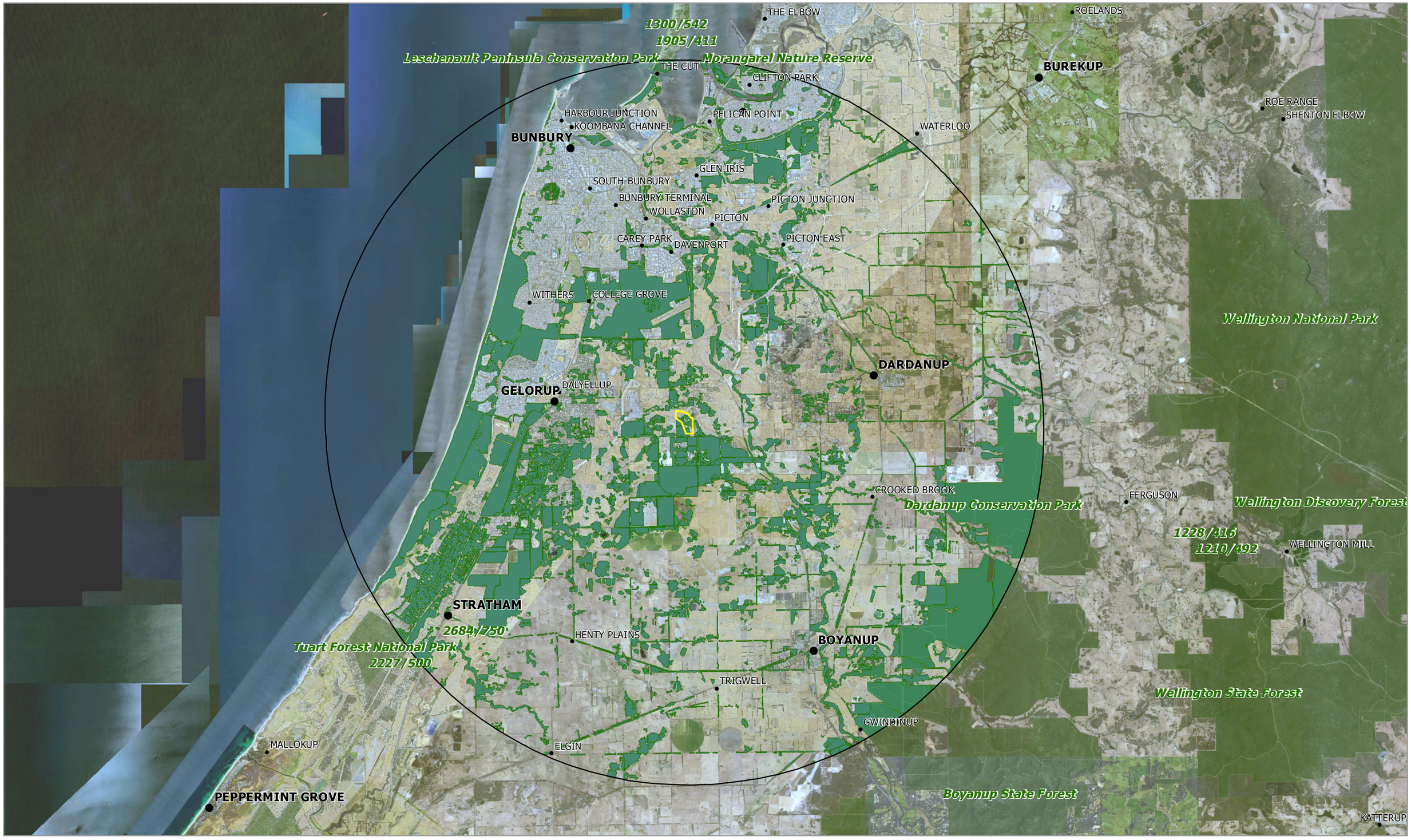
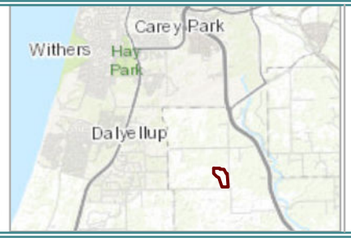


FIGURE 3 VEGETATION REMAINING WITHIN 12 KM OF THE SURVEY AREA

LOT 220 QUEELUP ROAD, NORTH BOYANUP

- Study Area (Lot 220 Queelup Road, North Boyanup)
- 12km
- DBCA managed land
- Native vegetation remaining (DPIRD, 2024)



A3 @ 1:120000

0 0.5 1 2 km

GRID: GDA2020 zone 50

N

SW environmental
www.swenvironmental.com.au

Ref: SW580
Date: 27/03/2025 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

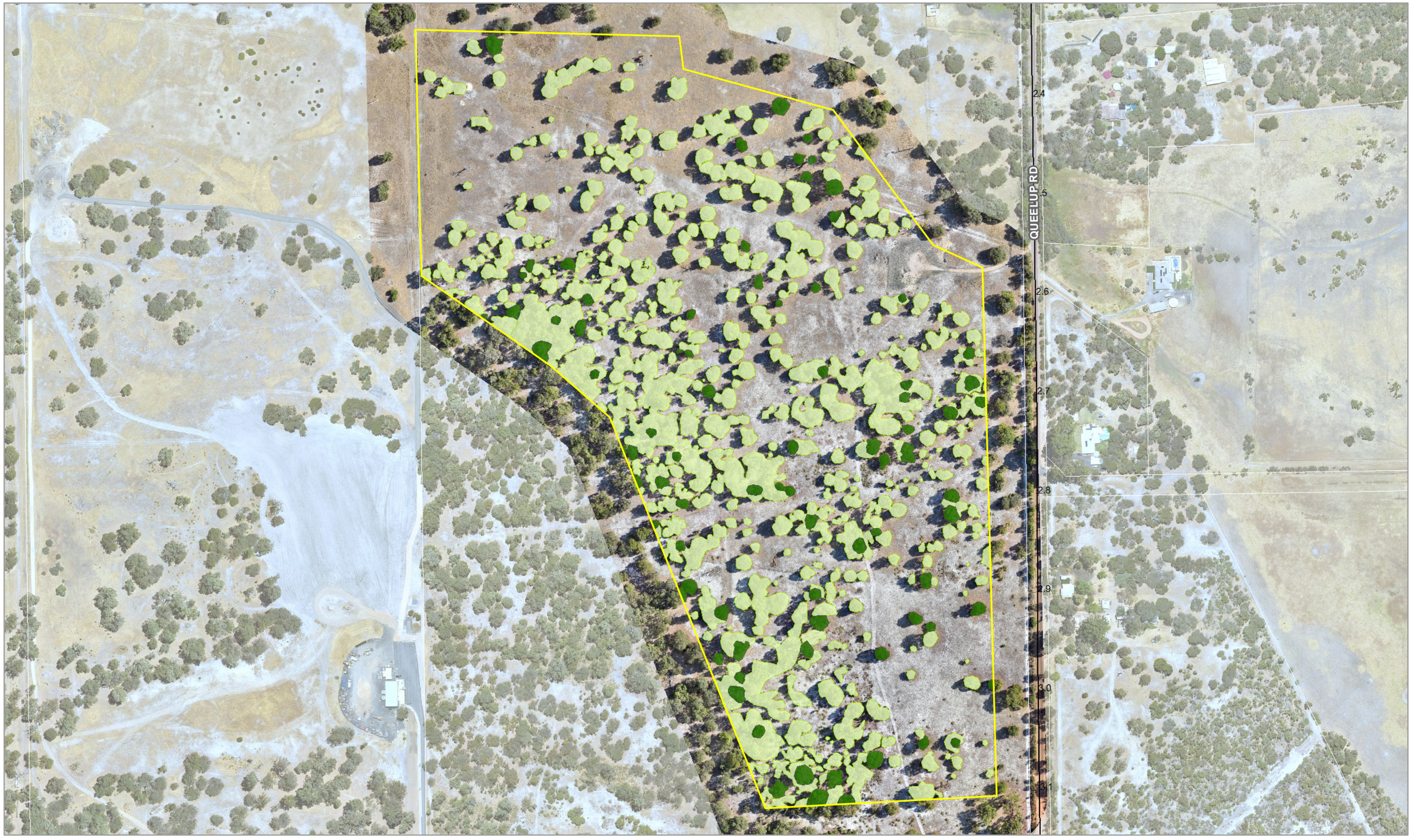


FIGURE 4 FAUNA HABITAT

LOT 220 QUEELUP ROAD, NORTH BOYANUP

Study Area (Lot 220 Queelup Road, North Boyanup)

Fauna habitat

Jarrah or Marri paddock trees (1.03 ha)

Predominately Peppermint woodland and paddock trees (7.81 ha)

Road



A3 @ 1:3500

N

0 25 50 100 m

GRID: GDA2020 zone 50

SW environmental

www.swenvironmental.com.au

Ref: SW580
Date: 27/03/2025 Author: SP

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

FIGURE 5 POTENTIAL BLACK COCKATOO BREEDING TREES

LOT 220 QUEELUP ROAD, NORTH BOYANUP

Ref: SW580
Date: 27/03/2025 Author: SP

Study Area (Lot 220 Queelup Road, North Boyanup)

Road

Potential black cockatoo breeding trees

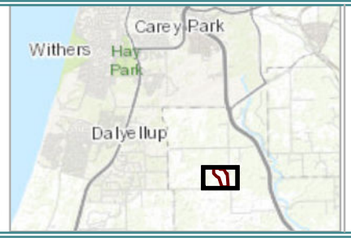
Potentially suitable size hollow no signs of use (confirmed)

Unsuitable hollow (confirmed)

Suitable DBH no hollows

Other tree

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)



A3 @ 1:3500

N

0 25 50 100 m

GRID: GDA2020 zone 50

SW environmental

www.swenvironmental.com.au

FIGURE 6 WRP NOCTURNAL EFFORT AND RESULTS

LOT 220 QUEELUP ROAD, NORTH BOYANUP

Ref: SW580_SP
Date: 28/03/2025 Author: SP

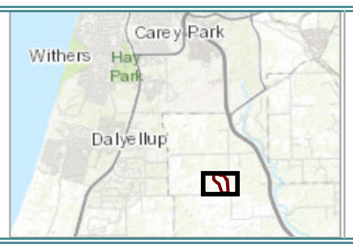
Study Area (Lot 220 Queelup Road, North Boyanup)

Taxon, Abundance

- South-western brush-tailed phascogale , 1
- Western ringtail possum, 1
- Western ringtail possum, 2
- Common brushtail possum, 1
- Common brushtail possum, 2

Nocturnal survey effort

- 10/03/2025
- 19/03/2025



A3 @ 1:3500

N

0 25 50 100 m

GRID: GDA2020 zone 50

SW environmental
www.swenvironmental.com.au

Source: Base map © Esri and its data suppliers. SLIP Landgate (2024)

Appendix B Commonwealth Black Cockatoo Foraging Quality Scoring Tool Template (SEWPAC 2012)

Table A1 Foraging quality scoring tool template

Starting score		Baudin's Cockatoo	Carnaby's Cockatoo	Forest Red-tailed Black-Cockatoo
10		**Start at a score of 10** if your site is native eucalypt woodlands and forest, and proteaceous woodland and heath, particularly Marri, within the range of the species, including along roadsides and parkland cleared areas. Can include planted vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is native shrubland, kwongan heathland or woodland, dominated by proteaceous plant species such as *Banksia* spp. (including *Dryandra* spp.), *Hakea* spp. and *Grevillea* spp., as well as native eucalypt woodland and forest that contains foraging species, within the range of the species, including along roadsides and parkland cleared areas. Also includes planted native vegetation. **This tool only applies to sites equal to or larger than 1 hectare in size.**	**Start at a score of 10** if your site is Jarrah or Marri woodland and/or forest, or if it is on the edge of Karri forest, or if Wandoo and Blackbutt occur on the site, within the range of the subspecies, including along roadsides and parkland cleared areas. **This tool only applies to sites equal to or larger than 1 hectare in size.**
Attribute	Sub-tractions	Context adjustor (attributes reducing functionality of foraging habitat)		
Foraging potential	**-2**	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.	**Subtract 2** from your score if there is no evidence of feeding debris on your site.
Connectivity	**-2**	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.	**Subtract 2** from your score if you have evidence to conclude that there is no other foraging habitat within 12 km of your site.
Proximity to breeding	**-2**	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.	**Subtract 2** if you have evidence to conclude that your site is more than 12 km from breeding habitat.

Proximity to roosting	**-1**	**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.
Impact from significant plant disease	**-1**	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.	**Subtract 1** if your site has disease present (e.g. *Phytophthora* spp. or Marri canker) and the disease is affecting more than 50% of the preferred food plants present.
Total score		*8*	*10*	*10*
Appraisal		To support your habitat score, you should provide an overall appraisal of the habitat on the impact site and within 20km of the impact area to clearly explain and justify the score. It should include discussion on the foraging habitat's proximity to other resources (e.g. exact distance to proximate resources), frequency of use of proximate sites, the degree of evidence and description of vegetation type and condition.		

Appendix C Black Cockatoo Foraging Plants (recorded during survey)

Table C.1 Flora taxa within the Survey Area with potential for quality black cockatoo foraging value

Species	Common name	Habit	Baudin's cockatoo	Carnaby's cockatoo	FRTBC	Reference
Agonis flexuosa	Peppermint Tree	Tree		Secondary		(Groom, 2011; Valentine & Stock, 2008)
Banksia ilicifolia			Secondary	Primary		(DoEE, 2017; Groom, 2011; Johnstone et al., 2010a, 2010b; Johnstone & Storr, 1998; Valentine & Stock, 2008)
Banksia spp.			Secondary	Primary		(DoEE, 2017; Saunders, 1979; SEWPaC, 2012)
Corymbia calophylla	Marri	Tree	Primary	Primary	Primary	(DoEE, 2017; Johnstone et al., n.d., 2010a, 2010b, 2010c, 2017; Johnstone & Kirkby, 1999, 2008; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)
Eucalyptus marginata	Jarrah	Tree	Secondary	Primary	Primary	(Birds Australia, n.d.; DoEE, 2017; Groom, 2011; Johnstone et al., n.d., 2010a, 2010b, 2010c, 2017; Johnstone & Kirkby, 1999; Johnstone & Storr, 1998; Saunders, 1979; SEWPaC, 2012; Valentine & Stock, 2008)
Xylomelum occidentale	Woody Pear	Tree or tall shrub		Secondary	Secondary	(Groom 2011, S. Priddle pers obs.)

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Appendix D Tree Survey Results

Table 6-1 Tree assessment results (DBH trees only) and black cockatoo breeding suitability (only best hollows recorded)

ID	Species	DBH	Comments	Hollows	Size	Type	Height	Note	Easting (GDA94)	Northing
18	Jarrah	50	Suitable DBH no hollows						377261.344	6302393.713
21	Jarrah	50	Suitable DBH no hollows						377266.261	6302398.716
22	Jarrah	50	Suitable DBH no hollows						377268.187	6302405.581
29	Jarrah	80	Suitable DBH no hollows						377307.154	6302402.028
54	Jarrah	65	Suitable DBH no hollows						377323.282	6302367.657
62	Dead	60	Suitable DBH no hollows						377292.62	6302348.769
92	Jarrah	65	Suitable DBH no hollows						377278.399	6302318.148
96	Marri	50	Suitable DBH no hollows						377280.171	6302310.385
111	Jarrah	60	Suitable DBH no hollows						377315.921	6302340.2
112	Jarrah	50	Suitable DBH no hollows						377316.944	6302336.689
168	Jarrah	50	Suitable DBH no hollows						377330.377	6302293.626
276	Jarrah	60	Suitable DBH no hollows						377441.774	6302276.183
280	Jarrah	60	Suitable DBH no hollows						377424.924	6302314.042
305	Dead	75	Unsuitable hollow (confirmed)	1	10 – 15 cm	Knot	10 – 15 m	Knot angle suitable	377440.997	6302404.981
320	Jarrah	50	Suitable DBH no hollows						377481.863	6302419.288
322	Jarrah	65	Unsuitable hollow (confirmed)	1	15 – 20 cm	Spout	to 10 m	No evidence of use	377481.92	6302406.792
325	Jarrah	70	Suitable DBH no hollows						377494.72	6302383.402
338	Jarrah	50	Suitable DBH no hollows						377514.407	6302363.197
355	Jarrah	60	Suitable DBH no hollows						377550.945	6302381.147
365	Dead	65	Suitable DBH no hollows						377590.264	6302398.093
371	Dead	100	Suitable DBH no hollows						377638.807	6302368.001
390	Jarrah	50	Suitable DBH no hollows						377570.656	6302449.585
475	Jarrah	60	Suitable DBH no hollows						377227.938	6302395.315
478	Jarrah	60	Suitable DBH no hollows						377221.509	6302351.286
507	Dead	50	Suitable DBH no hollows						377182.954	6302582.319
517	Dead	85	Unsuitable hollow (confirmed)	1	to 10 cm	Spout	to 10 m	Spout angle not suitable, aperture too small	377300.367	6302512.744
525	Dead	60	Unsuitable hollow (confirmed)	1	20 cm +	Vertical	to 10 m	Hollow too shallow or exposed	377373.608	6302515.802

ID	Species	DBH	Comments	Hollows	Size	Type	Height	Note	Easting (GDA94)	Northing
540	Marri	65	Suitable DBH no hollows						377230.646	6302621.414
560	Marri	125	Suitable DBH no hollows						377517.284	6302560.766
562	Jarrah	65	Suitable DBH no hollows						377540.969	6302528.189
565	Dead	50	Suitable DBH no hollows						377583.677	6302524.993
575	Marri	125	Unsuitable hollow (confirmed)	1	20 cm +	Knot	to 10 m	Hollow too shallow or exposed	377570.153	6302480.51
576	Jarrah	120	Potentially suitable size hollow no signs of use (confirmed)	2	10 – 15 cm, 15 – 20 cm	Spout	10 – 15 m	Suitable spout angle (first hollow), Common Brushtail Possum inhabiting second hollow, entry not large enough, unlikely to have suitable chamber	377546.088	6302506.131
577	Jarrah	70	Suitable DBH no hollows						377541.901	6302490.324
578	Jarrah	50	Suitable DBH no hollows						377535.55	6302507.617
582	Jarrah	50	Suitable DBH no hollows						377529.653	6302220.183
611	Jarrah	65	Suitable DBH no hollows						377641.844	6302272.256
612	Dead	130	Unsuitable hollow (confirmed)	1	10 – 15 cm	Knot	10 – 15 m	Chamber too small	377642.102	6302281.091
635	Jarrah	65	Suitable DBH no hollows						377687.299	6302254.133
640	Jarrah	90	Suitable DBH no hollows						377708.242	6302286.124
645	Jarrah	70	Suitable DBH no hollows						377715.409	6302264.796
658	Jarrah	80	Suitable DBH no hollows						377701.877	6302313.285
703	Jarrah	50	Suitable DBH no hollows						377558.654	6302296.915
751	Dead	95	Suitable DBH no hollows						377495.434	6302177.786
763	Jarrah	50	Suitable DBH no hollows						377413.495	6302212.359
770	Jarrah	60	Suitable DBH no hollows						377388.553	6302232.001
821	Jarrah	60	Suitable DBH no hollows						377396.278	6302184.752
831	Jarrah	70	Suitable DBH no hollows						377369.463	6302214.777
837	Jarrah	60	Suitable DBH no hollows						377373.829	6302191.704
846	Jarrah	60	Suitable DBH no hollows						377417.085	6302162.336
859	Jarrah	55	Suitable DBH no hollows						377391.304	6302145.565
863	Marri	60	Suitable DBH no hollows						377476.215	6301991.824
868	Marri	50	Suitable DBH no hollows						377475.935	6302020.688
869	Marri	55	Suitable DBH no hollows						377475.03	6302019.743
875	Marri	55	Suitable DBH no hollows						377454.204	6302010.004

ID	Species	DBH	Comments	Hollows	Size	Type	Height	Note	Easting (GDA94)	Northing
876	Jarrah	60	Suitable DBH no hollows						377456.516	6302055.861
878	Jarrah	55	Suitable DBH no hollows						377425.045	6302080.743
924	Jarrah	50	Suitable DBH no hollows						377495.274	6301936.499
945	Jarrah	100	Suitable DBH no hollows						377537.6	6301895.25
949	Jarrah	70	Suitable DBH no hollows						377513.93	6301877.133
955	Jarrah	95	Suitable DBH no hollows						377555.179	6301869.854
963	Jarrah	60	Suitable DBH no hollows						377571.213	6301891.181
1030	Dead	55	Suitable DBH no hollows						377415.752	6302121.713
1044	Jarrah	55	Suitable DBH no hollows						377549.714	6302077.823
1063	Jarrah	50	Suitable DBH no hollows						377547.54	6302146.539
1079	Jarrah	50	Suitable DBH no hollows						377516.903	6302180.752
1081	Jarrah	50	Suitable DBH no hollows						377525.214	6302177.304
1168	Jarrah	50	Suitable DBH no hollows						377613.287	6302134.67
1173	Jarrah	80	Suitable DBH no hollows						377598.712	6302121.409
1196	Jarrah	90	Unsuitable hollow (confirmed)	1	to 10 cm	Knot	10 – 15 m	Knot angle suitable, aperture too small	377608.994	6302219.945
1202	Jarrah	60	Suitable DBH no hollows						377643.645	6302220.758
1213	Jarrah	60	Suitable DBH no hollows						377686.535	6302171.37
1217	Jarrah	60	Suitable DBH no hollows						377686.524	6302153.779
1244	Jarrah	50	Suitable DBH no hollows						377708.82	6302055.517
1247	Jarrah	70	Suitable DBH no hollows						377660.585	6302089.955
1251	Jarrah	130	Unsuitable hollow (confirmed)	3	10 – 15 cm, 10 – 15 cm	Spout	10 – 15 m	Spout angles suitable, hollow too shallow and exposed	377555.022	6302044.674
1257	Jarrah	50	Suitable DBH no hollows						377691.838	6301925.799
1262	Jarrah	50	Suitable DBH no hollows						377659.262	6301924.428
1281	Jarrah	110	Suitable DBH no hollows						377614.405	6301910.409
1344	Jarrah	75	Suitable DBH no hollows						377542.268	6302019.185
1352	Jarrah	60	Suitable DBH no hollows						377616.672	6302013.119
1355	Jarrah	90	Suitable DBH no hollows						377648.978	6302050.259
1377	Jarrah	50	Suitable DBH no hollows						377727.613	6301984.235
1381	Jarrah	70	Suitable DBH no hollows						377584.1665	6301865.728
1383	Dead	55	Suitable DBH no hollows						377479.426	6302023.368

ID	Species	DBH	Comments	Hollows	Size	Type	Height	Note	Easting (GDA94)	Northing
1384	Marri	120	Suitable DBH no hollows						377258.7645	6302358.029
1385	Marri	80	Suitable DBH no hollows						377453.132	6302102.104
1386	Marri	55	Suitable DBH no hollows						377417.6635	6302075.483
1387	Jarrah	70	Suitable DBH no hollows						377208.8181	6302497.458
1388	Dead	55	Potentially suitable size hollow no signs of use (confirmed)	1	10 – 15 cm	Knot	10 – 15 m	Marginal sized entry and unlikely to have chamber	377476.746	6301977.977

Appendix E Hollow Assessment

Note: Only best hollows shown.

Tree ID	Comments	H1 note	Photo
576	Potentially suitable size hollow no signs of use (confirmed)	10 – 15 cm aperture, CBP inhabiting hollow, entry aperture not large enough. Unlikely to have a suitable chamber inside.	  

1388	Potentially suitable size hollow no signs of use (confirmed)	10 – 15 cm aperture, marginal sized entry and unlikely to have a suitable chamber inside.	  