

3 December 2012

Our Reference: 21073-12LRF1Rev0_121203

Mario Giacci
MM Giacci Family Trust
Lot 103 Sutherland Way
Picton WA 6229

Perth Office
129 Royal Street
East Perth WA 6004
T: +61 8 9421 9600
F: +61 8 9421 9699
E: perth@astron.com.au

Pilbara Office
Suite 4, 11 Hedland Place
PO Box 713, Karratha WA 6714
T: +61 8 9144 1679
F: +61 8 9144 1733
E: karratha@astron.com.au

Dear Mario,

Re: Lot 265 Ducane Road Gelorup – Black Cockatoo and Western Ringtail Possum Assessment, November 2012

1 Introduction

Astron was commissioned by MM Giacci Family Trust to undertake an assessment of Lot 265 Ducane Road, Gelorup for potential habitat for the western ringtail possum and black cockatoo species.

The proposed sand extraction of Lot 265 Ducane Road was referred to the Department of Sustainability, Environment, Water, Populations and Communities (DSEWPAC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Ref 2012/6616).

DSEWPAC require further information relating to potential breeding trees for two threatened black cockatoo species (*Calyptorhynchus* spp.):

1. A map showing the number, location and species of trees with diameter at breast height (DBH) greater than 50cm within the development footprint that contain hollows and would require clearing under the proposed development.
2. A map showing the number, location and species of trees with diameter at breast height (DBH) greater than 50cm within the development footprint, without hollows, and would require clearing under the proposed development.
3. Whether any of the trees identified above in a) or b) show any evidence of past or current breeding activity.

DSEWPAC also require further information regarding the potential habitat for the western ringtail possum (*Pseudocheirus occidentalis*):

1. A map showing the location of *Agonis flexuosa* (peppermint trees).
2. Whether there is any evidence of activity, such as faecal pellets.
3. Whether any of the peppermint trees identified above in a), or eucalypt trees, show any evidence of past or current breeding activity, such as dreys (nests).

2 Methodology

A survey of the area (Figure 1) was conducted by Brent Johnson on 27 November 2012. The survey area was accessed by light vehicle and then traversed on foot. The survey area was systematically walked and all trees were assessed for their potential as either habitat for western ringtail possums or as breeding habitat for black cockatoo species.

2.1 Black Cockatoo Assessment

All trees greater than 50 cm diameter breast height (DBH) were recorded, including the species, height of tree, GPS coordinate and photograph taken. The trees were visually searched for the presence of any hollows. To determine if trees have suitable breeding hollows, the following criteria were recorded for each mature tree (based on Gibbons and Lindenmayer 2002):

- height of the hollow in the tree
- minimum entrance width of a hollow
- diameter of the branch on which the hollow occurred
- whether the branch was living, part dead or dead
- whether the tree has multiple hollows
- any evidence of any past or current breeding activity.

2.2 Western Ringtail Possum Assessment

The location of all peppermint trees were recorded, including a GPS coordinate. A search was undertaken for any suitable hollow, dreys and faecal pellets and if found, a photograph and GPS coordinate was taken.

3 Results

The property has been extensively cleared to provide pasture for stock and a training racetrack (horses) with the remaining vegetation essentially scattered larger eucalypts, nuytsia and peppermints over an understory of grassland (mostly weed species). Whilst the property would be considered to be highly disturbed the tree species are in excellent condition with many mature specimens possessing straight boles and full canopies. Senescent and/or dead trees were rare, which resulted in a relative absence of hollows. There are plantings of exotic (eastern states) eucalypts around the three dwellings and horse stables complex.

3.1 Black Cockatoos

Carnaby's black cockatoos were heard calling in adjacent uncleared bush, however, none were seen within the survey area. A total of 40 eucalypt trees (jarrah, marri or tuart) and one banksia tree with a DBH greater than 50cm was recorded, including those with and without hollows (Attachment A). Of the 41 trees recorded, 10 trees contained hollows that may be suitable for black cockatoos (Figure 1); five marri and five jarrah trees. Of these trees with hollows, nine are contained within the proposed clearing area (Figure 1). No trees had any evidence of past or current breeding activity by black cockatoos (Attachment A). All 31 trees over 50 cm DBH that did not contain hollows are within the proposed clearing habitat (Figure 2).

The mature and healthy trees present within the survey area would provide foraging opportunity however there is limited hollow availability. The jarrah was in heavy flower at the time of visit and

Australian ringnecks were observed feeding on them. Chewed marri nuts were observed under many trees characteristic of Carnaby's black cockatoo. There is approximately 5.22 ha of suitable black cockatoo foraging habitat within the survey area.

3.2 Western Ringtail Possums

A total of 106 individual peppermint (*Agonis flexuosa*) trees between 5 and 11 metres (m) in height, and two groves of younger peppermint trees less than 20 cm DBH containing 33 individuals were recorded within the survey area (Figure 3; Attachment B). Ninety seven peppermint trees were recorded within the proposed clearing area (Figure 3).

No dreys were observed in the peppermints and no scratch marks or scats observed around either eucalypts or peppermints. The overall lack of hollows (the obvious better hollows had bees) also limits the refuge value. There appears to be no evidence of brushtail possums within the survey area.

4 Conclusions

Overall the breeding habitat value to black cockatoos is not significant in the context of the wider Gelorup area. This is primarily due to the lack of trees that contained hollows. However there are a large number of mature and healthy trees within the proposed clearing area and black cockatoos do utilise the area for foraging purposes.

Overall the refuge/nesting value to the western ringtail possum is not significant in the context of the wider Gelorup area. This is primarily due to the lack of connectivity between individual peppermint trees, which would diminish the habitat value to this arboreal species. Western ringtail possums are present immediately to the west of the survey area (J Dunlop DEC, pers. comm. November 2012) and the more intact, uncleared properties surrounding the survey area may support possum populations and may occasionally visit the survey area, but are unlikely to rely on it as nesting habitat.

Yours sincerely

ASTRON ENVIRONMENTAL SERVICES



Jessica Oates
Senior Zoologist

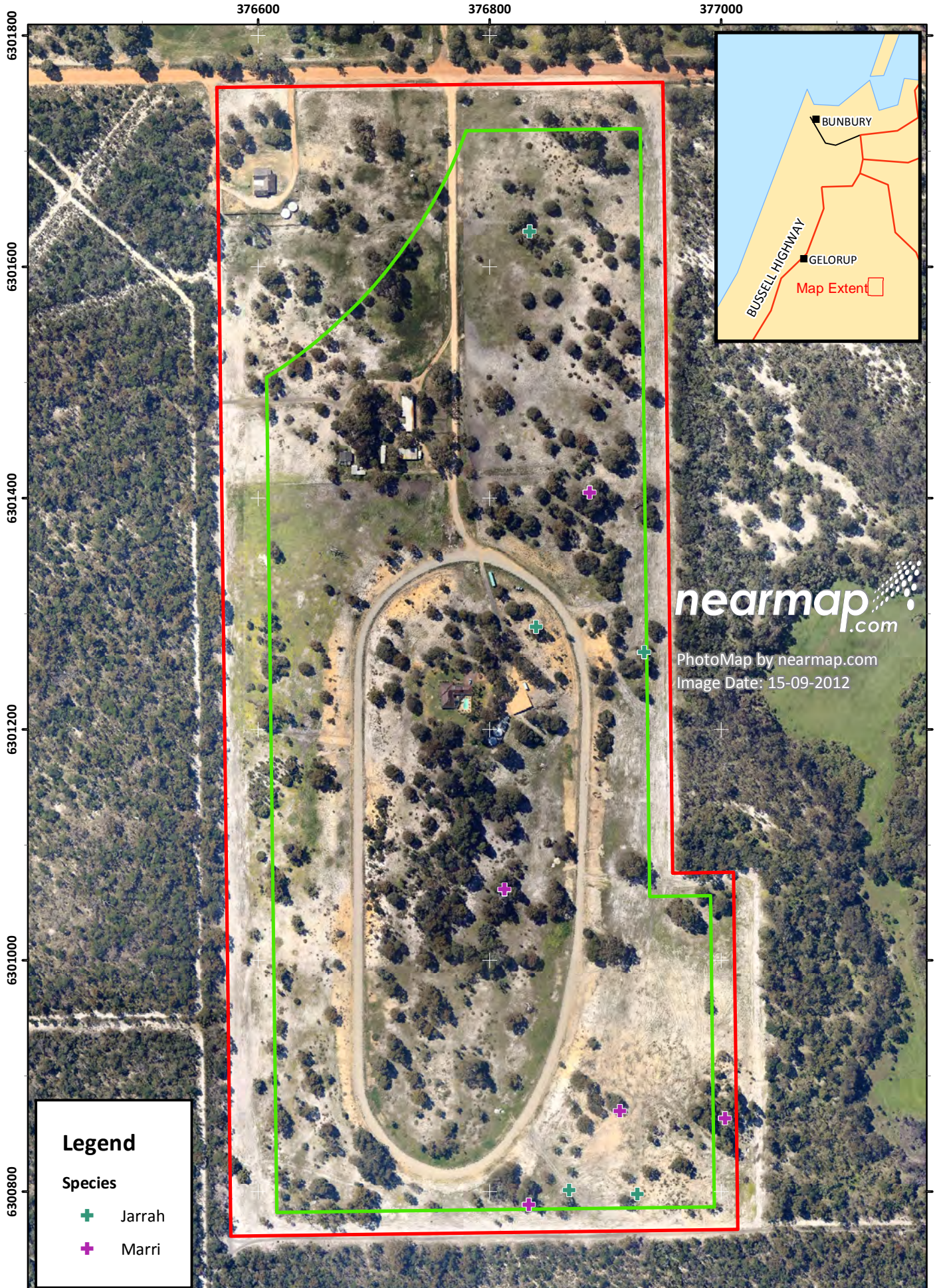
Attachments

Attachment A: Potential Habitat Trees for Black Cockatoos

Attachment B: Potential Habitat Trees for Western Ringtail Possums

References

Gibbons, P and Lindenmayer, D, 2002, *Tree Hollows and Wildlife Conservation in Australia*, CSIRO Publishing, Collingwood.



Legend

Species

- + Jarrah
- + Marri

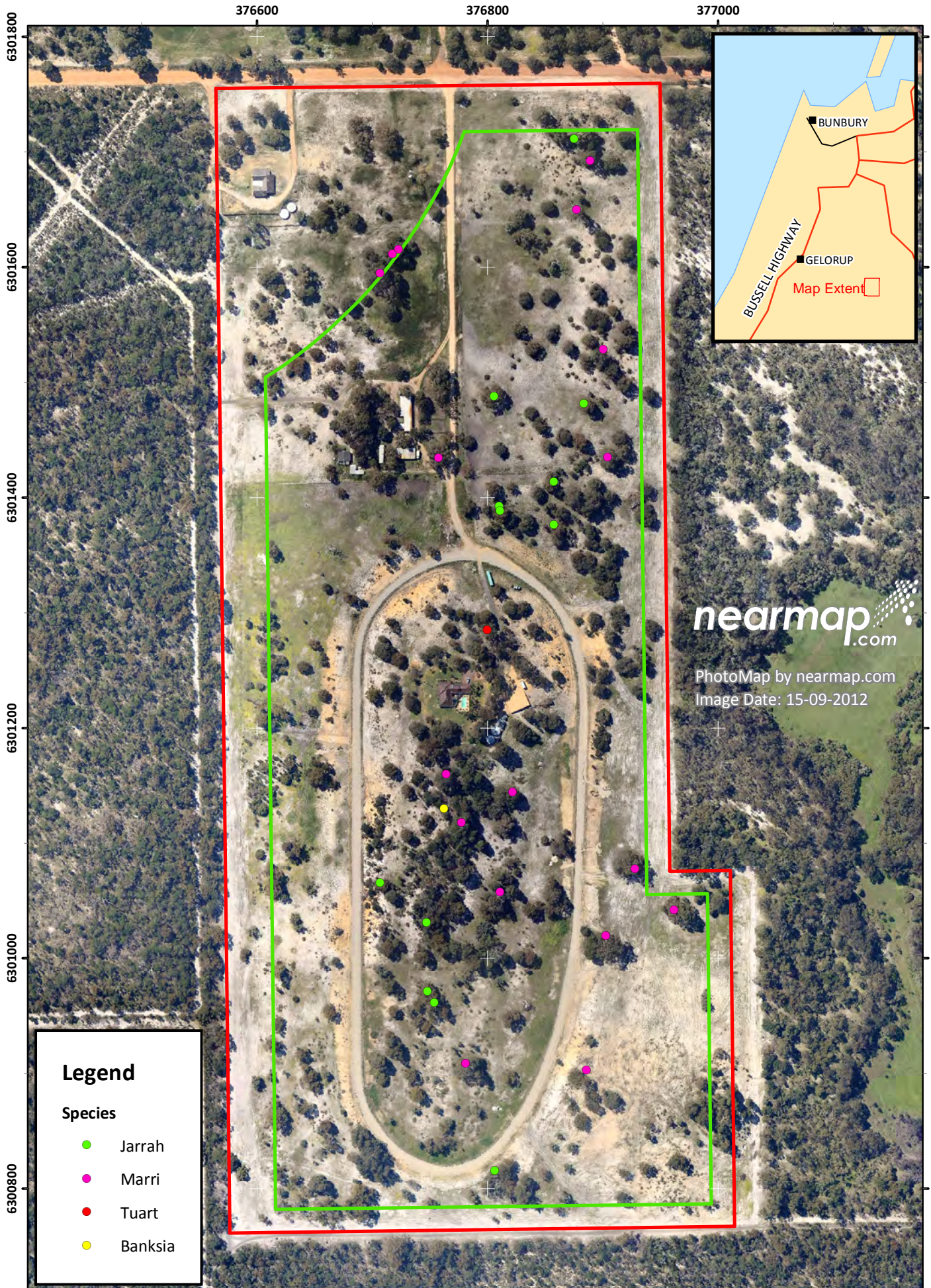
MM Giacci Family Trust
 Lot 265 Ducane Road Gelorup – Black Cockatoo and Western Ringtail Possum Assessment



Figure 1: Location and species of trees >50cm DBH that contain potentially suitable black cockatoo hollows.

Author: J. Oates	Date: 30-11-2012	Datum: GDA 1994	N ↑
Drawn: E. Ongee	210732-12FMV1RevA_121130_Figure_1	Projection: MGA Zone 50	

This page has been left blank intentionally.



Legend

Species

- Jarrah
- Marri
- Tuart
- Banksia

nearmap
 .com

PhotoMap by nearmap.com
 Image Date: 15-09-2012

MM Giacci Family Trust
 Lot 265 Ducane Road Gelorup – Black Cockatoo and Western Ringtail Possum Assessment



Figure 2: Location and species of trees >50 cm DBH that do not contain hollows.

Author: J. Oates	Date: 30-11-2012	Datum: GDA 1994 Projection: MGA Zone 50 	
Drawn: E. Ongee	210732-12FMV1RevA_121130_Figure_2		

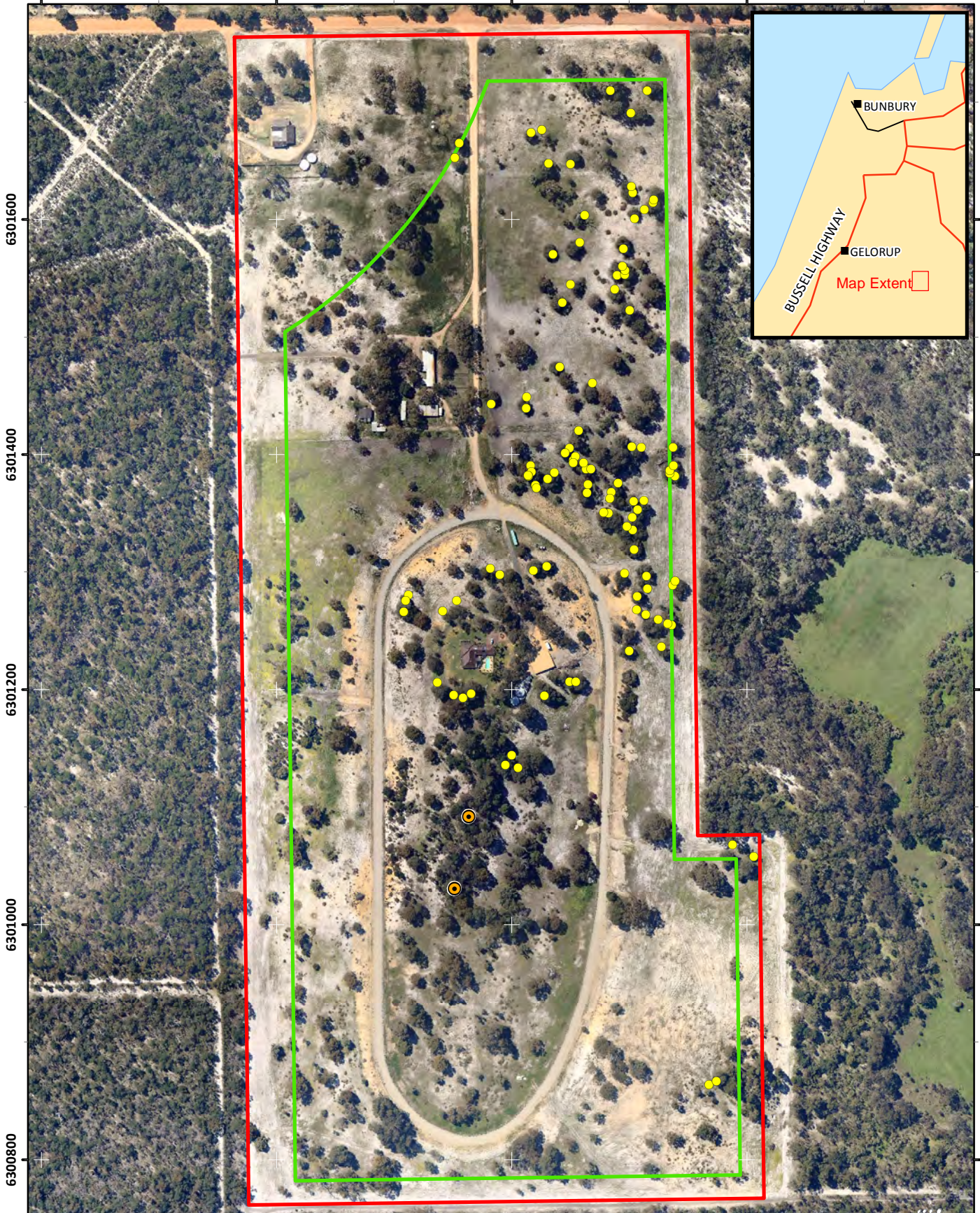
This page has been left blank intentionally.

376400

376600

376800

377000



6301600

6301400

6301200

6301000

6300800

Legend

- Peppermint (single individual)
- ⊙ Peppermint (many individuals)

nearmap.com

PhotoMap by nearmap.com
Image Date: 15-09-2012

MM Giacci Family Trust

Lot 265 Ducane Road Gelorup – Black Cockatoo and Western Ringtail Possum Assessment



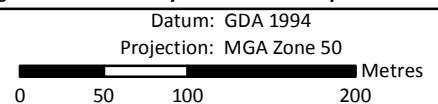
Figure 3: Location of all peppermint (*Agonis flexuosa*) trees and any evidence of Western Ringtail Possum activity within the survey area.

Author: J. Oates

Date: 30-11-2012

Drawn: E. Ongee

210732-12FMV1RevA_121130_Figure_3



Datum: GDA 1994

Projection: MGA Zone 50











This page has been left blank intentionally.





Attachment A. Potential Habitat Trees for Black Cockatoos





This page has been left blank intentionally.





Table A.1: Location, description and photos of trees over 50 cm diameter breast height (DBH) with and without potentially suitable black cockatoo hollows.




WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/Partly Dead/Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
001	376806	6300816	Jarrah	13	No	-	-	-	-	-	No	
002	376834	6300789	Marri	16	Yes	2	1/12	40	Dead	Unknown	No - bees	
003	376869	6300802	Jarrah	15	Yes	5	8-14	10-40	Partly Dead	10-30	No	
006	376928	6300799	Jarrah	16	Yes	2	10	20	Dead	15	No	


WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/Partly Dead/Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
007	377003	6300864	Marri	22	Yes	3	10-20	10-30	Dead	8-20	No	
010	376962	6301042	Marri	13	No	-	-	-	-	-	No	
011	376928	6301078	Marri	20	No	-	-	-	-	-	No	
012	376903	6301020	Marri	24	No	-	-	-	-	-	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/ Partly Dead/ Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
013	376811	6301057	Marri	20	No	-	-	-	-	-	No	
014	376813	6301062	Marri	20	Yes	2	17-19	18	Dead	14	No	
016	376747	6301031	Jarrah	10	No	-	-	-	-	-	No	
017	376748	6300972	Jarrah	14	No	-	-	-	-	-	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/Partly Dead/Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
018	376754	6300962	Jarraah	21	No	-	-	-	-	-	No	
019	376781	6300909	Marri	23	No	-	-	-	-	-	No	
020	376886	6300903	Marri	14	No	-	-	-	-	-	No	
023	376912	6300870	Marri	12	Yes	2	6/10	25/70	Dead	Unknown	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/ Partly Dead/ Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
024	376707	6301066	Jarraah	10	No	-	-	-	-	-	No	
026	376777	6301118	Marri	15	No	-	-	-	-	-	No	
027	376762	6301131	Banksia	10	No	-	-	-	-	-	No	None
028	376764	6301160	Marri	15	No	-	-	-	-	-	No	
032	376822	6301145	Marri	10	No	-	-	-	-	-	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/ Partly Dead/ Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
049	376934	6301267	Jarraah	16	Yes	4	10-14	20-40	Dead	No	No	
073	376857	6301377	Jarraah	16	No	-	-	-	-	-	No	
077	376857	6301414	Jarraah	12	No	-	-	-	-	-	No	None
078	376886	6301405	Marri	16	Yes	2	10/14	35	Dead	20	No - bees	
080	376810	6301392	Jarraah	12	No	-	-	-	-	-	No	None
089	376840	6301289	Jarraah	13	Yes	4	10-13	10-25	Dead	Unknown	No	None
090	376800	6301285	Tuart	13	No	-	-	-	-	-	No	None
102	376811	6301389	Jarraah	15	No	-	-	-	-	-	No	None
108	376904	6301435	Marri	17	No	-	-	-	-	-	No	None
112	376806	6301488	Jarraah	15	No	-	-	-	-	-	No	None
113	376883	6301482	Jarraah	14	No	-	-	-	-	-	No	None
115	376900	6301529	Marri	16	No	-	-	-	-	-	No	None
128	376877	6301650	Marri	17	No	-	-	-	-	-	No	None
129	376889	6301693	Marri	16	No	-	-	-	-	-	No	None
133	376875	6301711	Jarraah	14	No	-	-	-	-	-	No	None



WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Hollows Present	No. hollows	Hollow Height (m)	Diameter of Branch (cm)	Branch (Living/ Partly Dead/ Dead)	Min. width of hollow entrance (cm)	Evidence of current or past breeding activity?	Photo
138	376835	6301631	Jarrah	17	Yes	1	12	40	Dead	Unknown	No	
146	376758	6301434	Marri	14	No	-	-	-	-	-	No	None
149	376723	6301616	Marri	14	No	-	-	-	-	-	No	None
150	376717	6301612	Marri	15	No	-	-	-	-	-	No	None
151	376707	6301595	Marri	16	No	-	-	-	-	-	No	None

This page has been left blank intentionally.

Attachment B. Potential Habitat Trees for Western Ringtail Possums

This page has been left blank intentionally.

Table A.1: Location, description and photos of potential habitat trees for Western Ringtail Possums.

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
008	377006	6301058	Peppermint	10	No	No	1	No	
009	376988	6301068	Peppermint	11	No	No	1	No	
015	376751	6301031	Peppermint	-	No	No	22	No	
021	376968	6300864	Peppermint	10	No	No	1	No	
022	376974	6300867	Peppermint	10	No	No	1	No	
025	376764	6301092	Peppermint	-	No	No	11	No	
029	376805	6301134	Peppermint	12	No	No	1	No	
030	376795	6301136	Peppermint	11	No	No	1	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
031	376800	6301144	Peppermint	10	No	No	1	No	
033	376828	6301195	Peppermint	10	No	No	1	No	
034	376849	6301207	Peppermint	7	No	No	1	No	
035	376855	6301207	Peppermint	7	No	No	1	No	
036	376900	6301233	Peppermint	5	No	No	1	No	
037	376927	6301236	Peppermint	9	No	No	1	No	
038	376936	6301255	Peppermint	7-9	No	No	1	No	
039	376933	6301256	Peppermint	7-9	No	No	1	No	
040	376925	6301260	Peppermint	7-9	No	No	1	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
041	376914	6301263	Peppermint	7-9	No	No	1	No	
042	376906	6301268	Peppermint	7-9	No	No	1	No	
043	376907	6301279	Peppermint	7-9	No	No	1	No	
044	376915	6301286	Peppermint	7-9	No	No	1	No	
045	376915	6301296	Peppermint	7-9	No	No	1	No	
046	376896	6301299	Peppermint	7-9	No	No	1	No	
047	376937	6301289	Peppermint	7-9	No	No	1	No	
048	376939	6301293	Peppermint	7-9	No	No	1	No	
050	376904	6301319	Peppermint	5-9	No	No	1	No	
051	376903	6301336	Peppermint	5-9	No	No	1	No	
052	376898	6301339	Peppermint	5-9	No	No	1	No	
053	376903	6301346	Peppermint	5-9	No	No	1	No	
054	376907	6301353	Peppermint	5-9	No	No	1	No	
055	376904	6301360	Peppermint	5-9	No	No	1	No	
056	376913	6301361	Peppermint	5-9	No	No	1	No	
057	376939	6301382	Peppermint	5-9	No	No	1	No	
058	376935	6301384	Peppermint	5-9	No	No	1	No	
059	376935	6301387	Peppermint	5-9	No	No	1	No	
060	376938	6301391	Peppermint	5-9	No	No	1	No	
061	376937	6301406	Peppermint	5-9	No	No	1	No	
062	376910	6301406	Peppermint	5-9	No	No	1	No	
063	376890	6301376	Peppermint	5-9	No	No	1	No	
064	376885	6301368	Peppermint	5-9	No	No	1	No	
065	376883	6301363	Peppermint	5-9	No	No	1	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
066	376883	6301350	Peppermint	5-9	No	No	1	No	
067	376878	6301350	Peppermint	5-9	No	No	1	No	
068	376864	6301367	Peppermint	5-9	No	No	1	No	
069	376865	6301375	Peppermint	5-9	No	No	1	No	
070	376863	6301388	Peppermint	5-9	No	No	1	No	
071	376852	6301395	Peppermint	5-9	No	No	1	No	
072	376836	6301385	Peppermint	5-9	No	No	1	No	
074	376868	6301388	Peppermint	7-10	No	No	1	No	
075	376854	6301398	Peppermint	7-10	No	No	1	No	
076	376849	6301405	Peppermint	7-10	No	No	1	No	
079	376902	6301407	Peppermint	11	No	No	1	No	
081	376816	6301391	Peppermint	5-9	No	No	1	No	
082	376817	6301385	Peppermint	5-9	No	No	1	No	
083	376814	6301382	Peppermint	5-9	No	No	1	No	
084	376820	6301374	Peppermint	5-9	No	No	1	No	
085	376782	6301303	Peppermint	5-9	No	No	1	No	
086	376790	6301298	Peppermint	5-9	No	No	1	No	
087	376818	6301301	Peppermint	5-9	No	No	1	No	
088	376830	6301305	Peppermint	5-9	No	No	1	No	
091	376753	6301276	Peppermint	6-10	No	No	1	No	
092	376742	6301267	Peppermint	6-10	No	No	1	No	
093	376712	6301280	Peppermint	6-10	No	No	1	No	
094	376710	6301276	Peppermint	6-10	No	No	1	No	
095	376709	6301266	Peppermint	6-10	No	No	1	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
096	376737	6301206	Peppermint	6-10	No	No	1	No	
097	376751	6301195	Peppermint	6-10	No	No	1	No	
098	376759	6301193	Peppermint	6-10	No	No	1	No	
099	376765	6301196	Peppermint	6-10	No	No	1	No	
100	376821	6301372	Peppermint	6-10	No	No	1	No	
101	376814	6301382	Peppermint	6-10	No	No	1	No	
103	376831	6301379	Peppermint	6-10	No	No	1	No	
104	376846	6301401	Peppermint	6-10	No	No	1	No	
105	376852	6301393	Peppermint	6-10	No	No	1	No	
106	376861	6301393	Peppermint	6-10	No	No	1	No	
107	376857	6301421	Peppermint	6-10	No	No	1	No	
109	376869	6301461	Peppermint	6-10	No	No	1	No	
110	376841	6301475	Peppermint	6-10	No	No	1	No	
111	376813	6301449	Peppermint	6-10	No	No	1	No	
114	376901	6301523	Peppermint	6	No	No	1	No	
116	376888	6301541	Peppermint	6-10	No	No	1	No	
117	376890	6301553	Peppermint	6-10	No	No	1	No	
118	376896	6301553	Peppermint	6-10	No	No	1	No	
119	376896	6301557	Peppermint	6-10	No	No	1	No	
120	376894	6301560	Peppermint	6-10	No	No	1	No	
121	376895	6301575	Peppermint	6-10	No	No	1	No	
122	376905	6301601	Peppermint	6-10	No	No	1	No	
123	376913	6301608	Peppermint	6-10	No	No	1	No	
124	376920	6301614	Peppermint	6-10	No	No	1	No	

WPT No.	Easting	Northing	Tree Species	Tree Height (m)	Dreys Present	Hollows Present	No. Trees	Evidence of use? (scats, scratching, etc)	Photo
125	376921	6301617	Peppermint	6-10	No	No	1	No	
126	376903	6301622	Peppermint	6-10	No	No	1	No	
127	376902	6301628	Peppermint	6-10	No	No	1	No	
130	376902	6301690	Peppermint	7-10	No	No	1	No	
131	376915	6301709	Peppermint	7-10	No	No	1	No	
132	376884	6301709	Peppermint	7-10	No	No	1	No	
134	376826	6301677	Peppermint	6-9	No	No	1	No	
135	376817	6301674	Peppermint	6-9	No	No	1	No	
136	376832	6301648	Peppermint	6-9	No	No	1	No	
137	376850	6301647	Peppermint	6-9	No	No	1	No	
139	376862	6301604	Peppermint	7-11	No	No	1	No	
140	376858	6301580	Peppermint	7-11	No	No	1	No	
141	376835	6301570	Peppermint	7-11	No	No	1	No	
142	376850	6301545	Peppermint	7-11	No	No	1	No	
143	376843	6301530	Peppermint	7-11	No	No	1	No	
144	376812	6301439	Peppermint	7-11	No	No	1	No	
145	376783	6301443	Peppermint	7-11	No	No	1	No	
147	376755	6301665	Peppermint	5-10	No	No	1	No	
148	376752	6301652	Peppermint	5-10	No	No	1	No	