Species	Distribution and habitat preferences
Rostratula australis (Australian Painted Snipe)	Endemic to Australia, occurs in the southern and northern coastal areas of WA but is generally more common in eastern Australia. Favours the margins and shallow waters of well vegetated wetlands including man made wetlands (dams, and pastures)(Pizzey & Knight 2012).
Actitis hypoleucos (Common Sandpiper)	In WA the species is mostly coastal with some inland records (Geering et al. 2007). They are found across a wide range of wetlands: small ponds, large inlets, mudflats where they forage on the shore usually close to the vegetation (Pizzey & Knight 2012).
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo)	Endemic to the south-west of WA with its range extending from the humid and subhumid south-west (mainly the hilly interior) north to Gingin and Gidgegannup, and east to Mt Helena, Chidlow, Wooroloo, Wundowie, The Lakes, Christmas Tree Well, Bannister, Mount Saddleback, Kojonup, Rocky Gully, the upper King River and Porongurup Range (Johnstone & Kirkby 2009). Status along the Swan Coastal Plain is uncertain. In the early 1900's, this species was listed as rare, but there appears to have been a shift in this species range in the last five years to the Swan Coastal Plain (T. Kirkby, pers. comm., 29 March 2010). The species may be a casual visitor to Perth's southern suburbs in search of Cape Lilac (e.g. Rockingham, Kwinana, Casuarina, Calista, Kewdale, Bentley, Lynwood, Gosnells, Forrestdale, Byford and Armadale) (Johnstone & Kirkby 2009). Detailed information on the critical habitat utilised by this species (breeding, foraging, roost areas) is largely unknown as the forested habitat in which this species occurs is difficult to monitor (time-intensive and expensive) (DEC 2007). Most breeding is thought to occur in Eucalypt forests throughout the south-west (Johnstone & Storr 1998). Nesting is primarily in large hollows of Marri, Jarrah, Wandoo, Bullich, Tuart and Karri (Johnstone & Kirkby 2009).
Calyptorhynchus latirostris (Carnaby's Black Cockatoo)	Endemic to south-western Australia, south of a line from Geraldton to Esperance. The species is found in woodlands and heathlands where it essentially feeds on banksias, eucalyptus, hakeas and grevilleas but also introduced pines (Garnett & Crowley 2000; Weerheim 2008). Carnaby's Black Cockatoos have undergone a significant decline across their distribution range. The high proportion of introduced pine trees (*Pinus* sp.) in the diet of the species is an additional threat considering most of the trees have been planted for commercial logging and will be cleared in the future (Cale 2003). The species does however feed on a wide variety of tree and shrub species (DEC 2011).
Calyptorhynchus baudinii (Baudin's Black Cockatoo)	Endemic to a 2000 km^2 area in south-west WA, bounded by the 750 isohyet (Department of the Environment 2014a). Mostly feed on Marri and large fruits with diet changes over the year, depending on the food availability. The species nests in large hollows of mature Jarrah and Marri trees.
Ninox connivens connivens (Barking Owl, southern)	Occurs across most Australian states except Tasmania and the Northern Territory. In WA, the species only occurs in the south-west. Mostly found in forested riparian vegetation where they nest in large tree hollows (Garnett & Crowley 2000).
Merops ornatus (Rainbow Bee-eater)	Migratory species (moving between Australia and Asia) occurring across Australia, with complex seasonal movements depending on location and rainfall. Found in lightly wooded, preferably sandy country, near water and

Species	Distribution and habitat preferences
Mammals	
Dasyurus geoffroii (Western Quoll)	Prior to European settlement the species occupied approximately 70% of continental Australia (Smith *et al.* 2004; Van Dyck & Strahan 2008). Massive decline in range has occurred, currently occurs in only 5% of its former range. Mostly found in woodland, heath and mallee habitats.
Parantechinus apicalis (Dibbler)	Thought to be extinct until its rediscovery in 1967 near Albany (Van Dyck & Strahan 2008). Confined to the Fitzgerald River National Park (where it was discovered in 1984) on the mainland and on two islands on the west coast.
Isoodon obesulus fusciventer (Southern Brown Bandicoot)	Subspecies is endemic to south-western Australia. Mostly found in sandy soil habitats where they dig for food.
Macropus irma (Western Brush Wallaby)	Endemic to south-western Australia and is monospecific. Unlike other macropods, the species mostly feeds in dense bushlands and tends to avoid more open habitats (Van Dyck & Strahan 2008; Wann & Bell 1997). Feeds on a wide range of plants (Wann & Bell 1997).
Leporillus conditor (Greater Stick-nest Rat)	Once occurring across a southern strip of WA and most of South Australia, the species is now confined to a few localities. In WA, restricted to Shark Bay and has recently been reintroduced at the Mount Gibson Sanctuary. Lives in arid and semi-arid zones where they can build their mounds around shrubs.

5.3.2.3 Black cockatoo habitat

A total of 1,465 potential black cockatoo breeding trees were recorded in the study area (Figure 5-7; Appendix 5). *Corymbia calophylla* was the most abundant species accounting for 44% of the species, with *Eucalyptus* wandoo, *E. marginata*, *E*. *accedens*, *E. camaldulensis*, *E*. rudis and *E*. *patens* also present in the study area. Of the potential breeding trees recorded, 110 had visible hollows and a further six had possible hollows. Of these, 25 were confirmed by Tony Kirkby as having hollows suitable for current breeding by Carnaby's Black Cockatoo, including nine which showed signed of recent use by the species (Figure 5-7).

Breeding and roosting tree species were recorded in the majority of sampled vegetation quadrats in the study area. Based on analysis of remnant native vegetation polygons that contained potential breeding trees (section 3.2.2.4), 98.5 ha of breeding habitat is present within remnant native vegetation of the study area. Approximately 66% of the potential breeding trees were present within these mapped areas with the remainder recorded in cleared pastures and revegetated areas.

Known food species for Carnaby's Black Cockatoo were also recorded in the majority of sampled vegetation quadrats and foraging habitat was assessed in the field as being quality habitat generally due to the presence of important foraging species. This finding was supported by the spatial analysis of foraging habitat (section 3.2.2.4) which classified 87.5 ha as quality foraging habitat.

A detailed summary of black cockatoo habitat values defined for Muchea North and Chittering is presented in sections 5.4.2.3 and 5.5.2.3 respectively.

Figure 5–7a
Conservation significant fauna and black cockatoo potential breeding trees recorded in the study area (Muchea North)

Study area

Potential breeding tree with suitable hollows and signs of use by Carnaby'sBlack Cockatoo (CBC)

Potential breeding tree with suitable hollows but no signs of use by CBC

Potential breeding tree with hollows but not suitable for use by CBC

Potential breeding tree with hollows but hollows not assessed

Potential breeding tree with no hollows

Conservation Significant Fauna

Carnaby's Black Cockatoo - Direct sighting

Carnaby's Black Cockatoo - Forage evidence

0 0.15 0.3 0.6 Kilometres

1:20,000

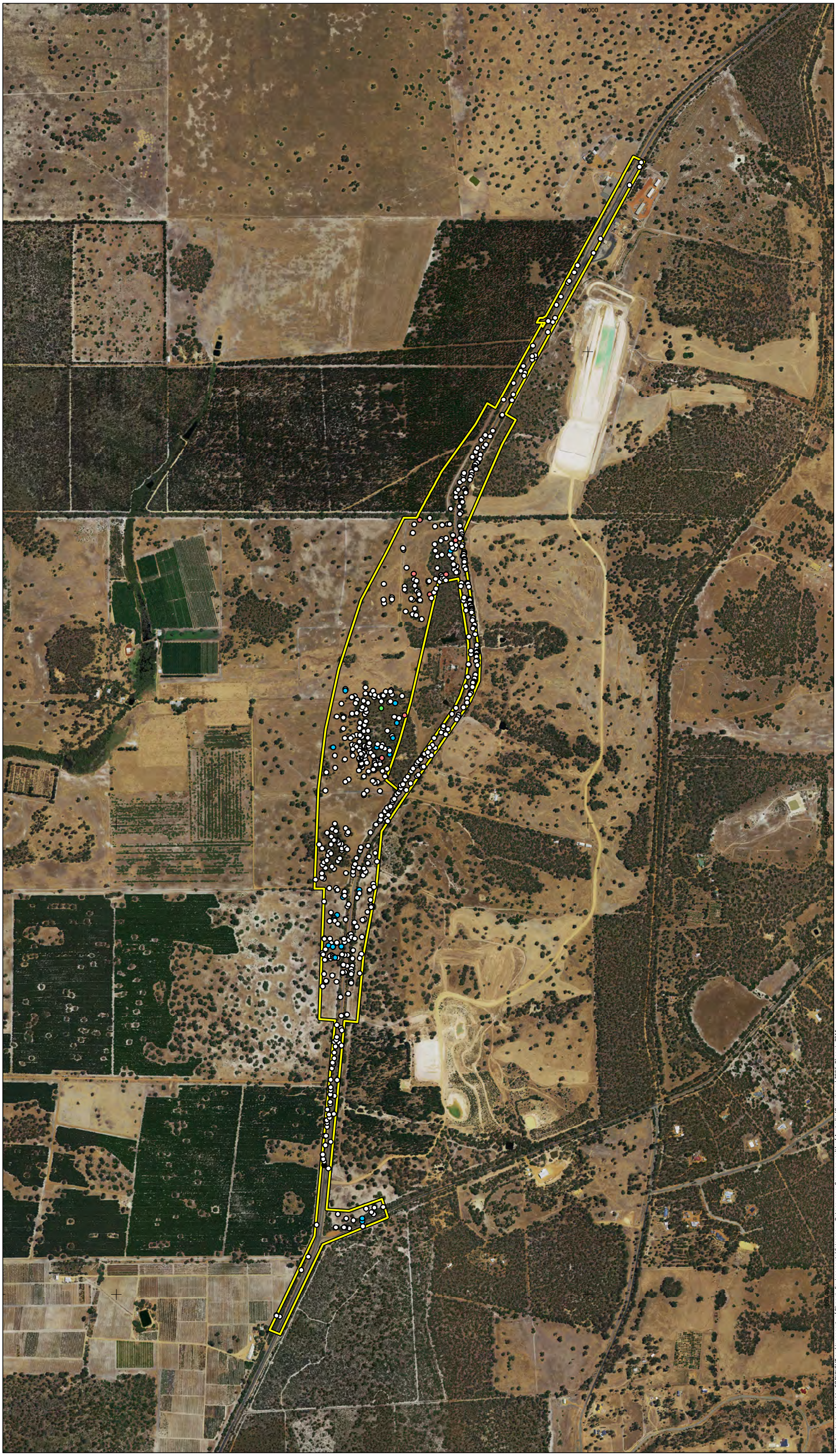
Client: Jacobs
Project: Great Northern Highway – Muchea to Wubin (Stage 2) Upgrades
Author: A. Leung
Date: 21/12/2015

Coordinate System: GDA 1994 MGA Zone 50
Projection: Transverse Mercator
Datum: GDA 1994

PHOENIX ENVIRONMENTAL SCIENCES

406000
408000
6514000
6512000
6510000
6508000
6506000

Figure 5–7b
Conservation significant fauna and black cockatoo potential breeding trees recorded in the study area (Chittering)



5.4 MUCHEA NORTH SUMMARY

5.4.1 Flora and vegetation

A total of 240 taxa representing 48 families and 143 genera were recorded in the Muchea North study area (Appendix 4) comprising 192 native species and 48 weeds. A total of 38 annual species and 202 perennial species were recorded. The most prominent families were Fabaceae (34), Myrtaceae (27), Proteaceae (23), Poaceae (21), Haemodoraceae (15), Asteraceae (15) Asparagaceae (10) and Orchidaceae (10) (Appendix 4).

Only three specimens (*Grevillea* sp., *Synaphea* sp. and Poaceae sp.) could not be conclusively identified to species level as they lacked adequate reproductive structures, none resembled conservation significant flora.

5.4.1.1 Conservation significant flora

Six species of conservation significant flora were recorded in the Muchea North study area (Table 5-11). Their identities were confirmed with the WA Herbarium.

***Acacia drummondii* subsp. *affinis* Priority 3**

Four populations of *Acacia drummondii* subsp. *affinis* were recorded in three vegetation associations; 48 (shrublands; scrub-heath), 999 (medium woodland; Marri) and 1019 (medium sparse woodland Jarrah and Marri) (Figure 5-2). An additional population was recorded 3 m outside the boundary of the study area in degraded vegetation 1017 (medium open woodland; Jarrah and Marri, with low woodland; Banksia). The species was also reported previously in Muchea North by Western Botanical (2006) at one of the locations from the current survey.

***Darwinia foetida* Threatened (CE) EPBC Act, Schedule 2 (EN) WC Act**

One population of seven plants was recorded in the Muchea North study area in a degraded area heavily infested with weeds (Figure 5-2).

An additional population of ten plants was located in an area mapped as cleared and planted south of the current study area (south of Brand Highway) with the majority of the site revegetated.

***Eucalyptus caesia* Priority 4**

A single plant of *Eucalyptus caesia* was recorded in the Muchea North study area in an area mapped as cleared (Figure 5-2). This species is widely propagated and distributed as a garden plant. The study area lies well outside of the natural range of the species and it is considered highly likely that the single specimen has been planted, particularly as it was located adjacent to the front gate of a residential property.

***Stylidium squamellosum* Priority 2**

Two plants were recorded on the border of the Muchea North study area. Both plants were found in close proximity to a DPaW record in Barracca Nature Reserve, mapped as vegetation 946 (medium woodland; Wandoo) (Figure 5-2).

***Verticordia lindleyi* subsp. *lindleyi* Priority 4**

A population of approximately 60 plants was recorded in the Muchea North study area in 'medium woodland; Wandoo' (946) within the Barracca Nature Reserve in May 2015 (Figure 5-2). Four additional populations (68 plants in total) were located during further searches in other suitable habitat. Two of these were located just outside of the study area, one within vegetation 975 (low

woodland; Jarrah) which was rated as very good condition and the other in vegetation 946 (medium woodland; Wandoo) rated as pristine condition vegetation[5].

Another population previously recorded adjacent to the one in the nature reserve but in remnant vegetation on the eastern side of the road (Western Botanical 2006) has been removed. The area has been recently severely disturbed with virtually all understorey vegetation removed.

***Verticordia serrata* var. *linearis* Priority 3**

Two plants were recorded in 'Low woodland; Jarrah' (975) in the Muchea North study area (Figure 5-2).

From the field survey, two desktop records of conservation significant species have been confirmed as mis-identifications. In searches undertaken at the previous records of *Daviesia debilior* subsp. *sinuans* (P3) in Muchea North, it was determined that the recorded populations were actually *Daviesia triflora* (not conservation significant) and confirmed by Mike Hislop from the WA Herbarium. As such it is concluded that the previous records for the Priority species are erroneous identifications and the Priority species is not present in the study area.

A previous survey (Western Botanical 2006) identified large numbers of the Priority 3 species, *Acacia pulchella* var. *reflexa* acuminate bracteoloe variant (P3) in the Muchea North survey area. The *Acacia* specimens collected in spring 2014 at several of the recorded locations were identified as an unthreatened species, *Acacia pulchella* var. *reflexa* by the WA Herbarium.

5.4.1.2 Introduced flora

A total of 48 weed species were recorded for the Muchea North study area, with all the species having wide distributions in WA and there were no apparent range extensions for any species. The recorded weeds included three declared plants, **Asparagus asparagoides* **Echium plantagineum* and **Moraea miniata* (Table 5-12; Figure 5-3). **Asparagus asparagoides* is also a WoNS (DotE 2015). A large infestation of **Moraea miniata* was recorded in the southern section of the Muchea North study area.

5.4.1.3 Range extensions

There were no natural range extensions for any of the flora recorded within the Muchea North study area.

5.4.1.4 Vegetation associations

The vegetation of the Muchea North study area comprised a mixture of mid forest, low to mid woodland and tea-tree and heath shrublands (Figure 5-4). In total, sixteen vegetation associations were defined in Muchea North (Table 5-13). These collectively represented 38.6% of the study area. The remainder of the study area was represented by the road (GNH), cleared (e.g. townships, driveways, side roads), cleared and planted (re-vegetated with mostly non-native species), pasture, and pasture and cleared (homesteads within agricultural areas).

[5] The adjacent vegetation was mapped as part of the Phase 1 survey area.

5.4.1.5 Vegetation condition

Vegetation condition in the Muchea North study area ranged from completely degraded to pristine, with the majority (70.9%[6]) of the study area mapped as completely degraded (Table 5-18). Three areas were recorded as pristine (3%), one comprising medium woodland; Wandoo (946) within the Barracca Nature Reserve, and two representing medium forest; Jarrah-Marri (965). Along the length of the Muchea North study area there were patches of vegetation in excellent condition (6.3%), all of which were recorded in woodland/forest. The highest rating for shrublands was very good. Areas defined as completely degraded, degraded and good were present in all vegetation associations with the exception of the Wandoo woodland of the nature reserve.

Patches of the Muchea North study area were recorded as cleared and planted (8.8%). The condition of these areas was considered completely degraded to degraded, as it was evident that at some point in the past they had been completely cleared or virtually completely cleared with the subsequent loss of natural values. Similarly, sections of the study area encompassed by urban areas/townships were regarded as completely degraded.

There was evidence of multiple disturbances within areas recorded as completely degraded to good. Overall, clearing for agricultural purposes or urbanisation followed by intensive weed invasion were the most common disturbances. Others included clearing for roads, tracks, fencing, and electricity/phone line corridors.

Table 5-18 Proportion of vegetation in Muchea North study area by condition rating

Condition	Area (ha)	% of study area
Completely Degraded (includes existing GNH – paved road and gravel shoulders and cleared paddocks)	132.2	61.4
Degraded	20.4	9.5
Good	13.2	6.1
Very Good	29.5	13.7
Excellent	13.6	6.3
Pristine	6.4	3.0

5.4.1.6 Threatened and priority ecological communities

None of the vegetation associations recorded in the Muchea North study area were considered representative of any Commonwealth or State listed TECs, or any State listed PECs.

5.4.1.7 Local and regional significance of vegetation

Within the Muchea North study area, eight of the 16 vegetation associations may be considered locally significant because they (Table 5-19):

- represent less than one percent of the study area
- provide habitat for one or more conservation significant flora, and/or

[6] Road area included in calculation.

- contain excellent or pristine condition vegetation that represents patches of comparatively high native species diversity surrounded by highly impacted vegetation.

Table 5-19 Vegetation associations considered locally conservation significant in Muchea North study area

Vegetation code	Reason for local significance
27	Represents less than 1% of the Muchea North study area
48	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3)
49	Represents less than 1% of the Muchea North study area
946	Provides habitat for *Stylidium squamellosum* (P2) and *Verticordia lindleyi* subsp. *lindleyi* (P4) Contains excellent or pristine condition vegetation
949	Represents less than 1% of the Muchea North study area
965	Contains excellent or pristine condition vegetation
975	Provides habitat for *Verticordia serrata* var. *linearis* (P3) Contains excellent condition vegetation
999	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3) Contains excellent condition vegetation
1003	Provides habitat for *Darwinia foetida* (CE EPBC Act, S2 WC Act) Represents less than 1% of the Muchea North study area Contains excellent condition vegetation
1006	Contains excellent condition vegetation
1019	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3) Contains excellent condition vegetation

Five vegetation associations within the Muchea North study area (4, 946, 999 and 1008) may be considered regionally conservation significant as less than 30% of their pre-European extent remains (Table 5-15).

5.4.2 Fauna and fauna habitat

5.4.2.1 Fauna habitats

Seven fauna habitat types were defined in the Muchea North study area (Figure 5-6):

- cleared (agriculture, road, infrastructure) (52.51%)
- woodland (Jarrah, Marri, Wandoo and/or banksia) (33.90%)
- cleared and revegetated non-native woodland mosaic (8.84%)
- shrubland (low heath/scrub) (2.05%)
- shrubland (thicket) (0.99%)
- woodland (paperbark or sheoak) (0.88%)
- forest (Jarrah and/or Marri) (0.82%).

The habitat of the study area comprised a combination of cleared, non-native revegetated and native woodlands, shrubland and forest habitats. Jarrah/Marri Woodland was the most abundant habitat with lower woodland and shrublands present in small extents. The majority of the study area was narrow but some patches of native remnant vegetation adjoin larger remnants, including Barracca Nature Reserve and a woodland at the northern end.

Fauna habitat quality within the Muchea North study area was variable, ranging from completely degraded areas offering little habitat value to good quality habitat. Good quality fauna habitat existed within the remnant woodland habitats, particularly those that are contiguous with larger pockets of native vegetation. Some of these patches were identified as having potential ecological linkage value. Elsewhere, the habitat was generally of low value to fauna due to the vegetation degradation, narrowness and fragmentation of remnant vegetation within the study area.

5.4.2.2 Conservation significant fauna

Carnaby's Black Cockatoo was recorded in the Muchea North study area on several occasions during the surveys (Table 5-20). The species was recorded from direct sightings of flocks and individuals, and from evidence of foraging (Figure 5-7). Tony Kirkby noted a male feeding a female and a single male in the study area which suggests breeding in the vicinity.

Up to 13 additional conservation significant fauna species may occur in the Muchea North study area based on habitats present and known species distributions (Table 5-20). Several conservation significant species identified in the desktop review are unlikely to occur because suitable habitat is not present and/or the Muchea North study area is outside the current range of the species. Three species have previously been recorded within 1 km of the study area: Carnaby's Black Cockatoo, Rainbow Bee-eater and Southern Brown Bandicoot.

The habitats likely to support conservation significant species are the larger areas of forest, woodland and shrubland. The narrow habitat corridors are unlikely to support most of the conservation significant species as core habitat but may provide some linkage value to some species. The areas of native vegetation where Carnaby's Black Cockatoo was recorded are of value for this species, especially in regard to food resources.

Table 5-20 Conservation significant species likelihood of occurrence assessment for the Muchea study area

Species	Likelihood of occurrence*
Invertebrates	
Leioproctus contrarius (Bee)	Possible – species of Goodeniaceae have been recorded in study area
Idiosoma nigrum (Shield-backed Trapdoor Spider)	Unlikely – south of known distribution
Throscodectes xederoides (Mogumber Bush Cricket)	Unlikely – habitat not present (white sands)
Reptiles	
Pseudemydura umbrina (Western Swamp Tortoise)	Unlikely – study area north of known distribution; habitat not present (freshwater wetlands)
Egernia stokesii badia (Western Spiny-tailed Skink)	Unlikely – study area outside of known distribution; habitat unsuitable (too degraded and fragmented)
Aspidites ramsayi (Woma Python)	Unlikely – study area is outside of the known distribution
Neelaps calonotos (Black-striped Snake)	Possible – may occur in shrubland habitat where suitable sandy substrates are present
Birds	
Leipoa ocellata (Malleefowl)	Unlikely – habitat unsuitable (too degraded and fragmented)
Oxyura australis (Blue-billed Duck)	Unlikely – habitat not present (wetlands)
Apus pacificus (Fork-tailed Swift)	Likely – may forage in the air above study area
Botaurus poiciloptilus (Australasian Bittern)	Unlikely – no habitat present (wetlands)
Ardea modesta (Eastern great Egret)	Unlikely – no habitat present (wetlands)
Ardea ibis (Cattle Egret)	Possible – may occur in low lying areas following suitable rainfall
Plegadis falcinellus (Glossy Ibis)	Possible – may occur in low lying areas following suitable rainfall
Falco peregrinus (Peregrine Falcon)	Likely – may forage and breed in woodland habitats where suitable large eucalypts present
Rostratula australis (Australian Painted Snipe)	Unlikely – no habitat present (shallow wetlands)
Actitis hypoleucos (Common Sandpiper)	Unlikely – no habitat present (shallow wetlands)
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo)	Likely – may forage and roost but unlikely to breed in study area
Calyptorhynchus latirostris (Carnaby's Black Cockatoo)	Recorded in study area and secondary evidence of foraging recorded in woodland habitats. GHD (2011) recorded a breeding pair in the study area
Calyptorhynchus baudinii (Baudin's Black Cockatoo)	Possible – study area north of modelled distribution but a few (potentially unreliable) NatureMap records as far north as New Norcia - may forage but unlikely to breed or roost in study area
Ninox connivens connivens (Barking Owl, southern)	Possible – may occur in woodland, shrubland or forest habitats
Merops ornatus (Rainbow Bee-eater)	Likely – may occur in shrubland and woodland habitats as well as disturbed areas; NatureMap record within 1 km of the study area

Species	Likelihood of occurrence*
Mammals	
Dasyurus geoffroii (Western Quoll)	Possible – suitable habitat present within study area but limited and narrow, NatureMap record within 3 km west of Bullsbrook
Parantechinus apicalis (Dibbler)	Unlikely – study area north of known current distribution; habitat unsuitable (too degraded and fragmented)
Isoodon obesulus fusciventer (Southern Brown Bandicoot)	Likely – may occur in forest, woodland and shrubland habitats where suitable understory present; has been recorded within 1 km of the study area (NatureMap)
Macropus irma (Western Brush Wallaby)	Possible – may occur in woodland or shrubland habitats
Leporillus conditor (Greater Stick-nest Rat)	Unlikely – confined to a few localities all well outside study area; habitat not present (arid semi-arid shrubland)

* See Table 5-17 for full description of species distribution and habitat preferences.

5.4.2.3 Black cockatoo habitat

A total of 827 potential black cockatoo breeding trees were recorded in the Muchea North study area (Table 5-21; Figure 5-7). *Corymbia calophylla* was the most abundant species accounting for 49% of the species, with *E. wandoo*, *Eucalyptus marginata*, *E. camaldulensis*, *E. rudis* and *E. patens* also present in the survey area. Of the potential breeding trees recorded, 81 had visible hollows and a further six had possible hollows. Of the 81 potential breeding trees with hollows, 16 of the trees were confirmed by Tony Kirkby as having hollows suitable for current breeding by Carnaby's Black Cockatoo and nine of these showed signed of use by the species (Figure 5-7):

- HT0025 (406598E, 6510735N) – *Corymbia calophylla*, worn hollow
- HT5907 40489E, 6508969N) – *Eucalyptus marginata*, slightly worn hollow, possible Carnaby's Black Cockatoo hollow but not much chewing at entrance
- HT5954 (405370E, 6509234N) – *Eucalyptus wandoo*, now being used by Galahs
- HT6017 (407871E, 6511716N) – *Eucalyptus wandoo*, well worn hollow in large branch of large habitat tree
- HT6261 (404998E, 6509195N) – *Eucalyptus wandoo*, good hollow at 10 m with chewing marks but Galahs present, hollow at 10 m
- HT6421 (408325E, 6512584N) – *Corymbia Calophylla*, well chewed hollow at 10 m
- HT8751 (404949E, 6509158N) – *Eucalyptus wandoo*
- HT8752 (405059E, 6509287N) – *Eucalyptus wandoo*
- HT8754 (407824E, 6511706N) – *Eucalyptus wandoo*.

Based on analysis of remnant native vegetation polygons that contained potential breeding trees (section 3.2.2.4), 67.5 ha of breeding habitat is present within remnant native vegetation of the Muchea North study area. Approximately 64% of the potential breeding trees were present within these mapped areas. The remainder were located within cleared pastures and revegetated areas, often as isolated trees or strands of trees in paddocks. Trees with hollows outside of the Phase 2

study area were not checked by Tony Kirkby for suitability or evidence of use. Bees were not recorded as being present in any of the hollows.

No evidence of roosting by Carnaby's Black Cockatoo was recorded in the study area. Twenty one quadrats recorded species known to be used for roosting and nesting (Table 5-22; Appendix 5).

Known food species for Carnaby's Black Cockatoo were recorded in 23 of the 26 sampled vegetation quadrats (Table 5-22). Evidence (residues) of feeding by Carnaby's Black Cockatoo was observed in the study area and was noted to be extensive at some locations, particularly *Corymbia calophylla* and *Banksia attenuata* (pers. comm. T. Kirkby, November 2015). Foraging habitat was assessed in the field as being quality habitat generally due to presence of important foraging species (e.g. *Corymbia calophylla* and *Banksia* spp.) and foraging records. This finding was supported by the spatial analysis of foraging habitat (section 3.2.2.4) which classified 59 ha of the study area as quality foraging habitat.

Table 5-21 Potential black cockatoo breeding tree species recorded in the Muchea North study area

Tree species	Total no.	With hollows	Potential hollows[1]	Suitable for use	Evidence of use	Hollow usage not assessed[2]	Bees present in hollows
Corymbia calophylla	402	35	5	4	2	2	0
Eucalyptus camaldulensis	15	0	0	0	0	0	0
Eucalyptus marginata	86	22	1	2	1	0	0
Eucalyptus patens	2	0	0	0	0	0	0
Eucalyptus rudis	45	2	0	0	0	0	0
Eucalyptus sp.	58	1	0	0	0	1	0
Eucalyptus wandoo	219	20	0	10	6	1	0
Total	**827**	**81**	**6**	**16**	**9**	**4**	**0**

[1] Possible hollows were recorded if trees look like they might have hollows but were not observable by the assessor, e.g. too high up, facing upwards or wrong direction, or had other view obstructions.; [2] Outside Phase 2 survey area.

Table 5-22 Plant species utilised by Carnaby's Black Cockatoo (breeding, foraging and roosting) recorded in the vegetation quadrats for Muchea North study area

Taxon	Food	Nestin	Roosti	M1.8	M1.9a	M1.11	M1.14	M1.21	M1.23	M1.27	M1.30	M1.31	M1.32	M1.33	M1.34	M1.35	MNP2 002	MNP2 003	MNP2 006	MNP2 007	MNP2 008	MNP2 011	MNP2 012	MNP2 013	MNP2 014	MNP2 015	Qu1*	Qu4*	Qu5*
Acacia saligna	●				✓ 5%																								
Banksia attenuata	●			✓ 5%											✓ 5%				✓ 20%					✓ 5%		✓ 5%		✓ 30-70%	
Banksia grandis	●			✓ 2%																									
Banksia menziesii	●														✓ 5%	✓ 1%	✓ 5%		✓ 5%					✓ 20%		✓ 20%			
Banksia nivea	●						✓ 0.1%						✓ 0.1%										✓ 1%						
Banksia sessilis	●							✓ 6%																					
Corymbia calophylla	●	●	●	✓ 60%			✓ 60%	✓ 1%	✓ 35%	✓ 2%	✓ 20%			✓ 0.1%	✓ 30%	✓ 25%		✓ 20%	✓ 20%	✓ 10%		✓ 5%	✓ 15%	✓ 3%	✓ 10%			✓ 30-70%	✓ 30-70%
Eucalyptus accedens	●	●	●																		✓ 25%								
Eucalyptus marginata	●	●?	●					✓ 10%						✓ 25%	✓ 35%	✓ 35%		✓ 10%	✓ 10%	✓ 10%	✓ 5%		✓ 5%	✓ 5%		✓ 10%			
Eucalyptus wandoo	●	●	●										✓ 25%							✓ 30%	✓ 35%				✓ 20%				
Jacksonia furcellata	●				✓ 1%																								✓ 2-10%
Xanthorrhoea preissii	●						✓ 5%	✓ 5%			✓ 3%		✓ 3%	✓ 2%		✓ 3%		✓ 10%	✓ 5%	✓ 1%	✓ 25%	✓ 10%	✓ 5%	✓ 1%	✓ 5%	✓ 10%		✓ 10-30%	
Total				**3**	**2**	**0**	**3**	**4**	**1**	**1**	**2**	**0**	**3**	**3**	**4**	**4**	**1**	**3**	**5**	**4**	**4**	**2**	**4**	**5**	**3**	**4**	**0**	**3**	**2**

Percentages relate to percentage cover of species within quadrat. * Indicates quadrats completed by GHD in 2010 (GHD 2011c).

5.5 CHITTERING SUMMARY

5.5.1 Flora and vegetation

A total of 109 taxa representing 32 families and 74 genera were recorded for the Chittering study area (Appendix 4) comprising 87 native species and 21 weeds. A total of 16 annual species and 93 perennial species were recorded. The most prominent families were Fabaceae (18) Poaceae (15), Proteaceae (8), Asteraceae (7) and Myrtaceae (6) (Appendix 4).

Three specimens (Poaceae sp., Lepidosperma sp. and Haemodorum sp.) could not be conclusively identified to species level as they lacked adequate reproductive structures, none resembled conservation significant flora.

5.5.1.1 Conservation significant flora

Two conservation significant flora were recorded in the Chittering study area, *Acacia drummondii* subsp. *affinis* (P3) and *Haemodorum loratum* (P3) (Table 5-11). The identity of one species, *Acacia drummondii* subsp. *affinis*, was confirmed with the WA Herbarium. The other species is yet to be confirmed.

***Acacia drummondii* subsp. *affinis* Priority 3**

Five populations of *Acacia drummondii* subsp. *affinis* were recorded in the Chittering study area in three vegetation associations; 48 (shrublands; scrub-heath), 965 (medium woodland; Jarrah and Marri) and 968 (medium woodland; Jarrah, Marri and Wandoo) (Figure 5-2).

***Haemodorum loratum* Priority 3**

A single individual was recorded in quadrat CHP2002, in vegetation 992 (medium forest; Jarrah and Wandoo; Figure 5-2). The species has been previously found at 41 locations along the coast between Eneabba and Bunbury, including one record 7 km south-east of Muchea (DPaW 2015b). The identity of this specimen requires confirmation by the WA Herbarium.

5.5.1.2 Introduced flora

A total of 22 weed species were recorded in the Chittering study area. All of the species recorded have wide distributions in WA and there were no apparent range extensions for any species. Two of the taxa, **Echium plantagineum* and **Moraea miniata*, are declared plants (Table 5-12; Figure 5-3).

5.5.1.3 Range extensions

There were no natural range extensions for any of the flora recorded within the Chittering study area.

5.5.1.4 Vegetation associations

The vegetation of the Chittering study area comprised a mixture of medium woodland and medium forest (Figure 5-4). Five vegetation associations were defined (Table 5-13) and collectively represent 38.7% of the study area. The remainder of the study area was represented by the road (GNH), cleared (e.g. townships, driveways, side roads), cleared and planted (re-vegetated with mostly non-native species), and pasture and cleared (homesteads within agricultural areas).

5.5.1.5 Vegetation condition

Vegetation condition in the Chittering study area ranged from completely degraded to excellent, with the majority (61%[7]) mapped as completely degraded (Table 5-23; Figure 5-5). Patches of vegetation were rated as excellent and very good condition, representing 19.5% of woodlands in the study area.

Table 5-23 Proportion of vegetation in Chittering study area by condition rating

Condition	Area (ha)	Percentage of study area
Completely Degraded (includes existing GNH – paved road and gravel shoulders and cleared paddocks)	53.54	61.33
Degraded	7.57	8.68
Good	9.14	10.47
Very Good	6.19	7.09
Excellent	10.85	12.43

5.5.1.6 Threatened and priority ecological communities

None of the vegetation associations recorded in the Chittering study area were considered representative of any Commonwealth or State listed TECs, or any State listed PECs.

5.5.1.7 Local and regional significance of vegetation

Within the Chittering study area, all of the five vegetation associations may be considered locally significant because they (Table 5-24):

- represent less than one percent of the study area
- provide habitat for one or more conservation significant flora, and/or
- contain excellent or pristine condition vegetation that represents patches of comparatively high native species diversity surrounded by highly impacted vegetation.

[7] Road area included in calculation.

Table 5-24 Vegetation associations considered locally conservation significant in Muchea North study area

Vegetation code	Reason for local significance
23	Contains vegetation in excellent condition
48	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3)
965	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3) Contains vegetation in excellent condition
968	Provides habitat for *Acacia drummondii* subsp. *affinis* (P3)
992	Provides habitat for *Haemodorum loratum* (P3) Contains vegetation in excellent condition
1017	Represents less than 1% of the Chittering study area

Vegetation association 992 may also be considered regionally conservation significant as less than 30% of its pre-European extent remains (Table 5-15).

5.5.2 Fauna and fauna habitat

5.5.2.1 Fauna habitats

Three fauna habitats were defined in the Chittering study area (Figure 5-6):

- cleared (agriculture, road, infrastructure) (57.49%)
- woodland (Jarrah, Marri, Wandoo and/or banksia) (38.67%)
- cleared and revegetated non-native woodland mosaic (3.84%).

The habitat within the study area consisted of scattered patches eucalypts over sparse to little understory which was often dominated by pastoral or weed species. Some plantings/rehabilitation were also present within the study area. Most of this habitat lacked understory species or was interspersed with open areas and weeds. There was some evidence of natural regeneration following fire, but these areas were also degraded. Some areas of road reserve were wider than normal (more than a few metres) and almost 50% of the study area was adjacent to larger patches of remnant vegetation or nature reserve.

The overall quality and value of the habitat present within the Chittering study area is considered low and unsuitable for fauna largely due to previous clearing, and degradation of native vegetation. However the areas of native vegetation where the road reserve is adjacent to remnant native vegetation may provide some value as a linkage between remnant patches.

5.5.2.2 Conservation significant fauna

No conservation significant fauna species were recorded in the Chittering study area during the surveys.

Up to 14 conservation significant fauna species may occur in the Chittering study area based on habitats present and known species distributions (Table 5-25). Several conservation significant species identified in the desktop review are unlikely to occur because suitable habitat is not present and/or the Chittering study area is outside the current range of the species. Three species have previously

been recorded within 1 km of the study area: Carnaby's Black Cockatoo, Rainbow Bee-eater and Southern Brown Bandicoot.

The habitats likely to support conservation significant species are the forest, woodland and shrubland habitats. The narrow habitat corridors are unlikely to support many of these species but the habitats adjacent to remnant vegetation patches may provide some value (e.g. as a linkage to core habitat) for some species.

Table 5-25 Conservation significant species likelihood of occurrence assessment for Chittering study area

Species	Likelihood of occurrence*
Invertebrates	
Leioproctus contrarius (Bee)	Possible – species of Goodeniaceae have been recorded in study area
Idiosoma nigrum (Shield-backed Trapdoor Spider)	Unlikely – south of known distribution
Throscodectes xederoides (Mogumber Bush Cricket)	Unlikely – habitat not present (white sands)
Reptiles	
Pseudemydura umbrina (Western Swamp Tortoise)	Unlikely – study area north of known distribution; habitat not present (freshwater wetlands)
Egernia stokesii badia (Western Spiny-tailed Skink)	Unlikely – study area outside of known distribution; habitat unsuitable (too degraded and fragmented)
Aspidites ramsayi (Woma Python)	Unlikely – study area is outside of the known distribution
Neelaps calonotos (Black-striped Snake)	Possible – may occur in shrubland habitat where suitable sandy substrates are present
Birds	
Leipoa ocellata (Malleefowl)	Unlikely – habitat unsuitable (too degraded and fragmented)
Oxyura australis (Blue-billed Duck)	Unlikely – habitat not present (wetlands)
Apus pacificus (Fork-tailed Swift)	Likely – may forage in the air above study area
Botaurus poiciloptilus (Australasian Bittern)	Unlikely – no habitat present (wetlands)
Ardea modesta (Eastern great Egret)	Unlikely – no habitat present (wetlands)
Ardea ibis (Cattle Egret)	Possible – may occur in low lying areas following suitable rainfall
Plegadis falcinellus (Glossy Ibis)	Possible – may occur in low lying areas following suitable rainfall
Falco peregrinus (Peregrine Falcon)	Likely – may forage and breed in woodland habitats where suitable large Eucalypts present
Rostratula australis (Australian Painted Snipe)	Unlikely – no habitat present (shallow wetlands)
Actitis hypoleucos (Common Sandpiper)	Unlikely – no habitat present (shallow wetlands)
Calyptorhynchus banksii naso (Forest Red-tailed Black Cockatoo)	Likely – may forage and roost but unlikely to breed in study area
Calyptorhynchus latirostris (Carnaby's Black Cockatoo)	Likely – suitable nesting, roosting and foraging habitat present.
Calyptorhynchus baudinii (Baudin's Black Cockatoo)	Possible – study area north of modelled distribution but a few (potentially unreliable) NatureMap records as far north as New Norcia - may forage but unlikely to breed or roost in study area

Species	Likelihood of occurrence*
Ninox connivens connivens (Barking Owl, southern)	Possible – may occur in woodland, shrubland or forest habitats
Merops ornatus (Rainbow Bee-eater)	Likely – may occur in shrubland and woodland habitats as well as disturbed areas; NatureMap record within 1 km of the study area
Mammals	
Dasyurus geoffroii (Western Quoll)	Possible – suitable habitat present within study area but limited and narrow, NatureMap record within 3 km west of Bullsbrook
Parantechinus apicalis (Dibbler)	Unlikely – study area north of known current distribution; habitat unsuitable (too degraded and fragmented)
Isoodon obesulus fusciventer (Southern Brown Bandicoot)	Likely – likely to occur in forest, woodland and shrubland habitats where suitable understory present; has been recorded within 1 km of the study area (NatureMap)
Macropus irma (Western Brush Wallaby)	Possible – may occur in woodland or shrubland habitats
Petrogale lateralis lateralis (Black-flanked Rock-wallaby)	Unlikely – habitat not present (rocky outcrop)
Leporillus conditor (Greater Stick-nest Rat)	Unlikely – confined to a few localities all well outside study area; habitat not present (arid semi-arid shrubland)

* See Table 5-17 for full description of species distribution and habitat preferences.

5.5.2.3 Black cockatoo habitat

A total of 638 potential black cockatoo breeding trees were recorded within the Chittering study area (Table 5-26; Figure 5-7). *Corymbia calophylla* was the most common species accouting for 39% of potential habitat trees. *Eucalyptus wandoo*, *E. marginata*, *E. accedens* and *E. rudis* were also present in the study area. Thirty-one of the potential breeding trees had visible hollows. Of the 31 potential breeding trees with hollows, nine of the trees were confirmed by Tony Kirkby as having hollows suitable for current breeding by Carnaby's Black Cockatoo and two of these showed sign of recent use by the species (Figure 5-7):

- HT4059 (409566E, 6517603N) – *Eucalyptus wandoo*, nestbox with chewing on sacrificial post
- HT8753 (409125E, 6516486N) – *Eucalyptus wandoo*.

Based on analysis of remnant native vegetation polygons that contained potential breeding trees (section 3.2.2.4), 31.0 ha of breeding habitat within remnant native vegetation is present within the Chittering study area. Approximately 68% of the potential breeding trees were present within these mapped areas. The remainder were located within cleared pastures and revegetated areas. Trees with hollows outside of the Phase 2 study area were not checked by Tony Kirkby for suitability or evidence of use. Bees were recorded as being present in three of the hollows.

No evidence of roosting was recorded in the Chittering study area. Seven quadrats recorded species known to be used for roosting and nesting by Carnaby's Black Cockatoo (Table 5-27).

Known food species for Carnaby's Black Cockatoo were recorded in eight of the nine sampled vegetation quadrats (Table 5-27). Evidence (residues) of feeding by Carnaby's Black Cockatoo was observed in the study area and was noted to be extensive at some locations, particularly in those areas with *Corymbia calophylla* (pers. comm. T. Kirkby, March 2015). Foraging habitat was assessed in the field as being quality habitat generally due to high presence of foraging species in some locations and foraging records. This finding was supported by the spatial analysis of foraging habitat (section 3.2.2.4) which identified 28.5 ha of quality foraging habitat and 5.3 ha of low value foraging habitat within the study area.

Table 5-26 Potential black cockatoo breeding tree species recorded in the Chittering study area

Tree species	Total number	With hollows	Potential hollows[1]	Suitable for use	Evidence of use	Hollow usage not assessed[2]	Bees present in hollows
Corymbia calophylla	248	7	0	2	0	1	1
Eucalyptus accedens	23	0	0	0	0	0	0
Eucalyptus marginata	106	11	0	1	0	0	0
Eucalyptus rudis	39	3	0	0	0	0	0
Eucalyptus sp.	58	1	0	0	0	0	0
Eucalyptus wandoo	164	9	0	6	2	1	2
Total	**638**	**31**	**0**	**9**	**2**	**1**	**3**

[1] Possible hollows were recorded if trees look like they might have hollows but were not observable by the assessor, e.g. too high up, facing upwards or wrong direction, or had other view obstructions.; [2] Outside Phase 2 survey area.

Table 5-27 Important plant species for Carnaby's Black Cockatoo recorded in the vegetation quadrats for the study area

Taxon	Food plant	Nesting	Roosting	CH1.1	CH1.2	CH1.3	M 1.35	CHP2002	CHP2003	CHP2006	CHP2008	MNP2018
Acacia saligna	●					✓ 4%						
Banksia attenuata	●											✓ 5%
Banksia menziesii	●						✓ 1%					✓ 20%
Banksia sessilis	●											
Callitris pyramidalis	●						✓ 2%					
Corymbia calophylla	●	●	●		✓ 40%		✓ 25%		✓ 8%	✓ 15%	✓ 15%	
Eucalyptus accedens	●	●	●									
Eucalyptus marginata	●	●?					✓ 35%	✓ 5%	✓ 8%	✓ 15%	✓ 15%	✓ 20%
Eucalyptus wandoo	●	●	●					✓ 25%	✓ 4%			
Hakea lissocarpha	●											
Hakea prostrata	●											
Jacksonia furcellata	●											
Xanthorrhoea preissii	●				✓ 10%		✓ 3%	✓ 10%	✓ 10%	✓ 10%		
Total				**0**	**2**	**1**	**5**	**3**	**4**	**3**	**2**	**3**

Percentages relate to percentage cover of species within quadrat

6 DISCUSSION

6.1 FLORA AND VEGETATION

The flora and vegetation survey undertaken in the Muchea North and Chittering study area identified the presence of a total of seven conservation significant species comprised of:

- one population of the EPBC Act Threatened (Critically Endangered) and WC Act Schedule 2 (Endangered) *Darwinia foetida* in Muchea North, with 7 plants recorded (an additional population of ten plants was recorded outside the current study area)
- two populations, each comprising single plants, of the Priority 2 species *Stylidium squamellosum* in Muchea North
- nine populations containing 99 plants in total of *Acacia drummondii* subsp. *affinis* (Priority 3), with records from both Muchea North and Chittering (and an additional population of 409 plants outside the current Muchea North study area)
- a single specimen of *Haemodorum loratum* (Priority 3) in Chittering
- two populations, each comprising single plants, of *Verticordia serrata* var. *linearis* (Priority 3) in Muchea North
- a single specimen of *Eucalyptus caesia* (Priority 4) in Muchea North. This species is widely propagated and distributed as a garden plant and, as such, it is considered highly likely that this specimen has been planted.
- five populations (112 individuals) of *Verticordia lindleyi* subsp. *lindleyi* (Priority 4) in Muchea North (an additional two populations of 21 plants are outside the current study area).

The remnant vegetation within the study area covers approximately 46% (117.0 ha) of the 302.6 ha study area which represents a relatively high percentage in a region that has been extensively cleared. The remainder of the study area (185.6 ha) comprised cleared and planted areas, pasture and the GNH, and was mapped as completely degraded.

Of the 19 vegetation associations defined in the study area, low to mid woodland associations were most prevalent, representing 13 of the 19 vegetation associations mapped for the study area and 71.4% of the remnant native vegetation present. Woodlands containing combinations of Jarrah, Marri, Wandoo as dominant overstory species were most prevalent. The remainder of the remnant vegetation within the study area was represented by shrublands (tee-tree thickets, scrub-heath and mixed heath) and medium forests (Jarrah, Marri and Wandoo).

The condition of the remnant vegetation in the study area ranged from degraded to pristine with 50.3 ha (16.6% of the study area) showing clear evidence of significant disturbance (degraded to good condition) and typically very low native biological diversity. Pockets of the vegetation across both Muchea North and Chittering were rated as very good (35.7 ha, 11.8%) and excellent (24.5 ha, 8.1%) condition. Pristine condition vegetation was only recorded in Muchea North, in three small areas (6.4 ha, 2.1%), one comprising medium woodland; Wandoo (946) within the Barracca Nature Reserve, and two representing medium forest; Jarrah-Marri (965).

None of the vegetation associations recorded in either Muchea North or Chittering are considered to be representative of any Commonwealth or State listed TECs, or any State listed PECs.

Five of the 19 vegetation associations defined for the study area may be considered to have regional conservation significance as they represent vulnerable communities with less than 30% of pre-European extent remaining when compared with DPaW 2014 statistics (DPaW 2014):

- total area of vegetation association 4 within the study area is 5.50 ha which represents 0.002% of the total area of vegetation type 4 remaining (293,983 ha)
- total area of vegetation association 946 within the study area is 4.12 ha which represents 0.029% of the total area of vegetation type 946 remaining (14,145 ha)
- total area of vegetation association 992 within the study area is 5.3 ha which represents 0.017% of the total area of vegetation type 992 remaining (31,783 ha)
- total area of vegetation association 999 within the study area is 9.92 ha which represents 0.076% of the total area of vegetation type 999 remaining (13,035 ha)
- total area of vegetation association 1008 within the study area is 6.08 ha which represents 0.531% of the total area of vegetation type 1008 remaining (1,145 ha).

Areas within 14 of the vegetation associations recorded in the study area (23, 27, 37, 48, 49, 946, 965, 968, 975, 992, 999, 1003, 1006 and 1019) may be considered locally significant because they represent less than one percent of the study area, provide habitat for one or more conservation significant flora, and/or represent areas of comparatively high native diversity (i.e. excellent or pristine vegetation condition) in otherwise largely disturbed vegetation.

Of the 51 weed species recorded in the study area, three are declared plants **Asparagus asparagoides*, **Echium plantagineum* and **Moraea miniata*. **Asparagus asparagoides* is also a WoNS. The declared plants will require management to alleviate potential harmful impact of the plant, reduce numbers and distribution, and prevent spread of the species.

In terms of overall ecological value the northern part of Muchea North was considered to have the highest value in the study area due to the following attributes:

- vegetation was in very good, excellent or pristine condition
- provided habitat for several conservation significant flora
- supported some of the more good quality fauna habitat
- provided broader regional linkage between Barracca Nature Reserve and surrounding larger native vegetation remnants.

Vegetation recorded to be in very good to pristine condition typically comprised a greater level of biological diversity than the surrounding more disturbed remnants and as such clearing of this vegetation may be at variance with clearing principle A:

- Native vegetation should not be cleared if it comprises a high level of biological diversity.

Clearing of vegetation containing breeding, roosting and/or quality foraging habitat for Carnaby's Black Cockatoo within the study are is likely to be considered at variance with principle B:

- Native vegetation should not be cleared if it comprises the whole or a part of, or is necessary for the maintenance of, a significant habitat for fauna indigenous to Western Australia.

The only record of legislatively protected flora from the study area was one population of *Darwinia foetida* from a degraded area in Muchea North. With the exception of this species, the area was comprised completely of weed species and it is therefore considered that clearing of this vegetation is unlikely to be variance to principle C as the vegetation does not comprise native species:

- Native vegetation should not be cleared if it includes, or is necessary for the continued existence of, rare flora.

As all vegetation in the study area represents remnants in an area that has been extensively cleared, clearing of vegetation in the study area is may be considered at variance to clearing principle E:

- Native vegetation should not be cleared if it is significant as a remnant of native vegetation in an area that has been significantly cleared.

Vegetation within the Muchea North study area adjoins Barracca Nature Reserve and clearing of vegetation within, or adjacent to the reserve, could be at variance with clearing principle H:

- Native vegetation should not be cleared if the clearing of the vegetation is likely to have an impact on the environmental values of any adjacent or nearby conservation area.

6.2 FAUNA AND FAUNA HABITAT

The fauna survey undertaken in the Muchea North and Chittering study area identified variable habitat quality ranging from completely degraded areas offering little habitat value to good quality habitat. The majority of the 13 woodland vegetation associations were collectively classified as woodland (Jarrah, Marri, Wandoo and/or banksia) habitat and represented 91.3% of fauna habitat within remnant vegetation of the study area. Shrubland (low heath/scrub; thicket), forest (Jarrah and/or Marri) and paperbark or sheoak woodland made up the remaining habitat in small pockets of Muchea North.

Some patches of woodland habitat in Muchea North that are contiguous with larger pockets of native vegetation were considered to be good quality habitat. The overall quality and value of habitat in Chittering was considered low and generally unsuitable for fauna largely due to previous clearing, and degradation of native vegetation.

The majority of the study area (61.3%) comprised cleared areas, represented by agriculture, roads and other infrastructure, and cleared and revegetated non-native woodlands, which are of little to no value for fauna both in terms of habitat value and as ecological corridors.

Numerous records of Carnaby's Black Cockatoo were made in Muchea North during the surveys and were the only direct observations of conservation significant fauna. Based on habitats present and known species distributions, up to 14 conservation significant fauna species may occur in Muchea North, particularly in the larger remnants (Table 5-20). Up to 14 conservation significant species were also assessed as potentially occurring in Chittering (Table 5-25); however, the greater degree of clearing and fragmentation in this part of the study area when compared with Muchea North is likely to affect the potential for presence of most of these fauna.

Within the study area, 1,465 potential breeding trees representing breeding habitat for Carnaby's Black Cockatoo were recorded during the survey comprising *Corymbia calophylla* (44%), *Eucalyptus wandoo, E. marginata*, *E. accedens*, *E. camaldulensis*, *E. rudis* and *E. patens*. Based on the records, 98.5 ha of remnant vegetation within the study area has been mapped as potential breeding habitat for the species. Approximately 66% of the potential breeding trees were present within these mapped areas; the remainder were located within cleared pastures and revegetated areas. Potential breeding habitat is defined by the presence of known breeding tree species with suitable DBH (DSEWPaC 2012a). DSEWPaC (2012) (2012a) also recognises that in such habitat, "trees of all ages and size are potentially important for maintaining breeding in the long term through maintaining the integrity of the habitat and allowing for recruitment of trees to provide future nest hollows", as well as the importance of maintaining long-term supply of trees particularly in woodland stands that are known to support cockatoo breeding.

The study area contains 11 likely nesting sites for Carnaby's Black Cockatoo and an additional 25 trees with hollows suitable for current breeding by the species.

No evidence of roosting by Carnaby's Black Cockatoo was recorded; however, tree species that Carnaby's Black Cockatoo is known to roost in were recorded within the study area. Inspections for roost (and nest) sites were not conducted within vicinity of the study area and therefore it cannot be

ruled out that a roost site occurs within 6 km of the study area or that a known nesting site occurs within 6-12 km of the study area.

The survey results indicate that the study area contains important foraging habitat for Carnaby's Black Cockatoo, with evidence of feeding noted to be extensive at some locations, particularly in those areas with *Corymbia calophylla* and *Banksia attenuata.* Based on the spatial analysis of food plants present in vegetation quadrats, 87.5 ha of the study area was rated as quality foraging habitat for the species.

A pine plantation adjacent to the Chittering study area between SLK 46.8 and 48.4 and comprising approximately 200 ha is likely to provide an additional food resource for Carnaby's Black Cockatoo in the vicinity of the study area. Pine plantations are known to be a significant food source for the species, particularly on the Swan Coastal Plain where they are common (Finn *et al.* 2009; Lee *et al.* 2013; Stock *et al.* 2013). Approximately 20 km to the west and south of the study area, three large extents of pine plantation are present at Gnangara, Pinjar and Yanchep. Large numbers of Carnaby's Black Cockatoo have been recorded foraging in the pine plantations in these areas in the month of April, which is around peak season for maturation of the seeds (Stock *et al.* 2013). Pines are also an important food source for the species when non-native species may not be flowering, in January to July (Finn *et al.* 2009).

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Appendix 1 Quadrat data

Site:	CHP2002	**Type:**	Q (10 m x 10 m)
Date:	24/09/2015	**Position:**	-31.473872, 116.047428
Total vegetation cover (%):	50	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	30	**Soil colour:**	grey
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	0.1	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	>10
Disturbance details:	firebreak, historic clearing, weeds		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Eucalyptus wandoo* and *E. marginata* open forest over mid *Xanthorrhoea preissii* open shrubland over low *Lechenaultia biloba*, *Banksia dallanneyi* var. *dallanneyi*, *Gastrolobium dilatatum* and *Conostylis setosa* open shrubland over isolated low **Briza maxima* and *Neurachne alopecuroidea* tussock grasses and isolated low *Mesomelaena tetragona* and *Desmocladus fasciculatus* sedges.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus wandoo	25.0	15.00		
Xanthorrhoea preissii	10.0	01.50		
Eucalyptus marginata	05.0	10.00		
Lechenaultia biloba	02.0	00.30		
Banksia dallanneyi var. *dallanneyi*	01.0	00.20		
Gastrolobium dilatatum	01.0	00.40		
Conostylis setosa	01.0	00.20		
Mesomelaena tetragona	00.2	00.35		
Banksia bipinnatifida subsp. *multifida*	00.1	00.20		
Dampiera linearis	00.1	00.20		
Pterostylis sanguinea	00.1	00.20		
Synaphea spinulosa subsp. *spinulosa*	00.1	00.30		
Haemodorum loratum	00.1	01.00		P3
Petrophile macrostachya	00.1	00.50		

Hakea stenocarpa	00.1	00.60	
Hibbertia hypericoides	00.1	00.40	
Desmocladus fasciculatus	00.1	00.15	
Labichea lanceolata subsp. *lanceolata*	00.1	00.30	
Philotheca spicata	00.1	00.30	
Calectasia narragara	00.1	00.30	
Poaceae sp.	00.1	00.10	
Allocasuarina humilis	00.1	00.50	
Neurachne alopecuroidea	00.1	00.40	
Gompholobium knightianum	00.1	00.30	
Sphaerolobium medium	00.1	00.30	
Briza maxima	00.1	00.20	*
Gladiolus caryophyllaceus	00.1	00.50	*
Lomandra sericea	00.1	00.50	
Conostylis aculeata subsp. *preissii*	00.1	00.25	
Burchardia congesta	00.1	00.40	

Site:	CHP2003	**Type:**	Q (10 m x 10 m)
Date:	24/09/2015	**Position:**	-31.483118, 116.043669
Total vegetation cover (%):	45	**Topography:**	hill top
Tree/shrub cover >2 m (%):	20	**Soil colour:**	grey
Shrub cover <2 m (%):	20	**Soil:**	sand, loam
Grass cover (%):	0.1	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	>5 years
Disturbance details:	weeds		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla*, *Eucalyptus marginata* and *E. wandoo* woodland over mid *Xanthorrhoea preissii* open shrubland over low sparse *Gastrolobium dilatatum*, *Acacia drummondii* subsp. *affinis* and *Labichea lanceolata* subsp. *lanceolata* shrubland over isolated low *Neurachne alopecuroidea* and **Pentameris airoides* grasses and *Lepidosperma calcicola* sedges and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Xanthorrhoea preissii	10.0	02.00		
Corymbia calophylla	08.0	15.00		
Eucalyptus marginata	08.0	15.00		
Eucalyptus wandoo	04.0	15.00		
Gastrolobium dilatatum	03.0	00.70		
Lechenaultia biloba	01.0	00.30		
Acacia drummondii subsp. *affinis*	01.0	00.50		P3
Hakea stenocarpa	01.0	00.60		
Labichea lanceolata subsp. *lanceolata*	01.0	00.60		
Sphaerolobium medium	01.0	00.50		
Lepidosperma sp.	00.1	00.20		
Lomandra sericea	00.1	00.30		
Philotheca spicata	00.1	00.30		
Hibbertia lasiopus	00.1	00.20		

Banksia bipinnatifida subsp. *multifida*	00.1	00.20	
Tetratheca nuda	00.1	00.25	
Tripterococcus brunonis	00.1	00.40	
Stylidium hispidum	00.1	00.10	
Stylidium diuroides subsp. *diuroides*	00.1	00.20	
Drosera pallida	00.1	<00.01	
Conostylis setosa	00.1	00.20	
Synaphea spinulosa subsp. *spinulosa*	00.1	00.40	
Dampiera linearis	00.1	00.30	
Thysanotus multiflorus	00.1	00.50	
Trymalium angustifolium	00.1	00.20	
Daviesia decurrens	00.1	00.70	
Pentameris airoides	00.1	00.10	*
Petrophile striata	00.1	00.60	
Haemodorum sp.	00.1	04.00	
Trichocline spathulata	00.1	00.15	
Stylidium neurophyllum	00.1	00.20	
Drosera erythrorhiza	00.1	00.01	
Gompholobium preissii	00.1	00.40	
Ursinia anthemoides	00.1	00.20	*
Gladiolus caryophyllaceus	00.1	00.40	*
Neurachne alopecuroidea	00.1	00.40	
Dillwynia laxiflora	00.1	00.30	
Mesomelaena pseudostygia	00.1	00.40	
Lepidosperma calcicola	00.1	00.60	
Dampiera alata	00.1	00.40	
Lomandra caespitosa	00.1	00.20	
Burchardia congesta	00.1	00.40	
Boronia ramosa subsp. *anethifolia*	00.1	03.00	
Kennedia stirlingii	00.1	00.20	
Astroloma pallidum	00.1	00.20	
Desmocladus fasciculatus	00.1	00.20	
Gompholobium knightianum	00.1	00.30	
Xanthosia huegelii	00.1	00.15	
Millotia tenuifolia var. *tenuifolia*	00.1	00.10	
Conostylis setigera subsp. *setigera*	00.1	00.20	

Site:	CHP2006	**Type:**	Q (10 m x 10 m)
Date:	23/09/2015	**Position:**	-31.488563, 116.042891
Total vegetation cover (%):	50	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	30	**Soil colour:**	brown, grey, whitish
Shrub cover <2 m (%):	20	**Soil:**	sand
Grass cover (%):	0.1	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	>5 years
Disturbance details:	firebreak, historic clearing, weed infestation		
Vegetation condition:	good (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus marginata* woodland over mid *Adenanthos cygnorum* and *Xanthorrhoea preissii* open shrubland over isolated low *Acacia pulchella* shrubs and isolated low *Hypolaena exsulca* and *Mesomelaena pseudostygia* sedges and mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	15.0	15.00		
Eucalyptus marginata	15.0	15.00		
Xanthorrhoea preissii	10.0	01.50		
Adenanthos cygnorum	10.0	02.00		
Acacia drewiana subsp. *drewiana*	01.0	00.30		
Nuytsia floribunda	00.1	03.00		
Laxmannia squarrosa	00.1	00.15		
Hypolaena exsulca	00.1	00.60		
Mesomelaena pseudostygia	00.1	00.50		
Gompholobium tomentosum	00.1	00.30		
Conostylis juncea	00.1	00.30		
Caladenia flava	00.1	00.20		
Gladiolus caryophyllaceus	00.1	00.40	*	
Crassula colorata	00.1	00.03		
Astroloma stomarrhena	00.1	00.30		
Drosera erythrorhiza	00.1	00.01		

Drosera pygmaea	00.1	00.03	
Ursinia anthemoides subsp. *anthemoides*	00.1	00.15	*
Pyrorchis nigricans	00.1	00.01	
Haemodorum sp.	00.1	00.50	
Hypochaeris glabra	00.1	00.15	*
Lomandra sericea	00.1	00.20	
Gastrolobium capitatum	00.1	00.20	
Ehrharta longiflora	00.1	00.40	*
Diuris magnifica	00.1	00.20	
Briza minor	00.1	00.15	*

Site:	CHP2007	**Type:**	Q (10 m x 10 m)
Date:	23/09/2015	**Position:**	-31.491508, 116.040831
Total vegetation cover (%):	80	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	25	**Soil colour:**	brown, whitish
Shrub cover <2 m (%):	10	**Soil:**	sand
Grass cover (%):	10	**Rock type:**	none
Herb cover (%):	40	**Fire age:**	none evident
Disturbance details:	firebreak, grazing – high, historic clearing, weed infestation		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus marginata* woodland over mid *Xanthorrhoea preissii* sparse shrubland over mixed low grasses and forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Hypochaeris glabra	20	0.05	*	
Arctotheca calendula	20	0.01	*	
Corymbia calophylla	15.0	15.00		
Xanthorrhoea preissii	10.0	02.00		
Eucalyptus marginata	10.0	15.00		
Poaceae sp.	10	00.2		

Site:	CHP2008	**Type:**	Q (10 m x 10 m)
Date:	23/09/2015	**Position:**	-31.487844, 116.04105
Total vegetation cover (%):	60	**Topography:**	flat plain
Tree/shrub cover >2 m (%):	40	**Soil colour:**	grey
Shrub cover <2 m (%):	20	**Soil:**	sandy loam
Grass cover (%):	0.1	**Rock type:**	none
Herb cover (%):	1	**Fire age:**	>5 years
Disturbance details:	weed infestation		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus marginata* woodland over mid *Xanthorrhoea preissii* sparse shrubland over low mixed open shrubland and low isolated grasses, sedges and herbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	15.0	15.00		
Eucalyptus marginata	15.0	15.00		
Xanthorrhoea preissii	10.0	02.50		
Lechenaultia biloba	05.0	00.50		
Hibbertia hypericoides	04.0	00.50		
Hibbertia polystachya	03.0	00.30		
Hakea stenocarpa	02.0	00.60		
Dillwynia laxiflora	01.0	00.70		
Mesomelaena tetragona	01.0	00.50		
Drosera pallida	01.0	<00.01		
Acacia drummondii subsp. *affinis*	01.0	00.30		P3
Banksia dallanneyi var. *dallanneyi*	00.1	00.20		
Allocasuarina humilis	00.1	01.80		
Burchardia congesta	00.1	00.30		
Lomandra sericea	00.1	00.40		
Haemodorum sp.	00.1	00.30		
Lomandra caespitosa	00.1	00.25		

Hypochaeris glabra	00.1	00.10	*
Gompholobium knightianum	00.1	00.30	
Ehrharta longiflora	00.1	00.80	*
Daviesia angulata	00.1	00.50	
Trichocline spathulata	00.1	00.15	
Banksia bipinnatifida subsp. *multifida*	00.1	00.20	
Gladiolus caryophyllaceus	00.1	00.60	*
Briza maxima	00.1	00.20	*
Poaceae sp.	00.1	00.30	
Gompholobium preissii	00.1	00.20	
Desmocladus fasciculatus	00.1	00.20	
Philotheca spicata	00.1	00.30	

Site:	M1.8	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.5741, 115.995
Total vegetation cover (%):	90	**Topography:**	plain
Tree/shrub cover >2 m (%):	67	**Soil colour:**	grey
Shrub cover <2 m (%):	0.1	**Soil:**	sand
Grass cover (%):	90	**Rock type:**	none
Herb cover (%):	3	**Fire age:**	>10 years
Disturbance details:	evidence it was partially cleared in past, holes dug, dense weeds		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* open forest, over low open *Banksia attenuata* and *Banksia grandis* woodland over mid to tall **Chasmanthe floribunda*, *Mesomelaena pseudostygia* and *Chordifex sinuosus* sedgeland and low **Ehrharta longiflora*, **E. calycina* and **Eragrostis curvula* tussock grassland with isolated **Asparagus asparagoides* vines.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Ehrharta longiflora	70.0	00.40	*	
Corymbia calophylla	60.0	15.00		
Chasmanthe floribunda	10.0	01.00	*	
Ehrharta calycina	05.0	00.50	*	
Banksia attenuata	05.0	06.00		
Asparagus asparagoides	03.0	00.30	*	
Chordifex sinuosus	03.0	00.50		
Mesomelaena pseudostygia	02.0	00.40		
Banksia grandis	02.0	05.00		
Eragrostis curvula	01.0	00.40	*	
Stirlingia latifolia	00.1	00.40		

Site:	M1.9a	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.5705, 115.994
Total vegetation cover (%):	95	**Topography:**	low-lying swamp
Tree/shrub cover >2 m (%):	35	**Soil colour:**	black
Shrub cover <2 m (%):	2	**Soil:**	sand with humus
Grass cover (%):	75	**Rock type:**	none
Herb cover (%):	3	**Fire age:**	5 – 10 years
Disturbance details:	dense weeds, fence line		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Low *Melaleuca rhaphiophylla* and *M. viminea* subsp. *viminea* woodland over sparse mid *Acacia saligna*, **Tamarix parviflora* and *Jacksonia furcellata* shrubland over tall **Chasmanthe floribunda* and **Typha orientalis* sedgeland over isolated low *Acacia pulchella* var. *pulchella* and *Hypocalymma angustifolium* shrubs over mid open **Eragrostis curvula*, **Polypogon monspeliensis* and **Lolium rigidum* tussock grassland over isolated **Cotula coronopifolia*, **Sonchus oleraceus* and **Trifolium arvense* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Typha orientalis	40.0	02.00	*	
Chasmanthe floribunda	20.0	01.00	*	
Eragrostis curvula	15.0	00.50	*	
Melaleuca viminea subsp. *viminea*	15.0	04.00		
Melaleuca rhaphiophylla	15.0	05.00		
Acacia saligna	05.0	02.50		
Cotula coronopifolia	03.0	00.30	*	
Lolium rigidum	02.0	00.30	*	
Polypogon monspeliensis	02.0	00.70	*	
Bromus diandrus	01.0	00.50	*	
Tamarix parviflora	01.0	01.50	*	
Ehrharta calycina	01.0	00.50	*	
Jacksonia furcellata	01.0	01.50		

Sonchus oleraceus	00.1	00.50	*
Isolepis cernua var. *setiformis*	00.1	00.10	
Hypocalymma angustifolium	00.1	00.50	
Acacia pulchella var. *pulchella*	00.1	00.40	
Ehrharta longiflora	00.1	00.30	*
Trifolium arvense	00.1	00.20	*
Briza maxima	00.1	00.50	*

Site:	M1.11a	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.5585, 115.992
Total vegetation cover (%):	60	**Topography:**	depression, seasonally inundated
Tree/shrub cover >2 m (%):	5	**Soil colour:**	grey
Shrub cover <2 m (%):	40	**Soil:**	loamy sands and laterite
Grass cover (%):	16	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	>10 years
Disturbance details:	roadside, abundant weeds, evidence of partial clearing		
Vegetation condition:	very good (Keighery, 1994)		
Vegetation description:	Isolated mid *Eucalyptus drummondii* x *rudis* trees over mid open *Hypocalymma angustifolium* and *Verticordia densiflora* var. *densiflora* heathland over isolated low *Leptospermum erubescens* and *Petrophile linearis* shrubs over a mid open **Eragrostis curvula* and **Briza minor* tussock grassland with isolated mid *Mesomelaena tetragona* sedges and low isolated **Ursinia anthemoides*, **Arctotheca calendula* and **Trifolium arvense* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Hypocalymma angustifolium	20.0	01.20		
Verticordia densiflora var. *densiflora*	15.0	01.20		
Eragrostis curvula	15.0	00.70	*	
Tricoryne elatior	05.0	00.50		
Eucalyptus drummondii x *rudis*	05.0	15.00		
Leptospermum erubescens	02.0	01.00		
Mesomelaena tetragona	01.0	00.70		
Ursinia anthemoides	01.0	00.30	*	
Briza minor	00.1	00.40	*	
Drosera glanduligera	00.1	00.05		
Microtis media subsp. *media*	00.1	00.15		
Arctotheca calendula	00.1	00.10	*	
Wahlenbergia gracilenta	00.1	00.10		
Trifolium arvense	00.1	00.10	*	

Lotus subbiflorus	00.1	00.10	*
Petrophile linearis	00.1	00.50	

Site:	M1.14a	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.5489, 115.997
Total vegetation cover (%):	70	**Topography:**	gentle slope/low hill
Tree/shrub cover >2 m (%):	65	**Soil colour:**	brown
Shrub cover <2 m (%):	10	**Soil:**	sand
Grass cover (%):	6	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	5 – 10 years
Disturbance details:	firebreak, fencing, rubbish, weeds		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* open forest over a mid *Allocasuarina humilis* and *Xanthorrhoea preisii* shrubland over low sparse *Phyllanthus calycinus*, *Acacia pulchella* var. *pulchella* and *Gompholobium tomentosum* shrubland, over low open *Neurachne alopecuroidea*, **Ehrharta calycina* and **Eragrostis curvula* tussock grassland with isolated low *Desmocladus flexuosus* and *Mesomelaena pseudostygia* sedges and low isolated **Gladiolus caryophyllaceus*, *Burchardia congesta* and *Conostylis candicans* subsp. *candicans* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	60.0	20.00		
Allocasuarina humilis	25.0	02.50		
Xanthorrhoea preissii	05.0	01.50		
Neurachne alopecuroidea	04.0	00.50		
Phyllanthus calycinus	03.0	00.50		
Acacia pulchella var. *pulchella*	01.0	00.50		
Ehrharta calycina	01.0	00.50	*	
Eragrostis curvula	01.0	00.50	*	
Briza maxima	00.1	00.30	*	
Gompholobium tomentosum	00.1	00.40		
Romulea rosea	00.1	00.10	*	
Mesomelaena pseudostygia	00.1	00.30		

Burchardia congesta	00.1	00.30	
Gladiolus caryophyllaceus	00.1	00.50	*
Conostylis candicans subsp. *candicans*	00.1	00.30	
Scaevola repens	00.1	00.20	
Podotheca gnaphalioides	00.1	00.10	
Daviesia preissii	00.1	00.60	
Banksia nivea	00.1	00.10	
Chamelaucium uncinatum	00.1	02.00	
Tricoryne elatior	00.1	00.10	
Desmocladus flexuosus	00.1	00.50	

Site:	M1.21	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.542, 116.006
Total vegetation cover (%):	50	**Topography:**	gentle slope of low rise
Tree/shrub cover >2 m (%):	11	**Soil colour:**	white
Shrub cover <2 m (%):	25	**Soil:**	sand
Grass cover (%):	10	**Rock type:**	none
Herb cover (%):	7	**Fire age:**	>10 years
Disturbance details:	weeds, fence-line, small patches of clearing		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Eucalyptus marginata* and *Corymbia calophylla* woodland over open mid *Banksia sessilis*, *Daviesia divaricata* and *Xanthorrhoea preissii* shrubland over low sparse *Verticordia densiflora* var. *densiflora*, *Astroloma macrocalyx* and *Synaphea gracillima* heathland over low isolated *Mesomelaena pseudostygia*, *Lepidobolus preissianus* and *Chordifex sinuosus* sedges with low *Conostylis setigera* subsp. *setigera*, *Waitzia suaveolens* var. *suaveolens* and **Ursinia anthemoides* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus marginata	10.0	15.00		
Verticordia densiflora var. *densiflora*	10.0	00.80		
Banksia sessilis	06.0	02.00		
Conostylis setigera subsp. *setigera*	05.0	01.00		
Ursinia anthemoides	05.0	00.20	*	
Xanthorrhoea preissii	05.0	01.50		
Daviesia divaricata	03.0	02.00		
Mesomelaena pseudostygia	03.0	00.60		
Synaphea gracillima	02.0	00.50		
Lepidobolus preissianus	02.0	00.30		
Allocasuarina humilis	01.0	01.20		
Waitzia suaveolens var. *suaveolens*	01.0	00.15		
Astroloma macrocalyx	01.0	00.50		

Corymbia calophylla	01.0	10.00	
Chordifex sinuosus	01.0	00.05	
Podotheca gnaphalioides	01.0	00.20	
Conospermum stoechadis subsp. *sclerophyllum*	00.1	01.00	
Hibbertia hypericoides	00.1	00.50	
Burchardia umbellata	00.1	00.50	
Conostylis candicans	00.1	00.40	
Hypochaeris glabra	00.1	<00.01	*
Anigozanthos manglesii	00.1	00.30	
Hybanthus calycinus	00.1	00.20	
Anigozanthos humilis	00.1	00.20	
Lepidobolus preissianus	00.1	00.20	
Petrophile linearis	00.1	00.20	
Laxmannia squarrosa	00.1	00.15	
Stylidium recurvum	00.1	00.05	
Stirlingia latifolia	00.1	00.40	

Site:	M1.23	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5375, 116.012
Total vegetation cover (%):	70	**Topography:**	plain
Tree/shrub cover >2 m (%):	40	**Soil colour:**	grey
Shrub cover <2 m (%):	20	**Soil:**	sand
Grass cover (%):	14	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	1 – 5 years
Disturbance details:	limited weeds, fence-line, possible historic clearing due to many small stemmed trees		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* open forest, over isolated low *Nuytsia floribunda* trees over low *Lechenaultia biloba*, *Jacksonia sternbergiana* and *Acacia pulchella* shrubland over low open *Hypolaena exsulca* and *Desmocladus flexuosus* sedgeland with isolated low *Dasypogon bromeliifolius*, *Lomandra sericea* and **Freesia alba* x *leichtlinii* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	35.0	15.00		
Lechenaultia biloba	20.0	00.50		
Hypolaena exsulca	05.0	00.30		
Nuytsia floribunda	05.0	06.00		
Desmocladus flexuosus	03.0	00.30		
Dasypogon bromeliifolius	03.0	00.30		
Freesia alba x *leichtlinii*	02.0	00.20	*	
Lomandra sericea	01.0	00.30		
Ursinia anthemoides	01.0	00.30	*	
Sonchus oleraceus	00.1	00.40	*	
Dampiera coronata	00.1	00.01		
Jacksonia sternbergiana	00.1	01.00		
Acacia pulchella	00.1	00.70		
Gladiolus caryophyllaceus	00.1	00.50	*	

Stirlingia latifolia	00.1	00.50	
Daviesia divaricata	00.1	00.30	
Microtis media subsp. *media*	00.1	00.20	
Wahlenbergia capensis	00.1	00.20	*
Kennedia prostrata	00.1	00.01	
Thysanotus tenellus	00.1	00.30	
Leptospermum erubescens	00.1	00.50	

Site:	M1.27a	**Type:**	Q (10 m x 10 m)
Date:	16/10/2014	**Position:**	-31.5347, 116.017
Total vegetation cover (%):	80	**Topography:**	seasonally inundated basin
Tree/shrub cover >2 m (%):	40	**Soil colour:**	grey
Shrub cover <2 m (%):	20	**Soil:**	loamy sand
Grass cover (%):	30	**Rock type:**	none
Herb cover (%):	1	**Fire age:**	5 – 10 years
Disturbance details:	rubbish, clearing from fenceline, power poles, some weeds		
Vegetation condition:	very good (Keighery, 1994)		
Vegetation description:	Low isolated *Corymbia calophylla* trees over a tall *Melaleuca hamata*, *Kunzea micrantha* and **Leptospermum laevigatum* heathland over low to mid open *Leptospermum erubescens*, *Verticordia densiflora* var. *densiflora* and *Adenanthos cygnorum* heathland over mid open **Eragrostis curvula*, *Ehrharta calycina* and *Neurachne alopecuroidea* tussock grassland and tall open *Hypolaena exsulca*, *Desmocladus flexuosus* and *Mesomelaena tetragona* sedgeland with low isolated mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Melaleuca hamata	30.0	04.00		
Leptospermum erubescens	20.0	01.80		
Hypolaena exsulca	10.0	01.00		
Desmocladus flexuosus	10.0	01.00		
Eragrostis curvula	05.0	00.70	*	
Leptospermum laevigatum	05.0	03.00	*	
Kunzea micrantha	05.0	02.50		
Corymbia calophylla	02.0	05.00		
Hypolaena exsulca	01.0	00.30		
Ehrharta calycina	01.0	00.70	*	
Centrolepis aristata	01.0	00.10		
Verticordia densiflora var. *densiflora*	01.0	01.00		
Lepidobolus preissianus	01.0	00.15		

Austrostipa flavescens	00.1	00.30	
Drosera glanduligera	00.1	00.50	
Phyllanthus calycinus	00.1	00.50	
Gladiolus caryophyllaceus	00.1	00.50	*
Acacia drummondii subsp. *affinis*	00.1	00.40	
Neurachne alopecuroidea	00.1	00.30	
Mesomelaena tetragona	00.1	00.50	
Ursinia anthemoides	00.1	00.20	*
Conostylis candicans	00.1	00.20	
Microtis media subsp. *media*	00.1	00.20	
Briza minor	00.1	00.15	*
Lysimachia arvensis	00.1	00.10	*
Arctotheca calendula	00.1	00.10	*
Solanum nigrum	00.1	00.10	*
Pentameris airoides subsp. *airoides*	00.1	00.05	*
Adenanthos cygnorum	00.1	00.05	
Vellereophyton dealbatum	00.1	00.05	*
Hypochaeris glabra	00.1	00.01	*
Podotheca gnaphalioides	00.1	00.30	

Site:	M1.30a	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5317, 116.021
Total vegetation cover (%):	80	**Topography:**	mid slope of low rise
Tree/shrub cover >2 m (%):	20	**Soil colour:**	grey
Shrub cover <2 m (%):	3	**Soil:**	clay
Grass cover (%):	65	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	>10 years
Disturbance details:	clearing for powerline corridor, dense weeds, fenceline, rubbish		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* woodland over isolated mid *Xanthorrhoea preissii* shrubs over isolated low *Phyllanthus calycinus* shrubs over low to mid **Ehrharta calycina*, *Eragrostis curvula*, **Brachypodium distachyon* and **Cenchrus clandestinus* tussock grassland with isolated low *Mesomelaena pseudostygia*, *M. tetragona* and *Lepidobolus preissianus* sedges and low sparse *Conostylis setigera* subsp., *setigera* and **Hypochaeris glabra* forbland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	20.0	20.00		
Eragrostis curvula	20.0	00.50	*	
Brachypodium distachyon	20.0	00.20	*	
Ehrharta calycina	10.0	00.50	*	
Cenchrus clandestinus	10.0	00.30	*	
Xanthorrhoea preissii	02.0	01.80		
Conostylis setigera subsp. *setigera*	02.0	00.40		
Avena barbata	01.0	00.70	*	
Bromus diandrus	01.0	00.50	*	
Mesomelaena pseudostygia	01.0	00.50		
Phyllanthus calycinus	01.0	00.40		
Hypochaeris glabra	01.0	<00.01	*	
Lepidobolus preissianus	00.1	00.50		
Lysimachia arvensis	00.1	00.10	*	

Haemodorum discolor	00.1	01.00	
Chasmanthe floribunda	00.1	01.00	*
Microtis media subsp. *media*	00.1	00.20	
Euphorbia terracina	00.1	00.20	*
Romulea rosea	00.1	00.20	*
Mesomelaena tetragona	00.1	00.30	
Sonchus oleraceus	00.1	00.20	*
Briza minor	00.1	00.30	*
Neurachne alopecuroidea	00.1	00.50	
Briza maxima	00.1	00.20	*
Ursinia anthemoides	00.1	00.20	*
Hybanthus calycinus	00.1	00.30	
Tricoryne elatior	00.1	00.30	
Bossiaea eriocarpa	00.1	00.40	
Moraea miniata	00.1	00.30	*
Podotheca gnaphalioides	00.1	00.20	

Site:	M1.31	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5298, 116.023
Total vegetation cover (%):	70	**Topography:**	seasonally inundated low-lying swamp
Tree/shrub cover >2 m (%):	10	**Soil colour:**	brown
Shrub cover <2 m (%):	0	**Soil:**	clay loam
Grass cover (%):	55	**Rock type:**	none
Herb cover (%):	15	**Fire age:**	>10 years
Disturbance details:	cleared for powerline, erosion channels, fenceline, dense weeds		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Tall open *Melaleuca hamata* heathland over low **Juncus hybridus*, *Schoenus plumosus* and *Isolepis cernua* var. *setiformis* sedgeland with low to mid open **Polypogon monspeliensis*, **Brachypodium distachyon* and **Avena barbata* grassland and low open *Gratiola pubescens*, **Trifolium arvense* and **Lysimachia arvensis* forbland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Juncus hybridus	40.0	00.50	*	
Brachypodium distachyon	10.0	00.20	*	
Gratiola pubescens	10.0	00.50		
Melaleuca hamata	10.0	05.00		
Polypogon monspeliensis	05.0	00.60	*	
Schoenus plumosus	02.0	00.10		
Trifolium arvense	02.0	00.20	*	
Lysimachia arvensis	01.0	00.20	*	
Isolepis cernua var. *setiformis*	01.0	00.10		
Ehrharta longiflora	00.1	00.30	*	
Gladiolus undulatus	00.1	00.50	*	
Avena barbata	00.1	00.50	*	
Arundo donax	00.1	00.50	*	
Briza maxima	00.1	00.30	*	

Sonchus oleraceus	00.1	00.30	*
Burchardia multiflora	00.1	00.20	
Caesia micrantha	00.1	00.20	
Gladiolus caryophyllaceus	00.1	00.20	*
Briza minor	00.1	00.10	*
Burchardia multiflora	00.1	00.30	

Site:	M1.32	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5231, 116.029
Total vegetation cover (%):	80	**Topography:**	flat plain
Tree/shrub cover >2 m (%):	25	**Soil colour:**	brown, grey
Shrub cover <2 m (%):	12	**Soil:**	clay loam
Grass cover (%):	50	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	5 – 10 years
Disturbance details:	minimal weeds present		
Vegetation condition:	pristine (Keighery, 1994)		
Vegetation description:	Low *Eucalyptus wandoo* woodland over isolated mid *Xanthorrhoea preisii* shrubs over a low open *Hypocalymma angustifolium*, *Verticordia plumose* and *Dampiera linearis* shrubland over a low *Desmocladus flexuosus* and *Centrolepis aristata* sedgeland with isolated low *Neurachne alopecuroidea*, **Briza maxima* and **B. minima* tussock grasses and low isolated *Drosera gigantea* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Desmocladus flexuosus	50.0	00.50		
Eucalyptus wandoo	25.0	10.00		
Hypocalymma angustifolium	05.0	00.60		
Xanthorrhoea preissii	03.0	01.50		
Centrolepis aristata	03.0	00.10		
Drosera gigantea subsp. *gigantea*	02.0	00.60		
Dampiera linearis	01.0	00.20		
Verticordia plumosa	01.0	00.30		
Briza maxima	01.0	00.20	*	
Disa bracteata	00.1	00.30	*	
Burchardia multiflora	00.1	00.30		
Sowerbaea laxiflora	00.1	00.40		
Anigozanthos bicolor subsp. *bicolor*	00.1	00.40		
Thysanotus manglesianus	00.1	00.40		

Neurachne alopecuroidea	00.1	00.50		
Verticordia densiflora var. *densiflora*	00.1	00.60		
Caesia micrantha	00.1	00.50		
Calytrix flavescens	00.1	00.30		
Banksia nivea	00.1	00.10		
Tribonanthes longipetala	00.1	00.25		
Verticordia pennigera	00.1	00.25		
Ursinia anthemoides	00.1	00.20	*	
Austrostipa flavescens	00.1	00.20		
Dampiera teres	00.1	00.20		
Verticordia insignis	00.1	00.20		
Stylidium squamellosum	00.1	00.15		P2
Briza minor	00.1	00.10	*	
Hordeum leporinum	00.1	00.10	*	
Stylidium neurophyllum	00.1	00.10		
Thelymitra benthamiana	00.1	00.30		

Site:	M1.33a	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5197, 116.033
Total vegetation cover (%):	45	**Topography:**	foot slope
Tree/shrub cover >2 m (%):	28	**Soil colour:**	grey
Shrub cover <2 m (%):	10	**Soil:**	sand
Grass cover (%):	7	**Rock type:**	none
Herb cover (%):	3	**Fire age:**	5 – 10 years
Disturbance details:	weeds, some previous clearing		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Isolated mid *Corymbia calophylla* trees over a low *Eucalyptus marginata* woodland over isolated tall *Adenanthos cygnorum* shrubs over isolated mid *Jacksonia floribunda* and *Xanthorrhoea preissii* shrubs low isolated *Desmocladus flexuosus*, *Chordifex sinuosus* and *Mesomelaena pseudostygia* sedges with isolated low **Ehrharta calycina* and **Briza maxima* tussock grasses and low sparse *Conostylis candicans* subsp. *candicans*, *Dasypogon bromeliifolius* and **Ursinia anthemoides* forbland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus marginata	25.0	08.00		
Chordifex sinuosus	05.0	00.10		
Dasypogon bromeliifolius	04.0	00.30		
Conostylis candicans	03.0	00.30		
Adenanthos cygnorum	02.0	03.00		
Xanthorrhoea preissii	02.0	01.50		
Desmocladus flexuosus	02.0	00.50		
Ursinia anthemoides	02.0	00.20	*	
Jacksonia floribunda	01.0	01.20		
Burchardia multiflora	00.1	00.50		
Lyginia imberbis	00.1	00.40		
Stirlingia latifolia	00.1	00.40		
Bossiaea eriocarpa	00.1	00.50		

Mesomelaena pseudostygia	00.1	00.40	
Gladiolus caryophyllaceus	00.1	00.50	*
Lepidosperma tenue	00.1	00.50	
Corymbia calophylla	00.1	15.00	
Anigozanthos manglesii	00.1	00.30	
Hypochaeris glabra	00.1	<00.01	*
Stylidium neurophyllum	00.1	00.30	
Briza maxima	00.1	00.20	*
Schoenus subfascicularis	00.1	00.20	
Dampiera linearis	00.1	00.20	
Gompholobium tomentosum	00.1	00.20	
Calytrix flavescens	00.1	00.20	
Hyalosperma cotula	00.1	00.10	
Hypochaeris glabra	00.1	00.10	*
Johnsonia pubescens subsp. *pubescens*	00.1	00.10	
Gastrolobium capitatum	00.1	00.10	
Ehrharta calycina	00.1	00.30	*

Site:	M1.34	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.515, 116.035
Total vegetation cover (%):	80	**Topography:**	mid slope
Tree/shrub cover >2 m (%):	70	**Soil colour:**	white
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	4	**Rock type:**	none
Herb cover (%):	1	**Fire age:**	5 – 10 years
Disturbance details:	clearing for firebreak and fenceline		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Low *Banksia menziesii*, *B. attenuata*, *Corymbia calophylla* and *Eucalyptus marginata* forest over isolated mid *Adenanthos cygnorum* shrubs over isolated low *Hibbertia hypericoides* shrubs over low isolated *Desmocladus flexuosus* sedges with isolated low *Austrostipa flavescens* tussock grasses and low isolated *Lomandra sericea* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus marginata	35.0	08.00		
Corymbia calophylla	30.0	07.00		
Banksia menziesii	05.0	06.00		
Banksia attenuata	05.0	06.00		
Adenanthos cygnorum	03.0	02.00		
Hibbertia hypericoides	02.0	00.50		
Desmocladus flexuosus	02.0	00.40		
Lomandra sericea	01.0	00.20		
Jacksonia floribunda	00.1	00.50		
Burchardia multiflora	00.1	00.20		
Petrophile linearis	00.1	00.20		
Gompholobium knightianum	00.1	00.20		
Drosera erythrorhiza subsp. *collina*	00.1	<00.01		
Austrostipa flavescens	00.1	00.20		
Stirlingia latifolia	00.1	00.40		

Astroloma xerophyllum	00.1	00.50	
Gompholobium tomentosum	00.1	00.50	
Conostylis setigera subsp. *setigera*	00.1	00.30	
Stylidium neurophyllum	00.1	00.50	
Gladiolus caryophyllaceus	00.1	00.50	*
Anigozanthos humilis	00.1	00.20	
Tricoryne elatior	00.1	00.50	
Dampiera linearis	00.1	00.30	
Hypochaeris glabra	00.1	<00.01	*
Lonicera japonica	00.1	03.00	*
Synaphea spinulosa subsp. *spinulosa*	00.1	00.40	
Laxmannia squarrosa	00.1	00.10	
Helichrysum luteoalbum	00.1	00.05	
Podotheca gnaphalioides	00.1	00.10	

Site:	M1.35	**Type:**	Q (10 m x 10 m)
Date:	17/10/2014	**Position:**	-31.5103, 116.036
Total vegetation cover (%):	70	**Topography:**	mid slope, low hill
Tree/shrub cover >2 m (%):	65	**Soil colour:**	white
Shrub cover <2 m (%):	4	**Soil:**	sand
Grass cover (%):	2	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	5 – 10 years
Disturbance details:	weeds present, rubbish, low intensity clearing		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid open *Corymbia calophylla* and *Eucalyptus marginata* forest over tall open *Adenanthos cygnorum*, *Banksia menziesii* and *Callitris pyramidalis* shrubland over isolated mid *Xanthorrhoea preissii* shrubs over low isolated *Eremaea pauciflora* var. *pauciflora* shrubs over low isolated *Chordifex sinuosus* and *Mesomelaena pseudostygia* sedges with isolated low **Ehrharta calycina*, **Briza maxima* and **Pentameris airoides* subsp. *airoides* tussock grasses and low isolated *Conostylis setigera* subsp. *setigera* forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus marginata	35.0	15.00		
Corymbia calophylla	25.0	20.00		
Ehrharta calycina	04.0	00.10	*	
Xanthorrhoea preissii	03.0	01.80		
Adenanthos cygnorum	02.0	04.00		
Callitris pyramidalis	02.0	03.50		
Chordifex sinuosus	01.0	00.10		
Banksia menziesii	01.0	04.00		
Conostylis setigera subsp. *setigera*	01.0	00.15		
Briza maxima	01.0	00.20	*	
Eremaea pauciflora var. *pauciflora*	01.0	00.50		
Dampiera linearis	00.1	00.30		
Gladiolus caryophyllaceus	00.1	00.70	*	

Mesomelaena pseudostygia	00.1	00.50	
Jacksonia floribunda	00.1	00.40	
Oxalis pes-caprae	00.1	00.2	*
Tricoryne elatior	00.1	00.30	
Austrostipa elegantissima	00.1	00.30	
Hypolaena exsulca	00.1	00.30	
Ursinia anthemoides	00.1	00.15	*
Neurachne alopecuroidea	00.1	00.15	
Pentameris airoides subsp. *airoides*	00.1	00.10	*
Podotheca gnaphalioides	00.1	00.10	
Hibbertia hypericoides	00.1	00.40	

Site:	MNP2002	**Type:**	Q (10 m x 10 m)
Date:	17/09/2015	**Position:**	-31.509515, 116.037567
Total vegetation cover (%):	55	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	25	**Soil colour:**	whitish
Shrub cover <2 m (%):	25	**Soil:**	sand
Grass cover (%):	5	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	none evident
Disturbance details:	firebreak, vehicle tracks		
Vegetation condition:	very good (Keighery, 1994)		
Vegetation description:	Tall *Adenanthos cygnorum*, *Banksia menziesii* and *Nuytsia floribunda* open shrubland over low open *Calothamnus sanguineus*, *Daviesia triflora* and *Hibbertia hypericoides* shrubland over low *Mesomelaena pseudostygia* sparse sedgeland.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Adenanthos cygnorum	15.0	03.00		
Calothamnus sanguineus	07.0	00.70		
Banksia menziesii	05.0	04.00		
Daviesia triflora	05.0	01.00		
Nuytsia floribunda	04.0	05.00		
Mesomelaena pseudostygia	03.0	00.60		
Hibbertia hypericoides	03.0	00.50		
Lyginia imberbis	02.0	00.50		
Scholtzia involucrata	02.0	00.20		
Conospermum stoechadis subsp. *sclerophyllum*	01.0	00.50		
Stirlingia latifolia	01.0	01.00		
Jacksonia floribunda	00.1	01.50		
Conostylis setigera subsp. *setigera*	00.1	00.10		
Gladiolus caryophyllaceus	00.1	00.50	*	
Burchardia congesta	00.1	00.50		
Gompholobium knightianum	00.1	00.10		

Beaufortia macrostemon	00.1	00.30
Drosera erythrorhiza	00.1	00.01
Pimelea sulphurea	00.1	00.60
Calytrix flavescens	00.1	00.20
Gompholobium tomentosum	00.1	00.40
Bossiaea eriocarpa	00.1	00.40
Synaphea spinulosa subsp. *spinulosa*	00.1	00.20
Hibbertia huegelii	00.1	00.10
Philotheca spicata	00.1	01.00
Cassytha flava	00.1	00.30
Johnsonia pubescens subsp. *pubescens*	00.1	00.10
Petrophile linearis	00.1	00.10
Drosera menziesii	00.1	00.30

Site:	MNP2003	**Type:**	Q (10 m x 10 m)
Date:	17/09/2015	**Position:**	-31.512115, 116.036125
Total vegetation cover (%):	65	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	30	**Soil colour:**	red-brown
Shrub cover <2 m (%):	35	**Soil:**	clay loam
Grass cover (%):	2	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	1 – 5 years
Disturbance details:	none recorded		
Vegetation condition:	pristine (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus marginata* woodland over mid *Xanthorrhoea preissii* sparse shrubland over low mixed shrubland (*Hibbertia* spp. prominent) over isolated low *Lepidosperma calcicola* and *Mesomelaena pseudostygia* sedges and isolated low *Stylidium* spp. forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	20.0	15.00		
Hibbertia hypericoides	15.0	00.60		
Xanthorrhoea preissii	10.0	02.00		
Eucalyptus marginata	10.0	15.00		
Grevillea sp.	05.0	00.60		
Hakea stenocarpa	02.0	00.30		
Banksia dallanneyi var. *dallanneyi*	01.0	00.15		
Daviesia hakeoides subsp. *hakeoides*	01.0	00.50		
Daviesia angulata	01.0	00.50		
Sphaerolobium medium	01.0	00.80		
Lechenaultia biloba	01.0	00.50		
Mesomelaena pseudostygia	01.0	00.40		
Grevillea pilulifera	01.0	00.50		
Conostylis aculeata subsp. *aculeata*	01.0	00.40		
Petrophile striata	01.0	00.50		

Drosera erythrorhiza	00.1	00.01
Hibbertia lasiopus	00.1	00.20
Drosera menziesii	00.1	00.30
Kennedia coccinea subsp. *coccinea*	00.1	00.10
Fabaceae sp. indet.	00.1	00.30
Synaphea sp.	00.1	00.20
Acacia pulchella var. *pulchella*	00.1	00.20
Banksia bipinnatifida subsp. *multifida*	00.1	00.20
Haemodorum sp.	00.1	00.40
Dampiera linearis	00.1	00.10
Lepidosperma calcicola	00.1	00.50
Hibbertia huegelii	00.1	00.20
Stylidium hispidum	00.1	00.05
Patersonia juncea	00.1	00.10
Astroloma pallidum	00.1	00.10
Stylidium diuroides subsp. *diuroides*	00.1	00.20
Conostylis setigera subsp. *setigera*	00.1	00.10
Philotheca spicata	00.1	00.20
Desmocladus flexuosus	00.1	00.10
Gompholobium knightianum	00.1	00.30

Site:	MNP2006	**Type:**	Q (10 m x 10 m)
Date:	18/09/2015	**Position:**	-31.515962, 116.03364
Total vegetation cover (%):	80	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	75	**Soil colour:**	whitish
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	3	**Rock type:**	none
Herb cover (%):	0.1	**Fire age:**	>5 years
Disturbance details:	none recorded		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus marginata* woodland over tall *Adenanthos cygnorum* and *Banksia menziesii* shrubland over mid *Xanthorrhoea preissii* sparse shrubland over low mixed shrubland with *Hibbertia* spp. prominent over isolated low *Mesomelaena pseudostygia*, *Lepidosperma squamatum* and *Hypolaena exsulca* sedges and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Corymbia calophylla	20.0	15.00		
Banksia attenuata	20.0	05.00		
Adenanthos cygnorum	20.0	04.00		
Eucalyptus marginata	10.0	20.00		
Banksia menziesii	05.0	05.00		
Xanthorrhoea preissii	05.0	01.50		
Hibbertia hypericoides	05.0	00.60		
Dasypogon bromeliifolius	04.0	00.50		
Mesomelaena pseudostygia	02.0	00.50		
Stirlingia latifolia	01.0	00.60		
Lepidosperma squamatum	01.0	00.60		
Lyginia barbata	01.0	00.50		
Hypolaena exsulca	01.0	00.40		
Drosera erythrorhiza	01.0	00.05		

Stylidium schoenoides	00.1	00.15
Desmocladus flexuosus	00.1	00.10
Diuris magnifica	00.1	00.80
Astroloma pallidum	00.1	00.50
Drosera pallida	00.1	01.50
Bossiaea eriocarpa	00.1	00.40
Haemodorum sp.	00.1	00.60
Petrophile linearis	00.1	00.20
Jacksonia floribunda	00.1	01.60
Stylidium piliferum	00.1	00.10
Daviesia triflora	00.1	00.40
Conostylis juncea	00.1	00.20
Philotheca spicata	00.1	00.80
Hovea trisperma var. *grandiflora*	00.1	00.10
Prasophyllum hians	00.1	00.70
Caladenia flava	00.1	00.10
Burchardia congesta	00.1	00.30

Site:	MNP2007	**Type:**	Q (10 m x 10 m)
Date:	18/09/2015	**Position:**	-31.519765, 116.035353
Total vegetation cover (%):	90	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	50	**Soil colour:**	red-brown
Shrub cover <2 m (%):	45	**Soil:**	clay loam
Grass cover (%):	0.1	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	none evident
Disturbance details:	firebreak		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla*, *Eucalyptus marginata* and *E. wandoo* open forest over mid *Allocasuarina humilis* and *Xanthorrhoea preissii* shrubland over low mixed sparse shrubland isolated low *Lepidosperma calcicola* and *Desmocladus fasciculatus* sedges and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Allocasuarina humilis	30.0	01.80		
Eucalyptus wandoo	30.0	20.00		
Eucalyptus marginata	10.0	20.00		
Corymbia calophylla	10.0	20.00		
Grevillea sp.	03.0	01.00		
Sphaerolobium medium	03.0	00.50		
Banksia bipinnatifida subsp. *multifida*	01.0	00.20		
Daviesia triflora	01.0	00.80		
Dampiera linearis	01.0	00.30		
Lechenaultia biloba	01.0	00.70		
Xanthorrhoea preissii	01.0	01.80		
Grevillea synapheae subsp. *synapheae*	01.0	00.20		
Anigozanthos manglesii	01.0	00.40		
Ursinia anthemoides	00.1	00.30	*	
Agrostocrinum hirsutum	00.1	00.30		

Lepidosperma calcicola	00.1	00.50	
Kennedia coccinea subsp. *coccinea*	00.1	00.20	
Briza maxima	00.1	00.20	*
Synaphea spinulosa subsp. *spinulosa*	00.1	00.20	
Hypochaeris glabra	00.1	00.05	*
Petrophile striata	00.1	01.00	
Lysimachia arvensis	00.1	00.10	*
Patersonia juncea	00.1	00.50	
Gladiolus caryophyllaceus	00.1	00.50	*
Bossiaea eriocarpa	00.1	00.30	
Gompholobium preissii	00.1	00.30	
Acacia pulchella	00.1	00.30	
Gastrolobium capitatum	00.1	00.30	
Desmocladus fasciculatus	00.1	00.50	
Trichocline spathulata	00.1	00.20	
Haemodorum sp.	00.1	00.30	
Thomasia grandiflora	00.1	00.30	
Trymalium angustifolium	00.1	00.30	
Drosera pallida	00.1	01.00	
Conostylis setigera subsp. *setigera*	00.1	00.50	
Hibbertia lasiopus	00.1	00.15	
Gompholobium knightianum	00.1	00.30	
Petrophile seminuda	00.1	00.20	
Podolepis gracilis	00.1	00.15	
Dillwynia laxiflora	00.1	00.20	
Chamaescilla corymbosa	00.1	00.50	
Opercularia vaginata	00.1	00.20	
Thysanotus patersonii	00.1	00.40	

Site:	MNP2008	**Type:**	Q (10 m x 10 m)
Date:	18/09/2015	**Position:**	-31.526396, 116.027522
Total vegetation cover (%):	70	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	60	**Soil colour:**	red-brown
Shrub cover <2 m (%):	30	**Soil:**	clay loam
Grass cover (%):	5	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	none evident
Disturbance details:	evidence of feral animals, excavation, firebreak, grazing – medium, historic clearing, vehicle tracks,		
Vegetation condition:	good (Keighery, 1994)		
Vegetation description:	Mid *Eucalyptus accedens*, *E. marginata* and *E. wandoo* open forest over mid *Xanthorrhoea preissii* open shrubland over low sparse mixed sedgeland, low isolated *Neurachne alopecuroidea* tussock grasses and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus wandoo	35.0	20.00		
Eucalyptus accedens	25.0	20.00		
Xanthorrhoea preissii	25.0	01.00		
Eucalyptus marginata	05.0	15.00		
Grevillea sp.	02.0	00.40		
Neurachne alopecuroidea	02.0	00.10		
Mesomelaena tetragona	01.0	00.40		
Haemodorum sp.	01.0	00.20		
Desmocladus fasciculatus	01.0	00.15		
Mesomelaena pseudostygia	01.0	00.40		
Lomandra preissii	01.0	00.30		
Banksia armata var. *armata*	01.0	01.00		
Lepidosperma pubisquameum	01.0	00.60		
Petrophile striata	00.5	00.50		
Astroloma pallidum	00.1	00.10		

Conostylis setigera subsp. *setigera*	00.1	00.10	
Briza maxima	00.1	00.30	*
Trichocline spathulata	00.1	00.20	
Drosera bulbosa	00.1	00.05	
Gladiolus caryophyllaceus	00.1	00.60	*
Ursinia anthemoides	00.1	00.10	*
Romulea rosea	00.1	00.20	*
Avena barbata	00.1	00.30	*
Trifolium subterraneum	00.1	00.05	*
Acacia pulchella var. *reflexa*	00.1	00.50	

Site:	MNP2011	**Type:**	Q (10 m x 10 m)
Date:	18/09/2015	**Position:**	-31.534197, 116.0186
Total vegetation cover (%):	30	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	10	**Soil colour:**	whitish
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	10	**Rock type:**	none
Herb cover (%):	1	**Fire age:**	none evident
Disturbance details:	firebreak, grazing – medium, historic operations, large-scale clearing, weed infestation		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Low *Corymbia calophylla* and *Nuytsia floribunda* open woodland over mid *Xanthorrhoea preissii* sparse shrubland over low Poaceae sp. sparse tussock grassland and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Xanthorrhoea preissii	10.0	02.00		
Poaceae sp. indet.	10.0	00.10		
Nuytsia floribunda	05.0	10.00		
Corymbia calophylla	05.0	10.00		
Hibbertia hypericoides	04.0	00.40		
Ursinia anthemoides subsp. *anthemoides*	02.0	00.30	*	
Hypochaeris glabra	00.3	00.05	*	
Petrophile linearis	00.2	00.40		
Ehrharta longiflora	00.1	00.40	*	
Mesomelaena pseudostygia	00.1	00.40		
Daviesia triflora	00.1	00.50		
Jacksonia floribunda	00.1	01.20		
Conostylis aculeata subsp. *aculeata*	00.1	00.40		
Burchardia congesta	00.1	00.40		
Gladiolus caryophyllaceus	00.1	00.50	*	
Allocasuarina humilis	00.1	01.60		

Podotheca gnaphalioides	00.1	00.20

Site:	MNP2012	**Type:**	Q (10 m x 10 m)
Date:	21/09/2015	**Position:**	-31.537087, 116.013897
Total vegetation cover (%):	45	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	20	**Soil colour:**	red-brown
Shrub cover <2 m (%):	25	**Soil:**	clay loam
Grass cover (%):	0.1	**Rock type:**	laterite
Herb cover (%):	0.1	**Fire age:**	none evident
Disturbance details:	historic clearing, weed infestation		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Low *Corymbia calophylla* and *Eucalyptus marginata* open woodland over low *Hibbertia hypericoides*, *Lechenaultia biloba* and *Xanthorrhoea preissii* open shrubland over isolated low *Neurachne alopecuroidea* tussock grasses and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Hibbertia hypericoides	15.0	00.40		
Corymbia calophylla	15.0	10.00		
Eucalyptus marginata	05.0	10.00		
Xanthorrhoea preissii	05.0	01.00		
Lechenaultia biloba	02.0	00.30		
Rhodanthe citrina	01.0	00.10		
Daviesia decurrens	01.0	01.00		
Grevillea sp.	01.0	01.00		
Banksia nivea subsp. *nivea*	01.0	00.20		
Hibbertia commutata	01.0	00.30		
Stylidium hispidum	00.1	00.20		
Petrophile striata	00.1	00.30		
Synaphea spinulosa subsp. *spinulosa*	00.1	00.20		
Hyalosperma cotula	00.1	00.10		
Neurachne alopecuroidea	00.1	00.10		
Labichea lanceolata subsp. *lanceolata*	00.1	00.20		

Desmocladus flexuosus	00.1	00.10	
Lomandra preissii	00.1	00.30	
Drosera sp.	00.1	00.40	
Gompholobium knightianum	00.1	00.30	
Hakea stenocarpa	00.1	00.50	
Daviesia hakeoides subsp. *hakeoides*	00.1	00.40	
Haemodorum sp.	00.1	00.20	
Gladiolus caryophyllaceus	00.1	00.30	*
Trichocline spathulata	00.1	00.15	
Banksia bipinnatifida subsp. *multifida*	00.1	00.20	
Trymalium angustifolium	00.1	00.20	
Thysanotus patersonii	00.1	00.20	
Drosera erythrorhiza	00.1	00.05	
Caladenia flava	00.1	00.20	
Petrophile seminuda	00.1	00.30	

Site:	MNP2013	**Type:**	Q (10 m x 10 m)
Date:	21/09/2015	**Position:**	-31.541351, 116.009998
Total vegetation cover (%):	45	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	30	**Soil colour:**	whitish
Shrub cover <2 m (%):	2	**Soil:**	sand
Grass cover (%):	12	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	none evident
Disturbance details:	historic clearing, weed infestation		
Vegetation condition:	very good (Keighery, 1994)		
Vegetation description:	Low *Banksia attenuata*, *B. menziesii*, *Corymbia calophylla* and *Eucalyptus marginata* woodland over low isolated mixed shrubs, low *Mesomelaena pseudostygia* sparse sedgelend and isolated low mixed forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Banksia menziesii	20.0	05.00		
Mesomelaena pseudostygia	10.0	00.80		
Banksia attenuata	05.0	05.00		
Eucalyptus marginata	05.0	05.00		
Corymbia calophylla	03.0	05.00		
Hypolaena exsulca	02.0	00.60		
Drosera erythrorhiza	01.0	00.01		
Xanthorrhoea preissii	01.0	01.00		
Pauridia glabella	01.0	00.05		
Hibbertia huegelii	01.0	00.30		
Leporella fimbriata	00.2	00.02		
Lepidobolus preissianus	00.1	00.20		
Gladiolus caryophyllaceus	00.1	00.40	*	
Elythranthera brunonis	00.1	00.40		
Anigozanthos humilis	00.1	00.20		
Caladenia flava	00.1	00.20		

Conostylis setigera subsp. *setigera*	00.1	00.20	
Trachymene ornata	00.1	00.05	
Burchardia congesta	00.1	00.40	
Drosera menziesii	00.1	00.30	
Rhodanthe citrina	00.1	00.10	
Hyalosperma cotula	00.1	00.10	
Podotheca gnaphalioides	00.1	00.10	
Pentameris airoides subsp. *airoides*	00.1	00.10	*
Lolium rigidum	00.1	00.20	*
Xanthosia huegelii	00.1	00.10	
Stylidium piliferum	00.1	00.10	
Vulpia bromoides	00.1	00.10	*
Crassula colorata var. *acuminata*	00.1	00.10	
Hybanthus calycinus	00.1	00.20	

Site:	MNP2014	**Type:**	Q (10 m x 10 m)
Date:	21/09/2015	**Position:**	-31.547569, 116.002505
Total vegetation cover (%):	40	**Topography:**	hill slope
Tree/shrub cover >2 m (%):	30	**Soil colour:**	red-brown
Shrub cover <2 m (%):	5	**Soil:**	clay loam
Grass cover (%):	5	**Rock type:**	laterite
Herb cover (%):	1	**Fire age:**	>5 years
Disturbance details:	evidence of feral animals, grazing – medium, historic clearing, weed infestation		
Vegetation condition:	degraded (Keighery, 1994)		
Vegetation description:	Mid *Corymbia calophylla* and *Eucalyptus wandoo* woodland over mid *Xanthorrhoea preissii* sparse shrubland over isolated low mixed shrubs, grasses and forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Eucalyptus wandoo	20.0	15.00		
Corymbia calophylla	10.0	15.00		
Xanthorrhoea preissii	05.0	01.50		
Ehrharta longiflora	01.0	00.40	*	
Daviesia decurrens	01.0	00.60		
Acacia pulchella var. *reflexa*	01.0	01.50		
Arctotheca calendula	01.0	00.10	*	
Hibbertia hypericoides	00.1	00.50		
Hakea stenocarpa	00.1	00.10		
Lepidosperma calcicola	00.1	00.50		
Trifolium subterraneum	00.1	00.10	*	
Erodium cygnorum	00.1	00.50		
Lupinus angustifolius	00.1	00.30	*	
Romulea rosea	00.1	00.20	*	
Trifolium hirtum	00.1	00.20	*	
Monoculus monstrosus	00.1	00.20	*	

Lolium rigidum	00.1	00.10	*
Lysimachia arvensis	00.1	00.10	*
Crassula colorata var. *acuminata*	00.1	00.10	
Trifolium campestre var. *campestre*	00.1	00.10	*

Site:	MNP2015	**Type:**	Q (10 m x 10 m)
Date:	21/09/2015	**Position:**	-31.55189, 115.996429
Total vegetation cover (%):	55	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	35	**Soil colour:**	whitish
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	5	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	none evident
Disturbance details:	grazing – medium, livestock tracks, weed infestation		
Vegetation condition:	very good (Keighery, 1994)		
Vegetation description:	Low *Banksia attenuata*, *B. menziesii* and *Eucalyptus marginata* woodland over mid *Daviesia triflora* and *Xanthorrhoea preissii* open shrubland over sparse low mixed shrubland and isolated low mixed tussock grasses, sedges and forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Banksia menziesii	20.0	05.00		
Eucalyptus marginata	10.0	08.00		
Xanthorrhoea preissii	10.0	01.80		
Banksia attenuata	05.0	05.00		
Hibbertia hypericoides	03.0	00.40		
Patersonia occidentalis	02.0	00.80		
Eremaea pauciflora	02.0	00.50		
Conostylis aculeata subsp. *aculeata*	01.0	00.30		
Mesomelaena pseudostygia	01.0	00.70		
Ehrharta longiflora	01.0	00.30	*	
Thysanotus dichotomus	01.0	00.50		
Ursinia anthemoides subsp. *anthemoides*	01.0	00.20	*	
Hypochaeris glabra	01.0	00.05	*	
Daviesia triflora	01.0	01.00		
Amphipogon turbinatus	01.0	00.15		
Acacia pulchella var. *goadbyi*	01.0	00.60		

Nuytsia floribunda	01.0	06.00	
Burchardia congesta	00.2	00.30	
Diuris magnifica	00.1	00.40	
Caladenia flava	00.1	00.10	
Pterostylis sanguinea	00.1	00.20	
Drosera erythrorhiza	00.1	00.02	
Conostylis teretifolia subsp. *teretifolia*	00.1	00.10	
Stylidium neurophyllum	00.1	00.30	
Hovea trisperma	00.1	00.40	
Sowerbaea laxiflora	00.1	00.10	
Haemodorum sp.	00.1	00.20	
Gladiolus caryophyllaceus	00.1	00.30	*
Alexgeorgea nitens	00.1	00.10	
Gompholobium tomentosum	00.1	00.30	
Briza maxima	00.1	00.20	*
Philotheca spicata	00.1	00.10	
Romulea rosea	00.1	00.10	*
Rytidosperma setaceum	00.1	00.05	
Lepidosperma pubisquameum	00.1	00.50	
Hypolaena exsulca	00.1	00.50	
Astroloma xerophyllum	00.1	00.30	
Petrophile linearis	00.1	00.50	

Site:	MNP2018	**Type:**	Q (10 m x 10 m)
Date:	17/09/2015	**Position:**	-31.502268, 116.0425
Total vegetation cover (%):	90	**Topography:**	undulating plain
Tree/shrub cover >2 m (%):	50	**Soil colour:**	whitish
Shrub cover <2 m (%):	15	**Soil:**	sand
Grass cover (%):	25	**Rock type:**	none
Herb cover (%):	2	**Fire age:**	none evident
Disturbance details:	weed infestation		
Vegetation condition:	excellent (Keighery, 1994)		
Vegetation description:	Low *Eucalyptus marginata* open woodland over tall *Banksia attenuata* and *B. menziesii* shrubland over low *Eremaea pauciflora*, *Philotheca spicata* and *Macrozamia riedlei* open shrubland over low *Desmocladus flexuosus* and *Mesomelaena pseudostygia* open sedgeland and isolated low mixed tussock grasses and forbs.		

Species	Cover (%)	Height (m)	Weeds	Conservation status
Banksia menziesii	20.0	04.00		
Eucalyptus marginata	20.0	08.00		
Desmocladus flexuosus	10.0	00.15		
Mesomelaena pseudostygia	10.0	00.40		
Banksia attenuata	05.0	04.00		
Eremaea pauciflora	05.0	00.50		
Acacia longifolia subsp. *longifolia*	05.0	04.00	*	
Philotheca spicata	03.0	00.70		
Conostylis aurea	02.0	00.20		
Macrozamia riedlei	02.0	01.20		
Conostylis setigera subsp. *setigera*	01.0	00.20		
Bossiaea eriocarpa	01.0	00.50		
Synaphea spinulosa subsp. *spinulosa*	01.0	00.40		
Drosera erythrorhiza	01.0	00.01		
Hibbertia hypericoides	01.0	00.30		

Calothamnus sanguineus	01.0	00.40	
Ehrharta calycina	01.0	00.40	*
Adenanthos cygnorum	01.0	02.50	
Gompholobium knightianum	00.2	00.30	
Blancoa canescens	00.1	00.20	
Gompholobium tomentosum	00.1	00.40	
Alexgeorgea nitens	00.1	00.15	
Caladenia flava	00.1	00.10	
Burchardia umbellata	00.1	00.40	
Stirlingia latifolia	00.1	00.30	
Amphipogon turbinatus	00.1	00.15	
Melaleuca parviceps	00.1	00.20	
Daviesia triflora	00.1	00.40	
Phlebocarya ciliata	00.1	00.20	
Synaphea flabelliformis	00.1	00.30	
Dampiera linearis	00.1	00.20	
Conospermum stoechadis subsp. *sclerophyllum*	00.1	00.50	
Drosera menziesii	00.1	00.20	
Briza maxima	00.1	00.20	*
Jacksonia floribunda	00.1	01.20	
Pterostylis recurva	00.1	00.60	
Gladiolus caryophyllaceus	00.1	01.00	*

Appendix 2 Vegetation structural classes (NVIS)

Height Classes

Height	Growth form					
Height class	Height range (m)	Tree, vine (Mid & Upper), palm (single-stemmed)	Shrub, heath shrub, chenopod shrub, ferns, Samphire shrub, cycad, tree-fern, Grass-tree, palm (multi-stemmed)	Tree mallee, Mallee Shrub	Tussock grass, hummock grass, other grass, sedge, rush, forbs, vine (Ground)	Bryophyte, lichen, seagrass, aquatic
8	>30	tall	N/A	N/A	N/A	N/A
7	10-30	mid	N/A	tall	N/A	N/A
6	<10	low	N/A	mid	N/A	N/A
5	<3	N/A	N/A	low	N/A	N/A
4	>2	N/A	tall	N/A	tall	N/A
3	1-2	N/A	mid	N/A	tall	N/A
2	0.5-1	N/A	low	N/A	mid	tall
1	<0.5	N/A	low	N/A	low	low

Structural Formation Classes

Growth form	Height ranges (m)	Structural formation classes					
Foliage cover % (cover #)		70-100% (5)	30-70% (4)	10-30% (3)	<10% (2)	0-5% (1)	≈0% (N)
tree, palm	<10,10-30, >30	closed forest	open forest	woodland	open woodland	isolated trees	isolated clumps of trees
tree mallee	<3, <10, 10-30	closed mallee forest	open mallee forest	mallee woodland	open mallee woodland	isolated mallee trees	isolated clumps of mallee trees
shrub, cycad, grass-tree, tree-fern	<1,1-2,>2	closed shrubland	shrubland	open shrubland	sparse shrubland	isolated shrubs	isolated clumps of shrubs
mallee shrub	<3, <10, 10-30	closed mallee shrubland	mallee shrubland	open mallee shrubland	sparse mallee shrubland	isolated mallee shrubs	isolated clumps of mallee shrubs
heath shrub	<1,1-2,>2	closed heathland	heathland	open heathland	sparse heathland	isolated heath shrubs	isolated clumps of heath shrubs

Growth form	Height ranges (m)	Structural formation classes					
chenopod shrub	<1,1-2,>2	closed chenopod shrubland	chenopod shrubland	open chenopod shrubland	sparse chenopod shrubland	isolated chenopod shrubs	isolated clumps of chenopod shrubs
samphire shrub	<0.5,>0.5	closed samphire shrubland	samphire shrubland	open samphire shrubland	sparse samphire shrubland	isolated samphire shrubs	isolated clumps of samphire shrubs
hummock grass	<2,>2	closed hummock grassland	hummock grassland	open hummock grassland	sparse hummock grassland	isolated hummock grasses	isolated clumps of hummock grasses
tussock grass	<0.5,>0.5	closed tussock grassland	tussock grassland	open tussock grassland	sparse tussock grassland	isolated tussock grasses	isolated clumps of tussock grasses
other grass	<0.5,>0.5	closed grassland	grassland	open grassland	sparse grassland	isolated grasses	isolated clumps of grasses
sedge	<0.5,>0.5	closed sedgeland	sedgeland	open sedgeland	sparse sedgeland	isolated sedges	isolated clumps of sedges
rush	<0.5,>0.5	closed rushland	rushland	open rushland	sparse rushland	isolated rushes	isolated clumps of rushes
forb	<0.5,>0.5	closed forbland	forbland	open forbland	sparse forbland	isolated forbs	isolated clumps of forbs
fern	<1,1-2,>2	closed fernland	fernland	open fernland	sparse fernland	isolated ferns	isolated clumps of ferns
bryophyte	<0.5	closed bryophytelan-d	bryophytela-nd	open bryophytel-and	sparse bryophytela-nd	isolated bryophytes	isolated clumps of bryophytes
lichen	<0.5	closed lichenland	lichenland	open lichenland	sparse lichenland	isolated lichens	isolated clumps of lichens
vine	<10,10-30, >30	closed vineland	vineland	open vineland	sparse vineland	isolated vines	isolated clumps of vines
aquatic	0-0.5,<1	closed aquatic bed	aquatic bed	open aquatic bed	sparse aquatics	isolated aquatics	isolated clumps of aquatics
seagrass	0-0.5,<1	closed seagrass bed	seagrass bed	open seagrass bed	sparse seagrass bed	isolated seagrasses	isolated clumps of seagrasses

Appendix 3 Fauna species identified in the desktop review

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Invertebrates											
Leioproctus contrarius	bee				P3			●	●		
Idiosoma nigrum	Shield-backed Trapdoor Spider	VU		S3 (VU)					●		
Parartemia contracta	fairy shrimp				P1				●		
Throscodectes xederoides	Mogumber Bush Cricket				P3				●		
Amphibians											
Litoria adelaidensis	Slender Tree Frog							●			●
Litoria moorei	Motorbike Frog							●			●
Heleioporus eyrei	Moaning Frog							●			
Limnodynastes dorsalis	Western Banjo Frog							●			●
Neobatrachus pelobatoides	Humming Frog							●			
Crinia georgiana	Quacking Frog							●			●
Crinia glauerti	Clicking Frog							●			●
Crinia insignifera	Squelching Froglet							●			●
Crinia pseudinsignifer	Bleating Froglet							●			
Geocrinia leai	Ticking Frog							●			
Pseudophryne guentheri	Crawling Toadlet							●			
Reptiles											
Chelodina colliei	Oblong Turtle							●			
Pseudemydura umbrina	Western Swamp Tortoise	CR		S1 (CR)					●		

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Underwoodisaurus milii	Southern Barking Gecko							●			●
Diplodactylus granariensis subsp. granariensis								●			
Gehyra variegata								●			
Hemidactylus frenatus	Asian House Gecko					●				●	
Aprasia pulchella	Granite Worm-lizard							●			●
Aprasia repens	Sand-plain Worm-lizard							●			
Lialis burtonis								●			
Pygopus lepidopodus	Common Scaly Foot							●			
Ctenophorus adelaidensis	Southern Heath Dragon, Western Heath Dragon							●			
Egernia napoleonis								●			
Egernia stokesii badia	Western Spiny-tailed Skink	EN		S3 (VU)					●		
Tiliqua rugosa subsp. rugosa								●			●
Cryptoblepharus buchananii	Buchanan's Snake-eyed Skink										●
Menetia greyii	Common Dwarf Skink										●
Ctenotus fallens	West-coast Ctenotus										●
Ctenotus australis								●			
Lerista christinae								●			
Lerista lineopunctulata								●			
Varanus tristis	Racehorse Monitor							●			
Antaresia stimsoni subsp. *stimsoni*	Stimpson's Python							●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Aspidites ramsayi	Woma Python (south-western)				P1				●		
Morelia spilota imbricata	South-western Carpet Python								●		
Brachyurophis semifasciatus	Southern Shovel-nosed Snake							●			
Demansia psammophis reticulata	Yellow-faced Whipsnake										●
Echiopsis curta	Bardick							●			
Elapognathus coronatus	Crowned Snake							●			
Neelaps calonotos	Black-striped Snake				P3			●	●		
Parasuta gouldii	Gould's Hooded Snake							●			●
Pseudechis australis	Mulga							●			
Pseudonaja affinis subsp. affinis	Dugite							●			
Pseudonaja mengdeni	Western Brown Snake							●			
Simoselaps bertholdi	Jan's Banded Snake							●			
Ramphotyphlops braminus	Flowerpot Blind Snake					●				●	
Birds											
Dromaius novaehollandiae	Emu							●			●
Leipoa ocellata	Malleefowl	VU		S3 (VU)					●	●	
Coturnix pectoralis	Stubble Quail							●			
Biziura lobata	Musk Duck							●			
Cygnus atratus	Black Swan						●	●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Tadorna tadornoides	Australian Shelduck							●			●
Chenonetta jubata	Australian Wood Duck						●	●			●
Malacorhynchus membranaceus	Pink-eared Duck							●			
Anas rhynchotis	Australasian Shoveler							●			
Anas gracilis	Grey Teal						●	●			●
Anas castanea	Chestnut Teal							●			
Anas platyrhynchos	Northern Mallard					●				●	
Anas superciliosa	Pacific Black Duck							●			●
Aythya australis	Hardhead							●			
Oxyura australis	Blue-billed Duck				P4			●			
Tachybaptus novaehollandiae	Australasian Grebe							●			
Poliocephalus poliocephalus	Hoary-headed Grebe							●			
Podiceps cristatus	Great Crested Grebe							●			
Columba livia	Rock Dove					●	●			●	●
Streptopelia senegalensis	Laughing Dove					●		●		●	
Streptopelia chinensis	Spotted Dove					●				●	
Phaps chalcoptera	Common Bronzewing						●	●			●
Ocyphaps lophotes	Crested Pigeon						●	●			
Podargus strigoides	Tawny Frogmouth							●			
Aegotheles cristatus	Australian Owlet-nightjar							●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Apus pacificus	Fork-tailed Swift		●	S5 (Mig.)						●	
Anhinga novaehollandiae	Australasian Darter							●			
Microcarbo melanoleucos	Little Pied Cormorant							●			●
Phalacrocorax carbo	Great Cormorant							●			
Phalacrocorax sulcirostris	Little Black Cormorant							●			
Phalacrocorax varius	Pied Cormorant							●			
Pelecanus conspicillatus	Australian Pelican							●			
Botaurus poiciloptilus	Australasian Bittern	EN		S2 (EN)				●	●		
Ardea pacifica	White-necked Heron							●			
Ardea modesta	Eastern Great Egret		●	S5 (Mig.)				●	●		●
Ardea ibis	Cattle Egret		●	S5 (Mig.)						●	
Ardea garzetta	Little Egret							●			
Egretta novaehollandiae	White-faced Heron							●			
Nycticorax caledonicus	Nankeen Night-heron							●			
Plegadis falcinellus	Glossy Ibis		●	S5 (Mig.)				●	●		
Threskiornis molucca	Australian White Ibis							●			●
Threskiornis spinicollis	Straw-necked Ibis							●			●
Platalea flavipes	Yellow-billed Spoonbill							●			
Pandion cristatus	Eastern Osprey		●							●	
Elanus axillaris	Black-shouldered Kite							●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Lophoictinia isura	Square-tailed Kite						●				
Haliaeetus leucogaster	White-bellied Sea-eagle		●							●	
Haliastur sphenurus	Whistling Kite							●			
Accipiter fasciatus	Brown Goshawk							●			●
Accipiter cirrocephalus	Collared Sparrowhawk							●			
Circus approximans	Swamp Harrier						●	●			
Aquila audax	Wedge-tailed Eagle						●	●			●
Hieraaetus morphnoides	Little Eagle						●	●			
Falco cenchroides	Nankeen Kestrel						●	●			
Falco berigora	Brown Falcon						●	●			
Falco longipennis	Australian Hobby							●			●
Falco peregrinus	Peregrine Falcon			S7 (SP)			●	●	●		
Porphyrio porphyrio	Purple Swamphen							●			
Gallinula tenebrosa	Dusky Moorhen							●			
Fulica atra	Eurasian Coot							●			
Ardeotis australis	Australian Bustard								●		
Burhinus grallarius	Bush Stone-curlew						●				
Himantopus himantopus	Black-winged Stilt						●	●			
Recurvirostra novaehollandiae	Red-necked Avocet							●			
Elseyornis melanops	Black-fronted Dotterel							●			
Vanellus tricolor	Banded Lapwing						●				

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Rostratula australis	Australian Painted Snipe	EN	●	S2 (EN)					●	●	
Tringa nebularia	Common Greenshank							●			
Actitis hypoleucos	Common Sandpiper		●	S5 (Mig.)				●	●		
Turnix velox	Little Button-quail							●			
Chroicocephalus novaehollandiae	Silver Gull						●				
Calyptorhynchus banksii naso	Forest Red-tailed Black Cockatoo	VU		S3 (VU)			●	●	●		
Calyptorhynchus latirostris	Carnaby's Black Cockatoo	EN		S2 (EN)			●	●	●	●	●
Calyptorhynchus baudinii	Baudin's Black Cockatoo	VU		S2 (EN)					●		
Eolophus roseicapillus	Galah						●	●			●
Cacatua tenuirostris	Long-billed Corella					●		●			
Cacatua pastinator butleri	Western Corrella						●	●			
Cacatua sanguinea	Little Corella						●	●			●
Cacatua galerita	Sulphur-crested Cockatoo					●		●			
Glossopsitta porphyrocephala	Purple-crowned Lorikeet							●			
Platycercus icterotis	Western Rosella							●			
Barnardius zonarius	Australian Ringneck						●	●			●
Purpureicephalus spurius	Red-capped Parrot							●			●
Psephotus varius	Mulga Parrot						●				
Melopsittacus undulatus	Budgerigar						●	●			
Neophema elegans	Elegant Parrot							●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Chalcites basalis	Horsfield's Bronze-cuckoo										●
Chalcites lucidus	Shining Bronze-cuckoo						●	●			
Cacomantis pallidus	Pallid Cuckoo						●	●			
Cacomantis flabelliformis	Fan-tailed Cuckoo							●			
Ninox connivens connivens	Barking Owl (southern)				P2				●		
Ninox novaeseelandiae	Southern Boobook							●			
Dacelo novaeguineae	Laughing Kookaburra					●		●			●
Todiramphus sanctus	Sacred Kingfisher							●			
Merops ornatus	Rainbow Bee-eater		●	S5 (Mig.)			●	●	●	●	●
Malurus splendens	Splendid Fairy-wren							●			●
Malurus leucopterus	White-winged Fairy-wren						●	●			
Malurus lamberti	Variegated Fairy-wren							●			
Malurus pulcherrimus	Blue-breasted Fairy-wren						●	●			
Sericornis frontalis	White-browed Scrubwren							●			
Smicrornis brevirostris	Weebill						●	●			●
Gerygone fusca	Western Gerygone						●	●			
Acanthiza chrysorrhoa	Yellow-rumped Thornbill						●	●			
Acanthiza uropygialis	Chestnut-rumped Thornbill						●				
Acanthiza inornata	Western Thornbill							●			
Acanthiza apicalis	Inland Thornbill							●			
Pardalotus punctatus	Spotted Pardalote						●	●			

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Pardalotus striatus	Striated Pardalote						●	●			●
Acanthorhynchus superciliosus	Western Spinebill							●			●
Lichenostomus virescens	Singing Honeyeater						●				●
Lichenostomus leucotis	White-eared Honeyeater						●				
Manorina flavigula	Yellow-throated Miner						●	●			
Acanthagenys rufogularis	Spiny-cheeked Honeyeater						●	●			
Anthochaera lunulata	Western Wattlebird							●			
Anthochaera carunculata	Red Wattlebird						●	●			●
Epthianura albifrons	White-fronted Chat						●	●			
Lichmera indistincta	Brown Honeyeater						●	●			●
Phylidonyris novaehollandiae	New Holland Honeyeater							●			●
Melithreptus brevirostris	Brown-headed Honeyeater						●	●			
Pomatostomus superciliosus	White-browed Babbler						●				
Pomatostomus superciliosus ashbyi	White-browed Babbler (western wheatbelt)								●		
Daphoenositta chrysoptera	Varied Sittella							●			
Coracina novaehollandiae	Black-faced Cuckoo-shrike						●	●			●
Pachycephala pectoralis	Golden Whistler							●			
Pachycephala rufiventris	Rufous Whistler						●	●			●
Colluricincla harmonica	Grey Shrike-thrush						●	●			
Oreoica gutturalis gutturalis	Crested Bellbird (southern)								●		

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Artamus personatus	Masked Woodswallow						●				
Artamus cinereus	Black-faced Woodswallow						●	●			●
Artamus cyanopterus	Dusky Woodswallow							●			
Cracticus torquatus	Grey Butcherbird						●	●			●
Cracticus nigrogularis	Pied Butcherbird						●	●			
Cracticus tibicen	Australian Magpie						●	●			●
Strepera versicolor	Grey Currawong							●			
Rhipidura albiscapa	Grey Fantail						●	●			●
Rhipidura leucophrys	Willie Wagtail						●	●			●
Corvus coronoides	Australian Raven						●	●			●
Corvus bennetti	Little Crow							●			
Myiagra inquieta	Restless Flycatcher							●			
Grallina cyanoleuca	Magpie-lark						●	●			
Petroica goodenovii	Red-capped Robin						●	●			●
Drymodes brunneopygia	Southern Scrub-robin						●				
Acrocephalus australis	Australian Reed-Warbler							●			
Megalurus gramineus	Little Grassbird							●			
Cincloramphus mathewsi	Rufous Songlark						●	●			
Cincloramphus cruralis	Brown Songlark						●	●			
Zosterops lateralis	Silvereye						●	●			●
Hirundo neoxena	Welcome Swallow						●	●			●
Petrochelidon nigricans	Tree Martin						●	●			●

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Sturnus vulgaris	Common Starling					●				●	
Sturnus tristis	Common Myna					●				●	
Dicaeum hirundinaceum	Mistletoebird							●			
Taeniopygia guttata	Zebra Finch						●				
Passer domesticus	House Sparrow					●				●	
Passer montanus	Eurasian Tree Sparrow					●				●	
Anthus novaeseelandiae	Australasian Pipit						●				
Carduelis carduelis	European Goldfinch					●				●	
Mammals											
Tachyglossus aculeatus	Short-beaked Echidna							●			
Dasyurus geoffroii	Western Quoll	VU		S3 (VU)				●	●	●	
Parantechinus apicalis	Dibbler	EN		S2 (EN)					●		
Sminthopsis gilberti	Gilbert's Dunnart							●			
Isoodon obesulus fusciventer	Southern Brown Bandicoot/Quenda				P5			●	●		
Cercartetus concinnus	Western Pygmy-possum, Mundarda							●			
Trichosurus vulpecula	Common Brushtail Possum										●
Macropus fuliginosus	Western Grey Kangaroo							●			●
Macropus robustus subsp. erubescens	Euro							●			
Macropus irma	Western Brush Wallaby				P4				●		
Leporillus conditor	Greater Stick-nest Rat	VU		S6 (SC)					●		

Scientific name	Common name	Status					Source				
		EPBC Act Threatened	EPBC Act Migratory	WC Act	DPaW	Introduced	BirdLife	NatureMap	DPAW Threatened Fauna	Protected Matters	GHD 2011
Nyctophilus geoffroyi subsp. geoffroyi								●			
Nyctophilus gouldi	Gould's Long-eared Bat							●			
Mus musculus	House Mouse					●				●	●
Rattus norvegicus	Brown Rat					●				●	
Rattus rattus	Black Rat					●		●		●	
Funambulus pennanti	Indian Palm Squirrel					●				●	
Oryctolagus cuniculus	Rabbit					●				●	●
Canis lupus familiaris	Dog					●	●			●	
Vulpes vulpes	Red Fox					●				●	●
Felis catus	Cat					●	●	●		●	
Sus scrofa	Pig					●				●	●
Bos taurus	European Cattle					●	●			●	●
Capra hircus	Goat					●	●			●	

Appendix 4 Flora species inventory for the study area

Family	Taxon	Muchea North	Chittering
ANARTHRIACEAE	*Lyginia barbata*	●	
ANARTHRIACEAE	*Lyginia imberbis*	●	
APIACEAE	*Xanthosia huegelii*	●	●
ARALIACEAE	*Trachymene ornata*	●	
ASPARAGACEAE	**Asparagus asparagoides* (Declared)	●	
ASPARAGACEAE	*Chamaescilla corymbosa*	●	
ASPARAGACEAE	*Laxmannia squarrosa*	●	●
ASPARAGACEAE	*Lomandra caespitosa*		●
ASPARAGACEAE	*Lomandra preissii*	●	
ASPARAGACEAE	*Lomandra sericea*	●	●
ASPARAGACEAE	*Sowerbaea laxiflora*	●	
ASPARAGACEAE	*Thysanotus dichotomus*	●	
ASPARAGACEAE	*Thysanotus manglesianus*	●	
ASPARAGACEAE	*Thysanotus multiflorus*		●
ASPARAGACEAE	*Thysanotus patersonii*	●	
ASPARAGACEAE	*Thysanotus tenellus*	●	
ASTERACEAE	**Arctotheca calendula*	●	●
ASTERACEAE	**Cotula coronopifolia*	●	
ASTERACEAE	**Hypochaeris glabra*	●	●
ASTERACEAE	**Monoculus monstrosus*	●	
ASTERACEAE	**Podotheca gnaphalioides*	●	●
ASTERACEAE	**Sonchus oleraceus*	●	
ASTERACEAE	**Ursinia anthemoides*	●	●
ASTERACEAE	**Ursinia anthemoides* subsp. *anthemoides*	●	●
ASTERACEAE	**Vellereophyton dealbatum*	●	
ASTERACEAE	*Helichrysum luteoalbum*	●	
ASTERACEAE	*Hyalosperma cotula*	●	
ASTERACEAE	*Millotia tenuifolia* var. *tenuifolia*		●
ASTERACEAE	*Podolepis gracilis*	●	
ASTERACEAE	*Rhodanthe citrina*	●	
ASTERACEAE	*Trichocline spathulata*	●	●
ASTERACEAE	*Waitzia suaveolens* var. *suaveolens*	●	
BORAGINACEAE	**Echium plantagineum* (Declared)	●	●
CAMPANULACEAE	**Wahlenbergia capensis*	●	
CAMPANULACEAE	**Wahlenbergia gracilenta*	●	
CAPRIFOLIACEAE	**Lonicera japonica*	●	
CASUARINACEAE	*Allocasuarina humilis*	●	●
CELASTRACEAE	*Tripterococcus brunonis*		●

Family	Taxon	Muchea North	Chittering
CENTROLEPIDACEAE	*Centrolepis aristata*	●	
COLCHICACEAE	*Burchardia congesta*	●	●
COLCHICACEAE	*Burchardia multiflora*	●	
COLCHICACEAE	*Burchardia umbellata*	●	
CRASSULACEAE	*Crassula colorata*		●
CUPRESSACEAE	*Callitris pyramidalis*		●
CYPERACEAE	*Isolepis cernua* var. *setiformis*	●	
CYPERACEAE	*Lepidosperma calcicola*	●	●
CYPERACEAE	*Lepidosperma pubisquameum*	●	
CYPERACEAE	*Lepidosperma* sp.		●
CYPERACEAE	*Lepidosperma squamatum*	●	
CYPERACEAE	*Lepidosperma tenue*	●	●
CYPERACEAE	*Mesomelaena pseudostygia*	●	●
CYPERACEAE	*Mesomelaena tetragona*	●	●
CYPERACEAE	*Schoenus plumosus*	●	
CYPERACEAE	*Schoenus subfascicularis*	●	
DASYPOGANACEAE	*Calectasia narragara*		●
DASYPOGONACEAE	*Dasypogon bromeliifolius*	●	
DILLENIACEAE	*Hibbertia commutata*	●	
DILLENIACEAE	*Hibbertia huegelii*	●	
DILLENIACEAE	*Hibbertia hypericoides*	●	●
DILLENIACEAE	*Hibbertia lasiopus*	●	●
DILLENIACEAE	*Hibbertia polystachya*		●
DROCERACEAE	*Drosera erythrorhiza*		●
DROCERACEAE	*Drosera pallida*	●	●
DROCERACEAE	*Drosera pygmaea*		●
DROSERACEAE	*Drosera bulbosa*	●	
DROSERACEAE	*Drosera erythrorhiza* subsp. *collina*	●	
DROSERACEAE	*Drosera gigantea* subsp. *gigantea*	●	
DROSERACEAE	*Drosera glanduligera*	●	
DROSERACEAE	*Drosera menziesii*	●	
ELAEOCARPACEAE	*Tetratheca nuda*		●
ERICACEAE	*Astroloma macrocalyx*	●	
ERICACEAE	*Astroloma pallidum*	●	●
ERICACEAE	*Astroloma stomarrhena*		●
ERICACEAE	*Astroloma xerophyllum*	●	
EUPHORBIACEAE	*Euphorbia terracina*	●	
FABACEAE	**Lotus subbiflorus*	●	
FABACEAE	**Lupinus angustifolius*		●
FABACEAE	**Trifolium arvense*	●	

Family	Taxon	Muchea North	Chittering
FABACEAE	**Trifolium campestre* var. *campestre*	●	
FABACEAE	**Trifolium hirtum*	●	
FABACEAE	**Trifolium subterraneum*	●	
FABACEAE	*Acacia drewiana subsp. drewiana*		●
FABACEAE	*Acacia drummondii* subsp. *affinis* (P3)	●	●
FABACEAE	*Acacia longifolia* subsp. *longifolia*	●	
FABACEAE	*Acacia pulchella*	●	
FABACEAE	*Acacia pulchella* var. *goadbyi*	●	
FABACEAE	*Acacia pulchella* var. *pulchella*	●	
FABACEAE	*Acacia pulchella* var. *reflexa*	●	
FABACEAE	*Acacia saligna*	●	●
FABACEAE	*Bossiaea eriocarpa*	●	
FABACEAE	*Daviesia angulata*	●	●
FABACEAE	*Daviesia debilior* subsp. *sinuans* (P3)	●	
FABACEAE	*Daviesia decurrens*		●
FABACEAE	*Daviesia divaricata*	●	
FABACEAE	*Daviesia hakeoides* subsp. *hakeoides*	●	
FABACEAE	*Daviesia preissii*	●	
FABACEAE	*Daviesia triflora*	●	
FABACEAE	*Dillwynia laxiflora*	●	●
FABACEAE	*Fabaceae sp. indet.*	●	
FABACEAE	*Gastrolobium capitatum*	●	●
FABACEAE	*Gastrolobium dilatatum*		●
FABACEAE	*Gompholobium knightianum*	●	●
FABACEAE	*Gompholobium preissii*	●	●
FABACEAE	*Gompholobium tomentosum*	●	●
FABACEAE	*Hovea trisperma*	●	
FABACEAE	*Hovea trisperma* var. *grandiflora*	●	
FABACEAE	*Jacksonia floribunda*	●	●
FABACEAE	*Jacksonia furcellata*	●	
FABACEAE	*Jacksonia sternbergiana*	●	●
FABACEAE	*Kennedia coccinea* subsp. *coccinea*	●	
FABACEAE	*Kennedia prostrata*	●	●
FABACEAE	*Kennedia stirlingii*		●
FABACEAE	*Labichea lanceolata* subsp. l*anceolata*	●	●
FABACEAE	*Sphaerolobium medium*	●	●
GOODENIACEAE	*Dampiera alata*		●
GOODENIACEAE	*Dampiera coronata*	●	
GOODENIACEAE	*Dampiera lindleyi*		●
GOODENIACEAE	*Dampiera teres*	●	

Family	Taxon	Muchea North	Chittering
GOODENIACEAE	*Lechenaultia biloba*	●	●
GOODENIACEAE	*Scaevola repens*	●	
HAEMODORACEAE	*Anigozanthos bicolor* subsp. *bicolor*	●	
HAEMODORACEAE	*Anigozanthos humilis*	●	
HAEMODORACEAE	*Anigozanthos manglesii*	●	
HAEMODORACEAE	*Blancoa canescens*	●	
HAEMODORACEAE	*Conostylis aculeata* subsp. *aculeata*	●	
HAEMODORACEAE	*Conostylis aculeata* subsp. *preissii*		●
HAEMODORACEAE	*Conostylis aurea*	●	
HAEMODORACEAE	*Conostylis candicans*	●	
HAEMODORACEAE	*Conostylis candicans* subsp. *candicans*	●	
HAEMODORACEAE	*Conostylis juncea*	●	●
HAEMODORACEAE	*Conostylis setigera* subsp. *setigera*	●	●
HAEMODORACEAE	*Conostylis setosa*		●
HAEMODORACEAE	*Conostylis teretifolia* subsp. t*eretifolia*	●	
HAEMODORACEAE	*Haemodorum discolor*	●	
HAEMODORACEAE	*Haemodorum loratum* (P3)		●
HAEMODORACEAE	*Haemodorum sp.*	●	
HAEMODORACEAE	*Phlebocarya ciliata*	●	
HAEMODORACEAE	*Tribonanthes longipetala*	●	
HEMEROCALLIDACEAE	*Agrostocrinum hirsutum*	●	
HEMEROCALLIDACEAE	*Caesia micrantha*	●	
HEMEROCALLIDACEAE	*Johnsonia pubescens* subsp. *pubescens*	●	
HEMEROCALLIDACEAE	*Tricoryne elatior*	●	●
HYPOXIDACEAE	*Pauridia glabella*	●	
IRIDACEAE	**Chasmanthe floribunda*	●	
IRIDACEAE	**Freesia alba x leichtlinii*	●	
IRIDACEAE	**Gladiolus* ? *undulatus*	●	
IRIDACEAE	**Gladiolus caryophyllaceus*	●	●
IRIDACEAE	**Moraea miniata* (Declared)	●	●
IRIDACEAE	**Romulea rosea*	●	
IRIDACEAE	*Patersonia juncea*	●	
IRIDACEAE	*Patersonia occidentalis*	●	
JUNCACEAE	**Juncus hybridus*	●	
LAURACEAE	*Cassytha flava*	●	
LORANTHACEAE	*Nuytsia floribunda*	●	●
MALVACEAE	*Thomasia grandiflora*	●	
MYRTACEAE	**Leptospermum laevigatum*	●	
MYRTACEAE	*Beaufortia macrostemon*	●	
MYRTACEAE	*Calothamnus sanguineus*	●	

Family	Taxon	Muchea North	Chittering
MYRTACEAE	*Calytrix flavescens*	●	
MYRTACEAE	*Chamelaucium uncinatum*	●	
MYRTACEAE	*Corymbia calophylla*	●	●
MYRTACEAE	*Darwinia foetida* (CE EPBC Act, S2 WC Act)	●	
MYRTACEAE	*Eremaea pauciflora*	●	
MYRTACEAE	*Eremaea pauciflora var. pauciflora*		●
MYRTACEAE	*Eucalyptus accedens*	●	
MYRTACEAE	*Eucalyptus caesia* (P4)	●	
MYRTACEAE	*Eucalyptus drummondii x rudis*	●	
MYRTACEAE	*Eucalyptus marginata*	●	●
MYRTACEAE	*Eucalyptus rudis*		●
MYRTACEAE	*Eucalyptus wandoo*	●	●
MYRTACEAE	*Hypocalymma angustifolium*	●	
MYRTACEAE	*Kunzea micrantha*	●	
MYRTACEAE	*Leptospermum erubescens*	●	
MYRTACEAE	*Melaleuca hamata*	●	
MYRTACEAE	*Melaleuca parviceps*	●	
MYRTACEAE	*Melaleuca rhaphiophylla*	●	●
MYRTACEAE	*Melaleuca viminea* subsp. *viminea*	●	
MYRTACEAE	*Scholtzia involucrata*	●	
MYRTACEAE	*Verticordia densiflora* var. *densiflora*	●	
MYRTACEAE	*Verticordia insignis*	●	
MYRTACEAE	*Verticordia lindleyi* subsp. *lindleyi* (P4)	●	
MYRTACEAE	*Verticordia pennigera*	●	
MYRTACEAE	*Verticordia plumosa*	●	
MYRTACEAE	*Verticordia serrata* var. *linearis* (P3)	●	
ORCHIDACEAE	**Disa bracteata*	●	
ORCHIDACEAE	*Caladenia flava*	●	●
ORCHIDACEAE	*Diuris magnifica*	●	●
ORCHIDACEAE	*Elythranthera brunonis*	●	
ORCHIDACEAE	*Leporella fimbriata*	●	
ORCHIDACEAE	*Microtis media* subsp. *media*	●	
ORCHIDACEAE	*Prasophyllum hians*	●	
ORCHIDACEAE	*Pterostylis recurva*	●	
ORCHIDACEAE	*Pterostylis sanguinea*	●	●
ORCHIDACEAE	*Pyrorchis nigricans*		●
ORCHIDACEAE	*Thelymitra benthamiana*	●	
OXALIDACEAE	**Oxalis pes-caprae*	●	●
PHYLLANTHACEAE	*Phyllanthus calycinus*	●	
PLANTAGINACEAE	*Gratiola pubescens*	●	

Family	Taxon	Muchea North	Chittering
POACEAE	**Arundo donax* ?	●	
POACEAE	**Avena barbata*	●	●
POACEAE	**Brachypodium distachyon*	●	
POACEAE	**Briza maxima*	●	●
POACEAE	**Briza minor*	●	●
POACEAE	**Bromus diandrus*	●	●
POACEAE	**Cenchrus clandestinus*	●	
POACEAE	**Cynodon dactylon*		●
POACEAE	**Ehrharta calycina*	●	●
POACEAE	**Ehrharta longiflora*	●	●
POACEAE	**Eragrostis curvula*	●	●
POACEAE	**Hordeum leporinum*	●	
POACEAE	**Lolium rigidum*	●	
POACEAE	**Pentameris airoides*		●
POACEAE	**Pentameris airoides* subsp. *airoides*	●	●
POACEAE	**Polypogon monspeliensis*	●	
POACEAE	**Vulpia bromoides*	●	
POACEAE	*Amphipogon turbinatus*	●	
POACEAE	*Austrostipa elegantissima*		●
POACEAE	*Austrostipa flavescens*	●	
POACEAE	*Neurachne alopecuroidea*	●	●
POACEAE	Poaceae sp.		●
POACEAE	Poaceae sp.		●
POACEAE	Poaceae sp.	●	
POACEAE	Poaceae sp. indet.	●	●
POACEAE	*Rytidosperma setaceum*	●	
PRIMULACEAE	**Lysimachia arvensis*	●	●
PROTEACEAE	*Adenanthos cygnorum*	●	●
PROTEACEAE	*Banksia armata var. armata*	●	
PROTEACEAE	*Banksia attenuata*	●	
PROTEACEAE	*Banksia bipinnatifida* subsp. *multifida*	●	●
PROTEACEAE	*Banksia dallanneyi* var. *dallanneyi*	●	●
PROTEACEAE	*Banksia grandis*	●	
PROTEACEAE	*Banksia menziesii*	●	●
PROTEACEAE	*Banksia nivea*	●	
PROTEACEAE	*Banksia nivea subsp. nivea*	●	
PROTEACEAE	*Banksia sessilis*	●	
PROTEACEAE	*Conospermum stoechadis* subsp. *sclerophyllum*	●	
PROTEACEAE	*Grevillea pilulifera*	●	

Family	Taxon	Muchea North	Chittering
PROTEACEAE	*Grevillea* sp.	●	
PROTEACEAE	*Grevillea synapheae* subsp. *synapheae*	●	
PROTEACEAE	*Hakea stenocarpa*	●	●
PROTEACEAE	*Petrophile linearis*	●	
PROTEACEAE	*Petrophile macrostachya*		●
PROTEACEAE	*Petrophile seminuda*	●	
PROTEACEAE	*Petrophile striata*	●	●
PROTEACEAE	*Stirlingia latifolia*	●	
PROTEACEAE	*Synaphea flabelliformis*	●	
PROTEACEAE	*Synaphea gracillima*	●	
PROTEACEAE	*Synaphea sp.*	●	
PROTEACEAE	*Synaphea spinulosa* subsp. *spinulosa*	●	●
RESTIONACEAE	*Alexgeorgea nitens*	●	
RESTIONACEAE	*Chordifex sinuosus*	●	●
RESTIONACEAE	*Desmocladus fasciculatus*	●	●
RESTIONACEAE	*Desmocladus flexuosus*	●	
RESTIONACEAE	*Hypolaena exsulca*	●	●
RESTIONACEAE	*Lepidobolus preissianus*	●	
RHAMNACEAE	*Trymalium angustifolium*	●	●
RUBIACEAE	*Opercularia vaginata*	●	
RUTACEAE	*Boronia ramosa subsp. anethifolia*		●
RUTACEAE	*Philotheca spicata*	●	●
SOLANACEAE	**Solanum nigrum*	●	●
STYLIDIACEAE	*Stylidium diuroides subsp. diuroides*	●	●
STYLIDIACEAE	*Stylidium hispidum*	●	●
STYLIDIACEAE	*Stylidium neurophyllum*	●	●
STYLIDIACEAE	*Stylidium piliferum*	●	
STYLIDIACEAE	*Stylidium recurvum*	●	
STYLIDIACEAE	*Stylidium schoenoides*	●	
STYLIDIACEAE	*Stylidium squamellosum* (P2)	●	
TAMAROCACEAE	**Tamarix parviflora*	●	
THYMELAEACEAE	*Pimelea sulphurea*	●	
TYPHACEAE	**Typha orientalis*	●	
VIOLACEAE	*Hybanthus calycinus*	●	
XANTHORRHOEACEAE	*Xanthorrhoea preissii*	●	●
ZAMIACEAE	*Macrozamia riedlei*	●	

Appendix 5 Carnaby's Black Cockatoo potential breeding tree records

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT00010	16/10/2014	-31.57356	115.9948	*Corymbia calophylla*	560	No	No	No	
HT00011	16/10/2014	-31.57362	115.9948	*Corymbia calophylla*	770	No	No	No	
HT00012	16/10/2014	-31.574	115.9949	*Corymbia calophylla*	590	No	No	No	
HT00013	16/10/2014	-31.54886	115.9971	*Corymbia calophylla*	930	No	No	No	
HT00014	16/10/2014	-31.54871	115.9971	*Corymbia calophylla*	640	No	No	No	
HT00015	16/10/2014	-31.54869	115.9971	*Corymbia calophylla*	750	No	No	No	Dead.
HT00016	16/10/2014	-31.5487	115.997	*Corymbia calophylla*	980	No	No	No	
HT00017	16/10/2014	-31.54848	115.9972	*Eucalyptus marginata*	550	No	No	No	
HT00018	16/10/2014	-31.54868	115.9974	*Corymbia calophylla*	560	No	No	No	
HT00019	16/10/2014	-31.54205	116.0057	*Eucalyptus marginata*	560	No	No	No	
HT00020	16/10/2014	-31.54201	116.0057	*Corymbia calophylla*	600	Possible	No	No	
HT00021	16/10/2014	-31.54205	116.0058	*Corymbia calophylla*	560	No	No	No	
HT00022	16/10/2014	-31.54226	116.0057	*Eucalyptus marginata*	870	Possible	No	No	Dead.
HT00023	16/10/2014	-31.54231	116.0058	*Eucalyptus marginata*	1400	Yes	No	No	
HT00024	16/10/2014	-31.54214	116.0059	*Corymbia calophylla*	800	No	No	No	
HT00025	16/10/2014	-31.53454	116.0161	*Corymbia calophylla*	800	Yes	Yes	Yes	Dead. Hollow in top. Worn Hollow. Duck down at entrance.
HT00026	17/10/2014	-31.53174	116.0205	*Corymbia calophylla*	760	Yes	No	No	
HT00027	17/10/2014	-31.53168	116.0203	*Corymbia calophylla*	500	No	No	No	
HT00028	17/10/2014	-31.53145	116.0205	*Corymbia calophylla*	600	No	No	No	
HT00029	17/10/2014	-31.53139	116.0206	*Corymbia calophylla*	890	No	No	No	
HT00030	17/10/2014	-31.53128	116.0207	*Corymbia calophylla*	870	Possible	No	No	
HT00031	17/10/2014	-31.52304	116.0293	*Eucalyptus* sp. indet.	720	Yes	not assessed	not assessed	Dead.

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT00032	17/10/2014	-31.523	116.0295	*Eucalyptus wandoo*	730	Yes	not assessed	not assessed	Dead.
HT00033	17/10/2014	-31.52263	116.0297	*Corymbia calophylla*	1000	No	No	No	
HT00034	17/10/2014	-31.51942	116.0333	*Eucalyptus marginata*	1170	Yes	No	No	
HT00035	17/10/2014	-31.51936	116.0333	*Corymbia calophylla*	740	Yes	No	No	
HT00036	17/10/2014	-31.51969	116.033	*Corymbia calophylla*	740	No	No	No	
HT00037	17/10/2014	-31.51982	116.033	*Corymbia calophylla*	560	No	No	No	
HT00038	17/10/2014	-31.51976	116.0327	*Corymbia calophylla*	730	No	No	No	
HT00039	17/10/2014	-31.51983	116.0325	*Corymbia calophylla*	730	Yes	No	No	
HT00040	17/10/2014	-31.52004	116.0326	*Corymbia calophylla*	570	No	No	No	
HT00041	17/10/2014	-31.5202	116.0324	*Eucalyptus marginata*	500	Yes	No	No	
HT00042	17/10/2014	-31.52024	116.0323	*Corymbia calophylla*	880	Yes	No	No	
HT00043	17/10/2014	-31.52035	116.0324	*Eucalyptus marginata*	1050	Yes	No	No	Multiple hollows present.
HT00044	17/10/2014	-31.51249	116.0352	*Eucalyptus marginata*	1200	Yes	No	No	
HT00045	17/10/2014	-31.53759	116.0122	*Corymbia calophylla*	790	Yes	No	No	Dead.
HT00046	17/10/2014	-31.53727	116.0125	*Corymbia calophylla*	1320	No	No	No	
HT00157	28/10/2014	-31.52756	116.0254	*Corymbia calophylla*	1000	No	No	No	
HT00158	28/10/2014	-31.52702	116.0258	*Corymbia calophylla*	1150	Yes	not assessed	not assessed	Dead.
HT00159	28/10/2014	-31.52076	116.0326	*Corymbia calophylla*	1130	Possible	No	No	
HT00160	28/10/2014	-31.52076	116.0327	*Corymbia calophylla*	1140	Possible	No	No	
HT00224	31/10/2014	-31.53236	116.0193	*Corymbia calophylla*	600	No	No	No	
HT00225	31/10/2014	-31.53294	116.0186	*Corymbia calophylla*	640	No	No	No	
HT00226	31/10/2014	-31.53334	116.018	*Corymbia calophylla*	510	No	No	No	
HT00227	31/10/2014	-31.53345	116.0179	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT00228	31/10/2014	-31.53518	116.0155	*Corymbia calophylla*	900	Yes	Yes	No	Hollow at 4 m. Has suitable entrance but is too low and shows no signs of use.
HT00229	31/10/2014	-31.53564	116.0149	*Corymbia calophylla*	1050	No	No	No	
HT00230	31/10/2014	-31.53672	116.0132	*Corymbia calophylla*	850	Yes	No	No	Dead. Hollows at 4 m and 8 m.
HT00231	31/10/2014	-31.53697	116.0131	*Corymbia calophylla*	510	No	No	No	
HT00232	31/10/2014	-31.53712	116.0128	*Corymbia calophylla*	570	No	No	No	
HT00233	31/10/2014	-31.53725	116.0126	*Corymbia calophylla*	1160	No	No	No	
HT00234	31/10/2014	-31.53945	116.0096	*Corymbia calophylla*	1000	No	No	No	
HT00236	31/10/2014	-31.54294	116.005	*Corymbia calophylla*	1200	No	No	No	
HT00237	31/10/2014	-31.54294	116.0049	*Corymbia calophylla*	650	No	No	No	
HT00238	31/10/2014	-31.54303	116.0049	*Eucalyptus marginata*	1000	No	No	No	
HT00239	31/10/2014	-31.54371	116.0041	*Corymbia calophylla*	1000	Possible	No	No	
HT00240	31/10/2014	-31.54417	116.0035	*Corymbia calophylla*	1000	No	No	No	
HT00243	31/10/2014	-31.547	115.9997	*Corymbia calophylla*	1090	No	No	No	
HT00244	31/10/2014	-31.54783	115.9986	*Eucalyptus marginata*	1190	Yes	No	No	Hollow at 6 m and 12 m.
HT00245	31/10/2014	-31.54995	115.9967	*Eucalyptus marginata*	1100	No	No	No	
HT03680	31/03/2015	-31.5204	116.0327	*Corymbia calophylla*	760	No	No	No	
HT03681	31/03/2015	-31.52527	116.0273	*Corymbia calophylla*	500	No	No	No	
HT03682	31/03/2015	-31.53399	116.0172	*Corymbia calophylla*	540	No	No	No	
HT03683	31/03/2015	-31.53271	116.0189	*Corymbia calophylla*	500	No	No	No	
HT03684	31/03/2015	-31.53247	116.0192	*Corymbia calophylla*	500	No	No	No	Dead.
HT03685	31/03/2015	-31.5323	116.0195	*Corymbia calophylla*	500	No	No	No	
HT03686	31/03/2015	-31.53196	116.0198	*Eucalyptus wandoo*	360	No	No	No	
HT03687	31/03/2015	-31.53093	116.0213	*Corymbia calophylla*	600	No	No	No	
HT03688	31/03/2015	-31.5303	116.0221	*Eucalyptus rudis*	900	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03689	31/03/2015	-31.53005	116.0225	*Eucalyptus rudis*	760	No	No	No	
HT03690	31/03/2015	-31.52879	116.0242	*Corymbia calophylla*	500	No	No	No	
HT03691	31/03/2015	-31.52793	116.0252	*Corymbia calophylla*	500	No	No	No	
HT03692	31/03/2015	-31.52595	116.0267	*Eucalyptus wandoo*	600	No	No	No	
HT03693	31/03/2015	-31.52734	116.0257	*Corymbia calophylla*	500	No	No	No	
HT03694	31/03/2015	-31.527	116.0259	*Eucalyptus wandoo*	300	No	No	No	
HT03695	31/03/2015	-31.52667	116.0261	*Eucalyptus wandoo*	380	No	No	No	
HT03696	31/03/2015	-31.52665	116.0261	*Eucalyptus wandoo*	320	No	No	No	
HT03697	31/03/2015	-31.52649	116.0263	*Eucalyptus wandoo*	500	No	No	No	
HT03698	31/03/2015	-31.52628	116.0264	*Eucalyptus wandoo*	1200	No	No	No	
HT03699	31/03/2015	-31.52608	116.0266	*Corymbia calophylla*	500	No	No	No	
HT03700	31/03/2015	-31.52606	116.0266	*Eucalyptus marginata*	440	No	No	No	
HT03701	31/03/2015	-31.5257	116.0268	*Corymbia calophylla*	500	No	No	No	
HT03702	31/03/2015	-31.52554	116.0269	*Corymbia calophylla*	1100	No	No	No	
HT03703	31/03/2015	-31.5267	116.0263	*Eucalyptus wandoo*	360	No	No	No	
HT03704	31/03/2015	-31.52532	116.0271	*Corymbia calophylla*	560	No	No	No	
HT03705	31/03/2015	-31.52523	116.0271	*Corymbia calophylla*	500	No	No	No	
HT03706	31/03/2015	-31.52514	116.0272	*Corymbia calophylla*	500	No	No	No	
HT03707	31/03/2015	-31.52511	116.0273	*Corymbia calophylla*	580	No	No	No	
HT03708	31/03/2015	-31.52454	116.0275	*Corymbia calophylla*	500	No	No	No	
HT03709	31/03/2015	-31.52419	116.0281	*Corymbia calophylla*	540	No	No	No	
HT03710	31/03/2015	-31.52396	116.0284	*Corymbia calophylla*	500	No	No	No	
HT03711	31/03/2015	-31.5237	116.0286	*Corymbia calophylla*	560	No	No	No	
HT03712	31/03/2015	-31.52371	116.0286	*Corymbia calophylla*	500	No	No	No	
HT03713	31/03/2015	-31.52318	116.0292	*Eucalyptus wandoo*	400	No	No	No	
HT03714	31/03/2015	-31.52674	116.0263	*Eucalyptus wandoo*	400	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03715	31/03/2015	-31.523	116.0295	*Eucalyptus wandoo*	300	No	No	No	
HT03716	31/03/2015	-31.52239	116.0301	*Corymbia calophylla*	600	No	No	No	
HT03717	31/03/2015	-31.52204	116.0307	*Corymbia calophylla*	560	No	No	No	
HT03718	31/03/2015	-31.52154	116.0312	*Corymbia calophylla*	640	No	No	No	
HT03719	31/03/2015	-31.52119	116.0317	*Corymbia calophylla*	500	No	No	No	
HT03720	31/03/2015	-31.5209	116.032	*Corymbia calophylla*	600	No	No	No	
HT03721	31/03/2015	-31.52078	116.0321	*Corymbia calophylla*	560	No	No	No	
HT03722	31/03/2015	-31.52043	116.0324	*Corymbia calophylla*	1200	No	No	No	
HT03723	31/03/2015	-31.5202	116.0322	*Eucalyptus marginata*	800	No	No	No	
HT03724	31/03/2015	-31.52014	116.0323	*Corymbia calophylla*	600	No	No	No	
HT03725	31/03/2015	-31.52687	116.0262	*Eucalyptus wandoo*	360	No	No	No	
HT03726	31/03/2015	-31.52005	116.0324	*Corymbia calophylla*	640	No	No	No	
HT03727	31/03/2015	-31.51879	116.0331	*Corymbia calophylla*	500	No	No	No	
HT03728	31/03/2015	-31.5183	116.0332	*Corymbia calophylla*	500	No	No	No	
HT03729	31/03/2015	-31.51804	116.0333	*Corymbia calophylla*	500	No	No	No	
HT03730	31/03/2015	-31.51801	116.0333	*Corymbia calophylla*	500	No	No	No	
HT03731	31/03/2015	-31.5165	116.0339	*Corymbia calophylla*	700	No	No	No	
HT03732	31/03/2015	-31.51595	116.034	*Corymbia calophylla*	540	No	No	No	
HT03733	31/03/2015	-31.51536	116.0342	*Corymbia calophylla*	500	No	No	No	
HT03734	31/03/2015	-31.51481	116.0344	*Corymbia calophylla*	660	No	No	No	
HT03735	31/03/2015	-31.51354	116.0347	*Eucalyptus marginata*	1100	No	No	No	
HT03736	31/03/2015	-31.52745	116.0257	*Corymbia calophylla*	1100	No	No	No	
HT03737	31/03/2015	-31.51352	116.0347	*Eucalyptus marginata*	1100	No	No	No	Dead.
HT03738	31/03/2015	-31.51339	116.0349	*Corymbia calophylla*	800	No	No	No	
HT03739	31/03/2015	-31.51312	116.0348	*Corymbia calophylla*	760	No	No	No	
HT03740	31/03/2015	-31.51311	116.0349	*Corymbia calophylla*	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03741	31/03/2015	-31.51313	116.0348	*Corymbia calophylla*	680	No	No	No	
HT03742	31/03/2015	-31.52833	116.025	*Corymbia calophylla*	1200	No	No	No	
HT03743	31/03/2015	-31.53155	116.0207	*Eucalyptus camaldulensis*	680	No	No	No	
HT03744	31/03/2015	-31.53186	116.0201	*Corymbia calophylla*	500	No	No	No	
HT03745	31/03/2015	-31.54687	116.0001	*Corymbia calophylla*	520	No	No	No	
HT03746	31/03/2015	-31.52123	116.0319	*Corymbia calophylla*	540	No	No	No	
HT03747	31/03/2015	-31.5477	115.999	*Corymbia calophylla*	600	No	No	No	
HT03748	31/03/2015	-31.54833	115.9982	*Eucalyptus marginata*	500	No	No	No	
HT03749	31/03/2015	-31.54836	115.9982	*Corymbia calophylla*	600	No	No	No	
HT03750	31/03/2015	-31.54965	115.9968	*Eucalyptus marginata*	500	No	No	No	
HT03751	31/03/2015	-31.54951	115.9969	*Eucalyptus marginata*	600	No	No	No	
HT03752	31/03/2015	-31.54922	115.9971	*Eucalyptus marginata*	500	No	No	No	
HT03753	31/03/2015	-31.57459	115.9951	*Corymbia calophylla*	720	No	No	No	
HT03754	31/03/2015	-31.57467	115.9951	*Corymbia calophylla*	720	No	No	No	
HT03756	31/03/2015	-31.57347	115.9947	*Corymbia calophylla*	660	No	No	No	
HT03757	31/03/2015	-31.52203	116.0309	*Corymbia calophylla*	800	No	No	No	
HT03758	31/03/2015	-31.57248	115.9944	*Corymbia calophylla*	700	No	No	No	
HT03759	31/03/2015	-31.57236	115.9944	*Corymbia calophylla*	520	No	No	No	
HT03760	31/03/2015	-31.56595	115.9927	*Corymbia calophylla*	500	No	No	No	
HT03761	31/03/2015	-31.56475	115.9923	*Eucalyptus camaldulensis*	540	No	No	No	
HT03762	31/03/2015	-31.56448	115.9922	*Corymbia calophylla*	600	No	No	No	
HT03763	31/03/2015	-31.56296	115.9918	*Eucalyptus wandoo*	320	No	No	No	
HT03764	31/03/2015	-31.55996	115.9915	*Corymbia calophylla*	520	No	No	No	
HT03765	31/03/2015	-31.55807	115.992	*Eucalyptus camaldulensis*	600	No	No	No	
HT03766	31/03/2015	-31.55776	115.9921	*Eucalyptus camaldulensis*	500	No	No	No	
HT03767	31/03/2015	-31.5576	115.9922	*Corymbia calophylla*	560	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03768	31/03/2015	-31.52233	116.0306	*Corymbia calophylla*	600	No	No	No	
HT03769	31/03/2015	-31.55698	115.9925	*Eucalyptus camaldulensis*	600	No	No	No	
HT03770	31/03/2015	-31.55686	115.9925	*Eucalyptus camaldulensis*	580	No	No	No	
HT03771	31/03/2015	-31.55654	115.9927	*Eucalyptus camaldulensis*	700	No	No	No	
HT03772	31/03/2015	-31.55572	115.9931	*Corymbia calophylla*	500	No	No	No	
HT03773	31/03/2015	-31.55535	115.9933	*Corymbia calophylla*	540	No	No	No	
HT03774	31/03/2015	-31.55508	115.9935	*Corymbia calophylla*	500	No	No	No	
HT03775	31/03/2015	-31.55484	115.9935	*Corymbia calophylla*	500	No	No	No	
HT03776	31/03/2015	-31.55483	115.9936	*Corymbia calophylla*	500	No	No	No	
HT03777	31/03/2015	-31.55441	115.9938	*Corymbia calophylla*	500	No	No	No	
HT03778	31/03/2015	-31.55286	115.9946	*Corymbia calophylla*	620	No	No	No	
HT03779	31/03/2015	-31.52276	116.0301	*Corymbia calophylla*	500	No	No	No	
HT03780	31/03/2015	-31.5527	115.9948	*Corymbia calophylla*	960	No	No	No	
HT03781	31/03/2015	-31.5527	115.9948	*Corymbia calophylla*	500	No	No	No	
HT03782	31/03/2015	-31.5524	115.995	*Corymbia calophylla*	500	No	No	No	
HT03783	31/03/2015	-31.55214	115.9951	*Corymbia calophylla*	500	No	No	No	
HT03784	31/03/2015	-31.55214	115.995	*Corymbia calophylla*	1100	Yes	No	No	Dead. Hollow at 10 m.
HT03785	31/03/2015	-31.55211	115.995	*Corymbia calophylla*	520	No	No	No	
HT03786	31/03/2015	-31.55205	115.995	*Corymbia calophylla*	700	No	No	No	
HT03787	31/03/2015	-31.55201	115.995	*Corymbia calophylla*	1000	No	No	No	
HT03788	31/03/2015	-31.55173	115.9952	*Corymbia calophylla*	500	No	No	No	
HT03789	31/03/2015	-31.55158	115.9953	*Corymbia calophylla*	700	No	No	No	
HT03790	31/03/2015	-31.52374	116.0288	*Corymbia calophylla*	600	No	No	No	
HT03791	31/03/2015	-31.55142	115.9954	*Corymbia calophylla*	580	No	No	No	
HT03792	31/03/2015	-31.55139	115.9954	*Corymbia calophylla*	560	No	No	No	
HT03793	31/03/2015	-31.55127	115.9955	*Corymbia calophylla*	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03794	31/03/2015	-31.55123	115.9957	*Corymbia calophylla*	1060	No	No	No	
HT03795	31/03/2015	-31.55042	115.9962	*Corymbia calophylla*	660	No	No	No	
HT03797	31/03/2015	-31.5468	115.9999	*Corymbia calophylla*	660	No	No	No	
HT03798	31/03/2015	-31.54678	115.9999	*Corymbia calophylla*	500	No	No	No	
HT03799	31/03/2015	-31.54698	115.9996	*Corymbia calophylla*	1100	No	No	No	
HT03801	31/03/2015	-31.52404	116.0285	*Corymbia calophylla*	660	No	No	No	
HT03802	31/03/2015	-31.54572	116.0014	*Corymbia calophylla*	700	No	No	No	
HT03803	31/03/2015	-31.54516	116.0021	*Eucalyptus marginata*	640	No	No	No	
HT03804	31/03/2015	-31.54499	116.0022	*Corymbia calophylla*	500	No	No	No	
HT03805	31/03/2015	-31.54486	116.0022	*Eucalyptus camaldulensis*	680	No	No	No	
HT03806	31/03/2015	-31.54472	116.0024	*Eucalyptus camaldulensis*	560	No	No	No	
HT03807	31/03/2015	-31.54475	116.0027	*Corymbia calophylla*	600	No	No	No	
HT03808	31/03/2015	-31.54407	116.0036	*Eucalyptus marginata*	540	No	No	No	
HT03809	31/03/2015	-31.54361	116.0042	*Eucalyptus marginata*	1360	No	No	No	
HT03810	31/03/2015	-31.54353	116.0041	*Corymbia calophylla*	600	No	No	No	
HT03811	31/03/2015	-31.54351	116.0043	*Corymbia calophylla*	520	No	No	No	
HT03812	31/03/2015	-31.52426	116.0282	*Corymbia calophylla*	500	No	No	No	
HT03813	31/03/2015	-31.54314	116.0048	*Corymbia calophylla*	500	No	No	No	
HT03814	31/03/2015	-31.54309	116.0048	*Corymbia calophylla*	600	No	No	No	
HT03815	31/03/2015	-31.5428	116.0052	*Eucalyptus marginata*	580	No	No	No	
HT03816	31/03/2015	-31.54254	116.0055	*Eucalyptus marginata*	660	No	No	No	Dead.
HT03817	31/03/2015	-31.54178	116.0065	*Eucalyptus marginata*	620	No	No	No	
HT03818	31/03/2015	-31.54162	116.0067	*Corymbia calophylla*	560	No	No	No	
HT03819	31/03/2015	-31.5406	116.0078	*Corymbia calophylla*	620	No	No	No	
HT03820	31/03/2015	-31.5406	116.008	*Corymbia calophylla*	1400	No	No	No	
HT03821	31/03/2015	-31.54033	116.0084	*Eucalyptus wandoo*	300	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03822	31/03/2015	-31.53876	116.0105	*Corymbia calophylla*	560	No	No	No	
HT03823	31/03/2015	-31.52535	116.0273	*Corymbia calophylla*	1060	Yes	not assessed	not assessed	Dead. Hollows at 8 m (x2).
HT03824	31/03/2015	-31.53853	116.0107	*Corymbia calophylla*	520	No	No	No	
HT03825	31/03/2015	-31.53842	116.0108	*Corymbia calophylla*	1000	No	No	No	Dead.
HT03826	31/03/2015	-31.53788	116.0116	*Corymbia calophylla*	720	No	No	No	Dead.
HT03827	31/03/2015	-31.5368	116.0133	*Corymbia calophylla*	520	No	No	No	
HT03828	31/03/2015	-31.5365	116.0135	*Corymbia calophylla*	500	No	No	No	
HT03829	31/03/2015	-31.53626	116.0137	*Corymbia calophylla*	540	No	No	No	
HT03830	31/03/2015	-31.53586	116.0146	*Corymbia calophylla*	600	No	No	No	
HT03831	31/03/2015	-31.53565	116.0149	*Corymbia calophylla*	500	No	No	No	
HT03832	31/03/2015	-31.5355	116.015	*Corymbia calophylla*	500	No	No	No	
HT03833	31/03/2015	-31.53535	116.0151	*Corymbia calophylla*	500	No	No	No	
HT03834	31/03/2015	-31.57355	115.9948	*Corymbia calophylla*	500	No	No	No	
HT03835	31/03/2015	-31.57357	115.9948	*Corymbia calophylla*	500	No	No	No	
HT03836	31/03/2015	-31.57248	115.9946	*Corymbia calophylla*	1000	No	No	No	
HT03837	31/03/2015	-31.57226	115.9943	*Corymbia calophylla*	700	No	No	No	
HT03838	31/03/2015	-31.56589	115.9927	*Corymbia calophylla*	500	No	No	No	
HT03839	31/03/2015	-31.56472	115.9923	*Eucalyptus camaldulensis*	520	No	No	No	
HT03840	31/03/2015	-31.54984	115.9965	*Eucalyptus camaldulensis*	500	No	No	No	
HT03841	31/03/2015	-31.5498	115.9965	*Eucalyptus camaldulensis*	500	No	No	No	
HT03842	31/03/2015	-31.5498	115.9965	*Eucalyptus camaldulensis*	500	No	No	No	
HT03843	31/03/2015	-31.54976	115.9965	*Eucalyptus camaldulensis*	550	No	No	No	
HT03844	31/03/2015	-31.54968	115.9965	*Eucalyptus camaldulensis*	550	No	No	No	
HT03845	31/03/2015	-31.54939	115.9967	*Corymbia calophylla*	500	No	No	No	
HT03846	31/03/2015	-31.54891	115.9969	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT03847	31/03/2015	-31.54833	115.9977	*Corymbia calophylla*	800	No	No	No	
HT03848	31/03/2015	-31.54829	115.9978	*Corymbia calophylla*	750	No	No	No	
HT03850	31/03/2015	-31.54811	115.9981	*Corymbia calophylla*	600	No	No	No	
HT03853	31/03/2015	-31.54785	115.9985	*Eucalyptus marginata*	900	Yes	No	No	Hollow at 20 m.
HT03854	31/03/2015	-31.54775	115.9987	*Corymbia calophylla*	700	No	No	No	
HT03855	31/03/2015	-31.54757	115.9987	*Corymbia calophylla*	1000	No	No	No	
HT03858	31/03/2015	-31.5475	115.9988	*Corymbia calophylla*	550	No	No	No	
HT03859	31/03/2015	-31.54745	115.9988	*Corymbia calophylla*	650	No	No	No	
HT03860	31/03/2015	-31.54733	115.9991	*Eucalyptus marginata*	1000	No	No	No	
HT03861	31/03/2015	-31.54725	115.9992	*Eucalyptus marginata*	600	No	No	No	
HT03862	31/03/2015	-31.5471	115.9993	*Eucalyptus marginata*	800	No	No	No	
HT03863	31/03/2015	-31.54709	115.9994	*Corymbia calophylla*	600	No	No	No	
HT03864	31/03/2015	-31.54707	115.9994	*Corymbia calophylla*	700	No	No	No	
HT03865	31/03/2015	-31.52551	116.0271	*Corymbia calophylla*	700	No	No	No	
HT03866	31/03/2015	-31.52598	116.0268	*Eucalyptus wandoo*	450	No	No	No	
HT03867	31/03/2015	-31.52691	116.0263	*Eucalyptus marginata*	450	No	No	No	Dead.
HT03868	31/03/2015	-31.52703	116.0262	*Eucalyptus wandoo*	400	No	No	No	
HT04042	1/04/2015	-31.46205	116.0551	*Eucalyptus marginata*	680	No	No	No	
HT04043	1/04/2015	-31.46222	116.055	*Corymbia calophylla*	500	No	No	No	
HT04044	1/04/2015	-31.46292	116.0545	*Corymbia calophylla*	880	No	No	No	
HT04046	1/04/2015	-31.46496	116.0532	*Corymbia calophylla*	580	No	No	No	
HT04047	1/04/2015	-31.46551	116.0529	*Corymbia calophylla*	500	No	No	No	
HT04048	1/04/2015	-31.46798	116.0512	*Corymbia calophylla*	600	No	No	No	
HT04049	1/04/2015	-31.46814	116.0511	*Corymbia calophylla*	660	No	No	No	
HT04050	1/04/2015	-31.46851	116.0508	*Corymbia calophylla*	600	No	No	No	
HT04051	1/04/2015	-31.46949	116.0503	*Corymbia calophylla*	580	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04052	1/04/2015	-31.46958	116.0501	*Eucalyptus marginata*	600	No	No	No	
HT04053	1/04/2015	-31.47007	116.0498	*Eucalyptus marginata*	640	No	No	No	
HT04054	1/04/2015	-31.4709	116.0493	*Eucalyptus marginata*	560	No	No	No	
HT04055	1/04/2015	-31.4711	116.0492	*Corymbia calophylla*	700	No	No	No	
HT04056	1/04/2015	-31.47171	116.0487	*Eucalyptus marginata*	1000	No	No	No	
HT04057	1/04/2015	-31.47228	116.0483	*Eucalyptus marginata*	800	No	No	No	
HT04058	1/04/2015	-31.47249	116.0482	*Eucalyptus wandoo*	360	No	No	No	
HT04059	1/04/2015	-31.47283	116.048	*Eucalyptus wandoo*	440	Yes	Yes	Yes	Artificial nest box at 10 m. Nestbox with chewing on sacrificial post.
HT04060	1/04/2015	-31.47291	116.0479	*Eucalyptus wandoo*	300	No	No	No	
HT04061	1/04/2015	-31.47318	116.0478	*Eucalyptus wandoo*	300	No	No	No	
HT04062	1/04/2015	-31.4732	116.0478	*Eucalyptus wandoo*	320	No	No	No	
HT04063	1/04/2015	-31.47342	116.0476	*Eucalyptus wandoo*	420	No	No	No	
HT04064	1/04/2015	-31.47346	116.0477	*Eucalyptus wandoo*	520	No	No	No	
HT04065	1/04/2015	-31.47343	116.0477	*Corymbia calophylla*	560	No	No	No	
HT04066	1/04/2015	-31.47349	116.0476	*Eucalyptus wandoo*	360	No	No	No	
HT04067	1/04/2015	-31.4736	116.0475	*Eucalyptus wandoo*	340	No	No	No	
HT04068	1/04/2015	-31.47357	116.0475	*Eucalyptus wandoo*	500	No	No	No	
HT04069	1/04/2015	-31.47367	116.0475	*Eucalyptus wandoo*	300	No	No	No	
HT04070	1/04/2015	-31.4737	116.0475	*Eucalyptus wandoo*	300	No	No	No	
HT04071	1/04/2015	-31.47374	116.0476	*Eucalyptus wandoo*	300	No	No	No	
HT04072	1/04/2015	-31.47385	116.0474	*Eucalyptus wandoo*	740	No	No	No	
HT04073	1/04/2015	-31.47397	116.0474	*Eucalyptus wandoo*	300	No	No	No	
HT04074	1/04/2015	-31.47404	116.0473	*Eucalyptus wandoo*	300	No	No	No	
HT04075	1/04/2015	-31.47415	116.0473	*Eucalyptus wandoo*	320	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04076	1/04/2015	-31.47449	116.0471	*Eucalyptus marginata*	720	No	No	No	
HT04077	1/04/2015	-31.47455	116.0471	*Eucalyptus wandoo*	460	No	No	No	
HT04078	1/04/2015	-31.47459	116.0471	*Eucalyptus wandoo*	300	No	No	No	
HT04079	1/04/2015	-31.47465	116.0471	*Eucalyptus wandoo*	380	No	No	No	
HT04080	1/04/2015	-31.47484	116.0469	*Eucalyptus wandoo*	440	No	No	No	
HT04081	1/04/2015	-31.47496	116.0469	*Eucalyptus marginata*	1100	No	No	No	
HT04082	1/04/2015	-31.47497	116.0469	*Eucalyptus wandoo*	340	No	No	No	
HT04083	1/04/2015	-31.475	116.047	*Eucalyptus wandoo*	360	No	No	No	
HT04084	1/04/2015	-31.47517	116.0468	*Eucalyptus wandoo*	300	No	No	No	
HT04085	1/04/2015	-31.47536	116.0469	*Corymbia calophylla*	500	No	No	No	
HT04086	1/04/2015	-31.4754	116.0469	*Corymbia calophylla*	500	No	No	No	
HT04087	1/04/2015	-31.47545	116.0468	*Corymbia calophylla*	500	No	No	No	
HT04088	1/04/2015	-31.47545	116.0468	*Corymbia calophylla*	500	No	No	No	
HT04089	1/04/2015	-31.47591	116.0468	*Corymbia calophylla*	500	No	No	No	
HT04090	1/04/2015	-31.47609	116.0469	*Eucalyptus wandoo*	320	No	No	No	
HT04091	1/04/2015	-31.47613	116.0469	*Eucalyptus wandoo*	380	No	No	No	
HT04092	1/04/2015	-31.47623	116.0469	*Eucalyptus wandoo*	320	No	No	No	
HT04093	1/04/2015	-31.47632	116.0469	*Eucalyptus wandoo*	300	No	No	No	
HT04094	1/04/2015	-31.47637	116.0469	*Eucalyptus wandoo*	400	No	No	No	
HT04095	1/04/2015	-31.47638	116.0468	*Eucalyptus wandoo*	900	No	No	No	
HT04096	1/04/2015	-31.48074	116.0476	*Eucalyptus wandoo*	300	No	No	No	
HT04097	1/04/2015	-31.48065	116.0475	*Eucalyptus wandoo*	600	No	No	No	
HT04098	1/04/2015	-31.48074	116.0476	*Eucalyptus marginata*	500	No	No	No	
HT04099	1/04/2015	-31.48075	116.0476	*Eucalyptus wandoo*	340	No	No	No	
HT04100	1/04/2015	-31.48078	116.0475	*Eucalyptus wandoo*	300	No	No	No	
HT04101	1/04/2015	-31.48088	116.0475	*Corymbia calophylla*	740	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04102	1/04/2015	-31.48093	116.0475	*Eucalyptus wandoo*	300	No	No	No	
HT04103	1/04/2015	-31.48093	116.0475	*Eucalyptus marginata*	680	No	No	No	
HT04104	1/04/2015	-31.48107	116.0476	*Eucalyptus wandoo*	320	No	No	No	
HT04105	1/04/2015	-31.4811	116.0475	*Eucalyptus wandoo*	320	No	No	No	
HT04106	1/04/2015	-31.48125	116.0476	*Eucalyptus wandoo*	340	No	No	No	
HT04107	1/04/2015	-31.48162	116.0475	*Eucalyptus wandoo*	380	No	No	No	
HT04108	1/04/2015	-31.48176	116.0474	*Eucalyptus wandoo*	600	No	No	No	
HT04109	1/04/2015	-31.48188	116.0474	*Eucalyptus wandoo*	340	No	No	No	
HT04110	1/04/2015	-31.48191	116.0474	*Eucalyptus wandoo*	300	No	No	No	
HT04111	1/04/2015	-31.48193	116.0474	*Eucalyptus wandoo*	380	No	No	No	
HT04112	1/04/2015	-31.48209	116.0473	*Eucalyptus wandoo*	300	No	No	No	
HT04113	1/04/2015	-31.48228	116.0473	*Eucalyptus wandoo*	400	No	No	No	
HT04114	1/04/2015	-31.48229	116.0473	*Eucalyptus wandoo*	320	No	No	No	
HT04115	1/04/2015	-31.48231	116.0473	*Eucalyptus wandoo*	360	No	No	No	
HT04116	1/04/2015	-31.48237	116.0472	*Eucalyptus wandoo*	420	No	No	No	
HT04117	1/04/2015	-31.48253	116.0471	*Eucalyptus wandoo*	600	No	No	No	Dead.
HT04118	1/04/2015	-31.48267	116.0471	*Eucalyptus wandoo*	400	No	No	No	
HT04119	1/04/2015	-31.48287	116.0469	*Eucalyptus wandoo*	460	No	No	No	
HT04120	1/04/2015	-31.48316	116.0467	*Corymbia calophylla*	670	No	No	No	
HT04121	1/04/2015	-31.48323	116.0467	*Corymbia calophylla*	900	No	No	No	
HT04122	1/04/2015	-31.48332	116.0466	*Corymbia calophylla*	500	No	No	No	
HT04123	1/04/2015	-31.48369	116.0462	*Eucalyptus wandoo*	300	No	No	No	
HT04124	1/04/2015	-31.48441	116.0456	*Corymbia calophylla*	640	No	No	No	
HT04125	1/04/2015	-31.48472	116.0453	*Eucalyptus wandoo*	540	No	No	No	
HT04126	1/04/2015	-31.48514	116.0451	*Eucalyptus wandoo*	320	No	No	No	
HT04127	1/04/2015	-31.48512	116.0451	*Eucalyptus wandoo*	300	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04128	1/04/2015	-31.48549	116.0448	*Eucalyptus wandoo*	300	No	No	No	
HT04129	1/04/2015	-31.48575	116.0445	*Eucalyptus marginata*	680	No	No	No	
HT04130	1/04/2015	-31.486	116.0443	*Eucalyptus wandoo*	380	No	No	No	
HT04131	1/04/2015	-31.48696	116.0435	*Corymbia calophylla*	500	No	No	No	
HT04132	1/04/2015	-31.4871	116.0434	*Corymbia calophylla*	500	No	No	No	
HT04133	1/04/2015	-31.48813	116.0426	*Eucalyptus marginata*	800	No	No	No	
HT04134	1/04/2015	-31.48898	116.0422	*Corymbia calophylla*	500	No	No	No	
HT04135	1/04/2015	-31.49154	116.0417	*Eucalyptus marginata*	1200	No	No	No	
HT04136	1/04/2015	-31.49173	116.0417	*Eucalyptus marginata*	560	No	No	No	
HT04137	1/04/2015	-31.49231	116.0417	*Eucalyptus marginata*	600	No	No	No	
HT04138	1/04/2015	-31.49272	116.0416	*Eucalyptus marginata*	640	No	No	No	
HT04139	1/04/2015	-31.49296	116.0415	*Eucalyptus marginata*	680	No	No	No	
HT04140	1/04/2015	-31.49463	116.0414	*Corymbia calophylla*	600	No	No	No	
HT04141	1/04/2015	-31.49511	116.0413	*Eucalyptus marginata*	560	No	No	No	
HT04142	1/04/2015	-31.49566	116.0412	*Eucalyptus marginata*	500	No	No	No	
HT04143	1/04/2015	-31.49708	116.0411	*Eucalyptus marginata*	500	No	No	No	
HT04144	1/04/2015	-31.49769	116.041	*Corymbia calophylla*	600	No	No	No	
HT04145	1/04/2015	-31.49839	116.041	*Corymbia calophylla*	700	No	No	No	
HT04146	1/04/2015	-31.49945	116.0408	*Corymbia calophylla*	500	No	No	No	
HT04147	1/04/2015	-31.50048	116.0407	*Corymbia calophylla*	520	No	No	No	
HT04148	1/04/2015	-31.5095	116.0368	*Eucalyptus* sp. indet.	500	No	No	No	
HT04149	1/04/2015	-31.51149	116.0357	*Eucalyptus marginata*	600	No	No	No	
HT04150	1/04/2015	-31.50915	116.0371	*Eucalyptus marginata*	500	No	No	No	
HT04151	1/04/2015	-31.51107	116.0356	*Corymbia calophylla*	500	No	No	No	
HT04152	1/04/2015	-31.51105	116.0356	*Corymbia calophylla*	580	No	No	No	
HT04153	1/04/2015	-31.51105	116.0356	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04154	1/04/2015	-31.51061	116.036	*Corymbia calophylla*	500	No	No	No	
HT04155	1/04/2015	-31.5104	116.0361	*Corymbia calophylla*	500	No	No	No	
HT04156	1/04/2015	-31.51021	116.0362	*Eucalyptus marginata*	500	No	No	No	
HT04157	1/04/2015	-31.51016	116.0363	*Corymbia calophylla*	560	No	No	No	
HT04158	1/04/2015	-31.50981	116.0363	*Corymbia calophylla*	500	No	No	No	
HT04159	1/04/2015	-31.5093	116.0367	*Corymbia calophylla*	600	No	No	No	
HT04160	1/04/2015	-31.50908	116.0369	*Eucalyptus marginata*	680	No	No	No	
HT04161	1/04/2015	-31.50896	116.0369	*Corymbia calophylla*	540	No	No	No	
HT04162	1/04/2015	-31.50863	116.0371	*Corymbia calophylla*	500	No	No	No	
HT04163	1/04/2015	-31.50861	116.0371	*Corymbia calophylla*	580	No	No	No	
HT04164	1/04/2015	-31.50792	116.0375	*Corymbia calophylla*	500	No	No	No	
HT04165	1/04/2015	-31.50714	116.038	*Eucalyptus marginata*	700	No	No	No	
HT04166	1/04/2015	-31.50607	116.0383	*Corymbia calophylla*	520	No	No	No	
HT04167	1/04/2015	-31.50613	116.0385	*Eucalyptus marginata*	500	No	No	No	
HT04168	1/04/2015	-31.50609	116.0383	*Eucalyptus marginata*	500	No	No	No	
HT04169	1/04/2015	-31.50435	116.0395	*Corymbia calophylla*	640	No	No	No	
HT04170	1/04/2015	-31.50385	116.0398	*Eucalyptus marginata*	600	No	No	No	
HT04171	1/04/2015	-31.50263	116.0402	*Corymbia calophylla*	500	No	No	No	Dead.
HT04172	1/04/2015	-31.50033	116.0405	*Corymbia calophylla*	800	Yes	not assessed	not assessed	Hollow at 10 m.
HT04173	1/04/2015	-31.50019	116.0405	*Corymbia calophylla*	780	No	No	No	
HT04174	1/04/2015	-31.50011	116.0405	*Corymbia calophylla*	660	No	No	No	
HT04175	1/04/2015	-31.49993	116.0405	*Eucalyptus marginata*	620	No	No	No	
HT04176	1/04/2015	-31.49958	116.0406	*Corymbia calophylla*	560	No	No	No	
HT04177	1/04/2015	-31.49923	116.0406	*Eucalyptus marginata*	780	No	No	No	
HT04178	1/04/2015	-31.49923	116.0406	*Eucalyptus marginata*	1000	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04179	1/04/2015	-31.49887	116.0407	*Corymbia calophylla*	520	No	No	No	
HT04180	1/04/2015	-31.49872	116.0407	*Eucalyptus marginata*	540	No	No	No	
HT04181	1/04/2015	-31.49862	116.0406	*Corymbia calophylla*	520	No	No	No	
HT04182	1/04/2015	-31.49862	116.0407	*Eucalyptus marginata*	880	No	No	No	
HT04183	1/04/2015	-31.49852	116.0408	*Corymbia calophylla*	600	No	No	No	
HT04184	1/04/2015	-31.49841	116.0408	*Eucalyptus marginata*	500	No	No	No	
HT04185	1/04/2015	-31.49822	116.0407	*Eucalyptus marginata*	720	No	No	No	
HT04186	1/04/2015	-31.49801	116.0408	*Corymbia calophylla*	500	No	No	No	
HT04187	1/04/2015	-31.49793	116.0408	*Corymbia calophylla*	500	No	No	No	
HT04188	1/04/2015	-31.49768	116.0408	*Eucalyptus marginata*	1260	Yes	not assessed	not assessed	Hollows at 10 m and 12 m.
HT04189	1/04/2015	-31.49763	116.0408	*Corymbia calophylla*	500	No	No	No	
HT04190	1/04/2015	-31.49747	116.0408	*Eucalyptus marginata*	600	No	No	No	
HT04191	1/04/2015	-31.49737	116.0408	*Corymbia calophylla*	700	No	No	No	
HT04192	1/04/2015	-31.49707	116.0408	*Eucalyptus marginata*	660	No	No	No	
HT04193	1/04/2015	-31.49664	116.0409	*Corymbia calophylla*	520	No	No	No	
HT04194	1/04/2015	-31.49649	116.041	*Eucalyptus marginata*	640	No	No	No	
HT04195	1/04/2015	-31.49641	116.0409	*Eucalyptus marginata*	660	No	No	No	
HT04196	1/04/2015	-31.49626	116.041	*Eucalyptus marginata*	700	No	No	No	
HT04197	1/04/2015	-31.49604	116.041	*Corymbia calophylla*	660	No	No	No	
HT04198	1/04/2015	-31.4958	116.0411	*Eucalyptus marginata*	500	No	No	No	
HT04199	1/04/2015	-31.49563	116.041	*Eucalyptus marginata*	500	No	No	No	
HT04200	1/04/2015	-31.49555	116.0411	*Corymbia calophylla*	500	No	No	No	
HT04201	1/04/2015	-31.49545	116.0411	*Corymbia calophylla*	540	No	No	No	
HT04202	1/04/2015	-31.49498	116.0411	*Corymbia calophylla*	1000	No	No	No	
HT04203	1/04/2015	-31.49391	116.0413	*Corymbia calophylla*	680	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04204	1/04/2015	-31.493	116.0414	*Corymbia calophylla*	580	No	No	No	
HT04205	1/04/2015	-31.49297	116.0414	*Eucalyptus marginata*	740	No	No	No	
HT04206	1/04/2015	-31.49267	116.0415	*Eucalyptus marginata*	560	No	No	No	
HT04207	1/04/2015	-31.49231	116.0415	*Eucalyptus marginata*	500	No	No	No	
HT04208	1/04/2015	-31.49228	116.0414	*Eucalyptus marginata*	580	No	No	No	
HT04209	1/04/2015	-31.4918	116.0415	*Eucalyptus marginata*	620	No	No	No	
HT04210	1/04/2015	-31.49169	116.0415	*Eucalyptus marginata*	860	No	No	No	Dead.
HT04211	1/04/2015	-31.49095	116.0416	*Eucalyptus marginata*	500	No	No	No	
HT04212	1/04/2015	-31.49045	116.0417	*Eucalyptus marginata*	500	No	No	No	
HT04213	1/04/2015	-31.49036	116.0417	*Eucalyptus marginata*	520	No	No	No	
HT04214	1/04/2015	-31.48924	116.0419	*Eucalyptus marginata*	680	No	No	No	
HT04215	1/04/2015	-31.4891	116.0419	*Eucalyptus marginata*	700	No	No	No	
HT04216	1/04/2015	-31.48895	116.042	*Eucalyptus marginata*	500	No	No	No	
HT04217	1/04/2015	-31.48892	116.042	*Eucalyptus marginata*	540	No	No	No	
HT04218	1/04/2015	-31.48883	116.042	*Eucalyptus marginata*	600	No	No	No	
HT04219	1/04/2015	-31.4886	116.0421	*Corymbia calophylla*	500	No	No	No	
HT04220	1/04/2015	-31.48831	116.0423	*Corymbia calophylla*	500	No	No	No	
HT04221	1/04/2015	-31.4882	116.0423	*Eucalyptus marginata*	520	No	No	No	
HT04222	1/04/2015	-31.48819	116.0423	*Eucalyptus marginata*	500	No	No	No	
HT04223	1/04/2015	-31.48762	116.0427	*Eucalyptus marginata*	800	No	No	No	
HT04224	1/04/2015	-31.48732	116.043	*Corymbia calophylla*	540	No	No	No	
HT04225	1/04/2015	-31.48718	116.0431	*Corymbia calophylla*	500	No	No	No	
HT04226	1/04/2015	-31.48715	116.0432	*Corymbia calophylla*	500	No	No	No	
HT04227	1/04/2015	-31.48697	116.0432	*Corymbia calophylla*	500	No	No	No	
HT04228	1/04/2015	-31.48681	116.0434	*Corymbia calophylla*	500	No	No	No	
HT04229	1/04/2015	-31.48676	116.0435	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04230	1/04/2015	-31.48671	116.0436	*Corymbia calophylla*	800	No	No	No	
HT04231	1/04/2015	-31.48668	116.0435	*Corymbia calophylla*	720	No	No	No	
HT04232	1/04/2015	-31.48663	116.0436	*Corymbia calophylla*	600	No	No	No	
HT04233	1/04/2015	-31.48647	116.0437	*Eucalyptus marginata*	740	No	No	No	
HT04234	1/04/2015	-31.48639	116.0437	*Eucalyptus marginata*	520	No	No	No	
HT04235	1/04/2015	-31.48634	116.0438	*Eucalyptus marginata*	720	No	No	No	
HT04236	1/04/2015	-31.48617	116.0439	*Eucalyptus marginata*	560	No	No	No	
HT04237	1/04/2015	-31.4861	116.044	*Eucalyptus marginata*	680	No	No	No	
HT04238	1/04/2015	-31.48598	116.0441	*Eucalyptus wandoo*	460	No	No	No	
HT04239	1/04/2015	-31.48593	116.0441	*Eucalyptus wandoo*	550	No	No	No	
HT04240	1/04/2015	-31.48583	116.0441	*Eucalyptus wandoo*	360	No	No	No	
HT04241	1/04/2015	-31.48579	116.0442	*Eucalyptus marginata*	840	No	No	No	
HT04242	1/04/2015	-31.48561	116.0443	*Eucalyptus wandoo*	380	No	No	No	
HT04243	1/04/2015	-31.4855	116.0444	*Eucalyptus wandoo*	500	No	No	No	
HT04244	1/04/2015	-31.4853	116.0446	*Eucalyptus marginata*	500	No	No	No	
HT04245	1/04/2015	-31.48518	116.0446	*Eucalyptus wandoo*	300	No	No	No	
HT04246	1/04/2015	-31.48506	116.0448	*Eucalyptus wandoo*	480	No	No	No	
HT04247	1/04/2015	-31.485	116.0448	*Eucalyptus wandoo*	360	No	No	No	
HT04248	1/04/2015	-31.48491	116.0449	*Eucalyptus wandoo*	620	No	No	No	
HT04249	1/04/2015	-31.48484	116.045	*Eucalyptus wandoo*	300	No	No	No	
HT04251	1/04/2015	-31.48468	116.0451	*Eucalyptus wandoo*	300	No	No	No	
HT04252	1/04/2015	-31.48465	116.0451	*Eucalyptus wandoo*	300	No	No	No	
HT04253	1/04/2015	-31.48463	116.0452	*Eucalyptus marginata*	600	No	No	No	
HT04254	1/04/2015	-31.48381	116.0459	*Corymbia calophylla*	500	No	No	No	
HT04255	1/04/2015	-31.48364	116.046	*Corymbia calophylla*	540	No	No	No	
HT04256	1/04/2015	-31.48358	116.046	*Corymbia calophylla*	580	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04257	1/04/2015	-31.48311	116.0464	*Corymbia calophylla*	600	No	No	No	
HT04258	1/04/2015	-31.48288	116.0466	*Eucalyptus wandoo*	300	No	No	No	
HT04259	1/04/2015	-31.48205	116.047	*Eucalyptus wandoo*	320	No	No	No	
HT04260	1/04/2015	-31.48171	116.0471	*Eucalyptus wandoo*	340	No	No	No	
HT04261	1/04/2015	-31.48124	116.0472	*Eucalyptus wandoo*	300	No	No	No	
HT04262	1/04/2015	-31.48122	116.0472	*Eucalyptus wandoo*	320	No	No	No	
HT04263	1/04/2015	-31.48083	116.0473	*Eucalyptus wandoo*	340	No	No	No	
HT04264	1/04/2015	-31.4807	116.0473	*Eucalyptus wandoo*	300	No	No	No	
HT04265	1/04/2015	-31.48016	116.0472	*Eucalyptus wandoo*	980	No	No	No	
HT04266	1/04/2015	-31.47915	116.0471	*Eucalyptus marginata*	500	No	No	No	
HT04267	1/04/2015	-31.47895	116.0471	*Eucalyptus wandoo*	340	No	No	No	
HT04268	1/04/2015	-31.47878	116.047	*Eucalyptus wandoo*	380	No	No	No	
HT04269	1/04/2015	-31.4781	116.0469	*Corymbia calophylla*	560	No	No	No	
HT04270	1/04/2015	-31.47746	116.0467	*Eucalyptus wandoo*	720	No	No	No	
HT04271	1/04/2015	-31.47677	116.0466	*Eucalyptus wandoo*	320	No	No	No	
HT04272	1/04/2015	-31.47662	116.0466	*Eucalyptus wandoo*	600	No	No	No	
HT04273	1/04/2015	-31.47664	116.0466	*Eucalyptus wandoo*	300	No	No	No	
HT04274	1/04/2015	-31.47646	116.0466	*Eucalyptus wandoo*	1600	Yes	Yes	No	Hollow at 10 m. Suitable hollow but has feral bees. Facing east.
HT04275	1/04/2015	-31.47629	116.0465	*Eucalyptus wandoo*	560	No	No	No	
HT04276	1/04/2015	-31.47627	116.0465	*Eucalyptus wandoo*	600	No	No	No	
HT04277	1/04/2015	-31.47526	116.0464	*Corymbia calophylla*	600	No	No	No	
HT04278	1/04/2015	-31.47481	116.0467	*Eucalyptus wandoo*	400	No	No	No	
HT04279	1/04/2015	-31.47463	116.0467	*Eucalyptus wandoo*	780	No	No	No	
HT04280	1/04/2015	-31.47452	116.0468	*Eucalyptus wandoo*	300	No	No	No	
HT04281	1/04/2015	-31.47425	116.0468	*Eucalyptus wandoo*	320	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04282	1/04/2015	-31.47415	116.047	*Eucalyptus marginata*	680	No	No	No	Dead.
HT04283	1/04/2015	-31.47396	116.047	*Eucalyptus marginata*	520	No	No	No	
HT04284	1/04/2015	-31.47389	116.047	*Eucalyptus wandoo*	340	No	No	No	
HT04285	1/04/2015	-31.47327	116.0474	*Eucalyptus wandoo*	500	No	No	No	
HT04286	1/04/2015	-31.47308	116.0476	*Eucalyptus wandoo*	300	No	No	No	
HT04287	1/04/2015	-31.47294	116.0477	*Eucalyptus wandoo*	460	No	No	No	
HT04288	1/04/2015	-31.47262	116.0478	*Eucalyptus wandoo*	340	No	No	No	
HT04289	1/04/2015	-31.47251	116.048	*Eucalyptus wandoo*	300	No	No	No	
HT04290	1/04/2015	-31.47244	116.048	*Eucalyptus wandoo*	380	No	No	No	
HT04291	1/04/2015	-31.47109	116.0488	*Corymbia calophylla*	600	No	No	No	
HT04292	1/04/2015	-31.47047	116.0493	*Corymbia calophylla*	500	No	No	No	
HT04293	1/04/2015	-31.47	116.0496	*Eucalyptus marginata*	560	No	No	No	
HT04294	1/04/2015	-31.46981	116.0497	*Corymbia calophylla*	500	No	No	No	
HT04295	1/04/2015	-31.46904	116.0502	*Corymbia calophylla*	500	No	No	No	
HT04296	1/04/2015	-31.46809	116.0509	*Corymbia calophylla*	500	No	No	No	
HT04297	1/04/2015	-31.46747	116.0512	*Corymbia calophylla*	700	No	No	No	
HT04298	1/04/2015	-31.46717	116.0514	*Eucalyptus marginata*	540	No	No	No	
HT04299	1/04/2015	-31.46664	116.0518	*Corymbia calophylla*	500	No	No	No	
HT04300	1/04/2015	-31.46656	116.0518	*Corymbia calophylla*	500	No	No	No	
HT04301	1/04/2015	-31.46624	116.052	*Corymbia calophylla*	500	No	No	No	
HT04302	1/04/2015	-31.46597	116.0522	*Corymbia calophylla*	500	No	No	No	
HT04607	1/04/2015	-31.46941	116.0503	*Corymbia calophylla*	500	No	No	No	
HT04608	1/04/2015	-31.46945	116.0501	*Eucalyptus marginata*	500	No	No	No	
HT04609	1/04/2015	-31.47019	116.0498	*Eucalyptus marginata*	500	No	No	No	
HT04610	1/04/2015	-31.47112	116.0492	*Eucalyptus marginata*	600	No	No	No	
HT04611	1/04/2015	-31.47168	116.0488	*Eucalyptus marginata*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04612	1/04/2015	-31.47281	116.048	*Eucalyptus wandoo*	300	No	No	No	
HT04613	1/04/2015	-31.47336	116.0477	*Corymbia calophylla*	600	No	No	No	
HT04614	1/04/2015	-31.47662	116.047	*Eucalyptus accedens*	550	No	No	No	
HT04615	1/04/2015	-31.47669	116.0469	*Eucalyptus wandoo*	850	No	No	No	
HT04616	1/04/2015	-31.47692	116.047	*Eucalyptus accedens*	380	No	No	No	
HT04617	1/04/2015	-31.47698	116.047	*Eucalyptus wandoo*	400	No	No	No	
HT04618	1/04/2015	-31.47698	116.047	*Eucalyptus wandoo*	320	No	No	No	
HT04619	1/04/2015	-31.477	116.047	*Eucalyptus wandoo*	320	No	No	No	
HT04620	1/04/2015	-31.47707	116.047	*Eucalyptus accedens*	320	No	No	No	
HT04621	1/04/2015	-31.47707	116.047	*Eucalyptus wandoo*	400	No	No	No	
HT04622	1/04/2015	-31.47718	116.047	*Eucalyptus wandoo*	360	No	No	No	
HT04623	1/04/2015	-31.47722	116.047	*Eucalyptus wandoo*	600	No	No	No	
HT04624	1/04/2015	-31.47729	116.047	*Eucalyptus accedens*	900	No	No	No	
HT04626	1/04/2015	-31.47747	116.047	*Eucalyptus accedens*	300	No	No	No	
HT04627	1/04/2015	-31.47758	116.0471	*Eucalyptus accedens*	800	No	No	No	
HT04631	1/04/2015	-31.4781	116.0471	*Eucalyptus accedens*	440	No	No	No	
HT04632	1/04/2015	-31.47813	116.0472	*Eucalyptus accedens*	360	No	No	No	
HT04633	1/04/2015	-31.47824	116.0472	*Eucalyptus wandoo*	500	No	No	No	
HT04637	1/04/2015	-31.47872	116.0472	*Eucalyptus wandoo*	850	Yes	not assessed	not assessed	Hollow at 20 m.
HT04638	1/04/2015	-31.47875	116.0473	*Eucalyptus wandoo*	450	No	No	No	
HT04639	1/04/2015	-31.4789	116.0473	*Eucalyptus accedens*	360	No	No	No	
HT04640	1/04/2015	-31.4789	116.0473	*Eucalyptus accedens*	500	No	No	No	
HT04641	1/04/2015	-31.47894	116.0473	*Eucalyptus accedens*	400	No	No	No	
HT04642	1/04/2015	-31.47901	116.0473	*Eucalyptus accedens*	420	No	No	No	
HT04643	1/04/2015	-31.47901	116.0473	*Eucalyptus accedens*	950	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04644	1/04/2015	-31.47908	116.0473	*Eucalyptus accedens*	460	No	No	No	
HT04645	1/04/2015	-31.47912	116.0473	*Eucalyptus accedens*	460	No	No	No	
HT04649	1/04/2015	-31.47916	116.0473	*Eucalyptus accedens*	320	No	No	No	
HT04650	1/04/2015	-31.47923	116.0473	*Eucalyptus wandoo*	320	No	No	No	
HT04653	1/04/2015	-31.47945	116.0474	*Corymbia calophylla*	500	No	No	No	
HT04654	1/04/2015	-31.47952	116.0474	*Corymbia calophylla*	500	No	No	No	
HT04656	1/04/2015	-31.47971	116.0474	*Eucalyptus accedens*	300	No	No	No	
HT04658	1/04/2015	-31.47982	116.0474	*Eucalyptus marginata*	600	No	No	No	
HT04659	1/04/2015	-31.47985	116.0474	*Corymbia calophylla*	680	No	No	No	
HT04660	1/04/2015	-31.48007	116.0475	*Eucalyptus accedens*	400	No	No	No	
HT04661	1/04/2015	-31.48048	116.0475	*Eucalyptus accedens*	900	No	No	No	
HT04662	1/04/2015	-31.48388	116.0461	*Eucalyptus wandoo*	450	No	No	No	
HT04663	1/04/2015	-31.48468	116.0455	*Eucalyptus accedens*	600	No	No	No	
HT04665	1/04/2015	-31.48543	116.0449	*Eucalyptus accedens*	380	No	No	No	
HT04666	1/04/2015	-31.48719	116.0435	*Corymbia calophylla*	500	No	No	No	
HT04667	1/04/2015	-31.48719	116.0435	*Corymbia calophylla*	500	No	No	No	
HT04668	1/04/2015	-31.49151	116.0418	*Corymbia calophylla*	1500	No	No	No	
HT04669	1/04/2015	-31.49162	116.0418	*Eucalyptus marginata*	550	No	No	No	
HT04670	1/04/2015	-31.49519	116.0414	*Eucalyptus marginata*	680	No	No	No	
HT04671	1/04/2015	-31.49577	116.0413	*Eucalyptus marginata*	700	No	No	No	
HT04673	1/04/2015	-31.48403	116.0456	*Corymbia calophylla*	800	No	No	No	Dead.
HT04674	1/04/2015	-31.48429	116.0455	*Corymbia calophylla*	500	No	No	No	
HT04675	1/04/2015	-31.48439	116.0454	*Eucalyptus accedens*	350	No	No	No	
HT04676	1/04/2015	-31.48457	116.0453	*Eucalyptus marginata*	750	No	No	No	
HT04677	1/04/2015	-31.47865	116.047	*Eucalyptus wandoo*	400	No	No	No	
HT04678	1/04/2015	-31.47821	116.0468	*Eucalyptus accedens*	300	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT04679	1/04/2015	-31.47768	116.0467	*Eucalyptus wandoo*	300	No	No	No	
HT04680	1/04/2015	-31.47665	116.0467	*Eucalyptus wandoo*	450	No	No	No	
HT05884	7/10/2015	-31.56679	115.9913	*Eucalyptus* sp. indet.	580	No	No	No	
HT05885	7/10/2015	-31.56813	115.9921	*Corymbia calophylla*	1010	No	No	No	
HT05886	7/10/2015	-31.56837	115.9922	*Corymbia calophylla*	600	No	No	No	
HT05889	7/10/2015	-31.55239	115.9953	*Corymbia calophylla*	530	No	No	No	
HT05890	7/10/2015	-31.55249	115.9954	*Corymbia calophylla*	710	No	No	No	
HT05891	7/10/2015	-31.5525	115.9955	*Corymbia calophylla*	1110	Yes	No	No	
HT05892	7/10/2015	-31.55252	115.9956	*Corymbia calophylla*	670	No	No	No	
HT05893	7/10/2015	-31.55235	115.9957	*Corymbia calophylla*	605	No	No	No	
HT05894	7/10/2015	-31.55216	115.9955	*Corymbia calophylla*	770	No	No	No	
HT05895	7/10/2015	-31.55216	115.9959	*Corymbia calophylla*	550	No	No	No	
HT05896	7/10/2015	-31.55202	115.9958	*Corymbia calophylla*	710	Yes	No	No	
HT05897	7/10/2015	-31.55199	115.9959	*Corymbia calophylla*	510	No	No	No	
HT05898	7/10/2015	-31.55166	115.9959	*Corymbia calophylla*	500	No	No	No	
HT05899	7/10/2015	-31.55169	115.9961	*Eucalyptus marginata*	690	No	No	No	
HT05900	7/10/2015	-31.55125	115.9966	*Eucalyptus marginata*	1710	Yes	No	No	
HT05901	7/10/2015	-31.55146	115.9969	*Eucalyptus marginata*	1300	Yes	No	No	
HT05902	7/10/2015	-31.55153	115.9969	*Eucalyptus marginata*	1100	Yes	No	No	
HT05903	7/10/2015	-31.55125	115.9968	*Eucalyptus marginata*	900	No	No	No	
HT05904	7/10/2015	-31.55052	115.9971	*Eucalyptus marginata*	810	Yes	No	No	
HT05905	7/10/2015	-31.55058	115.9975	*Corymbia calophylla*	610	No	No	No	
HT05907	7/10/2015	-31.55022	115.9975	*Eucalyptus marginata*	830	Yes	Possible	Yes	Slightly worn hollow. Possible Carnanby's black Cockatoo hollow but would have expected more chewing at entrance.

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT05908	7/10/2015	-31.55002	115.9972	*Eucalyptus marginata*	1120	No	No	No	
HT05909	7/10/2015	-31.54986	115.9971	*Eucalyptus marginata*	910	Yes	No	No	
HT05910	7/10/2015	-31.54973	115.9976	*Eucalyptus marginata*	610	No	No	No	
HT05911	7/10/2015	-31.54959	115.9975	*Eucalyptus marginata*	840	Yes	Yes	No	Shows no signs of use and is too low
HT05912	7/10/2015	-31.54962	115.998	*Eucalyptus marginata*	1330	Yes	No	No	
HT05913	7/10/2015	-31.54936	115.9979	*Corymbia calophylla*	845	No	No	No	
HT05914	7/10/2015	-31.54948	115.998	*Corymbia calophylla*	760	No	No	No	
HT05915	7/10/2015	-31.54947	115.9984	*Eucalyptus marginata*	1070	Yes	No	No	
HT05916	7/10/2015	-31.54947	115.9984	*Corymbia calophylla*	850	No	No	No	
HT05917	7/10/2015	-31.54918	115.9976	*Eucalyptus marginata*	890	Yes	No	No	
HT05918	7/10/2015	-31.54918	115.9976	*Corymbia calophylla*	650	No	No	No	
HT05920	7/10/2015	-31.54886	115.999	*Eucalyptus wandoo*	650	No	No	No	
HT05921	7/10/2015	-31.54875	115.9989	*Eucalyptus wandoo*	700	No	No	No	
HT05922	7/10/2015	-31.54874	115.9986	*Corymbia calophylla*	800	No	No	No	
HT05923	7/10/2015	-31.54741	116.0003	*Eucalyptus wandoo*	910	Yes	Yes	No	Large hollow but shows no sign of use.
HT05924	7/10/2015	-31.54644	116.001	*Corymbia calophylla*	610	No	No	No	
HT05925	7/10/2015	-31.54675	116.002	*Corymbia calophylla*	740	No	No	No	
HT05926	7/10/2015	-31.54683	116.0021	*Corymbia calophylla*	1010	No	No	No	
HT05929	7/10/2015	-31.54732	116.0018	*Eucalyptus wandoo*	380	No	No	No	
HT05930	7/10/2015	-31.54735	116.0018	*Eucalyptus wandoo*	380	No	No	No	
HT05931	7/10/2015	-31.5476	116.0018	*Eucalyptus wandoo*	450	No	No	No	
HT05932	7/10/2015	-31.54764	116.0018	*Eucalyptus wandoo*	360	No	No	No	
HT05933	7/10/2015	-31.54793	116.0041	*Corymbia calophylla*	540	No	No	No	
HT05934	8/10/2015	-31.54802	116.004	*Eucalyptus wandoo*	430	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT05935	8/10/2015	-31.54808	116.0039	*Eucalyptus wandoo*	600	No	No	No	
HT05936	8/10/2015	-31.54811	116.0039	*Eucalyptus wandoo*	320	No	No	No	
HT05937	8/10/2015	-31.54846	116.0038	*Corymbia calophylla*	920	No	No	No	
HT05938	8/10/2015	-31.54852	116.0037	*Eucalyptus wandoo*	720	Yes	Yes	No	
HT05939	8/10/2015	-31.5486	116.0033	*Eucalyptus wandoo*	580	Yes	No	No	
HT05941	8/10/2015	-31.54827	116.0032	*Eucalyptus wandoo*	530	Yes	No	No	
HT05942	8/10/2015	-31.54819	116.0033	*Eucalyptus wandoo*	410	No	No	No	
HT05943	8/10/2015	-31.54815	116.0031	*Eucalyptus wandoo*	350	No	No	No	
HT05944	8/10/2015	-31.548	116.0031	*Eucalyptus wandoo*	360	No	No	No	
HT05945	8/10/2015	-31.54789	116.003	*Eucalyptus wandoo*	850	Yes	No	No	
HT05946	8/10/2015	-31.54791	116.0032	*Eucalyptus wandoo*	340	No	No	No	
HT05947	8/10/2015	-31.54787	116.0035	*Eucalyptus wandoo*	540	Yes	Yes	No	
HT05948	8/10/2015	-31.54793	116.0036	*Eucalyptus wandoo*	610	No	No	No	
HT05949	8/10/2015	-31.5478	116.0037	*Eucalyptus wandoo*	470	No	No	No	
HT05950	8/10/2015	-31.54774	116.0038	*Eucalyptus wandoo*	390	No	No	No	
HT05951	8/10/2015	-31.54769	116.0037	*Eucalyptus wandoo*	370	No	No	No	
HT05952	8/10/2015	-31.54763	116.0034	*Eucalyptus wandoo*	390	No	No	No	
HT05953	8/10/2015	-31.54771	116.0032	*Corymbia calophylla*	390	Yes	No	No	
HT05954	8/10/2015	-31.54787	116.003	*Eucalyptus wandoo*	980	Yes	No	Yes	Now being used by Galahs.
HT05955	8/10/2015	-31.54759	116.0036	*Eucalyptus wandoo*	380	No	No	No	
HT05956	8/10/2015	-31.54763	116.0035	*Eucalyptus wandoo*	410	No	No	No	
HT05957	8/10/2015	-31.54747	116.0035	*Eucalyptus wandoo*	380	No	No	No	
HT05958	8/10/2015	-31.5475	116.003	*Eucalyptus wandoo*	380	No	No	No	
HT05959	8/10/2015	-31.50198	116.0432	*Corymbia calophylla*	580	No	No	No	
HT05960	8/10/2015	-31.50197	116.0432	*Eucalyptus gomphocephala*	550	No	No	No	
HT05961	8/10/2015	-31.50223	116.0427	*Eucalyptus gomphocephala*	670	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT05962	8/10/2015	-31.5025	116.0422	*Eucalyptus gomphocephala*	810	Yes	No	No	
HT05963	8/10/2015	-31.5024	116.0422	*Eucalyptus gomphocephala*	1310	Yes	No	No	
HT05964	8/10/2015	-31.50278	116.0416	*Corymbia calophylla*	590	No	No	No	
HT05965	8/10/2015	-31.50275	116.0415	*Corymbia calophylla*	520	No	No	No	
HT05966	8/10/2015	-31.50273	116.0414	*Eucalyptus gomphocephala*	710	No	No	No	
HT05967	8/10/2015	-31.50936	116.0373	*Eucalyptus marginata*	560	No	No	No	
HT05969	8/10/2015	-31.50743	116.0386	*Corymbia calophylla*	890	Yes	No	No	
HT05970	8/10/2015	-31.51041	116.0371	*Eucalyptus marginata*	840	No	No	No	
HT05971	8/10/2015	-31.51052	116.037	*Eucalyptus marginata*	720	Yes	No	No	
HT05972	8/10/2015	-31.5126	116.036	*Eucalyptus marginata*	550	No	No	No	
HT05973	8/10/2015	-31.51318	116.0358	*Eucalyptus marginata*	560	No	No	No	
HT05974	8/10/2015	-31.51624	116.035	*Corymbia calophylla*	920	Yes	No	No	
HT05975	8/10/2015	-31.51817	116.0347	*Corymbia calophylla*	620	No	No	No	
HT05976	8/10/2015	-31.51973	116.0338	*Corymbia calophylla*	930	Yes	No	No	
HT05977	8/10/2015	-31.5194	116.0341	*Corymbia calophylla*	710	Yes	No	No	
HT05978	8/10/2015	-31.51937	116.0342	*Corymbia calophylla*	730	Yes	No	No	
HT05979	8/10/2015	-31.51938	116.0343	*Corymbia calophylla*	680	No	No	No	
HT05980	8/10/2015	-31.51944	116.0348	*Corymbia calophylla*	780	No	No	No	
HT05981	8/10/2015	-31.51921	116.0352	*Corymbia calophylla*	720	Yes	No	No	
HT05982	8/10/2015	-31.51899	116.0355	*Eucalyptus wandoo*	780	No	No	No	
HT05983	8/10/2015	-31.51917	116.0355	*Eucalyptus wandoo*	360	No	No	No	
HT05984	8/10/2015	-31.52006	116.0335	*Corymbia calophylla*	500	No	No	No	
HT05985	8/10/2015	-31.52011	116.0338	*Eucalyptus wandoo*	420	No	No	No	
HT05986	8/10/2015	-31.52005	116.0342	*Eucalyptus wandoo*	410	No	No	No	
HT05987	8/10/2015	-31.52001	116.0343	*Eucalyptus wandoo*	400	No	No	No	
HT05988	8/10/2015	-31.52001	116.0343	*Eucalyptus wandoo*	350	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT05989	8/10/2015	-31.51996	116.0345	*Corymbia calophylla*	680	No	No	No	
HT05990	8/10/2015	-31.51995	116.0346	*Eucalyptus wandoo*	420	No	No	No	
HT05991	8/10/2015	-31.51993	116.0346	*Eucalyptus wandoo*	440	No	No	No	
HT05992	8/10/2015	-31.51991	116.0347	*Eucalyptus wandoo*	480	No	No	No	
HT05993	8/10/2015	-31.51988	116.0348	*Eucalyptus wandoo*	460	No	No	No	
HT05994	8/10/2015	-31.5196	116.0365	*Eucalyptus wandoo*	380	No	No	No	
HT05995	8/10/2015	-31.51966	116.0365	*Corymbia calophylla*	510	No	No	No	
HT05996	8/10/2015	-31.51979	116.0357	*Corymbia calophylla*	720	No	No	No	
HT05997	8/10/2015	-31.52048	116.0337	*Corymbia calophylla*	920	No	No	No	
HT05998	8/10/2015	-31.52048	116.0334	*Corymbia calophylla*	580	No	No	No	
HT05999	8/10/2015	-31.52063	116.0332	*Corymbia calophylla*	610	No	No	No	
HT06001	8/10/2015	-31.52514	116.0284	*Corymbia calophylla*	500	No	No	No	
HT06002	8/10/2015	-31.52516	116.0285	*Corymbia calophylla*	720	Yes	No	No	
HT06003	8/10/2015	-31.52516	116.0285	*Corymbia calophylla*	580	Yes	No	No	
HT06004	8/10/2015	-31.52554	116.0284	*Eucalyptus wandoo*	560	No	No	No	
HT06005	8/10/2015	-31.52561	116.0285	*Corymbia calophylla*	910	No	No	No	
HT06006	8/10/2015	-31.52511	116.0288	*Corymbia calophylla*	610	No	No	No	
HT06007	8/10/2015	-31.52572	116.0288	*Eucalyptus wandoo*	520	No	No	No	
HT06008	8/10/2015	-31.52511	116.0289	*Corymbia calophylla*	510	No	No	No	
HT06009	8/10/2015	-31.52499	116.0289	*Eucalyptus wandoo*	740	No	No	No	
HT06010	8/10/2015	-31.52509	116.029	*Eucalyptus wandoo*	720	No	No	No	
HT06011	8/10/2015	-31.52511	116.0291	*Eucalyptus wandoo*	780	Yes	No	No	
HT06012	8/10/2015	-31.52511	116.0292	*Corymbia calophylla*	840	Yes	No	No	
HT06013	8/10/2015	-31.52579	116.0292	*Eucalyptus wandoo*	450	No	No	No	
HT06014	8/10/2015	-31.52585	116.0291	*Eucalyptus wandoo*	380	No	No	No	
HT06015	8/10/2015	-31.52511	116.0292	*Corymbia calophylla*	560	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06016	8/10/2015	-31.52527	116.0296	*Eucalyptus wandoo*	980	Yes	No	No	
HT06017	8/10/2015	-31.52569	116.0296	*Eucalyptus wandoo*	1200	Yes	Yes	Yes	Well worn hollow in large branch. Massive habitat tree
HT06018	8/10/2015	-31.52506	116.0295	*Eucalyptus patens*	610	No	No	No	
HT06019	8/10/2015	-31.52485	116.0296	*Corymbia calophylla*	560	No	No	No	
HT06020	8/10/2015	-31.52486	116.0297	*Corymbia calophylla*	800	Yes	Yes	No	
HT06021	8/10/2015	-31.52498	116.0297	*Corymbia calophylla*	720	Yes	No	No	
HT06022	8/10/2015	-31.52503	116.0298	*Corymbia calophylla*	630	No	No	No	
HT06023	8/10/2015	-31.52516	116.0299	*Eucalyptus marginata*	680	No	No	No	
HT06024	8/10/2015	-31.52512	116.03	*Corymbia calophylla*	1230	Yes	No	No	
HT06025	8/10/2015	-31.52556	116.03	*Eucalyptus wandoo*	740	Yes	Yes	No	
HT06026	8/10/2015	-31.52585	116.0299	*Eucalyptus wandoo*	530	No	No	No	
HT06027	8/10/2015	-31.52576	116.0302	*Eucalyptus wandoo*	700	Yes	No	No	
HT06028	8/10/2015	-31.52519	116.0299	*Eucalyptus marginata*	920	Yes	No	No	
HT06029	8/10/2015	-31.52505	116.0302	*Eucalyptus marginata*	930	Yes	No	No	
HT06030	8/10/2015	-31.52509	116.0303	*Corymbia calophylla*	780	Yes	No	No	
HT06031	8/10/2015	-31.52509	116.0304	*Corymbia calophylla*	890	No	No	No	
HT06032	8/10/2015	-31.52516	116.0304	*Corymbia calophylla*	790	No	No	No	
HT06033	8/10/2015	-31.52519	116.0305	*Corymbia calophylla*	540	No	No	No	
HT06034	8/10/2015	-31.52525	116.0304	*Corymbia calophylla*	710	No	No	No	
HT06035	8/10/2015	-31.52557	116.0303	*Eucalyptus gomphocephala*	620	Yes	No	No	
HT06036	8/10/2015	-31.52557	116.0305	*Corymbia calophylla*	920	Yes	No	No	
HT06037	8/10/2015	-31.52563	116.0306	*Eucalyptus marginata*	630	No	No	No	
HT06038	8/10/2015	-31.52514	116.0306	*Corymbia calophylla*	570	No	No	No	
HT06039	8/10/2015	-31.52512	116.0306	*Corymbia calophylla*	1060	Yes	No	No	
HT06040	8/10/2015	-31.52511	116.0307	*Corymbia calophylla*	780	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06041	8/10/2015	-31.5255	116.0308	*Corymbia calophylla*	820	Yes	No	No	
HT06042	8/10/2015	-31.5255	116.0308	*Corymbia calophylla*	830	Yes	No	No	
HT06043	8/10/2015	-31.52486	116.0304	*Eucalyptus wandoo*	420	No	No	No	
HT06044	8/10/2015	-31.52483	116.0304	*Eucalyptus wandoo*	830	No	No	No	
HT06045	8/10/2015	-31.5247	116.0301	*Eucalyptus wandoo*	450	No	No	No	
HT06046	8/10/2015	-31.52469	116.0299	*Eucalyptus wandoo*	740	Yes	Yes	No	
HT06047	8/10/2015	-31.52461	116.0299	*Corymbia calophylla*	720	No	No	No	
HT06048	8/10/2015	-31.52461	116.0298	*Eucalyptus wandoo*	610	No	No	No	
HT06049	8/10/2015	-31.52461	116.0298	*Eucalyptus wandoo*	390	No	No	No	
HT06050	8/10/2015	-31.52456	116.0298	*Eucalyptus wandoo*	450	No	No	No	
HT06051	8/10/2015	-31.52457	116.0297	*Eucalyptus wandoo*	680	No	No	No	
HT06052	8/10/2015	-31.52457	116.0297	*Eucalyptus wandoo*	470	No	No	No	
HT06053	8/10/2015	-31.52454	116.0296	*Eucalyptus wandoo*	510	No	No	No	
HT06054	8/10/2015	-31.52457	116.0292	*Corymbia calophylla*	990	No	No	No	
HT06055	8/10/2015	-31.52463	116.029	*Corymbia calophylla*	970	No	No	No	
HT06056	8/10/2015	-31.52472	116.029	*Corymbia calophylla*	890	No	No	No	
HT06057	8/10/2015	-31.52482	116.0288	*Corymbia calophylla*	1020	No	No	No	
HT06058	8/10/2015	-31.53162	116.021	*Corymbia calophylla*	510	No	No	No	
HT06059	8/10/2015	-31.53175	116.0214	*Corymbia calophylla*	980	No	No	No	
HT06060	8/10/2015	-31.53202	116.0214	*Corymbia calophylla*	680	No	No	No	
HT06061	8/10/2015	-31.53218	116.0212	*Corymbia calophylla*	590	No	No	No	
HT06062	8/10/2015	-31.53152	116.0214	*Corymbia calophylla*	970	No	No	No	
HT06063	8/10/2015	-31.53143	116.0216	*Eucalyptus marginata*	850	Yes	No	No	
HT06064	8/10/2015	-31.53136	116.0215	*Corymbia calophylla*	530	No	No	No	
HT06065	8/10/2015	-31.53135	116.0219	*Corymbia calophylla*	1030	No	No	No	
HT06066	8/10/2015	-31.53132	116.022	*Corymbia calophylla*	780	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06067	8/10/2015	-31.53127	116.0222	*Corymbia calophylla*	850	No	No	No	
HT06068	8/10/2015	-31.53127	116.0223	*Corymbia calophylla*	870	No	No	No	
HT06069	8/10/2015	-31.53098	116.0221	*Corymbia calophylla*	950	No	No	No	
HT06070	8/10/2015	-31.53085	116.0225	*Corymbia calophylla*	1110	No	No	No	
HT06071	8/10/2015	-31.531	116.0226	*Corymbia calophylla*	1020	No	No	No	
HT06072	8/10/2015	-31.53095	116.023	*Corymbia calophylla*	960	No	No	No	
HT06073	8/10/2015	-31.53063	116.0231	*Corymbia calophylla*	1020	No	No	No	
HT06074	8/10/2015	-31.53063	116.024	*Corymbia calophylla*	730	No	No	No	
HT06075	8/10/2015	-31.53047	116.0244	*Corymbia calophylla*	680	No	No	No	
HT06076	8/10/2015	-31.53056	116.0248	*Corymbia calophylla*	1020	No	No	No	
HT06077	8/10/2015	-31.53112	116.0252	*Corymbia calophylla*	820	No	No	No	
HT06078	8/10/2015	-31.53125	116.0252	*Corymbia calophylla*	610	No	No	No	
HT06079	8/10/2015	-31.53167	116.0252	*Corymbia calophylla*	710	No	No	No	
HT06080	8/10/2015	-31.53184	116.0252	*Corymbia calophylla*	840	No	No	No	
HT06081	8/10/2015	-31.53143	116.0247	*Corymbia calophylla*	940	No	No	No	
HT06082	8/10/2015	-31.54727	116.003	*Eucalyptus wandoo*	350	No	No	No	
HT06083	8/10/2015	-31.54726	116.003	*Eucalyptus wandoo*	310	No	No	No	
HT06084	8/10/2015	-31.54724	116.003	*Eucalyptus wandoo*	300	No	No	No	
HT06085	8/10/2015	-31.54724	116.003	*Eucalyptus wandoo*	340	No	No	No	
HT06086	8/10/2015	-31.54692	116.0027	*Corymbia calophylla*	500	No	No	No	
HT06087	8/10/2015	-31.54679	116.0027	*Corymbia calophylla*	700	No	No	No	
HT06088	8/10/2015	-31.54668	116.0025	*Corymbia calophylla*	850	No	No	No	
HT06089	8/10/2015	-31.54663	116.0025	*Eucalyptus wandoo*	300	No	No	No	
HT06090	8/10/2015	-31.54619	116.0022	*Corymbia calophylla*	600	No	No	No	
HT06091	8/10/2015	-31.54599	116.0027	*Eucalyptus patens*	1410	No	No	No	
HT06092	8/10/2015	-31.54577	116.003	*Eucalyptus rudis* subsp. *rudis*	590	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06093	8/10/2015	-31.54631	116.0019	*Corymbia calophylla*	520	No	No	No	
HT06094	8/10/2015	-31.54522	116.0026	*Corymbia calophylla*	500	No	No	No	
HT06095	8/10/2015	-31.54144	116.0106	*Eucalyptus* sp. indet.	1500	No	No	No	
HT06096	8/10/2015	-31.54142	116.0107	*Eucalyptus gomphocephala*	1020	No	No	No	
HT06097	8/10/2015	-31.54142	116.0109	*Eucalyptus gomphocephala*	620	No	No	No	
HT06098	8/10/2015	-31.54141	116.011	*Eucalyptus gomphocephala*	710	No	No	No	
HT06099	8/10/2015	-31.54137	116.0112	*Eucalyptus gomphocephala*	720	No	No	No	
HT06100	8/10/2015	-31.54177	116.0111	*Corymbia calophylla*	560	No	No	No	
HT06101	8/10/2015	-31.54175	116.0105	*Eucalyptus marginata*	1230	Yes	No	No	Hollow at 6 m.
HT06102	8/10/2015	-31.54157	116.0076	*Eucalyptus marginata*	810	No	No	No	
HT06103	8/10/2015	-31.54157	116.0076	*Eucalyptus marginata*	950	No	No	No	
HT06104	8/10/2015	-31.5416	116.0072	*Eucalyptus marginata*	1300	No	No	No	
HT06105	8/10/2015	-31.54117	116.008	*Corymbia calophylla*	580	No	No	No	
HT06106	8/10/2015	-31.54116	116.0084	*Eucalyptus marginata*	500	No	No	No	
HT06107	8/10/2015	-31.54127	116.0082	*Corymbia calophylla*	590	No	No	No	
HT06108	8/10/2015	-31.53923	116.0112	*Eucalyptus marginata*	590	No	No	No	
HT06109	8/10/2015	-31.53778	116.0137	*Corymbia calophylla*	840	No	No	No	
HT06110	8/10/2015	-31.49008	116.0415	*Eucalyptus marginata*	1640	Yes	No	No	Hollow at 7 m.
HT06111	8/10/2015	-31.48988	116.0415	*Corymbia calophylla*	1220	No	No	No	
HT06112	8/10/2015	-31.49004	116.0415	*Eucalyptus marginata*	960	No	No	No	
HT06113	8/10/2015	-31.48974	116.0412	*Corymbia calophylla*	820	No	No	No	
HT06114	8/10/2015	-31.48981	116.0412	*Corymbia calophylla*	810	No	No	No	
HT06115	8/10/2015	-31.48974	116.0409	*Corymbia calophylla*	520	No	No	No	
HT06116	8/10/2015	-31.49026	116.0406	*Corymbia calophylla*	720	No	No	No	
HT06117	8/10/2015	-31.49067	116.0409	*Corymbia calophylla*	510	No	No	No	
HT06118	8/10/2015	-31.49077	116.0412	*Eucalyptus* sp. indet.	1510	Yes	No	No	Hollows at 5 m and 8 m.

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06119	8/10/2015	-31.49089	116.0411	*Corymbia calophylla*	650	No	No	No	
HT06120	8/10/2015	-31.49095	116.0411	*Eucalyptus marginata*	1890	Yes	No	No	Hollows at 6 m, 8 m and 10 m.
HT06121	8/10/2015	-31.49099	116.0411	*Corymbia calophylla*	510	No	No	No	
HT06122	8/10/2015	-31.491	116.0409	*Eucalyptus gomphocephala*	1100	No	No	No	
HT06123	8/10/2015	-31.49112	116.0412	*Corymbia calophylla*	820	No	No	No	
HT06124	8/10/2015	-31.49182	116.0412	*Eucalyptus gomphocephala*	810	No	No	No	
HT06125	8/10/2015	-31.49168	116.0409	*Corymbia calophylla*	500	No	No	No	
HT06126	8/10/2015	-31.49185	116.0409	*Corymbia calophylla*	500	No	No	No	
HT06127	8/10/2015	-31.49166	116.0406	*Corymbia calophylla*	790	No	No	No	
HT06128	8/10/2015	-31.49168	116.0406	*Corymbia calophylla*	600	No	No	No	
HT06130	8/10/2015	-31.49194	116.0408	*Corymbia calophylla*	1100	Yes	No	No	Hollow at 8 m.
HT06131	8/10/2015	-31.49198	116.041	*Eucalyptus marginata*	1600	Yes	No	No	Hollows at 5 m, 6 m and 12 m.
HT06132	8/10/2015	-31.49198	116.0414	*Eucalyptus marginata*	700	Yes	No	No	Hollow at 5 m.
HT06133	8/10/2015	-31.49241	116.0412	*Corymbia calophylla*	500	No	No	No	
HT06134	8/10/2015	-31.49231	116.0409	*Corymbia calophylla*	1200	No	No	No	
HT06135	8/10/2015	-31.49243	116.0409	*Eucalyptus marginata*	910	No	No	No	
HT06136	8/10/2015	-31.49208	116.0407	*Corymbia calophylla*	910	No	No	No	
HT06137	8/10/2015	-31.49222	116.0405	*Eucalyptus marginata*	700	No	No	No	
HT06138	8/10/2015	-31.49228	116.0406	*Corymbia calophylla*	500	No	No	No	
HT06139	8/10/2015	-31.49248	116.0406	*Corymbia calophylla*	610	No	No	No	
HT06140	8/10/2015	-31.49235	116.0409	*Eucalyptus marginata*	700	No	No	No	
HT06141	8/10/2015	-31.49235	116.041	*Corymbia calophylla*	1200	No	No	No	
HT06142	8/10/2015	-31.4924	116.041	*Corymbia calophylla*	1400	No	No	No	
HT06143	8/10/2015	-31.4924	116.0411	*Corymbia calophylla*	900	Yes	No	No	Hollow at 10 m.
HT06144	8/10/2015	-31.49309	116.041	*Eucalyptus gomphocephala*	1350	No	No	No	
HT06145	8/10/2015	-31.49303	116.0406	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06146	8/10/2015	-31.47587	116.046	*Corymbia calophylla*	620	No	No	No	
HT06147	8/10/2015	-31.4756	116.0455	*Corymbia calophylla*	580	No	No	No	
HT06148	8/10/2015	-31.47567	116.045	*Corymbia calophylla*	1200	Yes	Yes	No	Hollow at 10 m. Has three hollows but show no signs of use. Good habitat tree.
HT06149	8/10/2015	-31.47585	116.0448	*Corymbia calophylla*	620	No	No	No	
HT06150	8/10/2015	-31.47681	116.0443	*Eucalyptus marginata*	920	No	No	No	
HT06151	8/10/2015	-31.4775	116.0444	*Eucalyptus wandoo*	500	No	No	No	
HT06152	8/10/2015	-31.47821	116.0443	*Eucalyptus wandoo*	480	No	No	No	
HT06153	8/10/2015	-31.47833	116.0443	*Corymbia calophylla*	500	No	No	No	
HT06154	8/10/2015	-31.47863	116.0438	*Corymbia calophylla*	1060	No	No	No	
HT06155	8/10/2015	-31.4787	116.0438	*Corymbia calophylla*	1020	No	No	No	
HT06156	8/10/2015	-31.47885	116.0434	*Corymbia calophylla*	920	No	No	No	
HT06157	8/10/2015	-31.4787	116.0434	*Corymbia calophylla*	1220	No	No	No	
HT06158	8/10/2015	-31.47811	116.0434	*Corymbia calophylla*	1730	No	No	No	
HT06159	8/10/2015	-31.47873	116.0447	*Eucalyptus wandoo*	490	No	No	No	
HT06160	8/10/2015	-31.47853	116.0455	*Eucalyptus wandoo*	1530	Yes	Yes	No	3 hollows at 10 m. Has what looks like good branch hollow but leads into main trunk which has hole in side.
HT06161	8/10/2015	-31.47804	116.0454	*Eucalyptus marginata*	500	No	No	No	
HT06162	8/10/2015	-31.47801	116.0454	*Eucalyptus marginata*	870	No	No	No	
HT06163	8/10/2015	-31.47794	116.0457	*Eucalyptus wandoo*	320	No	No	No	
HT06164	8/10/2015	-31.47779	116.046	*Corymbia calophylla*	590	No	No	No	
HT06165	8/10/2015	-31.47784	116.046	*Corymbia calophylla*	660	No	No	No	
HT06166	8/10/2015	-31.47752	116.0458	*Eucalyptus marginata*	680	No	No	No	
HT06167	8/10/2015	-31.47708	116.0458	*Eucalyptus sp. indet.*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06168	8/10/2015	-31.477	116.046	*Eucalyptus marginata*	670	No	No	No	
HT06169	8/10/2015	-31.47686	116.0457	*Eucalyptus marginata*	550	No	No	No	
HT06170	8/10/2015	-31.47661	116.0457	*Eucalyptus wandoo*	350	No	No	No	
HT06171	8/10/2015	-31.48901	116.0411	*Corymbia calophylla*	560	No	No	No	
HT06172	8/10/2015	-31.48891	116.041	*Corymbia calophylla*	720	No	No	No	
HT06173	8/10/2015	-31.48932	116.0406	*Corymbia calophylla*	1100	No	No	No	
HT06174	8/10/2015	-31.48938	116.0406	*Corymbia calophylla*	660	No	No	No	
HT06175	8/10/2015	-31.48934	116.0405	*Corymbia calophylla*	550	No	No	No	
HT06176	8/10/2015	-31.48917	116.0405	*Corymbia calophylla*	1110	No	No	No	
HT06177	8/10/2015	-31.48941	116.0402	*Corymbia calophylla*	700	No	No	No	
HT06179	8/10/2015	-31.48897	116.0407	*Corymbia calophylla*	830	No	No	No	
HT06180	8/10/2015	-31.48885	116.0406	*Corymbia calophylla*	630	No	No	No	
HT06181	8/10/2015	-31.48875	116.0406	*Corymbia calophylla*	630	No	No	No	
HT06182	8/10/2015	-31.48867	116.0408	*Corymbia calophylla*	530	No	No	No	
HT06183	8/10/2015	-31.48848	116.0408	*Eucalyptus marginata*	630	No	No	No	
HT06184	8/10/2015	-31.48727	116.0411	*Corymbia calophylla*	950	No	No	No	
HT06185	8/10/2015	-31.48767	116.0417	*Corymbia calophylla*	630	No	No	No	
HT06186	8/10/2015	-31.48603	116.0426	*Eucalyptus marginata*	710	No	No	No	
HT06187	8/10/2015	-31.48604	116.0432	*Corymbia calophylla*	650	No	No	No	
HT06188	8/10/2015	-31.4857	116.0431	*Corymbia calophylla*	850	No	No	No	
HT06189	8/10/2015	-31.48572	116.0429	*Corymbia calophylla*	650	No	No	No	
HT06190	8/10/2015	-31.48565	116.0428	*Corymbia calophylla*	720	No	No	No	
HT06191	8/10/2015	-31.48548	116.0434	*Corymbia calophylla*	670	No	No	No	
HT06192	8/10/2015	-31.48548	116.0434	*Corymbia calophylla*	710	No	No	No	
HT06193	8/10/2015	-31.48528	116.0433	*Eucalyptus wandoo*	750	No	No	No	
HT06195	8/10/2015	-31.48518	116.0435	*Eucalyptus wandoo*	410	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06196	8/10/2015	-31.485	116.0432	*Eucalyptus wandoo*	510	No	No	No	
HT06197	8/10/2015	-31.48518	116.0429	*Eucalyptus wandoo*	520	No	No	No	
HT06198	8/10/2015	-31.48485	116.0431	*Eucalyptus wandoo*	510	No	No	No	
HT06199	8/10/2015	-31.48484	116.0432	*Eucalyptus wandoo*	320	No	No	No	
HT06200	8/10/2015	-31.48479	116.0433	*Eucalyptus wandoo*	600	No	No	No	
HT06201	8/10/2015	-31.48477	116.0433	*Eucalyptus wandoo*	1190	Yes	Yes	No	Hollow at 10 m.
HT06202	8/10/2015	-31.48465	116.0436	*Eucalyptus marginata*	890	Yes	No	No	Hollow at 10 m.
HT06203	8/10/2015	-31.48443	116.0436	*Eucalyptus marginata*	610	Yes	No	No	Hollow at 11 m.
HT06204	8/10/2015	-31.48449	116.0436	*Corymbia calophylla*	780	No	No	No	
HT06205	8/10/2015	-31.48442	116.0434	*Corymbia calophylla*	700	No	No	No	
HT06206	8/10/2015	-31.48425	116.0433	*Eucalyptus wandoo*	500	No	No	No	
HT06207	8/10/2015	-31.48435	116.0433	*Eucalyptus wandoo*	300	No	No	No	
HT06208	8/10/2015	-31.48436	116.043	*Eucalyptus wandoo*	410	Yes	No	No	Hollow at 8 m.
HT06209	8/10/2015	-31.48424	116.0431	*Eucalyptus wandoo*	390	No	No	No	
HT06210	8/10/2015	-31.48372	116.0435	*Corymbia calophylla*	820	No	No	No	
HT06211	8/10/2015	-31.48394	116.0437	*Eucalyptus marginata*	510	No	No	No	
HT06212	8/10/2015	-31.48401	116.0438	*Eucalyptus marginata*	610	Yes	No	No	Hollow at 7 m.
HT06213	8/10/2015	-31.48344	116.0439	*Eucalyptus marginata*	560	Yes	No	No	Hollow at 6 m.
HT06214	8/10/2015	-31.48321	116.0438	*Eucalyptus marginata*	680	No	No	No	
HT06215	8/10/2015	-31.48325	116.0441	*Eucalyptus marginata*	680	No	No	No	
HT06216	8/10/2015	-31.48315	116.0443	*Eucalyptus marginata*	1470	Yes	Yes	No	3 hollows at 10 m. Has branch hollow but wrong angle for Carnaby's Black Cockatoo nest.
HT06217	8/10/2015	-31.48268	116.0439	*Eucalyptus marginata*	540	Yes	No	No	3 hollows at 10 m.
HT06218	8/10/2015	-31.48265	116.0436	*Eucalyptus wandoo*	440	No	No	No	
HT06219	8/10/2015	-31.4824	116.0442	*Eucalyptus wandoo*	390	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06220	8/10/2015	-31.48235	116.0437	*Eucalyptus wandoo*	640	No	No	No	
HT06221	8/10/2015	-31.48218	116.0437	*Eucalyptus marginata*	900	No	No	No	
HT06222	8/10/2015	-31.48213	116.0417	*Corymbia calophylla*	920	No	No	No	
HT06223	8/10/2015	-31.48218	116.0417	*Corymbia calophylla*	680	Yes	No	No	Hollow at 4 m.
HT06224	8/10/2015	-31.48269	116.0415	*Corymbia calophylla*	800	No	No	No	
HT06225	8/10/2015	-31.48318	116.0416	*Corymbia calophylla*	590	No	No	No	
HT06226	8/10/2015	-31.48321	116.0416	*Corymbia calophylla*	610	No	No	No	
HT06227	8/10/2015	-31.48318	116.0413	*Corymbia calophylla*	900	No	No	No	
HT06228	8/10/2015	-31.48364	116.0415	*Corymbia calophylla*	900	No	No	No	
HT06229	8/10/2015	-31.48435	116.0411	*Corymbia calophylla*	800	Yes	No	No	Hollow at 15 m.
HT06230	8/10/2015	-31.48466	116.0412	*Eucalyptus marginata*	910	No	No	No	
HT06231	8/10/2015	-31.48482	116.0416	*Corymbia calophylla*	900	No	No	No	
HT06232	8/10/2015	-31.48513	116.0412	*Eucalyptus marginata*	500	No	No	No	
HT06233	8/10/2015	-31.4853	116.0408	*Corymbia calophylla*	1020	No	No	No	
HT06234	7/10/2015	-31.55895	115.9907	*Corymbia calophylla*	500	No	No	No	
HT06235	7/10/2015	-31.559	115.9907	*Corymbia calophylla*	500	No	No	No	
HT06236	7/10/2015	-31.55876	115.9907	*Corymbia calophylla*	500	No	No	No	
HT06239	7/10/2015	-31.55781	115.9905	*Corymbia calophylla*	600	No	No	No	
HT06241	7/10/2015	-31.55761	115.9904	*Corymbia calophylla*	500	No	No	No	
HT06248	7/10/2015	-31.55607	115.9903	*Corymbia calophylla*	1000	No	No	No	
HT06250	7/10/2015	-31.55783	115.9915	*Corymbia calophylla*	540	No	No	No	
HT06251	7/10/2015	-31.55802	115.9913	*Corymbia calophylla*	600	No	No	No	
HT06252	7/10/2015	-31.55802	115.9913	*Corymbia calophylla*	660	No	No	No	
HT06253	7/10/2015	-31.55819	115.9913	*Corymbia calophylla*	900	No	No	No	
HT06254	7/10/2015	-31.55819	115.991	*Corymbia calophylla*	800	No	No	No	
HT06255	7/10/2015	-31.55607	115.9933	*Corymbia calophylla*	660	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06256	7/10/2015	-31.55757	115.9933	*Corymbia calophylla*	700	No	No	No	
HT06257	7/10/2015	-31.55853	115.9924	*Corymbia calophylla*	900	No	No	No	
HT06258	7/10/2015	-31.55846	115.9925	*Corymbia calophylla*	500	No	No	No	
HT06259	7/10/2015	-31.54807	115.9991	*Eucalyptus wandoo*	900	No	No	No	
HT06260	7/10/2015	-31.5481	115.9991	*Eucalyptus wandoo*	520	No	No	No	
HT06261	7/10/2015	-31.5482	115.9991	*Eucalyptus wandoo*	800	Yes	Yes	Yes	Hollow at 10 m. Good hollow with chewing but Galahs present.
HT06262	7/10/2015	-31.54824	115.9994	*Eucalyptus marginata*	560	No	No	No	
HT06263	7/10/2015	-31.54849	115.9995	*Eucalyptus marginata*	540	No	No	No	
HT06265	7/10/2015	-31.54821	115.9998	*Eucalyptus marginata*	560	No	No	No	
HT06266	7/10/2015	-31.54821	115.9998	*Eucalyptus marginata*	800	No	No	No	Dead.
HT06267	7/10/2015	-31.5481	115.9998	*Eucalyptus marginata*	500	No	No	No	
HT06269	7/10/2015	-31.54811	116.0001	*Eucalyptus wandoo*	360	No	No	No	
HT06270	7/10/2015	-31.54805	116	*Eucalyptus wandoo*	460	No	No	No	
HT06271	7/10/2015	-31.54799	115.9999	*Eucalyptus wandoo*	960	No	No	No	
HT06273	7/10/2015	-31.54787	116.0004	*Eucalyptus wandoo*	800	No	No	No	
HT06274	7/10/2015	-31.54777	116.0004	*Eucalyptus wandoo*	820	No	No	No	
HT06275	7/10/2015	-31.54766	116.0003	*Eucalyptus wandoo*	620	No	No	No	
HT06276	7/10/2015	-31.5476	116.0003	*Eucalyptus wandoo*	340	No	No	No	
HT06277	7/10/2015	-31.54756	116.0003	*Eucalyptus wandoo*	360	No	No	No	
HT06278	7/10/2015	-31.5474	116.0001	*Eucalyptus wandoo*	740	No	No	No	
HT06279	7/10/2015	-31.54728	116.0002	*Eucalyptus wandoo*	300	No	No	No	
HT06280	7/10/2015	-31.54728	116.0002	*Eucalyptus wandoo*	300	No	No	No	
HT06281	7/10/2015	-31.54726	116	*Corymbia calophylla*	980	Yes	No	No	3 hollows at 10-12 m.
HT06282	7/10/2015	-31.54722	115.9998	*Eucalyptus wandoo*	300	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06283	7/10/2015	-31.54748	115.9997	*Eucalyptus wandoo*	1100	No	No	No	
HT06284	7/10/2015	-31.5474	115.9996	*Eucalyptus wandoo*	400	No	No	No	
HT06285	7/10/2015	-31.5475	115.9996	*Eucalyptus wandoo*	320	No	No	No	
HT06286	7/10/2015	-31.54756	115.9995	*Eucalyptus wandoo*	560	No	No	No	
HT06287	7/10/2015	-31.5476	115.9995	*Eucalyptus wandoo*	320	No	No	No	
HT06288	7/10/2015	-31.54766	115.9997	*Eucalyptus wandoo*	340	No	No	No	
HT06289	7/10/2015	-31.54785	115.9997	*Eucalyptus wandoo*	300	No	No	No	
HT06290	7/10/2015	-31.54785	115.9997	*Eucalyptus wandoo*	340	No	No	No	
HT06291	7/10/2015	-31.54772	115.9995	*Eucalyptus wandoo*	320	No	No	No	
HT06292	7/10/2015	-31.5477	115.9994	*Eucalyptus wandoo*	500	No	No	No	
HT06293	7/10/2015	-31.54772	115.9994	*Eucalyptus wandoo*	360	No	No	No	
HT06294	7/10/2015	-31.54775	115.9991	*Corymbia calophylla*	700	No	No	No	
HT06295	7/10/2015	-31.54791	115.9993	*Eucalyptus wandoo*	780	Yes	No	No	hollow at 4 m and 8 m.
HT06296	7/10/2015	-31.54787	115.9992	*Eucalyptus wandoo*	400	No	No	No	
HT06297	7/10/2015	-31.54791	115.9991	*Corymbia calophylla*	500	No	No	No	
HT06298	7/10/2015	-31.54789	115.9991	*Corymbia calophylla*	500	No	No	No	
HT06299	7/10/2015	-31.54795	115.9991	*Eucalyptus wandoo*	360	No	No	No	
HT06300	7/10/2015	-31.54805	115.9992	*Eucalyptus wandoo*	620	No	No	No	
HT06301	7/10/2015	-31.54831	115.9988	*Eucalyptus marginata*	500	No	No	No	
HT06302	7/10/2015	-31.54819	115.9986	*Eucalyptus marginata*	540	No	No	No	
HT06303	7/10/2015	-31.54817	115.9986	*Eucalyptus marginata*	900	No	No	No	
HT06304	7/10/2015	-31.54837	115.9986	*Eucalyptus marginata*	1000	No	No	No	
HT06305	7/10/2015	-31.54844	115.9987	*Eucalyptus marginata*	1100	No	No	No	Dead.
HT06306	7/10/2015	-31.54855	115.9988	*Eucalyptus wandoo*	300	No	No	No	
HT06307	7/10/2015	-31.5485	115.9989	*Eucalyptus wandoo*	960	No	No	No	
HT06308	7/10/2015	-31.54853	115.999	*Eucalyptus wandoo*	420	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06309	7/10/2015	-31.54844	115.999	*Eucalyptus wandoo*	480	No	No	No	
HT06310	7/10/2015	-31.54846	115.9991	*Eucalyptus wandoo*	720	No	No	No	
HT06311	7/10/2015	-31.54855	115.9992	*Eucalyptus marginata*	720	No	No	No	
HT06312	7/10/2015	-31.54855	115.9992	*Eucalyptus* sp. indet.	500	No	No	No	
HT06313	7/10/2015	-31.54853	115.9994	*Eucalyptus wandoo*	360	No	No	No	
HT06314	7/10/2015	-31.5485	115.9984	*Corymbia calophylla*	840	No	No	No	
HT06315	7/10/2015	-31.54863	115.9983	*Corymbia calophylla*	740	No	No	No	
HT06316	7/10/2015	-31.54835	115.9983	*Eucalyptus marginata*	560	No	No	No	
HT06317	7/10/2015	-31.54848	115.998	*Corymbia calophylla*	500	No	No	No	
HT06318	7/10/2015	-31.54878	115.998	*Corymbia calophylla*	860	No	No	No	
HT06319	7/10/2015	-31.54888	115.998	*Eucalyptus marginata*	700	No	No	No	Dead.
HT06320	7/10/2015	-31.54902	115.9978	*Corymbia calophylla*	860	Yes	No	No	Dead. Hollow at 12 m. Has hollow of suitable entrance size but is wrong angle. Too near horizontal.
HT06321	7/10/2015	-31.54905	115.9976	*Eucalyptus marginata*	1020	No	No	No	
HT06322	7/10/2015	-31.54912	115.9976	*Eucalyptus marginata*	800	No	No	No	
HT06323	7/10/2015	-31.54905	115.9983	*Eucalyptus marginata*	1100	No	No	No	Dead.
HT06324	7/10/2015	-31.54911	115.9983	*Corymbia calophylla*	700	No	No	No	Dead.
HT06325	7/10/2015	-31.54911	115.9985	*Eucalyptus marginata*	500	No	No	No	
HT06330	7/10/2015	-31.54745	116.001	*Eucalyptus wandoo*	1040	No	No	No	
HT06331	7/10/2015	-31.54705	116.0005	*Eucalyptus wandoo*	300	No	No	No	
HT06332	7/10/2015	-31.5468	116.0006	*Eucalyptus marginata*	540	No	No	No	
HT06333	7/10/2015	-31.5468	116.0006	*Corymbia calophylla*	640	No	No	No	
HT06334	7/10/2015	-31.54624	116.0012	*Corymbia calophylla*	860	No	No	No	
HT06335	7/10/2015	-31.54661	116.002	*Corymbia calophylla*	640	No	No	No	
HT06336	7/10/2015	-31.54716	116.0021	*Eucalyptus wandoo*	320	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06337	7/10/2015	-31.54715	116.0022	*Eucalyptus wandoo*	540	No	No	No	
HT06338	7/10/2015	-31.54733	116.0021	*Eucalyptus wandoo*	400	No	No	No	
HT06339	7/10/2015	-31.54735	116.0021	*Eucalyptus wandoo*	300	No	No	No	
HT06340	7/10/2015	-31.54744	116.0021	*Eucalyptus wandoo*	700	No	No	No	
HT06341	7/10/2015	-31.54765	116.0021	*Eucalyptus wandoo*	360	No	No	No	
HT06342	7/10/2015	-31.54761	116.002	*Corymbia calophylla*	500	No	No	No	Dead.
HT06343	7/10/2015	-31.54771	116.0021	*Eucalyptus wandoo*	500	No	No	No	
HT06344	7/10/2015	-31.54773	116.0021	*Eucalyptus wandoo*	300	No	No	No	
HT06345	7/10/2015	-31.54792	116.002	*Eucalyptus wandoo*	320	No	No	No	
HT06349	7/10/2015	-31.54811	116.0018	*Eucalyptus wandoo*	600	No	No	No	
HT06351	7/10/2015	-31.54794	116.004	*Eucalyptus wandoo*	540	No	No	No	
HT06352	7/10/2015	-31.54776	116.0037	*Eucalyptus wandoo*	360	No	No	No	
HT06353	7/10/2015	-31.5477	116.0036	*Eucalyptus wandoo*	340	No	No	No	
HT06354	7/10/2015	-31.54779	116.0036	*Eucalyptus wandoo*	420	No	No	No	
HT06355	7/10/2015	-31.54789	116.0036	*Eucalyptus wandoo*	600	No	No	No	
HT06356	7/10/2015	-31.54795	116.0036	*Eucalyptus wandoo*	380	No	No	No	
HT06357	7/10/2015	-31.54809	116.0034	*Eucalyptus wandoo*	440	No	No	No	
HT06358	7/10/2015	-31.54821	116.0035	*Eucalyptus wandoo*	340	No	No	No	
HT06359	7/10/2015	-31.54835	116.0034	*Eucalyptus wandoo*	540	No	No	No	
HT06360	7/10/2015	-31.54848	116.0034	*Corymbia calophylla*	500	No	No	No	
HT06361	7/10/2015	-31.5485	116.0032	*Eucalyptus wandoo*	300	No	No	No	
HT06363	7/10/2015	-31.54841	116.0031	*Eucalyptus wandoo*	340	No	No	No	
HT06364	7/10/2015	-31.54831	116.003	*Eucalyptus wandoo*	600	No	No	No	
HT06368	7/10/2015	-31.5481	116.0024	*Corymbia calophylla*	740	No	No	No	
HT06369	7/10/2015	-31.548	116.0026	*Eucalyptus wandoo*	840	No	No	No	
HT06370	7/10/2015	-31.54793	116.0025	*Eucalyptus wandoo*	560	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06371	7/10/2015	-31.54811	116.0028	*Eucalyptus wandoo*	360	No	No	No	
HT06372	7/10/2015	-31.54811	116.0028	*Eucalyptus* sp. indet.	500	No	No	No	
HT06373	7/10/2015	-31.54811	116.0029	*Eucalyptus wandoo*	400	No	No	No	
HT06374	7/10/2015	-31.54799	116.0028	*Corymbia calophylla*	640	No	No	No	
HT06375	7/10/2015	-31.54795	116.0029	*Eucalyptus wandoo*	300	No	No	No	
HT06376	7/10/2015	-31.54781	116.0027	*Eucalyptus wandoo*	320	No	No	No	
HT06377	7/10/2015	-31.54773	116.0026	*Eucalyptus wandoo*	340	No	No	No	
HT06378	8/10/2015	-31.54773	116.0026	*Eucalyptus wandoo*	320	No	No	No	
HT06379	8/10/2015	-31.54778	116.0026	*Eucalyptus wandoo*	340	No	No	No	
HT06380	8/10/2015	-31.54764	116.0025	*Corymbia calophylla*	500	No	No	No	
HT06381	8/10/2015	-31.54744	116.0024	*Eucalyptus wandoo*	440	No	No	No	
HT06382	8/10/2015	-31.54733	116.0024	*Eucalyptus wandoo*	540	No	No	No	
HT06383	8/10/2015	-31.54744	116.0028	*Eucalyptus wandoo*	600	No	No	No	
HT06384	8/10/2015	-31.54758	116.0028	*Eucalyptus wandoo*	400	No	No	No	
HT06385	8/10/2015	-31.54771	116.0027	*Eucalyptus wandoo*	340	No	No	No	
HT06386	8/10/2015	-31.54775	116.0027	*Eucalyptus wandoo*	340	No	No	No	
HT06387	8/10/2015	-31.54774	116.0042	*Corymbia calophylla*	700	No	No	No	
HT06388	8/10/2015	-31.54755	116.0038	*Eucalyptus wandoo*	300	No	No	No	
HT06389	8/10/2015	-31.54739	116.0038	*Eucalyptus wandoo*	400	No	No	No	
HT06390	8/10/2015	-31.54742	116.0037	*Eucalyptus wandoo*	320	No	No	No	
HT06391	8/10/2015	-31.54739	116.0036	*Eucalyptus wandoo*	320	No	No	No	
HT06392	8/10/2015	-31.54729	116.0027	*Eucalyptus wandoo*	320	No	No	No	
HT06393	8/10/2015	-31.54725	116.0026	*Eucalyptus wandoo*	340	No	No	No	
HT06395	8/10/2015	-31.50199	116.0428	*Eucalyptus gomphocephala*	500	No	No	No	
HT06396	8/10/2015	-31.50216	116.0426	*Eucalyptus gomphocephala*	540	No	No	No	Eucalyptus sp
HT06397	8/10/2015	-31.50203	116.0424	*Eucalyptus gomphocephala*	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06398	8/10/2015	-31.50246	116.0418	*Eucalyptus marginata*	540	No	No	No	
HT06399	8/10/2015	-31.50239	116.0415	*Corymbia calophylla*	540	No	No	No	
HT06400	8/10/2015	-31.50222	116.0411	*Corymbia calophylla*	560	No	No	No	
HT06401	8/10/2015	-31.50274	116.041	*Corymbia calophylla*	500	No	No	No	
HT06402	8/10/2015	-31.51871	116.0336	*Eucalyptus gomphocephala*	1100	No	No	No	
HT06403	8/10/2015	-31.51792	116.034	*Eucalyptus marginata*	560	No	No	No	
HT06404	8/10/2015	-31.51676	116.0343	*Eucalyptus gomphocephala*	700	No	No	No	
HT06405	8/10/2015	-31.51617	116.0344	*Eucalyptus gomphocephala*	700	No	No	No	
HT06406	8/10/2015	-31.51431	116.035	*Corymbia calophylla*	540	No	No	No	
HT06407	8/10/2015	-31.51313	116.0354	*Corymbia calophylla*	1200	No	No	No	
HT06408	8/10/2015	-31.5123	116.0357	*Corymbia calophylla*	600	No	No	No	
HT06409	8/10/2015	-31.51168	116.0358	*Corymbia calophylla*	600	No	No	No	
HT06410	8/10/2015	-31.51122	116.036	*Corymbia calophylla*	500	No	No	No	
HT06411	8/10/2015	-31.50928	116.0371	*Eucalyptus gomphocephala*	540	No	No	No	
HT06412	8/10/2015	-31.50922	116.0372	*Corymbia calophylla*	500	No	No	No	
HT06413	8/10/2015	-31.50752	116.0382	*Eucalyptus gomphocephala*	660	No	No	No	
HT06414	8/10/2015	-31.51054	116.0367	*Corymbia calophylla*	500	No	No	No	
HT06415	8/10/2015	-31.511	116.0369	*Eucalyptus gomphocephala*	500	No	No	No	
HT06416	8/10/2015	-31.51235	116.0359	*Eucalyptus gomphocephala*	540	No	No	No	
HT06417	8/10/2015	-31.51279	116.0358	*Eucalyptus gomphocephala*	500	No	No	No	
HT06418	8/10/2015	-31.51291	116.0356	*Eucalyptus gomphocephala*	500	No	No	No	
HT06419	8/10/2015	-31.51357	116.0357	*Corymbia calophylla*	540	No	No	No	
HT06420	8/10/2015	-31.5152	116.035	*Eucalyptus gomphocephala*	520	No	No	No	
HT06421	8/10/2015	-31.51789	116.0345	*Corymbia calophylla*	560	Yes	Yes	Yes	Hollow at 10 m. Well chewed hollow in Marri. Facing west.
HT06422	8/10/2015	-31.51942	116.0339	*Corymbia calophylla*	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06423	8/10/2015	-31.5194	116.0339	*Eucalyptus marginata*	500	No	No	No	Dead.
HT06424	8/10/2015	-31.51938	116.0338	*Corymbia calophylla*	540	No	No	No	
HT06425	8/10/2015	-31.51943	116.0342	*Corymbia calophylla*	700	No	No	No	
HT06426	8/10/2015	-31.51946	116.0343	*Eucalyptus wandoo*	380	No	No	No	
HT06427	8/10/2015	-31.51955	116.0346	*Eucalyptus wandoo*	460	No	No	No	
HT06428	8/10/2015	-31.51958	116.0347	*Eucalyptus wandoo*	300	No	No	No	
HT06429	8/10/2015	-31.51956	116.0348	*Eucalyptus wandoo*	340	No	No	No	
HT06430	8/10/2015	-31.51967	116.0347	*Eucalyptus wandoo*	360	No	No	No	
HT06431	8/10/2015	-31.51958	116.035	*Eucalyptus wandoo*	340	No	No	No	
HT06432	8/10/2015	-31.51952	116.035	*Eucalyptus wandoo*	320	No	No	No	
HT06433	8/10/2015	-31.51958	116.0351	*Eucalyptus wandoo*	440	No	No	No	
HT06434	8/10/2015	-31.51956	116.0351	*Eucalyptus wandoo*	300	No	No	No	
HT06435	8/10/2015	-31.51937	116.0354	*Eucalyptus wandoo*	300	No	No	No	
HT06436	8/10/2015	-31.51935	116.0354	*Eucalyptus wandoo*	320	No	No	No	
HT06437	8/10/2015	-31.51939	116.0356	*Eucalyptus wandoo*	340	No	No	No	
HT06438	8/10/2015	-31.51928	116.0357	*Eucalyptus wandoo*	320	No	No	No	
HT06439	8/10/2015	-31.51922	116.0359	*Eucalyptus wandoo*	540	No	No	No	
HT06440	8/10/2015	-31.51913	116.0361	*Eucalyptus wandoo*	360	No	No	No	
HT06441	8/10/2015	-31.51924	116.0363	*Eucalyptus wandoo*	620	No	No	No	
HT06442	8/10/2015	-31.51991	116.0339	*Corymbia calophylla*	560	No	No	No	
HT06443	8/10/2015	-31.51993	116.0338	*Eucalyptus wandoo*	360	No	No	No	
HT06444	8/10/2015	-31.52024	116.0342	*Corymbia calophylla*	620	No	No	No	
HT06445	8/10/2015	-31.5202	116.0343	*Eucalyptus wandoo*	300	No	No	No	
HT06446	8/10/2015	-31.5202	116.0344	*Eucalyptus wandoo*	380	No	No	No	
HT06449	8/10/2015	-31.52015	116.0346	*Eucalyptus wandoo*	360	No	No	No	
HT06450	8/10/2015	-31.52013	116.0347	*Eucalyptus wandoo*	480	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06451	8/10/2015	-31.52008	116.0349	*Eucalyptus gomphocephala*	720	No	No	No	
HT06452	8/10/2015	-31.52009	116.0349	*Eucalyptus wandoo*	520	No	No	No	
HT06453	8/10/2015	-31.51999	116.0352	*Eucalyptus wandoo*	420	No	No	No	
HT06454	8/10/2015	-31.51999	116.0352	*Eucalyptus gomphocephala*	660	No	No	No	
HT06455	8/10/2015	-31.52006	116.0353	*Eucalyptus wandoo*	580	No	No	No	
HT06456	8/10/2015	-31.51999	116.0353	*Eucalyptus wandoo*	520	No	No	No	
HT06457	8/10/2015	-31.51992	116.0356	*Eucalyptus wandoo*	500	No	No	No	
HT06458	8/10/2015	-31.51985	116.0357	*Corymbia calophylla*	560	No	No	No	
HT06459	8/10/2015	-31.51982	116.036	*Corymbia calophylla*	760	No	No	No	
HT06460	8/10/2015	-31.5197	116.0362	*Eucalyptus gomphocephala*	640	No	No	No	
HT06461	8/10/2015	-31.51973	116.0363	*Eucalyptus wandoo*	480	No	No	No	
HT06462	8/10/2015	-31.52035	116.0336	*Corymbia calophylla*	660	No	No	No	
HT06463	8/10/2015	-31.52052	116.0338	*Corymbia calophylla*	560	No	No	No	
HT06464	8/10/2015	-31.52049	116.0338	*Corymbia calophylla*	640	No	No	No	
HT06465	8/10/2015	-31.52066	116.0333	*Corymbia calophylla*	740	No	No	No	
HT06466	8/10/2015	-31.52579	116.0275	*Eucalyptus wandoo*	300	No	No	No	
HT06467	8/10/2015	-31.52573	116.0277	*Corymbia calophylla*	780	No	No	No	
HT06468	8/10/2015	-31.52592	116.0277	*Eucalyptus wandoo*	300	No	No	No	
HT06469	8/10/2015	-31.52605	116.0277	*Eucalyptus wandoo*	400	No	No	No	
HT06470	8/10/2015	-31.52609	116.0279	*Eucalyptus* sp. indet.	380	No	No	No	
HT06471	8/10/2015	-31.52611	116.0279	*Eucalyptus* sp. indet.	440	No	No	No	
HT06472	8/10/2015	-31.52613	116.028	*Eucalyptus* sp. indet.	320	No	No	No	
HT06473	8/10/2015	-31.52609	116.0281	*Eucalyptus* sp. indet.	400	No	No	No	
HT06474	8/10/2015	-31.52613	116.0282	*Eucalyptus* sp. indet.	300	No	No	No	
HT06475	8/10/2015	-31.52615	116.0283	*Eucalyptus* sp. indet.	320	No	No	No	
HT06476	8/10/2015	-31.52584	116.0285	*Corymbia calophylla*	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06477	8/10/2015	-31.52595	116.0287	*Eucalyptus* sp. indet.	700	No	No	No	
HT06478	8/10/2015	-31.526	116.0291	*Eucalyptus* sp. indet.	500	No	No	No	
HT06479	8/10/2015	-31.52595	116.0291	*Eucalyptus* sp. indet.	640	No	No	No	
HT06480	8/10/2015	-31.52593	116.0291	*Eucalyptus* sp. indet.	580	No	No	No	
HT06481	8/10/2015	-31.52579	116.0294	*Eucalyptus wandoo*	900	No	No	No	
HT06482	8/10/2015	-31.52563	116.0292	*Eucalyptus wandoo*	320	No	No	No	
HT06483	8/10/2015	-31.52605	116.0288	*Eucalyptus* sp. indet.	360	No	No	No	
HT06484	8/10/2015	-31.52605	116.0287	*Eucalyptus* sp. indet.	380	No	No	No	
HT06485	8/10/2015	-31.52613	116.0285	*Eucalyptus* sp. indet.	340	No	No	No	
HT06486	8/10/2015	-31.52629	116.0285	*Eucalyptus wandoo*	400	No	No	No	
HT06487	8/10/2015	-31.52629	116.0285	*Eucalyptus* sp. indet.	660	No	No	No	
HT06488	8/10/2015	-31.5263	116.0283	*Eucalyptus wandoo*	600	No	No	No	Dead.
HT06489	8/10/2015	-31.52639	116.0282	*Eucalyptus* sp. indet.	320	No	No	No	
HT06490	8/10/2015	-31.52639	116.0282	*Eucalyptus* sp. indet.	300	No	No	No	
HT06491	8/10/2015	-31.52641	116.0278	*Eucalyptus* sp. indet.	300	No	No	No	
HT06492	8/10/2015	-31.52639	116.0277	*Eucalyptus* sp. indet.	460	No	No	No	
HT06493	8/10/2015	-31.52639	116.0274	*Eucalyptus* sp. indet.	580	No	No	No	
HT06494	8/10/2015	-31.52641	116.0274	*Eucalyptus* sp. indet.	300	No	No	No	
HT06495	8/10/2015	-31.52652	116.0275	*Eucalyptus* sp. indet.	340	No	No	No	
HT06496	8/10/2015	-31.52652	116.0275	*Eucalyptus* sp. indet.	300	No	No	No	
HT06497	8/10/2015	-31.52654	116.0276	*Eucalyptus* sp. indet.	300	No	No	No	
HT06498	8/10/2015	-31.52632	116.0271	*Eucalyptus* sp. indet.	500	No	No	No	
HT06499	8/10/2015	-31.52641	116.0272	*Eucalyptus* sp. indet.	300	No	No	No	
HT06500	8/10/2015	-31.52638	116.0271	*Eucalyptus* sp. indet.	320	No	No	No	
HT06501	8/10/2015	-31.52641	116.0271	*Eucalyptus* sp. indet.	340	No	No	No	
HT06502	8/10/2015	-31.52659	116.027	*Eucalyptus* sp. indet.	380	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06503	8/10/2015	-31.52661	116.0271	*Eucalyptus* sp. indet.	600	No	No	No	
HT06504	8/10/2015	-31.52657	116.0269	*Eucalyptus* sp. indet.	340	No	No	No	
HT06505	8/10/2015	-31.52657	116.0268	*Eucalyptus* sp. indet.	300	No	No	No	
HT06506	8/10/2015	-31.52672	116.0266	*Eucalyptus* sp. indet.	300	No	No	No	
HT06507	8/10/2015	-31.52684	116.0266	*Eucalyptus* sp. indet.	300	No	No	No	
HT06508	8/10/2015	-31.52686	116.0267	*Eucalyptus* sp. indet.	320	No	No	No	
HT06509	8/10/2015	-31.52689	116.0266	*Eucalyptus* sp. indet.	300	No	No	No	
HT06510	8/10/2015	-31.52689	116.0267	*Eucalyptus* sp. indet.	300	No	No	No	
HT06511	8/10/2015	-31.52702	116.0267	*Eucalyptus* sp. indet.	320	No	No	No	
HT06512	8/10/2015	-31.52706	116.0267	*Eucalyptus* sp. indet.	300	No	No	No	
HT06513	8/10/2015	-31.52715	116.0267	*Eucalyptus* sp. indet.	600	No	No	No	
HT06514	8/10/2015	-31.52715	116.0266	*Eucalyptus* sp. indet.	300	No	No	No	
HT06515	8/10/2015	-31.52718	116.0265	*Eucalyptus* sp. indet.	300	No	No	No	
HT06516	8/10/2015	-31.52743	116.0266	*Eucalyptus* sp. indet.	400	No	No	No	
HT06517	8/10/2015	-31.52752	116.0267	*Eucalyptus* sp. indet.	300	No	No	No	
HT06518	8/10/2015	-31.52752	116.0268	*Eucalyptus* sp. indet..	320	No	No	No	
HT06519	8/10/2015	-31.52745	116.0268	*Eucalyptus* sp. indet.	540	No	No	No	
HT06520	8/10/2015	-31.52741	116.0269	*Corymbia calophylla*	500	No	No	No	
HT06521	8/10/2015	-31.52738	116.027	*Eucalyptus* sp. indet.	600	No	No	No	
HT06522	8/10/2015	-31.52752	116.027	*Eucalyptus* sp. indet.	320	No	No	No	
HT06523	8/10/2015	-31.52475	116.0287	*Eucalyptus wandoo*	800	No	No	No	
HT06524	8/10/2015	-31.53213	116.0212	*Eucalyptus* sp. indet.	800	No	No	No	
HT06525	8/10/2015	-31.53212	116.0213	*Corymbia calophylla*	540	No	No	No	
HT06526	8/10/2015	-31.53211	116.0214	*Corymbia calophylla*	900	No	No	No	
HT06527	8/10/2015	-31.53253	116.0211	*Corymbia calophylla*	520	No	No	No	
HT06528	8/10/2015	-31.53259	116.021	*Corymbia calophylla*	660	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06529	8/10/2015	-31.53257	116.0208	*Eucalyptus* sp. indet.	540	No	No	No	
HT06530	8/10/2015	-31.53259	116.0208	*Eucalyptus* sp. indet.	320	No	No	No	
HT06531	8/10/2015	-31.53276	116.0207	*Eucalyptus* sp. indet.	300	No	No	No	
HT06532	8/10/2015	-31.53276	116.0206	*Corymbia calophylla*	500	No	No	No	
HT06533	8/10/2015	-31.53268	116.0204	*Corymbia calophylla*	800	No	No	No	
HT06534	8/10/2015	-31.53274	116.0202	*Eucalyptus gomphocephala*	760	No	No	No	
HT06535	8/10/2015	-31.5328	116.0201	*Eucalyptus gomphocephala*	700	No	No	No	
HT06536	8/10/2015	-31.53297	116.0202	*Eucalyptus gomphocephala*	1100	No	No	No	
HT06538	8/10/2015	-31.53347	116.0199	*Corymbia calophylla*	540	No	No	No	
HT06539	8/10/2015	-31.53338	116.0195	*Corymbia calophylla*	800	No	No	No	
HT06540	8/10/2015	-31.53351	116.0193	*Corymbia calophylla*	1120	No	No	No	
HT06541	8/10/2015	-31.53363	116.0195	*Eucalyptus gomphocephala*	540	No	No	No	
HT06542	8/10/2015	-31.53367	116.0195	*Eucalyptus gomphocephala*	500	No	No	No	
HT06543	8/10/2015	-31.53369	116.0195	*Eucalyptus gomphocephala*	680	No	No	No	
HT06544	8/10/2015	-31.53351	116.0192	*Eucalyptus gomphocephala*	560	No	No	No	
HT06545	8/10/2015	-31.53286	116.0195	*Corymbia calophylla*	860	No	No	No	
HT06546	8/10/2015	-31.53286	116.0197	*Corymbia calophylla*	500	No	No	No	
HT06547	8/10/2015	-31.53279	116.0197	*Corymbia calophylla*	500	No	No	No	
HT06548	8/10/2015	-31.53277	116.0196	*Corymbia calophylla*	500	No	No	No	
HT06549	8/10/2015	-31.53251	116.0198	*Eucalyptus gomphocephala*	1260	No	No	No	
HT06550	8/10/2015	-31.53246	116.0199	*Corymbia calophylla*	680	No	No	No	
HT06551	8/10/2015	-31.53211	116.0204	*Eucalyptus gomphocephala*	680	No	No	No	Dead.
HT06552	8/10/2015	-31.53205	116.0207	*Eucalyptus gomphocephala*	640	No	No	No	
HT06553	8/10/2015	-31.53187	116.0208	*Corymbia calophylla*	620	No	No	No	
HT06554	8/10/2015	-31.54709	116.0037	*Eucalyptus wandoo*	300	No	No	No	
HT06555	8/10/2015	-31.54716	116.0034	*Eucalyptus wandoo*	340	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06556	8/10/2015	-31.54711	116.0035	*Eucalyptus wandoo*	340	No	No	No	
HT06557	8/10/2015	-31.54697	116.003	*Eucalyptus gomphocephala*	600	No	No	No	
HT06558	8/10/2015	-31.54697	116.003	*Eucalyptus gomphocephala*	940	No	No	No	
HT06559	8/10/2015	-31.54676	116.0031	*Corymbia calophylla*	960	No	No	No	
HT06560	8/10/2015	-31.54676	116.0031	*Corymbia calophylla*	640	No	No	No	
HT06561	8/10/2015	-31.54674	116.0034	*Corymbia calophylla*	760	No	No	No	
HT06562	8/10/2015	-31.54661	116.0033	*Corymbia calophylla*	680	No	No	No	
HT06563	8/10/2015	-31.54647	116.0035	*Corymbia calophylla*	980	No	No	No	
HT06564	8/10/2015	-31.54613	116.0034	*Corymbia calophylla*	520	No	No	No	
HT06565	8/10/2015	-31.54609	116.0033	*Corymbia calophylla*	500	No	No	No	
HT06566	8/10/2015	-31.54599	116.0034	*Corymbia calophylla*	500	No	No	No	
HT06567	8/10/2015	-31.54597	116.0034	*Corymbia calophylla*	660	No	No	No	
HT06568	8/10/2015	-31.54591	116.0034	*Corymbia calophylla*	500	No	No	No	
HT06569	8/10/2015	-31.54591	116.0033	*Corymbia calophylla*	500	No	No	No	Dead.
HT06570	8/10/2015	-31.54584	116.0034	*Corymbia calophylla*	540	No	No	No	
HT06571	8/10/2015	-31.54574	116.0034	*Corymbia calophylla*	720	No	No	No	
HT06572	8/10/2015	-31.54568	116.0035	*Corymbia calophylla*	1480	No	No	No	
HT06573	8/10/2015	-31.54557	116.0034	*Corymbia calophylla*	700	No	No	No	
HT06574	8/10/2015	-31.54729	116.0028	*Eucalyptus wandoo*	540	Yes	No	No	Hollow at 6 m. Two Carnaby's Black Cockatoo observed flying out of hollow. Looks like evidence of recent chewing rapid parts of hollow entrance.
HT06575	8/10/2015	-31.54697	116.0025	*Corymbia calophylla*	500	No	No	No	
HT06576	8/10/2015	-31.54627	116.0019	*Corymbia calophylla*	500	No	No	No	
HT06577	8/10/2015	-31.54586	116.0017	*Eucalyptus gomphocephala*	600	No	No	No	
HT06578	8/10/2015	-31.54533	116.0039	*Corymbia calophylla*	520	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06579	8/10/2015	-31.54128	116.0023	*Corymbia calophylla*	620	No	No	No	
HT06580	8/10/2015	-31.54129	116.0023	*Corymbia calophylla*	560	No	No	No	Dead.
HT06581	8/10/2015	-31.54122	116.0024	*Corymbia calophylla*	500	No	No	No	
HT06582	8/10/2015	-31.54109	116.0111	*Corymbia calophylla*	1000	No	No	No	
HT06583	8/10/2015	-31.54109	116.0112	*Eucalyptus gomphocephala*	660	No	No	No	
HT06584	8/10/2015	-31.54158	116.0113	*Corymbia calophylla*	960	No	No	No	
HT06586	8/10/2015	-31.54207	116.0081	*Eucalyptus gomphocephala*	680	No	No	No	
HT06587	8/10/2015	-31.54217	116.0081	*Eucalyptus gomphocephala*	920	Yes	No	No	Hollow at 6 m.
HT06588	8/10/2015	-31.54241	116.0078	*Corymbia calophylla*	520	No	No	No	
HT06589	8/10/2015	-31.54251	116.0077	*Corymbia calophylla*	500	No	No	No	
HT06590	8/10/2015	-31.5419	116.0078	*Eucalyptus gomphocephala*	860	No	No	No	
HT06591	8/10/2015	-31.54128	116.008	*Eucalyptus gomphocephala*	680	No	No	No	
HT06592	8/10/2015	-31.54102	116.008	*Corymbia calophylla*	500	No	No	No	
HT06593	8/10/2015	-31.54105	116.0081	*Eucalyptus gomphocephala*	560	No	No	No	
HT06594	8/10/2015	-31.54111	116.0083	*Eucalyptus gomphocephala*	840	No	No	No	
HT06595	8/10/2015	-31.54123	116.0083	*Eucalyptus gomphocephala*	640	No	No	No	
HT06596	8/10/2015	-31.53888	116.0113	*Corymbia calophylla*	520	No	No	No	
HT06597	8/10/2015	-31.53922	116.0116	*Eucalyptus gomphocephala*	1440	No	No	No	
HT06598	8/10/2015	-31.538	116.0132	*Corymbia calophylla*	640	No	No	No	
HT06599	8/10/2015	-31.53689	116.0138	*Eucalyptus wandoo*	320	No	No	No	
HT06600	8/10/2015	-31.53585	116.0155	*Eucalyptus* sp. indet.	540	No	No	No	Dead.
HT06601	8/10/2015	-31.53556	116.0157	*Eucalyptus gomphocephala*	560	No	No	No	
HT06602	8/10/2015	-31.53513	116.0166	*Corymbia calophylla*	540	No	No	No	Dead.
HT06603	8/10/2015	-31.48925	116.0424	*Corymbia calophylla*	500	No	No	No	
HT06604	8/10/2015	-31.48907	116.0424	*Corymbia calophylla*	500	No	No	No	
HT06605	8/10/2015	-31.48912	116.0425	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06606	8/10/2015	-31.489	116.0424	*Corymbia calophylla*	860	No	No	No	Dead.
HT06607	8/10/2015	-31.4888	116.0426	*Corymbia calophylla*	640	No	No	No	
HT06608	8/10/2015	-31.48855	116.0426	*Corymbia calophylla*	600	No	No	No	
HT06609	8/10/2015	-31.48841	116.0429	*Corymbia calophylla*	500	No	No	No	
HT06610	8/10/2015	-31.48873	116.043	*Eucalyptus gomphocephala*	1060	No	No	No	
HT06611	8/10/2015	-31.48959	116.0428	*Corymbia calophylla*	700	No	No	No	
HT06612	8/10/2015	-31.4897	116.0429	*Corymbia calophylla*	1140	No	No	No	
HT06613	8/10/2015	-31.48982	116.0427	*Corymbia calophylla*	600	No	No	No	
HT06614	8/10/2015	-31.48982	116.0427	*Corymbia calophylla*	500	No	No	No	
HT06615	8/10/2015	-31.48982	116.0422	*Eucalyptus gomphocephala*	1980	Yes	No	No	Hollow at 10 m.
HT06616	8/10/2015	-31.48994	116.0422	*Eucalyptus gomphocephala*	1700	No	No	No	
HT06617	8/10/2015	-31.49011	116.0421	*Eucalyptus gomphocephala*	940	No	No	No	
HT06618	8/10/2015	-31.49019	116.0427	*Corymbia calophylla*	620	No	No	No	
HT06619	8/10/2015	-31.4904	116.0427	*Corymbia calophylla*	520	No	No	No	
HT06622	8/10/2015	-31.49049	116.0427	*Corymbia calophylla*	840	No	No	No	
HT06623	8/10/2015	-31.49067	116.0426	*Corymbia calophylla*	660	No	No	No	
HT06624	8/10/2015	-31.49094	116.0424	*Corymbia calophylla*	680	No	No	No	
HT06625	8/10/2015	-31.49096	116.0423	*Corymbia calophylla*	560	No	No	No	
HT06626	8/10/2015	-31.49106	116.042	*Eucalyptus gomphocephala*	1480	No	No	No	
HT06627	8/10/2015	-31.49123	116.0421	*Corymbia calophylla*	960	No	No	No	
HT06628	8/10/2015	-31.49168	116.042	*Corymbia calophylla*	1100	No	No	No	
HT06629	8/10/2015	-31.49162	116.0423	*Eucalyptus gomphocephala*	500	No	No	No	
HT06630	8/10/2015	-31.49227	116.0423	*Corymbia calophylla*	500	No	No	No	
HT06631	8/10/2015	-31.49243	116.0422	*Corymbia calophylla*	1020	No	No	No	
HT06632	8/10/2015	-31.49213	116.0419	*Corymbia calophylla*	520	No	No	No	
HT06633	8/10/2015	-31.49243	116.0419	*Eucalyptus gomphocephala*	820	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06634	8/10/2015	-31.49272	116.0419	*Corymbia calophylla*	640	No	No	No	Dead.
HT06635	8/10/2015	-31.49285	116.0418	*Eucalyptus gomphocephala*	660	No	No	No	
HT06636	8/10/2015	-31.49296	116.0418	*Eucalyptus gomphocephala*	680	No	No	No	
HT06637	8/10/2015	-31.49303	116.0418	*Corymbia calophylla*	840	No	No	No	
HT06638	8/10/2015	-31.49302	116.0422	*Eucalyptus gomphocephala*	640	No	No	No	
HT06639	8/10/2015	-31.49333	116.0418	*Corymbia calophylla*	700	No	No	No	
HT06640	8/10/2015	-31.49338	116.0418	*Corymbia calophylla*	560	No	No	No	
HT06642	8/10/2015	-31.49379	116.0417	*Corymbia calophylla*	820	No	No	No	
HT06643	8/10/2015	-31.49459	116.0416	*Corymbia calophylla*	1100	No	No	No	
HT06646	8/10/2015	-31.49349	116.0405	*Eucalyptus gomphocephala*	600	No	No	No	
HT06647	8/10/2015	-31.49332	116.0407	*Corymbia calophylla*	500	No	No	No	
HT06648	8/10/2015	-31.49329	116.0407	*Corymbia calophylla*	760	No	No	No	
HT06649	8/10/2015	-31.49333	116.0411	*Corymbia calophylla*	500	No	No	No	
HT06650	8/10/2015	-31.47584	116.0463	*Corymbia calophylla*	500	No	No	No	Dead.
HT06651	8/10/2015	-31.47584	116.0464	*Corymbia calophylla*	760	No	No	No	
HT06652	8/10/2015	-31.47592	116.0457	*Corymbia calophylla*	600	No	No	No	
HT06653	8/10/2015	-31.47617	116.0447	*Corymbia calophylla*	700	No	No	No	
HT06654	8/10/2015	-31.47674	116.0443	*Corymbia calophylla*	580	No	No	No	
HT06655	8/10/2015	-31.47773	116.0448	*Corymbia calophylla*	1000	Yes	Yes	No	3 Hollows at 8-10 m.
HT06656	8/10/2015	-31.47796	116.0448	*Eucalyptus wandoo*	300	No	No	No	
HT06657	8/10/2015	-31.47799	116.0449	*Eucalyptus wandoo*	320	No	No	No	
HT06658	8/10/2015	-31.4782	116.0448	*Eucalyptus wandoo*	420	No	No	No	
HT06659	8/10/2015	-31.47838	116.0449	*Eucalyptus wandoo*	360	No	No	No	
HT06660	8/10/2015	-31.47845	116.045	*Eucalyptus* sp. indet.	360	No	No	No	
HT06661	8/10/2015	-31.47851	116.045	*Corymbia calophylla*	600	No	No	No	
HT06662	8/10/2015	-31.47873	116.045	*Corymbia calophylla*	940	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06663	8/10/2015	-31.47875	116.045	*Corymbia calophylla*	600	No	No	No	
HT06664	8/10/2015	-31.47868	116.0446	*Eucalyptus* sp. indet.	540	No	No	No	
HT06665	8/10/2015	-31.47906	116.0448	*Corymbia calophylla*	600	No	No	No	
HT06666	8/10/2015	-31.47917	116.0444	*Corymbia calophylla*	580	No	No	No	
HT06667	8/10/2015	-31.47928	116.0447	*Corymbia calophylla*	1140	No	No	No	
HT06668	8/10/2015	-31.47932	116.0448	*Corymbia calophylla*	500	No	No	No	
HT06669	8/10/2015	-31.47946	116.0451	*Corymbia calophylla*	1000	No	No	No	
HT06670	8/10/2015	-31.47866	116.0455	*Eucalyptus gomphocephala*	540	No	No	No	
HT06671	8/10/2015	-31.47845	116.0457	*Eucalyptus wandoo*	420	No	No	No	
HT06675	8/10/2015	-31.47793	116.046	*Corymbia calophylla*	620	No	No	No	
HT06676	8/10/2015	-31.47791	116.0461	*Eucalyptus gomphocephala*	700	No	No	No	Dead.
HT06678	8/10/2015	-31.47777	116.0462	*Eucalyptus wandoo*	1100	Yes	Yes	No	2 hollows at 10 m.
HT06679	8/10/2015	-31.47759	116.0466	*Eucalyptus wandoo*	520	No	No	No	
HT06680	8/10/2015	-31.47769	116.0467	*Eucalyptus wandoo*	700	No	No	No	
HT06681	8/10/2015	-31.47741	116.0466	*Eucalyptus wandoo*	320	No	No	No	
HT06682	8/10/2015	-31.47738	116.0465	*Eucalyptus wandoo*	660	No	No	No	
HT06683	8/10/2015	-31.47715	116.0465	*Eucalyptus wandoo*	360	No	No	No	
HT06684	8/10/2015	-31.47701	116.0464	*Eucalyptus wandoo*	380	No	No	No	
HT06685	8/10/2015	-31.47686	116.0464	*Eucalyptus wandoo*	900	Yes	No	No	Hollow at 6 m.
HT06686	8/10/2015	-31.47675	116.0465	*Eucalyptus wandoo*	340	No	No	No	
HT06687	8/10/2015	-31.47659	116.0464	*Eucalyptus wandoo*	360	No	No	No	
HT06688	8/10/2015	-31.47638	116.0462	*Eucalyptus wandoo*	1140	No	No	No	
HT06689	8/10/2015	-31.47641	116.046	*Eucalyptus wandoo*	300	No	No	No	
HT06690	8/10/2015	-31.47647	116.046	*Eucalyptus wandoo*	300	No	No	No	
HT06691	8/10/2015	-31.48917	116.0416	*Corymbia calophylla*	520	No	No	No	
HT06692	8/10/2015	-31.48871	116.0413	*Corymbia calophylla*	500	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06693	8/10/2015	-31.48861	116.0413	*Eucalyptus gomphocephala*	660	No	No	No	
HT06694	8/10/2015	-31.4883	116.0414	*Eucalyptus* sp. indet.	500	No	No	No	Dead.
HT06695	8/10/2015	-31.48822	116.0414	*Corymbia calophylla*	500	No	No	No	
HT06696	8/10/2015	-31.48818	116.0416	*Corymbia calophylla*	820	No	No	No	
HT06697	8/10/2015	-31.48825	116.0417	*Corymbia calophylla*	500	No	No	No	
HT06698	8/10/2015	-31.48804	116.0414	*Eucalyptus gomphocephala*	540	No	No	No	Dead.
HT06699	8/10/2015	-31.48803	116.0413	*Eucalyptus gomphocephala*	500	No	No	No	
HT06700	8/10/2015	-31.48791	116.0413	*Corymbia calophylla*	560	No	No	No	
HT06701	8/10/2015	-31.48792	116.0413	*Eucalyptus gomphocephala*	500	No	No	No	
HT06702	8/10/2015	-31.48791	116.0412	*Corymbia calophylla*	540	No	No	No	
HT06703	8/10/2015	-31.48791	116.0411	*Eucalyptus gomphocephala*	520	No	No	No	
HT06704	8/10/2015	-31.48777	116.041	*Corymbia calophylla*	880	No	No	No	
HT06705	8/10/2015	-31.48762	116.0408	*Eucalyptus gomphocephala*	680	No	No	No	
HT06706	8/10/2015	-31.48806	116.041	*Eucalyptus gomphocephala*	680	No	No	No	
HT06707	8/10/2015	-31.48834	116.0409	*Corymbia calophylla*	520	No	No	No	
HT06708	8/10/2015	-31.4884	116.041	*Eucalyptus gomphocephala*	660	No	No	No	
HT06709	8/10/2015	-31.48822	116.0406	*Corymbia calophylla*	500	No	No	No	
HT06710	8/10/2015	-31.48806	116.0404	*Eucalyptus gomphocephala*	520	No	No	No	
HT06711	8/10/2015	-31.48748	116.041	*Corymbia calophylla*	580	No	No	No	Dead.
HT06712	8/10/2015	-31.48757	116.0412	*Corymbia calophylla*	580	No	No	No	
HT06713	8/10/2015	-31.48745	116.0416	*Corymbia calophylla*	760	No	No	No	
HT06714	8/10/2015	-31.4876	116.0417	*Corymbia calophylla*	680	No	No	No	
HT06715	8/10/2015	-31.48618	116.0425	*Eucalyptus gomphocephala*	520	No	No	No	
HT06716	8/10/2015	-31.48614	116.0425	*Eucalyptus gomphocephala*	500	No	No	No	
HT06717	8/10/2015	-31.48547	116.0425	*Corymbia calophylla*	920	No	No	No	
HT06718	8/10/2015	-31.48524	116.0422	*Eucalyptus gomphocephala*	860	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06719	8/10/2015	-31.4851	116.0424	*Corymbia calophylla*	500	No	No	No	
HT06720	8/10/2015	-31.48507	116.0423	*Eucalyptus wandoo*	360	No	No	No	
HT06721	8/10/2015	-31.48503	116.0423	*Eucalyptus gomphocephala*	500	No	No	No	
HT06722	8/10/2015	-31.48497	116.0423	*Corymbia calophylla*	580	No	No	No	
HT06723	8/10/2015	-31.48483	116.0423	*Corymbia calophylla*	560	No	No	No	
HT06724	8/10/2015	-31.4848	116.0422	*Corymbia calophylla*	500	No	No	No	
HT06725	8/10/2015	-31.48478	116.0422	*Corymbia calophylla*	560	No	No	No	
HT06726	8/10/2015	-31.48476	116.0424	*Corymbia calophylla*	500	No	No	No	
HT06727	8/10/2015	-31.48474	116.0424	*Corymbia calophylla*	860	No	No	No	
HT06728	8/10/2015	-31.48483	116.0425	*Eucalyptus wandoo*	400	No	No	No	Dead.
HT06729	8/10/2015	-31.48484	116.0425	*Eucalyptus wandoo*	360	No	No	No	
HT06730	8/10/2015	-31.48468	116.0425	*Eucalyptus wandoo*	460	No	No	No	
HT06731	8/10/2015	-31.48453	116.0424	*Eucalyptus wandoo*	420	No	No	No	
HT06732	8/10/2015	-31.48456	116.0427	*Eucalyptus wandoo*	300	No	No	No	
HT06733	8/10/2015	-31.48457	116.0428	*Eucalyptus wandoo*	300	No	No	No	
HT06734	8/10/2015	-31.48469	116.0429	*Eucalyptus* sp. indet.	320	No	No	No	
HT06735	8/10/2015	-31.48487	116.043	*Eucalyptus* sp. indet.	360	No	No	No	
HT06736	8/10/2015	-31.48491	116.0429	*Eucalyptus wandoo*	340	No	No	No	
HT06737	8/10/2015	-31.48496	116.0429	*Eucalyptus wandoo*	360	No	No	No	
HT06738	8/10/2015	-31.48503	116.043	*Eucalyptus wandoo*	360	No	No	No	
HT06739	8/10/2015	-31.48525	116.0429	*Eucalyptus* sp. indet.	400	No	No	No	
HT06740	8/10/2015	-31.48522	116.0429	*Eucalyptus* sp. indet.	300	No	No	No	
HT06741	8/10/2015	-31.48528	116.0427	*Corymbia calophylla*	800	No	No	No	
HT06742	8/10/2015	-31.48494	116.0426	*Eucalyptus* sp. indet.	560	No	No	No	
HT06743	8/10/2015	-31.48494	116.0426	*Eucalyptus* sp. indet.	660	No	No	No	Dead.
HT06744	8/10/2015	-31.48457	116.0424	*Eucalyptus wandoo*	480	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06745	8/10/2015	-31.48441	116.0423	*Corymbia calophylla*	520	No	No	No	
HT06746	8/10/2015	-31.48434	116.0425	*Eucalyptus* sp. indet.	440	No	No	No	
HT06747	8/10/2015	-31.48431	116.0425	*Eucalyptus* sp. indet.	300	No	No	No	
HT06748	8/10/2015	-31.48434	116.0426	*Eucalyptus* sp. indet.	300	No	No	No	
HT06749	8/10/2015	-31.48434	116.0427	*Eucalyptus* sp. indet.	600	No	No	No	
HT06750	8/10/2015	-31.48438	116.0427	*Eucalyptus* sp. indet.	360	No	No	No	
HT06751	8/10/2015	-31.4843	116.0427	*Eucalyptus* sp. indet.	360	No	No	No	
HT06752	8/10/2015	-31.48419	116.0427	*Eucalyptus* sp. indet.	420	No	No	No	
HT06753	8/10/2015	-31.4842	116.0427	*Eucalyptus* sp. indet.	340	No	No	No	
HT06754	8/10/2015	-31.4842	116.0427	*Eucalyptus* sp. indet.	440	No	No	No	
HT06755	8/10/2015	-31.48402	116.0426	*Eucalyptus* sp. indet.	340	No	No	No	
HT06756	8/10/2015	-31.484	116.0426	*Eucalyptus* sp. indet.	400	No	No	No	
HT06757	8/10/2015	-31.484	116.0426	*Eucalyptus* sp. indet.	320	No	No	No	
HT06758	8/10/2015	-31.484	116.0426	*Eucalyptus* sp. indet.	700	No	No	No	
HT06759	8/10/2015	-31.48374	116.0425	*Eucalyptus* sp. indet.	480	No	No	No	
HT06760	8/10/2015	-31.48396	116.0424	*Eucalyptus* sp. indet.	400	No	No	No	
HT06761	8/10/2015	-31.48372	116.0427	*Eucalyptus* sp. indet.	320	No	No	No	
HT06762	8/10/2015	-31.4835	116.0425	*Eucalyptus* sp. indet.	740	No	No	No	
HT06763	8/10/2015	-31.48337	116.0426	*Eucalyptus* sp. indet.	300	No	No	No	
HT06764	8/10/2015	-31.4831	116.0425	*Eucalyptus* sp. indet.	300	No	No	No	
HT06765	8/10/2015	-31.4831	116.0425	*Eucalyptus* sp. indet.	300	No	No	No	
HT06766	8/10/2015	-31.483	116.0426	*Eucalyptus* sp. indet.	300	No	No	No	
HT06767	8/10/2015	-31.48291	116.0424	*Eucalyptus* sp. indet.	500	No	No	No	
HT06768	8/10/2015	-31.48288	116.0426	*Eucalyptus* sp. indet.	300	No	No	No	
HT06769	8/10/2015	-31.48282	116.0424	*Eucalyptus* sp. indet.	300	No	No	No	
HT06770	8/10/2015	-31.48266	116.0427	*Eucalyptus* sp. indet.	600	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06771	8/10/2015	-31.48258	116.0425	*Eucalyptus* sp. indet.	740	No	No	No	
HT06772	8/10/2015	-31.4823	116.0426	*Corymbia calophylla*	520	No	No	No	
HT06773	8/10/2015	-31.48207	116.0426	*Corymbia calophylla*	620	No	No	No	
HT06774	8/10/2015	-31.48233	116.0428	*Eucalyptus* sp. indet.	300	No	No	No	
HT06775	8/10/2015	-31.48233	116.0428	*Eucalyptus* sp. indet.	500	No	No	No	
HT06776	8/10/2015	-31.48244	116.0429	*Eucalyptus* sp. indet.	440	No	No	No	
HT06777	8/10/2015	-31.4822	116.0429	*Eucalyptus* sp. indet.	1040	No	No	No	
HT06778	8/10/2015	-31.48237	116.043	*Corymbia calophylla*	520	No	No	No	
HT06779	8/10/2015	-31.48241	116.0432	*Eucalyptus* sp. indet.	300	No	No	No	
HT06780	8/10/2015	-31.4826	116.0433	*Eucalyptus* sp. indet.	400	No	No	No	
HT06781	8/10/2015	-31.48238	116.0433	*Eucalyptus* sp. indet.	640	No	No	No	
HT06782	8/10/2015	-31.48239	116.0434	*Eucalyptus* sp. indet.	300	No	No	No	
HT06783	8/10/2015	-31.48238	116.0434	*Eucalyptus* sp. indet.	300	No	No	No	
HT06784	8/10/2015	-31.48223	116.0435	*Corymbia calophylla*	580	No	No	No	
HT06785	8/10/2015	-31.48223	116.0437	*Corymbia calophylla*	740	No	No	No	
HT06786	8/10/2015	-31.48261	116.0437	*Eucalyptus* sp. indet.	340	No	No	No	
HT06787	8/10/2015	-31.48241	116.0421	*Corymbia calophylla*	640	No	No	No	
HT06788	8/10/2015	-31.48244	116.042	*Corymbia calophylla*	620	No	No	No	
HT06789	8/10/2015	-31.48243	116.0419	*Corymbia calophylla*	600	No	No	No	
HT06790	8/10/2015	-31.48253	116.0421	*Eucalyptus* sp. indet.	320	No	No	No	
HT06791	8/10/2015	-31.48253	116.0422	*Corymbia calophylla*	500	No	No	No	
HT06792	8/10/2015	-31.48266	116.0421	*Eucalyptus* sp. indet.	300	No	No	No	
HT06793	8/10/2015	-31.48306	116.0419	*Eucalyptus* sp. indet.	360	No	No	No	
HT06794	8/10/2015	-31.48304	116.0422	*Corymbia calophylla*	560	No	No	No	
HT06795	8/10/2015	-31.48341	116.0423	*Eucalyptus* sp. indet.	500	No	No	No	
HT06796	8/10/2015	-31.48362	116.0423	*Eucalyptus* sp. indet.	380	No	No	No	

Name	Date	Latitude	Longitude	Tree species	DBH (mm)	Hollows present	Suitable for Carnaby's	Evidence of use by Carnaby's	Description
HT06797	8/10/2015	-31.48387	116.0421	*Corymbia calophylla*	740	No	No	No	
HT06798	8/10/2015	-31.48389	116.0423	*Eucalyptus* sp. indet.	300	No	No	No	
HT06799	8/10/2015	-31.48393	116.042	*Corymbia calophylla*	640	No	No	No	
HT06800	8/10/2015	-31.484	116.0419	*Corymbia calophylla*	660	No	No	No	
HT06801	8/10/2015	-31.484	116.0416	*Corymbia calophylla*	920	No	No	No	
HT06802	8/10/2015	-31.48414	116.0423	*Eucalyptus* sp. indet.	400	No	No	No	
HT06803	8/10/2015	-31.48425	116.0419	*Corymbia calophylla*	600	No	No	No	
HT06804	8/10/2015	-31.48428	116.0421	*Eucalyptus* sp. indet.	380	No	No	No	
HT06805	8/10/2015	-31.48432	116.0421	*Eucalyptus* sp. indet.	300	No	No	No	
HT06806	8/10/2015	-31.48443	116.042	*Corymbia calophylla*	640	No	No	No	
HT06807	8/10/2015	-31.48449	116.0423	*Corymbia calophylla*	700	No	No	No	
HT06808	8/10/2015	-31.48467	116.042	*Corymbia calophylla*	540	No	No	No	
HT06809	8/10/2015	-31.48464	116.0424	*Eucalyptus* sp. indet.	400	No	No	No	
HT06810	8/10/2015	-31.48462	116.0423	*Eucalyptus* sp. indet.	340	No	No	No	
HT06811	8/10/2015	-31.48559	116.0418	*Eucalyptus gomphocephala*	1140	No	No	No	
HT06812	8/10/2015	-31.48568	116.0416	*Eucalyptus gomphocephala*	740	No	No	No	
HT06813	8/10/2015	-31.486	116.0407	*Corymbia calophylla*	500	No	No	No	
HT08751	8/11/2015	-31.54864	115.9986	*Eucalyptus wandoo*	1000	Yes	Yes	Yes	
HT08752	8/11/2015	-31.54748	115.9998	*Eucalyptus wandoo*	900	Yes	Yes	Yes	
HT08753	8/11/2015	-31.48287	116.0433	*Eucalyptus wandoo*	900	Yes	Yes	Yes	
HT08754	8/11/2015	-31.52589	116.0291	*Eucalyptus wandoo*	1100	Yes	Yes	Yes	

Appendix B. Flora and Fauna assessment for the Muchea North and Chittering study area – Report Addendum (Phoenix, 2017)

PHOENIX
ENVIRONMENTAL SCIENCES

Flora and fauna assessment for the Muchea North and Chittering study area – Report Addendum

Great Northern Highway, Muchea to Wubin Upgrade Stage 2 Project

Prepared for Muchea to Wubin Integrated Project Team (Main Roads WA, Jacobs and Arup)

February 2017

Final report

Flora and fauna assessment for the Muchea North and Chittering study area – Report Addendum.

Great Northern Highway, Muchea to Wubin Upgrade Stage 2 Project.

Prepared for Muchea to Wubin Integrated Project Team (Main Roads WA, Jacobs and Arup)

Final Report

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Reviewer: Karen Crews

Date: 15 February 2017

Submitted to: Todd Jess, Carmelo Gumina

Version history			
Name	**Status**	**Version**	**Date**
K. Crews	Draft issued for client review	A	25 January 2017
K. Crews	Final issued to client	0	15 February 2017

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Abbreviations

CR – Critically Endangered

DBH – diameter at breast height

DoEE – Department of the Environment and Energy

DSEWPaC – Department of Sustainability, Environment, Water, Population and Communities

EN – Endangered

EPA – Environmental Protection Authority

EPBC Act – *Environmental Protection and Biodiversity Act 1999*

GNH – Great Northern Highway

GPS – Global Positioning System

NES – national environmental significance

P – Priority

sp. – species (singular)

spp. – species (plural)

subsp. – subspecies (singular)

VU – Vulnerable

WA – Western Australia

WC Act – *Wildlife Conservation Act 1950*

WoNS – Weed of National Significance

EXECUTIVE SUMMARY

In 2014, Main Roads WA established the Muchea to Wubin Integrated Project Team with industry partners Jacobs and Arup (the ASJV) to conduct a comprehensive planning review of the entire Muchea to Wubin link; Muchea to Wubin Upgrade Stage 2 (the Project). Phoenix Environmental Sciences Pty Ltd (Phoenix) was engaged by the ASJV to undertake a flora and fauna assessment for the Project.

The initial flora and fauna assessment was conducted for the Muchea North work package[1] (Muchea North) as part of the Project between October 2014 and October 2015 and is reported in Phoenix (2015). This report addendum documents an additional flora and fauna assessment undertaken for Muchea North in May–December 2016 to address changes to the study area and provide further information to inform the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) assessment for Muchea North.

The study area for the additional flora and fauna assessment of Muchea North work includes:

- gaps study area not previously surveyed in the initial flora and fauna assessment
- the phase 1 and phase 2 survey areas for Muchea North and Chittering study area (referred to here as initial study area that were part of the initial flora and fauna assessment (Phoenix 2015)
- extrapolation of native vegetation mapping within 500 m of the initial and gaps study areas and Carnaby's Black Cockatoo habitat extrapolation within 500 m of the Muchea North EPBC Act approval boundary.

The additional flora and fauna assessment comprised:

- Level 2 flora and vegetation survey in the gaps study area
- minor revisions to vegetation mapping in parts of the initial study area
- intensive transect searches for Threatened orchids listed under the EPBC Act in areas identified as suitable habitat in the initial study area and gaps study area.
- detailed field assessment and mapping distribution of the EPBC Act-listed *Banksia* Woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC) in the initial study area and gaps study area
- extrapolation of remnant native vegetation associations in the extrapolation study area
- Level 1 and, where necessary, targeted conservation significant fauna survey in the gaps study area
- survey of black cockatoo species including potential breeding trees, roosting and breeding sites, and mapping of breeding and foraging habitat in the gaps study area
- extrapolation of Carnaby's Black Cockatoo habitat in the Carnaby's habitat extrapolation study area.

Field surveys were undertaken primarily between October and November 2016 during the spring survey period. Where relevant, flora and fauna survey methodology was consistent with that employed in previous surveys of the initial study area.

[1] Referred to in Phoenix (2015) as Muchea North work package and Chittering work package.

A total of 61 plant taxa (including subspecies and varieties) representing 41 native species and 20 introduced species were recorded in the gaps study area. Of these, 19 species were not recorded in the previous surveys of the initial study area. One taxon could not be definitively identified to species level and one species to variety level as the specimens were sterile.

Two conservation significant flora were recorded in the survey. A total of 260 individuals of *Acacia drummondii* subsp. *affinis* (Priority 3) were recorded from 75 locations supplementing records of the species from the initial surveys. The new records occur in both the initial and gaps study areas. Three plants of *Anigozanthos humilis* subsp. *chrysanthus* (Priority 4) were recorded at one location in the gaps study area. This species was not recorded in the initial surveys.

Targeted transect searches in potential habitat in the initial study area and gaps study area for two EPBC Act orchids, *Thelymitra stellata* and *Drakaea elastica*, did not locate individuals of either species. Approximately 13.9 ha of habitat considered to have the potential to support *T. stellata* and 18.4 ha considered to have the potential to support *D. elastica* was mapped in the study area. However, in consideration of the survey results and definitions for critical habitat for EPBC Act-listed orchids, none of this habitat is considered to be habitat critical to the survival of either species.

Three declared pests were recorded in the gaps study area, **Asparagus asparagoides*(also a WoNS), **Moraea flaccida* and **Zantedeschia aethiopica*. The latter two were not recorded in the initial surveys.

Remnant native vegetation was mapped in 25.35 ha (31.71%) of the gaps study area and comprised 13 vegetation associations representing low to mid woodlands and forest, and shrublands. All but one of the vegetation associations were previously recorded in the initial study area, vegetation association 1182 Medium woodland; *Eucalyptus rudis* and *Melaleuca rhaphiophylla*.

The condition of native vegetation in the study area ranged from Degraded to Pristine, with Excellent and Pristine vegetation condition comprising 2.88 ha and 0.02 ha respectively.

The presence of the *Banksia* Woodlands of the Swan Coastal Plain TEC was confirmed in the initial study area and gaps study area. Based on the assessment, the TEC occupies four patches covering 59.71 ha of the study areas.

Three fauna habitat types were mapped within remnant native vegetation of the gaps study area based on aggregations of the mapped vegetation associations, with all remnant vegetation mapped as woodland (Jarrah, Marri and/or *Banksia*) habitat. One conservation significant species was recorded frequently within the gaps study area during the field surveys, Carnaby's Black Cockatoo *Calyptorhynchus latirostris* (Endangered EPBC Act and WC Act).

Up to 14 conservation significant fauna species may occur in the gaps study area, in particular in woodland habitats that are contiguous with larger areas of native vegetation in the initial study area and outside the study areas.

Records from the current survey extended the extent of breeding and foraging habitat for Carnaby's Black Cockatoo at Muchea North into parts of the gaps study area. This included records of seven nesting trees that were confirmed with evidence of current or recent use by the species, an additional 10 potential breeding trees with hollows suitable for breeding and 19.33 ha mapped as quality foraging habitat.

1 INTRODUCTION

Phoenix Environmental Sciences Pty Ltd (Phoenix) was commissioned by the Muchea to Wubin Integrated Project Team (Main Roads WA, Jacobs and Arup) to undertake flora and fauna assessments for the Muchea to Wubin Upgrade Stage 2 (the Project). The Project is supporting a significant program of works by Main Roads WA to improve safety and efficiency of the 218-km section of the Great Northern Highway (GNH) between Muchea and Wubin, north of Perth, to meet National Highway Standards.

The initial flora and fauna assessment relevant to this report addendum was conducted for the Muchea North work package[2] (Muchea North) as part of the Project between October 2014 and October 2015 and is reported in Phoenix (2015). This report addendum documents an additional flora and fauna assessment conducted for Muchea North in May–December 2016 and is supplementary to Phoenix (2015).

1.1 BACKGROUND

The initial flora and fauna assessment (Phoenix 2015) for Muchea North was undertaken to support environmental approvals for proposed upgrade works within Muchea North, including an environmental assessment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and native vegetation clearing permit under the *Environmental Protection* (Clearing of Native Vegetation) Regulations 2004.

The additional flora and fauna assessment was primarily undertaken to address changes to the study area and provide further information the EPBC Act assessment for Muchea North. It included baseline surveys in previously unsurveyed areas of the Muchea North EPBC Act approval boundary, vegetation extrapolation beyond the study area to comply with current survey guidelines and targeted work for EPBC Act-listed species and communities (matters of national environmental significance; NES) of potential relevance to Muchea North, as outlined below.

The Department of the Environment and Energy (DoEE) has deemed Muchea North a controlled action under the EPBC Act, with a contributing factor being a known Department of Parks and Wildlife (DPaW) population of the Star Sun-orchid (*Thelymitra stellata*) listed as Endangered under the EPBC Act, adjacent to the Muchea North EPBC Act approval boundary (along Blue Plains Road). Searches were conducted in September 2015 at the known location and in suitable habitat within the Muchea North and Chittering study area but the species was not located (Phoenix 2015). Further field surveys subsequently conducted for *T. stellata*, and one other EPBC Act-listed Threatened orchid, the Glossy-leaved Hammer Orchid (*Drakaea elastica*), are reported here.

Thelymitra stellata is endemic to southwestern WA with the known distribution fairly disjunct extending over a large area from Lake Grace south of Perth to Mount Lesueur National Park (NP) in the north. The majority of 23 known records for this species (DPaW 2016b) occur approximately 150 km north of Muchea in the vicinity of Mount Lesueur NP. The conservation advice for the species (DSEWPaC 2008) noted a total of 23 populations with the majority numbering less than 10 plants. *Thelymitra stellata* grows in a range of habitats across its distribution but in the Muchea area it grows amongst low shrubs in mixed woodland/forest of *Eucalyptus wandoo*, *E. marginata* and *Corymbia calophylla* in lateritic loams or gravelly soils (DPaW 2016b).

[2] Referred to in Phoenix (2015) as Muchea North work package and Chittering work package.

Drakaea elastica is also endemic to the south west of WA and is known from 42 populations from the Swan Coastal Plain over a range of approximately 350 km between Cataby in the north and Busselton in the south (DEC 2009). The species grows on bare patches of sand located within dense vegetation in low-lying areas alongside winter-wet swamps, typically in banksia (*Banksia menziesii, B. attenuata* and *B. ilicifolia*) woodland or spearwood (*Kunzea glabrescens*) thicket vegetation. *Drakaea elastica* often co-occurs with other orchid species including *D. glyptodon, D. livida* and *Paracaleana nigrita* (DEC 2009). Increased rates of survival in sites with relatively little direct sun exposure indicate a requirement for a shady canopy cover to be present.

Foraging and breeding habitat for Carnaby's Black Cockatoo (*Calyptorhynchus latirostris*) was mapped in the study area during the initial flora and fauna assessment of Muchea North and the species was confirmed to utilise the Muchea North area for breeding and foraging. Carnaby's Black Cockatoo is listed as Endangered under the EPBC Act. Additional surveys subsequently conducted for Carnaby's Black Cockatoo, including habitat assessments in previously unsurveyed areas of the Muchea North EPBC Act approval boundary and beyond it, are reported here.

The *Banksia* Woodlands of the Swan Coastal Plain Threatened Ecological Community (TEC) was listed as Endangered under the EPBC Act in September 2016 (Threatened Species Scientific Committee 2016). This ecological community is characterised by dominant *Banksia* species, high endemism and considerable localised variation in species composition across its range (Threatened Species Scientific Committee 2016). As *Banksia* woodland vegetation associations were recorded in the Muchea North and Chittering study area in the initial flora and fauna assessment (Phoenix 2015), a subsequent field survey was conducted in spring 2016 to determine if any of these were representative of the TEC.

1.2 STUDY AREA

The study area for the additional flora and fauna assessment of Muchea North work package is shown in Figure 1-1 and includes:

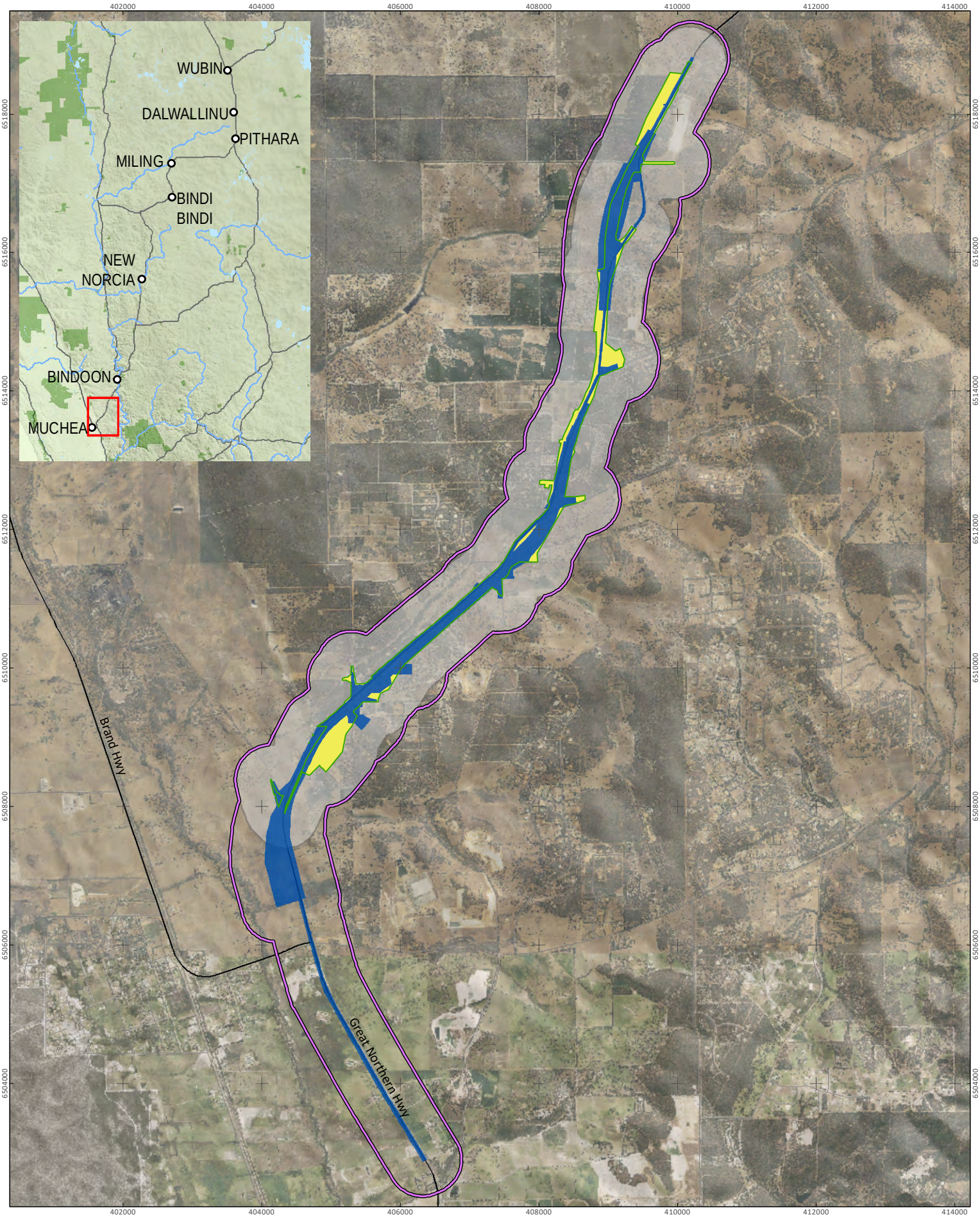
- **gaps study area** (76.8 ha), representing areas within the application area for the Muchea North *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) approval boundary that were not previously surveyed in the initial flora and fauna assessment
- the phase 1 and phase 2 survey areas for Muchea North and Chittering study area (referred to here as **initial study area**; 302.6 ha) that were part of the initial flora and fauna assessment (Phoenix 2015). Approximately 159 ha of the initial study area occurs within the current Muchea North EPBC Act approval boundary.
- native vegetation within 500 m either side of the initial study area and gaps study area (**extrapolation study area**; 2,507.3 ha).
- native vegetation within 500 m either side of the Muchea North EPBC Act approval boundary (**Carnaby's habitat extrapolation study area**; 1,541.5 ha).

Survey work undertaken in each study area was highly variable and is explained in section 1.3.

1.3 SCOPE OF WORK

The scope of works for the additional flora and fauna assessment was as follows:

- Level 2 flora and vegetation survey in the **gaps study area**
- minor revisions to vegetation mapping in parts of the **initial study area**
- intensive transect searches for Threatened orchids listed under the EPBC Act in areas identified as suitable habitat in the **initial study area and gaps study area**.
- detailed field assessment and mapping distribution of the *Banksia* Woodlands of the Swan Coastal Plain TEC in the **initial study area and gaps study area**
- extrapolation of remnant native vegetation associations in the **extrapolation study area**
- Level 1 and, where necessary, targeted conservation significant fauna survey in the **gaps study area**
- survey of black cockatoo species including potential breeding trees, roosting and breeding sites, and mapping of breeding and foraging habitat in the **gaps study area**
- extrapolation of Carnaby's Black Cockatoo habitat in the **Carnaby's habitat extrapolation study area**.



Jacobs

Flora and fauna assessment for the Muchea North study area – Report Addendum.

Project No	1121
Date	17-Jan-17
Drawn by	KW
Map author	KC

0 0.25 0.5 1 1.5 2 2.5
Kilometres

1:70,000 (at A4) GDA 1994 MGA Zone 50

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- Gaps study area
- Initial study area
- Muchea North EPBC Act approval boundary
- Native vegetation extrapolation study area
- Black cockatoo habitat extrapolation study area

Figure 1-1

Project location and study area

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2 METHODS

Field surveys were undertaken on 18 May 2016, and over several trips between 5 September and 15 December 2016.

Where applicable, survey methodology was consistent with that employed in previous surveys of the initial study area (Phoenix 2015). The surveys were also conducted in accordance with relevant state and federal guidelines, including:

- EPA Environmental Factor Guideline: Flora and vegetation (EPA 2016c)
- EPA Technical Guidance: Flora and vegetation surveys for Environmental Impact Assessment (EPA 2016a).
- EPA Environmental Factor Guideline: Terrestrial fauna (EPA 2016b)
- EPA Technical Guidance: Terrestrial fauna surveys (EPA 2016d)
- EPBC Act referral guidelines for threatened black cockatoo species (DSEWPaC 2012)
- EPBC Act survey guidelines for Australia's threatened orchids. Guidelines for detecting orchids listed as 'Threatened' under the *Environmental Protection and Biodiversity Conservation Act 1999* (Department of the Environment 2014).

Total field hours were 196 for flora and vegetation related tasks and 114 for fauna related tasks, inclusive of travel time.

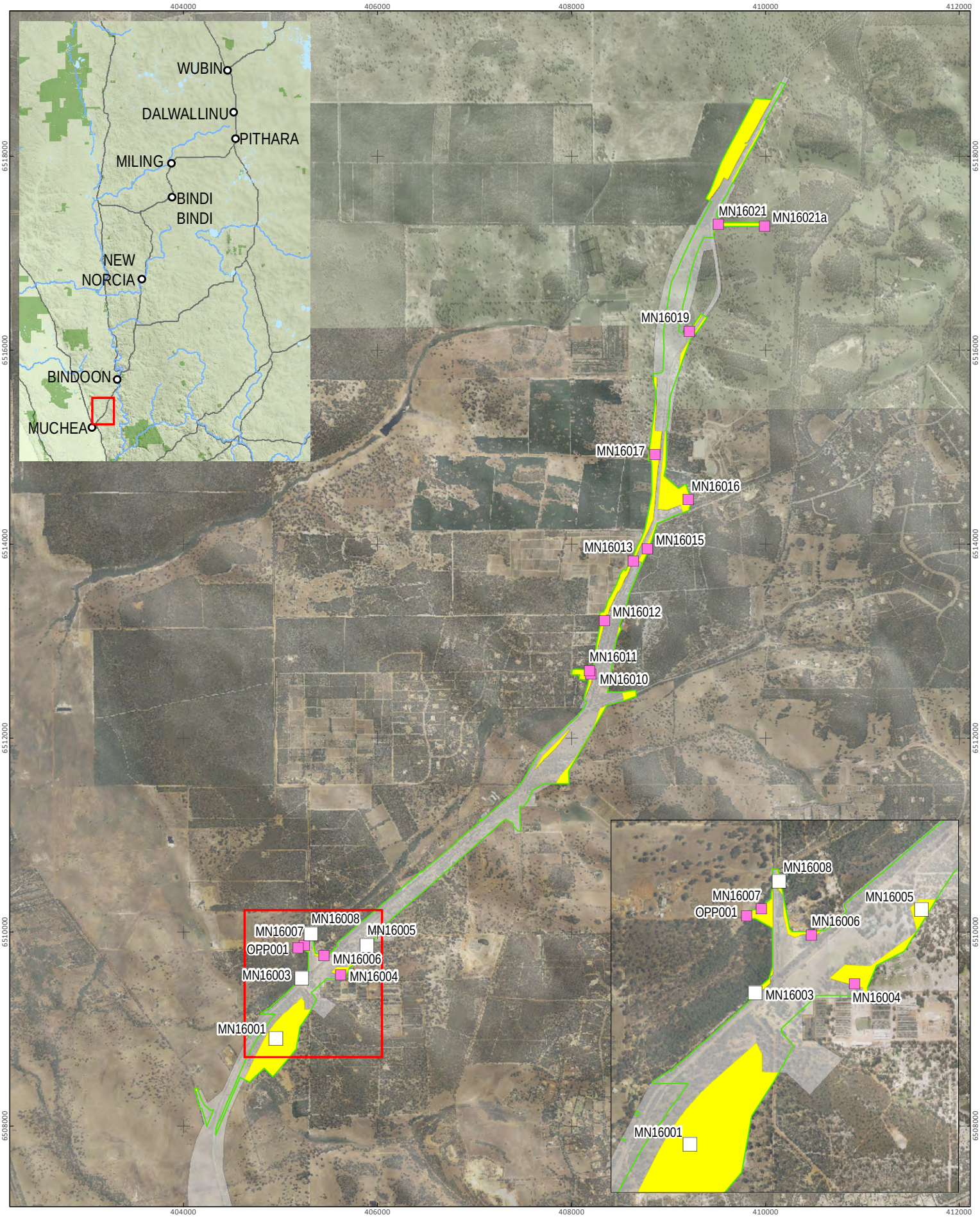
2.1 LEVEL 2 FLORA SURVEY (GAPS STUDY AREA)

2.1.1 Quadrat and relevé selection

Four quadrats and 14 relevés were sampled in the gaps study area (Figure 2-1; Appendix 1). Quadrat locations were selected to ensure that an adequate representation of the major vegetation types and flora present was sampled, and considered existing quadrat locations in adjacent previously surveyed areas. Quadrat and relevé sampling was conducted in accordance with the methods outlined in Phoenix (2015).

2.1.2 Vegetation community and condition mapping

The vegetation descriptions from quadrats were grouped according to similarity of community structure (i.e. canopy levels) and species composition. These were then matched with vegetation associations of Shepherd *et al.* (2002) based on predominant overstorey species or combination of species and prevalent community structure, in accordance with methods outlined in Phoenix (2015). The vegetation boundaries were mapped utilising high quality colour aerial photography (supplied) and from vegetation boundaries recorded on a global positioning system (GPS) during the field survey. Vegetation mapping also considered mapped vegetation associations in adjacent previously surveyed areas, where relevant.



Jacobs
Flora and fauna assessment for the Muchea North study area – Report Addendum.

Project No	1121
Date	24-Jan-17
Drawn by	KW
Map author	KC

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- Quadrat
- Relevé
- Muchea North EPBC Act approval boundary
- Gaps study area
- Initial study area

Figure 2-1

Survey site locations

PHOENIX ENVIRONMENTAL SCIENCES

2.1.3 Targeted flora searches

Targeted searches for conservation significant flora focussed on species identified in the desktop review in Phoenix (2015). Prior to the field survey, a list of potential flora was prepared for the study area based on species that have been recorded in or near the work package (Table 2-1). The targeted searches were conducted between 5 October and 3 November 2016.

The status of flora species identified in the desktop review (Phoenix 2015) was checked against the EPBC Act (Department of the Environment and Energy 2017), the *Wildlife Conservation Act 1950* (WC Act) (Western Australian Government 2017) and the DPaW Priority flora list (DPaW 2017a) prior to the survey to check currency of conservation status and identify any new additions.

In the field, targeted searches and data collection were conducted in accordance with methods outlined in Phoenix (2015). The searches focussed on habitats considered likely to contain or support conservation significant flora, with most remnant vegetation patches traversed by foot. Searches were conducted at the locations of all known previous records of conservation significant flora in the initial and gaps study areas to re-locate these populations and determine the state of plants (flowering, fruiting).

Table 2-1 Target conservation significant flora of the gaps study area

Species	Common name	Conservation status[1]		
		EPBC Act	WC Act	DPaW list
Acacia anomala	Grass Wattle	VU	VU	
Acacia drummondii subsp. *affinis*				P3
Andersonia gracilis	Slender Andersonia	EN	VU	
Anigozanthos viridis subsp. *terraspectans*	Dwarf Green Kangaroo Paw	VU	VU	
Caladenia huegelii	King Spider-orchid, Grand Spider-orchid	EN	CR	
Chamaescilla gibsonii				P3
Chamelaucium sp. Gingin (N.G. Marchant 6)	Gingin Wax	EN	VU	
Conospermum densiflorum subsp. *unicephalatum*	One-headed Smokebush	EN	EN	
Cyathochaeta teretifolia				P3
Darwinia foetida	Muchea Bell	CR	EN	
Daviesia debilior ssp. *sinuans*				P3
Diuris micrantha	Dwarf Bee-orchid	VU	VU	
Diuris purdiei	Purdie's Donkey-orchid	EN	EN	
Drakaea elastica	Glossy-leaved Hammer Orchid	EN	CR	
Eucalyptus x *balanites*	Cadda Road Mallee, Cadda Mallee	EN	CR	
Eucalyptus leprophloia	Scaly Butt Mallee, Scaly-butt Mallee	EN	EN	
Grevillea althoferorum subsp. *fragilis*		EN	CR	
Grevillea corrugata		EN	VU	
Grevillea curviloba subsp. *curviloba*	Curved-leaf Grevillea	EN	CR	
Grevillea curviloba subsp. *incurva*	Narrow curved-leaf Grevillea	EN	EN	
Hibbertia glomerata subsp. *ginginensis*				P1
Hypolaena robusta				P4
Jacksonia pungens	Pungent Jacksonia	EN	CR	
Leucopogon cymbiformis				P2

Species	Common name	Conservation status[1]		
		EPBC Act	WC Act	DPaW list
Millotia tenuifolia var. *laevis*				P2
Persoonia sulcata				P4
Stylidium squamellosum	Maize Trigger Plan			P2
Stylidium striatum	Fan-leaved Triggerplant			P4
Synaphea grandis				P4
Thelymitra dedmaniarum	Cinnamon Sun Orchid	EN	CR	
Thelymitra stellata	Star Sun-orchid	EN	EN	
Verticordia lindleyi subsp. *lindleyi*				P4
Verticordia serrata var. *linearis*				P3

[1] CR – Critical; EN – Endangered; VU – Vulnerable; P – Priority.

2.2 TRANSECT SEARCHES FOR EPBC ACT ORCHIDS (INITIAL STUDY AREA AND GAPS STUDY AREA)

A detailed desktop assessment was conducted for EPBC Act-listed orchids that have previously been recorded adjacent to, or within 20 km of, the study area to determine detectability of the species (Table 2-2). The assessment identified two species with potential to occur in the study area:

- *Drakaea elastica* Lindl. (Glossy-leaved Hammer Orchid; CR under the EPBC Act, EN under the WC Act)
- *Thelymitra stellata* Lindl. (Star Sun-orchid; EN under the EPBC Act and WC Act).

Thelymitra stellata was identified in the desktop review for the initial flora and fauna assessment (Phoenix 2015) but *Drakaea elastica* was only identified through this additional study due to the widened search area and an increased focus on the detection of EPBC Act-listed orchids.

Field surveys were undertaken in the study area for *T. stellata* and *D. elastica* in accordance with the 'Guidelines for detecting orchids listed as 'Threatened' under the EPBC Act (Department of the Environment 2014).

The field surveys included:

- quadrat survey of flora and vegetation in areas of the previous known locations near the study area
- transect foot searches in suitable habitat for plants of the target species marking any evidence of presence, e.g on-ground markers of emergent leaves.

Quadrat surveys were initially undertaken at previously located populations of *T. stellata* and *D. elastica* in the vicinity of the study area to characterise the local known habitat of each species (Figure 2-2; Figure 2-3). Habitat matching for each species was undertaken through a combination of habitat descriptions from DPaW records (DEC 2009; DPaW 2016a) and from site descriptions of the known locations made during the survey. Delineation of areas of suitable habitat was then undertaken by matching dominant species and soil characteristics of vegetation within the study area to the known populations.

Transect foot searches were conducted for *T. stellata* and *D. elastica* in all potential habitat identified for each species in the study area (Figure 2-2; Figure 2-3). Timing for *T. stellata* transect

searches was determined by reviewing climate data and monitoring the Blue Plains Road population (Figure 2-2). Survey timing for *D. elastica* was undertaken in the known flowering period without ground confirmation of flowering individuals. This was not considered necessary due to the distinctive glossy leaves, making this species detectable over a longer survey period (Department of the Environment 2014).

Two rounds of transect searches were conducted for *T. stellata*. The first was conducted between 25 October and 11 November 2016 and was timed to co-incide with initial detection of flowering individuals at the Blue Plains Road population. The second round of searches was conducted between 11 and 25 November 2016 towards the end of the flowering season and was designed to detect any late flowering individuals. Known populations were visited regularly to assess the reproductive stage of flowering plants.

One round of transect searches was conducted for *D. elastica* between 20 September and 10 October 2016.

Table 2-2 Orchid detectability information (Department of the Environment 2014)

Species	EPBC Act status[1]	WC Act status[1]	Landscape-scale habitat	Peak detectability	Similar species	Nearest record
Drakaea elastica Lindl. (glossy-leaved hammer-orchid)	EN	CR	In sandy soil adjacent to winter-wet depressions, swamps and water courses, growing in mixed woodlands, often under *Kunzea* species	Peak flowering period: late September to early November Dormant between December and late April *Drakaea elastica* prefers open sites and is often found on old, disused tracks and firebreaks	Similar species: *Drakaea concolor* (Kneeling hammer orchid) T VU	Approx. 18 km north of study area.
Thelymitra stellata Lindl. (star sun-orchid)	EN	EN	Lateritic soil, growing amongst low heath and scrub in jarrah (*Eucalyptus marginata*) woodland, on ridges, slopes, and breakaways	Peak flowering period: late October in northern populations and early November near Perth. Flowers remain closed during cool overcast weather	Similar species: *Thelymitra magnifica*	Approx. 63 m east of the study area.

[1] CR – Critically Endangered; EN – Endangered.

In planning and conducting the surveys, several aspects of the guidelines (Department of the Environment 2014) were taken into consideration (Table 2-3; Table 2-4).

Table 2-3 Consideration of EPBC Act orchid survey guidelines for the *Thelymitra stellata* survey

Aspect	Guideline	This survey
Survey intensity	Surveys should be conducted along parallel line transects approximately 5–10 m apart, depending on the visibility of the orchid and the density of vegetation; for *Thelymitra stellat*a, which is not habitat specific, transects should be walked at 6 m intervals, searching within 3 m on either side	Transects were conducted at 6–10 m spacings depending on the density of understory species. *T. stellata* is a large showy orchid making it relatively easy to locate when in flower.
Sampling strategy	To maximise likelihood of detection search efforts should be targeted in habitat favoured by the species; however, other similar habitats should not be excluded from survey designs, unless it is well established that these habitat types are consistently less favoured by the target species, as other ecological conditions could be associated with the orchid.	All habitats considered to have potential for *T. stell*ata to occur were surveyed.
Leaf morphology	When underground tubers re-sprout, leaves usually emerge many months before flowering; the leaves may be difficult to distinguish from other vegetation but may be an indication of possible locations and warrant follow-up visits.	Any *Thelymitra* sp. leaves observed during reconnaissance or other targeted surveys were noted and monitored until identification could be determined at flowering time.
Life history	Occurrence of natural hybridisation and variation in floral morphology; closely related orchid species should be collected and recorded, e.g. *T. magnifica*,	No similar taxa to *T. stellata* were recorded.
Extent of known populations	Most orchids survive underground for extended periods of time, do not flower every year and in any population there may be more vegetative plants than flowering plants. This means flowering plants will occur in different places each year and warrant intensive transect searches both in the study area and the vicinity of known locations.	Habitat in the vicinity of known *T. stellata* populations (Blue Plains Road) was characterised to inform habitat mapping within the study area. Transect searches were undertaken at three known populations to locate individuals of *T. stellata*.
Disturbed areas	Some species only flower after certain disturbance events, e.g. summer fire during species dormancy.	*T. stellata* is not dependent on summer fire or disturbance events for flowering or establishment.
Optimal timing for surveys, e.g. flowering times and review of climate data	Most orchids flower over a short period, usually in the order of weeks. Some flower only for a few days, making detectability dependent on the accurate timing of surveys. The guidelines indicate optimal timing of survey for *T. stellata* is October to November in the vicinity of the study area.	A local plant was monitored to determine optimal timing to undertake transect searches. The commencement of flowering at a known location triggered the first round of surveys. The second round of surveys was completed as soon as possible after the second round but not sooner than two weeks after the first round.

Aspect	Guideline	This survey
		Weather conditions during the transect searches for *T. stellata* were generally warm and sunny. Based on the high number of common orchid species observed during the surveys, climatic conditions were favourable for the targeted searches for *T. stellata*.
Appearance of species	Recognition of species using photographs and/or herbarium specimens	Dr Andrew Batty attended all transect searches and carried out identifications for *T. stellata*. Photographs of *T. stellata* on Florabase and insitu at the Blue Plains Road population were used to inform the survey.

Table 2-4 Consideration of EPBC Act orchid survey guidelines for the *Drakaea elastica* survey

Aspect	Guideline	Actual
Survey intensity	Surveys should be conducted along parallel line transects approximately 5–10 m apart, depending on the visibility of the orchid and the density of vegetation. For *Drakaea elastica*, which is not habitat specific, transects should be walked at 6 m intervals, searching within 3 m on either side	Transects were completed at 10 m spacings depending on the density of understory species to locate specific sand lenses. Sand lenses were then searched in detail for individuals of *D. elastic*a leaves or flowers.
Sampling strategy	To maximise the likelihood of detecting the species search efforts should be targeted in habitat favoured by the species; however, other similar habitats should not be excluded from survey designs unless it is well established that these habitat types are consistently less favoured by the target species as other ecological conditions could be associated with the orchid. *D. elastica* grows in bare sand patches. Areas with a continuous layer of organic matter are not considered suitable habitat.	All habitat considered to have potential for *D. elastica* was surveyed.
Leaf morphology	When underground tubers re-sprout, leaves usually emerge many months before flowering. The leaves of *D. elastica* are readily distinguishable from other similar species as they are glossy and light green.	Leaves and/or flowers of *D. elastica* were targeted during the surveys.
Life history	Occurrence of natural hybridisation and variation in floral morphology; closely related orchid species should be collected and recorded, i.e. other *Drakaea* species	No similar taxa were recorded.
Extent of known populations	Most orchids survive underground for extended periods of time, do not flower every year and in any population there may be more vegetative plants than flowering plants. This means flowering plants will occur in different places each year and warrant intensive	Habitat at a known *D. elastica* population was characterised to inform habitat mapping within the study area.

Aspect	Guideline	Actual
	transect searches both in the study area and the vicinity of known locations.	
Disturbed areas	Some species only flower after certain disturbance events, e.g. summer fire during species dormancy.	*D. elastica* is not dependent on summer fire or disturbance events for flowering or establishment.
Optimal timing for surveys	Most orchids flower over a short period, usually in the order of weeks. Some flower only for a few days, making detectability dependent on the accurate timing of surveys. The exceptions are those few species with distinctive leaves (such as *D. elastica*) that are recognisable over a longer period. The optimal timing for surveys for *D. elastica* is from late September to October.	The surveys for *D. elastica* were conducted during the known flowering period. Searches targeted both the flowers and disinctive glossy leaves. Based on the high number of common orchid species observed during the surveys, climatic conditions were favourable for the targeted searches for *D. elastica*.
Appearance of species	Recognition of species using photographs and/or herbarium specimens	Dr Andrew Batty attended all transect searches and carried out identifications as required. Photographs of *D. elastica* on Florabase were used to inform the survey.

Jacobs
Great Northern Highway,
Muchea to Wubin Upgrades Project

Project No	1121
Date	15-Feb-17
Drawn by	KW
Map author	AB

0 10 20 40 60 80
Kilometres

1:2,052,438 (at A4) GDA94 MGA zone 50

- Muchea North EPBC Act approval boundary
- Known *Thelymitra stellata* populations (DPaW)
- Known *Thelymitra stellata* habitat (Blue Plains Rd)
- Demarcated *Thelymitra stellata* population (Blue Plains Rd)
- Survey transects
- Quadrat sites
- Phoenix *Thelymitra stellata* record
- Suitable *Thelymitra stellata* habitat

Figure 2-2

Thelymitra stellata potential habitat, survey transects and known locations

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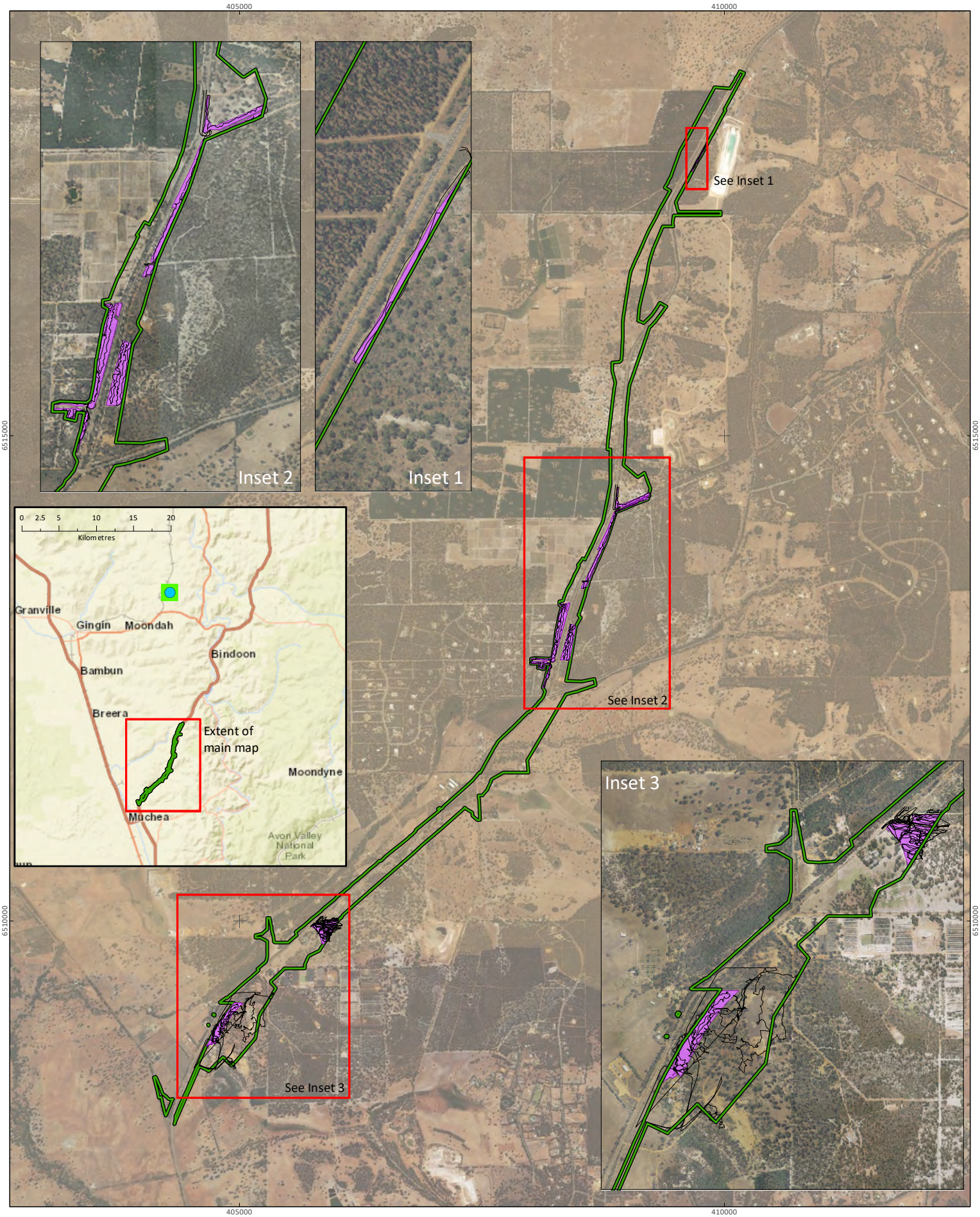

Jacobs
Great Northern Highway,
Muchea to Wubin Upgrades Project

Project No	1121
Date	24-Jan-17
Drawn by	KW
Map author	AB

0 0.25 0.5 1 1.5 2
Kilometres

1:50,000 (at A4) GDA 1994 MGA Zone 50

- Muchea North EPBC Act approval boundary
- Known *Drakaea elastica* population (DPaW)
- Survey transects
- Quadrat Site
- Suitable *Drakaea elastica* habitat

Figure 2-3

***Drakaea elastica* potential habitat, survey transects and known location**

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2.3 *BANKSIA* WOODLANDS OF THE SWAN COASTAL PLAIN TEC ASSESSMENT (INITIAL STUDY AREA AND GAPS STUDY AREA)

The extent of the *Banksia* Woodlands of the Swan Coastal Plain TEC was asessed in the field using a key (Appendix 2) and customised data collection template derived from conservation advice for TEC (Threatened Species Scientific Committee 2015). Key diagnostic features include a prominent tree layer of *Banksia*, with scattered eucalypts and other tree species often present among or emerging above the *Banksia* canopy (Threatened Species Scientific Committee 2016). The understorey is a species rich mix of sclerophyllous shrubs, graminoids and forbs. The ecological community is characterised by a high endemism and considerable localised variation in species composition across its range (Threatened Species Scientific Committee 2016).

Using vegetation mapping already completed for the study area (Phoenix 2015) seven locations were identified as potential TEC patches (i.e. a discrete and mostly continuous area of the ecological community) and required field assessment to determine if they meet all the criteria outlined in the conservation advice. At each potential patch, the area was traversed on foot taking note of:

- soil characteristics and land form
- dominant, co-dominant and emergent tree species and associated canopy cover values
- diversity of shrub layer
- diversity of ground layer
- condition of vegetation
- any variations in vegetation structure representing gaps.

Ten TEC sites (10 x 10 m) were assessed, in addition to data from five vegetation quadrat sites from the initial flora and fauna assessment (Phoenix 2015) on 23 November 2016 (Figure 3-5). The quadrat data was used to supplement data from the TEC assessment sites as it contained an inventory of early spring flowering species such as orchids not present during the field TEC assessment.

In determining the presence of the TEC, features of the remnant woodland patch including soils and landform (mainly sandplain landforms, sandy colluvium and aeolian sands on hills), one or more key *Banksia* species dominant (>2%) or co-dominant, co-dominant tree canopy other than *Banksia* species (not TEC if dominant), emergent trees >10 m tall, native understorey (sclerophyllous shrub and herbaceous ground layer species), patch size (Pristine - no minimum patch size, Excellent - minimum 0.5 ha, Very Good - 1 ha, Good 2 ha) and vegetation condition (rating at least Good were considered (refer to Appendix 2 for detailed information). This necessitated establishing the area of the patch in the field. Subsequently, prior to undertaking the field assessment, maps of the remnant woodland patches throughout the study area that potentially represented the TEC were uploaded to digital tablets.

The condition of the vegetation at each patch was determined using the condition scale in the conservation advice (Threatened Species Scientific Committee 2016), which is based on Keighery (1994) (Table 2-5). Based on the definition of a patch (see Appendix 2) any gaps greater than 30 m were recorded as the boundary of the patch. Minimum patch size requirements were also taken into account, in accordance with the conservation advice (Threatened Species Scientific Committee 2015). Relevant condition and minimum patch size requirements for the TEC are detailed in Table 2-6.

Table 2-5 Condition categories and indicative measures/thresholds for assessment (Threatened Species Scientific Committee 2015).

Vegetation condition rating	Indicative condition measures/thresholds	
	Typical native vegetation composition	Typical weed cover
Pristine No obvious signs of disturbance	Native plant species diversity fully retained or almost so	Zero or almost so weed cover/abundance
Excellent Vegetation structure intact Disturbance only affecting individual species Weeds are non-aggressive species	High native plant species diversity	Less than 10%
Very Good Vegetation structure altered Obvious signs of disturbance eg: from repeated fires, dieback, logging, grazing Aggressive weeds present	Moderate native plant species diversity	5–20%
Good Vegetation structure altered but retains basic vegetation structure or ability to regenerate it Obvious signs of disturbance, e.g. from partial clearing, dieback, logging, grazing Presence of very aggressive weeds	Low native plant species diversity To be considered as part of the EPBC Act ecological community a patch should meet at least the Good condition category	5–50%
Degraded Basic vegetation structure severely impacted by disturbance. Requires intensive management Disturbance evident such as partial clearing, dieback, logging and grazing Presence of very aggressive weeds at high density	Very low native plant species diversity	20–70%
Completely Degraded Vegetation structure is no longer intact and the area is completely or almost completely without native flora Equivalent to 'Parkland Cleared'	Very low to no native species diversity	Greater than 70%

Table 2-6 Condition and minimum patch size of *Banksia* Woodlands of the Swan Coastal Plain ecological community

Condition rating	Minimum patch size (ha)
Pristine	No minimum patch size applies
Excellent	0.5
Very Good	1.0
Good	2.0

2.4 EXTRAPOLATION OF REMNANT NATIVE VEGETATION ASSOCIATIONS (EXTRAPOLATION STUDY AREA)

Remnant native vegetation was extrapolated in accordance with methodology outlined in EPA Technical Guidance (EPA 2016a). Vegetation associations mapped in the initial study area and gaps study area (based on vegetation descriptions from quadrats/relevés and matching with vegetation associations of Shepherd *et al.* (2002)) were assigned to native vegetation present within 500 m of the study areas. This was done by matching similar features visible on high quality colour aerial photography (supplied), native vegetation extent and contour lines utilising ArcGIS software.

2.5 LEVEL 1 AND TARGETED CONSERVATION SIGNIFICANT FAUNA SURVEY (GAPS STUDY AREA)

The level 1 and targeted level 2 fauna assessment entailed:

- habitat assessment and mapping
- assessment of the likelihood of occurrence for conservation significant fauna within the study area
- targeted searches for conservation significant species.

Survey methods were consistent with those in Phoenix (2015). Targeted searches for conservation significant fauna focussed on species identified in the desktop review in Phoenix (2015). The current status of Threatened and Priority fauna was checked prior to the survey. Searches were conducted in areas containing suitable habitat or adjacent to areas of suitable habitat occurring outside of the gaps study area considered suitable to support conservation significant fauna.

2.6 SURVEY OF BLACK COCKATOO SPECIES (GAPS STUDY AREA)

The following assessment was conducted for black cockatoo species in the gaps study area:

- survey of potential breeding trees, roosting sites and feeding sites for black cockatoo species, particularly Carnaby's Black Cockatoo
- mapping of breeding and foraging habitat for Carnaby's Black Cockatoo
- mapping of foraging habitat for Forest Red-tailed Black Cockatoo.

Survey methods were consistent with those in Phoenix (2015).

2.1 EXTRAPOLATION OF CARNABY'S BLACK COCKATOO HABITAT (CARNABY'S HABITAT EXTRAPOLATION STUDY AREA)

The potential extent of Carnaby's Black Cockatoo potential foraging and breeding habitat was extrapolated within a 500 m buffer of the Muchea North EPBC Act approval boundary. Vegetation associations and Carnaby's Black Cockatoo habitat mapped in the initial study area (Phoenix 2015) and gap study area were initially used to map tentative habitat values within the Carnaby's habitat extrapolation study area. The tentative mapping was then ground-truthed in the field during a reconnaissance survey.

During the field survey, a high level Carnaby's Black Cockatoo habitat assessment was undertaken to refine areas of potential foraging and breeding habitat. Potential habitat was classified as foraging, breeding, or a combination of foraging and breeding.

Foraging habitat was identified based on brief inspection for the presence of known foraging species which were then ranked as quality or low value, taking into account presence and abundance (particularly species of high foraging value such as Marri and *Banksia* species), and general condition of the vegetation. Breeding habitat was identified based on the presence of known breeding tree species; however, no individual tree assessments were undertaken. The occurrence and extent of suitable or active nesting hollows was therefore not determined.

2.2 TAXONOMY AND NOMENCLATURE

Species that were well known to the survey botanists were identified in the field, while unknown and unconfirmed species were collected and assigned a unique voucher number to facilitate tracking. All plant voucher specimens collected during the field program were preserved in accordance with the requirements of the WA Herbarium. Plant species were identified using local and regional flora taxonomic keys, and comparisons with named species held at the WA Herbarium.

The conservation status of all recorded flora was compared against current lists on FloraBase (DPaW 2017a), the Protected Matters Database (Department of the Environment and Energy 2017) and the most recent Wildlife Conservation Notice (Western Australian Government 2017). Nomenclature for flora and vegetation follows that used by FloraBase (DPaW 2017a) and the WA Herbarium.

2.3 SURVEY PERSONNEL

The personnel involved in the survey are presented below (Table 2-7).

Table 2-7 Project team

Name	Qualifications	Role/s
Mrs Karen Crews	BSc (Env. Biol.) (Hons)	Project manager and report review
Dr Grace Wells	PhD (Plant Conservation)	Coordinator of field program, GIS, vegetation mapping, data management and report writing
Dr Grant Wells	PhD (Botany)	Field surveys, taxonomy, data analysis, report writing
Mr Jarrad Clark	BSc (Env. Mgt.)	Field surveys, data management
Mr Ryan Ellis	Dipl (Cons. Land Mgt)	Field surveys, report writing
Dr Andrew Batty	PhD (Botany)	Field surveys, vegetation mapping, data analysis, report writing
Ms Catherine Krens	BSc (Env Science)	Field surveys
Ms Gabriela Martinez	BSc (Env Science)	Field surveys
Mr Ben Eckermann	BSc (Env. Science), Grad. Cert. Sci. (Land and Water Mgmt.)	Field surveys
Mr Tony Kirkby		Field surveys (black cockatoo assessment)
Mr Frank Obbens	BSc (Biology) (Hons)	Taxonomy
Mrs Kathryn Wyatt	BIS. (GIS), Grad. Cert. (GIS)	GIS, data analysis

3 RESULTS

3.1 SURVEY LIMITATIONS

The limitations of the surveys have been considered in accordance with the potential survey limitations listed in EPA Technical Guidance (EPA 2016c, d) (Table 3-1).

Table 3-1 Limitations and constraints associated with the field survey

Variable	Impact on survey outcomes
Availability of contextual information	**Not a constraint for flora**. Existing information on the vegetation and land systems of the study area has been mapped by Shepherd *et al*. (2002). Access to online floristic records and information including previous studies undertaken on or in close proximity to the study area, including the initial flora assessment for Muchea North (Phoenix 2015) provided adequate information on the vegetation of the study area. **Slight constraint for fauna.** Few existing systematic fauna surveys have been undertaken within or in the vicinity of the gaps study area. The conservation significant fauna assessment relied primarily on the proximity of database records to the study area, current known distribution of the species, species habitat preferences and the field habitat assessment.
Access problems	**Not a constraint.** No access problems were encountered during the field survey and most of the study area (open paddocks excepted) was traversed by foot. Where required, surveys were staggered to accommodate access permission to private property.
Experience levels	**Not a constraint.** Suitably qualified and experienced botanists and zoologists undertook the surveys and reporting for the project.
Timing, weather, season	**Not a constraint.** Flora and fauna surveys were undertaken in the study area during the appropriate seasons according the relevant EPA guidelines. Weather leading up to the survey was optimal with sufficient rainfall and normal temperatures in the preceding winter. Gingin weather station recorded variable rainfall month to month equalling slightly below average rainfall in the six months preceding the survey and generally lower temperatures (BoM 2016). A plant outside of the survey areas (at the Blue Plains Road population) was monitored to determine optimal timing to undertake transect searches. The commencement of flowering at a known location triggered the first round of surveys. The second round of surveys was completed as soon as possible after the second round but not sooner than two weeks after the first round. Weather conditions during the transect searches for *T. stellata* were generally warm and sunny. Based on the high number of common orchid species observed during the surveys, climatic conditions were favourable for the targeted searches for *T. stellata* Fauna surveys were undertaken in the study area during the appropriate seasons according the relevant EPA guidelines. Weather leading up to the survey was comparable with long term averages in the preceding months.
Disturbances	**Slight constraint**. Large sections of the study area were in degraded to completely degraded condition from multiple historical disturbances, particularly clearing and weed infestation, making it difficult to discern changes in vegetation association in some areas**.** Historic disturbance within and in the vicinity of the gaps study area is likely to have influenced the occurrence of some conservation significant species identified in the desktop review.
Survey intensity	**Slight constraint for flora.** The Level 2 flora and vegetation assessment of the gaps study area represents the first seasonal survey for this area. However, as the gaps areas are small patches adjacent to the initial study areas that have been surveyed over two sampling

Variable	Impact on survey outcomes
	events, this constraint is considered minor. The field program conducted in spring 2016 is supplementary to previous surveys conducted in spring 2014 and 2015 for the Muchea North to Chittering study areas and adds to the overall survey intensity for the program. Most patches of remnant and planted vegetation were traversed by foot in search of conservation significant flora and fauna. Some areas were surveyed more than once to account for different flowering times that aid in flora identification. **Not a constraint for fauna.** The Level 1 and as necessary targeted fauna surveys were conducted across all areas of the gaps study area. The black cockatoo breeding tree, roosting site and breeding/ foraging/ roosting habitat assessment was conducted in all previously unsurveyed parts of the gaps study area.
Completeness	**Slight constraint.** During the field assessment of the extent of the *Banksia* Woodlands of the Swan Coastal Plain TEC within the study area clear detailed data was collected and is presented in this report; however, this may require further consideration following feedback from regulators given the formal listing became effective 16 September 2016 i.e after initiation of the current field survey program. The fauna survey was focussed on identifying the potential for presence of conservation significant species. Systematic censusing of the fauna assemblage was not undertaken but this is consistent with other surveys for similar linear infrastructure projects in the region. All areas were adequately surveyed during the Level 1 and targeted conservation significant surveys
Determination	**Slight constraint for flora.** The identity of two flora specimens could not be determined and further collections are required, including a variety of *Banksia dallanneyi* and a species of genus *Lepidosperma*. Both collected specimens were sterile. **Not a constraint for fauna.** Determinations regarding taxonomy and conservation status of fauna were made on the basis of current classifications and no limitations were encountered in this regard.

3.2 FLORA AND VEGETATION

A total of 61 plant taxa (including subspecies and varieties) representing 49 genera and 23 families were recorded in the gaps study area (Appendix 3). This total is comprised of 41 (67%) native species and 20 (33%) introduced (weed) species, and included 13 annual and 48 perennial species. The most prominent families were Myrtaceae (8), Fabaceae (7), Proteaceae (6) and Poaceae (6).

Of the flora species recorded within the gaps study area, 19 were new species (Table 3-2) including three families and nine genera not previously recorded. The total number of species excludes duplicates between the work packages.

Table 3-2 Summary of flora species recorded in gaps study area

Study area	No. flora species recorded	No. genera	No. families	No. native species	No. introduced species	No. additional species[1]
Initial study area (initial surveys Phoenix 2015)	273	153	52	222	51	-
Gaps study area (current survey)	61	49	23	41	20	19
Total in study area (both surveys)	**292**	**166**	**55**	**235**	**57**	

[1] Additional to flora species collected during surveys reported here for the work package.

One taxon (*Lepidosperma* sp.) could not be definitively identified to species level and one species (*Banksia dallanneyi*) to variety level as the specimens were sterile (i.e. lacked reproductive structures) at the time of collection (Table 3-3).

Table 3-3 Details of taxa not identified definitively to species or variety level

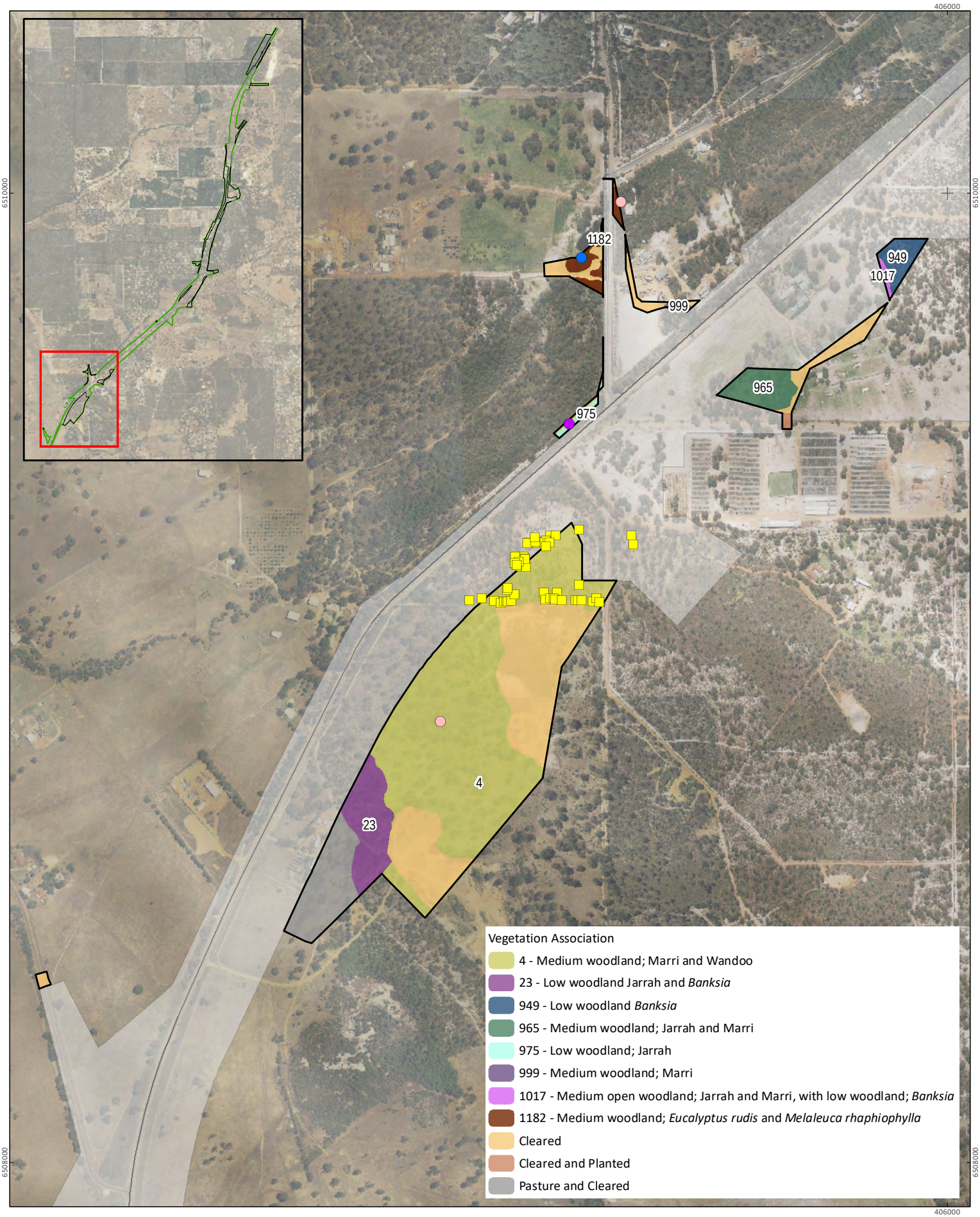
Taxon	Comments
Lepidosperma sp.	Sterile
Banksia dallanneyi	Sterile

3.2.1 Conservation significant flora

Two conservation significant flora species were recorded in the gaps and/or initial study areas during the spring 2016 surveys, *Acacia drummondii* subsp. *affinis* (P3) and *Anigozanthos humilis* subsp. *chrysanthus* (P4) (Figure 3-1).

A total of 260 individuals of *Acacia drummondii* subsp. *affinis* were recorded from 75 locations, each consisting of one to 25 individuals (Figure 3-1). The species was also identified in the desktop review and recorded in the initial study area during the previous surveys (Phoenix 2015). New records are located in both the gaps study area and the initial study area, with the latter records detected during the transect searches for EPBC Act-listed orchids.

Three plants of *Anigozanthos humilis* subsp. *chrysanthus* were recorded at one location in the gaps study area (Figure 3-1). This species was not identified in the desktop review or recorded in the initial surveys (Phoenix 2015).



Jacobs

Flora and fauna assessment for the Muchea North study area – Report Addendum.

Project No	1121
Date	24-Jan-17
Drawn by	KW
Map author	KC

0 50 100 200 300
Metres

1:10,000 (at A4) GDA 1994 MGA Zone 50

Gaps study area
Initial study area

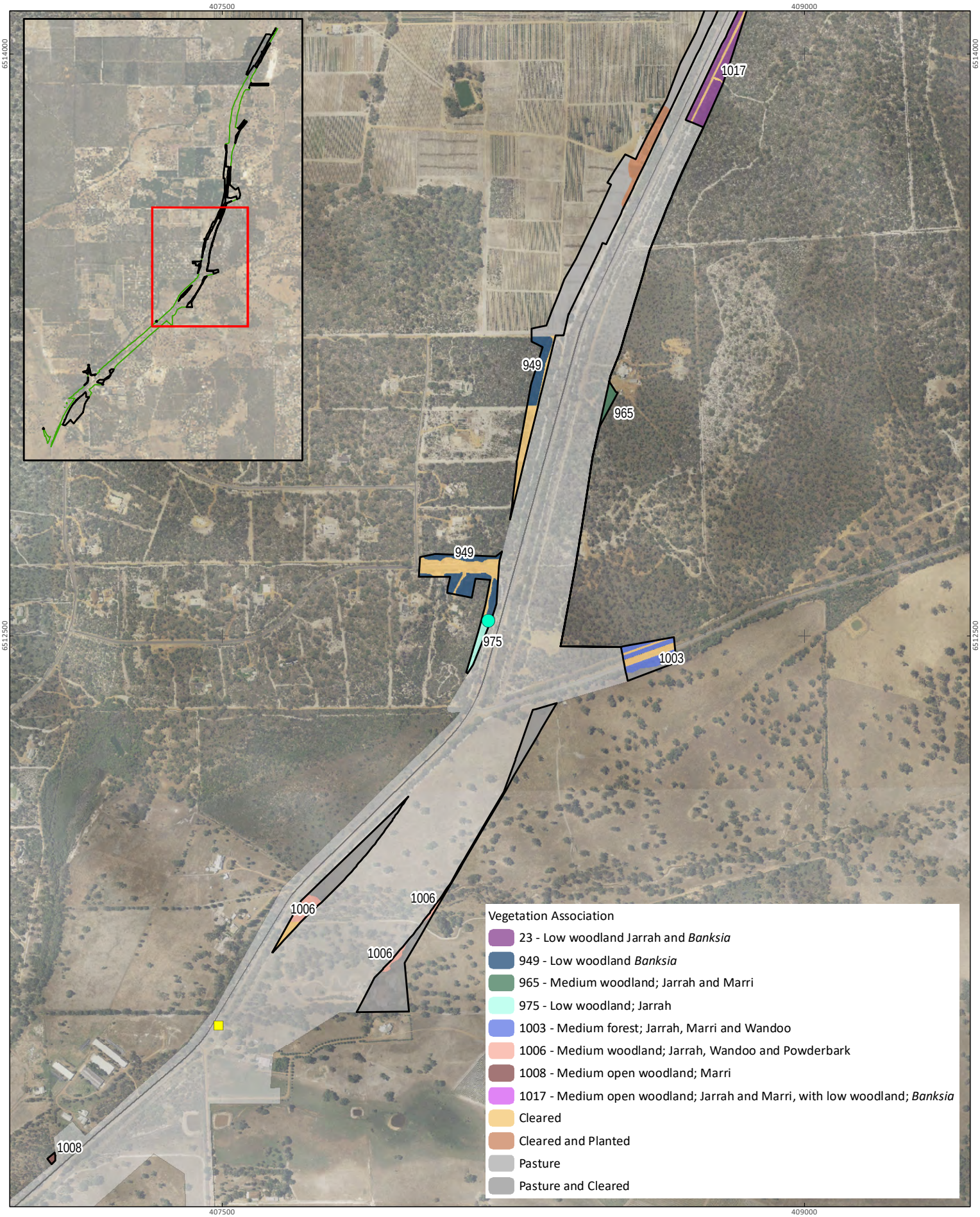
Conservation significant flora
P3, *Acacia drummondii* subsp. *affinis*

Declared pests
**Asparagus asparagoides*
**Moraea flaccida*
**Zantedeschia aethiopica*

Figure 3-1a

Vegetation associations, conservation significant flora and declared pests

PHOENIX ENVIRONMENTAL SCIENCES



Jacobs

Flora and fauna assessment for the Muchea North study area – Report Addendum.

Project No	1121
Date	24-Jan-17
Drawn by	KW
Map author	KC

0 50 100 200 300 400
Metres

1:12,500 (at A4) GDA 1994 MGA Zone 50

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Gaps study area

Initial study area

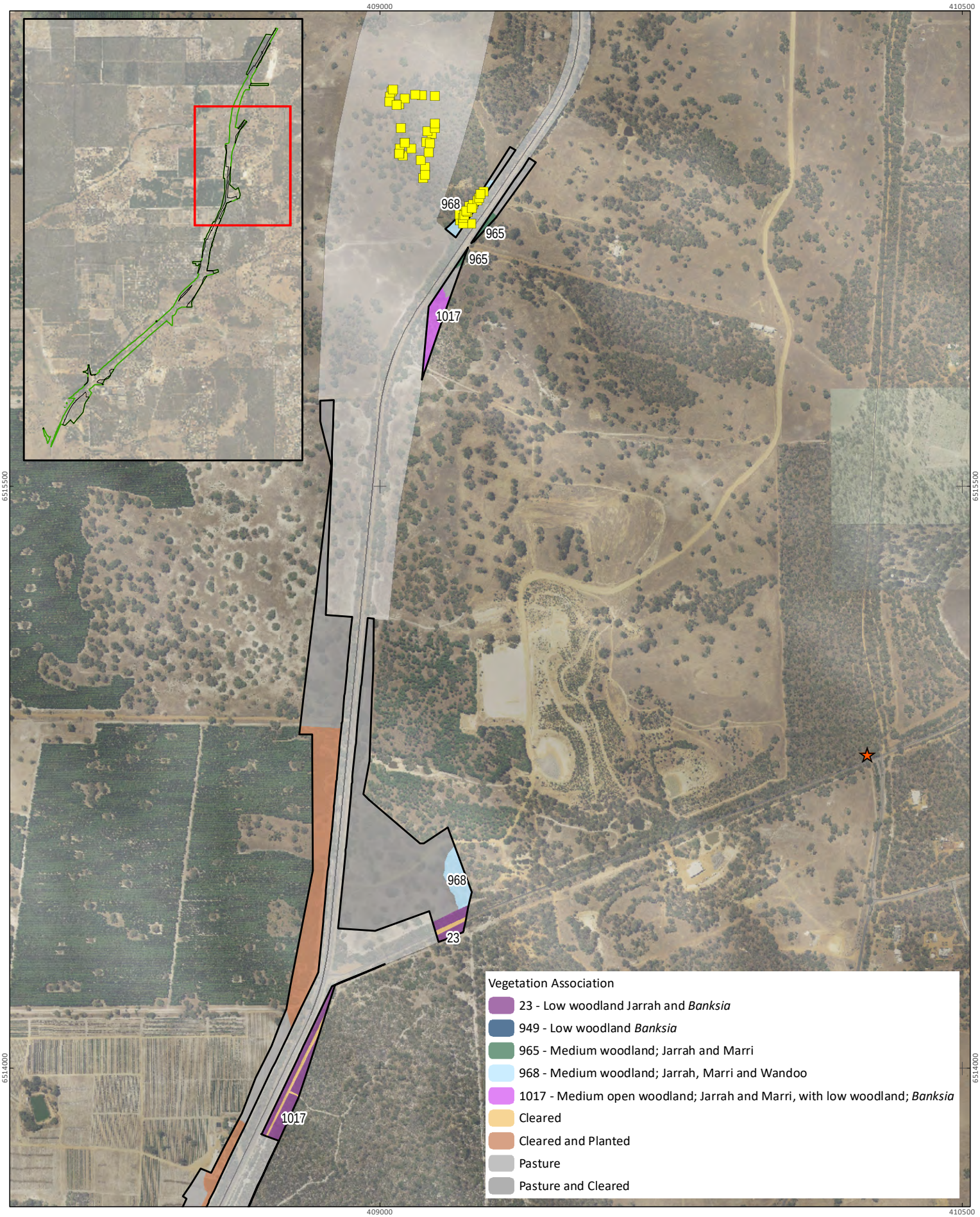
Conservation significant flora

- P3, *Acacia drummondii* subsp. *affinis*
- P4, *Anigozanthos humilis* subsp. *chrysanthus*

Figure 3-1b

Vegetation associations, conservation significant flora and declared pests

PHOENIX ENVIRONMENTAL SCIENCES



Jacobs

Flora and fauna assessment for the Muchea North study area – Report Addendum.

Project No	1121
Date	24-Jan-17
Drawn by	KW
Map author	KC

0 50 100 200 300 400
Metres

1:12,500 (at A4) GDA 1994 MGA Zone 50

Gaps study area

Initial study area

Conservation significant flora

EN, *Thelymitra stellata*

P3, *Acacia drummondii* subsp. *affinis*

Figure 3-1c

Vegetation associations, conservation significant flora and declared pests

PHOENIX ENVIRONMENTAL SCIENCES