

# Targeted Fauna Survey



## Bussell Highway – Hutton to Sabina Section (31.25 – 43.67 SLK)

MARCH 2018

*Version 2*

***On behalf of:***

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## 1. INTRODUCTION

This report details the results of a “targeted fauna survey” of a section of Bussell Highway referred to as the “Hutton to Sabina Section” (31.25 – 43.67 SLK) (the Project area) carried out on behalf of Main Roads Western Australia (MRWA).

It is understood that MRWA are proposing to duplicate sections of the highway to improve traffic flow and safety. The Project area has a total length of about 12 kilometres (km) and covers approximately 72.42 hectares (ha), of which ~28 ha will require clearing for proposed road works (Figure 1).

In 2016 MRWA engaged 360 Environmental to prepare an Environmental Impact Assessment (EIA) for the Project, which included a site fauna assessment (360 Environmental 2016a, 2016b). This was followed by a targeted survey for western ringtail possums (WRP) and black cockatoo habitat in 2017 (360 Environmental 2017).

The various fauna assessments identified 33.96 ha of potential habitat for western ringtail possums (WRP), two WRP individuals and 92 trees with a diameter at breast height (DBH) of  $\geq 50$ cm representing potential black cockatoo breeding habitat within the Project area.

It is however understood that the survey work was hindered to a certain degree by bad weather and so as to provide additional and more current information on the status of black cockatoos and WRPs in the area MRWA requested the following be carried out:

- Assess the 92 trees previously identified as being  $\geq 50$ cm DBH for potential nest hollows and signs of cockatoo usage, and
- Conduct a targeted western ringtail possum survey.

This report details the results of this assessment which will be used by MRWA to prepare environmental assessment documents necessary to secure environmental approvals for the proposed highway duplication.

## 2. SCOPE OF WORKS

Main Roads have defined the scope of the targeted fauna survey as:

### Black Cockatoo Habitat Assessment

- Re-assess the 92 trees (DBH $\geq$ 50cm) previously identified as potential black cockatoo habitat trees to confirm that they remain in-situ, intact and show no nesting signs by black cockatoos;
- Mark trees on-site based on their hollow bearing nature and cockatoo use with paint to identify them in the future.

### Western Ringtail Possum Survey

- Conduct a daytime assessment for signs of WRP, including scats and dreys;
- Conduct two night spotlight surveys of the Project area targeting WRP.

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

### **3. METHODS**

Daytime field survey work was carried out by Greg Harewood (B.Sc. - Zoology) on the 10 November and the 22 and 28 December 2017. Nocturnal surveys were carried out on the 18 and 23 January 2018.

#### **3.1 Black Cockatoo Habitat Assessment**

The previously identified habitat trees (360 Environmental 2017) within the Project area were re-assessed for the potential to contain or develop suitable hollows for black cockatoos. All trees were re-examined from ground level for evidence of use using binoculars (e.g. chew marks, actual individuals).

In addition, any direct observations of black cockatoo individuals or evidence of foraging/roosting was recorded to species level if possible.

#### **3.2 Western Ringtail Possum Assessment**

The western ringtail possum assessment has involved:

- Concurrent with the daytime black cockatoo habitat assessment dreys (and other potential daytime refuge habitat), scats and individual WRPs were searched for and recorded if observed; and
- Two night time surveys to locate and record the distribution and abundance of WRPs within the subject site were carried out. The nocturnal counts involved the systematic searching of potential WRP habitats on foot using a head torch.

#### **3.3 Other Fauna Species of Conservation Significance**

Any evidence or observations of other species of conservation significance was recorded during all survey work.

## **4. SURVEY CONSTRAINTS**

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

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

Survey for WRPs also has its limitations. Some of the bushland within the Project area is extremely thick which limits the effectiveness of survey work due to access difficulties and lack of light penetration when spotlighting. It should be appreciated that even under ideal conditions not all WRPs present in an area being surveyed will be observed. As such the results of the survey represent the minimum number of WRPs present within the area surveyed at the time.

## 5. RESULTS

### 5.1 Black Cockatoo Habitat Assessment

With the exception of some trees which could not be found (already cleared or wrong coordinates), all the trees identified by 360 Environmental were examined for hollows and evidence of use by black cockatoo as requested (80 in total). The observations made were generally consistent with 360 Environmental's findings with almost all trees not containing any hollows or only small/medium hollows unsuitable for black cockatoos.

One tree previously identified as only containing a possible hollow unsuitable for cockatoos was however found to have what appeared to be a large hollow spout possibly formed after 360 Environmental's survey as evidenced by large, fresh fallen logs adjacent to the tree. It is unclear if this hollow is actually suitable for black cockatoos though no evidence of any use was observed. None of the other trees identified by 360 Environmental contained hollows suitable for black cockatoos.

A summary of the observations made when re-examining the trees identified by 360 Environmental can be found in Appendix A. The main findings apart for the large hollow mentioned above relate to some trees being found to contain possible small/medium hollows not previously noted, in addition to a small number of trees being labelled with the wrong species name.

As indicated above, a number of trees could also not be found. Eight of the trees (planted eucalypts) appeared to have been cleared as part of road works at the Hutton Road end of the Project area (trees numbered 4 to 11). Trees numbered 26, 27 and 28 could also not be found and in this instance, it would appear that the coordinates provided by 360 Environmental were incorrect.

In addition to the 80 trees reported by 360 Environmental (360 Environmental 2017) another 76 trees with a DBH of  $\geq 50$ cm were identified within the Project area during the daytime field survey. These trees have been added to the data set, a complete summary of which is provided below.

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

- Tuart - *Eucalyptus gomphocephala*;
- Marri – *Corymbia calophylla*;
- Jarrah - *Eucalyptus marginata*;
- Flooded Gum - *Eucalyptus rudis*;
- Planted non-endemic eucalyptus; and

- Dead unidentifiable species.

A summary of the potential black cockatoo breeding trees (using DotEE criteria i.e. any suitable tree species with a DBH  $\geq$  50cm (Commonwealth of Australian 2012)) observed within the subject site (combined results of both surveys) is provided in Table 1 below and their location shown in Figure 2.

**Table 1: Summary of potential cockatoo breeding habitat trees (DBH  $\geq$ 50cm)**

Total Number of Habitat Trees	Number of Trees with <u>No Hollows Observed</u>	Number of Trees with Hollows Considered <u>Unsuitable</u> for Nesting Black Cockatoos	Number of Trees with Hollows Considered <u>Possibly Suitable</u> for Nesting Black Cockatoos	Tree Species					
				Tuart	Marri	Jarrah	Flooded Gum	Non-endemic	Dead Unknown
156	142	12	2	23	71	4	44	11	3

The assessment identified a total of 156 trees with a DBH of  $\geq$ 50cms within the subject site. The majority (142, ~91.1%) of the trees were not observed to contain hollows of any size. Twelve (12, ~7.6%) of the trees contained one or more possible hollows considered by the Author not to be suitable for black cockatoos to use for nesting purposes.

Two (2, ~1.3%) trees were identified as potentially containing hollows that appeared possibly big enough to allow the entry of a black cockatoo into a suitably sized and orientated branch/trunk though no evidence of actual use by black cockatoos (e.g. significant chew marks around hollow entrance) was seen in either case.

Additional details on each habitat tree observed can be found in Appendix A.

Following is a list of the main flora species recorded within the subject site during the fauna survey that are known to be used as a direct food source (i.e. seeds or flowers) by one or more species of black cockatoo:

- Tuart - *Eucalyptus gomphocephala*;
- Marri – *Corymbia calophylla*;
- Jarrah - *Eucalyptus marginata*;
- Flooded Gum - *Eucalyptus rudis*;
- Pine – *Pinus* sp.



- Planted non-endemic eucalypts; and
- Banksias - *Banksia* sp;

It should be noted that some of the above-mentioned species (e.g. tuart and flooded gum) while foraged upon on occasions are only likely to make up a small proportion of any one birds diet relative to more favoured plant species such as marri.

360 Environmental identified 29.5 ha of foraging habitat within the Project area (360 Environmental 2017) which appears to be mainly comprised of areas of vegetation containing marri.

Foraging debris left by black cockatoos observed within the Project area was relatively sparse. The most common evidence observed was chewed pine cones presumably left by foraging Carnaby's black cockatoo. During their survey 360 Environmental found foraging evidence in the form of "chewed marri nuts and too a much lesser extent on *banksia* and pine cones" (360 Environmental 2017).

No evidence of black cockatoo roosting within trees located within the Project area was observed during the field survey.

## 5.2 Western Ringtail Possum Assessment

The locations of various possum observations made during the survey period are shown in Figure 3.

Twenty WRP dreys were observed during the day survey. Fourteen trees were observed to contain possible hollows, some of which may be suitable for WRPs to use for daytime refuge.

Fourteen WRPs were observed during the first nocturnal survey. Eight common brushtail possums were also recorded.

Twenty two WRPs were observed during the second nocturnal survey. Twenty one common brushtail possums were also recorded.

The results of the WRP assessment indicate that this species is utilising vegetation where ever present along almost the entire length of the Project area, primarily wherever relatively dense midstorey (low forest, woodland or thicket) vegetation is present and where peppermint (*Agonis flexuosa*) generally occurs. 360 Environmental (2017) have estimated that this area of vegetation equates to about 33.96 ha based on the area they surveyed.

### 5.2.1 Other Fauna Species of Conservation Significance

Two other fauna species of conservation significance were recorded during the survey period, this being the quenda (southern brown bandicoot) and the south western brush-tailed phascogale. The location of these observations is shown in Figure 3.

## 6. CONCLUSION

The fauna assessment within the subject site was undertaken for the purposes of carrying out targeted black cockatoo and western ringtail possum surveys to supplement previous surveys done by 360 Environmental.

The 2017/2018 black cockatoo habitat survey identified the presence of 156 trees fulfilling DotEE (2012) criteria as potential breeding habitat, two of which may possibly contain hollows suitable for black cockatoos though neither showed any evidence of use for this purpose.

The Project area also contains vegetation representing foraging habitat for black cockatoos though its quality is variable depending on the density of favoured plant species. No black cockatoo roosting activity was observed.

A high percentage of the remnant vegetation present (~33.96 ha – 360 Environmental 2017) represents potential WRP habitat and the species was found at a number of locations within the Project area with 22 individuals being observed during the second night survey carried out in January 2018.

The presence of black cockatoo and western ringtail possum habitat and individuals will need to be considered during ongoing planning, for the formulation of management plans and during to be taken into consideration during the ongoing planning and construction phases of the proposed project.

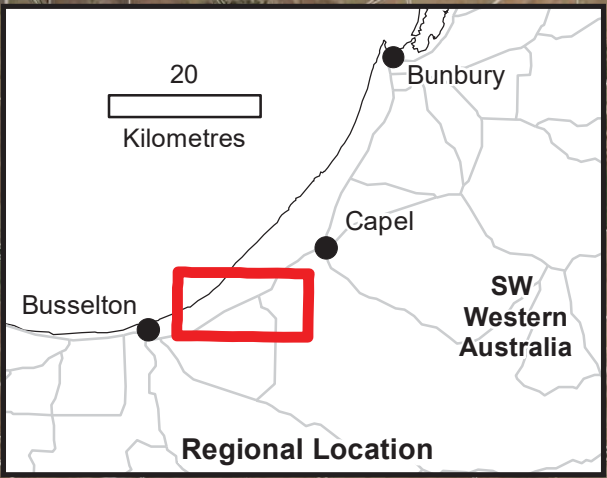
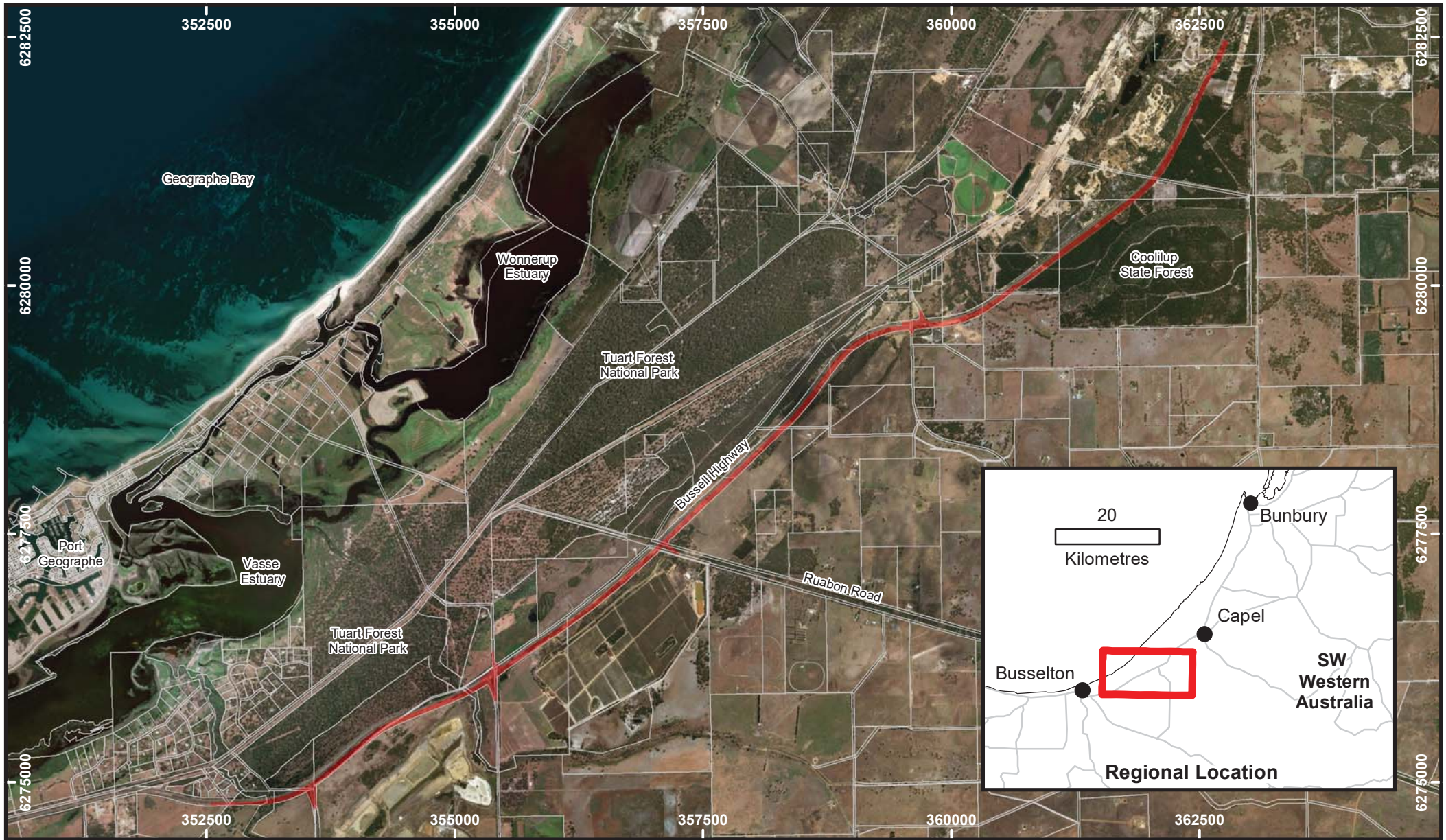
## **7. REFERENCES**

360 Environmental. (2016a). Fauna Assessment Bussell Highway. Unpublished report for MRWA.

360 Environmental (2016b). Bussell Highway - Hutton to Sabina (31.25 to 43.67 SLK) Environmental Impact Assessment (EIA). Unpublished report for MRWA.

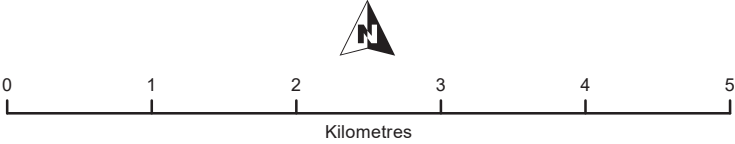
360 Environmental (2017). Bussell Highway - Hutton to Sabina (31.25 to 43.67 SLK) Level 1 Fauna and Targeted Western Ringtail Possum Survey.


# FIGURES



**Legend**

- Cadastral Boundaries
- Project Area



 Fauna Survey
Drawn: G Harewood Date: Jan 2018 Scale: 1:52,250 Projection/Coordinate System: UTM/MGA Zone 50

**Bussell Highway**  
 Hutton to Sabina Section  
 (31.25 – 43.67 SLK)  
**Project Area**  
 and  
**Surrounds**

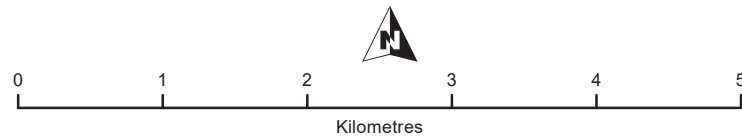
Figure: 1




**Legend**

- Project Area
- Cadastral Boundaries

- Habitat Tree - One or more large hollows possibly suitable for black cockatoos
- Habitat Tree - One or more possible small/medium hollows
- Habitat Tree - No hollows seen



 Fauna Survey
Drawn: G Harewood Date: Jan 2018 Scale: 1:52,250 Projection/Coordinate System: UTM/MGA Zone 50

**Busell Highway  
Hutton to Sabina Section  
(31.25 – 43.67 SLK)**

**Habitat Trees  
(DBH >50cm)**



**Legend**

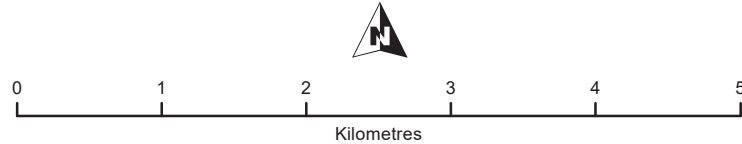
- Project Area
- Cadastral Boundaries
- WRP Drey


**Night 1 (18/01/2018)**

- Western Ringtail Possum
- Common Brushtail Possum

**Night 2 (23/01/2018)**

- +
 Western Ringtail Possum
- x
 Common Brushtailed Possum
- +
 SW Brush-tailed Phascogale
- +
 Quenda





Fauna Survey

Drawn: G Harewood  
Date: Jan 2018  
Scale: 1:52,250  
Projection/Coordinate System: UTM/MGA Zone 50

**Busell Highway  
Hutton to Sabina Section  
(31.25 – 43.67 SLK)**

**Possum Survey  
Results**

# **APPENDIX A**

## **HABITAT TREE REVIEW OF 360 ENVIRONMENTAL (2017) DATA**



360 Environment - Habitat Tree Review

DBH >50cm

Datum - GDA94

Entrance Size Ranges: Small = >5cm, Medium = 5, 10cm, Large = >10cm

360 Waypoint Number	mE	mN	Tree Species	Height	Number of Hollows	Hollow Size	360 Comments	GPH Comments
1	362630	6282153	Tuart	15-20			Splits in two at 1.5m	
2	362638	6282189	Tuart	15-20			Chewed tuart nuts	
3	362612	6282188	Tuart	15-20			Chewed pine cones	
12	362255	6281466	Marri	15-20				
13	362138	6281251	Marri	15-20				
14	361919	6280988	Marri	15-20				
15	361861	6280901	Marri	15-20			Camera	
16	361637	6280718	Tuart	15-20			Splits in two at 1m (Bandicoot diggings)	16, 17 & 18 are several metres apart
17	361637	6280718	Tuart	15-20			Splits in two at 1m	16, 17 & 18 are several metres apart
18	361637	6280718	Tuart	15-20			Splits in two at 1m	16, 17 & 18 are several metres apart
19	361549	6280653	Marri	15-20				
20	361542	6280648	Marri	15-20				Changed coords to 361542/6280648
21	361532	6280620	Marri	20+	2+	Small		Possible small hollows
22	360563	6279905	Tuart	15-20				
23	360405	6279787	Flooded Gum	10-15			Splits in two at 1.8m	
24	360403	6279777	Flooded Gum	10-15				Changed coords to 360403/6279777
25	360397	6279775	Flooded Gum	10-15				
29	360277	6279751	Tuart	15-20				
30	360251	6279739	Tuart	15-20				
31	360192	6279710	Tuart	15-20				31 and 32 are 3 metres apart
32	360195	6279710	Tuart	15-20				31 and 32 are 3 metres apart
33	360177	6279707	Tuart	15-20				
34	357030	6277373	Marri	15-20				
35	357018	6277359	Marri	20+				
36	357034	6277350	Marri	15-20				
37	357034	6277350	Jarraah	15-20				This tree is a jarrah, not a tuart as indentified by 360
38	357034	6277350	Jarraah	15-20	2+	Small		This tree is a jarrah, not a tuart as indentified by 360 - possible small hollows
39	357043	6277343	Marri	15-20				
40	357070	6277340	Marri	15-20			Partially dead	
41	357059	6277364	Marri	15-20				
42	357068	6277400	Marri	5-10				
43	357073	6277409	Marri	15-20				
45	357086	6277395	Marri	15-20				
46	357086	6277394	Marri	15-20				
47	357085	6277405	Marri	15-20				
48	357106	6277401	Marri	15-20				
50	355587	6276243	Marri	10-15				
51	355577	6276232	Marri	10-15				
52	355406	6275916	Marri	15-20				
53	355406	6275916	Marri	15-20				
54	355407	6275898	Marri	20+				
55	355409	6275893	Marri	15-20				
56	355422	6275859	Jarraah	15-20				This tree is a jarrah, not a tuart as indentified by 360
57	355426	6275833	Marri	15-20				
58	355425	6275825	Marri	15-20				
59	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
60	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
61	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
62	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
63	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
64	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
65	355080	6275895	Marri	15-20				59 to 67 are all several metres apart

360 Waypoint Number	mE	mN	Tree Species	Height	Number of Hollows	Hollow Size	360 Comments	GPH Comments
66	355080	6275895	Marri	15-20				
67	355080	6275895	Marri	15-20				59 to 67 are all several metres apart
68	355108	6275912	Flooded Gum	15-20				59 to 67 are all several metres apart
69	353570	6274916	Marri	15-20				
70	353575	6274892	Marri	15-20				
71	353439	6274926	Marri	15-20				
72	353464	6274921	Marri	15-20				
73	353480	6274909	Flooded Gum	10-15				
74	353480	6274909	Flooded Gum	10-15				
75	353494	6274919	Flooded Gum	15-20				
76	353477	6274930	Dead Marri	20+	1	Medium & Large (Cockatoo)	1 hollow not vertical	Upper trunk appears to have broken off recently forming spout? Possibly suitable for a black cockatoo - no signs.
77	353467	6274925	Dead Marri	20+				
78	353268	6274824	Flooded Gum	15-20				
79	353246	6274811	Flooded Gum	15-20	2+	Small, Medium & Large		Small to Large hollows - too low and shallow for a cockatoo, WRP drey in tree hollow
80	353215	6274838	Tuart	20+				
81	353210	6274821	Tuart	20+				
82	353210	6274821	Tuart	20+				
83	353202	6274822	Tuart	20+				
84	353202	6274822	Tuart	20+				
85	353202	6274822	Tuart	20+				
86	353200	6274805	Tuart	20+				
87	353188	6274802	Flooded Gum	20+				This tree appears to be a flooded gum, not a tuart as identified by 360
88	353181	6274813	Marri	15-20				
89	353163	6274824	Marri	15-20				
90	353166	6274791	Flooded Gum	20+				This tree appears to be a flooded gum, not a tuart as identified by 360
91	353139	6274803	Marri	15-20				
92	353134	6274795	Marri	15-20				
93	353119	6274804	Marri	15-20				

# **APPENDIX B**

## **COMBINED HABITAT TREE DETAILS**

## Full Habitat Tree List

DBH &gt;50cm

Datum - GDA94

Entrance Size Ranges: Small = &gt;5cm, Medium = 5, 10cm, Large = &gt;10cm

Waypoint Number	Zone	mE	mN	Recorder	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Hollow Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt001	50H	362620	6282165	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt002	50H	362627	6282168	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt003	50H	362639	6282177	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt004	50H	362613	6282142	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt005	50H	362593	6282129	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt006	50H	362591	6282142	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt007	50H	362607	6282149	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt008	50H	361975	6281023	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt009	50H	361918	6280975	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt010	50H	361917	6280971	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt011	50H	361918	6280969	GPH	Dead Marri	15-20	>50	0		No Signs	No Signs	No	
wpt012	50H	361910	6280947	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt013	50H	361952	6280970	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt014	50H	361943	6280979	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt017	50H	361799	6280866	GPH	Tuart	15-20	>50	0		No Signs	No Signs	No	
wpt020	50H	361545	6280649	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt022	50H	360390	6279818	GPH	Dead Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt023	50H	360176	6279660	GPH	Tuart	15-20	>50	0		No Signs	No Signs	No	
wpt024	50H	360188	6279667	GPH	Tuart	15-20	>50	0		No Signs	No Signs	No	
wpt025	50H	360203	6279672	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt026	50H	360210	6279670	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt027	50H	360215	6279670	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt028	50H	360222	6279675	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt030	50H	360232	6279682	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt031	50H	360238	6279684	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt032	50H	359833	6279619	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt033	50H	359802	6279620	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt034	50H	359616	6279553	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt035	50H	359584	6279643	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt036	50H	359080	6279402	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt037	50H	359073	6279398	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt038	50H	359013	6279409	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt039	50H	358962	6279377	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt040	50H	358942	6279354	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt041	50H	358882	6279302	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt042	50H	358789	6279192	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt043	50H	358125	6278377	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt044	50H	357779	6278047	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt045	50H	357780	6278045	GPH	Unknown Euc	20+	>50	0		No Signs	No Signs	No	
wpt046	50H	357567	6277886	GPH	Unknown Euc	15-20	>50	0		No Signs	No Signs	No	
wpt047	50H	357538	6277854	GPH	Unknown Euc	15-20	>50	0		No Signs	No Signs	No	
wpt048	50H	357083	6277406	GPH	Jarrah	20+	>50	0		No Signs	No Signs	No	
wpt049	50H	357071	6277358	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt055	50H	355390	6276050	GPH	Dead Unknown	15-20	>50	2+	Small & Medium	No Signs	No Signs	No	Internal dimensions of hollows unknown

Waypoint Number	Zone	mE	mN	Recorder	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Hollow Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
wpt056	50H	355416	6276060	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt057	50H	355392	6276033	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt058	50H	355403	6276029	GPH	Dead Marri	15-20	>50	2+	Small & Medium	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt059	50H	355417	6276032	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt060	50H	355422	6276014	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt061	50H	355422	6276006	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt062	50H	355405	6275994	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt063	50H	355403	6276002	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt065	50H	355418	6275958	GPH	Dead Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt066	50H	355423	6275938	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt068	50H	355380	6275955	GPH	Flooded Gum	10-15	>50	0		No Signs	No Signs	No	
wpt069	50H	355373	6275993	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt071	50H	355373	6276022	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt073	50H	355252	6275997	GPH	Flooded Gum	20+	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt074	50H	355125	6275894	GPH	Flooded Gum	20+	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt075	50H	355135	6275884	GPH	Flooded Gum	20+	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt081	50H	354265	6275529	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt082	50H	353755	6275101	GPH	Marri	15-20	>50	2+	Medium & Large	No Signs	No Signs	No	Too low and shallow
wpt083	50H	353614	6275002	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt084	50H	353591	6274993	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt085	50H	353591	6274988	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt086	50H	353569	6274974	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt087	50H	353569	6274931	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt088	50H	353584	6274884	GPH	Marri	15-20	>50	0		No Signs	No Signs	No	
wpt090	50H	353593	6274926	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt091	50H	353456	6274894	GPH	Flooded Gum	15-20	>50	0		No Signs	No Signs	No	
wpt092	50H	353444	6274892	GPH	Marri	20+	>50	0		No Signs	No Signs	No	
wpt093	50H	353425	6274897	GPH	Flooded Gum	20+	>50	2+	Small, Medium & Large (Cockatoo)	No Signs	No Signs	Yes	Internal dimensions of hollows unknown
wpt094	50H	353370	6274863	GPH	Dead Flooded Gum	15-20	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt095	50H	353321	6274853	GPH	Dead Unknown	15-20	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
wpt097	50H	353086	6274807	GPH	Tuart	15-20	>50	0		No Signs	No Signs	No	
wpt098	50H	352872	6274776	GPH	Dead Unknown	15-20	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
1	50H	362630	6282153	360	Tuart	20+	>50	0		No Signs	No Signs	No	
2	50H	362638	6282189	360	Tuart	20+	>50	0		No Signs	No Signs	No	
3	50H	362612	6282188	360	Tuart	20+	>50	0		No Signs	No Signs	No	
12	50H	362255	6281466	360	Marri	20+	>50	0		No Signs	No Signs	No	
13	50H	362138	6281251	360	Marri	20+	>50	0		No Signs	No Signs	No	
14	50H	361919	6280988	360	Marri	20+	>50	0		No Signs	No Signs	No	
15	50H	361861	6280901	360	Marri	20+	>50	0		No Signs	No Signs	No	
16	50H	361637	6280718	360	Tuart	20+	>50	0		No Signs	No Signs	No	
17	50H	361637	6280718	360	Tuart	20+	>50	0		No Signs	No Signs	No	
18	50H	361637	6280718	360	Tuart	20+	>50	0		No Signs	No Signs	No	
19	50H	361549	6280653	360	Marri	20+	>50	0		No Signs	No Signs	No	
20	50H	361542	6280648	360	Marri	20+	>50	0		No Signs	No Signs	No	
21	50H	361532	6280620	360	Marri	20+	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
22	50H	360563	6279905	360	Tuart	20+	>50	0		No Signs	No Signs	No	
23	50H	360405	6279787	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	

Waypoint Number	Zone	mE	mN	Recorder	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Hollow Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
24	50H	360403	6279777	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
25	50H	360397	6279775	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
29	50H	360277	6279751	360	Tuart	20+	>50	0		No Signs	No Signs	No	
30	50H	360251	6279739	360	Tuart	20+	>50	0		No Signs	No Signs	No	
31	50H	360192	6279710	360	Tuart	20+	>50	0		No Signs	No Signs	No	
32	50H	360195	6279710	360	Tuart	20+	>50	0		No Signs	No Signs	No	
33	50H	360177	6279707	360	Tuart	20+	>50	0		No Signs	No Signs	No	
34	50H	357030	6277373	360	Marri	20+	>50	0		No Signs	No Signs	No	
35	50H	357018	6277359	360	Marri	20+	>50	0		No Signs	No Signs	No	
36	50H	357034	6277350	360	Marri	20+	>50	0		No Signs	No Signs	No	
37	50H	357034	6277350	360	Jarra <td>20+</td> <td>&gt;50</td> <td>0</td> <td></td> <td>No Signs</td> <td>No Signs</td> <td>No</td> <td></td>	20+	>50	0		No Signs	No Signs	No	
38	50H	357034	6277350	360	Jarra <td>20+</td> <td>&gt;50</td> <td>2+</td> <td>Small</td> <td>No Signs</td> <td>No Signs</td> <td>No</td> <td>Internal dimensions of hollows unknown</td>	20+	>50	2+	Small	No Signs	No Signs	No	Internal dimensions of hollows unknown
39	50H	357043	6277343	360	Marri	20+	>50	0		No Signs	No Signs	No	
40	50H	357070	6277340	360	Marri	20+	>50	0		No Signs	No Signs	No	
41	50H	357059	6277364	360	Marri	20+	>50	0		No Signs	No Signs	No	
42	50H	357068	6277400	360	Marri	20+	>50	0		No Signs	No Signs	No	
43	50H	357073	6277409	360	Marri	20+	>50	0		No Signs	No Signs	No	
45	50H	357086	6277395	360	Marri	20+	>50	0		No Signs	No Signs	No	
46	50H	357086	6277394	360	Marri	20+	>50	0		No Signs	No Signs	No	
47	50H	357085	6277405	360	Marri	20+	>50	0		No Signs	No Signs	No	
48	50H	357106	6277401	360	Marri	20+	>50	0		No Signs	No Signs	No	
50	50H	355587	6276243	360	Marri	20+	>50	0		No Signs	No Signs	No	
51	50H	355577	6276232	360	Marri	20+	>50	0		No Signs	No Signs	No	
52	50H	355406	6275916	360	Marri	20+	>50	0		No Signs	No Signs	No	
53	50H	355406	6275916	360	Marri	20+	>50	0		No Signs	No Signs	No	
54	50H	355407	6275898	360	Marri	20+	>50	0		No Signs	No Signs	No	
55	50H	355409	6275893	360	Marri	20+	>50	0		No Signs	No Signs	No	
56	50H	355422	6275859	360	Jarra <td>20+</td> <td>&gt;50</td> <td>0</td> <td></td> <td>No Signs</td> <td>No Signs</td> <td>No</td> <td></td>	20+	>50	0		No Signs	No Signs	No	
57	50H	355426	6275833	360	Marri	20+	>50	0		No Signs	No Signs	No	
58	50H	355425	6275825	360	Marri	20+	>50	0		No Signs	No Signs	No	
59	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
60	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
61	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
62	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
63	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
64	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
65	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
66	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
67	50H	355080	6275895	360	Marri	20+	>50	0		No Signs	No Signs	No	
68	50H	355108	6275912	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
69	50H	353570	6274916	360	Marri	20+	>50	0		No Signs	No Signs	No	
70	50H	353575	6274892	360	Marri	20+	>50	0		No Signs	No Signs	No	
71	50H	353439	6274926	360	Marri	20+	>50	0		No Signs	No Signs	No	
72	50H	353464	6274921	360	Marri	20+	>50	0		No Signs	No Signs	No	
73	50H	353480	6274909	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
74	50H	353480	6274909	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
75	50H	353494	6274919	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	

Waypoint Number	Zone	mE	mN	Recorder	Tree Species	Tree Height (m)	DBH (cm)	Number of Hollows	Hollow Size	Occupancy	Chew Marks	Potential Cockatoo Nest Hollow	Comments
76	50H	353477	6274930	360	Dead Marri	20+	>50	2+	Medium & Large (Cockatoo)	No Signs	No Signs	Yes	Upper trunk appears to have broken off recently forming spout?
77	50H	353467	6274925	360	Dead Marri	20+	>50	0		No Signs	No Signs	No	
78	50H	353268	6274824	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
79	50H	353246	6274811	360	Flooded Gum	20+	>50	2+	Small, Medium & Large	No Signs	No Signs	No	Too low and shallow
80	50H	353215	6274838	360	Tuart	20+	>50	0		No Signs	No Signs	No	
81	50H	353210	6274821	360	Tuart	20+	>50	0		No Signs	No Signs	No	
82	50H	353210	6274821	360	Tuart	20+	>50	0		No Signs	No Signs	No	
83	50H	353202	6274822	360	Tuart	20+	>50	0		No Signs	No Signs	No	
84	50H	353202	6274822	360	Tuart	20+	>50	0		No Signs	No Signs	No	
85	50H	353202	6274822	360	Tuart	20+	>50	0		No Signs	No Signs	No	
86	50H	353200	6274805	360	Tuart	20+	>50	0		No Signs	No Signs	No	
87	50H	353188	6274802	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
88	50H	353181	6274813	360	Marri	20+	>50	0		No Signs	No Signs	No	
89	50H	353163	6274824	360	Marri	20+	>50	0		No Signs	No Signs	No	
90	50H	353166	6274791	360	Flooded Gum	20+	>50	0		No Signs	No Signs	No	
91	50H	353139	6274803	360	Marri	20+	>50	0		No Signs	No Signs	No	
92	50H	353134	6274795	360	Marri	20+	>50	0		No Signs	No Signs	No	
93	50H	353119	6274804	360	Marri	20+	>50	0		No Signs	No Signs	No	

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