



Main Roads Western Australia
Mitchell Freeway Extension Hester Avenue to Romeo Road
Black Cockatoo Monitoring

February 2020

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1. Introduction

1.1 Project background

Main Roads Western Australia (Main Roads) proposes to extend Mitchell Freeway north from Hester Avenue to Romeo Road, including an upgrade to Wanneroo Road from Dunstan Road to Trian Road (the Proposal).

Mitchell Freeway is the main arterial road that connects the northern suburban areas with Perth's central business district. The freeway currently terminates at Hester Avenue. Perth's northern suburbs have experienced continuing strong growth, with the population of Yanchep, Alkimos and Eglinton forecast to reach 118,000 by 2031¹.

The Proposal will extend the Mitchell Freeway a further 5.6 kilometres (km) from Hester Avenue to Romeo Road, as well as upgrading Wanneroo Road to a dual carriageway for 5.5 km from Dunstan Road to Trian Road. The Proposal will improve accessibility, travel times and road safety as well as sustaining jobs and enabling regional development in Perth's northern suburbs.

To inform the Proposal design and approval, GHD Pty Ltd (GHD) was commissioned to undertake a Black Cockatoo assessment within the proposed Proposal footprint (survey area). The initial phase of the investigations included a Black Cockatoo habitat and potential breeding tree assessment, which was undertaken in August 2018. During this stage, 20 trees were identified to contain hollows potentially suitable for Black Cockatoo breeding. These 20 trees were revisited and monitored again in November 2018 and January 2019. No Black Cockatoo were recorded utilising the identified hollows over the assessment period (GHD 2019).

1.2 Purpose of this report

GHD was commissioned by Main Roads to undertake an additional targeted Black Cockatoo potential breeding tree assessment for the Proposal. This involved revisiting and completing a visual inspection, with pole camera where possible, of trees previously identified to contain medium and/or large hollows suitable for Black Cockatoo breeding or demonstrating signs of historical use. This report provides the results of the October 2019 monitoring round.

The outcome of the survey will be used to inform the environmental assessment and approvals process. The results of the survey may also assist in the preparation of a Clearing Impact Assessment and Vegetation Management Plan and may be used in State or Commonwealth approval documentation.

1.3 Survey area

The survey area for this assessment aligned with the GHD (2019) report, which covers a total area of 399.97 hectares (ha). The freeway extension works are located between Hester Avenue, Clarkson and Romeo Road, Alkimos. The Wanneroo Road upgrade works are located from Dunstan Road to Trian Road Straight Line Kilometre (SLK) 35.50-40.40. The survey area includes the proposed road corridors for Mitchell Freeway extension and Wanneroo Road upgrade plus a 50 metre (m) buffer, located approximately 35 km north of Perth in the City of Wanneroo.

The survey area boundary is shown on Figure 1, Appendix A.

¹ <https://www.mediastatements.wa.gov.au/Pages/McGowan/2019/03/Mitchell-Freeway-extension-to-Romeo-Road-to-start-next-year.aspx>

1.4 Scope of works

The scope of works was to undertake monitoring of 20 Black Cockatoo monitoring trees within the survey area. The following actions were completed to fulfil the scope:

- A review of the 2018/2019 targeted Black Cockatoo assessment (GHD 2019)
- Monitor potential Black Cockatoo hollows identified in the 2018/2019 targeted Black Cockatoo survey (GHD 2019) for the Proposal to update the status of Black Cockatoo use
- A concise report (this document) on the findings of the survey.

1.5 Report limitations and assumptions

This report has been prepared by GHD for Main Roads and may only be used and relied on by Main Roads for the purpose agreed between GHD and the Main Roads as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than Main Roads arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report (including species listings). GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

Site conditions may change after the date of the field survey. GHD does not accept responsibility arising from, or in connection with, any change to the site conditions. GHD is also not responsible for updating this report if the site conditions change.

2. Methodology

2.1 Survey timing

A field survey was undertaken between 2-4 October 2019 by Ecologists Madison Roberts and Nicola Barrett. This timing is within the predicted breeding time of the Carnaby's Cockatoo and Forest Red-tailed Black Cockatoo, which are the target species for this assessment.

Madison Roberts has completed numerous Black Cockatoo assessments over three years, including the previous hollow assessments for the Proposal (GHD 2019). The photographs and findings from the visual survey were technically reviewed by Glen Gaikhorst, who has more than 20 years of professional experience in fauna assessment. Glen guided the 2018/2019 targeted Black Cockatoo habitat survey (GHD 2019) and is intimately familiar with the survey area and approach.

2.2 Survey approach

The monitoring was conducted with consideration to the EPBC Act referral guidelines for three threatened Black Cockatoo species: Carnaby's Black Cockatoo (Endangered) *Calyptorhynchus latirostris*, Baudin's Cockatoo (Vulnerable) *Calyptorhynchus baudinii*, Forest Red-tailed Black Cockatoo (Vulnerable) *Calyptorhynchus banksii naso*, (Department of Sustainability, Environment, Water, Populations, and Communities (DSEWPaC 2012).

The 20 previously identified and differentially Global Positioning System tagged potential breeding trees were monitored during this survey. The results from the previous 2018/2019 targeted Black Cockatoo survey (GHD 2019) is summarised in Appendix B.

Assessment of potential breeding hollows was undertaken using a pole camera (up to 12 meters (m) from ground), binoculars (hollows higher than 12 m) and visual and audible signs (calls, foraging evidence, chews, tree clippings, scat, feathers etc.). On average, Carnaby's Cockatoo are known to nest in hollows with an entrance diameter greater than 20 - 30 cm (Johnstone and Storr 1998; Groom 2011). While the Forrest Red-tailed Black Cockatoo is known to nest in hollows with an entrance of greater than 12 cm (Johnstone and Storr 1998). Therefore, during the field survey hollows were graded into Medium (6 to 10 centimetres (cm)) and Large (10+ cm).

The following information was collected on each tree using an android tablet:

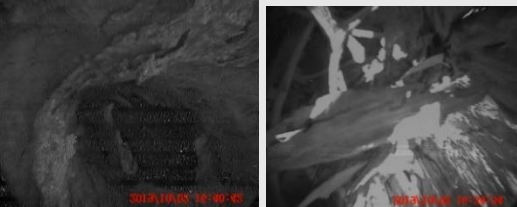


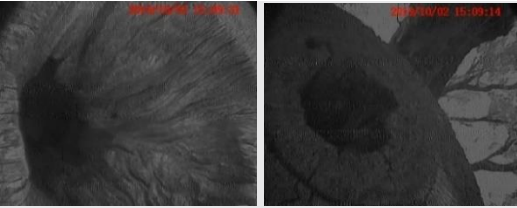
- Presence or absence of Black Cockatoo use
- Presence or absence of hollow chews and if present, age of chews
- Usage by other fauna (e.g. bees, other birds, possums)
- Other information where present – feathers, tree clippings, scat, foraging evidence recorded around base of tree.






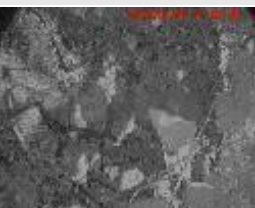
Opportunistic observations were also made throughout the survey area and adjacent vegetation. These included visual presence of Black Cockatoo, calls and foraging/roosting activity. This information was used to gain an understanding of Black Cockatoo activity within the area during and prior to survey.






3. Results








Monitoring results are presented below in Table 1. In summary, no Black Cockatoo breeding evidence was recorded at any of the monitoring trees.



Table 1 Results from September 2019 monitoring tree assessment

Tree ID	Tree location		Comments September 2019	Photos
	Easting	Northing		
T73	378107.5	6500886.3	3 x hollows assessed. 7 m hollow is broken and exposed to sunlight, no evidence of use. Photos taken. 9 m hollow has potential chews, photos taken, bottom of hollow was not visible, observed galahs enter hollow. Could not reach higher hollow with pole camera, facing east on dead wood, viewed with binoculars, no signs of use. Bees in all higher hollows (4 more hollows). No Black Cockatoo use.	
T78	378102.9	6500961.1	7 m hollow assessed with pole camera, no signs of use, hollow is shallow and broken and appears to contain honkey nuts, no chews, north facing. Could not reach other two hollows with pole camera. Binoculars used. No evidence of Black Cockatoo use.	
T87	378076.2	6501063.5	2 x hollows visually assessed. 12 m hollow is north facing and 15 m hollow is south facing. No fresh chews or evidence of Black Cockatoo use. No birds guarding tree.	
T103	378042.8	6501227.3	1 x hollow assessed. Hollow at 6 m is vertical, 25 cm wide, 60 cm deep. No evidence of Black Cockatoo use.	

Tree ID	Tree location		Comments September 2019	Photos	
	Easting	Northing			
T106	378060.2	6501158.3	4 x hollows checked. Hollow at 4 m is broken and can see sunlight through. Not suitable for Black Cockatoo. Hollow at 8 m has no evidence of use, appears to contain termites throughout. Hollow at 6 m contains bees. Not assessed with pole camera. Hollow at 12 m has no evidence of use. No birds guarding tree. No Black Cockatoo use.		
					
T236	378229.6	6500868.5	2 x hollows assessed. 3 m high hollow contains bees. 20 m high hollow is on dead branch on 45 degree angle, guarded by 2 galahs, fresh chews, not assessed with pole camera. No Black Cockatoo use.		
T239	378262.2	6500854.1	4 x hollows assessed. Hollow at 20 m high has been recently worked suspected by Galahs, not Black Cockatoo. Hollow at 6 m high is cracked, no chews, no evidence of use. Hollow at 8 m high is also cracked, no signs of use. Hollow at 8.5 m high contains leaves, possible old chews but nothing recent, not currently in use, photos taken. No Black Cockatoo use.		

Tree ID	Tree location		Comments September 2019	Photos	
	Easting	Northing			
T242	378243.3	6500827.9	3 x hollows assessed. Hollow at 15 m high appears cracked and exposed to sunlight. Pine cone found under tree. Hollow at 8 m high, contains fresh Galah chews, scat and possible feathers inside, 20-30 cm deep. Kookaburra observed flying into hollow carrying skink. Bees in 20 m high hollow. No Black Cockatoo use.		
T245	378243.6	6500804.0	Hollow at 10 m contains bees, not assessed with pole camera. Hollow at 25 m, 15 cm wide, old chews, on main trunk facing west, no scat or feathers observed, could not reach with pole camera. Visual inspection only. Hollow at 30 m contains bees. Two Australian Ringneck parrots were calling in tree, potentially seeking hollow.	Not assessed due to bees.	
T252	378264.7	6500757.3	2 x hollows assessed. Both contain bees and are located on eastern face of tree on vertical branches. Old chews present on 25 m hollow but currently contains bees. No Black Cockatoo use.	Not assessed due to bees.	
T259	378275.3	6500727.7	3 x hollows assessed. All hollows appear to be unused. No fresh chews observed at any hollow. No birds recorded in tree, no foraging evidence around tree. No Black Cockatoo use.		
T299	379385.6	6499076.5	2 x hollows assessed. Large hollow at 8 m has bees. 11 m hollow has no chews but may have potential for future Black Cockatoo use. Photos also taken of large hollow at 20 m high, 20 cm wide, 45 degree angle, on branch of main trunk directly above bee hollow, appears to have been historically chewed. No birds present at the time of survey, not assessed with pole camera, chewed sheoak nuts near tree. No Black Cockatoo use.		

Tree ID	Tree location		Comments September 2019	Photos	
	Easting	Northing			
T308	379460.6	6499022.9	3 x hollows assessed. Hollow at 7 m has old chews but inspection with pole camera shows very deep and containing cracks exposing sunlight, not suitable. 4 m hollow filled with woody debris, appears unused. 5 m hollow can visually see external cracks but could not see light with pole camera, contains possible guano. No Black Cockatoo use.		
T325	379575.7	6498730.0	1 x hollow assessed. 7 m high hollow assessed with pole camera, 30 cm wide, could not see bottom, near vertical, no fresh chews or clippings. No evidence of Black Cockatoo use.		
T327	379566.4	6498768.2	3 m hollow is broken and full of woody debris, not useable. 11 m hollow has no signs of use, 45 degree angle facing north, cracks exposing sunlight, assessed with pole camera. 5 m and 6 m hollows full of woody debris and do not appear to be in use. No Black Cockatoo use.		
					

Tree ID	Tree location		Comments September 2019	Photos
	Easting	Northing		
T486	377847.9	6499286.6	4 x hollows assessed. 8 m hollow on north side of trunk contains bees. 15 m hollow has breeding galahs, observed exiting hollow. 17 m hollow has breeding Australian Ringneck parrots observed exiting hollow. Another hollow at 15 m may have fresh chews but suspected Galahs, hit base of tree with stick and no activity from hollow. No Black Cockatoo use.	
T492	377816.1	6499344.3	6 x hollows assessed. 7 m hollow has old chews, bees currently present. 10 m high hollow contains old chews but suspected Galah. 11 m hollow contains bees. Other smaller hollows higher up contain bees. No Black Cockatoo use.	
T526	377182.4	6500636.3	2 x hollows assessed. One on trunk facing north, one on dead wood stem at 45 degree angle facing east. Both have bees present, no fresh chews or clippings around tree. No Black Cocky use.	Not assessed due to bees.
T527	377155.0	6500627.3	1 large hollow at 7 m with very active bee hive. No fresh chews. Banksia chew found 3 m from tree (carried). No Black Cockatoo use.	Not assessed due to bees.
T549	377071.5	6500635.2	2 x hollows assessed. Both have bees. Ten chewed banksia cones around tree. No Black Cockatoo use.	Not assessed due to bees.

3.1 Anecdotal observations to support survey timing

At the beginning of November 2019, two Carnaby's Cockatoo chicks were recorded in a hollow within bushland close to Wanneroo stockfeed (Glen Gaikhorst pers. comm.). The chicks appeared to be two weeks old and with the known incubation period being approximately 29-31 days it can be assumed that eggs should have been present within monitoring hollows during the September 2019 survey if the hollows were being used for breeding.

3.2 Opportunistic observations

Forest Red-tailed Black Cockatoos were heard calling on 4 October. Six male Forest Red-tailed Black Cockatoos were observed in the bushland east of Wanneroo Road outside the survey area. No Carnaby's Cockatoos were seen or heard during the survey. Tree clippings and foraging evidence (chewed banksia, marri nuts and sheoak) were observed throughout the survey area during the survey.

3.3 Additional monitoring tree outside survey area

During the August 2018 survey GHD identified a tree outside the survey area (at 379369.69 E, 6499761.66 N), but within the Neerabup Nature Reserve east of Wanneroo Road, which had a hollow appearing to be used by Black Cockatoo (Plate 1). The hollow was of suitable size and dimensions for Black Cockatoo. This tree has been monitored in consecutive monitoring rounds to indicate Black Cockatoo activity at the time of the survey. At the time of the October 2019 survey this hollow was visually assessed with binoculars (as the hollow is too high to reach with the pole camera). While no birds were recorded the hollow contained fresh chews consistent with Black Cockatoo use.

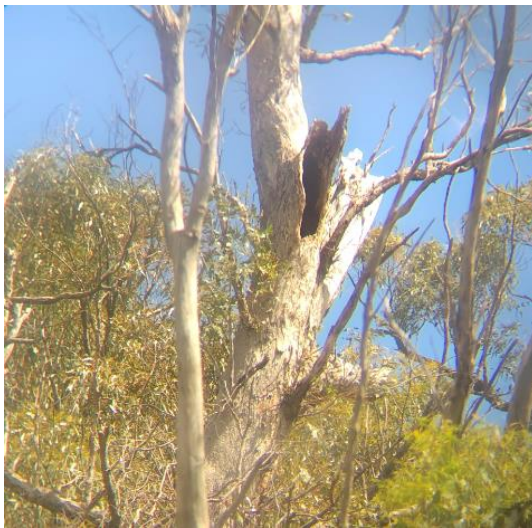


Plate 1 Additional monitoring hollow located outside survey area

4. Conclusion

Although anecdotal evidence suggests Carnaby's Cockatoo were nesting in the region at the time of survey, no evidence of Black Cockatoo use was observed in the 20 potential Black Cockatoo trees monitored during October 2019. One additional tree (not included in the 20 and outside the survey area) in Neerabup Nature Reserve was found to have fresh Black Cockatoo chews. This additional information pertaining to Black Cockatoo activity at the time of survey indicates Black Cockatoos are not currently using the 20 monitoring trees for breeding.

5. References

Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) 2012, *Environment Protection and Biodiversity Act 1999 referral guidelines for three threatened Black Cockatoo species: Carnaby's Black Cockatoo (endangered) *Calyptorhynchus latirostris*, Baudin's Black Cockatoo (vulnerable) *Calyptorhynchus baudinii* and Forest Red-tailed Black Cockatoo (vulnerable) *Calyptorhynchus banksia naso**, Australian Government Canberra.

GHD 2019, Mitchell Freeway Extension Hester Avenue to Romeo Road Biological Survey, Unpublished report for Main Roads Western Australia, June 2019

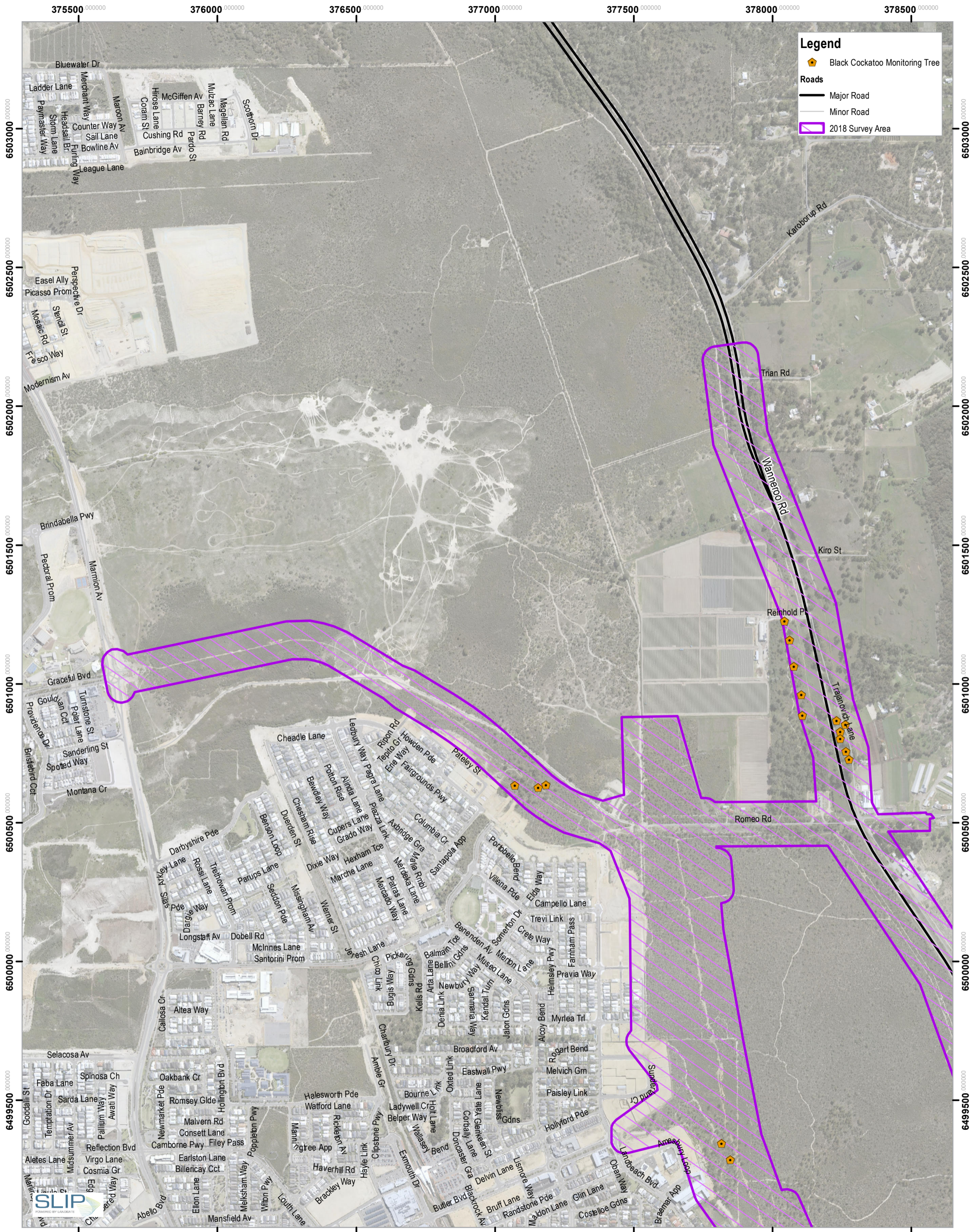
Groom, C. 2011, *Plants Used by Carnaby's Black Cockatoo*. Department of Environment and Conservation, Perth.

Johnstone, R. E., Storr, G. M. 2004, 'Handbook of Western Australian Birds. Volume 1. Nonpasserines (Emu to Dollarbird).' (Western Australia Museum: Perth.)

Appendices

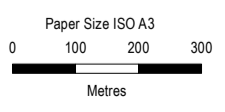
Appendix A – Figure

Figure 1 Black Cockatoo monitoring tree locations



Legend

- Black Cockatoo Monitoring Tree
- Roads**
 - Major Road
 - Minor Road
- 2018 Survey Area



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Hester Avenue to Romeo Road
Black Cockatoo Tree Monitoring

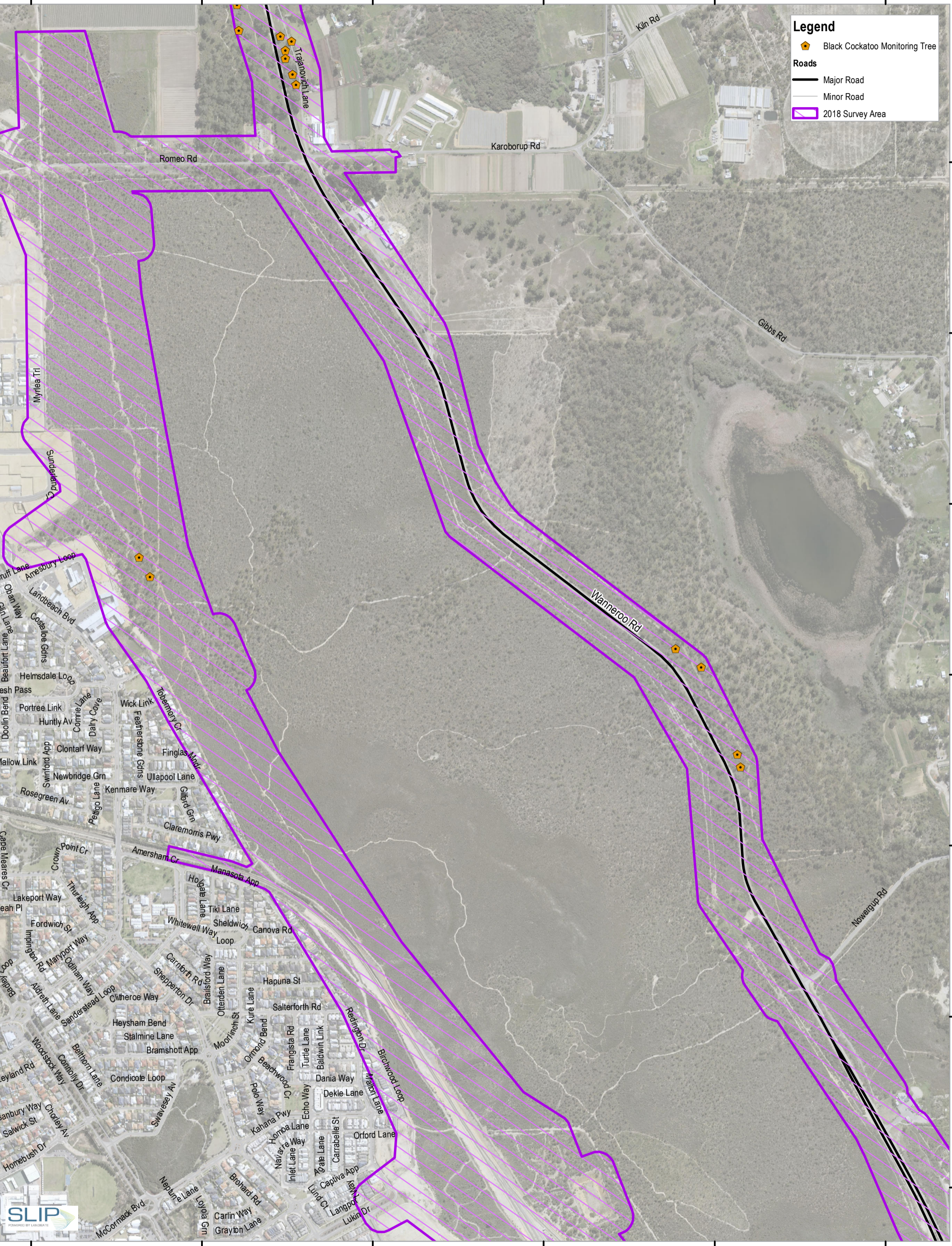
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Revision No. 0
Date 18/02/2020

**Black Cockatoo
Monitoring Tree Locations**

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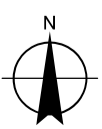
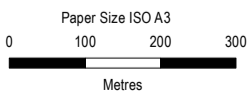


Legend

- Black Cockatoo Monitoring Tree

Roads

- Major Road
- Minor Road
- 2018 Survey Area

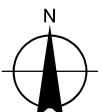
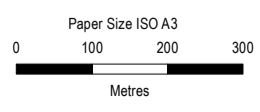
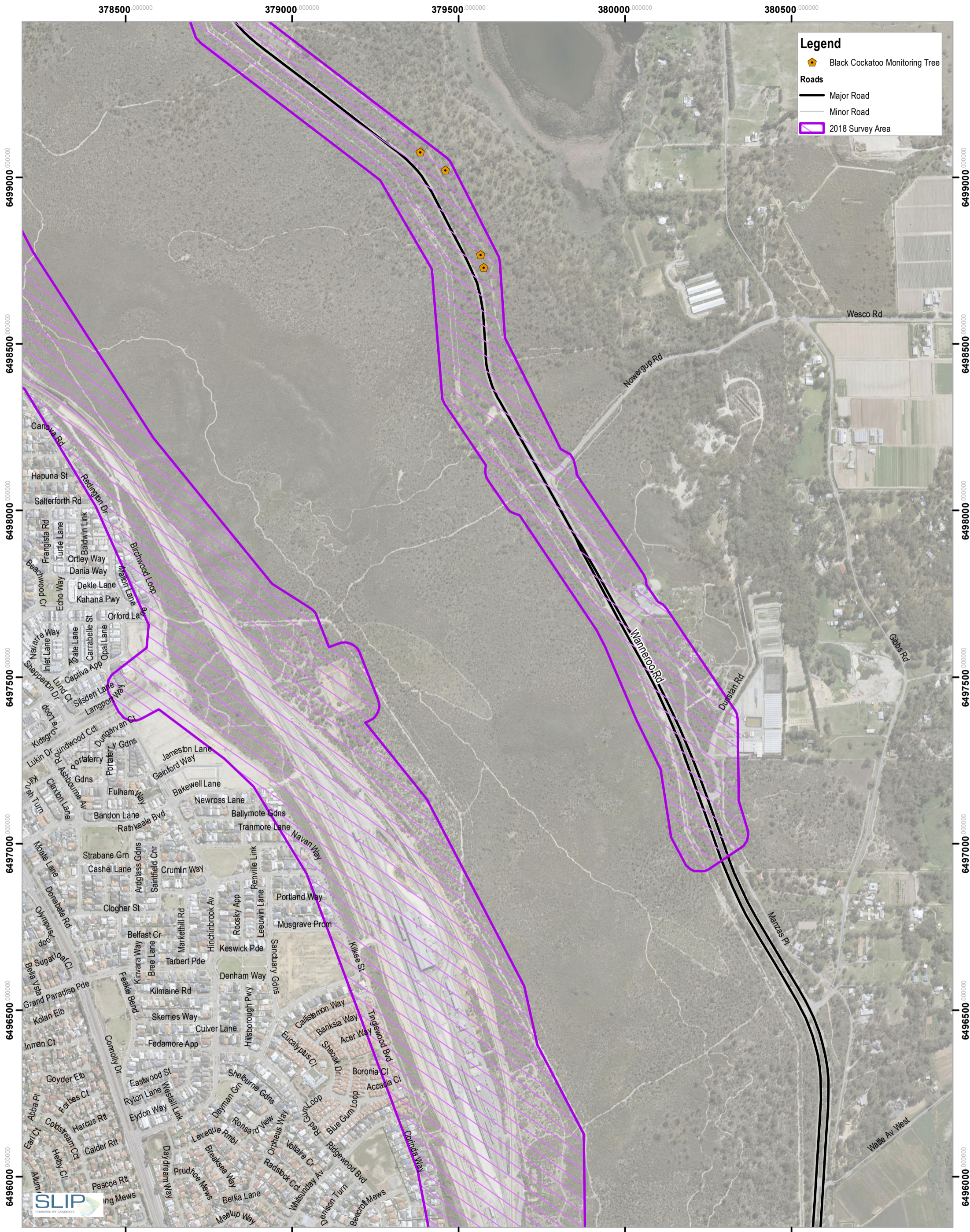


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**Black Cockatoo
 Monitoring Tree Locations**

**FIGURE 1
 Page 2 of 4**



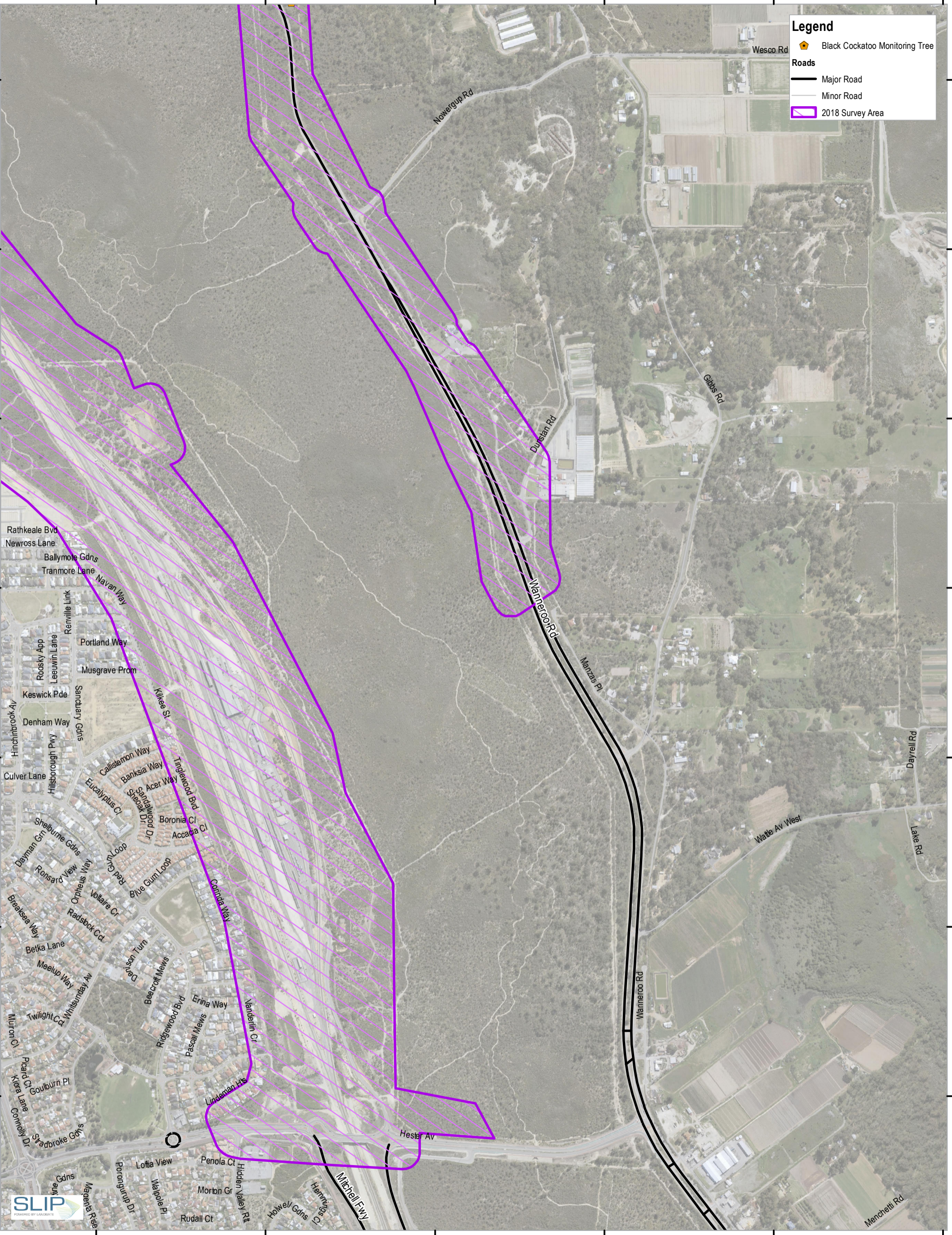
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**Black Cockatoo
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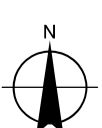
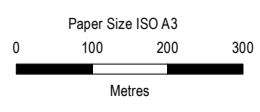
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Legend

- Black Cockatoo Monitoring Tree
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Appendix B – Previous hollow assessments

Number	Tree Species	DBH	Hollows Present	Hollow Entrance Size (CM)	Hollow Heights (M)	Breeding Evidence	Hollow Pole Cam Inspection	Hollow Depth	Hollow Angle	Comment August 2018	Comment November 2018	Comment January 2019
T73	Tuart	1410	3 large	all 20 plus	7, 9, 12	no evidence of use	yes	7m >1m, 9m 40cm, 12m 30 cm	2x vertical, 1x 45	7m is blocked, 9 m >1 m deep into trunk but had barn owl, 12 m blocked at 40 cm, other unknown but bees present. No Black Cockatoo use	Barn owl hollow too high to reach with pole cam but no external evidence of use. Lower large hollow checked but blocked with wood. No Black Cockatoo use	3 x hollows checked. 7 m hollow blocked with rotten wood, 9 m hollow is trunk hollow, 12 m hollow is trunk hollow with bees present. No evidence of Black Cockatoo use.
T78	Tuart	920	3 large	16, 20, 24	7, 12, 15	potential old chews	yes, lower hollow	7m is 30 cm deep	slight angle	old chews in lower hollow, galah in top one. No Black Cockatoo use	Top hollow that had Galahs has chews but no signs of current activity. Bees in second hollow. No camera pic. No Black Cockatoo use	No hollow visible at 7 m (branch down). 12 m is spout hollow on south side of tree, old chew marks and possible owl scats (urates) visible. 15 m hollow contains bees. No Black Cockatoo use
T87	Tuart	2500	2 large	2x 16	12 to 15	no evidence of use	yes	12 m 10 cm, 15 m to high	almost vertical	15 m to high but Eastern Long-billed Corella in 15 m. No Black Cockatoo use	Visual only as hollow was too high for pole cam. Hollow hard to inspect but no external evidence of use. No Black Cockatoo use	2 x hollows visually inspected. 12 m and 15 m hollows both in diagonal branch. Also a recently fallen branch containing hollow. No Black Cockatoo use
T103	Tuart	1300	1 large	16	6	no evidence of use	yes	1m	almost vertical	Potentially a bit low monitor. No Black Cockatoo use	Visual inspection as too high for pole cam. No signs of use. No Black Cockatoo use	1 x hollow checked, vertical sawn off spout at 4 m. No evidence of use. No Black Cockatoo use
T106	Tuart	1600	4 large	all 20 plus	4, 6, 8, 12	no evidence of use	yes	4 m approx 1 m, 6m 20 cm, 8 m 1.2m	2x vertical, 2x horizontal	8 m 1.2 deep galah nesting great hollow. Old chews but no Black Cockatoo use	Visual inspection as hollow too high for pole cam. No visual external evidence of use. Galahs were gone. No use observed. No Black Cockatoo use	4 x hollows checked. 4 m hollow had termite activity, 6 m hollow had dead wood blocking most of hollow, 8 m hollow had a barn owl roosting who flew out, 12 m was too high for pole cam but was visually inspected with no evidence of use. No Black Cockatoo use
T236	Tuart	2200	1 large, 1 small	20, 5	20, 3	no evidence of use	yes	3 m 30 cm (bees)	vertical	Multistem with listed hollow contains beehive. No Black Cockatoo use	Galahs in large hollow. No Black Cockatoo use	3 m high hollow contains bees and is located on east side of tree. 20 m hollow is located on west side of tree on a spout. No evidence of use.
T239	Tuart	2200	2 large, 2 medium	10, 15, 15, 10	6, 8, 8.5, 20	old chews present	yes	6 m 10 cm, 8 m 10 cm, 8.5 m 10 cm	45 and vertical	Multistem, 28 parrots appear nesting in upper canopy. Numerous hollows but no Black Cockatoo use	No Black Cockatoo use	2 large at 8 m. Low empty and shallow, 8 m is solid stump with no hollow, 8.5 m is 20 cm deep. 20 m had visual inspection, no bees and no evidence of use. Whistling kite hanging around. The 20 m hollow is north facing on a broken branch. No Black Cockatoo use
T242	Tuart	1800	2 large, 1 medium	20, 10, 20	8, 15, 20	Possible internal chews	yes	8 m 90 cm	vertical	20 m hollow guarded by galahs in tree. No Black Cockatoo use	Bees present in 2 hollows (1 x large, 1 x med), other large hollow had chews, feathers and nesting material.	Medium hollow located on northwest side, at least 50 cm deep. No evidence of use. 15 m hollow is a branch hollow on the north side of tree. No evidence of use. 15 m hollow is in black fork hollow (burned) in centre of tree. No evidence of use. 20 m hollow is south facing vertical branch hollow near top of tree. Old chew marks present, otherwise no evidence of use.
T245	Tuart	2000	3 large	20, 15, 20	25, 30, 10	no evidence of use	no to high	not assessed	45	Galahs in tree and chewing on branches, bees present in lower hollow but upper large ones look good	Some chews on highest hollow, no other evidence of use suspect Galah. Could not reach with pole cam.	10 m hollow is southwest facing at about 20 cm deep. No evidence of use. 25 m hollow has 20 cm diameter and is a trunk hollow near a fork. Bees present. 30 m hollow is trunk hollow facing east in centre of tree. No evidence of use.
T252	Tuart	1600	2 large	15, 15	15, 25	old chews present	no to high	not assessed	45	bees in lower hollow, but large above has chews possible Galah but monitor	Large hollow has historic chews - Galah. Small hollow contains bees. Bees also present in split at Galah hollow which is probably not in use.	15 m hollow is spout hollow with bees present, possible chew marks, NE facing. 25 m hollow at 45 degree angle east facing on branch. No evidence of use, possible old chew marks.
T259	Tuart	1300	2 large, 1 medium	20, 20, 10	10, 16, 17	no evidence of use	yes	10 m 20 cm, 2 large look good	vertical	Multistem form, All hollows in dead wood from original main stem, potentially more hollows higher	No activity. All hollow appear unused	10 m hollow on north side of tree is burned and shallow/not hollow. 16 m hollow is east facing. 18 m branch hollow is almost verticle on south side of tree. No evidence of use at any hollow. 18 m branch hollow had bees present on the north section of the tree facing south. Possible hollow at 13 m facing north but to high no use.
T299	Tuart	1200	2 large	2x 20	8, 11	old chews present	yes	8 m >1 m, 11 m 1 m	vertical	Two large hollows present but possible old chews present.	Large hollow has old chews present but no signs of current use. Too high for pole cam to reach. Lower hollow now contains bees - not assessed with pole. Highest hollow may be impacted by beehive below it.	8 m hollow has bees, 11 m too high for pole cam. Possible old chew marks, no other evidence of use. No sign of bees in upper hollow compared to previous assessment.
T308	Tuart	750	2 large, 1 small	5, 30, 20	5, 7, 4	old chews present	yes	5 m and 7 m same hollow. 1 m, 4 m 20cm	vertical and 45	Dead Tuart with hollows in mainstem, likely all hollows are linked to form one and maybe to deep for use. Possible old chews present.	Several hollows part of the same trunk hollow. Largest hollow blocked with debris at 40 cm, no signs of use, photos taken. Next highest is deep but no signs of activity.	3 x hollows checked. 4 m hollow was angled and shallow, located on east side of tree, 20 cm deep with frass. 5 m hollow is deep in south side of tree, possible old chew marks. 7 m hollow is deep. No other evidence of use at any hollow.
T325	Tuart	800	1 large	30	7	old chews present	yes	1.2 m	vertical	One large hollow of great depth and size possible old chews present externally, no recent use	1 x large hollow present and deep. No external sign of use, no internal signs of use. Photos taken.	7 m hollow is deep and near vertical, possible old chew marks externally. No other evidence of use.
T327	Tuart	950	4 large	20, 20, 15, 25	3, 5, 6, 11	old chews present	yes	3 m 10 cm, 5 m 10 cm, 6 m 10 cm, 11m 2m	vertical and 45	Multistem form, Several large hollows with old chews present. Nothing fresh monitor.	Tallest hollow no activity at entrance - no chews. Pics taken of lower hollow - 40 cm deep. No signs of use.	4 x hollows checked. 3 m hollow 10 cm deep. 7 m (more like 6 m) big spout hollow. 5 m no hollow, too shallow - 10 cm deep and filled with leaf litter. No evidence of Black Cockatoo use at any hollow.
T486	Tuart	1100	3, medium, 1 small	5, 3x 10	8, 15, 15, 17	chews present	no to high	To high to assess		2 medium hollows have Galah and 28 parrots nesting	1 x medium hollow with fresh chews. Too high to reach with pole cam, bees present in hollow, no sign of previous breeding events	8 m branch hollow/spout, photos taken, no longer looks like hollow or shallow hollow, some chew marks, south facing. 10 m small branch hollow was chewed but too small for Black

Number	Tree Species	DBH	Hollows Present	Hollow Entrance Size (CM)	Hollow Heights (M)	Breeding Evidence	Hollow Pole Cam Inspection	Hollow Depth	Hollow Angle	Comment August 2018	Comment November 2018	Comment January 2019
											but bees have taken over 28 Parrot breeding hollow.	Cockatoo, NE facing. 13 m branch hollow is north facing, no evidence of use. 10 m hollow is north facing trunk slit, no evidence of use.
T492	Tuart	1350	3 large 3 small	30, 20, 15, 3x 5	7, 10, 11	1 large extensive chews	yes	All >1 m	vertical	1 large hollow with 28 parrots breeding, 1 large/3 smalls with bees present	Aggravated bees - could not reach hollow, no chews or evidence of use, no photos taken	7 m hollow is south facing on burned trunk and had bees present, no other evidence of use. 10 m trunk hollow is east facing and 20 cm in diameter, has fresh chews, no bees and is oblong shape. 13 m trunk hollow is north facing with bees present, possible old chews. Note all 3 hollows on same trunk section. No actual signs of Black Cockatoo use
T526	Tuart	1130	2 large	12, 20	5, 7	no evidence of use	yes	>1m, couldnt see base	vertical, 45	One of the large hollow ever deep however no signs of use	Bees in one of the large hollows. No signs of use on the other	2 x hollows checked. Bees in larger hollow, abandoned bee hive in smaller hollow.
T527	Tuart	940	1 large	40, 20	7	no evidence of use	yes	1 m	vertical	Multistem, one large hollow and deep. No signs of use.	Bees now in trunk under main hollow which had no obvious chews, scat etc. Not photographed as bees very aggravated.	No evidence of use. 1 x hollow checked. Reduced bee activity.
T549	Tuart	1030	2 large	30, 16	5, 7	no evidence of use	yes	40 cm, not checked second	45	Hollow checked with cam and 3 kookaburra eggs present (Kookaburra upset in tree). Suitable but possibly to low for BC.	Bees taken over 2 x hollows (including one previously containing kookaburra eggs). Two gallahs defending other large hollow (from bees).	2 x hollows checked, no evidence of use. Bees in a 3rd small hollow at 5 m. Bees subsided from previous assessment but no BC use recorded.

GHD

Level 10

999 Hay Street

T: 61 8 6222 8222 F: 61 8 9463 6012 E: permail@ghd.com



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		Name	Signature	Name	Signature	Date
0	M Roberts	G Gaikhorst		D Farrar		25/02/2020

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