Appendix E Black Cockatoo Habitat Quality Assessment

Main Roads

Black Cockatoo Consolidated Report

7 January 2021

58910 133,937 (Rev B)

JBS&G Australia Pty Ltd T/A Strategen-JBS&G

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Executive Summary

Main Roads Western Australia (Main Roads) is proposing to extend Tonkin Highway from Thomas Road in Oakford to South Western Highway in Mundijong (the Proposed Action). The Proposed Action has the potential to impact native vegetation within the distribution of Carnaby's Cockatoo (Endangered), Baudin's Cockatoo (Endangered) and Forest Red-tailed Cockatoo (Vulnerable). As such, an assessment of the habitat value of the Proposed Action area for each species was deemed necessary to support potential future assessment and approval requirements and to inform development design. The Survey Area is 363.80 ha in area, spans 16 km in length and was designed to encompass the Proposed Action as well as areas immediately adjacent.

This report has been specifically prepared to provide a concise overview of the Black Cockatoo habitat value of the Survey Area through the consolidation of two surveys undertaken by Tony Kirkby in 2019 and 2020 as well as a foraging habitat assessment undertaken by Strategen-JBS&G in 2020.

Kirkby (2019) provided a baseline assessment of Black Cockatoo breeding, foraging and roosting habitat as well as drinking sites. A follow-up survey was then undertaken by Kirkby (2020) to inspect the trees reported to contain potentially suitable breeding hollows. Strategen-JBS&G then carried out an assessment of the foraging habitat quality within the Survey Area for each Black Cockatoo species.

These surveys indicated that the Survey Area contains habitat value to support the foraging, breeding and roosting of all three species.

The Survey Area contains foraging habitat of 'low to moderate' and 'moderate' value for Carnaby's Cockatoo and of 'low to moderate', 'moderate' and 'moderate to high' value for Baudin's and Forest Red-tailed Cockatoos.

479 trees of a suitable size and species to support the formation of hollows for Black Cockatoo breeding were present within the Survey Area, of which two Marris currently contained possibly suitable hollows.

No roosting was observed during the survey. Habitat with roosting value is considered to be present given the proximity of the Survey Area to surrounding confirmed roosts and the presence of suitably sized trees within the Survey Area.

1. Introduction

Main Roads Western Australia (Main Roads) is proposing to extend the existing Tonkin Highway from Thomas Road in Oakford to the South Western Highway in Mundijong, Western Australia (the Proposed Action).

Strategen-JBS&G were engaged by Main Roads to undertake a Black Cockatoo foraging habitat assessment and to prepare a consolidated report summarising the Black Cockatoo surveys undertaken to date, compiling all known breeding, foraging and roosting habitat as well as drinking sites within the Survey Area (Figure 1). These surveys focused on habitat for Carnaby's, Baudin's, and Forest Red-tailed Black Cockatoos.

Two Black Cockatoo habitat assessments had previously been conducted by Tony Kirkby within the Survey Area, including:

- A baseline assessment of breeding, foraging and roosting habitat as well as drinking sites (Kikby 2019); and
- A follow-up assessment of seven potential Black Cockatoo breeding hollows located during the Kirkby (2019) survey (Kirkby 2020).

Strategen-JBS&G subsequently undertook an assessment of the extent and quality of Black Cockatoo foraging habitat within the Survey Area in accordance with the EPBC Act referral guidelines for Black Cockatoos (DSEWPaC 2012).

This report has been prepared to compile the results of the three surveys, and to provide a consolidated assessment of breeding, foraging, drinking and roosting habitat for Carnaby's, Baudin's and Forest Red-tailed Cockatoos within the Survey Area.

1.1 Background information

1.1.1 Black Cockatoos

Three species of Black Cockatoo occur in the south west of Western Australia: Carnaby's Cockatoo (*Calyptorhynchus latirostris*; CBC), Baudin's Cockatoo (*C. baudinii*; BBC) and Forest Red-tailed Cockatoo (*C. banksii naso*; FRTBC).

Both CBC and BBC are listed as Endangered under the Western Australian *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). The FRTBC is listed as Vulnerable under the BC Act and the EPBC Act. The Survey Area is within the known distribution for all three species (DSEWPaC 2012).

1.1.1.1 Carnaby's Cockatoo

Carnaby's Cockatoo is endemic to the south west of Western Australia, with a widespread distribution from Kalbarri in the north-west through to Nuytsland Nature Reserve in the south-east (DSEWPaC 2012). The species breeds between late July and December predominantly in the inland portion of its distribution in areas receiving between 300 and 700mm of annual average rainfall (DSEWPaC 2012). The total population of CBC is currently estimated at 40,000 individuals with at least 13,984 occurring in the Greater Peth-Peel Region (Peck et al. 2019; EPA 2019).

Foraging habitat for CBC comprises proteaceous woodlands and shrublands, including *Banksia* spp., *Hakea* spp., and *Grevillea* spp. Their traditional diet of native seeds and nectar has changed to include increased quantities of seeds from introduced plants including broad-acre crops and plantation pines (DPaW 2013).

A roost site confirmed to be used by white-tailed Black Cockatoos (either CBC or BBC) exists within 1 km of the Survey Area (Figure 2; Peck et al. 2019). The nearest known CBC breeding site is 10 km east of the Survey Area within the Wungong Catchment (Figure 3; Kirkby 2019).

1.1.1.2 Baudin's Cockatoo

Baudin's Cockatoos have a distribution that extends from Albany in the south to Gidgegannup in the north, east to Mount Helena, Wandering, Quindanning, Kojonup, Frankland and King River, and to the eastern margin of the Swan Coastal Plain (Johnstone 1997; Johnstone and Storr 1998). BBC also occur in the Stirling Range (Sedgwick 1964), Porongurup Range (Abbott 1981) and near Boyup Brook (Davies 1966; Johnstone and Storr 1998). The current total BBC population size is estimated at 12,000 individuals.

Foraging habitat for BBC is dominated by Marri seeds and fruits, in addition to other foraging species including *Banksia* spp., *Hakea* spp., *Erodium botrys,* Jarrah and *Dryandra* spp. (DEC 2008). BBC breed in the hollows of mature trees including Marri, Karri, Jarrah and Wandoo in the lower south-west of Western Australia during the breeding season (July to November) (DEC 2008).

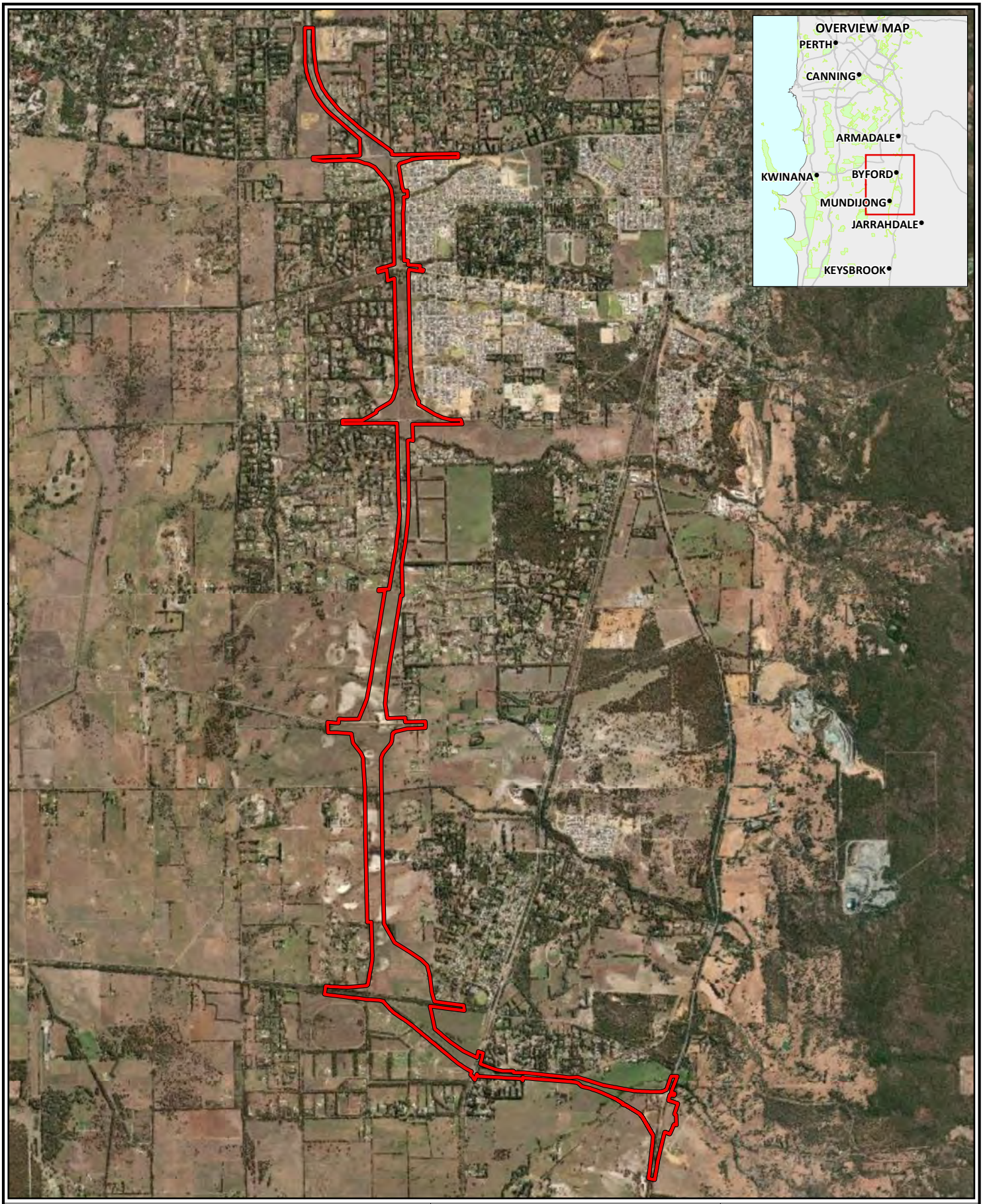
A roost site confirmed to be used by white-tailed Black Cockatoos (either CBC or BBC) exists within 1 km of the Survey Area (Figure 2; Peck et al. 2019). BBC are known to breed in low numbers approximately 16 km east of the Survey Area in the Wungong Catchment and 10 km south east in the Serpentine Hills area (Figure 3; Kirkby 2019).

1.1.1.3 Forest Red-tailed Cockatoo

Forest Red-tailed Cockatoos have a distribution stretching from Gingin in the north east through to Boxwood Hill in the south east (DSEWPaC 2012). As of September 2019, the total population of FRTBC is estimated at 15,000 individuals (Peck et al. 2019).

Foraging habitat for the species is heavily dominated by Marri and Jarrah fruits, however the species is known to feed on the fruit of other plants. FRTBC prefer to nest in large hollows of Marri, Jarrah, and Karri (Johnstone and Kirkby 1999). Breeding may occur at any time of the year, and peaks from April to June, and August to October (DSEWPaC 2012).

A roost confirmed to be used by FRTBC is located within 1 km of the Survey Area (Figure 2; Peck et al. 2019). The nearest confirmed breeding site for FRTBC is 8 km east of the Survey Area in the Wungong Catchment (Kirkby 2019). Breeding pairs have also been observed prospecting and chewing hollow entrances at Cardup Nature Reserve, 1.5 km to the east (Figure 3; Kirkby 2019). FRTBC breeding has also been confirmed within an artificial hollow 10 km south of the Survey Area in the Serpentine area (Figure 3; Kirkby 2019).



Legend

Survey area

Scale 1:60,000 at A4

0 0.5 1
Kilometers

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 05-Jan-2021

Drawn By: hsullivan | Checked By: CT

Tonkin Highway Extension WA

SURVEY AREA

FIGURE 1

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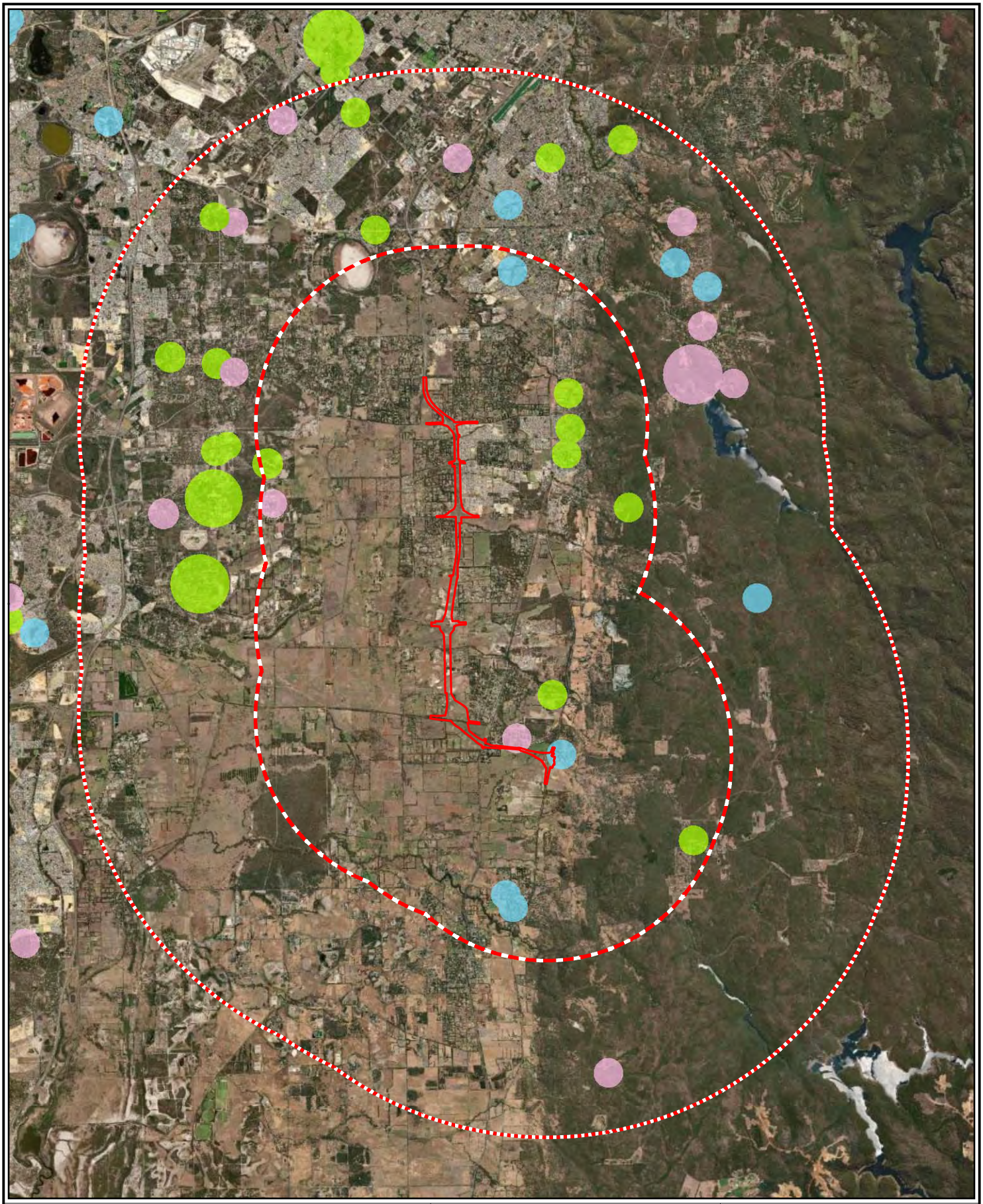
File Name: W:\Projects\1)Open\Main Roads\58910 Tonkin Extension PD\GIS\Maps\R07_Rev_A\58910_01_SurveyArea.mxd
Image Reference: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

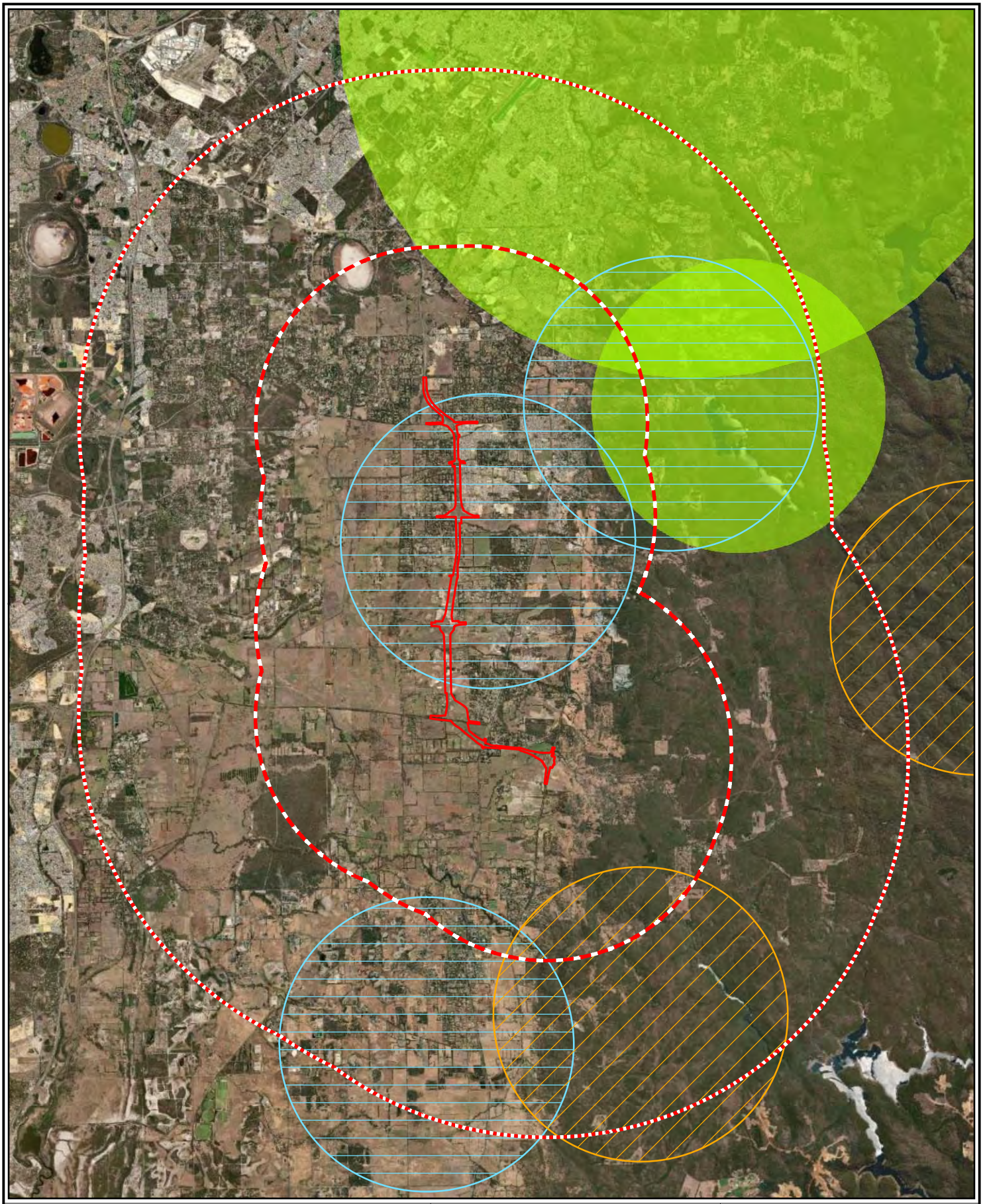
- Survey area
- 6 km radius
- 12 km radius

Confirmed roost sites

- Carnaby's and/or Baudin's Cockatoo
- Forest Red-tailed Cockatoo
- Joint roost

Scale 1:170,000 at A4 (0 1 2 Kilometers)	**Tonkin Highway Extension WA**
Coord. Sys. GDA 1994 MGA Zone 50	**BLACK COCKATOO CONFIRMED ROOST SITES WITHIN A 6 KM AND 12 KM RADIUS**
Job No: 58910	
Client: Main Roads Western Australia	**FIGURE 2**
Version: A — Date: 07-Jan-2021	strategen JBS&G
Drawn By: hsullivan — Checked By: CT	

File Name: W:\Projects\1)Open\Main Roads\58910 Tonkin Extension PD\GIS\Maps\R07_Rev_A\58910_02_RoostSites.mxd
Image Reference: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community



Legend

- Survey area
- 6 km radius
- 12 km radius

Black Cockatoo known breeding locations

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

Scale 1:170,000 at A4

0 1 2
Kilometers

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BLACK COCKATOO CONFIRMED BREEDING LOCATIONS

FIGURE 3

strategen JBS&G

File Name: W:\Projects\1)Open\Main Roads\58910 Tonkin Extension PD\GIS\Maps\R07_Rev_A\58910_03_BreedingSites.mxd
Image Reference: Source: Esri, Maxar, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

2. Methods

2.1 Kirkby 2019 (Appendix A)

A survey was undertaken within the Survey Area (Figure 1) between the 16th April and 5th May 2019. All trees with a DBH greater than 500 mm (300 mm for Wandoo) were recorded using a handheld GPS. Each tree was also checked from the ground for the presence of potentially suitable Black Cockatoo breeding hollows.

Evidence of foraging, via feeding residue, was recorded using a handheld GPS. Areas beneath possible roosting trees were searched for the presence of clipped leaves and branches which may indicate a roost. Evening searches for current roosting sites were also undertaken.

A search of the Western Australian Museum database was undertaken to locate the nearest known Black Cockatoo breeding and roosting sites. The 'Great Cocky Count' database (Birdlife Western Australia) was also used to locate the nearest known Black Cockatoo roosting sites.

2.2 Kirkby 2020 (Appendix A)

A survey was undertaken within the Survey Area (Figure 1) on the 1st September 2020 focusing on seven trees that had previously been inspected by Kirkby (2019) and reported to contain potentially suitable hollows for Black Cockatoo breeding. The trees had previously been assessed from ground level, with the Kirkby (2020) inspecting the hollowing using a pole camera.

Each hollow was inspected with observations made on the size, current use, condition, and likelihood of them being utilised by Black Cockatoos.

Kirkby (2019) was limited by the inability to access Lot 180 Shanley Road and part of Lot 33 Hopkinson Road. These areas were surveyed on the 15th September 2020.

2.3 Strategen-JBS&G Black Cockatoo foraging habitat assessment

Strategen-JBS&G undertook a Black Cockatoo habitat assessment on the 8th September and 16th September 2020 to determine the extent and quality of foraging habitat. The survey was completed by Tristan Sleigh, a Senior Botanist with 14 years botanical experience and 6 years specific experience in the assessment of Black Cockatoo habitat in accordance with the EPBC Act referral guidelines for Black Cockatoos (DSEWPaC 2012).

Ecological values for Black Cockatoos within the site were based on the definitions of foraging habitat as per the EPBC Act referral guidelines for Black Cockatoos (DSEWPaC 2012) and were assessed using the systems developed by Bamford Consulting (Appendix B).

Foraging habitat was assessed across the site by inspecting the vegetation and reviewing vegetation descriptions, and calculating a foraging score following the methodology detailed Appendix B. The resulting foraging score provides a numerical value reflecting the suitability of vegetation as foraging habitat for Black Cockatoos, with the numerical value designed to provide the information needed by the Federal Department of Agriculture, Water and the Environment (DAWE) to assess impact significance and offset requirements. The foraging value of the vegetation depends upon the type, density and condition of trees and shrubs in an area and can be influenced by site context, for example the availability of nearby foraging habitat. The Bamford scoring system (Appendix B) for value of foraging habitat has three components drawn from the DAWE offset calculator, and incorporates the approach developed by Bamford Consulting:

- A score out of six for the vegetation composition, condition and structure;
- A score out of three for the context of the site; and
- A score out of one for species density.

2.4 Survey limitations

The potential limitations for each survey were assessed against the factors listed in EPA (2016) and are described in Table 2.1.

Table 2.1: Potential limitations of surveys

Limitation	Limitation of Survey			Comment
	Kirkby (2019)	Kirkby (2020)	Strategen-JBS&G	
Effort and Extent	Not a limitation.	Not a limitation.	Not a limitation.	The Survey Area was traversed on foot for all surveys and all relevant Black Cockatoo habitat elements were recorded appropriately.
Competency/experience of the team carrying out the survey	Not a limitation.	Not a limitation.	Not a limitation.	All survey personnel have the appropriate training in sampling and identifying the flora of the region and identifying Black Cockatoo habitat.
Proportion of fauna identified, recorded and/or collected	Not a limitation.	Not a limitation.	Not applicable	The proportion of Black Cockatoo habitat surveyed was adequate, covering the entire Survey Area.
Sources of information e.g. previously available information (whether historic or recent) as distinct from new data	Not a limitation.	Not a limitation.	Not a limitation.	The surveys have been undertaken in the Swan Coastal Plain bioregion which has been well-studied and documented with ample literature available.
Timing/weather/season/cycle	Not a limitation.	Not a limitation.	Possible minor.	Strategen-JBS&G Habitat value assessment was informed by vegetation mapping provided following a Flora and Vegetation Survey by Woodman (2020) and treated as per the methodology of Bamford Consulting (Appendix B). Woodman (2020) noted possible minor limitations of the Flora and Vegetation survey caused by the area experiencing below-average rainfall prior to the survey as well as the high level of historical clearing and/or disturbance which may have affected the reliability of vegetation mapping.
Disturbances (e.g. fire, flood, accidental human intervention etc.) which affected results of survey	Possible minor.	Possible minor.	Possible minor.	The Survey Area and surrounds have been subject to disturbance over a significant period of time. Given the wide range of this disturbance, it is not considered a limitation within the Survey Area. Strategen-JBS&G The high level of historical clearing and/or disturbance in the Survey Area was identified by Woodman (2020) as a factor that may have affected the reliability of vegetation mapping, which was subsequently utilised in the foraging habitat assessment as per Appendix B.
Remoteness and/or access problems	Limitation – subsequently addressed.	Not a limitation.	Not a limitation.	Kirkby (2019) Access not initially possible to Lot 180 Shanley Road and was limited to Lot 33 Hopkinson Road. These areas were surveyed on the 15th September 2020.

3. Results

3.1 Breeding habitat

Tree species located within the Survey Area with the potential to form suitable breeding hollows for Black Cockatoo species include Jarrah (*Eucalyptus marginata*), Wandoo (*E. wandoo*), Flooded Gum (*E. rudis*) and Marri (*Corymbia calophylla*). In order to be of sufficient size to form hollows for Black Cockatoo nesting, these trees need to have reached a DBH of at least 500 mm (300 mm for Wandoo) (DSEWPaC 2012).

A total of 479 trees with a sufficiently large DBH were located within the Survey Area (Figure 4; Appendix C), comprising:

- 89 Flooded Gum (including two stags)
- 12 Jarrah (including five stags)
- Two Wandoo, and
- 376 Marri (including 20 stags).

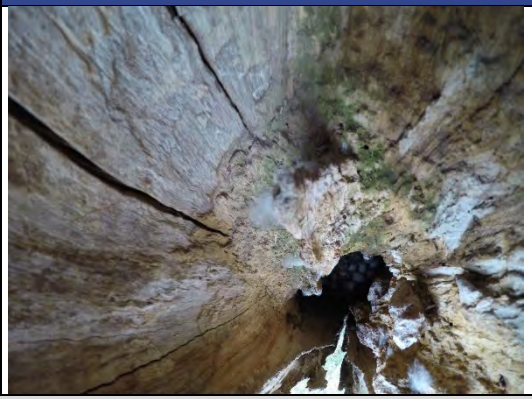
A total of 22 hollows were recorded within 16 trees. Of these, ten trees containing 13 hollows were considered potentially suitable for Black Cockatoo nesting (Kirkby 2019). Four of those 13 hollows had scarring in or near the hollow entrance, which is typical of use by Galahs (Kirkby 2019). The remaining nine hollows were either being used by Galahs at the time of the survey or were of a smaller size suitable for small parrots such as the Australian Ringneck (Kirkby 2019). Introduced Rainbow Lorikeet were also observed at one hollow (Kirkby 2019).

Seven trees considered to contain potentially suitable hollows for Black Cockatoo nesting were inspected during the follow-up assessment by Kirkby (2020). During this inspection, three possibly suitable hollows were identified in two Marri (Figure 4). One tree contained two suitable hollows and another tree supported one suitable hollow.

The remaining hollows were considered unsuitable due to their size, lack of depth, or occupancy by Galahs or feral bees (Kirkby 2020). A detailed breakdown of the hollow assessment results from Kirkby (2020) is presented in Table 3.1.

Table 3.1: Detailed hollow assessment results (Kirkby 2020).

Tree no.	Species	Approx. tree diameter at breast height (mm)	Hollow entry type	Photo/s	Comments
Possible Black Cockatoo breeding hollows					
3 (120)	Marri	1000	Top and side	 	Contains two hollows which are being used by Galahs *Eolophus roseicapilla*. Could possibly be utilised by Black Cockatoos if Galahs weren't present.

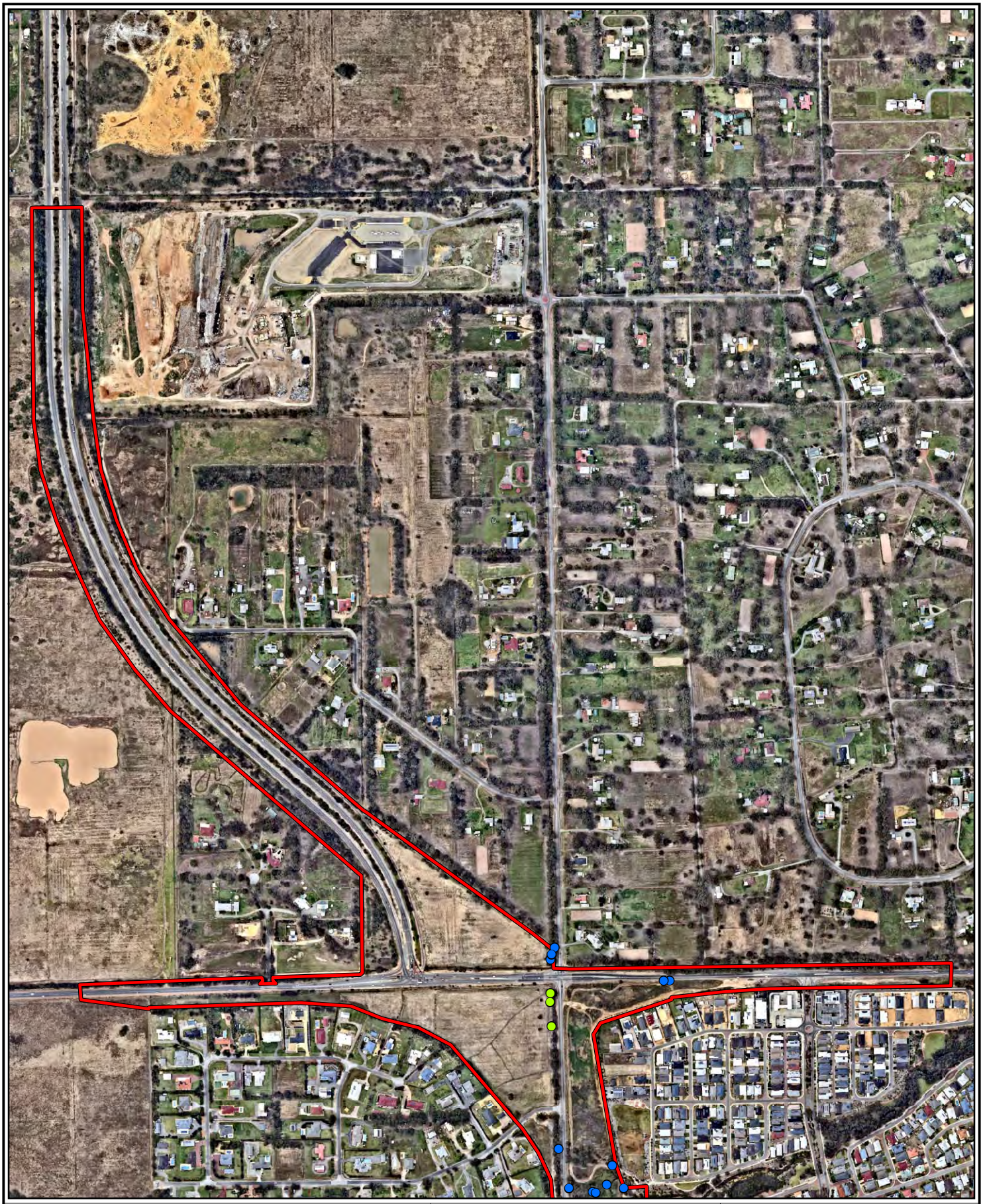
Tree no.	Species	Approx. tree diameter at breast height (mm)	Hollow entry type	Photo/s	Comments
6 (127)	Marri	900	Top		Hollow contains deserted duck eggs but has heavy chewing around the hollow entrance and has probably been used by Black Cockatoos in the past.
Unsuitable Black Cockatoo breeding hollows					
1 (89)	Jarrah	1200	Top		At the time of the original survey contained two hollows. One of these has since collapsed and the second is too shallow to be of value as a Black Cockatoo breeding hollow.

Tree no.	Species	Approx. tree diameter at breast height (mm)	Hollow entry type	Photo/s	Comments
2 (104)	Marri	800	Top		Chewed hollow entrance. Contains two Galah eggs and is probably too small to be used by Black Cockatoos.
4 (123)	Marri	800	Side	No photo provided.	Feral bees *Apis mellifera* using this hollow.
5 (126)	Marri	-	Side		Hollow lacks depth and is unsuitable to be utilised by Black Cockatoos. Bees also in hollow.

Tree no.	Species	Approx. tree diameter at breast height (mm)	Hollow entry type	Photo/s	Comments
7 (457)	Marri (stag)	1000	Top	 	Has two hollows with no depth and which are unsuitable for Black Cockatoos.

1

[1] Tree no. in brackets corresponds to the appropriate 'Tree ID number' in Appendix C.



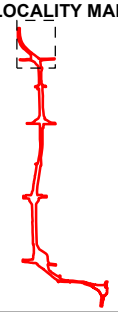
Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Marri

LOCALITY MAP



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Meters

Coord. Sys. GDA 1994 MGA Zone 50

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Client: Main Roads Western Australia

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Tonkin Highway Extension WA

BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 1**

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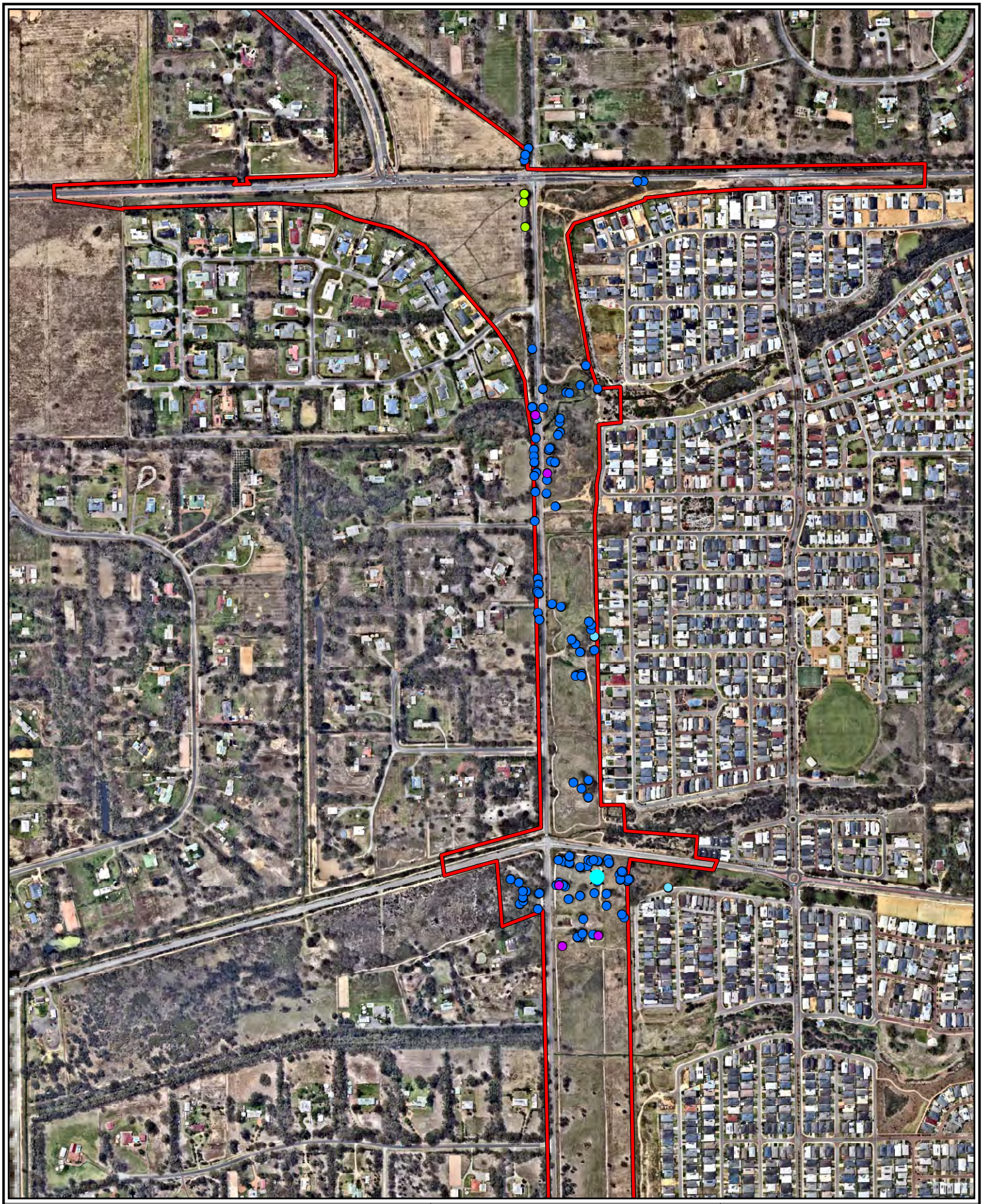

Legend

- Survey area

Black Cockatoo habitat

- Flooded Gum
- Jarrah stag
- Marri
- Marri stag
- Unsuitable breeding

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

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Tonkin Highway Extension WA

BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 2**

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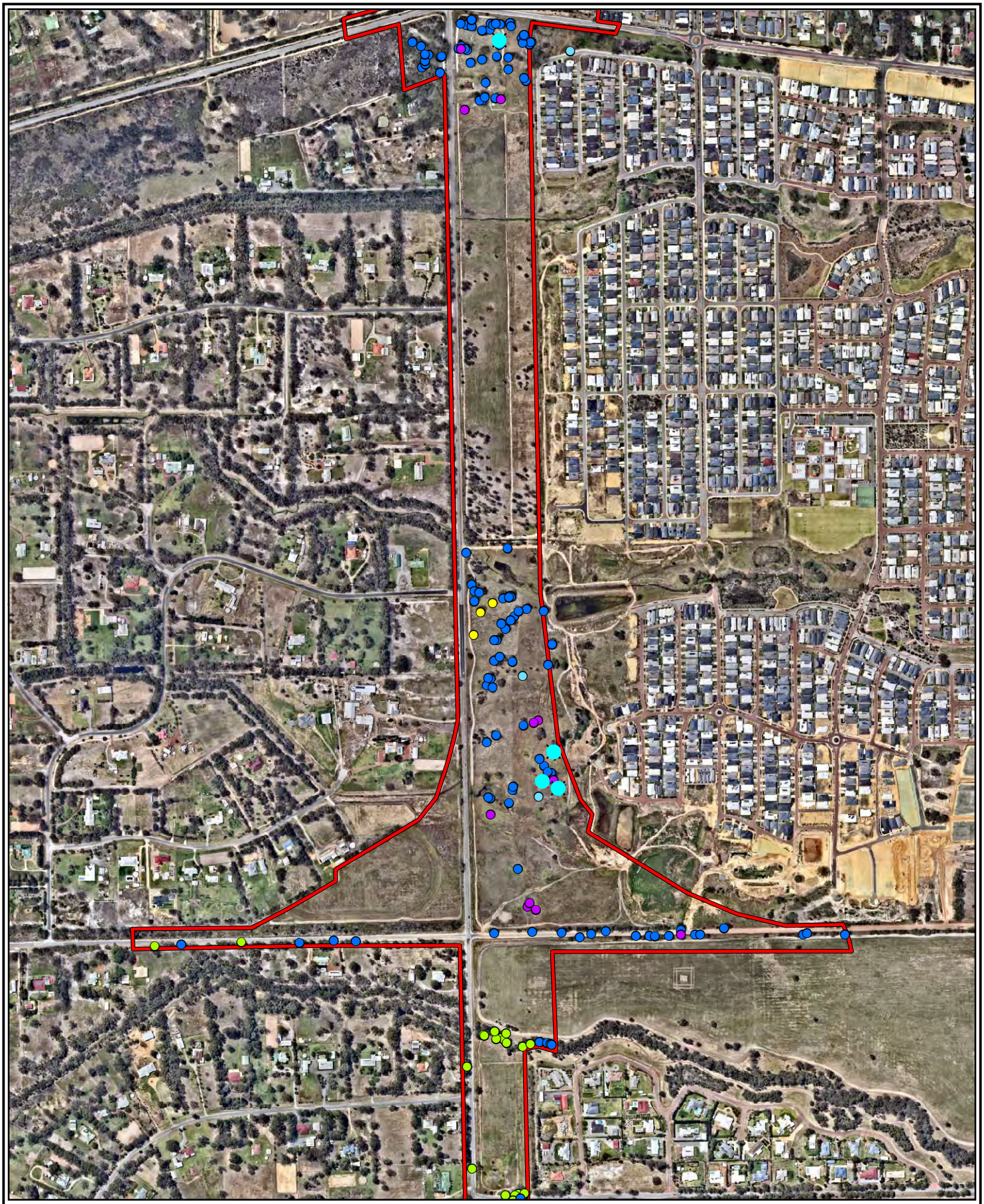


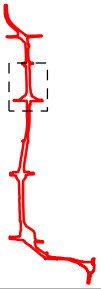
Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Jarrah
- Jarrah stag
- Marri
- Marri stag
- Possible breeding hollows
- Unsuitable breeding hollows

LOCALITY MAP



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BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 3**

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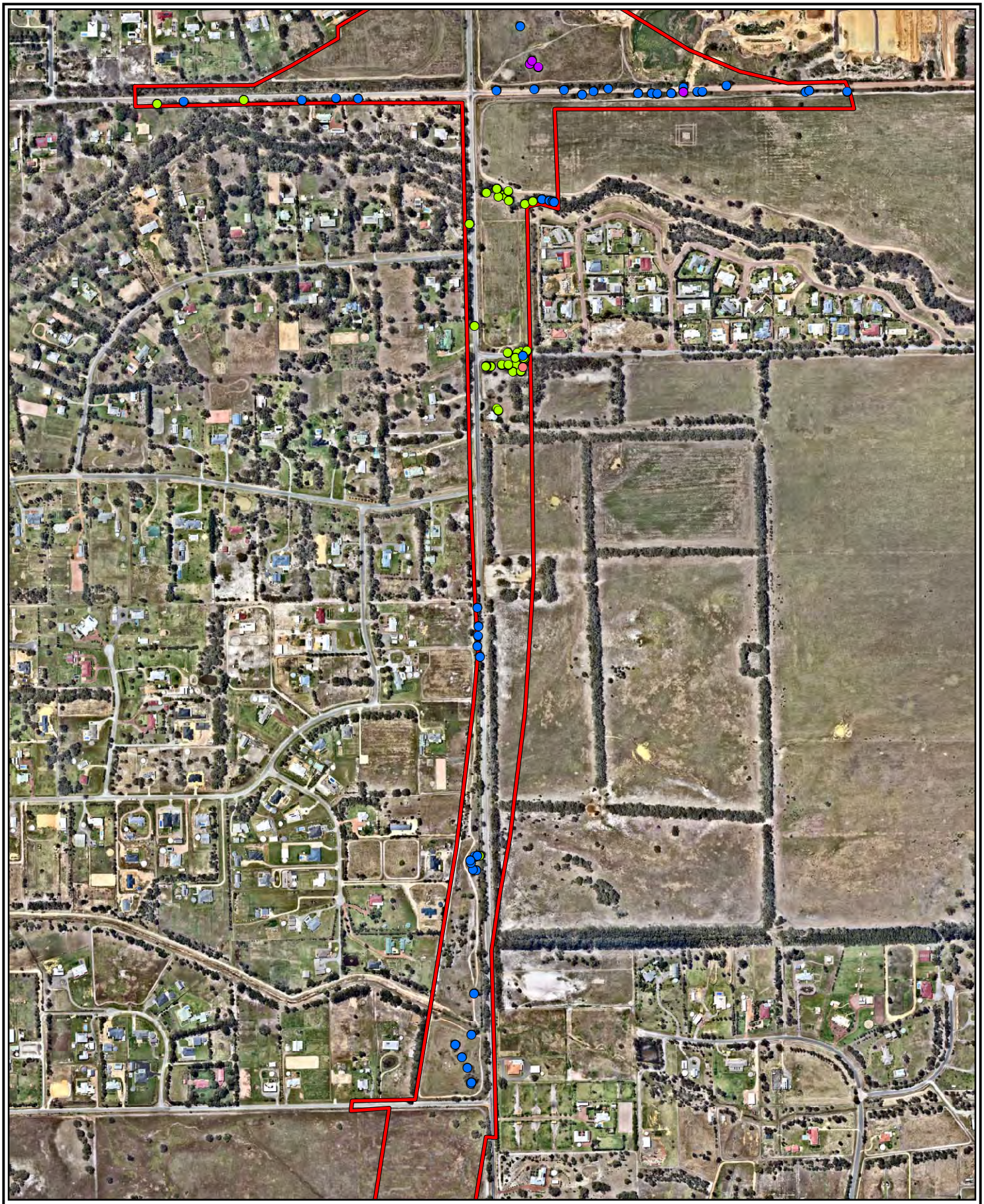


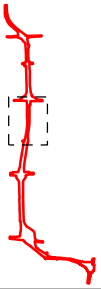
Legend

- Survey area

Black Cockatoo habitat

- Flooded Gum
- Flooded Gum stag
- Marri
- Marri stag

LOCALITY MAP



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BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 4**

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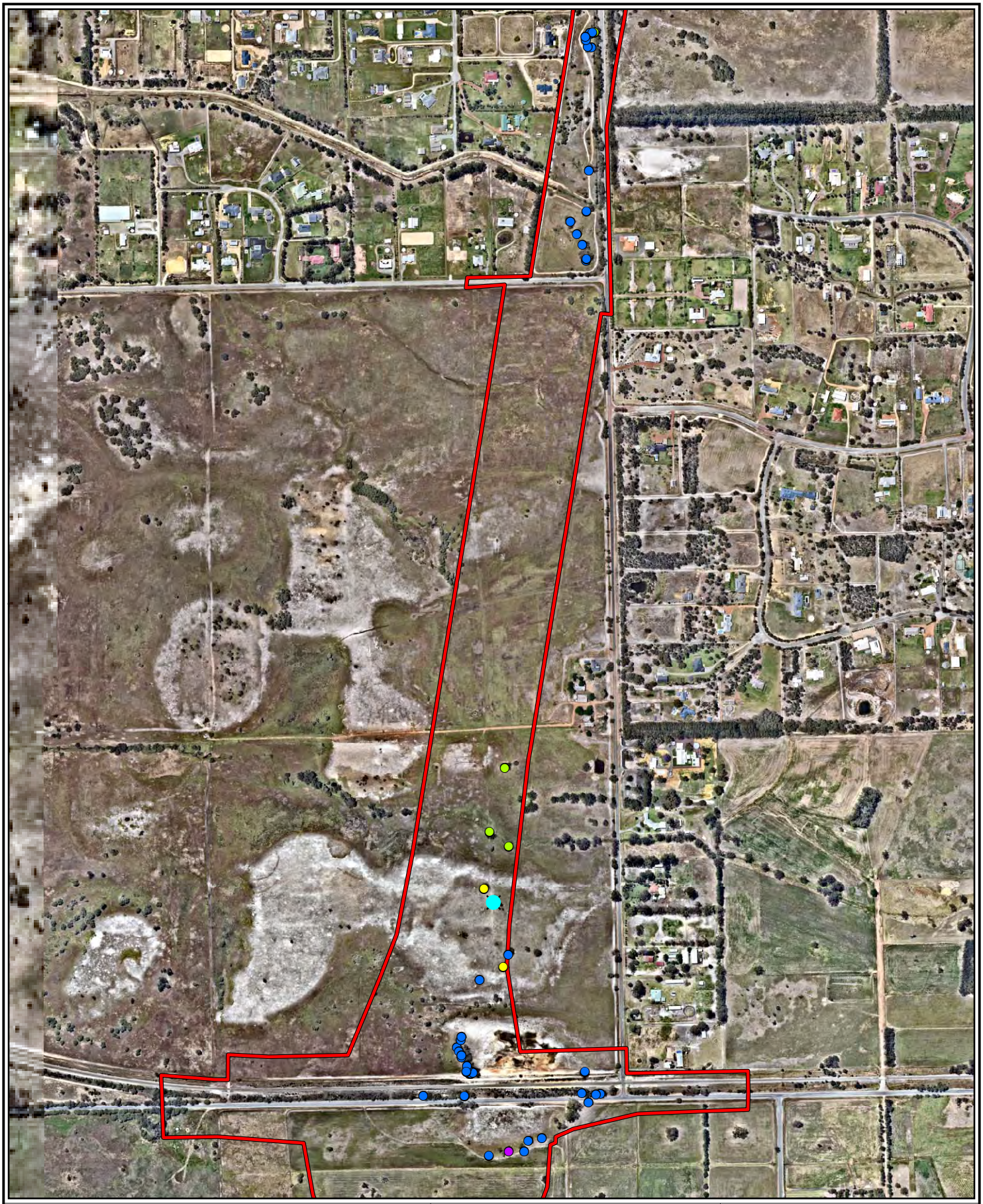


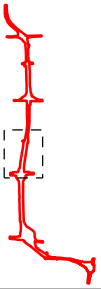
Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Flooded Gum stag
- Jarrah
- Marri
- Marri stag
- Unsuitable breeding hollows

LOCALITY MAP



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Meters

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Tonkin Highway Extension WA

BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 5**

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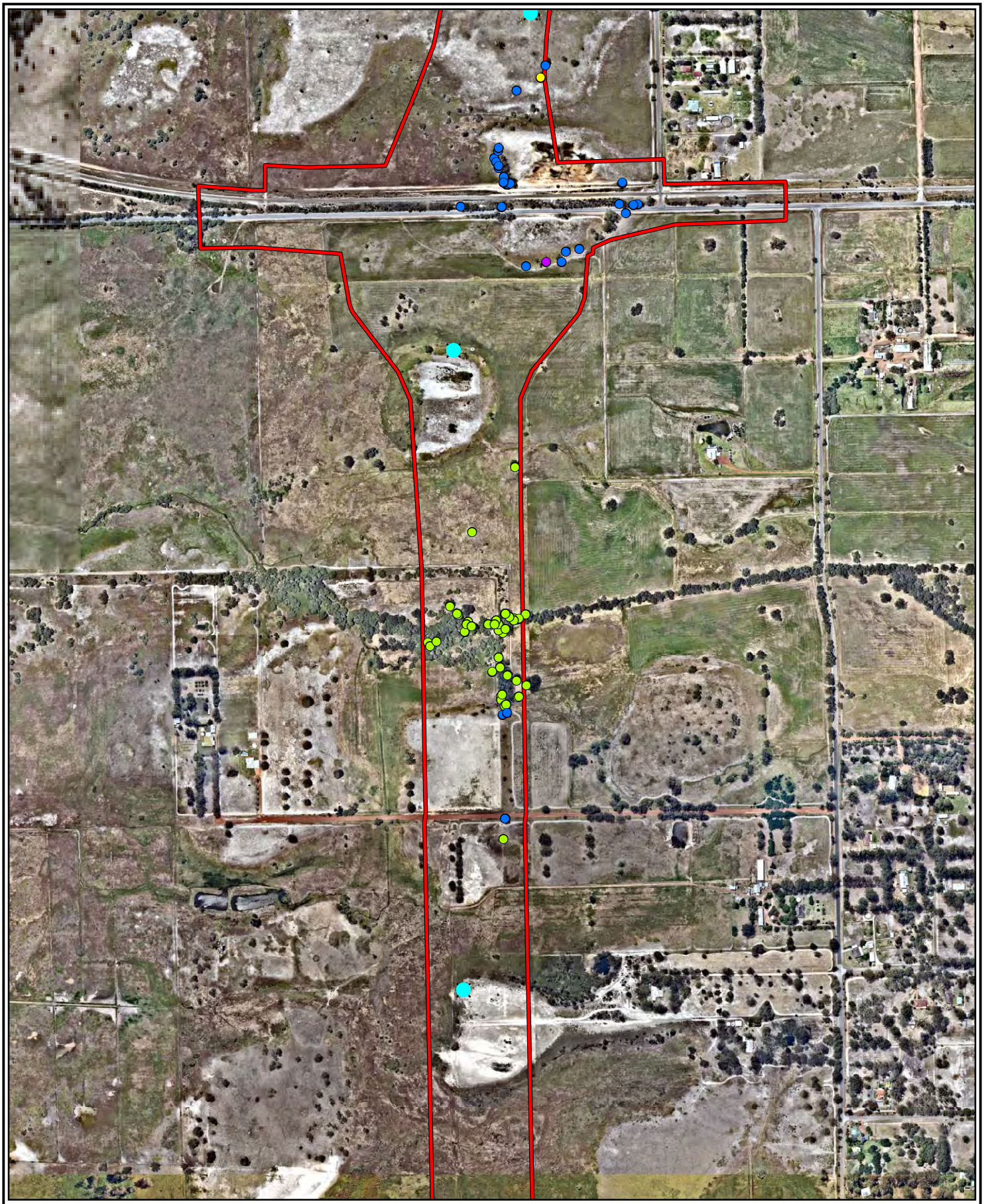


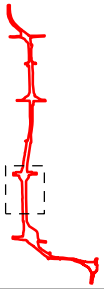
Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Flooded Gum stag
- Jarrah
- Marri
- Marri stag
- Unsuitable breeding hollows

LOCALITY MAP



Scale 1:10,000 at A4

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Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 6**

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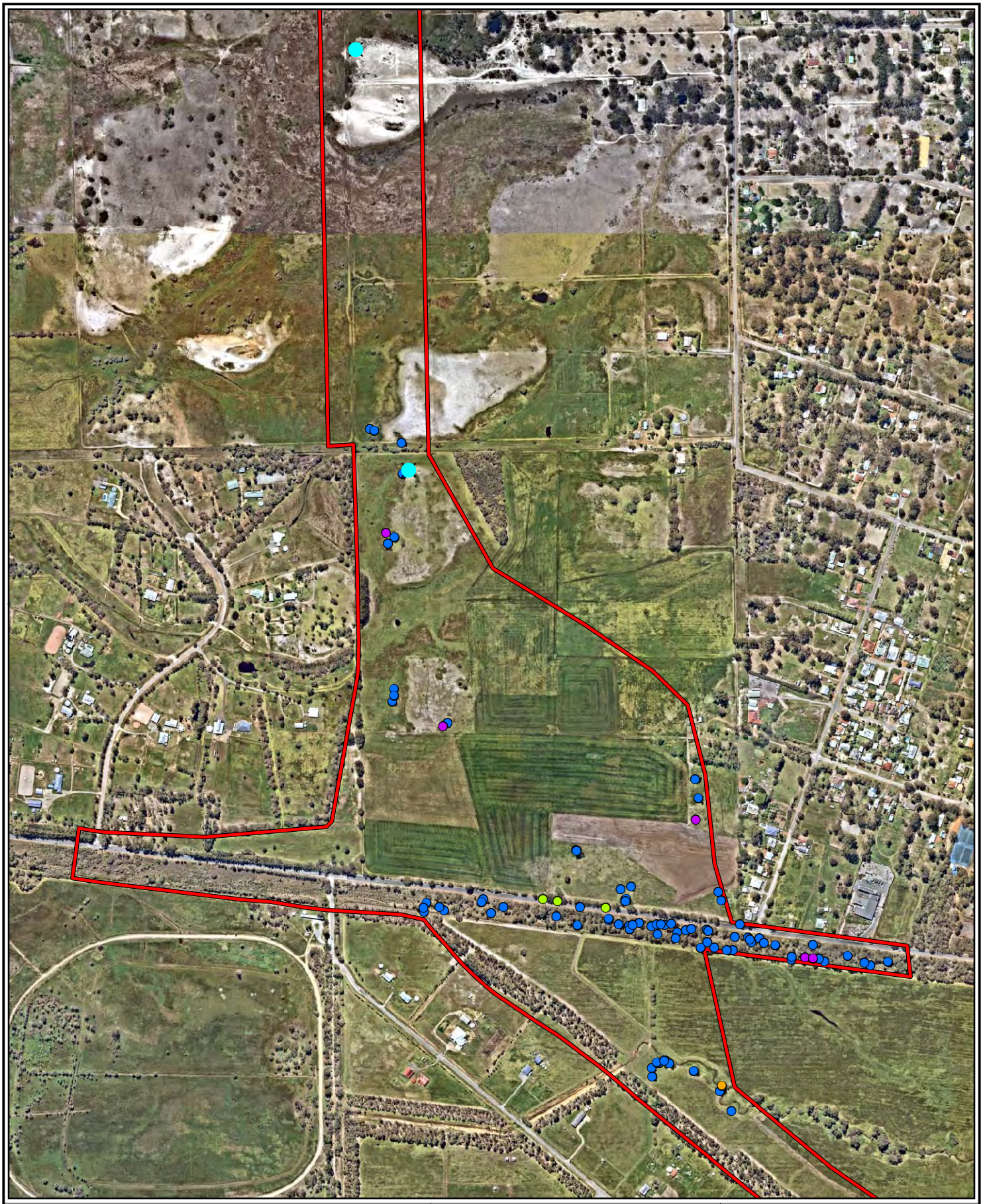
Image Reference: www.nearmap.com© - Imagery Date: 12 May 2020.



Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Marri
- Marri stag
- Wandoo
- Unsuitable breeding hollows

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 7**

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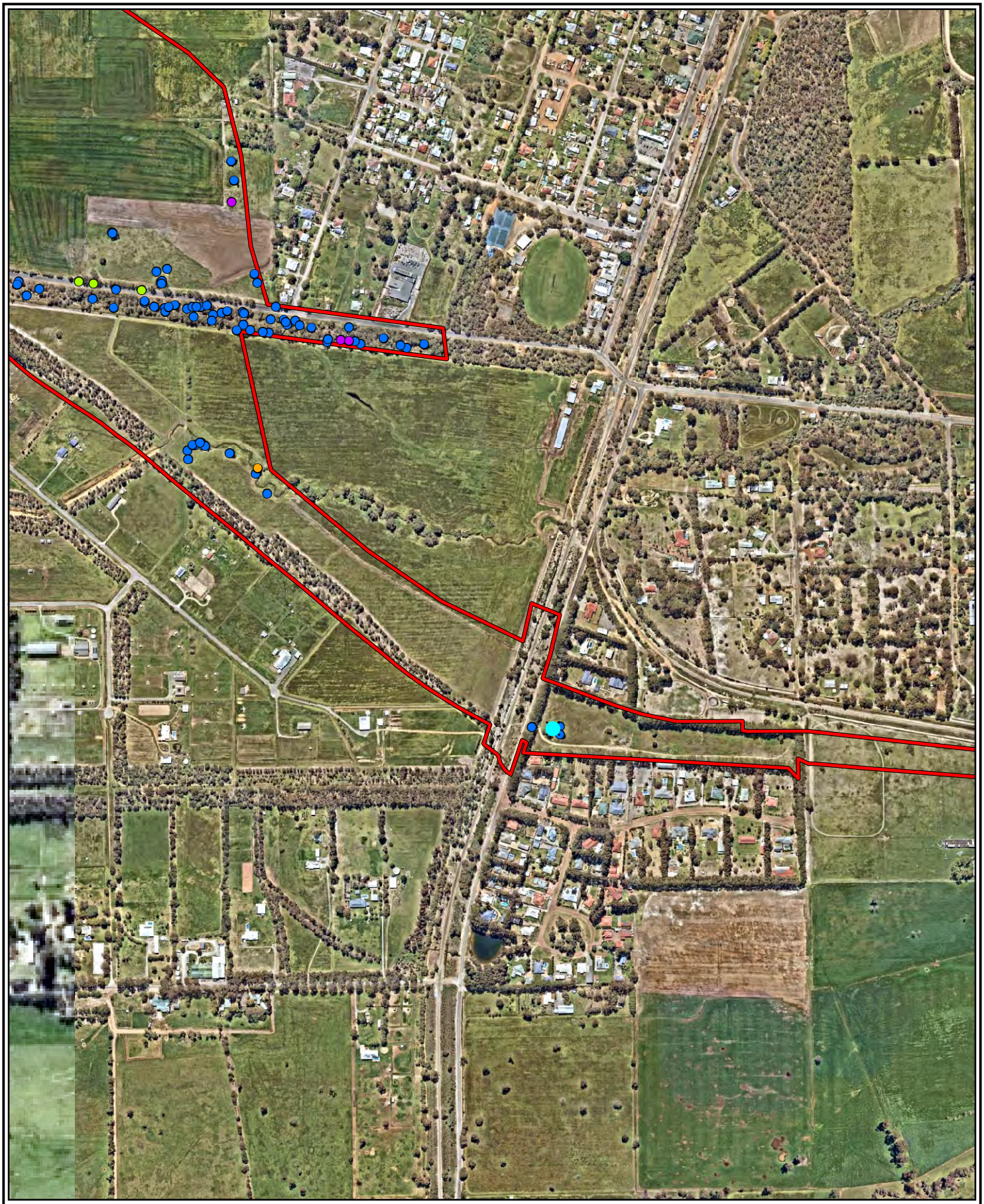


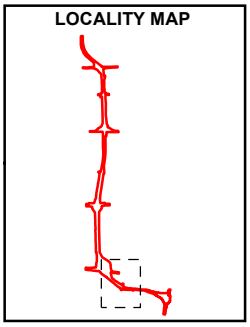
Legend

- Survey area

Black Cockatoo habitat trees

- Flooded Gum
- Jarrah
- Marri
- Marri stag
- Wandoo
- Unsuitable breeding hollows

LOCALITY MAP



Scale 1:10,000 at A4

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Meters

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BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 8**

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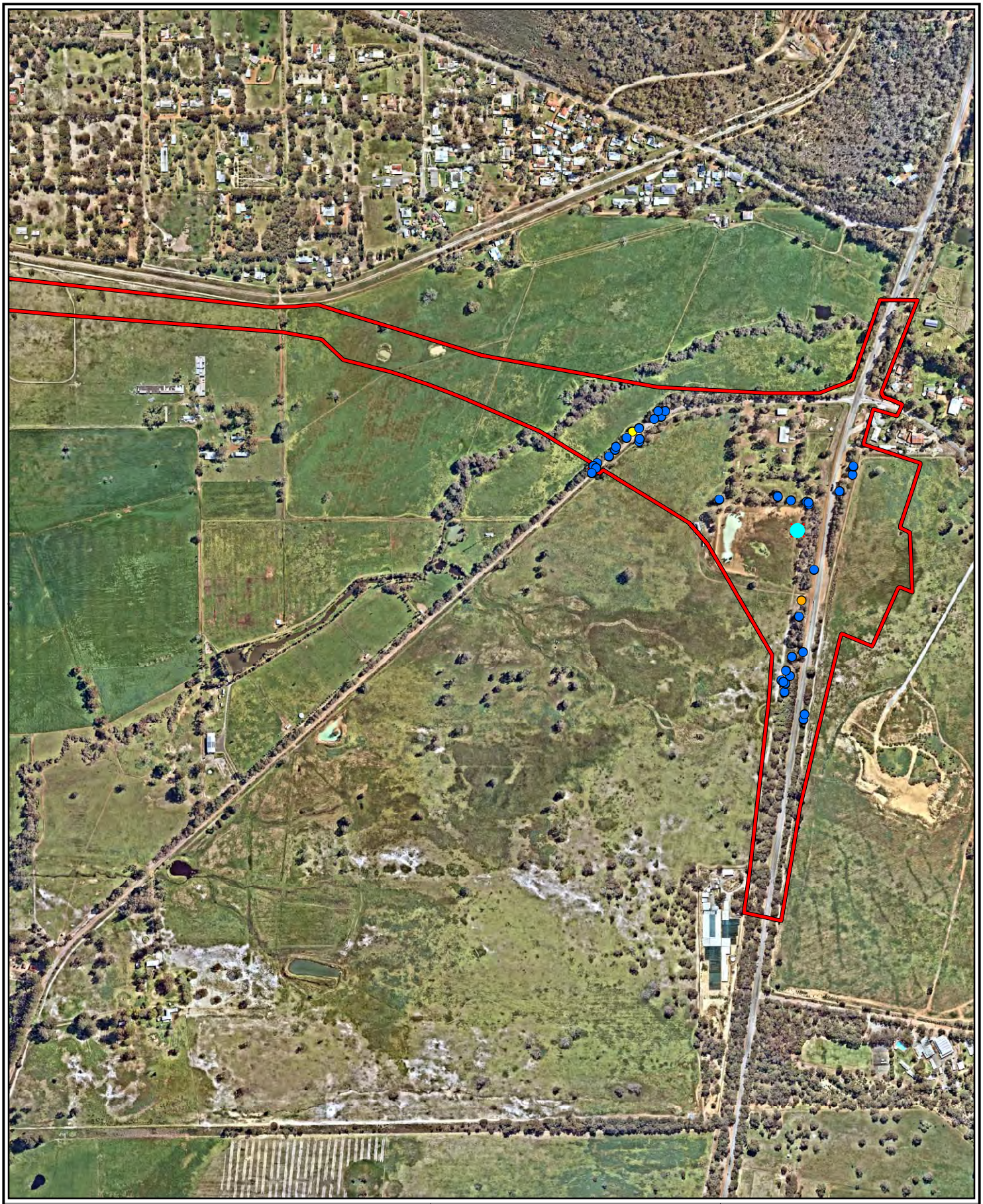


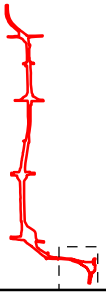
Legend

- Survey area

Black Cockatoo habitat trees

- Jarrah
- Marri
- Wandoo
- Possible breeding hollows

LOCALITY MAP



Scale 1:10,000 at A4

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Meters

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BLACK COCKATOO HABITAT TREES

FIGURE 4 **PAGE 9**

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3.2 Foraging habitat

A number of foraging species were recorded within the Survey Area, including Jarrah, Marri, Sheoak (*Allocasuarina fraseriana*), Swamp Sheoak (*Casuarina obesa*)*, Banksia menziesii, B. ilicifolia, Hakea* spp.*,* Balga (*Xanthorrhoea preissii*) *and* Cape Lilac (**Melia azedarach*)*.* A summary of the relevance of each foraging species to Black Cockatoos is provided below.

- **Jarrah (*Eucalyptus marginata*)** – seeds taken by CBC and FRTBC. There are also records of BBC feeding from Jarrah seeds, but it is very unusual. Nectar and grubs are taken by CBC and BBC.
- **Marri (*Corymbia calophylla*)** – seeds taken by all three species of Black Cockatoos. Nectar and grubs are taken by CBC and BBC. This is the most important and well-represented food species within the area.
- **Swamp Sheoak (*Casuarina obesa*)** – seeds are taken by taken by FRTBC however the species is poorly represented in the area.
- ***Banksia menziesii*** – seeds, nectar and grubs are taken by CBC and BBC. *B. menziesii* is an important food species, however it is poorly represented in the area.
- ***Banksia ilicifolia*** – seeds, nectar and grubs are taken by CBC and likely BBC. This is an important food species but is poorly represented with only a few trees in the south of the area.
- **Balga (*Xanthorrhoea preissii*)** – grubs and nectar are taken by both CBC and BBC. The species is found along verges.
- **Cape Lilac (*Melia azedarach*) –** seeds are taken by FRTBC. This is an introduced species which is considered a weed; however, it has become a seasonally important food source for FRTBC on parts of the Swan Coastal Plain.

The Survey Area also contains exotic eucalypt species which may provide nectar to CBC and BBC.

The extent and quality of Black Cockatoo foraging habitat is presented in Table 3.2. Of the 383.80 ha Survey Area, 337.28 ha (92.7%) for CBC and 337.60 ha (92.8%) for BBC and FRTBC was considered to have no, negligible to low, or low foraging value. Dominant foraging species within the Survey Area included *Eucalyptus marginata, Corymbia calophylla* and *Xanthorrhoea preissii*.

Kirkby (2019) recorded a total of 111 instances of feeding residue from BBC and FRTBC. 85 of these were from Marri trees, which were considered plentiful and easy locate. The residues ranged from brown and recent, to grey and up to two years old (Kirkby 2019). Foraging residues from BBC were noted at 24 different locations (Kirkby 2019). Whilst no evidence of use by CBC was recorded during the survey, the Survey Area is expected to provide potential foraging habitat.

Based on the composition, structure and condition of the vegetation assessed, Strategen-JBS&G identified the Survey Area as having:

- ‘low’, ‘low to moderate’ and ‘moderate’ foraging value for CBC; and
- ‘low’, ‘low to moderate’, ‘moderate’ and ‘moderate to high’ foraging value for BC and FRTBC.

Using the scoring system developed by Bamford (Appendix B), adding in site context and species presence, the habitat with the Survey Area rates as a maximum quality of 6 for CBC and 7 for the BBC and FRTBC, out of a maximum score of 10. The remaining vegetation units and cleared areas were scored either ‘low’ or ‘no’ foraging value based on the limited presence or total absence of suitable foraging species. Foraging habitat value for CBC is illustrated by Figure 5, and by Figure 6 for BBC and FRTBC.

Table 3.2: Extent and quality of Black Cockatoo foraging habitat.

Vegetation value	Site context	Species density	Total score (/10)	Area (ha)		
				CBC	BBC	FRTBC
Moderate to High foraging value (5)	1	1	7	0	8.838	8.838
Moderate foraging value (4)	1	1	6	13.703	4.865	4.865
Low to Moderate foraging value (3)	1	1	5	12.811	12.492	12.492
Low foraging value (2)	0	0	2	21.776	28.563	28.563
Negligible to low foraging value (1)	0	0	1	6.467	0	0
No foraging value (0)	0	0	0	309.039	309.039	309.039

3.3 Roosting habitat

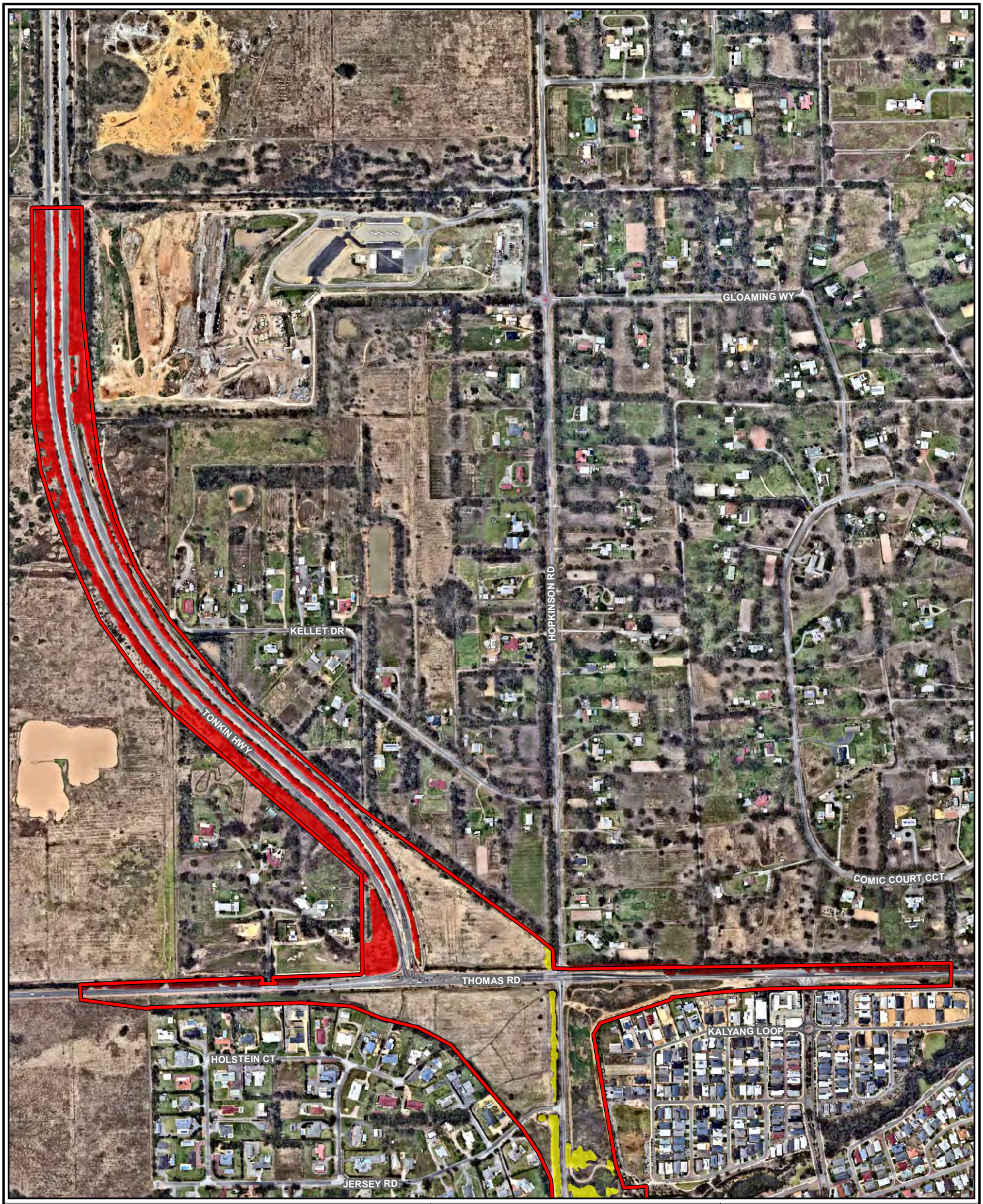
Publicly available data from the most recent annual Great Cocky Count (Peck et al. 2019) indicates that there is one confirmed white-tail cockatoo (CBC and/or BBC) and one confirmed FRTBC roost within 1 km of the Survey Area. 15 confirmed roosts exist within 6 km of the Survey Area and 41 occur within 12 km (Figure 2).

Jarrah, Marri, Wandoo and exotic eucalypts within the Survey Area are all able to provide a roost for Black Cockatoos (Kirkby 2019). Although no water sources are documented within the Survey Area, it is expected that suitable drinking sites would be available throughout the year from gardens, farm dams, stock troughs and natural water bodies throughout the Byford/Mundijong areas such as Beenyup Brook, Cardup Brook, Manjedal Brook and Medulla Brook.

In addition to the native tree species identified, the Survey Area contained approximately 300 introduced exotic Eucalypts ranging from 100 mm DBH saplings to larger trees up to 800 mm DBH. These introduced trees are not known as either a hollow or forage provider for Black Cockatoos; however, it is possible that they could provide a suitable roosting site. No evidence of Black Cockatoo roosting was recorded during the survey (Kirkby 2019).

3.4 Sightings

In addition to the foraging residues indicating Black Cockatoo presence, a number of birds were sighted. A single female FRTBC was observed during the survey. BBC individuals were noted to be feeding on Marri seeds just beyond the Survey Area, and a pair were observed overhead (Kirkby 2019).



Legend

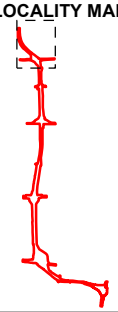
Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 1**

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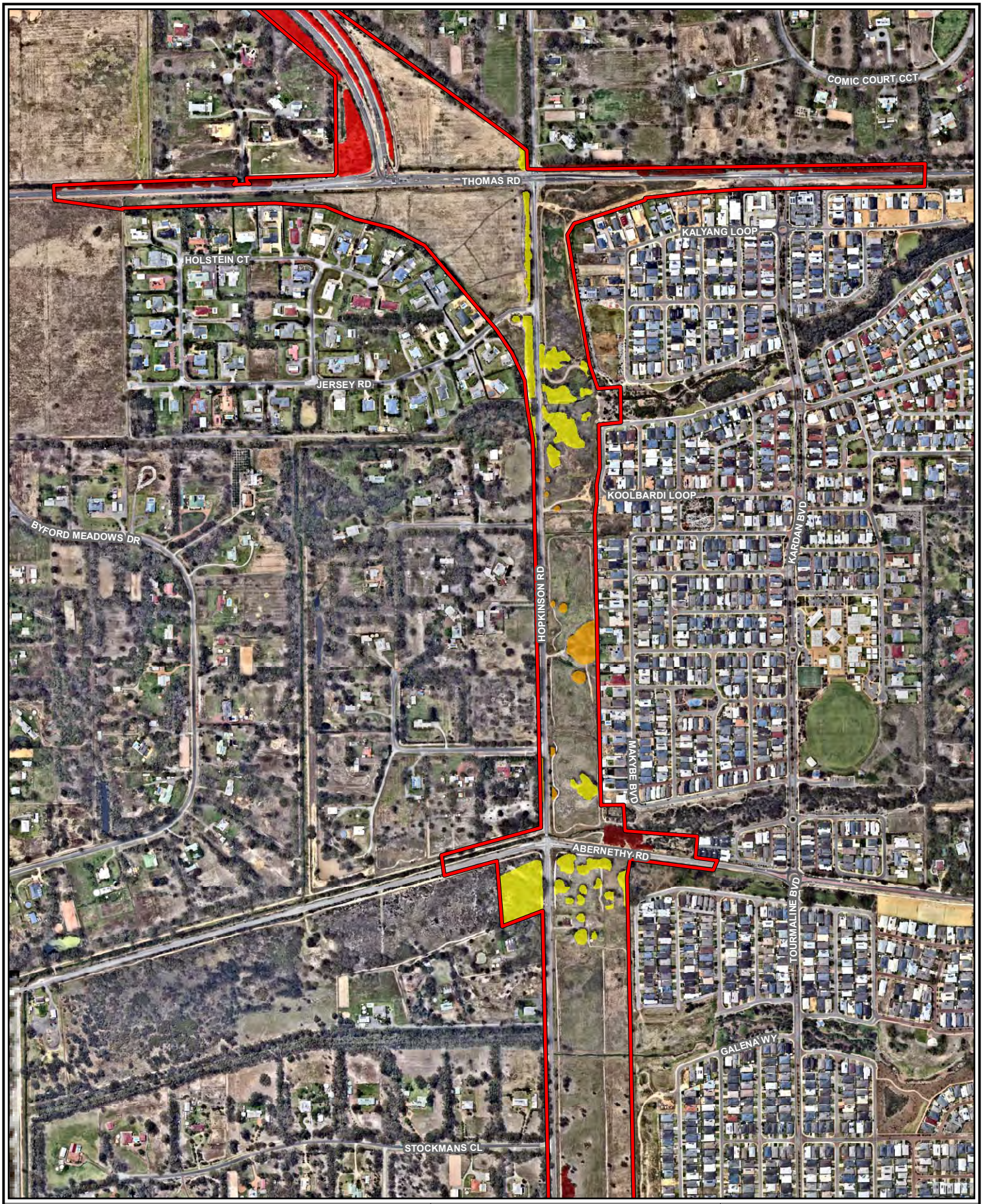

Legend

- Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

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Meters

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Tonkin Highway Extension WA

CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 2**

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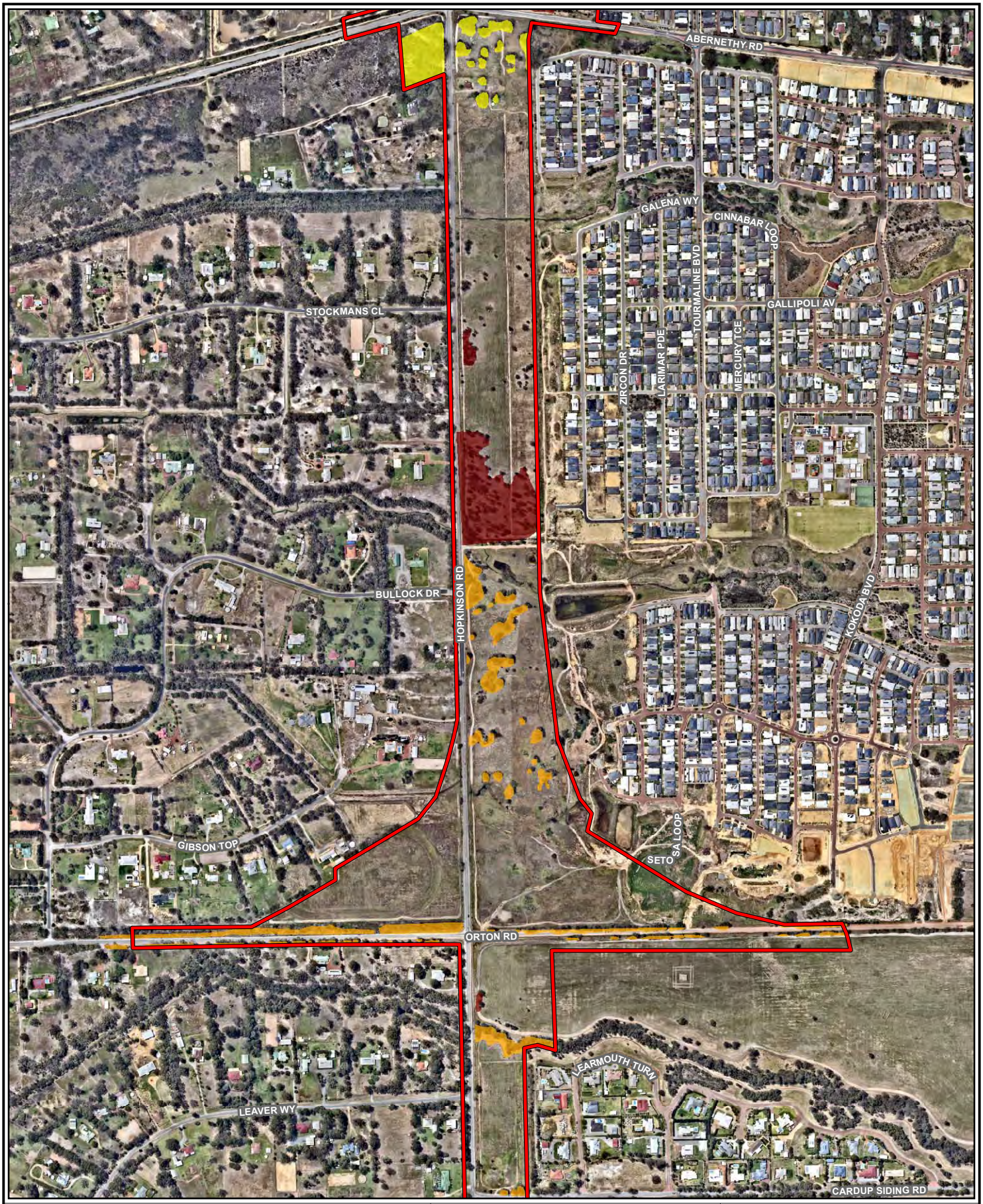


Legend

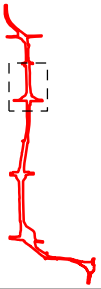
Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 3**

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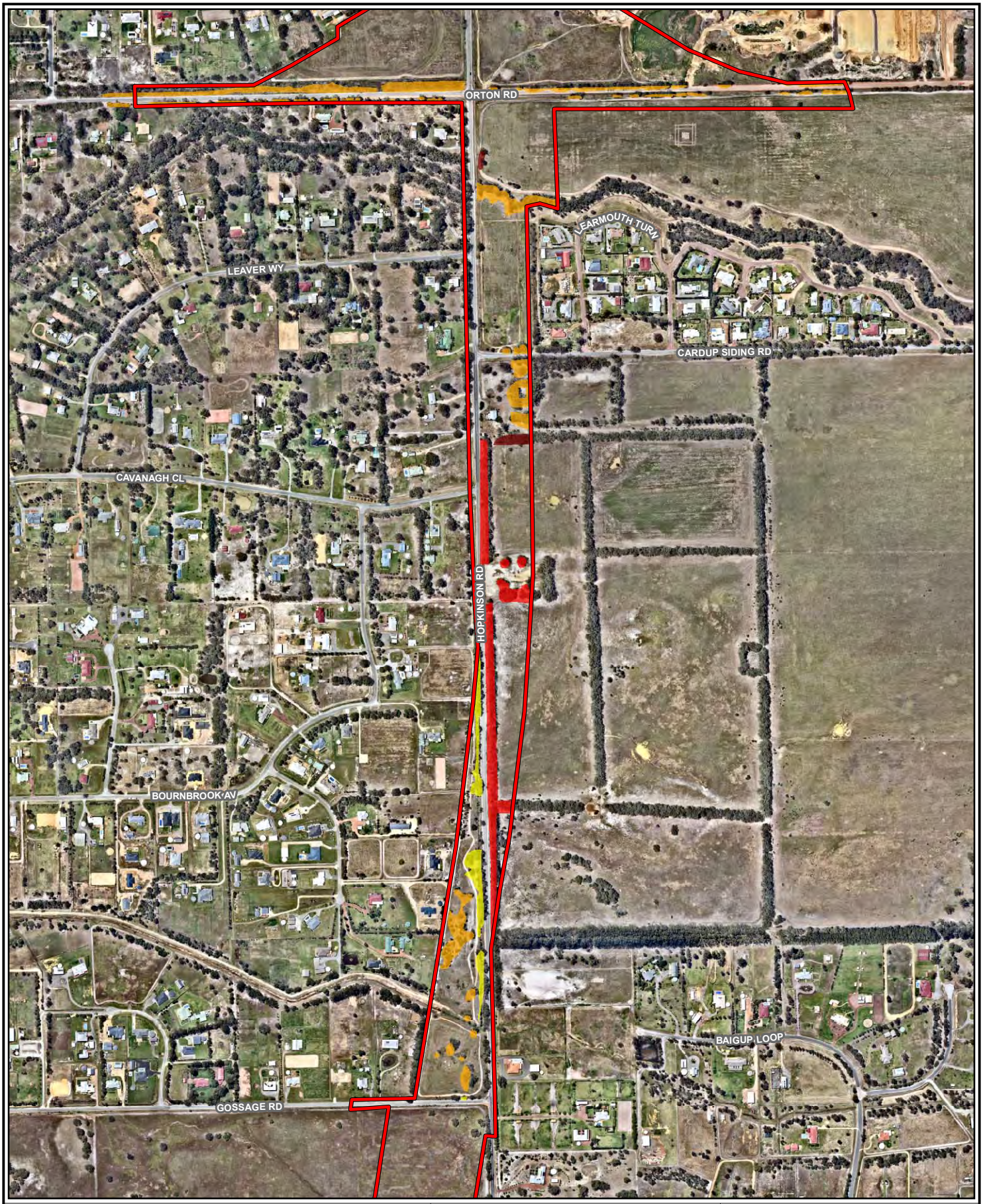


Legend

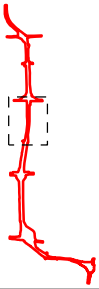
Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 4**

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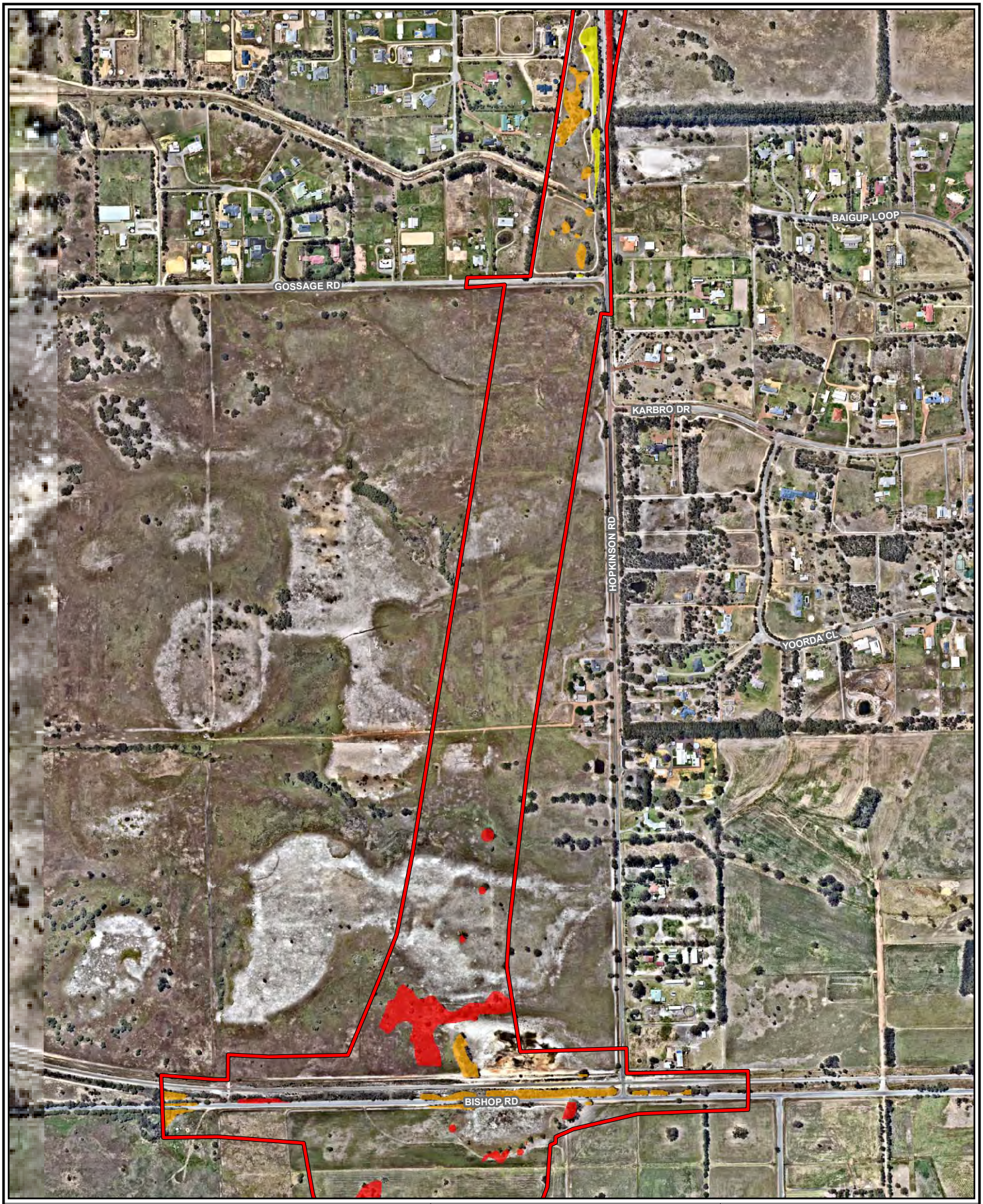

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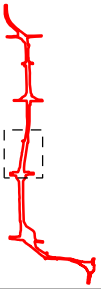
Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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Tonkin Highway Extension WA

CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 5**

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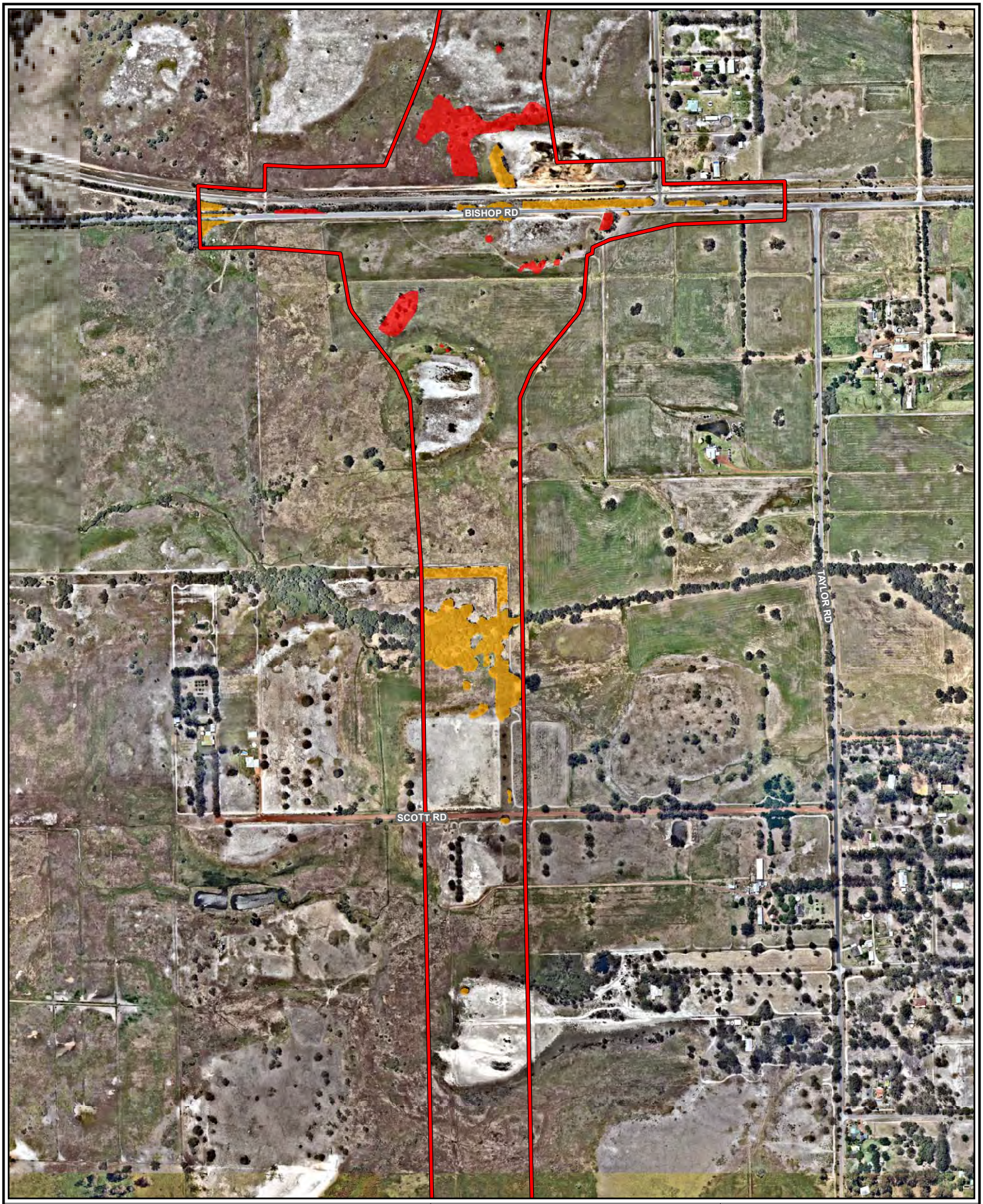


Legend

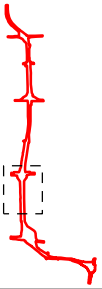
Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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Tonkin Highway Extension WA

CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 6**

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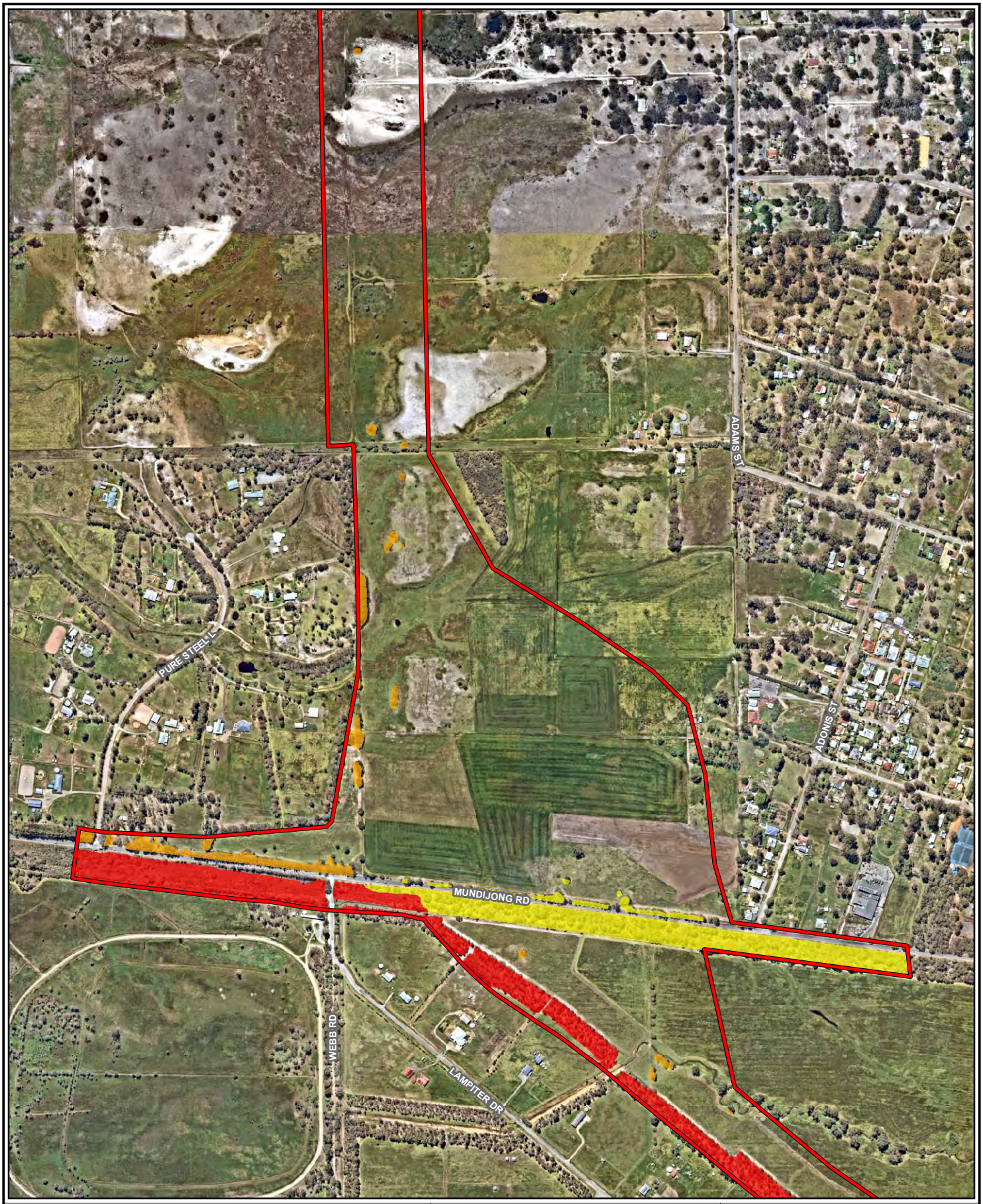

Legend

Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200 Meters

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Tonkin Highway Extension WA

CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 7**

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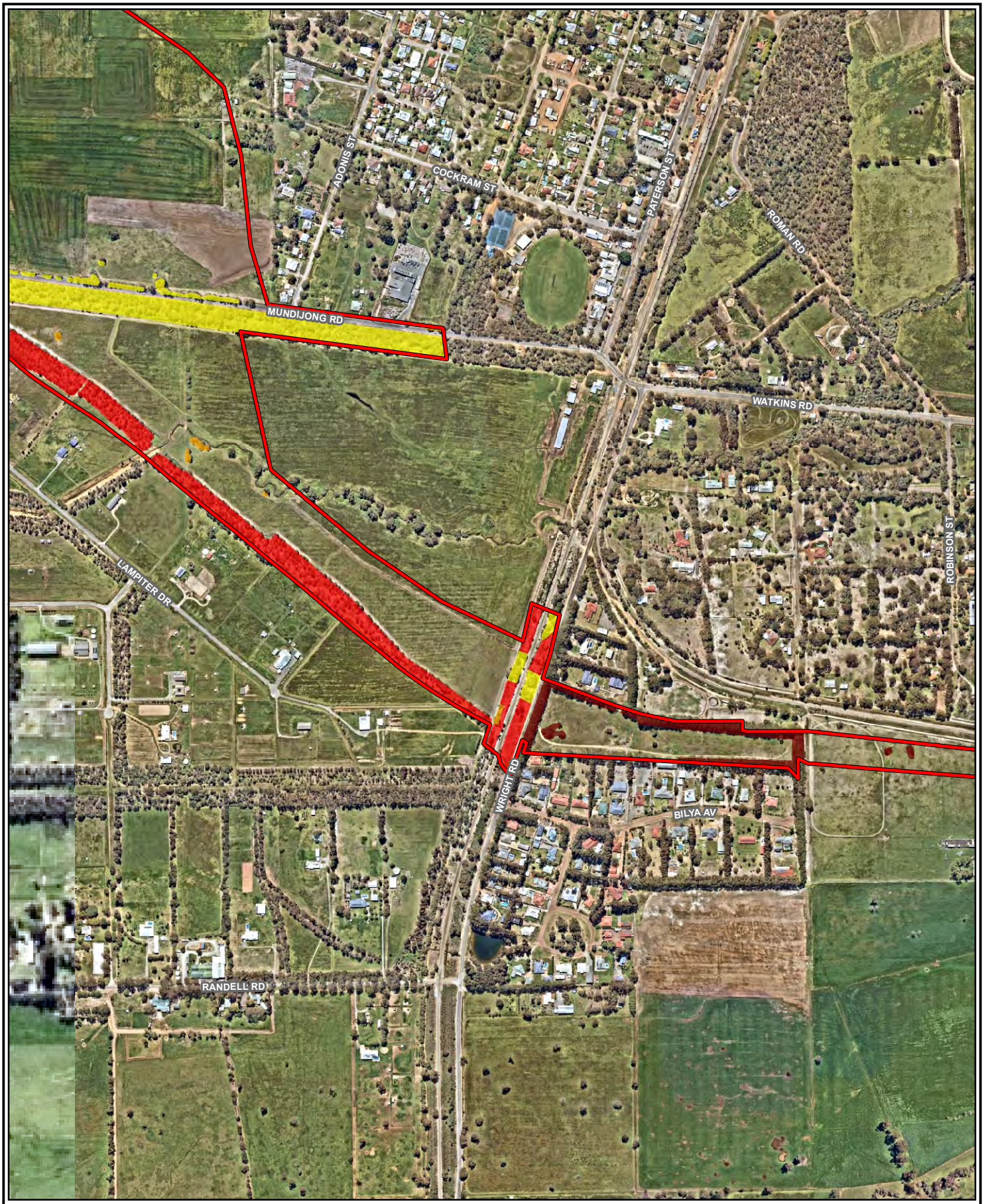

Legend

Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

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CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 8**

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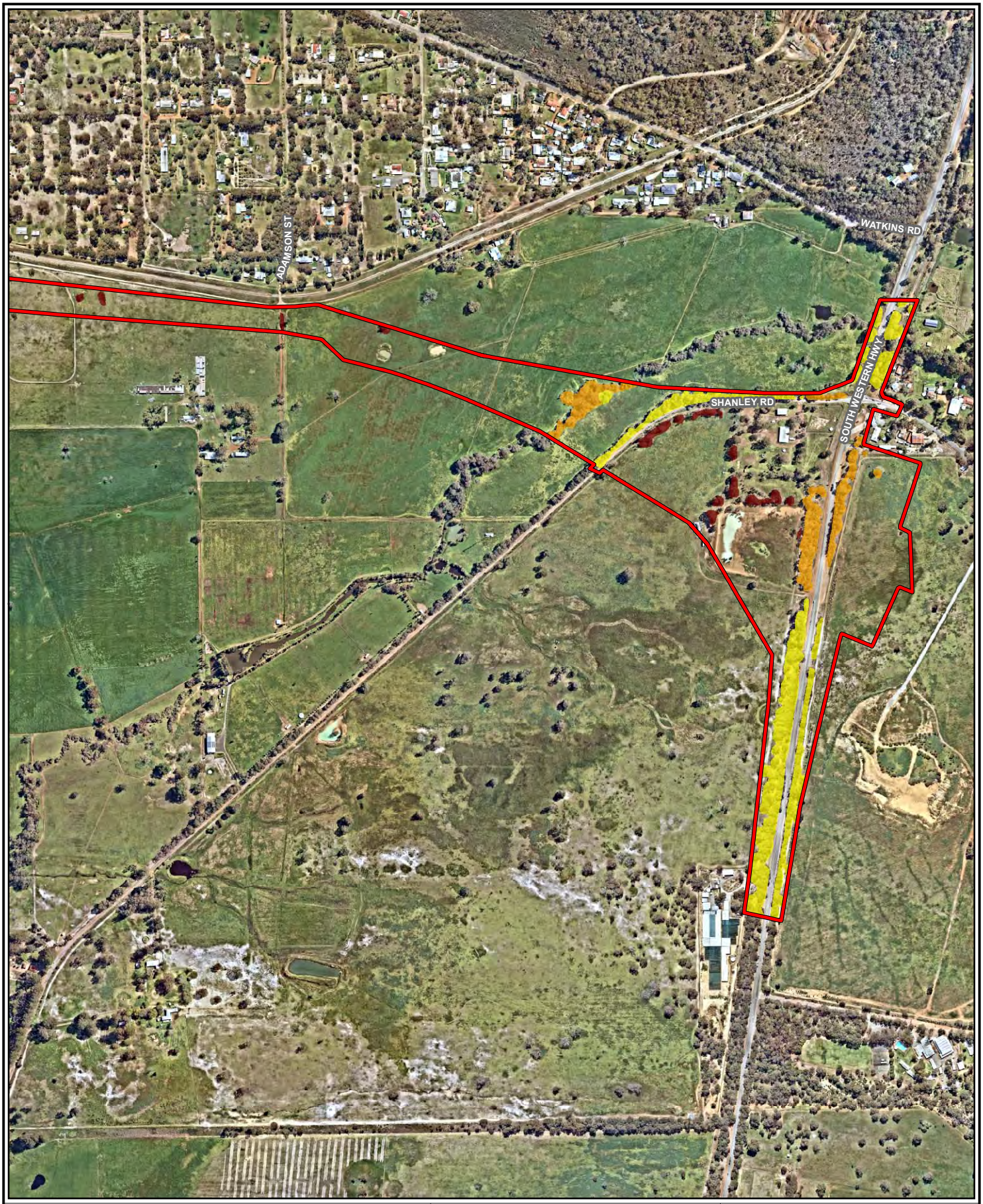

Legend

Survey area

Carnaby's Cockatoo foraging value

- Moderate (4)
- Low to moderate (3)
- Low (2)
- Negligable (1)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

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Tonkin Highway Extension WA

CARNABY'S COCKATOO FORAGING HABITAT QUALITY

FIGURE 5 **PAGE 9**

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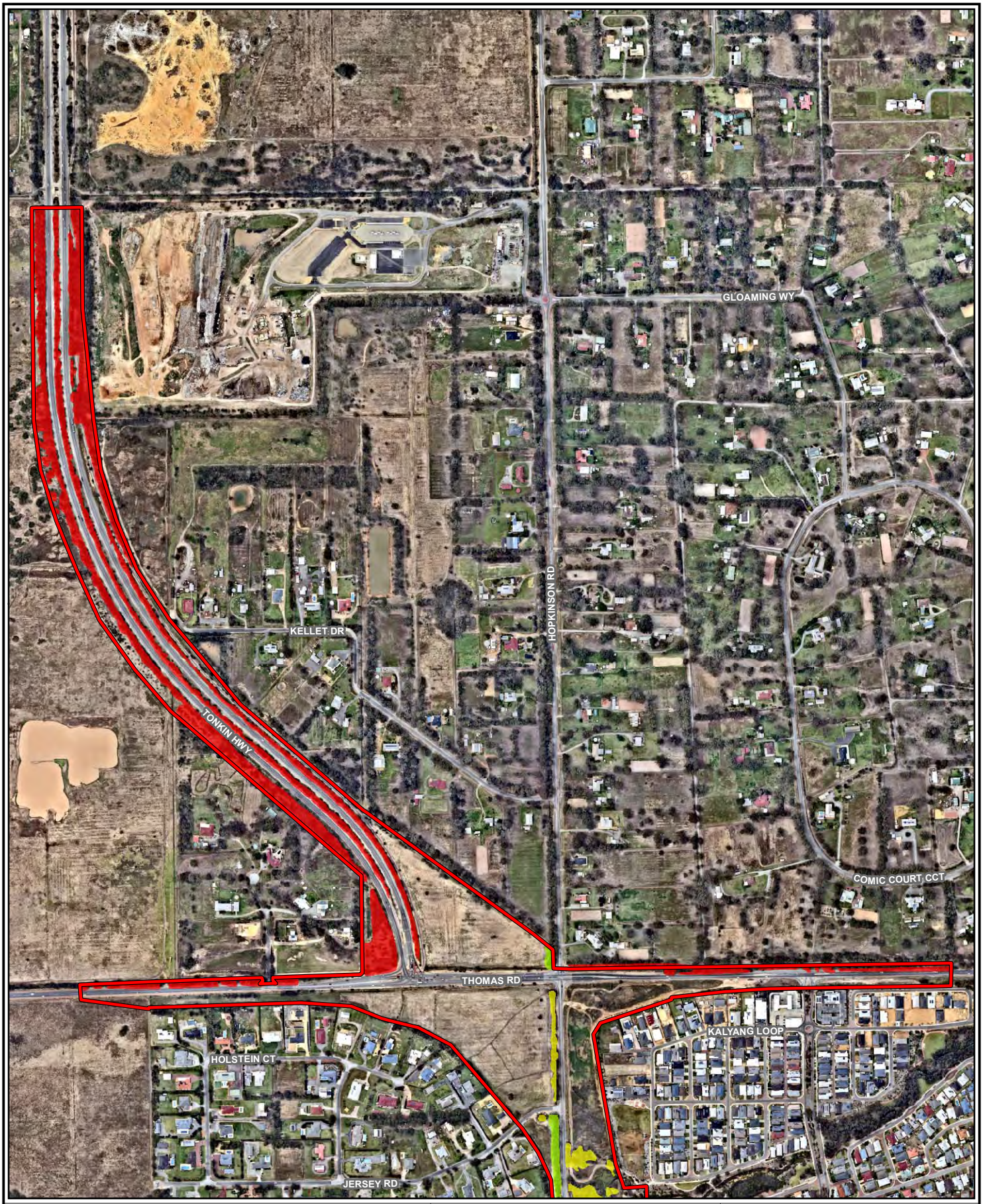


Legend

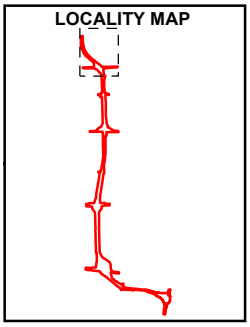
Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



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BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 1**

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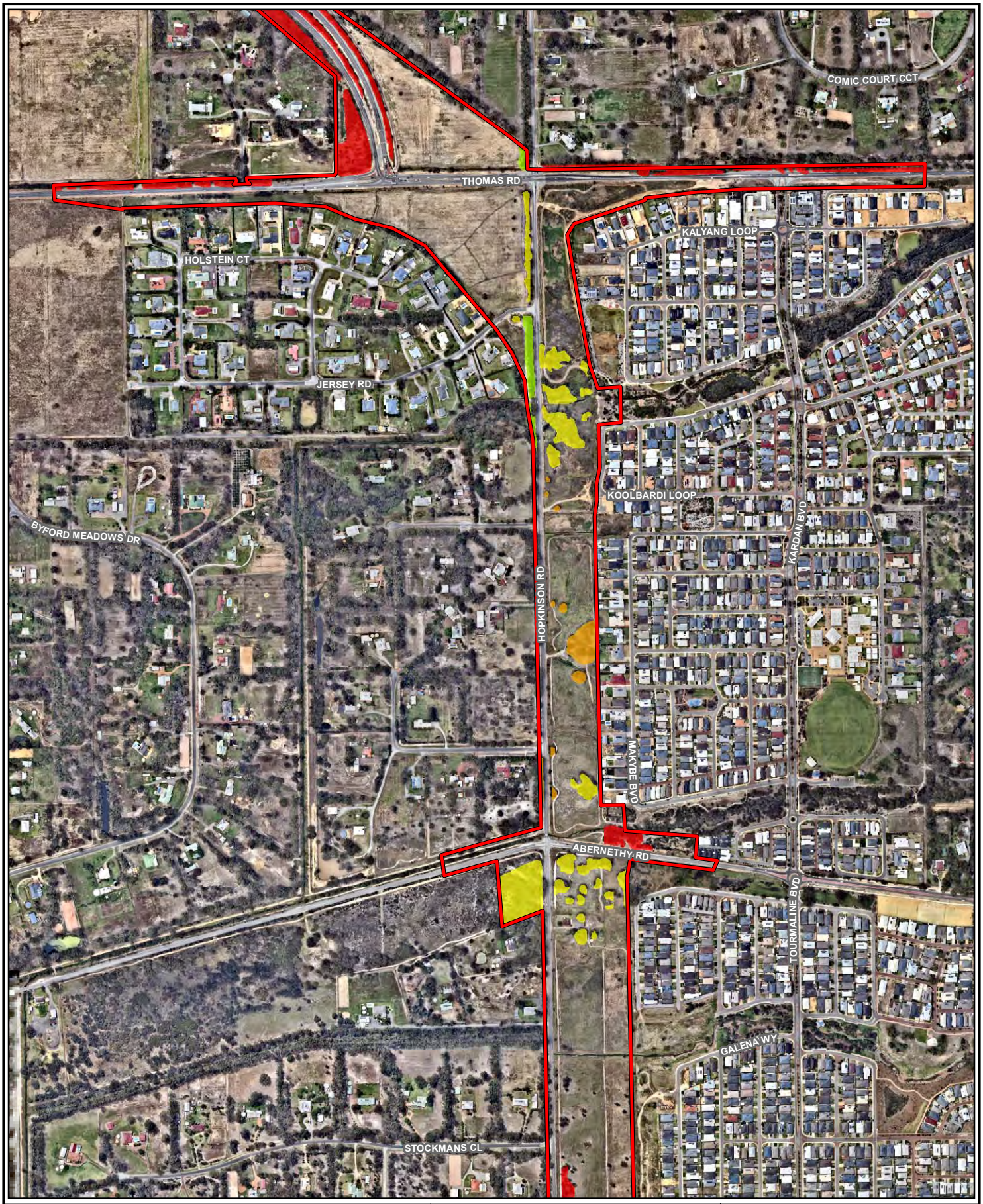

Legend

- Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

Drawn By: hsullivan | Checked By: CT

Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 2**

strategen JBS&G

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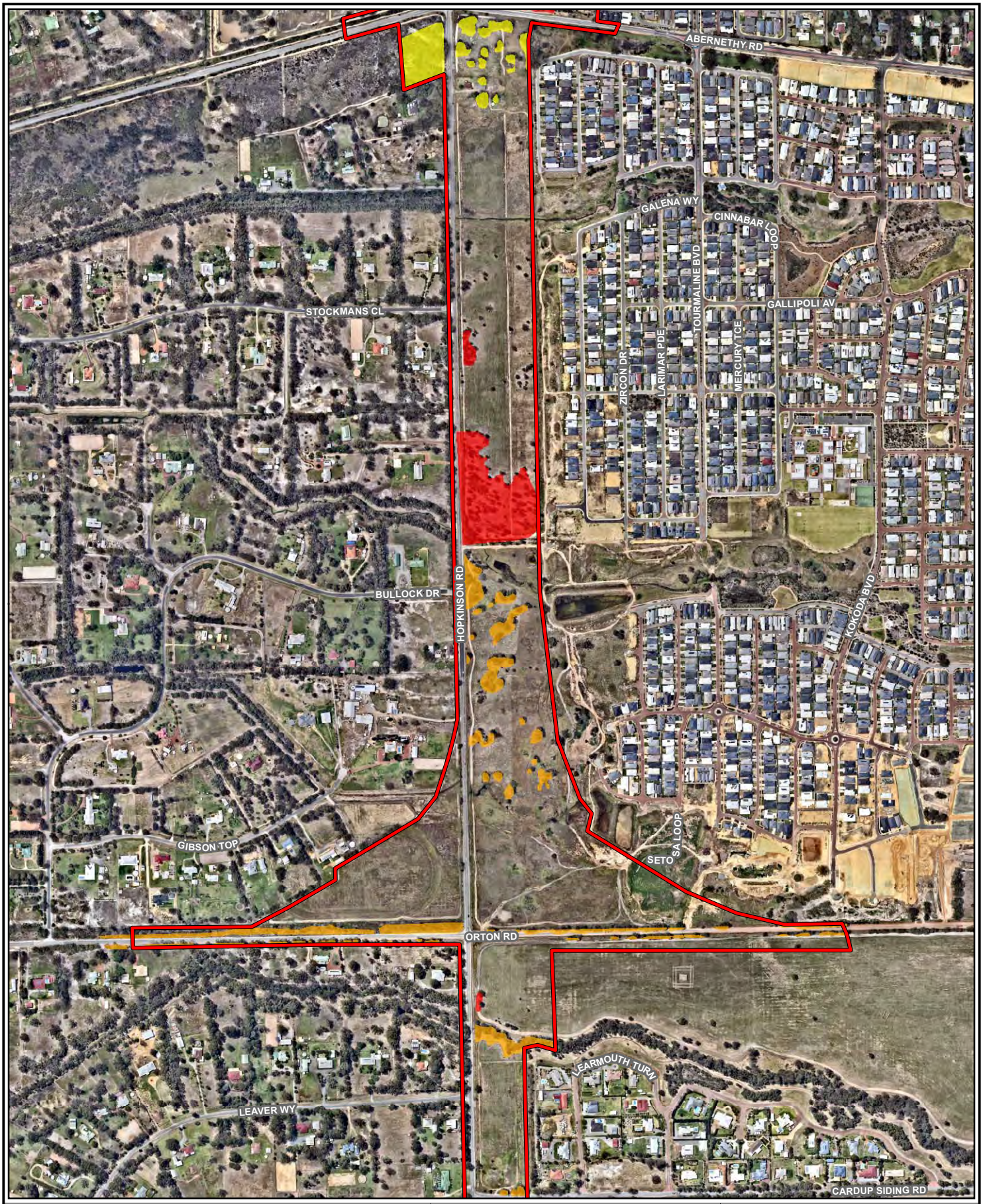


Legend

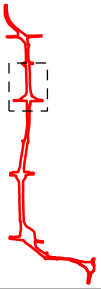
- Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



Scale 1:10,000 at A4

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Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 3**

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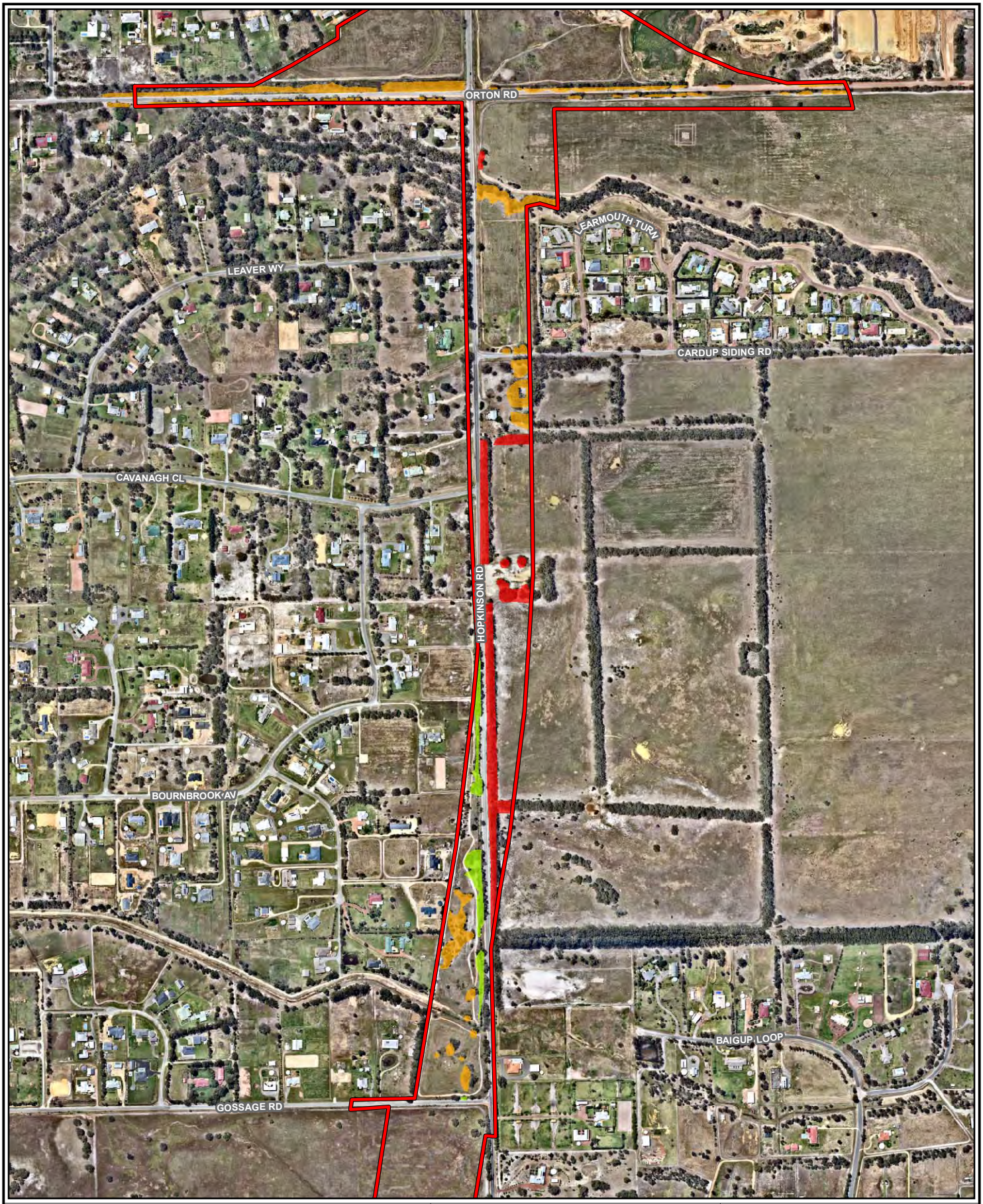


Legend

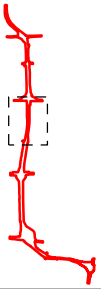
- Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



Scale 1:10,000 at A4

0 100 200
Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 4**

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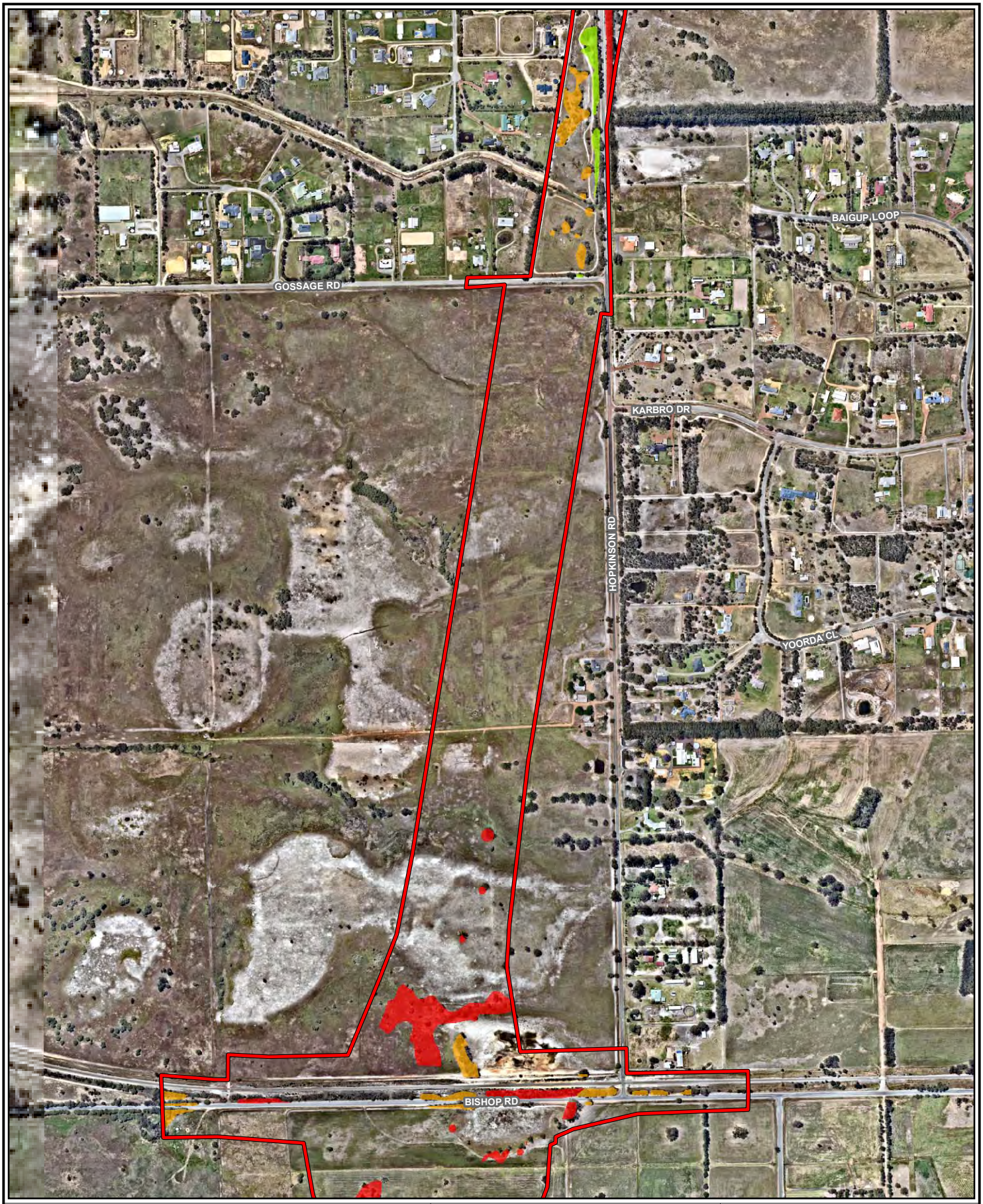


Legend

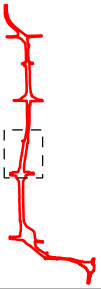
Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



Scale 1:10,000 at A4

0 100 200 Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 5**

strategen JBS&G

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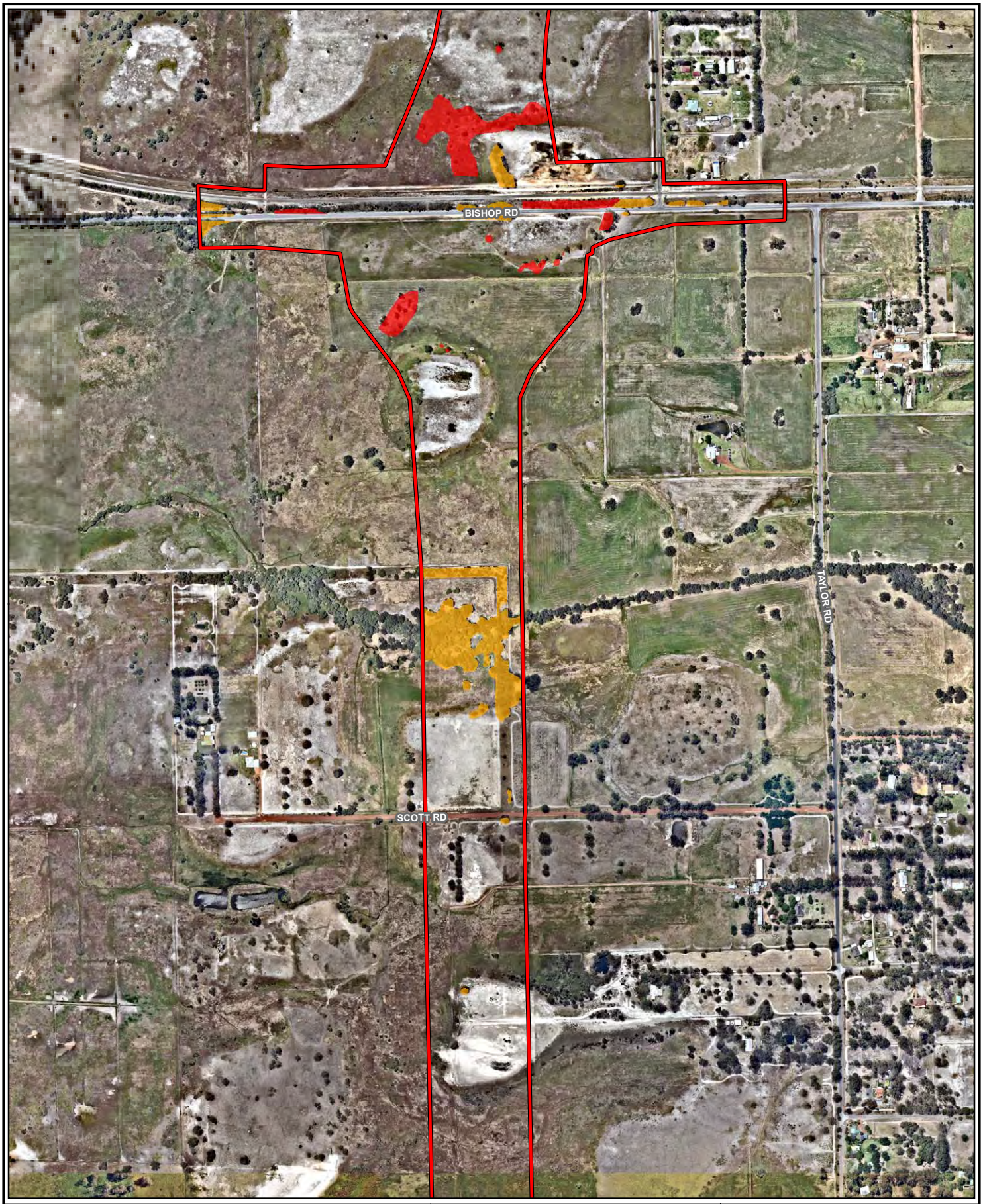


Legend

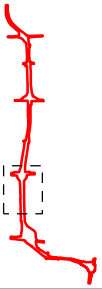
Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



Scale 1:10,000 at A4

0 100 200 Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 6**

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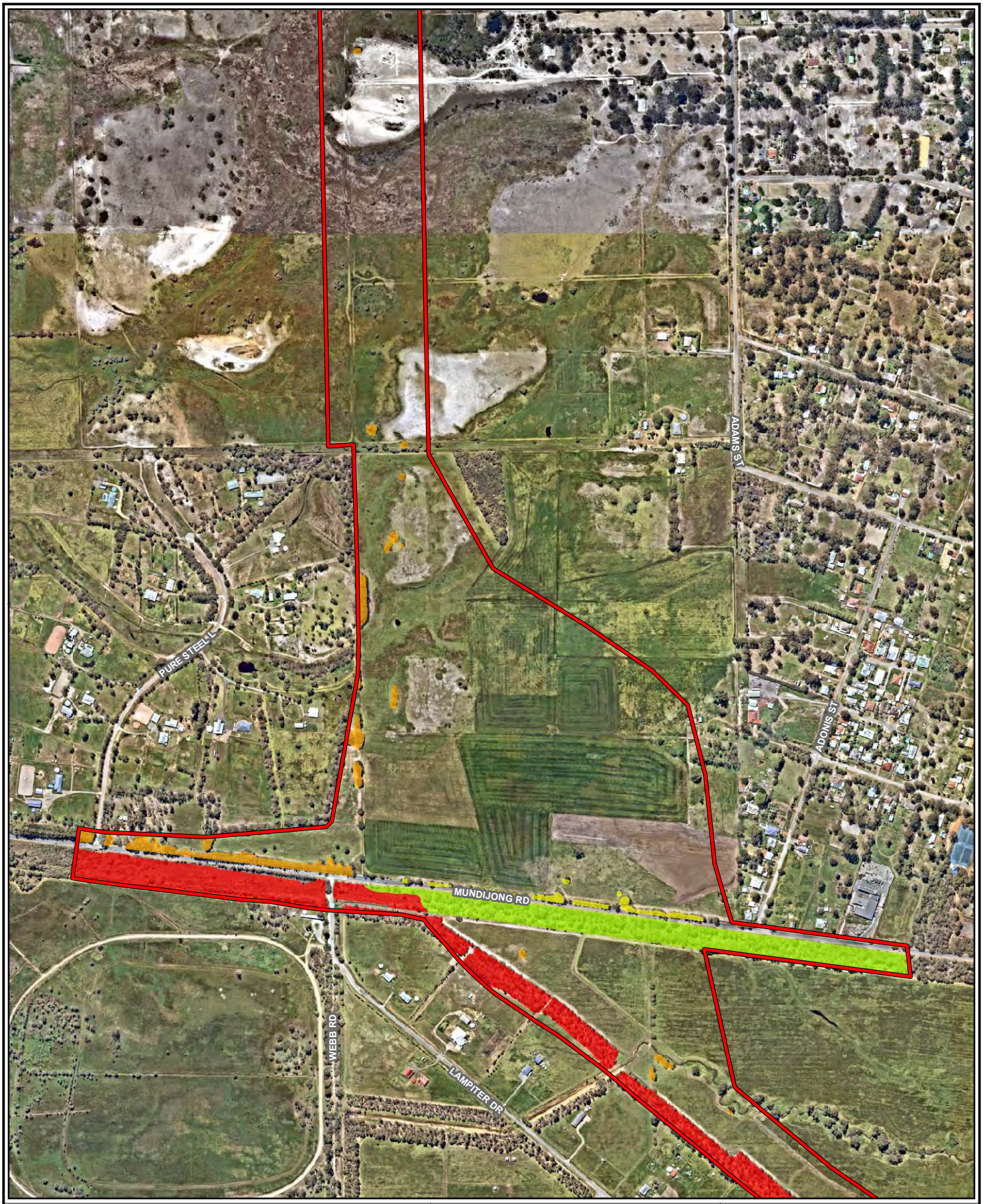

Legend

- Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200
Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

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BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 7**

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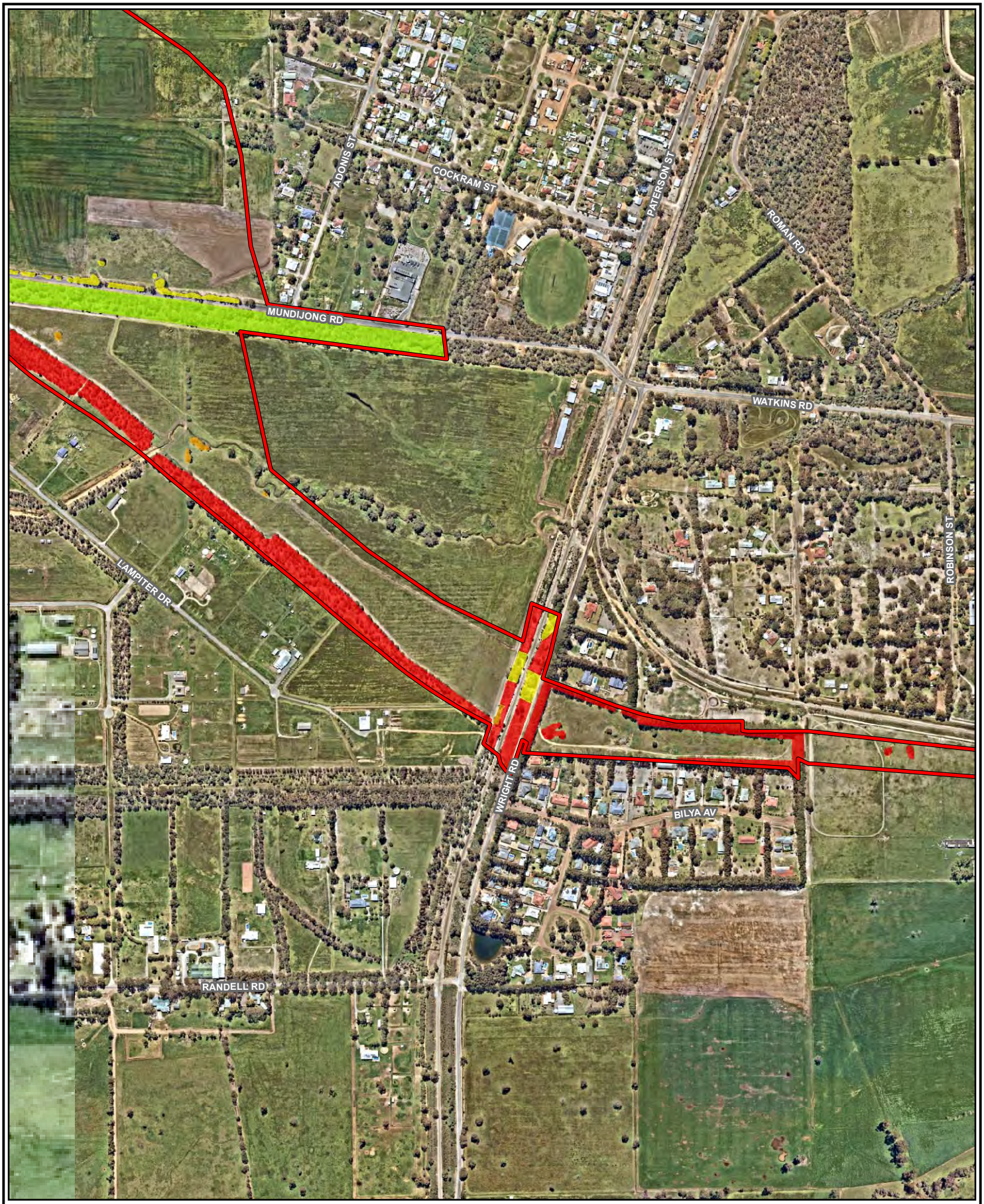

Legend

Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP

Scale 1:10,000 at A4

0 100 200 Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

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Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 8**

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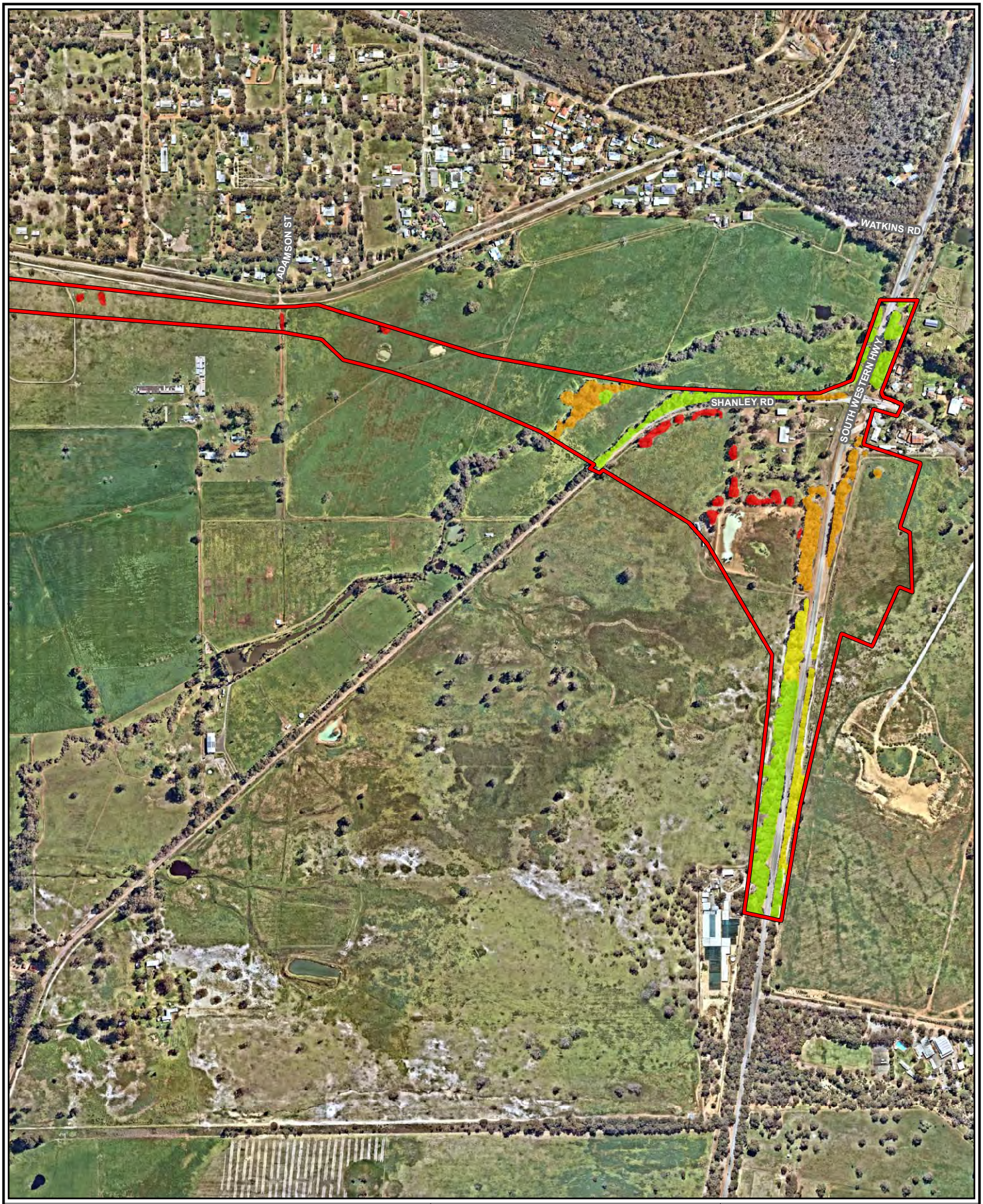


Legend

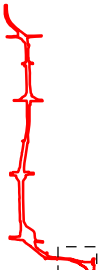
- Survey area

Baudin's and Forest Red-tailed Cockatoo foraging value

- Moderate to high (5)
- Moderate (4)
- Low to moderate (3)
- Low (2)

*Nil (0) foraging habitat value not illustrated on figures

LOCALITY MAP



Scale 1:10,000 at A4

0 100 200
Meters

Coord. Sys. GDA 1994 MGA Zone 50

Job No: 58910

Client: Main Roads Western Australia

Version: A | Date: 07-Jan-2021

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Tonkin Highway Extension WA

BAUDIN'S AND FOREST RED-TAILED COCKATOO FORAGING HABITAT VALUE

FIGURE 6 **PAGE 9**

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4. Discussion

4.1 Black Cockatoo presence within Survey Area

Evidence of occurrence for BBC and FRTBC was recorded within the Survey Area via foraging residue (Kirkby 2019). The lack of evidence of CBC within the Survey Area was anticipated given the low occurrence of their preferred *Banksia* foraging habitat (Kirkby 2019). A single FRTBC female was observed during the survey by Kirkby (2019) and a number of BBC individuals were observed nearby. The low number of birds sighted was not unexpected given that FRTBC are known to utilise these patches of remnant vegetation only when Marri has a productive seeding year (Johnstone & Kirkby 2016). BBC tend to use this are of the Swan Coastal Plain between August and October, before the bulk of the population return further south to breed (Johnstone & Kirkby 2008).

4.2 Foraging habitat

Based on the Black Cockatoo habitat assessment (Strategen-JBS&G 2020), the majority of the Survey Area contained nil, negligible to low, or low foraging value with 337.28 ha (92.7%) for CBC and 337.60 ha (92.8%) for BBC and FRTBC, respectively. This was considered a result of the majority of the Survey Area being comprised of cleared or highly degraded vegetation, with only scattered foraging species. This reflects the fragmented nature of habitat within the Survey Area, which is intersected by roads as well as cleared rural and urban areas.

Approximately 7% of the Survey Area (26.51 ha for CBC and 26.19 ha for BBC and FRTBC) contained foraging habitat of 'low to moderate', 'moderate' and 'moderate to high' value (Figure 5; Figure 6). These areas were largely restricted to roadsides, uncleared road reserves and remnant vegetation along creeks.

The regional context of Black Cockatoo foraging habitat within the Survey Area was assessed through estimating the likely extent of suitable foraging habitat within a 12 km radius. This was completed by calculating the amount of native remnant vegetation remaining within a 12 km radius (DPIRD 2019) that was of a vegetation complex known to contain plant species known to constitute foraging habitat for Black Cockatoos, and within the known distribution for each species. For CBC, suitable vegetation complexes were derived from the DBCA potential CBC foraging habitat shapefile (DBCA 2018), while for BBC and FRTBC suitable vegetation complexes are presented in Table 4.1 and Table 4.2. The area of potential foraging habitat represents the maximum possible extent, as it is noted that suitable foraging species may not be present across the entirety of each vegetation complex. The amount of quality foraging habitat for each species within the Survey Area was calculated as a proportion of that within a 12 km radius to represent its regional significance. The result of this assessment is discussed for each species in sections 4.2.1 to 4.2.3.

4.2.1 Carnaby's Cockatoo

Approximately 31,000 ha of vegetation forming potential foraging habitat for CBC is estimated to exist within 12 km of the Survey Area based on suitable vegetation complexes (Table 4.1; DPIRD 2019; Glossup et al. 2013). The 26.51 ha of foraging habitat of 'low to moderate', 'moderate' and 'moderate to high' value mapped within the Survey Area represents approximately 0.09% of potential foraging habitat for the species within a 12 km radius.

Table 4.1: Carnaby's Cockatoo Foraging Habitat Local Extent (12 km Radius)

Vegetation complex	Description	Foraging species for Carnaby's Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Swan Coastal Plain Region			
Bassendean – Central and South	Vegetation ranges from woodland of *Eucalyptus marginata - Allocasuarina fraseriana - Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* to *Eucalyptus todtiana* in the vicinity of Perth.	Yes	5,144.8
Beermullah	Mixture of low open forest of *Casuarina obesa* and open woodland of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata*. Minor components include closed scrub of *Melaleuca* species and occurrence of *Actinostrobus pyramidalis*.	Yes	119.9
Cottesloe – Central and South	Mosaic of woodland of *Eucalyptus gomphocephala* and open forest of *Eucalyptus gomphocephala - Eucalyptus marginata - Corymbia calophylla*; closed heath on the Limestone outcrops.	Yes	73.7
Dardanup	Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford.	Yes	333.9
Forrestfield	Open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* to open forest of *Eucalyptus marginata - Corymbia calophylla - Allocasuarina fraseriana - Banksia* species. Fringing woodland of *Eucalyptus rudis* in the gullies that dissect this landform.	Yes	536.8
Guildford	Mixture of open forest to tall open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* and woodland of *Eucalyptus wandoo* (with rare occurrences of *Eucalyptus lane-poolei*. Minor components include *Eucalyptus rudis - Melaleuca rhaphiophylla*.	Yes	602.9
Herdsman	Sedgelands and fringing woodland of *Eucalyptus rudis - Melaleuca* species.	Yes	139.5
Karrakatta – Central and South	Predominantly open forest of *Eucalyptus gomphocephala - Eucalyptus marginata - Corymbia calophylla* and woodland of *Eucalyptus marginata - Banksia* species. *Agonis flexuosa* is co-dominant south of the Capel River.	Yes	10.3
Serpentine River	Closed scrub of *Melaleuca* species and fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* along streams.	Yes	104.7
Southern River	Open woodland of *Corymbia calophylla - Eucalyptus marginata - Banksia* species with fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* along creek beds.	Yes	1,914.0
Swan	Fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* with localised occurrence of low open forest of *Casuarina obesa* and *Melaleuca cuticularis*.	Yes	12.6
South-west Forest Region			
Darling Scarp	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla*, with some admixtures with *Eucalyptus laeliae* in the north (subhumid zone), with occasional *Eucalyptus marginata* subsp. *elegantella* (mainly in subhumid zone) and *Corymbia haematoxylon* in the south (humid zone) on deeper soils adjacent to outcrops, woodland of *Eucalyptus wandoo* (subhumid and semiarid zones), low woodland of *Allocasuarina huegeliana* on shallow soils over granite outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on or near granite outcrops in all climate zones.	Yes	2,553.2
Dwellingup	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.	Yes	11,427.0

Vegetation complex	Description	Foraging species for Carnaby's Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Goonaping	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata* (humid zones) and *Eucalyptus marginata* subsp. *thalassica* (semiarid to perarid zones) on the sandy-gravels, low woodland of *Banksia attenuata* on the drier sandier sites (humid to perarid zones) with some *Banksia menziesii* (northern arid and perarid zones) and low open woodland of *Melaleuca preissiana-Banksia littoralis* on the moister sandy soils (humid to perarid zones).	Yes	175.3
Helena 1	Mosaic of open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata* subsp. *marginata* with some *Eucalyptus rudis* on the deeper soils ranging to closed heath and lithic complex on shallow soils associated with granite on steep slopes of valleys in humid and subhumid zones.	Yes	1,219.1
Murray 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Eucalyptus patens* on valley slopes to woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* on the valley floors in humid and subhumid zones.	Yes	3,310.4
Swamp	Mosaic of low open woodland of *Melaleuca preissiana-Banksia littoralis*, closed scrub of *Myrtaceae* spp., closed heath of *Myrtaceae* spp. and sedgelands of *Baumea* and *Leptocarpus* spp. on seasonally wet or moist sand, peat and clay soils on valley floors in all climatic zones.	Yes	247.2
Yarragil 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.	Yes	2,197.6
Yarragil 2	Open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* on slopes, woodland of *Eucalyptus patens-Eucalyptus rudis* with *Hakea prostrata* and *Melaleuca viminea* on valley floors in subhumid and semiarid zones.	Yes	1,498.2
Total			**31,621.4 ha**

4.2.2 Baudin's Cockatoo

Feeding residue of BBC was observed throughout the Survey Area within suitable habitat, predominantly from Marri trees.

Approximately 28,000 ha of vegetation forming potential foraging habitat for BBC exists within 12 km of the Survey Area based on suitable vegetation complexes (Table 4.2; DPIRD 2019; Webb et al. 2016). The 26.20 ha of foraging habitat of 'low to moderate', 'moderate' and 'moderate to high' value mapped within the Survey Area represents 0.09% of the potential foraging habitat within a 12 km radius.

Table 4.2: Baudin's Cockatoo Foraging Habitat within 12 km Radius

Vegetation complex	Description	Foraging species for Baudin's Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Swan Coastal Plain Region			
Bassendean – Central and South	Vegetation ranges from woodland of *Eucalyptus marginata - Allocasuarina fraseriana - Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* to *Eucalyptus todtiana* in the vicinity of Perth.	Yes	3,725.5
Beermullah	Mixture of low open forest of *Casuarina obesa* and open woodland of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata*. Minor components include closed scrub of *Melaleuca* species and occurrence of *Actinostrobus pyramidalis*.	Yes	70.6
Dardanup	Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford.	Yes	292.3
Forrestfield	Open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* to open forest of *Eucalyptus marginata - Corymbia calophylla - Allocasuarina fraseriana - Banksia* species. Fringing woodland of *Eucalyptus rudis* in the gullies that dissect this landform.	Yes	393.6
Guildford	Mixture of open forest to tall open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* and woodland of *Eucalyptus wandoo* (with rare occurrences of *Eucalyptus lane-poolei*. Minor components include *Eucalyptus rudis - Melaleuca rhaphiophylla*.	Yes	482.1
Southern River	Open woodland of *Corymbia calophylla - Eucalyptus marginata - Banksia* species with fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* along creek beds.	Yes	1,597.7

Vegetation complex	Description	Foraging species for Baudin's Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Darling Scarp	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla*, with some admixtures with *Eucalyptus laeliae* in the north (subhumid zone), with occasional *Eucalyptus marginata* subsp. *elegantella* (mainly in subhumid zone) and *Corymbia haematoxylon* in the south (humid zone) on deeper soils adjacent to outcrops, woodland of *Eucalyptus wandoo* (subhumid and semiarid zones), low woodland of *Allocasuarina huegeliana* on shallow soils over granite outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on or near granite outcrops in all climate zones.	Yes	2,181.8
Dwellingup	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.	Yes	11,113.6
Goonaping	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata* (humid zones) and *Eucalyptus marginata* subsp. *thalassica* (semiarid to perarid zones) on the sandy-gravels, low woodland of *Banksia attenuata* on the drier sandier sites (humid to perarid zones) with some *Banksia menziesii* (northern arid and perarid zones) and low open woodland of *Melaleuca preissiana-Banksia littoralis* on the moister sandy soils (humid to perarid zones).	Yes	167.1
Helena 1	Mosaic of open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata* subsp. *marginata* with some *Eucalyptus rudis* on the deeper soils ranging to closed heath and lithic complex on shallow soils associated with granite on steep slopes of valleys in humid and subhumid zones.	Yes	1,188.8
Murray 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Eucalyptus patens* on valley slopes to woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* on the valley floors in humid and subhumid zones.	Yes	3,210.3
Yarragil 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.	Yes	2,126.9
Yarragil 2	Open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* on slopes, woodland of *Eucalyptus patens-Eucalyptus rudis* with *Hakea prostrata* and *Melaleuca viminea* on valley floors in subhumid and semiarid zones.	Yes	1,498.2
Total			**28,048.5 ha**

4.2.3 Forest Red-tailed Cockatoo

Evidence of FRTBC presence, via Marri feeding residue, was located throughout the Survey Area within areas of suitable habitat.

Approximately 31,000 ha of vegetation forming potential foraging habitat for FRTBC exists within 12 km of the Survey Area based on suitable vegetation complexes (Table 4.3; DPIRD 2019). The 26.20 ha of foraging habitat of 'low to moderate', 'moderate' and 'moderate to high' value mapped within the Survey Area represents 0.09% of the potential foraging habitat within a 12 km radius.

Table 4.3: Forest Red-tailed Cockatoo Habitat within 12 km Radius

Vegetation complex	Description	Foraging species for Forest Red-tailed Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Swan Coastal Plain Region			
Bassendean – Central and South	Vegetation ranges from woodland of *Eucalyptus marginata - Allocasuarina fraseriana - Banksia* species to low woodland of *Melaleuca* species, and sedgelands on the moister sites. This area includes the transition of *Eucalyptus marginata* to *Eucalyptus todtiana* in the vicinity of Perth.	Yes	5,144.8
Beermullah	Mixture of low open forest of *Casuarina obesa* and open woodland of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata*. Minor components include closed scrub of *Melaleuca* species and occurrence of *Actinostrobus pyramidalis*.	Yes	119.9
Cottesloe – Central and South	Mosaic of woodland of *Eucalyptus gomphocephala* and open forest of *Eucalyptus gomphocephala - Eucalyptus marginata - Corymbia calophylla*; closed heath on the Limestone outcrops.	Yes	73.7
Dardanup	Mosaic of vegetation types characteristic of adjacent vegetation complexes such as Serpentine River, Southern River and Guildford.	Yes	333.9
Forrestfield	Open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* to open forest of *Eucalyptus marginata - Corymbia calophylla - Allocasuarina fraseriana - Banksia* species. Fringing woodland of *Eucalyptus rudis* in the gullies that dissect this landform.	Yes	536.8
Guildford	Mixture of open forest to tall open forest of *Corymbia calophylla - Eucalyptus wandoo - Eucalyptus marginata* and woodland of *Eucalyptus wandoo* (with rare occurrences of *Eucalyptus lane-poolei*. Minor components include *Eucalyptus rudis - Melaleuca rhaphiophylla*.	Yes	602.9
Karrakatta – Central and South	Predominantly open forest of *Eucalyptus gomphocephala - Eucalyptus marginata - Corymbia calophylla* and woodland of *Eucalyptus marginata - Banksia* species. *Agonis flexuosa* is co-dominant south of the Capel River.	Yes	10.3
Southern River	Open woodland of *Corymbia calophylla - Eucalyptus marginata - Banksia* species with fringing woodland of *Eucalyptus rudis - Melaleuca rhaphiophylla* along creek beds.	Yes	1,914.0

Vegetation complex	Description	Foraging species for Forest Red-tailed Cockatoo present (Yes/No)	Extent of potential foraging habitat within 12km (ha)
Darling Scarp	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla*, with some admixtures with *Eucalyptus laeliae* in the north (subhumid zone), with occasional *Eucalyptus marginata* subsp. *elegantella* (mainly in subhumid zone) and *Corymbia haematoxylon* in the south (humid zone) on deeper soils adjacent to outcrops, woodland of *Eucalyptus wandoo* (subhumid and semiarid zones), low woodland of *Allocasuarina huegeliana* on shallow soils over granite outcrops, closed heath of Myrtaceae-Proteaceae species and lithic complex on or near granite outcrops in all climate zones.	Yes	2,553.2
Dwellingup	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on lateritic uplands in mainly humid and subhumid zones.	Yes	11,427.0
Goonaping	Mosaic of open forest of *Eucalyptus marginata* subsp. *marginata* (humid zones) and *Eucalyptus marginata* subsp. *thalassica* (semiarid to perarid zones) on the sandy-gravels, low woodland of *Banksia attenuata* on the drier sandier sites (humid to perarid zones) with some *Banksia menziesii* (northern arid and perarid zones) and low open woodland of *Melaleuca preissiana-Banksia littoralis* on the moister sandy soils (humid to perarid zones).	Yes	175.3
Helena 1	Mosaic of open forest of *Corymbia calophylla-Eucalyptus patens-Eucalyptus marginata* subsp. *marginata* with some *Eucalyptus rudis* on the deeper soils ranging to closed heath and lithic complex on shallow soils associated with granite on steep slopes of valleys in humid and subhumid zones.	Yes	1,219.1
Murray 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla-Eucalyptus patens* on valley slopes to woodland of *Eucalyptus rudis-Melaleuca rhaphiophylla* on the valley floors in humid and subhumid zones.	Yes	3,310.4
Yarragil 1	Open forest of *Eucalyptus marginata* subsp. *marginata-Corymbia calophylla* on slopes with mixtures of *Eucalyptus patens* and *Eucalyptus megacarpa* on the valley floors in humid and subhumid zones.	Yes	2,197.6
Yarragil 2	Open forest of *Eucalyptus marginata* subsp. *thalassica-Corymbia calophylla* on slopes, woodland of *Eucalyptus patens-Eucalyptus rudis* with *Hakea prostrata* and *Melaleuca viminea* on valley floors in subhumid and semiarid zones.	Yes	1,498.2
Total			**31,117.4 ha**

4.3 Breeding habitat

A total of 479 trees at the survey meet the criteria to be classed as potential breeding trees (Kirkby 2019). In the Jarrah/Marri forest, Marri trees are considered to provide over 90% of breeding hollows suitable for use by Black Cockatoos (Johnstone & Kirkby 2011). Within the Survey Area, Marri are considered the most important source of breeding habitat (Kirkby 2019). 376 Marri trees with a DBH greater than 500 mm exist within the Survey Area, of which two currently contain

possibly suitable hollows (Figure 4; Kirkby 2020). The importance of conserving Marri stands with sufficient age and size to produce hollows has been highlighted by Johnstone et al. (2013) for the purpose of conserving FRTBC populations. Flooded Gum also constituted a substantial portion of potential breeding habitat within the Survey Area, with 89 trees present (Kirkby 2019). This species is not considered as important for Black Cockatoos as they seem to provide far fewer potential breeding hollows (Kirkby 2019). Kirkby (2019) notes that in a sample of 500 Flooded Gum trees of a suitable DBH, only one has been known to produce a suitable hollow.

In consideration of the local and regional context of the Survey Area, the closest known breeding record of CBC is located 10 km east of the Survey Area in the Wungong Catchment, while for BBC the closest site is 10 km east in the Serpentine Hills area. BBC are additionally known to breed 16 km to the east in the Wungong Catchment (Figure 3; Kirkby 2019). FRTBC are known to breed 8 km east in the Wungong Catchment, and have also been observed prospecting and chewing at hollow entrances at the nearby Cardup Nature Reserve which is 1.5 km east of the Survey Area (Kirkby 2019). Habitat connectivity and the availability of nearby foraging resources is necessary to support these breeding sites and local Black Cockatoo populations (White et al. 2014). Whilst no current breeding was observed for any species during the survey, the large number of Marri trees capable of producing future hollows indicates that the Survey Area contains high value for Black Cockatoos.

4.4 Roosting habitat

The Survey Area is intersected by the buffer area of two confirmed roost sites used by white-tailed Black Cockatoos (CBC and/or BBC) and FRTBC (Figure 2; Peck et al. 2019). Whilst the roost sites themselves are not located within the Survey Area, and no roosting was observed during the survey, the area is expected to contain suitable roosting habitat (Kirkby 2019). Within the local area (6 km radius) of the Survey Area there are 15 confirmed Black Cockatoo roost sites (Peck et al. 2019). Of those, eight are confirmed to be used by white-tailed Black Cockatoos, five by FRTBC and three are joint roosts (Peck et al. 2019). Within the regional area (12 km radius) there are 41 confirmed roost sites (Peck et al. 2019). 19 of those have been confirmed to be used by white-tailed Black Cockatoos, eight by FRTBC, and 14 are joint roosts (Peck et al. 2019). Given the close proximity of a number of roost sites to the Survey Area, the area is considered to provide roosting value for the three species.

Limitations

Scope of services

This report ("the report") has been prepared by Strategen-JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and Strategen-JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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In preparing the report, Strategen-JBS&G has relied upon data and other information provided by the Client and other individuals and organisations, most of which are referred to in the report ("the data"). Except as otherwise expressly stated in the report, Strategen-JBS&G has not verified the accuracy or completeness of the data. To the extent that the statements, opinions, facts, information, conclusions and/or recommendations in the report ("conclusions") are based in whole or part on the data, those conclusions are contingent upon the accuracy and completeness of the data. Strategen-JBS&G has also not attempted to determine whether any material matter has been omitted from the data. Strategen-JBS&G will not be liable in relation to incorrect conclusions should any data, information or condition be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to Strategen-JBS&G. The making of any assumption does not imply that Strategen-JBS&G has made any enquiry to verify the correctness of that assumption.

The report is based on conditions encountered and information received at the time of preparation of this report or the time that site investigations were carried out. Strategen-JBS&G disclaims responsibility for any changes that may have occurred after this time. This report and any legal issues arising from it are governed by and construed in accordance with the law of Western Australia as at the date of this report.

Environmental conclusions

Within the limitations imposed by the scope of services, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted environmental consulting practices. No other warranty, whether express or implied, is made.

The advice herein relates only to this project and all results conclusions and recommendations made should be reviewed by a competent person with experience in environmental investigations, before being used for any other purpose.

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Appendix A Kirkby (2019) and Kirkby (2020)

BLACK COCKATOO BREEDING, FEEDING AND ROOSTING HABITAT ASSESSMENT, TONKIN HIGHWAY EXTENSION.

TONY KIRKBY.

The purpose of the survey was to assess breeding, foraging, drinking and roosting habitat for three species of black cockatoos *Calyptorhynchus spp.* at The Tonkin Highway extension and identify if the survey area occurs within currently known foraging, and breeding areas

SPECIES BACKGROUND INFORMATION.

Three species of black cockatoo occur in the south west of Western Australia, Carnaby's Cockatoo *Calyptorhynchus latirostris,* Baudin's Cockatoo *C. baudinii* and the Forest Red-tailed Black Cockatoo (FRTBC) *C. 1argina naso.* Carnaby's and Baudin's Cockatoos are known collectively as 'white-tailed black cockatoos'.

Both Baudin's and Carnaby's Cockatoos are listed (Endangered) under the Western Australian Wildlife Conservation Act, and the Environmental Protection and Biodiversity Conservation Act (EPBC Act).

The FRTBC is listed as Vulnerable under the Western Australian Wildlife Conservation Act and the EPBC Act.

All three species are known from the general area of the survey.

The nearest confirmed breeding site of FRTBC is 8 km to the east in the Wungong Catchment though pairs have also been observed prospecting and chewing hollow entrances at Cardup Nature Reserve which lies 1.5 km to the east. There is also confirmed breeding of FRTBC in an artificial hollow in the Serpentine area 10 km to the south.

The nearest known Carnaby's Cockatoo breeding site is 10 km to the east in the Wungong Catchment.

Baudin's Cockatoo are known to breed in low numbers 16 km east in Wungong Catchment and 10 km south east in Serpentine Hills area.

BREEDING HABITAT AT THE SURVEY AREA.

Trees which could provide breeding hollows at the survey area are Jarrah *Eucalyptus marginata,* Wandoo *E. wandoo*, Flooded Gum *E. rudis* and Marri *Corymbia calophylla.* These trees need to have reached a diameter at breast height (DBH) of at least 500mm (300mm for Wandoo) in order to be large enough to form a breeding hollow.

FORAGING HABITAT AT THE SURVEY AREA.

Species providing foraging habitat at the survey include Jarrah, Marri, Sheoak *Allocasuarina fraserianna*, Swamp Sheoak *Casuarina obesa, Banksia menziessii, B. ilicifolia hakea spp,* Balga *Xanthorrhoea priessii and* Cape Lilac *Melia azedarach.*

Important food species at the survey area and their general relevance to black cockatoos.

Jarrah – seeds taken by FRTBC and Carnaby's Cockatoos. There are also records of Baudin's Cockatoos feeding from Jarrah seeds but it is very unusual, also nectar and grubs are taken by Baudin's and Carnaby's Cockatoos.

Marri – seeds taken by all three species of black cockatoos, also nectar and grubs are taken by Baudin's and Carnaby's Cockatoos. This is the most important and well represented food species at the survey area.

Sheoak – seeds are taken by taken by FRTBC but it is poorly represented in the survey area.

Banksia menziesii - seeds, nectar and grubs taken by Baudins' and Carnaby's Cockatoos. B.menziesii is an important food species but is poorly represented in the survey area.

Banksia ilicifolia – seeds, nectar and grubs taken by Carnaby's and probably Baudin's Cockatoos. This is an important food species but is poorly represented with only a few trees in the south of the survey area.

Balga *Xanthorrhoea priessii.* Grubs and nectar are taken by both Carnaby's and Baudin's Cockatoos. Found along verges

Cape Lilac – seeds taken by FRTBC. Note this is an introduced species which is considered a weed but has become a seasonally important food for FRTBC on parts of the Swan Coastal Plain.

The survey area also contains exotic eucalypt species which may provide nectar to both Baudin's and Carnaby's Cockatoos.

ROOSTING HABITAT AT THE SURVEY AREA.

Jarrah, Marri, Wandoo and exotic eucalypts at the survey area are all able to provide a roost for black cockatoos.

DRINKING SITES.

Although no drinking sites are documented for the survey or surrounding areas it is expected water would be available throughout the year from gardens, farm dams, stock troughs and natural water bodies which are found throughout the Byford/Mundijong areas.

METHODS.

The area was surveyed between 16th April and 5th May 2019 20th. All trees at the survey area above 500mm DBH (300mm for Wandoo) were picked up using hand held GPS. Trees were also checked from ground level for the presence of suitable black cockatoo breeding hollows.

Feeding residues were recorded and picked up using hand held GPS.

Areas beneath possible roosting trees were searched for the presence of clipped leaves and branches which may indicate a roost. Evening searches for roosting sites were also ondertaken.

A search of the Western Australian Museum database was undertaken to locate the nearest known black cockatoo breeding and roosting sites.

The 'Great Cocky Count' database (Birdlife Western Australia) was also used to locate the nearest known black cockatoo roosting sites.

RESULTS. See spreadsheet for individual details

Breeding habitat.

A total of 490 trees above the required DBH were located. 89 Flooded Gum, 20 Jarrah, two Wandoo and 379 Marri. A total of 22 hollows were located and of these 13 were potentially black cockatoo nesting hollows. Four of these hollows also had scarring in or near the hollow entrance which is typical of use by Galah's. The remaining nine hollows were either being used by Galah's at the time of the survey or were of a smaller size suitable for small parrots (Australian Ringneck). Introduced Rainbow Lorikeet were also observed at one hollow.

Foraging.

A total of 111 feeding residues from FRTBC and Baudin's Cockatoo were located.

FRTBC - feeding residues (85) from Marri were plentiful, easy to locate and ranged from brown to old and grey and possibly up to two years old.

Baudin's Cockatoo – feeding residues from Marri were noted at 24 locations. All residues were either brown or grey.

Roosting.

No roosting sites were located during the survey.

The nearest known roost sites of FRTBC are at Cardup Siding Rd, Cardup and Kiernan St, Mundijong located 1.8 km and 2.8 km respectively to the east of the survey area.

The nearest known roosting site of Baudin's Cockatoo is also 1.8 km to the east of the survey at Kiernan St.

Sightings.

A single female FRTBC was seen during the survey.

Baudin's Cockatoos were noted feeding on seeds from Marri (just outside the survey area) and a pair were seen overhead.

Discussion.

A total of 490 trees at the survey reach the criteria to be classed as potential breeding trees - 500mm DBH or in the case of Wandoo 300mm. The most important of these are Jarrah and Marri (399 trees), particularly Marri. In the Jarrah/Marri forest Marri provides over 90% of black cockatoo breeding hollows (*Johnstone, Kirkby and Sarti* 2011). Flooded Gums (89 trees) were also present but they appear to provide very few breeding hollows. The author has first hand knowledge of over 500 black cockatoo breeding trees and only a single breeding hollow is known from Flooded Gum.

Marri feeding residues left behind by FRTBC and Baudin's Cockatoo were located throughout the survey area in suitable habitat. The remnant vegetation throughout the survey area is probably important foraging habitat for the local populations of these species. No feeding residues from Carnaby's Cockatoos were located but given the limited amount of their preferred banksia foraging habitat this was to be expected.

The lack of actual sightings of black cockatoos during the survey is not unexpected as FRTBC utilise these patches of remnant vegetation only when Marri has a productive seeding year (*Black Cockatoo Research Progress Report to dept of Housing 2015,* WA Museum*)*. Baudin's Cockatoos tend to use this area of the Swan Coastal Plain between August and October before the bulk of the population return south to breed (*Johnstone and Kirkby 2008*).

Though it is possible the survey area could provide a roosting site for black cockatoos none were roosting there during the survey.

Tony Kirkby

1st August 2019

Addition to original report.

At the time of the survey access was not possible to Lot 180, Shanley Road and limited access was available at Lot 33, Hopkinson Road.

These areas were surveyed on 15th September 2020.

Lot 180, Shanley Road.

A total of four Marri and two Flooded Gums above 500mm DBH were located. None contained breeding hollows. Two of the Marri (458 and 459) are possibly just outside the survey area.

Feeding residues from Baudin's Cockatoo both recent and old were located and both Baudin's Cockatoos and FRTBC were heard from Marri trees along nearby Shanley Road.

Lot 33, Hopkinson Road.

Trees (Flooded Gums) located in the previous survey were further inspected for the presence of breeding hollows. No hollows were located.

This lot also contains approximately 300 introduced exotic eucalypts of varying sizes from small 100mm DBH saplings to larger trees up to 800mm DBH. These introduced trees are not known as either a hollow or forage provider for black cockatoos though it is possible they could provide a roosting site. No black cockatoo were roosting there during the survey.

Tony Kirkby

22nd September 2020.

ASSESSMENT OF POTENTIAL BLACK COCKATOO *Calyptorhynchus spp*. BREEDING HOLLOWS, TONKIN HIGHWAY EXTENSION.

TONY KIRKBY

The purpose of the survey was to undertake a detailed assessment of seven potential black cockatoo breeding hollows located in a previous survey (Kirkby-May 2019).

Methods

All trees which were previously inspected from ground level using binoculars were inspected using a pole camera during the current survey. Observations were made on size, use, condition and likelihood of being utilised by black cockatoos.

The survey was undertaken on 1-9-20.

Hollows Reference numbers from original report. Number in brackets is number received in recent correspondence (10-8-20) and used on supplied photographs.

Tree 343 (1)

Jarrah *Eucalyptus marginata*

At the time of the original survey contained two hollows. One of these has since collapsed and the second is too shallow to be of value as a black cockatoo breeding hollow.

Tree 601 (2)

Marri *Corymbia calophylla*

Chewed hollow entrance. Contains two Galah eggs and is probably too small for to be used by black cockatoos.

Tree 389 (3)

Marri

Contains two hollows which are being used by Galah's *Eolophus roseicapilla.* Could possibly be utilised by black cockatoos if Galahs were not present.

Tree 611 (4)

Marri

Feral bees *Apis mellifera* using this hollow.

Tree 439 (5)

Hollow lacks depth and is unsuitable for black cockatoos. Bees also in hollow.

Tree 163 (6)

Hollow contains deserted duck eggs but has heavy chewing around the hollow entrance and has probably been used by black cockatoos in the past.

Tree 545 (7)

Has two hollows with no depth and which are unsuitable for black cockatoos.

22nd September 2020

Appendix B Habitat scoring system (Bamford 2018)

Application of the Offset Assessment Guide (offsets guide) developed by the federal environment department for assessing Black Cockatoo foraging habitat requires the calculation of a score out of 10. The following system has been developed by Bamford Consulting to provide an objective scoring system that is practical and can be used by trained field zoologists with experience in the environments frequented by the species.

Calculating the total score (out of 10) requires the following steps:

a. Determining a score out of six for the vegetation composition, condition and structure; plus

b. Determining a score out of three for the context of the site; plus

c. Determining a score out of one for species density.

d. Determining the total score out of 10, which may require moderation for context and species density with respect to the vegetation composition.

Calculation of scores and the moderation process are described in detail below.

Vegetation composition, condition and structure scoring

Site Score	Description of Vegetation Values		
	Carnaby's Cockatoo	Baudin's Cockatoo	Forest Red-tailed Cockatoo
0	No foraging value. No Proteaceae, eucalypts or other potential sources of food. Examples: Water bodies (e.g. salt lakes, dams, rivers); Bare ground; Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	No foraging value. No eucalypts or other potential sources of food. Examples: Water bodies (e.g. dams, rivers); Bare ground; Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).	No foraging value. No eucalypts or other potential sources of food. Examples: Water bodies (e.g. dams, rivers); Bare ground; Developed sites devoid of vegetation (e.g. infrastructure, roads, gravel pits).
1	Negligible to low foraging value. Examples: Scattered specimens of known food plants but projected foliage cover of these is < 2%. This could include urban areas with scattered foraging trees; Paddocks that are partly vegetated with melons or other known food-source weeds (e.g. *Erodium* spp.) that represent a short-term and/or seasonal food source; Blue Gum plantations (foraging by Carnaby's Cockatoos has been reported but appears to be unusual).	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these < 1%. This could include urban areas with scattered foraging trees.	Negligible to low foraging value. Scattered specimens of known food plants but projected foliage cover of these < 1%. Could include urban areas with scattered foraging trees.
2	Low foraging value. Examples: Shrubland in which species of foraging value, such as shrubby banksias, have < 10% projected foliage cover; Woodland with tree banksias 2-5% projected foliage cover; Open eucalypt woodland/mallee of small-fruited species; Paddocks that are densely vegetated with melons or other known food-source weeds (e.g. *Erodium* spp.) that represent a short-term and/or seasonal food source.	Low foraging value. Examples: Woodland with scattered specimens of known food plants (e.g. Marri and Jarrah) 1-5% projected foliage cover; Urban areas with scattered foraging trees.	Low foraging value. Examples: Woodland with scattered specimens of known food plants (e.g. Marri, Jarrah or Sheoak) 1-5% projected foliage cover; Urban areas with scattered food plants such as Cape Lilac, *Eucalyptus caesia* and *E. erythrocorys*.
3	Low to Moderate foraging value. Examples:	Low to Moderate foraging value. Examples:	Low to Moderate foraging value. Examples:

	Shrubland in which species of foraging value, such as shrubby banksias, have 10-20% projected foliage cover; Woodland with tree banksias 5-20% projected foliage cover; Eucalypt Woodland/Mallee of small-fruited species; Eucalypt Woodland with Marri < 10% projected foliage cover.	Eucalypt Woodland with known food plants (especially Marri) 5-20% projected foliage cover; Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management); Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).	Eucalypt Woodland with known food plants (especially Marri and Jarrah) 5-20% projected foliage cover; Parkland-cleared Eucalypt Woodland/Forest with known food plants 10-40% projected foliage cover (poor long-term viability without management); Younger areas of (managed) revegetation with known food plants 10-40% projected foliage cover (establishing food sources with good long-term viability).
4	Moderate foraging value. Examples: Woodland/forest with tree banksias 20-40% projected foliage cover; Eucalypt Woodland/Forest with Marri 20-40% projected foliage cover.	Moderate foraging value. Examples: Marri-Jarrah Woodland/Forest with 20-40% projected foliage cover; Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. Eucalypt Woodland/Forest with diverse, healthy understorey and known food trees (especially Marri) 10-20% projected foliage cover. Orchards with highly desirable food sources (e.g. apples, pears, some stone fruits).	Moderate foraging value. Examples: Marri-Jarrah Woodland/Forest with 20-40% projected foliage cover; Marri-Jarrah Forest with 40-60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths; Sheoak Forest with 40-60% projected foliage cover.
5	Moderate to High foraging value. Examples: Banksia Forest with 40-60% projected foliage cover; Banksia Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths; Pine plantations with trees more than 10 years old.	Moderate to High foraging value. Examples: Marri-Jarrah Forest with 40-60% projected foliage cover; Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths.	Moderate to High foraging value. Examples: Marri-Jarrah Forest with 40-60% projected foliage cover; Marri-Jarrah Forest with > 60% projected foliage cover but vegetation condition reduced due to weed invasion and/or some tree deaths. Sheoak Forest with > 60% projected foliage cover.
6	High foraging value. Example: Banksia Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).	High foraging value. Example: Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).	High foraging value. Example: Marri-Jarrah Forest with > 60% projected foliage cover and vegetation condition good with low weed invasion and/or low tree deaths (indicating it is robust and unlikely to decline in the medium term).

Vegetation structural class terminology follows Keighery (1994).

Site context.

The maximum score is given in situations where foraging habitat is supporting breeding birds. It can also be given in fragmented landscapes where there is little foraging habitat remaining and thus what is left has a high contextual value. The site context score is species-specific as it depends upon factors such as the vegetation type and extent, and the presence of breeding birds, and the following table, developed by Bamford consulting in conjunction with DEE, provides a *guide* to the assignation of site context scores (note that 'local area' is defined as within a 15 km radius of the centre point of the study site).

Site Context Score	Percentage of the existing native vegetation within the 'local' area that the study site represents.	
	'Local' breeding known/likely	'Local' breeding unlikely
3	> 5%	> 10%
2	1 - 5%	5 - 10%
1	0.1 - 1%	1 - 5%
0	< 0.1%	< 0.1%

Species density.

Assignation of the species density score (0 or 1) is based upon the Black Cockatoo species being either abundant or not abundant, and is species specific. A score of 1 is used where the species is seen or reported regularly and/or there is abundant foraging evidence. Regularly is when the species is seen at intervals of every few days or weeks for at least several months of the year. A score of 0 is used when the species is recorded or reported very infrequently and there is little or no foraging evidence.

Note that context and species density scores are affected by the vegetation score and this is discussed below.

Moderation of scores for the calculation of a value out of 10.

The foraging value score provides a numerical value that reflects the suitability of vegetation as foraging habitat for Black Cockatoos, and this numerical value is designed to provide the information needed by the Federal Department of the Environment and Energy (DoEE) to assess impact significance and offset requirements. The foraging value of the vegetation depends upon the type, density and condition of trees and shrubs in an area, and can be influenced by the context such as the availability of foraging habitat nearby. The BCE scoring system for value of foraging habitat has three components as detailed above. These three components are drawn from the DoEE offsets guide but the scoring approach was developed by Bamford Consulting Ecologists.

a. A score out of six for the vegetation composition, condition and structure
b. a score out of three for the context of the site
c. a score out of one for species density.

Foraging value can thus be assigned a score out of six, based upon site vegetation characteristics, or a score out of 10 if context and species density are considered. Assigning a score out of 10 represents step D and may require moderation rather than simple addition.

The score out of six for vegetation characteristics and value can be compared across a site, while a score out of 10 is the overall foraging value and is used for the purposes of aiding offset calculations. The calculation out of 10 requires the vegetation characteristics (out of 6) to be combined with the scores given for context and species density. It is considered that the context and density scores are not independent of vegetation characteristics; otherwise habitat of absolutely no value for Black Cockatoo foraging (such as concrete or a wetland) could get a foraging score out of 10 as high as 4 if it occurred in an area where the species breed (context score of 3) and are abundant (species density score of 1). Similarly, vegetation of negligible or low characteristics which could not support Black Cockatoos could be assigned a score as high as 6 out of 10. In that case, the score of 6 would be more a reflection of nearby vegetation of high characteristics than of the foraging value of the negligible to low scoring vegetation. The Black Cockatoos would only be present because of vegetation of high characteristics, so applying the context and species density scores to vegetation of low characteristics would not give a true reflection of their foraging value.

For this reason, the context and species density scores need to be moderated for the vegetation characteristic score to prevent vegetation of little or no foraging value receiving an excessive score out of 10. A simple approach is assigning a context and species density score of zero to with a

characteristic score of low (2), negligible (1) or none (0), on the basis that birds will not use such areas unless they are adjacent to at least low-moderate quality foraging habitat (≥3). The approach to calculating a score out of 10 can be summarised as follows.

vegetation composition, condition and structure score	context score	Species density score
3-6 (low/moderate to high value)	Assessed as per B above	Assessed as per C above
0-2 (no to low value)	0	0

Appendix C Breeding habitat

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
1	Flooded Gum	700	CBC	403360	6432434	0	0	No access. Coordinates and DBH assessed from fenceline
2	Flooded Gum	700	CBC	403347	6432435	0	0	No access. Coordinates and DBH assessed from fenceline
3	Flooded Gum	800	CBC	403340	6432420	0	0	No access. Coordinates and DBH assessed from fenceline
4	Flooded Gum	800	CBC	403317	6432434	0	0	No access. Coordinates and DBH assessed from fenceline
5	Flooded Gum	800	CBC	403296	6432431	0	0	No access. Coordinates and DBH assessed from fenceline
6	Flooded Gum	800	CBC	403287	6432432	0	0	No access. Coordinates and DBH assessed from fenceline
7	Flooded Gum	1000	CBC	403356	6432421	0	0	No access. Coordinates and DBH assessed from fenceline
8	Flooded Gum	1000	CBC	403318	6432434	0	0	No access. Coordinates and DBH assessed from fenceline
9	Flooded Gum	1000	CBC	403286	6432431	0	0	No access. Coordinates and DBH assessed from fenceline
10	Flooded Gum	1000	CBC	403308	6432347	0	0	No access. Coordinates and DBH assessed from fenceline
11	Flooded Gum	1000	CBC	403311	6432343	0	0	No access. Coordinates and DBH assessed from fenceline
12	Flooded Gum	1200	CBC	403331	6432434	0	0	No access. Coordinates and DBH assessed from fenceline
13	Flooded Gum	500, 500, 500, 500, 500	CBC	403040	6428812	0	0	Feral bees
14	Flooded Gum	600, 600	CBC	403311	6426072	0	0	
15	Flooded Gum	900	CBC	403174	6436060	0	0	Forks early into stems below 500mm
16	Flooded Gum	200	CBC	403061	6428518	0	0	
17	Flooded Gum	500	CBC	403038	6428511	0	0	
18	Flooded Gum	500	CBC	403041	6428510	0	0	
19	Flooded Gum	700	CBC	403048	6428510	0	0	
20	Flooded Gum	500	CBC	403038	6428506	0	0	
21	Flooded Gum	1700	CBC	403063	6429859	0	0	Multi stems below 500mm
22	Flooded Gum	1750	CBC	403094	6429987	1	0	Small hollow used by Galah
23	Flooded Gum	1000	CBC	402803	6432963	0	0	Trunk forks into 2 small stems below 500mm
24	Flooded Gum	1000	CBC	403340	6426068	0	0	Trunk forks into 2 small stems below 500mm
25	Flooded Gum	1000	CBC	403436	6426055	0	0	Trunk forks into 2 small stems below 500mm
26	Flooded Gum	500	CBC	403253	6432715	0	0	
27	Flooded Gum	600	CBC	403364	6432446	0	0	
28	Flooded Gum	700	CBC	403356	6432461	0	0	
29	Flooded Gum	1000	CBC	402630	6432955	0	0	
30	Flooded Gum	500	CBC	403273	6431455	0	0	
31	Flooded Gum	500	CBC	403007	6428487	0	0	
32	Flooded Gum	500	CBC	403016	6428481	0	0	
33	Flooded Gum	500	CBC	403010	6428413	0	0	
34	Flooded Gum	500	CBC	403010	6428413	0	0	
35	Flooded Gum	500	CBC	402946	6428504	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
36	Flooded Gum	600	CBC	403321	6432772	0	0	
37	Flooded Gum	600	CBC	403007	6428487	0	0	
38	Flooded Gum	600	CBC	403011	6428354	0	0	
39	Flooded Gum	600	CBC	402866	6428462	0	0	
40	Flooded Gum	600	CBC	402939	6428483	0	0	
41	Flooded Gum	600	CBC	403029	6428513	0	0	
42	Flooded Gum	600	CBC	403017	6428070	0	0	
43	Flooded Gum	650	CBC	403020	6428520	0	0	
44	Flooded Gum	650	CBC	403021	6428520	0	0	
45	Flooded Gum	650	CBC	402986	6428499	0	0	
46	Flooded Gum	700	CBC	403007	6428498	0	0	
47	Flooded Gum	700	CBC	403021	6428489	0	0	
48	Flooded Gum	700	CBC	403012	6428348	0	0	
49	Flooded Gum	700	CBC	402870	6428455	0	0	
50	Flooded Gum	800	CBC	403364	6432755	0	0	
51	Flooded Gum	800	CBC	403327	6432769	0	0	
52	Flooded Gum	850	CBC	402954	6428682	0	0	
53	Flooded Gum	900	CBC	403102	6429830	0	0	
54	Flooded Gum	900	CBC	402943	6428498	0	0	
55	Flooded Gum	1000	CBC	403285	6432778	0	0	
56	Flooded Gum	1000	CBC	403380	6432760	0	0	
57	Flooded Gum	1000	CBC	403311	6432770	0	0	
58	Flooded Gum	1000	CBC	403019	6428336	0	0	
59	Flooded Gum	1000	CBC	403002	6428506	0	0	
60	Flooded Gum	1200	CBC	403331	6432781	0	0	
61	Flooded Gum	1200	CBC	403014	6428358	0	0	
62	Flooded Gum	2200	CBC	403022	6428338	0	0	
63	Flooded Gum	600,500	CBC	403332	6432762	0	0	
64	Flooded Gum	900,600	CBC	403308	6432785	1	0	Feral bees and Galahs using this tree
65	Flooded Gum	1000, 1000	CBC	403287	6432777	0	0	
66	Flooded Gum	600,600,500,500	CBC	402926	6428517	0	0	
67	Flooded Gum	500, 500, 500, 500, 500, 500	CBC	402994	6428404	0	0	
68	Flooded Gum	550, 500	CBC	403025	6428397	0	0	
69	Flooded Gum	550, 500	CBC	403046	6428353	0	0	
70	Flooded Gum	600, 500	CBC	402883	6428464	0	0	
71	Flooded Gum	600, 500, 500	CBC	402910	6428534	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
72	Flooded Gum	600, 500, 500	CBC	403063	6428377	0	0	
73	Flooded Gum	600, 500, 600, 500	CBC	402953	6428494	0	0	
74	Flooded Gum	600, 600	CBC	403048	6428354	0	0	
75	Flooded Gum	600, 600, 500	CBC	403007	6428432	0	0	
76	Flooded Gum	700, 550	CBC	402999	6428499	0	0	
77	Flooded Gum	700, 600	CBC	402924	6428519	0	0	
78	Flooded Gum	900, 600, 500, 500	CBC	403043	6428386	0	0	
79	Flooded Gum	500, 400	CBC	403362	6432448	0	0	
80	Flooded Gum	1000, 500, 400, 300, 500	CBC	403330	6432458	0	0	
81	Flooded Gum	300, 300, 300, 250	CBC	403366	6432458	0	0	Large at base but small then forms small multi stems
82	Flooded Gum	300,300,300,300,400	CBC	403368	6432462	0	0	Large at base but small then forms small multi stems
83	Flooded Gum	300,300,300,300	CBC	403349	6432458	0	0	Large at base but small then forms small multi stems
84	Flooded Gum	400, 400, 300, 300, 300	CBC	403263	6432512	0	0	Large at base but small then forms small multi stems
85	Flooded Gum	400,400,300,300	CBC	403345	6432448	0	0	Large at base but small then forms small multi stems
86	Flooded Gum	400, 300, 400	CBC	403171	6436109	0	0	Large at base but small then forms small multi stems
87	Flooded Gum	400, 300 ,300	CBC	403172	6436126	0	0	Large at base but small then forms small multi stems
88	Flooded Gum dead	600	CBC	403360	6432430	0	0	No access. Coordinates and DBH assessed from fenceline
89	Flooded Gum. Dead	1100	CBC	403071	6429718	2	1	Small hollow with Galah. Also larger hollow can be checked with camera but nearby feral bees need to be eradicated
90	Jarrah	1200	CBC	404257	6425180	2	2	2 top entry hollow at 8m. Can be checked with pole camera but bees need to be eradicated first. 2 hives
91	Jarrah	1100	CBC	403304	6433640	0	0	
92	Jarrah	1300	CBC	403280	6433621	0	0	
93	Jarrah	1330	CBC	403266	6433576	0	0	
94	Jarrah	600	CBC	406029	6424867	0	0	
95	Jarrah	900	CBC	403052	6429745	0	0	
96	Jarrah	550,500	CBC	403091	6429589	0	0	
97	Jarrah. Dead	1000	CBC	403308	6433565	0	0	Feral bees
98	Jarrah. Dead	850	CBC	403312	6435242	0	0	
99	Jarrah. Dead	900	CBC	403364	6433494	0	0	
100	Jarrah. Dead	1000	CBC	403396	6433253	0	0	
101	Jarrah. Dead		CBC	403459	6434741	0	0	
102	Marri	700	CBC, BBC and FRTBC	403617	6432976	0	0	Coordinates taken 3m to north because of drainage ditch

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
103	Marri	1450	CBC, BBC and FRTBC	403407	6433315	0	0	3 feral bee hives
104	Marri	1100	CBC, BBC and FRTBC	406442	6424748	0	0	
105	Marri	800	CBC, BBC and FRTBC	402937	6427769	1	1	Chewed hollow top entry at 10m. Can be inspected with pole camera but bees need to be eradicated from nearby hollow
106	Marri	800	CBC, BBC and FRTBC	403543	6425745	1	0	Coord innaccurate due to feral bees at base of tree. Galahs in higher hollow
107	Marri	700	CBC, BBC and FRTBC	403334	6433749	0	0	Feral bees
108	Marri	600	CBC, BBC and FRTBC	403965	6425940	0	0	Feral bees
109	Marri	900	CBC, BBC and FRTBC	403257	6431098	0	0	Feral bees
110	Marri	600	CBC, BBC and FRTBC	403271	6431912	0	0	Forks into small stems
111	Marri	900	CBC, BBC and FRTBC	403200	6434729	0	0	Forks 500, 300
112	Marri	1000	CBC, BBC and FRTBC	403596	6426010	0	0	Forks 500, 600
113	Marri	1000	CBC, BBC and FRTBC	403653	6425976	0	0	Forks 600, 300
114	Marri	1200	CBC, BBC and FRTBC	403262	6433677	0	0	Forks 600, 500, 300
115	Marri	900, 500	CBC, BBC and FRTBC	403311	6433376	0	0	Forks 900, 500
116	Marri	1000	CBC, BBC and FRTBC	403254	6429380	0	0	
117	Marri	500	CBC, BBC and FRTBC	403410	6436152	0	0	
118	Marri	600	CBC, BBC and FRTBC	403398	6436152	0	0	
119	Marri	600	CBC, BBC and FRTBC	403284	6435744	0	0	
120	Marri	1000	CBC, BBC and FRTBC	403199	6434698	0	0	Forms multi stems below 500mm DBH
121	Marri	1000?	CBC, BBC and FRTBC	406358	6424670	1	1	Possible hollow. Top entry probably Galah hollow. Has nearby Galah scars. 8m. Can be checked with camera but nearby bees must go first

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
122	Marri	700	CBC, BBC and FRTBC	403435	6433270	1	1	Possible hollow. Top entry. 8m. Can be checked with camera but nearby bees be eradicated
123	Marri	300	CBC, BBC and FRTBC	403426	6433343	1	1	Side entry hollow with no signs of use
124	Marri	800	CBC, BBC and FRTBC	403043	6426929	1	1	Small chewed hollow . Galah nearby. Side entry. 10m. Can be checked with field camera but nearby bees must be eradicated.
125	Marri	500	CBC, BBC and FRTBC	403924	6432978	1	0	Small hollow with no signs of use
126	Marri	1100	CBC, BBC and FRTBC	403270	6434951	1	0	Small hollow. Possibly Galah
127	Marri	?	CBC, BBC and FRTBC	403317	6434762	1	1	Small hollow. Too low and has no signs of use. Can be checked with pole camera but feral bees needs to be eradicated
128	Marri	900	CBC, BBC and FRTBC	403403	6433284	2	2	Small hollows. Top and side entry but well chewed. Can be field checked with camera
129	Marri	1100	CBC, BBC and FRTBC	403466	6426092	0	0	Stump
130	Marri	1000	CBC, BBC and FRTBC	403298	6434784	0	0	Stump - too low to provide a hollow
131	Marri	500	CBC, BBC and FRTBC	403708	6432979	0	0	Coordinates taken 3m to north because of drainage ditch
132	Marri	500	CBC, BBC and FRTBC	403656	6432976	0	0	Coordinates taken 3m to north because of drainage ditch
133	Marri	500	CBC, BBC and FRTBC	403628	6432975	0	0	Coordinates taken 3m to north because of drainage ditch
134	Marri	550	CBC, BBC and FRTBC	403590	6432976	0	0	Coordinates taken 3m to north because of drainage ditch
135	Marri	600	CBC, BBC and FRTBC	403718	6432979	0	0	Coordinates taken 3m to north because of drainage ditch
136	Marri	500	CBC, BBC and FRTBC	403031	6432965	0	0	Trunk forks into 2 small stems below 500mm dia
137	Marri	570	CBC, BBC and FRTBC	403307	6432981	0	0	Trunk forks into 2 small stems below 500mm dia
138	Marri	600	CBC, BBC and FRTBC	403442	6432982	0	0	Trunk forks into 2 small stems below 500mm dia
139	Marri	600	CBC, BBC and FRTBC	403680	6432987	0	0	Trunk forks into 2 small stems below 500mm dia
140	Marri	600	CBC, BBC and FRTBC	402919	6432962	0	0	Trunk forks into 2 small stems below 500mm dia

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
141	Marri	600	CBC, BBC and FRTBC	402683	6432959	0	0	Trunk forks into 2 small stems below 500mm dia
142	Marri	700	CBC, BBC and FRTBC	403530	6432985	0	0	Trunk forks into 2 small stems below 500mm dia
143	Marri	750	CBC, BBC and FRTBC	403383	6432984	0	0	Trunk forks into 2 small stems below 500mm dia
144	Marri	870	CBC, BBC and FRTBC	403931	6432981	0	0	Trunk forks into 2 small stems below 500mm dia
145	Marri	900	CBC, BBC and FRTBC	403501	6432980	0	0	Trunk forks into 2 small stems below 500mm dia
146	Marri	650	CBC, BBC and FRTBC	403690	6425970	0	0	Trunk forks into 2 small stems below 500mm dia
147	Marri	650	CBC, BBC and FRTBC	403678	6425971	0	0	Trunk forks into 2 small stems below 500mm dia
148	Marri	700	CBC, BBC and FRTBC	403113	6426050	0	0	Trunk forks into 2 small stems below 500mm dia
149	Marri	750	CBC, BBC and FRTBC	403527	6426018	0	0	Trunk forks into 2 small stems below 500mm dia
150	Marri	800	CBC, BBC and FRTBC	403919	6425959	0	0	Trunk forks into 2 small stems below 500mm dia
151	Marri	800	CBC, BBC and FRTBC	403579	6426006	0	0	Trunk forks into 2 small stems below 500mm dia
152	Marri	900	CBC, BBC and FRTBC	403953	6425945	0	0	Trunk forks into 2 small stems below 500mm dia
153	Marri	?	CBC, BBC and FRTBC	403161	6434751	0	0	Trunk forks into 2 small stems below 500mm dia
154	Marri	600	CBC, BBC and FRTBC	405994	6424831	0	0	Trunk forks into 2 small stems below 500mm dia
155	Marri	700	CBC, BBC and FRTBC	404215	6425183	0	0	Trunk forks into 2 small stems below 500mm dia
156	Marri	700	CBC, BBC and FRTBC	405958	6424805	0	0	Trunk forks into 2 small stems below 500mm dia
157	Marri	800	CBC, BBC and FRTBC	406043	6424850	0	0	Trunk forks into 2 small stems below 500mm dia
158	Marri	900	CBC, BBC and FRTBC	406343	6424380	0	0	Trunk forks into 2 small stems below 500mm dia
159	Marri	900	CBC, BBC and FRTBC	403260	6434718	0	0	Trunk forks into 2 small stems below 500mm dia

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
160	Marri	600, 600	CBC, BBC and FRTBC	405996	6424837	0	0	
161	Marri	550, 450	CBC, BBC and FRTBC	403144	6434758	0	0	
162	Marri	600, 500	CBC, BBC and FRTBC	403664	6425689	0	0	
163	Marri	650	CBC, BBC and FRTBC	403285	6429336	0	0	
164	Marri	550	CBC, BBC and FRTBC	403276	6429335	0	0	
165	Marri	550	CBC, BBC and FRTBC	403248	6429337	0	0	
166	Marri	500	CBC, BBC and FRTBC	403261	6429319	0	0	
167	Marri	500	CBC, BBC and FRTBC	403269	6431950	0	0	
168	Marri	500	CBC, BBC and FRTBC	403270	6431893	0	0	
169	Marri	550	CBC, BBC and FRTBC	403269	6431873	0	0	
170	Marri	500	CBC, BBC and FRTBC	403274	6431852	0	0	
171	Marri	300	CBC, BBC and FRTBC	403188	6435701	0	0	
172	Marri	500	CBC, BBC and FRTBC	403197	6435676	0	0	
173	Marri	850	CBC, BBC and FRTBC	403195	6435638	0	0	
174	Marri	650	CBC, BBC and FRTBC	403191	6435616	0	0	
175	Marri	700	CBC, BBC and FRTBC	403191	6435602	0	0	
176	Marri	650	CBC, BBC and FRTBC	403192	6435590	0	0	
177	Marri	600, 550	CBC, BBC and FRTBC	403196	6435570	0	0	
178	Marri	850	CBC, BBC and FRTBC	403192	6435563	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
179	Marri	500	CBC, BBC and FRTBC	403194	6435531	0	0	
180	Marri	500	CBC, BBC and FRTBC	403193	6435473	0	0	
181	Marri	700	CBC, BBC and FRTBC	403199	6435358	0	0	
182	Marri	550	CBC, BBC and FRTBC	403200	6435346	0	0	
183	Marri	900	CBC, BBC and FRTBC	403197	6435335	0	0	
184	Marri	650	CBC, BBC and FRTBC	403198	6435332	0	0	
185	Marri	600	CBC, BBC and FRTBC	403201	6435328	0	0	
186	Marri	500	CBC, BBC and FRTBC	403199	6435290	0	0	
187	Marri	550	CBC, BBC and FRTBC	403188	6435700	0	0	
188	Marri	700	CBC, BBC and FRTBC	403202	6435276	0	0	
189	Marri	750	CBC, BBC and FRTBC	403188	6435816	0	0	
190	Marri	450	CBC, BBC and FRTBC	403243	6435650	0	0	
191	Marri	450	CBC, BBC and FRTBC	403225	6435592	0	0	
192	Marri	500	CBC, BBC and FRTBC	403221	6435615	0	0	
193	Marri	500	CBC, BBC and FRTBC	403300	6434955	0	0	
194	Marri	500	CBC, BBC and FRTBC	403299	6433250	0	0	
195	Marri	520	CBC, BBC and FRTBC	403305	6435256	0	0	
196	Marri	520	CBC, BBC and FRTBC	403286	6434939	0	0	
197	Marri	520	CBC, BBC and FRTBC	403344	6433267	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
198	Marri	530	CBC, BBC and FRTBC	403239	6435645	0	0	
199	Marri	530	CBC, BBC and FRTBC	403274	6435227	0	0	
200	Marri	550	CBC, BBC and FRTBC	403348	6433614	0	0	
201	Marri	550	CBC, BBC and FRTBC	403292	6433362	0	0	
202	Marri	570	CBC, BBC and FRTBC	403307	6433525	0	0	
203	Marri	575	CBC, BBC and FRTBC	403340	6433654	0	0	
204	Marri	580	CBC, BBC and FRTBC	403234	6435502	0	0	
205	Marri	580	CBC, BBC and FRTBC	403292	6433476	0	0	
206	Marri	600	CBC, BBC and FRTBC	403180	6436218	0	0	
207	Marri	600	CBC, BBC and FRTBC	403223	6435619	0	0	
208	Marri	600	CBC, BBC and FRTBC	403233	6435590	0	0	
209	Marri	600	CBC, BBC and FRTBC	403312	6435215	0	0	
210	Marri	600	CBC, BBC and FRTBC	403251	6433740	0	0	
211	Marri	600	CBC, BBC and FRTBC	403267	6433643	0	0	
212	Marri	600	CBC, BBC and FRTBC	403372	6433628	0	0	
213	Marri	600	CBC, BBC and FRTBC	403421	6433301	0	0	
214	Marri	620	CBC, BBC and FRTBC	403227	6435307	0	0	
215	Marri	620	CBC, BBC and FRTBC	403266	6435236	0	0	
216	Marri	620	CBC, BBC and FRTBC	403312	6433565	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
217	Marri	620	CBC, BBC and FRTBC	403295	6433252	0	0	
218	Marri	650	CBC, BBC and FRTBC	403242	6435670	0	0	
219	Marri	650	CBC, BBC and FRTBC	403300	6433489	0	0	
220	Marri	650	CBC, BBC and FRTBC	403337	6433241	0	0	
221	Marri	650	CBC, BBC and FRTBC	403345	6433273	0	0	
222	Marri	650	CBC, BBC and FRTBC	403414	6433303	0	0	
223	Marri	670	CBC, BBC and FRTBC	403306	6435265	0	0	
224	Marri	680	CBC, BBC and FRTBC	403217	6435555	0	0	
225	Marri	680	CBC, BBC and FRTBC	403267	6433664	0	0	
226	Marri	680	CBC, BBC and FRTBC	403356	6433623	0	0	
227	Marri	700	CBC, BBC and FRTBC	403172	6436194	0	0	
228	Marri	700	CBC, BBC and FRTBC	403209	6435737	0	0	
229	Marri	700	CBC, BBC and FRTBC	403210	6435699	0	0	
230	Marri	700	CBC, BBC and FRTBC	403286	6435167	0	0	
231	Marri	700	CBC, BBC and FRTBC	403301	6435272	0	0	
232	Marri	700	CBC, BBC and FRTBC	403325	6433649	0	0	
233	Marri	700	CBC, BBC and FRTBC	403344	6433523	0	0	
234	Marri	700	CBC, BBC and FRTBC	403340	6433605	0	0	
235	Marri	700	CBC, BBC and FRTBC	403295	6433490	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
236	Marri	700	CBC, BBC and FRTBC	403398	6433329	0	0	
237	Marri	730	CBC, BBC and FRTBC	403277	6433661	0	0	
238	Marri	750	CBC, BBC and FRTBC	403341	6433652	0	0	
239	Marri	750	CBC, BBC and FRTBC	403337	6433651	0	0	
240	Marri	750	CBC, BBC and FRTBC	403307	6433565	0	0	
241	Marri	770	CBC, BBC and FRTBC	403245	6435302	0	0	
242	Marri	800	CBC, BBC and FRTBC	403174	6436204	0	0	
243	Marri	800	CBC, BBC and FRTBC	403318	6435737	0	0	
244	Marri	800	CBC, BBC and FRTBC	403216	6435528	0	0	
245	Marri	800	CBC, BBC and FRTBC	403304	6433472	0	0	
246	Marri	850	CBC, BBC and FRTBC	403274	6435164	0	0	
247	Marri	850	CBC, BBC and FRTBC	403300	6434921	0	0	
248	Marri	850	CBC, BBC and FRTBC	403366	6433396	0	0	
249	Marri	870	CBC, BBC and FRTBC	403243	6435678	0	0	
250	Marri	900	CBC, BBC and FRTBC	403256	6435730	0	0	
251	Marri	900	CBC, BBC and FRTBC	403262	6435728	0	0	
252	Marri	900	CBC, BBC and FRTBC	403283	6435211	0	0	
253	Marri	900	CBC, BBC and FRTBC	403318	6433533	0	0	
254	Marri	900	CBC, BBC and FRTBC	403330	6433588	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
255	Marri	1000	CBC, BBC and FRTBC	403406	6433624	0	0	
256	Marri	1000	CBC, BBC and FRTBC	403415	6433517	0	0	
257	Marri	1050	CBC, BBC and FRTBC	403321	6433599	0	0	
258	Marri	1100	CBC, BBC and FRTBC	403355	6433109	0	0	
259	Marri	1200	CBC, BBC and FRTBC	403423	6433557	0	0	
260	Marri	1300	CBC, BBC and FRTBC	403286	6435164	0	0	
261	Marri	500	CBC, BBC and FRTBC	404007	6432979	0	0	
262	Marri	500	CBC, BBC and FRTBC	403478	6432973	0	0	
263	Marri	500	CBC, BBC and FRTBC	402987	6432966	0	0	
264	Marri	550	CBC, BBC and FRTBC	403766	6432991	0	0	
265	Marri	500	CBC, BBC and FRTBC	403442	6426030	0	0	
266	Marri	500	CBC, BBC and FRTBC	403232	6426057	0	0	
267	Marri	500	CBC, BBC and FRTBC	403743	6425994	0	0	
268	Marri	550	CBC, BBC and FRTBC	403483	6426019	0	0	
269	Marri	550	CBC, BBC and FRTBC	403484	6426012	0	0	
270	Marri	550	CBC, BBC and FRTBC	403462	6426022	0	0	
271	Marri	550	CBC, BBC and FRTBC	403442	6426033	0	0	
272	Marri	550	CBC, BBC and FRTBC	403191	6426072	0	0	
273	Marri	550	CBC, BBC and FRTBC	403104	6426056	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
274	Marri	550	CBC, BBC and FRTBC	403807	6425952	0	0	
275	Marri	550	CBC, BBC and FRTBC	403873	6425948	0	0	
276	Marri	550	CBC, BBC and FRTBC	403639	6425986	0	0	
277	Marri	550	CBC, BBC and FRTBC	403638	6426011	0	0	
278	Marri	550	CBC, BBC and FRTBC	403554	6426021	0	0	
279	Marri	550	CBC, BBC and FRTBC	403538	6426022	0	0	
280	Marri	550	CBC, BBC and FRTBC	403163	6434708	0	0	
281	Marri	600	CBC, BBC and FRTBC	403338	6426038	0	0	
282	Marri	600	CBC, BBC and FRTBC	403073	6426047	0	0	
283	Marri	600	CBC, BBC and FRTBC	403727	6425986	0	0	
284	Marri	600	CBC, BBC and FRTBC	403862	6425953	0	0	
285	Marri	600	CBC, BBC and FRTBC	403694	6425997	0	0	
286	Marri	600	CBC, BBC and FRTBC	403546	6426022	0	0	
287	Marri	600	CBC, BBC and FRTBC	403540	6426002	0	0	
288	Marri	600	CBC, BBC and FRTBC	403170	6434714	0	0	
289	Marri	600	CBC, BBC and FRTBC	403176	6434733	0	0	
290	Marri	650	CBC, BBC and FRTBC	403503	6426025	0	0	
291	Marri	650	CBC, BBC and FRTBC	403490	6426021	0	0	
292	Marri	650	CBC, BBC and FRTBC	403207	6426044	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
293	Marri	650	CBC, BBC and FRTBC	403078	6426065	0	0	
294	Marri	650	CBC, BBC and FRTBC	403752	6425985	0	0	
295	Marri	650	CBC, BBC and FRTBC	403775	6425980	0	0	
296	Marri	650	CBC, BBC and FRTBC	403808	6425957	0	0	
297	Marri	650	CBC, BBC and FRTBC	403850	6425981	0	0	
298	Marri	650	CBC, BBC and FRTBC	403607	6426013	0	0	
299	Marri	650	CBC, BBC and FRTBC	403567	6426024	0	0	
300	Marri	650	CBC, BBC and FRTBC	403169	6434721	0	0	
301	Marri	700	CBC, BBC and FRTBC	403380	6426020	0	0	
302	Marri	700	CBC, BBC and FRTBC	403641	6426009	0	0	
303	Marri	700	CBC, BBC and FRTBC	403576	6425994	0	0	
304	Marri	700	CBC, BBC and FRTBC	403169	6434734	0	0	
305	Marri	750	CBC, BBC and FRTBC	403188	6426066	0	0	
306	Marri	800	CBC, BBC and FRTBC	403704	6426022	0	0	
307	Marri	800	CBC, BBC and FRTBC	403720	6425996	0	0	
308	Marri	800	CBC, BBC and FRTBC	403724	6425991	0	0	
309	Marri	800	CBC, BBC and FRTBC	403626	6425975	0	0	
310	Marri	900	CBC, BBC and FRTBC	403072	6426055	0	0	
311	Marri	1000	CBC, BBC and FRTBC	404000	6425947	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
312	Marri	500, 300	CBC, BBC and FRTBC	403202	6434730	0	0	
313	Marri	500	CBC, BBC and FRTBC	403528	6425735	0	0	
314	Marri	500	CBC, BBC and FRTBC	403555	6425750	0	0	
315	Marri	500	CBC, BBC and FRTBC	403028	6426983	0	0	
316	Marri	500	CBC, BBC and FRTBC	406332	6424347	0	0	
317	Marri	500	CBC, BBC and FRTBC	406381	6424722	0	0	
318	Marri	500	CBC, BBC and FRTBC	406376	6424728	0	0	
319	Marri	500	CBC, BBC and FRTBC	403378	6434754	0	0	
320	Marri	500	CBC, BBC and FRTBC	403382	6434758	0	0	
321	Marri	500	CBC, BBC and FRTBC	403380	6434758	0	0	
322	Marri	500	CBC, BBC and FRTBC	403362	6434767	0	0	
323	Marri	500	CBC, BBC and FRTBC	403339	6434797	0	0	
324	Marri	500	CBC, BBC and FRTBC	403256	6434792	0	0	
325	Marri	550	CBC, BBC and FRTBC	406318	6424739	0	0	
326	Marri	550	CBC, BBC and FRTBC	403364	6434757	0	0	
327	Marri	550	CBC, BBC and FRTBC	403341	6434790	0	0	
328	Marri	550	CBC, BBC and FRTBC	403300	6434796	0	0	
329	Marri	550	CBC, BBC and FRTBC	403253	6434743	0	0	
330	Marri	550	CBC, BBC and FRTBC	406370	6424293	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
331	Marri	600	CBC, BBC and FRTBC	402965	6427011	0	0	
332	Marri	600	CBC, BBC and FRTBC	406334	6424364	0	0	
333	Marri	600	CBC, BBC and FRTBC	406326	6424371	0	0	
334	Marri	600	CBC, BBC and FRTBC	405951	6424799	0	0	
335	Marri	600	CBC, BBC and FRTBC	403283	6434642	0	0	
336	Marri	600	CBC, BBC and FRTBC	403278	6434642	0	0	
337	Marri	600	CBC, BBC and FRTBC	403309	6434647	0	0	
338	Marri	600	CBC, BBC and FRTBC	403371	6434681	0	0	
339	Marri	600	CBC, BBC and FRTBC	403366	6434772	0	0	
340	Marri	600	CBC, BBC and FRTBC	403318	6434753	0	0	
341	Marri	600	CBC, BBC and FRTBC	403251	6434793	0	0	
342	Marri	600	CBC, BBC and FRTBC	403240	6434796	0	0	
343	Marri	600	CBC, BBC and FRTBC	403236	6434746	0	0	
344	Marri	600	CBC, BBC and FRTBC	403312	6434730	0	0	
345	Marri	600	CBC, BBC and FRTBC	406468	6424782	0	0	
346	Marri	650	CBC, BBC and FRTBC	406086	6424897	0	0	
347	Marri	650	CBC, BBC and FRTBC	403336	6434728	0	0	
348	Marri	650	CBC, BBC and FRTBC	403369	6434772	0	0	
349	Marri	650	CBC, BBC and FRTBC	403367	6434773	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
350	Marri	650	CBC, BBC and FRTBC	403242	6434750	0	0	
351	Marri	650	CBC, BBC and FRTBC	403283	6434724	0	0	
352	Marri	700	CBC, BBC and FRTBC	403529	6425718	0	0	
353	Marri	700	CBC, BBC and FRTBC	403538	6425746	0	0	
354	Marri	700	CBC, BBC and FRTBC	403563	6425744	0	0	
355	Marri	700	CBC, BBC and FRTBC	403612	6425729	0	0	
356	Marri	700	CBC, BBC and FRTBC	403687	6425649	0	0	
357	Marri	700	CBC, BBC and FRTBC	404271	6425184	0	0	
358	Marri	700	CBC, BBC and FRTBC	402974	6427008	0	0	
359	Marri	700	CBC, BBC and FRTBC	406470	6424798	0	0	
360	Marri	700	CBC, BBC and FRTBC	406369	6424427	0	0	
361	Marri	700	CBC, BBC and FRTBC	406042	6424848	0	0	
362	Marri	700	CBC, BBC and FRTBC	406072	6424893	0	0	
363	Marri	700	CBC, BBC and FRTBC	405956	6424795	0	0	
364	Marri	700	CBC, BBC and FRTBC	403319	6434794	0	0	
365	Marri	750	CBC, BBC and FRTBC	403553	6425750	0	0	
366	Marri	750	CBC, BBC and FRTBC	406380	6424726	0	0	
367	Marri	750	CBC, BBC and FRTBC	403290	6434678	0	0	
368	Marri	750	CBC, BBC and FRTBC	403305	6434793	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
369	Marri	750	CBC, BBC and FRTBC	403262	6434802	0	0	
370	Marri	750	CBC, BBC and FRTBC	403262	6434790	0	0	
371	Marri	800	CBC, BBC and FRTBC	404271	6425169	0	0	
372	Marri	800	CBC, BBC and FRTBC	406330	6424368	0	0	
373	Marri	800	CBC, BBC and FRTBC	406391	6424592	0	0	
374	Marri	800	CBC, BBC and FRTBC	406094	6424908	0	0	
375	Marri	800	CBC, BBC and FRTBC	406017	6424855	0	0	
376	Marri	800	CBC, BBC and FRTBC	403310	6434796	0	0	
377	Marri	800	CBC, BBC and FRTBC	403283	6434782	0	0	
378	Marri	800	CBC, BBC and FRTBC	403262	6434803	0	0	
379	Marri	900	CBC, BBC and FRTBC	406372	6424303	0	0	
380	Marri	900	CBC, BBC and FRTBC	406361	6424498	0	0	
381	Marri	900	CBC, BBC and FRTBC	406043	6424853	0	0	
382	Marri	900	CBC, BBC and FRTBC	406080	6424908	0	0	
383	Marri	900	CBC, BBC and FRTBC	403249	6434745	0	0	
384	Marri	950	CBC, BBC and FRTBC	403367	6434687	0	0	
385	Marri	1000	CBC, BBC and FRTBC	406319	6424737	0	0	
386	Marri	1000	CBC, BBC and FRTBC	406042	6424874	0	0	
387	Marri	1000	CBC, BBC and FRTBC	405982	6424818	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
388	Marri	1000	CBC, BBC and FRTBC	403336	6434705	0	0	
389	Marri	1100	CBC, BBC and FRTBC	406335	6424390	0	0	
390	Marri	1100	CBC, BBC and FRTBC	406345	6424730	0	0	
391	Marri	1100	CBC, BBC and FRTBC	405947	6424785	0	0	
392	Marri	1300	CBC, BBC and FRTBC	403288	6434649	0	0	
393	Marri	1350	CBC, BBC and FRTBC	406347	6424418	0	0	
394	Marri	1400	CBC, BBC and FRTBC	406202	6424732	0	0	
395	Marri	500	CBC, BBC and FRTBC	402998	6429428	0	0	
396	Marri	500	CBC, BBC and FRTBC	403007	6429408	0	0	
397	Marri	500	CBC, BBC and FRTBC	403029	6429379	0	0	
398	Marri	500	CBC, BBC and FRTBC	403264	6431452	0	0	
399	Marri	500	CBC, BBC and FRTBC	403267	6431426	0	0	
400	Marri	500	CBC, BBC and FRTBC	403260	6431427	0	0	
401	Marri	500	CBC, BBC and FRTBC	403398	6432764	0	0	
402	Marri	500	CBC, BBC and FRTBC	403398	6432764	0	0	
403	Marri	500	CBC, BBC and FRTBC	403413	6432762	0	0	
404	Marri	500	CBC, BBC and FRTBC	403010	6426467	0	0	
405	Marri	500	CBC, BBC and FRTBC	403013	6426492	0	0	
406	Marri	500	CBC, BBC and FRTBC	403475	6426071	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
407	Marri	550	CBC, BBC and FRTBC	403006	6429443	0	0	
408	Marri	550	CBC, BBC and FRTBC	403002	6429421	0	0	
409	Marri	550	CBC, BBC and FRTBC	403023	6429376	0	0	
410	Marri	550	CBC, BBC and FRTBC	403026	6429376	0	0	
411	Marri	550	CBC, BBC and FRTBC	403030	6429378	0	0	
412	Marri	550	CBC, BBC and FRTBC	403264	6431454	0	0	
413	Marri	550	CBC, BBC and FRTBC	403256	6431440	0	0	
414	Marri	550	CBC, BBC and FRTBC	403141	6429242	0	0	
415	Marri	550	CBC, BBC and FRTBC	403062	6429212	0	0	
416	Marri	550	CBC, BBC and FRTBC	403014	6426795	0	0	
417	Marri	550	CBC, BBC and FRTBC	403030	6426922	0	0	
418	Marri	550	CBC, BBC and FRTBC	403487	6426097	0	0	
419	Marri	600	CBC, BBC and FRTBC	403007	6429413	0	0	
420	Marri	600	CBC, BBC and FRTBC	403019	6429387	0	0	
421	Marri	600	CBC, BBC and FRTBC	403419	6432760	0	0	
422	Marri	600	CBC, BBC and FRTBC	403133	6429221	0	0	
423	Marri	600	CBC, BBC and FRTBC	403015	6428318	0	0	
424	Marri	600	CBC, BBC and FRTBC	403021	6428111	0	0	
425	Marri	600	CBC, BBC and FRTBC	403667	6426070	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
426	Marri	650	CBC, BBC and FRTBC	403007	6429449	0	0	
427	Marri	650	CBC, BBC and FRTBC	403013	6426479	0	0	
428	Marri	650	CBC, BBC and FRTBC	403001	6426782	0	0	
429	Marri	700	CBC, BBC and FRTBC	403043	6429563	0	0	
430	Marri	700	CBC, BBC and FRTBC	403018	6429391	0	0	
431	Marri	700	CBC, BBC and FRTBC	403017	6429380	0	0	
432	Marri	700	CBC, BBC and FRTBC	403120	6426424	0	0	
433	Marri	700	CBC, BBC and FRTBC	403661	6426087	0	0	
434	Marri	750	CBC, BBC and FRTBC	403269	6431455	0	0	
435	Marri	750	CBC, BBC and FRTBC	403477	6426073	0	0	
436	Marri	800	CBC, BBC and FRTBC	403262	6431180	0	0	
437	Marri	800	CBC, BBC and FRTBC	403238	6431053	0	0	
438	Marri	800	CBC, BBC and FRTBC	403249	6431031	0	0	
439	Marri	800	CBC, BBC and FRTBC	403255	6431446	0	0	
440	Marri	800	CBC, BBC and FRTBC	403024	6428322	0	0	
441	Marri	800	CBC, BBC and FRTBC	403621	6426274	0	0	
442	Marri	800	CBC, BBC and FRTBC	403385	6426056	0	0	
443	Marri	800	CBC, BBC and FRTBC	403377	6426170	0	0	
444	Marri	800	CBC, BBC and FRTBC	403378	6426169	0	0	

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
445	Marri	900	CBC, BBC and FRTBC	403256	6431000	0	0	
446	Marri	900	CBC, BBC and FRTBC	403422	6432759	0	0	
447	Marri	950	CBC, BBC and FRTBC	403257	6431003	0	0	
448	Marri	1000	CBC, BBC and FRTBC	403020	6428111	0	0	
449	Marri	1000	CBC, BBC and FRTBC	403476	6426068	0	0	
450	Marri	600,550	CBC, BBC and FRTBC	403101	6429613	0	0	
451	Marri	800,750	CBC, BBC and FRTBC	403225	6431078	0	0	
452	Marri	100, 800	CBC, BBC and FRTBC	403615	6426312	0	0	
453	Marri		CBC, BBC and FRTBC	403360	6432452	0	0	
454	Marri	500	CBC, BBC and FRTBC	402931	6429332	0	0	
455	Marri	600	CBC, BBC and FRTBC	403168	6429247	0	0	
456	Marri	1100	CBC, BBC and FRTBC	403295	6435783	0	0	Forks into 500, 600mm 300 dia
457	Marri	700	CBC, BBC and FRTBC	403013	6429331	0	0	Forks into 400, 300mm dia
458	Marri dead	1000	CBC, BBC and FRTBC	402917	6429045	2	2	2 top entry hollows. 300mm dia. Can be checked with camera
459	Marri dead	900	CBC, BBC and FRTBC	403616	6426231	3	0	3 hollows. Galahs and ringnecks present. Very rotten dangerous tree
460	Marri. Dead	500, 300	CBC, BBC and FRTBC	403374	6433034	0	0	Forked 500, 300mm dia
461	Marri. Dead	800	CBC, BBC and FRTBC	403218	6435568	0	0	Rainbow Lorikeet nest
462	Marri. Dead	900	CBC, BBC and FRTBC	403680	6432978	0	0	Coordinates taken 3m to north because of drainage ditch
463	Marri. Dead	900	CBC, BBC and FRTBC	403834	6425956	0	0	Trunk forks into 2 small stems below 500mm dia

Tree ID number	Flora species	DBH	Fauna species	Latitude	Longitude	Hollow	Potential	Comment
464	Marri. Dead	900	CBC, BBC and FRTBC	403850	6425954	0	0	Trunk forks into 2 small stems below 500mm dia
465	Marri. Dead	900	CBC, BBC and FRTBC	403241	6434745	0	0	Trunk forks into 2 small stems below 500mm dia
466	Marri. Dead	600	CBC, BBC and FRTBC	403194	6435685	0	0	
467	Marri. Dead	500	CBC, BBC and FRTBC	402997	6426804	0	0	
468	Marri. Dead	600	CBC, BBC and FRTBC	403111	6426417	0	0	
469	Marri. Dead	700	CBC, BBC and FRTBC	403102	6429221	0	0	
470	Marri. Dead	500	CBC, BBC and FRTBC	403395	6433406	0	0	
471	Marri. Dead	630	CBC, BBC and FRTBC	403386	6433401	0	0	
472	Marri. Dead	650	CBC, BBC and FRTBC	403426	6433286	0	0	
473	Marri. Dead	650	CBC, BBC and FRTBC	403378	6433041	0	0	
474	Marri. Dead	1100	CBC, BBC and FRTBC	403391	6433028	0	0	
475	Marri. Dead	1500	CBC, BBC and FRTBC	403300	6433218	0	0	
476	Marri. Dead	650	CBC, BBC and FRTBC	403248	6434624	0	0	
477	Marri. Dead	700	CBC, BBC and FRTBC	403320	6434645	0	0	
478	Wandoo	700, 600, 400	CBC, BBC and FRTBC	403668	6425700	0	0	
479	Wandoo?	500	CBC, BBC and FRTBC	406366	6424530	0	0	

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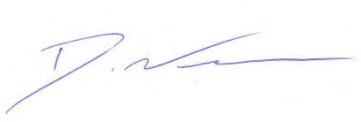
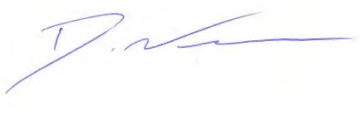
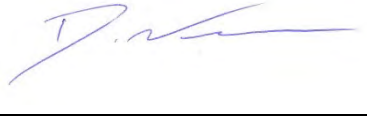
A	C Campbell	T Sleigh	D Newsome		20/11/2020
B	C Campbell	T Sleigh	D Newsome		16/12/2020
C	H Sullivan	D Newsome	D Newsome		07/01/2020

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