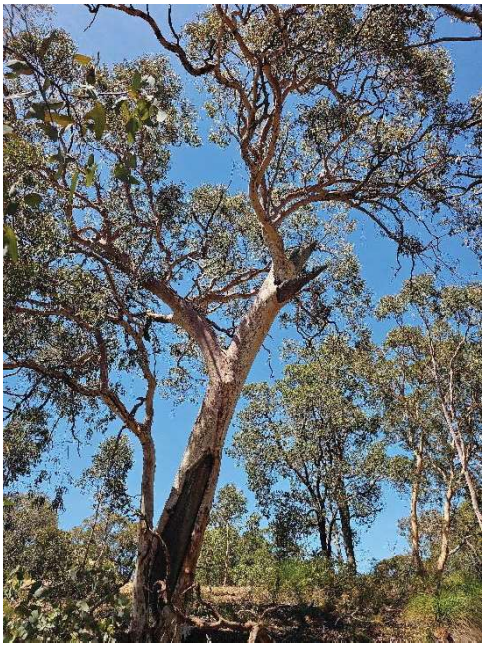
Black Cockatoo

Habitat Tree Review



Donnington's Quarry
Great Northern Highway
Chittering

January 2024

Version 2

On behalf of:
B & J Catalano Pty Ltd
C/- Lundstrom Environmental Consultants Pty Ltd

Prepared by:
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Zoologist

TABLE OF CONTENTS

SUMMARY

1. INTRODUCTION 1
2. SCOPE OF WORKS 1
3. METHODS 1
4. SURVEY CONSTRAINTS 2
5. RESULTS 3
6. CONCLUSION 5
7. REFERENCES 6

TABLES

TABLE 1: Summary of Habitat Tree Observations

FIGURES

FIGURE 1: Aerial Photograph & Trees Inspected

APPENDICES

APPENDIX A: Details of Trees Inspected

SUMMARY

This report details the results of a black cockatoo habitat tree review carried out over an area of proposed clearing within a section of B & J Catalano Pty. Ltd.'s "Doddington's Quarry", Chittering (the subject site) (Figure 1).

A series of black cockatoo habitat tree surveys were carried out over the subject site in 2019 by Western Wildlife during which time a number of trees were identified has potentially containing hollows suitable for black cockatoos to use for nesting purposes (Western Wildlife 2019 & 2020).

In order to assist in determining the impacts to black cockatoos a more detailed habitat tree assessment of 10 of the previously identified potential hollow bearing trees has been carried out.

This report details the methods used and the results of this review.

Primary Findings

Eight of the ten trees examined were found not to contain hollows that were considered by the Author to be suitable for black cockatoos to use for nesting purposes. This conclusion was, in most cases, based on the hollows being too small/shallow/open. Two hollows were also occupied by feral honey bees.

Tree D108 contains a large chimney style hollow that was found to have considerable depth and large internal dimensions. The hollow rim also has some minor chipping (chew marks) possibly caused by black cockatoos. This evidence suggests this hollow maybe suitable for black cockatoos to use for nesting purposes.

Tree D472 contains a large upward facing side entry hollow with some depth (base not visible). The hollow showed no signs of past or present use. The evidence observed suggests this hollow maybe suitable for black cockatoos to use for nesting purposes but it appears not to have been used for this purpose.

If these two trees cannot be avoided, it is recommended they be reinspected for occupancy immediately prior to clearing.

Details of each tree and the hollows they contain can be found in Appendix A.

1. INTRODUCTION

This report details the results of a black cockatoo habitat tree review carried out over an area of proposed clearing within a section of B & J Catalano Pty. Ltd.'s "Doddington's Quarry", Chittering (the subject site) (Figure 1).

A series of black cockatoo habitat tree surveys were carried out over the subject site in 2019 by Western Wildlife during which time a number of trees were identified has potentially containing hollows suitable for black cockatoos to use for nesting purposes (Western Wildlife 2019 & 2020).

As the Western Wildlife assessment was carried out from ground level some uncertainty existed about the true nature of the hollows/possible hollows in each of these particular habitat trees. In order to assist in determining the impacts to black cockatoos a more detailed assessment of the previously identified hollow bearing trees has therefore been carried out.

This report details the methods used and the results of this review.

2. SCOPE OF WORKS

The scope of works was:

- Locate and examine in detail ten (10) of the previously identified trees containing possible large hollows using a drone and/or pole mounted camera so as to obtain information on their likely suitability as breeding habitat for black cockatoos.

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

3. METHODS

The ten (10) previously identified hollow bearing trees were located in the field and each hollow (or possible hollow) was examined and photographed using a drone (DJI Mavic Air) or a pole mounted camera (GoPro) in as much detail as possible.

Details on each tree were recorded including species, location, number and type of hollows observed. Potential hollows were initially placed into one of three categories based on the type of hollow entry:

- Chimney: the hollow entry faces directly upwards in the end of the trunk;
- Spout: hollow entry which is at the end of a broken branch; or
- Side: the entry is directly into the side of the trunk or a branch with no protrusions.

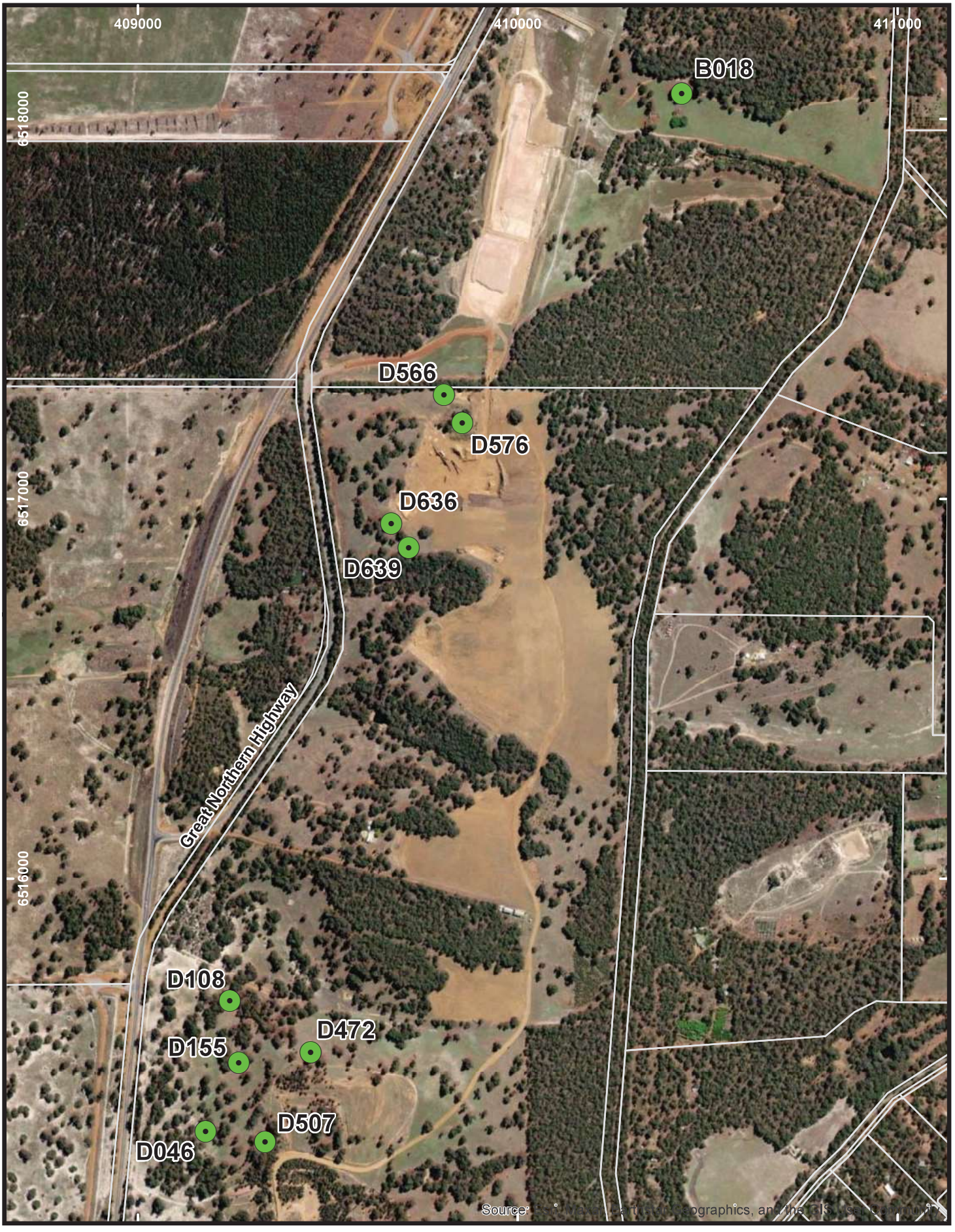
For the purpose of this review, hollows have then been placed into one of five categories based on the observable characteristics of each hollow. The categories used were:

- Confirmed Hollow: Black cockatoos observed utilising the hollow for breeding purposes;
- Chewed Hollow: The hollow shows signs of chewing ("chipping" around or near entrance and/or internally) attributed to black cockatoo activity (in most cases indicating nesting activity, but in some cases possibly marks left by black cockatoos investigating ("prospecting") hollows);
- Unused Hollow: The hollow appears to be of a suitable size for black cockatoos to use for nesting, but no conclusive evidence of this activity seen. It should be noted that chew marks/chipping are not always evident or present on some hollows that have been used for nesting. Hollows classified as "unused" may therefore have been used for nesting but cannot be specifically classified as such. Alternatively, some "unused" hollows may not be suitable for black cockatoos as a range of characteristics, not all of which can be seen or measured, ultimately determined if a hollow will ever actually be used;
- Unsuitable Hollow: The hollow has been assessed, based on information obtained, as being unlikely to be suitable for black cockatoos (generally because of the entrance appearing to be too small or because the actual hollow or accommodating branch/tree trunk appears to be too small or as having an unfavourable orientation);
- No Hollow: A possible hollow was found upon closer inspection to not be present.

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 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, though to a certain extent some of these limitations can be overcome by using a drone or pole camera to examine possible hollows in more detail (where considered warranted and feasible).



Legend

Habitat Trees Inspected

0 250 500

Metres

Fauna Survey

Donnington's Quarry
Great Northern Hwy
Chittering

Aerial Photograph & Trees Inspected

Drawn: G Harewood	
Date: Jan 2024	
Scale: 1:13,000	
Projection/Coordinate System: UTM/MGA Zone 50	Figure: 1

5. RESULTS

Eight of the ten trees examined were found not to contain hollows that were considered by the Author to be suitable for black cockatoos to use for nesting purposes. This conclusion was, in most cases, based on the hollows being too small/shallow/open.

Tree D108 contains a large chimney style hollow that was found to have considerable depth and large internal dimensions. The hollow rim also has some minor chipping (chew marks) possibly caused by black cockatoos. This evidence suggests this hollow maybe suitable for black cockatoos to use for nesting purposes.

Tree D472 contains a large upward facing side entry hollow with some depth (base not visible). The hollow showed no signs of past or present use. The evidence observed suggests this hollow maybe suitable for black cockatoos to use for nesting purposes but it appears not to have been used for this purpose.

Details of each tree and the hollows they contain can be found in Appendix A.

A summary of observations made are provided in Table 1 below.

Table 1: Summary of Habitat Tree Observations

Tree ID	Number of Possible Large Hollows	Status	Justification
B018	1	Unsuitable Hollow.	Wandoo with a potential large chimney style hollow. When examined with a pole mounted camera the hollow was found to be very shallow. This hollow would not be suitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.
D046	2	Unsuitable Hollows.	Jarrah with a potential large side entry hollow and spout. When examined with drone both hollows were found to have little depth. These hollows would be unsuitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.
D108	2	Chewed Hollow	Wandoo with one large chimney type hollow and semi horizontal spout. When examined with a drone the chimney type hollow was found to have considerable depth and large internal dimensions. The hollow rim also has some minor chipping (chew marks) possibly caused by black cockatoos. Evidence observed suggest this hollow maybe suitable for black cockatoos to use for nesting purposes. Semi horizontal spout was found to pass through to other side of tree and therefore unsuitable.
D155	1	Unsuitable Hollow.	Wandoo with upward facing spout. When examined with drone a medium size potential hollow was found. In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small. This hollow was also occupied by bees.
D472	1	Unused Hollow.	Wandoo with a large upward facing side entry hollow and several small/medium sized spout type hollows. When examined with a drone the side entry type hollow was found to have some depth. The hollow showed no signs of past or present use. Evidence observed suggests this hollow maybe suitable for black cockatoos to use for nesting purposes but it appears not to have been used for this purpose.
D507	1	Unsuitable Hollow.	Wandoo with upward facing spout. When examined with drone a shallow, medium size potential hollow was found. In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small.
D566	1	Unsuitable Hollows.	Jarrah with two potential spout type hollows. When examined with drone both hollows were found to have little or no depth. These hollows would be unsuitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.
D576	1	Unsuitable Hollow.	Marri with a potential chimney type hollow. When examined using binoculars the hollow appeared to be shallow/non-existent. In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small. This hollow was also occupied by bees.
D636	1	Unsuitable Hollow.	Wandoo with a potential large chimney style hollow. When examined with a pole mounted camera the hollow was found to be very shallow. This hollow would not be suitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.
D639	1	Unsuitable Hollow.	Wandoo with upward facing spout. When examined with drone a shallow, medium size potential hollow was found. In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too shallow and small. No signs of use by any fauna.

6. CONCLUSION

The assessment reported on here was undertaken to identify black cockatoo breeding hollows within eight previously identified hollow bearing trees.

Eight of the ten trees examined were found not to contain hollows that were considered by the Author to be suitable for black cockatoos to use for nesting purposes. This conclusion was, in most cases, based on the hollows being too small/shallow/open. Two hollows were also occupied by feral honey bees.

One tree contains a large chimney style hollow which showed some possible signs of black cockatoo activity in the form of a small number of chew/chip marks around the hollow entrance. This evidence suggests this hollow maybe suitable for black cockatoos to use for nesting purposes.

A second tree contains a large upward facing side entry hollow that appears potential suitable for black cockatoos but does not show any signs of past or present use. The evidence observed suggests this hollow maybe suitable for black cockatoos to use for nesting purposes but it appears not to have been used for this purpose.

If these two trees cannot be avoided, it is recommended they be reinspected for occupancy immediately prior to clearing.

7. REFERENCES

Western Wildlife (2019). Doddington's Gravel Quarry Chittering: Targeted Black-cockatoo Survey. Prepared for B & J Catalano, by Western Wildlife, November 2019.

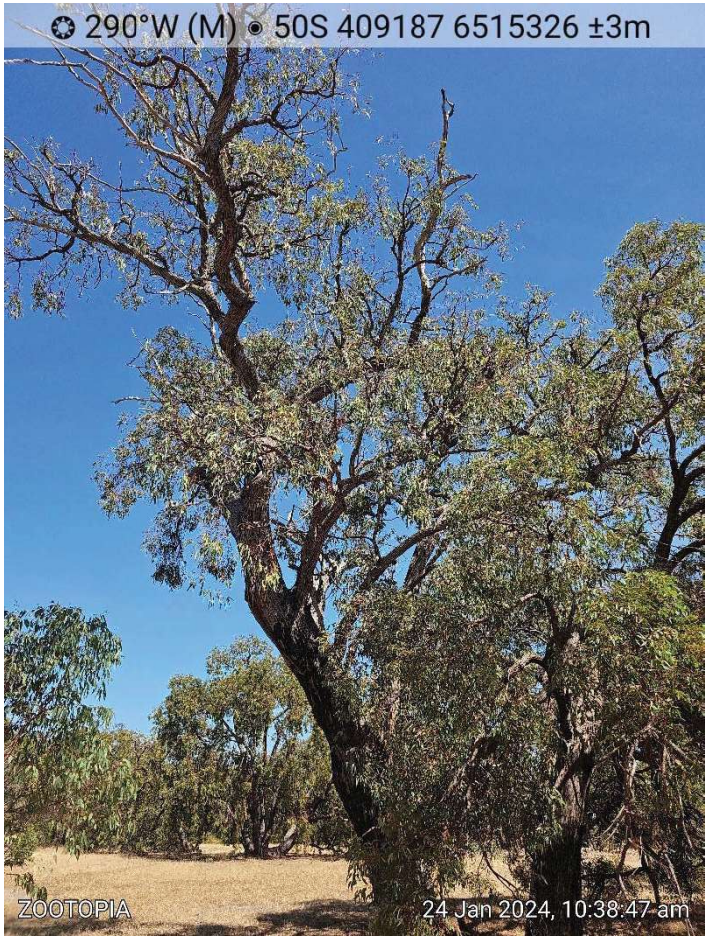
Western Wildlife (2020). Doddington's Quarry Chittering: black-cockatoo habitat trees survey on part Lot 41 Great Northern Hwy. Prepared for B & J Catalano, by Western Wildlife, March 2019.

APPENDIX A

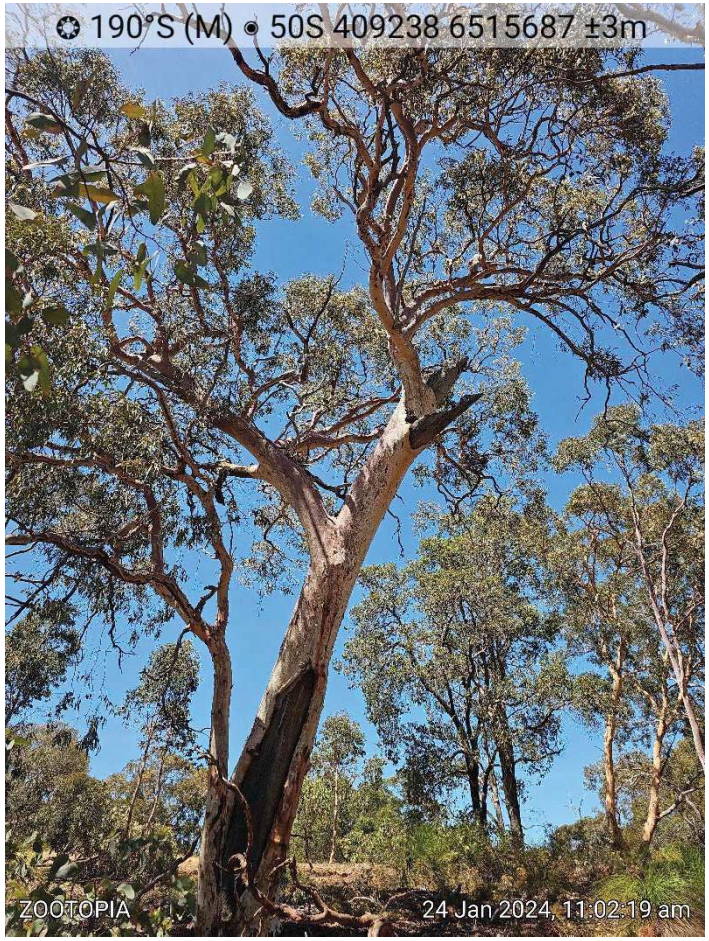
Details of Trees Inspected

ID	Coordinates (MGA 94/Z50)	410432 mE	6518065 mN	Tree Species	Wandoo	Survey Date	24/01/2024
B018	**Comments**	Wandoo with a potential large chimney style hollow. When examined with a pole mounted camera the hollow was found to be very shallow (base visible a few centimetres from rim of hollow – picture below right). This hollow would not be suitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.				**Classification**	Unsuitable Hollow

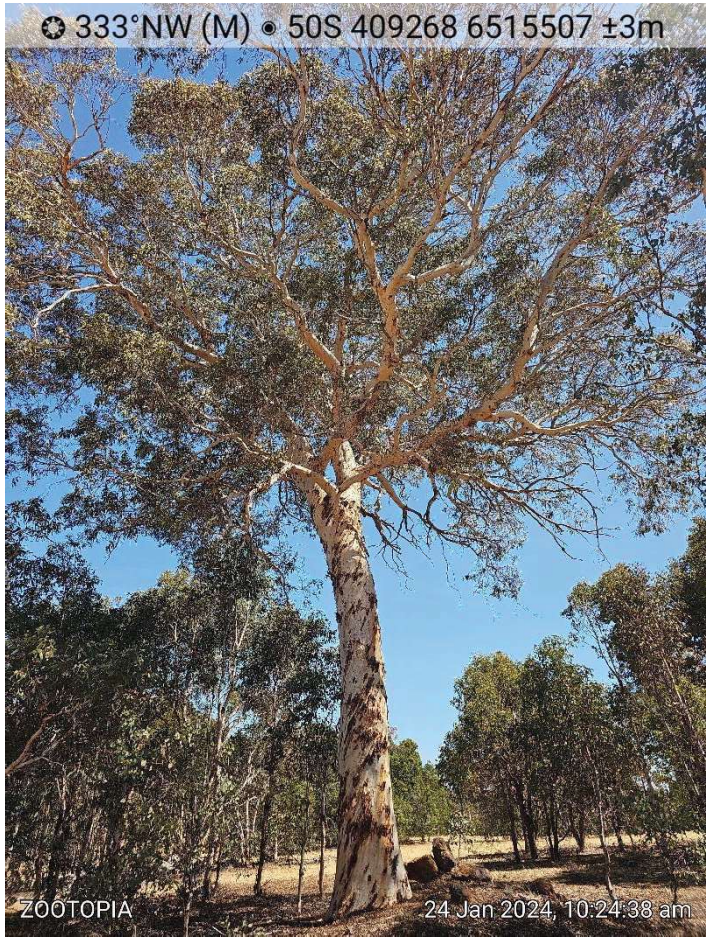
ID	Coordinates (MGA 94/Z50)	409178 mE	6515334 mN	Tree Species	Jarrah	Survey Date	24/01/2024
D046	**Comments**	Jarrah with a potential large side entry hollow (centre picture) and spout (right picture). When examined with drone both hollows were found to have little depth (base visible in both cases). These hollows would be unsuitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.				**Classification**	Unsuitable Hollows.

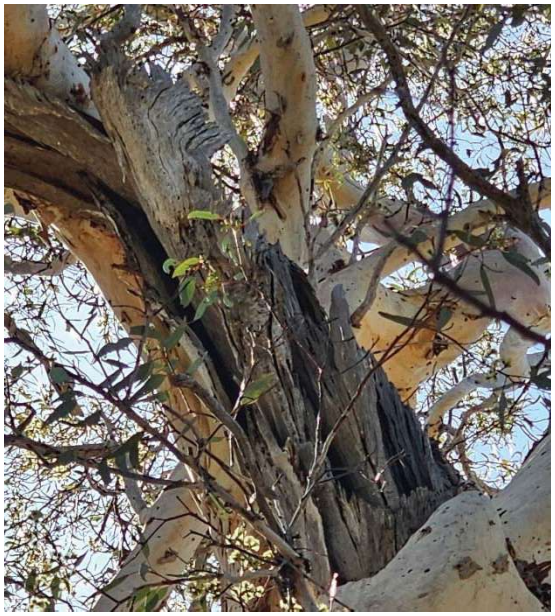


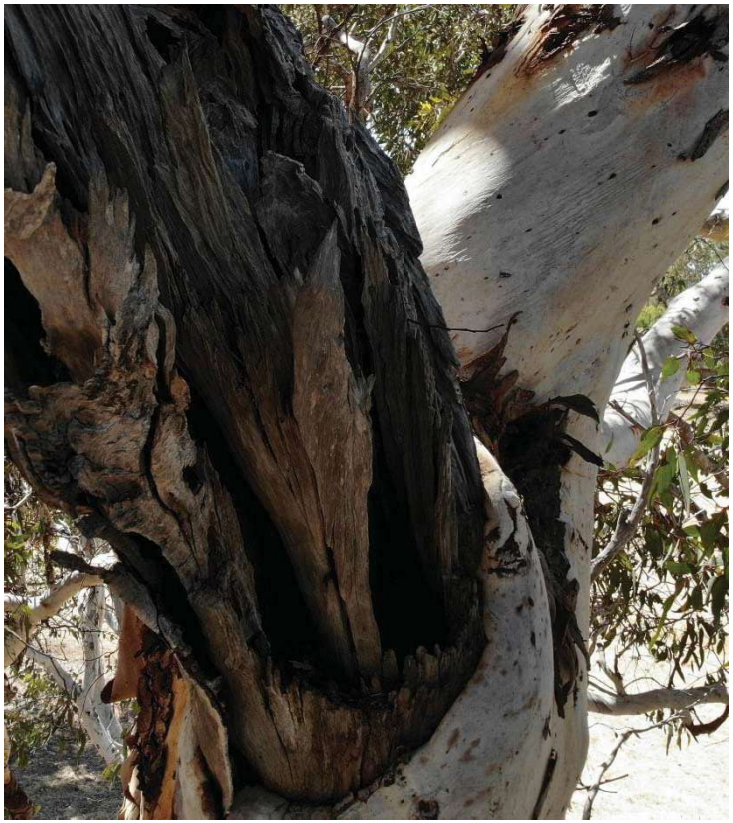
ID	Coordinates (MGA 94/Z50)	409241 mE	6515677 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D108	**Comments**	Wandoo with one large chimney type hollow and semi horizontal spout. When examined with a drone the chimney type hollow was found to have considerable depth (base not visible) and large internal dimensions. The hollow rim also has some minor chipping (chew marks) possibly caused by black cockatoos. Evidence observed suggest this hollow maybe suitable for black cockatoos to use for nesting purposes. Semi horizontal spout was found to pass through to other side of tree and therefore unsuitable .				**Classification**	Chewed Hollow.



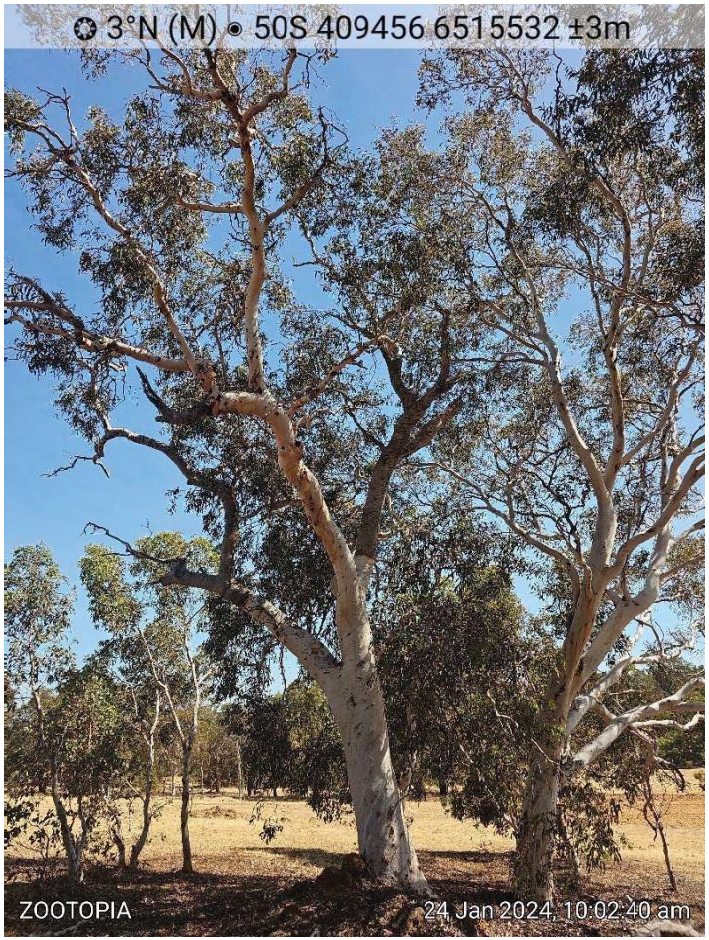
ID	Coordinates (MGA 94/Z50)	409265 mE	6515514 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D155	**Comments**	Wandoo with upward facing spout. When examined with drone a medium size potential hollow was found (photo below right). In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small. This hollow was also occupied by bees.				**Classification**	Unsuitable Hollow.



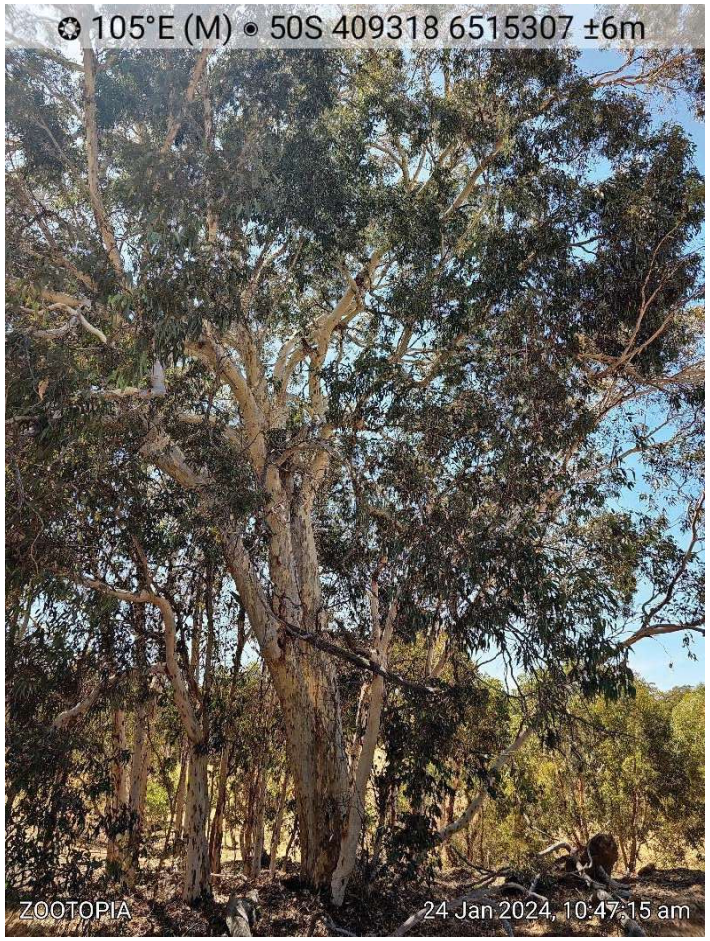




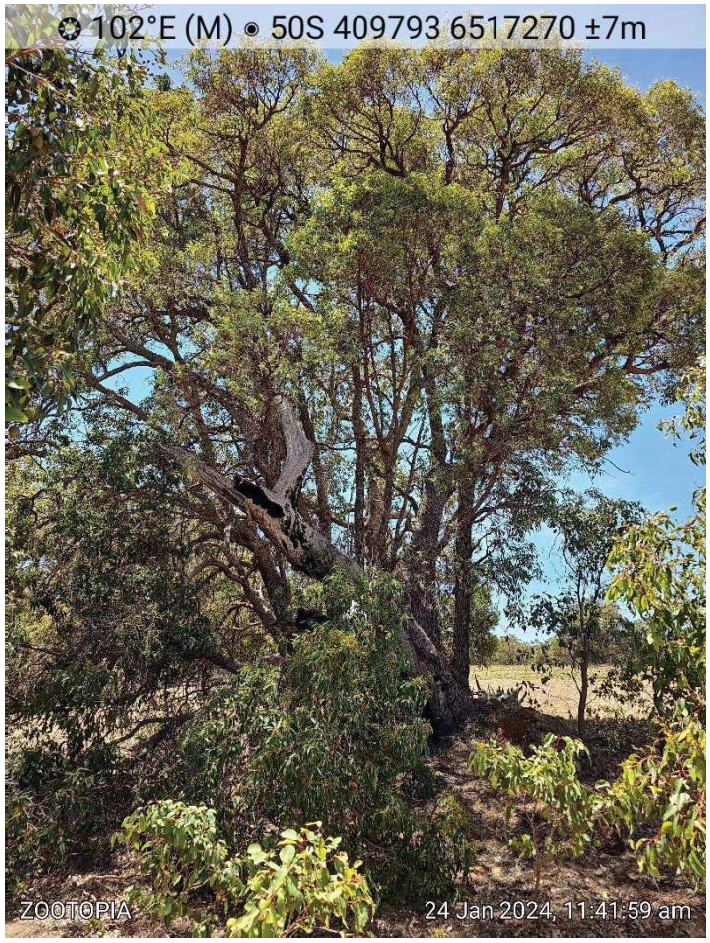
ID	Coordinates (MGA 94/Z50)	409454 mE	6515542 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D472	**Comments**	Wandoo with a large upward facing side entry hollow and several small/medium sized spout type hollows. When examined with a drone the side entry type hollow was found to have some depth (base not visible). The hollow showed no signs of past or present use. Evidence observed suggests this hollow maybe suitable for black cockatoos to use for nesting purposes but it appears not to have been used for this purpose. Other hollows all too small.				**Classification**	Unused Hollow.



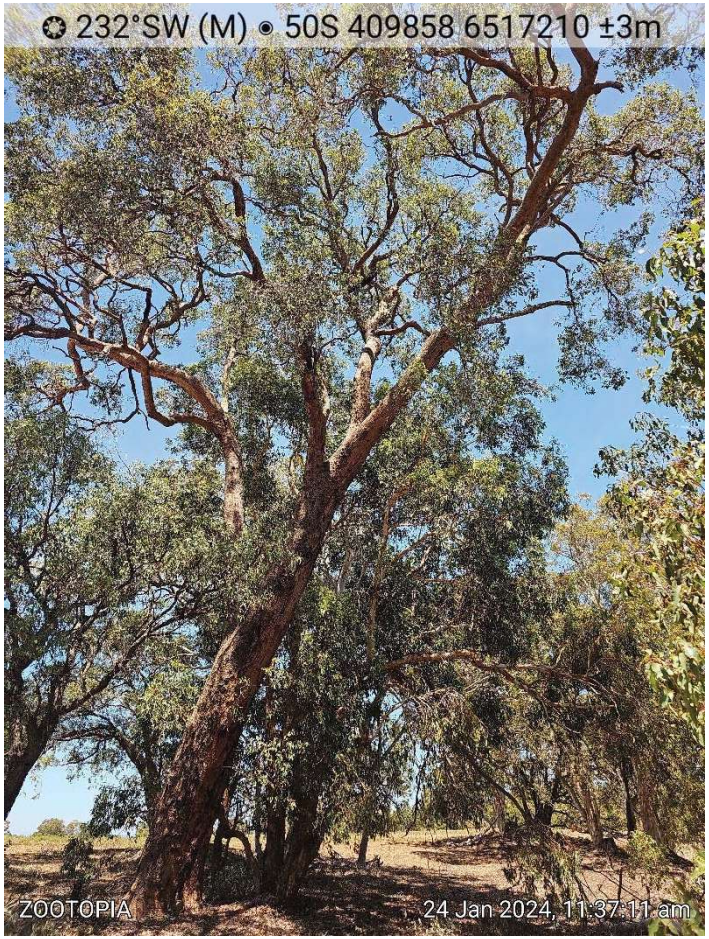
ID	Coordinates (MGA 94/Z50)	409334 mE	6515304 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D507	**Comments**	Wandoo with upward facing spout. When examined with drone a shallow, medium size potential hollow was found (photo below right). In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small. Two fissure type hollows in main trunk too small.				**Classification**	Unsuitable Hollow.



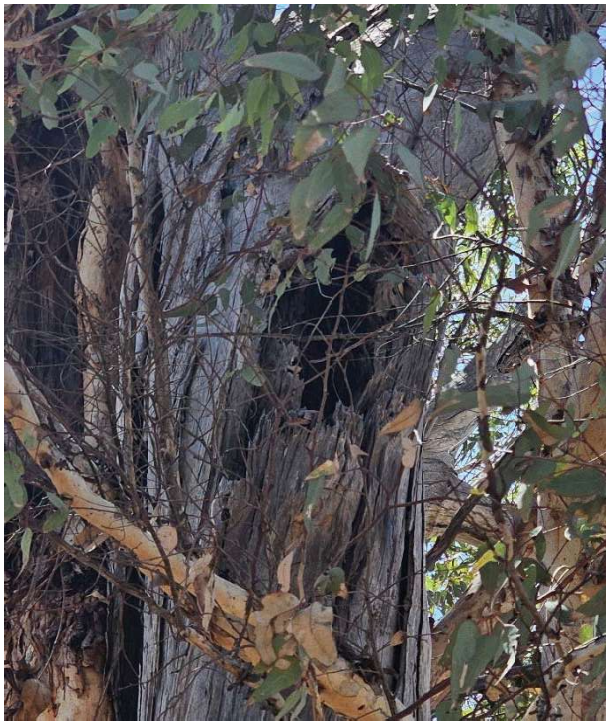
ID	Coordinates (MGA 94/Z50)	409806 mE	6517274 mN	Tree Species	Jarrah	Survey Date	24/01/2024
D566	**Comments**	Jarrah with two potential spout type hollows, one at an angle (centre picture) and the other vertical (right picture). When examined with drone both hollows were found to have little or no depth (base visible in both cases). These hollows would be unsuitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.				**Classification**	Unsuitable Hollows.



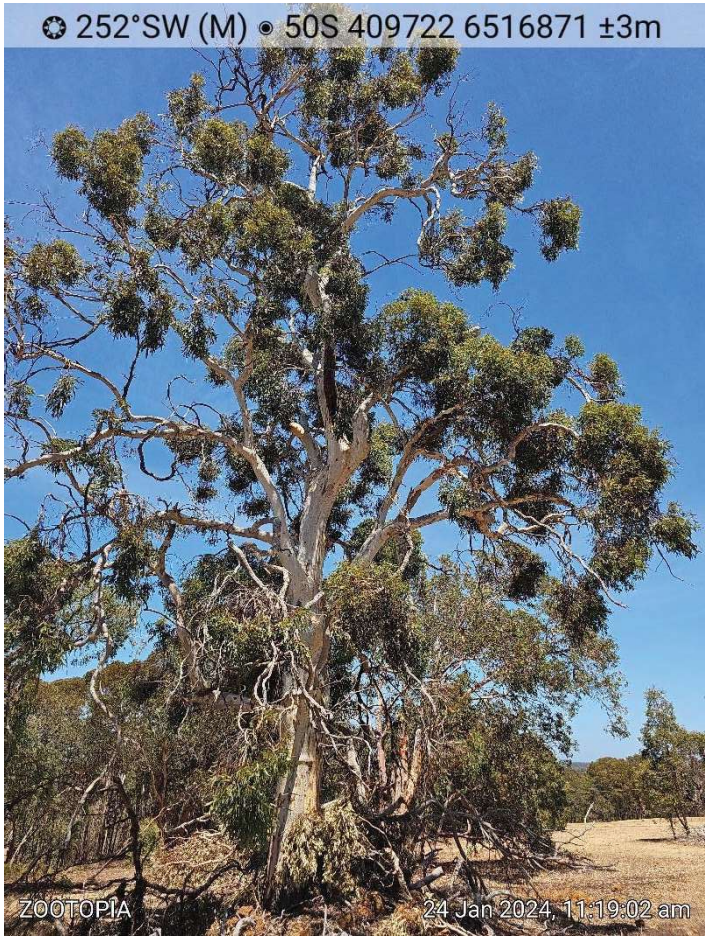
ID	Coordinates (MGA 94/Z50)	409854 mE	6517199 mN	Tree Species	Marri	Survey Date	24/01/2024
D576	**Comments**	Marri with a potential chimney type hollow. Because of surrounding branches it could not be examined with a drone and was too high for the pole camera, however when examined using binoculars the hollow appeared to be shallow/non-existent. In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too small. This hollow was also occupied by bees.				**Classification**	Unsuitable Hollow.



ID	Coordinates (MGA 94/Z50)	409854 mE	6516933 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D636	**Comments**	Wandoo with a potential large chimney style hollow. When examined with a pole mounted camera the hollow was found to be very shallow (base visible a few centimetres from rim of hollow – picture below right). This hollow would not be suitable for black cockatoos to use for nesting purposes. No signs of use by any fauna.				**Classification**	Unsuitable Hollow.



ID	Coordinates (MGA 94/Z50)	409712 mE	6516870 mN	Tree Species	Wandoo	Survey Date	24/01/2024
D639	**Comments**	Wandoo with upward facing spout. When examined with drone a shallow, medium size potential hollow was found (photo below right). In the Authors opinion this possible hollow would be unsuitable for black cockatoos to use for nesting purposes because it is too shallow and small. No signs of use by any fauna.				**Classification**	Unsuitable Hollow.



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