Nest Box Management Plan (Section 7)

Woolgoolga to Ballina Pacific Highway upgrade

December 2014

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Document information

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Executive Summary

This Nest Box Management Plan (NBMP) has been prepared on behalf of the New South Wales Roads and Maritime Service (Roads and Maritime) in relation to the Woolgoolga to Ballina Pacific Highway Upgrade project (W2B Upgrade). More specifically, This NBMP forms part of the overall management of hollow-dependent fauna for Section 7 – Devils Pulpit to Trustums Hill of the W2B upgrade.

The primary objectives of this NBMP are to catalogue tree hollows within the Study Area and to outline specific measures to be undertaken to mitigate the impacts of vegetation clearing on hollow-dependent fauna. The above objectives have been achieved through:

- Completion of a field survey to comprehensively identify hollow-bearing trees (HBT) within the Study Area and to identify vegetation adjacent to the Study Area that is suitable to house relocated hollows or nest boxes.
- Preparation of this NBMP, taking into account the survey results and the current road design and estimated limits of clearing associated with the W2B upgrade as provided by Roads and Maritime.

A total of 756 Hollow Bearing Trees (HBTs) with a total of 1,788 hollows will be removed as a result of pre-clearing works within the Study Area. These HBTs provide potential shelter and nesting sites for a variety of fauna groups, including 23 hollow-dependent threatened fauna species that were recorded as part of the ecological surveys conducted for the entire 155 km W2B upgrade Environmental Impact Statement (EIS). Compensation for the loss of this valuable habitat resource is therefore a critical to the project achieving a positive biodiversity outcome.

The nest box replacement strategy will involve the installation of 49 nest boxes designed to accommodate the following fauna groups:

- Woodland birds and small parrots (8 nest boxes)
- Small to medium scansorial-arboreal mammals (6 nest boxes)
- Gliders (7 nest boxes)
- Microbats (5 nest boxes)
- Large scansorial mammals (3 nest boxes)
- Cockatoos and large forest owls (10 nest boxes)
- Possum (10 additional boxes to reduce competitive interactions with cockatoos and large forest owls)

Nest boxes will be distributed throughout suitable habitat external to the clearing limits. Although recommendations have been made as to ideal nest box installation locations within this plan, the placement of nest boxes will be largely driven by availability of suitable host trees, property access and permission, and location of other fauna mitigation devices (i.e. fauna underpasses and vegetated medians).

An appropriate monitoring and management regime for an eight year period has been developed to facilitate the success of the nest box replacement strategy.

1 Introduction

The Woolgoolga to Ballina Pacific Highway Upgrade project (W2B Upgrade) encompasses approximately 155 km of highway extending north of Woolgoolga to the south of Ballina on the mid-north coast of New South Wales (Figure 1). The W2B Upgrade includes grade separated interchanges, service roads and upgrades to local road connections and will be based on 11 staged sections. The project has now received approval from both the Commonwealth and New South Wales Governments and as part of the approval process an Environmental Impact Statement (EIS) was prepared in accordance with Part 5.1 of the NSW *Environmental Planning & Assessment Act 1979*.

Biosis Pty Ltd was commissioned by Roads and Maritime to undertake an ecological assessment of Section 7 (Devils Pulpit to Trustums Hill) of the W2B upgrade in accordance with Contract No. 13.2544.0917-0001. Section 7 of the W2B Upgrade extends north from the recently completed Devils Pulpit Upgrade for approximately 15.3 km to Trustums Hill. Section 7 is traverses partially cleared grazing land, areas of privately owned native forest, Tabbimoble Swamp Nature Reserve and, Tabbimoble and Double Duke State Forests.

An Ecological Monitoring Program (EcMP) has been prepared to provide the framework for monitoring the biodiversity mitigation measures proposed for the W2B upgrade as part of an adaptive management process. The EcMP presents an adaptive monitoring program to assess the effectiveness of the general biodiversity mitigation measures and allow their modification if necessary. The EcMP focuses on five general mitigation measures that are outlined in the W2B Environmental Impact Statement (EIS) (RMS 2012) and Biodiversity Guidelines (RTA 2011), including the development of a Nest Box Management Plan (NBMP).

1.1 Scope of Works

Roads and Maritime have engaged Biosis to prepare a NBMP to inform overall management of hollow-dependent fauna that will be impacted upon by Section 7 of the W2B Upgrade and to satisfy the Condition of Approval (CoA) D6 as outlined in the Minister's condition of approval for SSI-4963 Woolgoolga to Ballina Pacific Highway Upgrade.

Field surveys were carried out along the length of Section 7, plus 5 m either side of the project boundary as delineated by the GIS information provided by Roads and Maritime (the Study Area, refer Figure 1). Owing to landholder access issues, some areas (i.e. approximately 17.88 ha or 8% of the Study Area) were not included in the current surveys as illustrated in Figure 1. As such, further surveys should be undertaken within these areas of no-access once land holder access issues have been resolved.

The information presented herein is based on field surveys completed by the Biosis ecology team between 7 and 11 July 2014.

1.2 Objectives of the NBMP

The primary objectives of this plan are to catalogue tree hollows within the Study Area and to outline specific measures to be undertaken to mitigate the impacts of vegetation clearing on hollow-dependent fauna. This will be facilitated through recommendations and guidance on the provision of nest boxes as a compensatory mechanism for the loss of habitat trees (and associated denning, roosting and nesting resources) within the clearing footprint.

The above objectives have been achieved through:

- Completion of a field survey to comprehensively identify hollow-bearing trees (HBT) within the Study Area and to identify vegetation adjacent to the Study Area that may be suitable to house the relocated hollows or substitute nest boxes.
- Preparation of this NBMP, taking into account the survey results and the current road design and estimated limits of clearing associated with the W2B Upgrade as provided by Roads and Maritime. Where hollows cannot be relocated, this NBMP includes the types and specifications of nest boxes that will be required and where they should be installed.

1.3 Limitations

Identification of tree hollows presents a number of sampling difficulties. When observations are made from ground-level, the number of hollows seen in standing trees may be differ from the actual number present as hollows may be obscured by branches, entrances may be horizontal, or too small to see, and some apparent entrances may be blind. This is supported by a study by Mackowski (1987) which found that most hollows, particularly branch hollows, become increasingly difficult to count the larger the diameter of the tree. Variables other than tree diameter, such as tree height and visibility of the tree crown, can also influence the detectability of hollows to the observer.

Furthermore, not all hollows observed from ground-based observations will be suitable for fauna, so data collected in this way must be corrected from direct measurements obtained from hollows or treated as an index only (Gibbons & Lindenmayer 2002).

While every effort was made to ensure the entire Study Area was surveyed, some limitations were encountered during field surveys. Owing to landholder access issues, some areas (i.e. approximately 17.88 ha or 8% of the Study Area) were not included in the current surveys as illustrated in Figure 1. As such, was not possible to collect HBT data within these "no-access" areas and further survey should be undertaken once access issues have been resolved.

2 Background

It is widely recognised that tree hollows as a habitat resource are depleted in modified landscapes, particularly land utilised for various forms of agriculture. This is now being exacerbated by urban development which is expanding in many parts of eastern Australia (Goldingay 2011). A consequence of these disturbances and subsequent decline in hollow resources is the listing of the loss of hollow-bearing trees as a Key Threatening Process (KTP) under Schedule 3 of the *Threatened Species Conservation Act 1995* (TSC Act) (TSSC 2007). In NSW, terrestrial vertebrate species that are known to be reliant on tree hollows for shelter and/or nesting include at least 46 mammals, 81 birds, 31 reptiles and 16 frogs (Gibbons & Lindenmayer 1997, Gibbons & Lindenmayer 2002). Of these, 40 species are listed as threatened under the TSC Act.

Many hollow-dependent fauna readily take to using artificially constructed hollows, most commonly in the form of a nest box attached to a tree (Beyer & Goldingay 2006). This provides the opportunity for nest boxes to be used as research and management tools. Nest boxes have been used as research tools for detecting species and for studies of the ecology of hollow-dependent species (Harley 2006, Menkhorst 1984, Soderquist 1996). Nest boxes may also be effective substitutes for natural hollows where hollow-dependent species are excluded or reduced in abundance by a lack of naturally occurring hollows (Beyer & Goldingay 2006, Harper et al. 2005, Menkhorst 1984), although the practicality of this application is vigorously debated (Lindenmayer et al. 1991, Lindenmayer et al. 2003).

The use of tree hollows by fauna may depend on a number of factors including hollow characteristics, diameter, height and depth, the number of hollows in a tree, tree health, size, location, density and the resulting thermoregulatory capabilities of the hollows themselves (Gibbons & Lindenmayer 2002). A more detailed discussion of these factors is provided in Chapters 5 and 6 with relevance to the species considered in this plan.

2.1 Existing Environment

TheW2B Upgrade is located in the NSW North Coast Bioregion, which is one of the most ecologically diverse bioregions in NSW. The Study Area is located between the town of Harwood and Woodburn in northern NSW, approximately 25 km north of the Maclean (Figure 1). The variety of ecosystems within the bioregion includes sub-tropical and warm temperate rainforests, a wide variety of wet and dry sclerophyll eucalypt forests, heathland, paperbark swamps, and freshwater and estuarine wetlands and waterways.

The Study Area is located within the:

- NSW North Coast Bioregion
- Clarence-Moreton Basin
- Northern Rivers CMA
- Richmond Valley Local Government Area (LGA).

With reference to Figure 1, the Study Area traverses and/or adjoins the following State Forests and National Parks in its southern portion.

- Tabbimoble State Forest
- Double Duke State Forest
- Tabbimoble Swamp Nature Reserve.

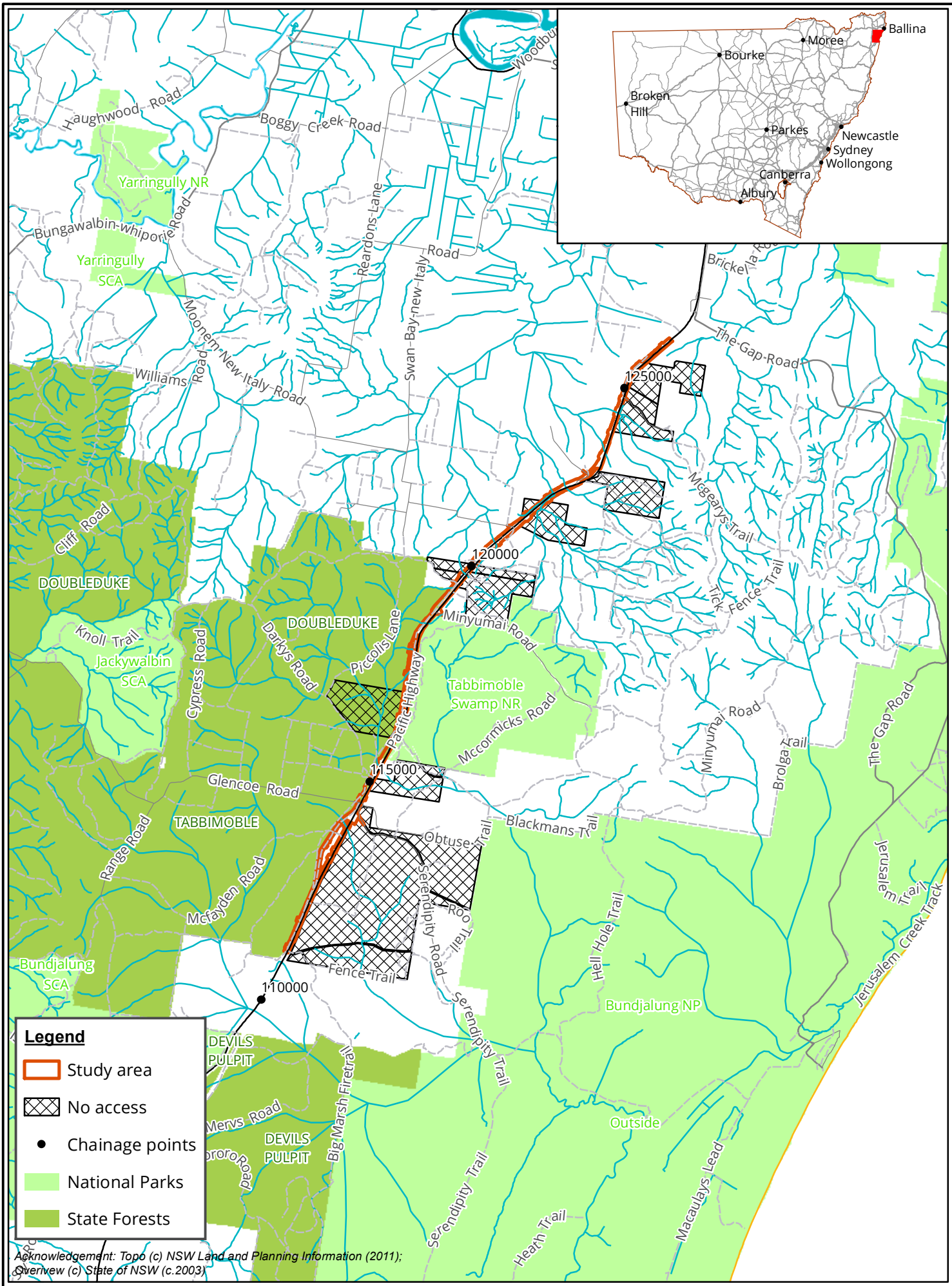

Figure 1: Location of the study area

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2.2 Fauna Habitats

The vegetation across the Study Area has been divided into 10 separate communities, which have been grouped into five broad fauna habitats. These fauna habitats are described below and the distribution of each habitat is shown in Figure 2.

- Dry Forest habitats encompassed approximately 61.11 ha or 27% of the Study Area and include the following BioMetric Vegetation Types (BVTs).
  - Blackbutt – Bloodwood dry heathy forests on sandstones of the northern North Coast.
  - Needlebark Stringybark – Red Bloodwood heathy woodland on sandstones of the lower Clarence of the North Coast.
  - Spotted Gum – Grey Ironbark – Pink Bloodwood open forest of the Clarence Valley lowlands of the North Coast.
  - Grey Gum – Grey Ironbark open forest of the Clarence lowlands of the North Coast
  - Scribbly Gum – Needlebark – Stringybark heathy open forest of coastal lowlands of northern North Coast.
- Floodplain forest habitat encompassed approximately 18.69 ha or 8% of the Study Area and included the Narrow-leaved Red Gum woodlands of the lowlands of the North Coast BVT.
- Wet Sclerophyll Forest habitat encompassed approximately 43.71 ha or 19% of the Study Area and included the Red Mahogany open forest of the coastal lowlands of the North Coast BVT.
- Swamp Forest habitats encompassed approximately 22.89 or 10% of the Study Area and include the Paperbark swamp forest of the coastal lowlands of the North Coast BVT.
- Modified habitats encompassed approximately 84.28 ha or 36% of the Study Area and include cleared pastures with scattered trees, plantations, cropping land, market gardens and pine forests.

Trustums Hill
The Gap Road
Reardons Lane
Moonem
125000
Norfons Road
Sawpit Creek
Whites Road
Mahogany Road
New Italy
Forest Road
Redgate Road
Turners Road
Mcgearys Trail
Cypress Road
120000
Aplins Road
Tick Fence Trail
Right Angle Trail
Posthammer Trail
Piccolis Lane
Minyumai Road
North Pacific Trail
RICHMOND VALLEY
Ghania Trail
Darkys Road
South Pacific Trail
Mccormicks Road
Wonder Trail
Lookout Road
Tabbimoble
Four Strand Trail
115000
Glencoe Road
Minyumai Road
Felspar Trail
Felspar Trail
Obtuse Trail
Brolga Trail
Blackmans Trail
Hell Hole
Mcfayden Road
Serendipity Road
Roo Trail
Hell Hole Trail
111000
Fence Trail
Esk River
CLARENCE VALLEY

Legend

- Study area
- No access
- Chainage points

Fauna habitat (SKM 2012)

- Dry Sclerophyll Forest
- Floodplain Forest
- Modified / Degraded
- Swamp Forest
- Wet Sclerophyll Forest

Figure 2: Fauna Habitat Types

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Acknowledgements: Topo (c) NSW Land and Planning Information (2012)

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Date: 21 August 2014,
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18218_HBTs_F2_FaunaHabmxd

0 400 800 1,200 1,600 2,000

Metres
Scale 1:40,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

N

3 Survey Methodology

3.1 Field Survey - Hollow-bearing Tree Survey

Hollow-bearing Tree Inventory

Surveys for HBTs were undertaken within the Study Area concurrently with the vegetation surveys between 7–11 July 2014. Hollows were recorded generally in accordance with methods described in the Operation Manual for BioMetric 3.1 (DECCW 2011), in that tree hollows were only recorded if the:

- Entrance could be seen from the ground.
- Hollow appeared to have depth.
- Hollow was at least 1m above the ground (basal hollows were only recorded if they continued up into the tree above 1m).

The location of each hollow-bearing tree was recorded with a hand-held GPS unit and assigned a unique identification number that indicates that the tree has been identified as part of Section 7 (e.g. 7HBT1).

Hollow Characteristics

For each individual hollow-bearing tree, the following data were collected.

- Whether the tree was dead or alive.
- The species of tree (where possible for dead trees).
- Height and diameter at breast height (DBH).
- Approximate number of hollows and position in the tree (e.g. trunk, limb).
- Estimated size classes of hollows (i.e. Small <50 mm, Medium 50-150 mm, Large = > 150 mm).

Hollow-bearing Tree Density

To assist with the development of the NBMP, then density of HBTs within the Study Area was determined by stratifying 500 m cross-sectional nest box zones. For example the Study Area starts at chainage 111000, so the area between chainage 111000 and 111500 was classified as Nest Box Zone 1.

The density of HBTs external to the Study Area was determined for each nest box zone using a minimum of three 100 x 50 m quadrats (0.5 ha). For each nest box zone the quadrats were deployed from the side of the Study Area where the greatest impact to HBTs was to occur, or on the side of the Study Area that was accessible at the time of survey. The average number of HBTs recorded within the quadrats was then used to estimate the density of HBTs on a per hectare basis adjacent to the project corridor for each nest box zone.

Where nest box zones adjacent to one another were very similar in habitat type (i.e. same vegetation community and historical land management), a total of 4 or 5 quadrats were taken across both nest box zones. The number of HBTs was then averaged and the resulting average applied to both zones.

4 Results

4.1 Hollow-Bearing Tree Inventory

Based on the results of the field survey, 756 hollow-bearing trees with a total of 1,788 hollows occur within the Study Area and have the potential to be impacted upon by the W2B Upgrade. 161 hollow-bearing stag trees were recorded, accounting for 21% of the total number of HBTs recorded. Pink Bloodwood *Corymbia intermedia* (115 trees), Scribbly Gum *Eucalyptus racemosa* (112 trees) and Red Mahogany *E. resinifera* (95 trees) were the most frequent species of alive HBTs recorded during the field surveys.

Tree hollows within the Study Area provide potential shelter and nesting sites for a range of woodland birds, scansorial (i.e. species that live near the ground but climb into low vegetation) and arboreal mammals, hollow-roosting microbats, owls, cockatoos, reptiles, amphibians and invertebrate species. Threatened hollow-dependent fauna species that are likely to occur within the Study Area are examined in more detail in Section 5.

4.2 Hollow Characteristics

Of the 1,788 identified tree hollows within the Study Area, 280 (16%) were trunk hollows, and 1508 (84%) were limb hollows. The size of each hollow was assigned into three size classes based on their estimated size of their entrance. This approach identified 640 small hollows (> 50mm), 721 medium hollows (50–150 mm) and 427 large hollows (> 150 mm).

Most of the 756 HBTs recorded contained more than one hollow, with an average of 2.4 functional hollows per tree (SD = 1.61). The frequency histogram displayed in Chart 1 shows the relationship between the hollow size classes of the HBTs recorded in the Study Area. Of the identified HBTs 18% contained four or more tree hollows with 13 hollows recorded in one large *Eucalyptus pilularis*. Of the 756 HBTs recorded in the Study Area, 577 (76%) were categorised as living, and 179 (24%) as dead trees (stags).

Chart 1: Number of hollow-bearing trees for each hollow count

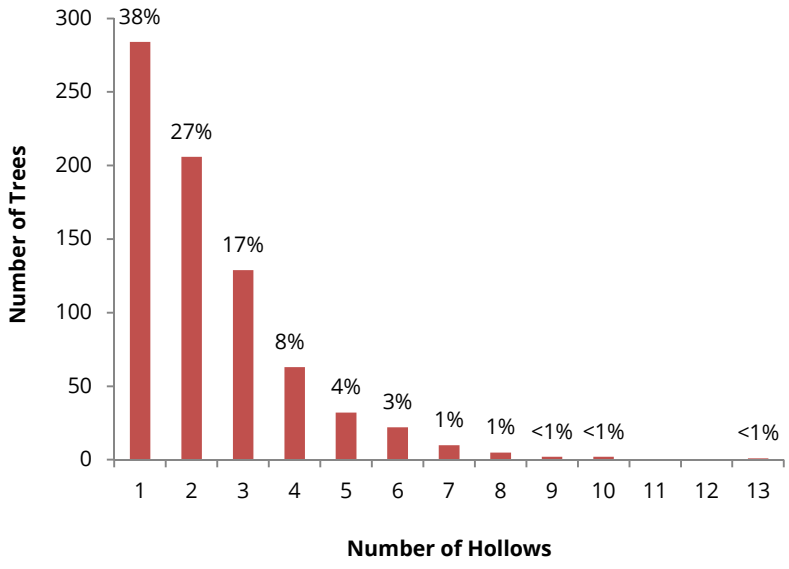

Figure 3: Location of Hollow-bearing Trees within the study area

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Acknowledgements: Topo (c) NSW Land and Planning Information (2012)

Matter: 18218
Date: 21 August 2014,
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Location:P:\18200s\18218\Mapping\
18218_HBTs_F3_HBTLocs

0 400 800 1,200 1,600 2,000

Metres
Scale 1:40,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

N

Legend

- Hollow-bearing trees
- Study area
- No access
- Chainage points

4.3 Hollow-Bearing Tree Density

The average HBT density within the Study Area was calculated to be 3 HBTs/ha, with densities ranging from <1–11 HBTs/ha across the 31 Nest Box Zones. None of the Nest Box Zones had a zero count of HBTs. In contrast, the density of HBTs external to the Study Area was much higher, with an average density of 8.62 HBTs/ha and a range of 0–21 HBTs/ha across the Nest Box Zones. Eight of the 31 Nest Box Zones had a zero count of HBTs in adjoining vegetation (refer Section 5.4.3, Table 4).

5 Nest Box Placement Strategy

Nest-boxes are proposed to be installed in suitable habitats external to the clearing footprint as a compensatory mechanism for the loss of habitat trees within the clearance zone. The distribution of nest boxes will be determined by a number of factors as detailed in Section 6.3.5.

The number and type of nest boxes required has been determined as a result of the completion of the pre-clearance surveys, and are based on the number, quality and size of the hollows to be removed, taking into consideration the hollow-dependent fauna species inhabiting the area.

5.1 Hollow-Dependent Fauna

Hollows potentially suitable for smaller species such as scansorial mammals, microbats and small parrots and medium-sized hollows suitable for arboreal mammals were recorded throughout all of the Study Area. Large hollows located within intact forest/woodland vegetation provide suitable nest sites for threatened species such as Glossy Black Cockatoo, Masked Owl, Barking Owl and Powerful Owl. Large hollows in senescent paddock trees in Cleared/ Modified habitats may provide nesting resources for more common and adaptable species such as Sulphur-Crested Cockatoo and Barn Owl.

Twenty-three hollow-dependent threatened fauna species that use natural tree hollows for nesting, roosting and den sites were recorded as part of the ecological surveys conducted for the entire 155 km W2B upgrade EIS (RMS 2012). Of the threatened hollow-dependent fauna species identified in the EIS, those species that were not considered relevant to Section 7 of the W2B Upgrade (e.g. Coxen's Fig Parrot *Cyclopsitta diophthalma coxeni*, Sooty Owl *Tyto tenebricosa* and Little Pied Bat *Chalinolobus picatus* due to known habitat requirements and distribution) were not included in this assessment. Other species (e.g. Pale-headed Snake *Hoplocephalus bitorquatus*, Barking Owl *Ninox connivens* and Beccari's Freetail-bat *Mormopterus beccarii*) are known from the wider locality and have the potential to occur in suitable habitat within Section 7. As such, a total of 22 hollow-dependent fauna species are considered to have the potential to be impacted (Table 1).

For the purposes of this NBMP, threatened hollow-dependent fauna species have primarily been used to inform the nest box placement strategy. This will facilitate a better conservation outcome as well as providing resources for non-target, common species in the project area.

Table 1: Threatened Species – Hollow-dependent Fauna

Common name	Scientific name	TSC Act	EPBC Act	Recorded in Section 7	Potential to Occur in Section 7
Birds					
Glossy Black Cockatoo	*Calyptorhynchus lathami*	Vulnerable	-	Yes*	Yes[†]
Brown Treecreeper	*Climacteris picumnus picumnus*	Vulnerable	-	Yes[†]	Yes[†]
Little Lorikeet	*Glossopsitta pusilla*	Vulnerable	-	Yes*	Yes[†]
Barking Owl	*Ninox connivens*	Vulnerable	-	No	Yes[β]
Powerful Owl	*Ninox strenua*	Vulnerable	-	Yes[†]	Yes[†]
Masked Owl	*Tyto novaehollandiae*	Vulnerable	-	No	Yes[†]

Common name	Scientific name	TSC Act	EPBC Act	Recorded in Section 7	Potential to Occur in Section 7
Microbats					
Hoary Wattled Bat	*Chalinolobus nigrogriseus*	Vulnerable	-	Yes†	Yes†
Eastern False Pipistrelle	*Falsistrellus tasmaniensis*	Vulnerable	-	Yes†	Yes†
Golden-tipped Bat	*Kerivoula papuensis*	Vulnerable	-	No†	Yes†
Little Bentwing-bat	*Miniopterus australis*	Vulnerable	-	Yes†	Yes†
Beccari's Freetail-bat	*Mormopterus beccarii*	Vulnerable	-	No†	Yesβ
Eastern Freetail-bat	*Mormopterus norfolkensis*	Vulnerable	-	No†	Yes†
Southern Myotis	*Myotis macropus*	Vulnerable	-	Yes†	Yes†
Eastern Long-eared Bat	*Nyctophilus bifax*	Vulnerable	-	No†	Yes†
Yellow-bellied Sheathtail-bat	*Saccolaimus flaviventris*	Vulnerable	-	No†	Yes†
Greater Broad-nosed-bat	*Scoteanax rueppellii*	Vulnerable	-	No†	Yes†
Arboreal/Scansorial mammals					
Spotted-tail Quoll	*Dasyurus maculatus*	Vulnerable	Endangered	No†	Yes†
Yellow-bellied Glider	*Petaurus australis*	Vulnerable	-	Yes†	Yes†
Squirrel Glider	*Petaurus norfolcensis*	Vulnerable	-	Yes†	Yes†
Brush-tailed Phascogale	*Phascogale tapoatafa*	Vulnerable	-	Yes†	Yes†
Reptiles					
Pale-headed Snake	*Hoplocephalus bitorquatus*	Vulnerable	-	No†	Yesβ
Stephen's Banded Snake	*Hoplocephalus stephensii*	Vulnerable	-	No†	Yes†

† EIS, β Bionet, * Biosis

5.2 Catalogue of Hollow Resources

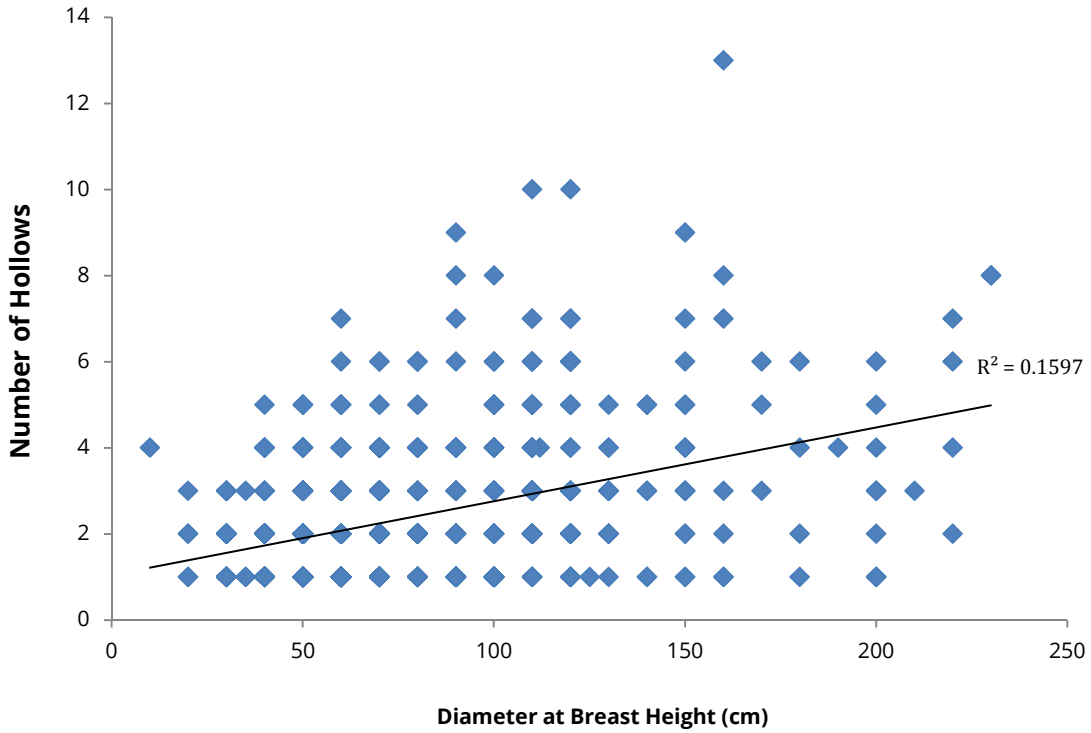
The results of the field survey identified the presence of a total of 1,788 tree hollows within the Study Area.

Several factors influencing the occupancy of hollows are associated with characteristics of trees that can be measured in the field. The total number of hollows in a tree has consistently been identified as a variable associated with occupancy, and is supported by various studies that have found significant associations between the number of visible hollows in trees and occupancy rates in arboreal mammals, birds, reptiles and microbats (Gibbons & Lindenmayer 2002).

Studies have shown that trees with the greater number of visible hollows are preferable, and are strongly associated with occupation rates. Trees with many hollows typically contain hollows with a range of different dimensions, and there is evidence of habitat partitioning between sympatric species of hollow-dependent fauna. It has also been suggested that some species selected trees with many hollows because there is the survival advantage that they provided multiple exits from which to escape predators (Gibbons & LIndenmayer 2002).

The scatter plot displayed in Chart 2 shows the correlation between the diameter of hollow-bearing trees and the number of hollows recorded for each tree. The squared correlational coefficient (R^2) is a measure of the goodness of fit of the trendline to the data, with values closer to 1 being a better fit. The R^2 value of 0.16 indicates that the trendline is not a good fit for the data, suggesting only a weak correlation between the number of hollows and diameter at breast height.

Chart 2: Diameter at breast height as a function of number of hollows



Legend

- Study area
- No access
- Chainage points

Cockatoos and Large Forest Owls
- Barking Owl
- Glossy Black-Cockatoo
- Masked Owl
- Powerful Owl

Gliders
- Squirrel Glider
- Yellow-bellied Glider

Large Scansorial Mammals
- Spotted-tailed Quoll

Microbats
- Eastern Long-eared Bat
- Eastern False Pipistrelle
- Greater Broad-nosed Bat
- Hoary Wattled Bat
- Southern Myotis
- Yellow-bellied Sheathtail-bat

Scansorial-Aboreal Mammals
- Brush-tailed Phascogale

Reptiles
- Stephens' Banded Snake

Woodland Birds and Small Parrots
- Brown Treecreeper (eastern subspecies)
- Little Lorikeet

Swampy Creek
Woodburn Town Drain
Rosolens Drain
Tuckombil Canal
130000
Evans River
Rocky Mouth Creek
Sawpit Creek
Brandy Arm Creek
125000
120000
115000
111000
Jerusalem Creek
Esk River

Figure 4: Threatened Species Records – Hollow-dependent fauna

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Acknowledgements: Topo (c) NSW Land and Planning Information (2012); NSW Office of Environment and Heritage's Atlas of NSW Wildlife, which holds data from a number of custodians. Data obtained through the BioNet Atlas of NSW Wildlife website 21/08/2014

Matter: 18218
Date: 21 August 2014,
Checked by: MLC, Drawn by: JMS, Last edited by: jshepherd
Location:P:\18200s\18218\Mapping\
18218_HBTs_F4_ThrFauna

0 600 1,200 1,800 2,400 3,000
Metres
Scale 1:60,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56
N

5.3 Suitability of Hollow Resources

Several factors that influence the occupancy of hollows are associated with characteristics of hollow-bearing trees that can be measured in the field. These characteristics include hollow characteristics, numbers of hollows in trees, tree health, dead trees, tree diameter, tree species, tree location, and tree spacing (Gibbons & Lindenmayer 2002).

The suitability of hollow resources to each target threatened species was investigated in relation to the data collected in the field.

Table 2 outlines some hollow resource preferences, home ranges and habitat preferences of key threatened species identified for the project area.

Table 2: Characteristics of tree hollows used by threatened species

Species	Minimum DBH (cm)	Entrance size (cm)	Size class (S, M, L)	Home range (ha)	References
Brown Treecreeper	>15	6–13	M (> M)	<1,000	Cooper 2000, Higgins et al 2001
Little Lorikeet	> 80	2.9–3.2	S only	Nomadic	Higgins 1999, Courtenay & Debus 2006 in Goldingay 2009
Brush-tailed Phascogale	> 14	7.7	M (> M)	5 – 60	Rhind 1996
Squirrel Glider	> 35	2-12	S (> S)	3 – 9	Beyer at al. 2008, Sharpe & Goldingay 2007 and Crane et al 2008 in Goldingay 2009,TSSC 2008
Yellow-bellied Glider	> 90		L (> M)	30 – 60	Goldingay & Kavanagh 1993, Craig 1985, Lindenmay et al 1991 in Goldingay 2009
Microbats	All	Grouped	S (> S)	1,000	Lumsden & Menkhorst 1995
Spotted-tail Quoll	> 47cm	7-27	L (> M)	> 2,500	Andrew 2005, Claridge et al 2005
Glossy Black Cockatoo	> 40	> 15	L	>1,000	Glossy Black Conservancy (2010)
Barking Owl	60-260	20-46	L	225-6,000	Taylor et al. 2002, Schedvin et al. 2001
Powerful Owl	> 77	17–76	L	300–1,500	Higgins 1999, Kavanagh 1996 in Goldingay 2009, Higgins 1999, McNabb 1996 in Goldingay 2009
Masked Owl	>95	45–100	L	200–800	Higgins 1999

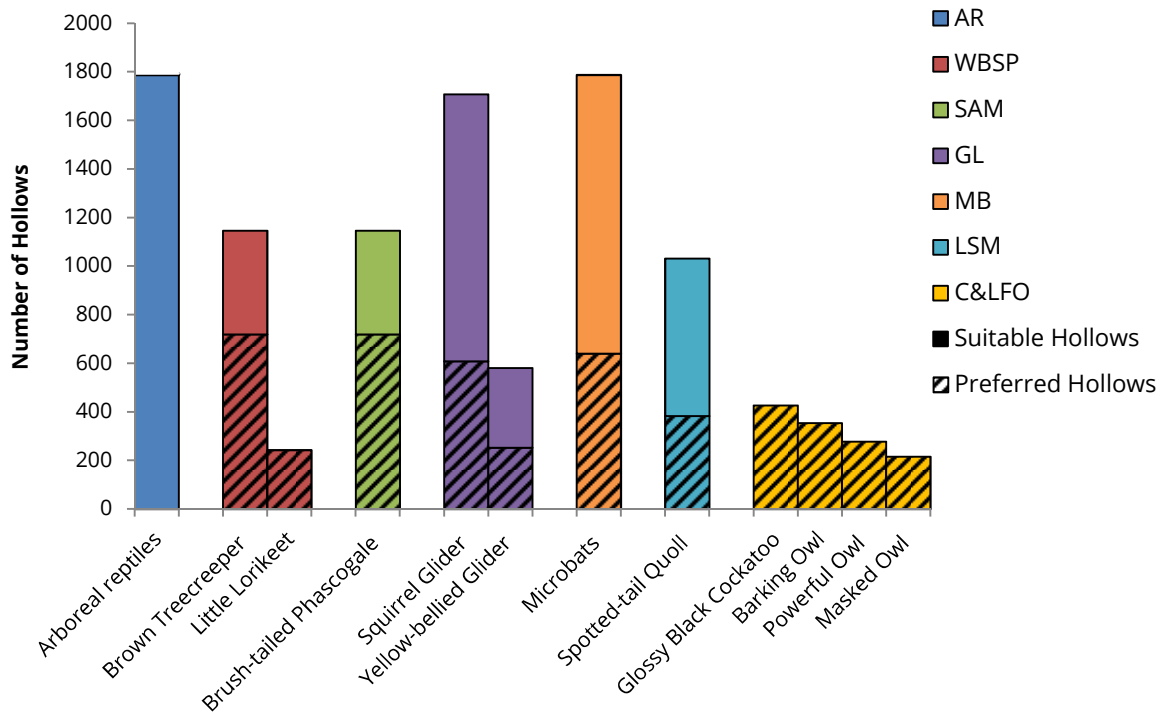
The data compiled in Table 2 was analysed to show the suitability of the 1,788 tree hollows identified within the Study Area to each species/broad fauna groups. The suitability of each tree hollow to specific fauna groups was assigned primarily on the basis of the results of the hollow-bearing tree survey data, taking into consideration the specific requirements of each species.

The size of hollows required by an animal is positively associated with the animal's body weight. While very small animals generally prefer hollows with synonymously small openings, they may also use hollows for larger entrances. However, this is not the case for larger species. Furthermore, the larger the hollow, the more likely it is to be occupied (Gibbons et al 2002; Gibbons 1999; Gibbons & Lindenmayer 2002). Taking this into consideration, the suitability of hollow size classes for some species was adjusted to show the proportion of preferred hollows.

The spatial arrangement of hollows and their location in the landscape were also considered. For example, isolated paddock trees containing hollows were considered unsuitable as nesting resources for gliders due to the canopy gap being beyond their normal volplane (i.e. gliding) capability. Chart 3 shows the suitability of tree hollows identified in the Study Area to each threatened species and/ or broad fauna group. In summary, the results indicate that most of the identified hollow-bearing trees provide suitable hollows for the following fauna, including:

- **(AR) Arboreal reptiles**: All of the 1,788 hollows found within the Study Area provide varying degrees of potential den resources for the Pale-Headed Snake and Stephen's Banded Snake, depending largely on the life cycle of individuals.
- **(WBSP) Woodland Birds and Small Parrots:** 1,147 hollows are considered suitable for the Brown Treecreeper, of which 720 hollows matched the preferred requirements for the species. 243 hollows are considered to provide potential nesting resources for the Little Lorikeet.
- **(SAM) Scansorial-arboreal mammals**: Of the 1,147 hollows considered to be suitable for the Brush-tailed Phascogale, 720 of these were considered to meet the preferred requirements of this species.
- **(GL) Gliders**: 1,708 hollows are considered to be suitable for the Squirrel Glider, of which 609 were considered to meet the preferred requirements of the species. 581hollows were considered to be suitable for the Yellow-bellied Glider, of which only 253 were considered to meet the preferred hollow requirements of the species.
- **(MB) Microbats**: Of the 1,788 hollows considered to be suitable for microbats, 640 of these meet the preferred hollow requirements for this group.
- **(LSM) Large-scansorial mammals**: 1,032 hollows are considered to provide suitable denning resources for the Spotted-tail Quoll, of which 383 hollows were considered to meet the preferred hollow requirements of the species (i.e. basal denning hollows).
- **(C&LFO) Cockatoos and Large Forest Owls**: 354 hollows are considered to be suitable for the Barking Owl, 216 hollows are considered to be suitable for the Masked Owl and 278 hollows are considered to be suitable for the Powerful Owl. 427 hollows are considered to be suitable for the Glossy Black Cockatoo.

Chart 3: Number of suitable and preferred hollows for target species and species groups



AR, Arboreal Reptiles; WBSP, Woodland Birds and Small Parrots; SAM, Small Scansorial Mammals; GL, Glider; MB, Microbats; LSM, Large Scansorial Mammals; C&LFO, Cockatoos and Large Forest Owl.

5.4 Number of Nest Boxes Required

5.4.2 Approach

In order to determine the number and type of nest boxes required, the two-stage formula outlined below was used.

Stage One

The first stage of the assessment calculates the proposed number of nest boxes required and the types of fauna the nest boxes should accommodate during Stage 1 of the assessment. The Study Area has been divided into 31 nest box zones from south to north, with each zone approximately 500 m in length. This approach is consistent with the nest box plan prepared for the Roads and Maritime Warrell Creek to Urunga upgrade (Lewis 2013). The nest box zones are shown in Figure 5. The equation outlined in Table 3 has been applied to each zone, (as per the Roads and Maritime Services Brief 13.2544.0917).

Table 3: Formula to equate required Nest Boxes

A x B x 1.2 = Proposed number of nest boxes required
A = Number of identified HBTs within the clearing footprint of a specified area = Density HBT/ha Area (ha) of vegetated land identified for removal
B = Total number of tree hollows identified = Mean number of functional hollows per HBT Total number of HBTs within the area
1.2 = 20% error factor built in to accommodate for the difficulties associated with identifying tree hollows.

The proposed number of nest boxes required is rounded up to the nearest whole number. This is then reviewed in Stage 2 of the assessment.

Stage Two

The second stage of the assessment involves the determination of the number and specific designs of nest boxes for the specific target species. This has been done on a proportional basis, i.e., if 20% of the tree hollows removed are considered suitable for a particular species then 20% of the total number of nest boxes derived from Stage 1 of the formula is to be applied.

In addition, as per Roads and Maritime requirements, for every cockatoo/owl nest box required within a given area, an additional possum nest box is required to reduce competitive interactions for nesting/denning resources. This stage of the assessment will also involve an appraisal once the clearing works have been completed and a final tally of the actual numbers of hollow bearing trees and tree hollows to be removed based on the detailed design (and numerical data substituted back into the formulas provided above). During this second stage, the NBMP will be updated to reflect the final number of nest boxes required and re-submitted to the appropriate authority for approval.

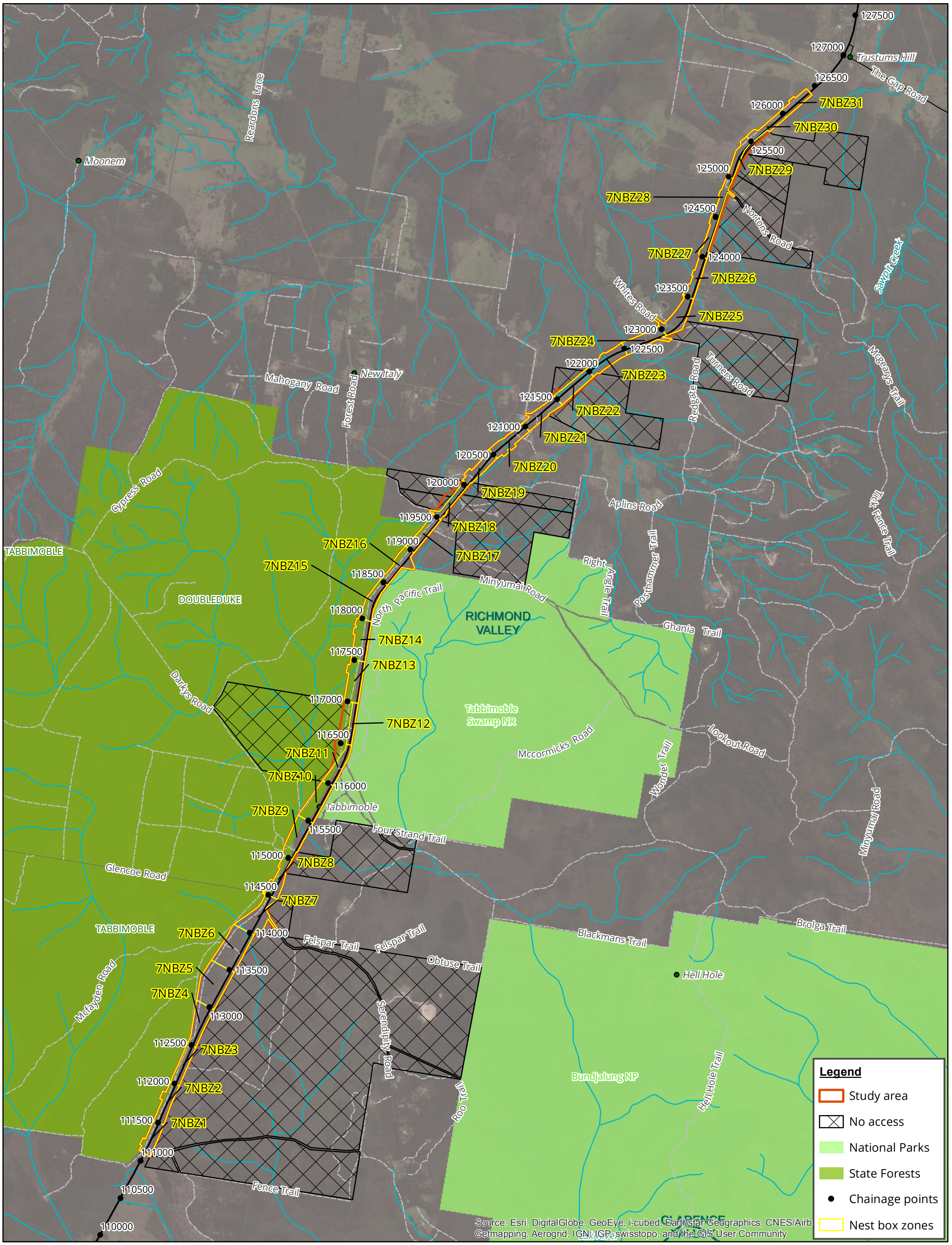


Figure 5: Nest box zones

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Acknowledgements: Topo (c) NSW Land and Planning Information (2012)

Matter: 18218
Date: 24 October 2014,
Checked by: MLC, Drawn by: JMS, Last edited by: jshepherd
Location:P:\18200s\18218\Mapping\
18218_HBTs_F5_NextBoxZones

0 400 800 1,200 1,600 2,000

Metres
Scale 1:40,000 @ A3
Coordinate System: GDA 1994 MGA Zone 56

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5.4.3 Proposed number of nest boxes

In order to compensate for the loss of HBTs, nest boxes will be installed into adjacent areas of habitat supporting a low density of HBTs. The HBT density results outside of the Study Area, have been used to determine which zones are 'low' in HBTs. Hollows within the Study Area, when located adjacent to vegetation containing 4 or more HBTs per hectare, do not require offsetting. This approach identifies 18 zones with a high density of HBTs (≥ 4 HBTs/ha) that will not require nest boxes.

Data from the two areas (zones 18 and 22) that were not accessed during the field survey have been excluded from the analysis.

Using the equations provided in Table 3, the quantity of nest boxes required for each zone has been calculated (refer to Table 4). From the calculations, a total of 39 nest boxes of various sizes are required to compensate for the loss of HBTs in the Study Area.

Table 4: Number of nest boxes required for each allocated zone

Nest Box Zone	Chainage	Number of HBTs in Study Area	Number of Hollows in Study Area	Area of habitat within Study Area (ha)	Density of HBTs within Study Area	HBT Density Outside Study Area	Nest Boxes required
1	111000-111500	2	9	5.61	0.36	0	2
2	111500-112000	3	6	5.86	0.51	21.2	0*
3	112000-112500	11	30	6.31	1.74	21.33	0*
4	112500-113000	12	16	5.77	2.08	14.67	0*
5	113000-113500	30	67	7.92	3.79	17	0*
6	113500-114000	39	84	14.80	2.63	18	0*
7	114000-114500	82	246	14.34	5.72	10.4	0*
8	114500-115000	54	138	10.72	5.04	10.4	0*
9	115000-115500	5	9	6.73	0.74	5.33	0*
10	115500-116000	15	53	8.99	1.67	3.33	8
11	116000-116500	63	129	8.59	7.33	16.67	0*
12	116500-117000	45	84	7.65	5.88	11.33	0*
13	117000-117500	94	256	8.65	10.87	16	0*
14	117500-118000	47	120	8.81	5.34	16	0*
15	118000-118500	18	41	8.71	2.07	13	0*

Nest Box Zone	Chainage	Number of HBTs in Study Area	Number of Hollows in Study Area	Area of habitat within Study Area (ha)	Density of HBTs within Study Area	HBT Density Outside Study Area	Nest Boxes required
16	118500-119000	31	72	6.31	4.91	18.67	0*
17	119000-119500	40	78	6.88	5.82	14.67	0*
19	120000-120500	19	45	6.36	2.99	0	7
20	120500-121000	5	6	6.14	0.81	0	1
21	121000-121500	8	15	7.33	1.09	0	3
23	122000-122500	4	17	7.60	0.53	0	3
24	122500-123000	11	37	7.61	1.44	0	5
25	123000-123500	2	6	7.64	0.26	0	1
26	123500-124000	20	34	8.81	2.27	7.33	0*
27	124000-124500	17	24	5.39	3.15	0.67	4
28	124500-125000	17	35	4.95	3.44	4.67	0*
29	125000-125500	6	14	5.28	1.14	0.67	3
30	125500-126000	5	10	5.88	0.85	0	2
31	126000-126500	8	14	4.35	1.84	8.67	0*
Total							**39**

* Density of HBTs outside Study Area >4/ha, therefore no nest boxes required.

5.5 Types of Nest Boxes Required

Most of the hollow-bearing trees identified within the Study Area contain small and medium sized limb hollows, and to a lesser extent trunk hollows, which are considered suitable for smaller fauna including arboreal/scansorial mammals, such as the Brush-tailed Phascogale, Squirrel and Yellow-bellied Glider, microbats, and small hollow-dependent birds such as the Brown Treecreeper and Little Lorikeet. It is therefore necessary that the ratio of nest box types reflects this. This equates to fewer large nest boxes capable of providing roosting and nesting habitat for cockatoos such as the Glossy Black-cockatoo, and large forest owls.

Table 5. Nest box types required shows the number of nest boxes recommended for each fauna group or species. This was calculated based on the number of preferred hollows for each species/group that will be cleared along the entire alignment. The proposed number of nest boxes required is rounded up or down to the nearest whole number. The final number of boxes has been reviewed to allow for the addition of one possum nest box for every C&LFO nest box required to reduce the competitive interactions for nesting/ denning resources. A total of 10 extra possum boxes are required, bringing the grand total of required nest boxes to **49**.

The recommended distribution of nest boxes for each fauna group within each nest box zone is detailed in Table 6. This has been calculated based upon the location of previous records of the different species/fauna groups, the proposed locations of fauna mitigation measures such as crossings, and the fauna habitat types present within and adjacent to the alignment for each nest box zone.

Table 5. Nest box types required

Species	Number of Boxes	% of boxes
Woodland Birds and Small Parrots	8	-
Brown Treecreeper	6	15
Little Lorikeet	2	5
Scansorial-Arborial Mammals (Brush-Tailed Phascogale)	6	16
Gliders	7	-
Squirrel Glider	5	13
Yellow-Bellied Glider	2	5
Microbats	5	13
Large-scansorial mammals (Spotted-Tail Quoll)	3	8
Cockatoos and Large Forest Owls	10	-
Glossy Black Cockatoo	3	9
Barking Owl	3	7

Species	Number of Boxes	% of boxes
Powerful Owl	2	5
Masked Owl	2	4
Total	39	100
Additional Possum Boxes (1 per CoLFO)	10	-
Total incl. Possum Boxes	**49**	

Note:

- No specific nest box designs have been proposed for arboreal reptiles (e.g. Stephens' Banded Snake and Pale-headed Snake) as they are considered to have generalist habitats and are likely to utilise a number of the designs proposed in this plan. For example, a juvenile Stephens' Banded Snake would be capable of using the microbat and small mammal nest boxes whilst a larger adult may be more inclined to seek refuge in a larger cockatoo or forest owl nest box.
- Microbats have been considered here as a single group and include only those species which are known to utilise tree hollows, including facultative use (i.e. by species such as Southern Myotis, Golden-Tipped Bat and Little Bentwing-Bat).

Table 6: Number of nest boxes required for each faunal group in each nest box zone

Nest Box Zone	Chainage	Habitat Types or Proposed Mitigation Structures[#]	No. Nest Boxes Required (Excl. extra poss.)	Nest Box Types						
				WBSP	SAM	GL	MB	LSM	C&LFO	Extra Poss
1	111000 –111500	(Glider pole at 111550)	2	1	-	1	-	-	-	-
2	111500– 112000	N/A	0*	-	-	-	-	-	-	-
3	112000–112500	N/A	0*	-	-	-	-	-	-	-
4	112500–113000	N/A	0*	-	-	-	-	-	-	-
5	113000–113500	N/A	0*	-	-	-	-	-	-	-
6	113500–114000	N/A	0*	-	-	-	-	-	-	-
7	114000–114500	N/A	0*	-	-	-	-	-	-	-
8	114500–115000	N/A	0*	-	-	-	-	-	-	-
9	115000–115500	N/A	0*	-	-	-	-	-	-	-
10	115500–116000	WSF	8	1	1	1	2	1	2	2
11	116000–116500	N/A	0*	-	-	-	-	-	-	-
12	116500– 117000	N/A	0*	-	-	-	-	-	-	-

Nest Box Zone	Chainage	Habitat Types or Proposed Mitigation Structures[#]	No. Nest Boxes Required (Excl. extra poss.)	Nest Box Types						
				WBSP	SAM	GL	MB	LSM	C&LFO	Extra Poss
13	117000–117500	N/A	0*	-	-	-	-	-	-	-
14	117500–118000	N/A	0*	-	-	-	-	-	-	-
15	118000 –118500	N/A	0*	-	-	-	-	-	-	-
16	118500–119000	N/A	0*	-	-	-	-	-	-	-
17	119000 –119500	N/A	0*	-	-	-	-	-	-	-
19	120000–120500	WSF	7	1	1	4	-	1	-	2
20	120500–121000	WSF	1	-	1	-	-	-	-	-
21	121000–121500	WSF	3	-	1	-	-	-	2	-
23	122000–122500	SwF	3	1	-	Culvert at 122500	1	1	-	-
24	122500–123000	SwF	5	1	-	1	1	-	2	2
25	123000–123500	WSF	1	-	1	-	-	-	-	-
26	123500-124000	N/A	0*	-	-	-	-	-	-	-
27	124000 –124500	WSF	4	1	1	-	-	-	2	2

Nest Box Zone	Chainage	Habitat Types or Proposed Mitigation Structures[#]	No. Nest Boxes Required (Excl. extra poss.)	Nest Box Types						
				WBSP	SAM	GL	MB	LSM	C&LFO	Extra Poss
28	124500–125000	N/A	0*	-	-	-	-	-	-	-
29	125000–125500	WSF, SwF, Modified	3	1	-	-	1	-	1	-
30	125500 –126000	WSF, SwF, Modified	2	1	-	-	-	-	1	-
31	126000–126500	N/A	0*		-	-	-	-	-	-
Total				**8**	**6**	**7**	**5**	**3**	**10**	**10**

[#]WSF - Wet Sclerophyll Forest; SwF - Swamp Forest.

* Density of HBTs outside Study Area >4/ha, therefore no nest boxes required.

6 Nest Box Specifications and Monitoring

6.1 Background

This section of the NBMP provides recommendations and guidance on the provision of nest boxes as a compensatory mechanism for the loss of habitat trees within the Study Area, inclusive of den, roosting and nesting resources. The EcMP details the consistent monitoring approach to be adopted for nest box monitoring and maintenance across all sections of the W2B upgrade.

The number and type of nest boxes required has been determined as a result of the completion of the pre-clearance surveys, and are based on the number, quality and size of the hollows to be removed (refer to Section 4.2), taking into consideration the threatened hollow-dependent fauna species potentially inhabiting the Study Area (refer to Section 5.1).

The Nest Box Management Plan specifies nest box dimensions, installation requirements, locations of nest boxes and ongoing monitoring and maintenance. The plan considers placement in adjacent habitats, focusing effort on areas of naturally low abundance of hollows.

Nest boxes will then be installed to compensate for the loss of hollow-bearing trees within the Study Area. Installation and maintenance will be undertaken in accordance with the Guide 8: Nest Boxes of the Biodiversity Guidelines (RTA 2011).

6.2 Approach

This NBMP includes the provision of compensatory habitat for key threatened species, through the installation of nest boxes in the surrounding landscape. As the design and position of nest boxes can influence patterns of occupancy by different species (Gibbons & Lindenmayer 2002), it is recommended that nest boxes be designed in alignment with those measurements specified in Table 7, in order to meet the specific habitat requirements of each target species, or faunal group.

6.3 Nest Box Construction

The design of nest boxes has been recommended according to each target species. Table 7 shows a summary of specifications for nest boxes targeting specific species of threatened fauna groups that are known to, or considered likely to occur in the Study Area. This table has been adapted from data published in (Franks & Franks 2006).

Table 7: Summary of specifications for nest boxes targeting specific species or fauna groups

Fauna Group and Species	Total no. required	Nest Box Dimensions[#]				Home range (ha)	Behaviour	Distance between Boxes
		IM (mm)	DC (mm)	ED (mm)	HG (m)			
Woodland Birds and Small Parrots								
Brown Treecreeper	6	150x150	350	60	3–6	<100	Communal – observed in family groups	20 m
Little Lorikeet	2	150x150	350	55	3–5	Nomadic	Several pairs breed in same tree	2–3 m
Scansorial-Arboreal Mammals								
Brush-tailed Phascogale	26	150x200	300	50	3–6	5–60	Solitary	50 m
Gliders								
Squirrel Glider	20	150x250	300	45	3–6	3–9	Colonial – family groups. Territorial.	Clumped in fours
Yellow-bellied Glider	2	250x300	400	80	6–8	30–60	Small family groups 2 – 6. Territorial.	Clumped in fours
Microbats								
Microbats	5	20 slot	400	30 hole	3–5	Varies	Clear flight path to box	N/A
Large Scansorial Mammals								
Spotted-tail Quoll	6	500x500	800	200	0–2	>2500	Solitary	4 km
Cockatoos and Large Forest Owls								
Glossy Black Cockatoo	3	300x400	1200	200	8–10	>1000	Monogamous pairs. Small groups 2-10	N/A
Powerful Owl	2	500x500	800	200	7–15	300–1500	Paired, Territorial.	3. 8 km
Masked Owl	2	250x300	500	100	4–6	200 – 800	Paired, Territorial.	2.5 km

Fauna Group and Species	Total no. required	Nest Box Dimensions[#]				Home range (ha)	Behaviour	Distance between Boxes
		IM (mm)	DC (mm)	ED (mm)	HG (m)			
Barking Owl	3	250x300	500	100	4–6	200–800	Monogamous pairs. Territorial.	2.5 km
Additional								
Possum	10	250x200	300	85	2–4	N/A	N/A	To be paired with Cockatoo and Large Forest Owl nest boxes

[#] IM – inside measurement; DC – depth of chamber from bottom of entrance hole; ED – entrance diameter; HG – height above ground

6.3.2 Nest box design

The recommended dimensions of nest boxes for target species have been provided in Table 7. While recognising the different nest box dimensions, the constructed nest boxed should also take a number of additional species-specific design considerations into account. For example, the thermoregulatory capabilities of the nest boxes should be considered, particularly for bats as this is considered to significantly influence roost use (Gibbons & Lindenmayer, 2002).

Furthermore, the design of the positioning and fastening mechanism should be sturdy and stable, preferably with a slight forward lean to assist with drainage whilst allowing for growth in the host tree. It is recommended that bracketing use the Habisure system (Hollow Log Homes Pty Ltd) where possible as this has the added advantage of allowing at least one metre growth in the diameter of the host tree before adjustment is required, is non-invasive to the tree and provides the required security (Appendix A).

6.3.3 Reducing competitive interactions

A number of pest species, both native and exotic, are considered to be relevant to this plan and are known to utilise both natural hollows and nest boxes. The most relevant ones to this NBMP are outlined in Table 8 along with measures to reduce nest box occupation by these species. The main competitive pressure on nest boxes predicted for the Study Area is considered to be from:

- European honeybees.
- Exotic birds including the Common Myna and Common Starling.
- Common Brushtail Possum.

Table 8: Some measures to reduce invasion by introduced and pest species (Adopted from Gleeson & Gleeson 2012).

Potential invading Species	Preventative Measure
Ants	Talcum powder applied to the entrance and edges of the nest box to deter ants.
	Talcum powder sprinkled inside of the box incites ants to leave, and lanolin grease around the edges of the box prevents them from returning.
	Ring of grease around trunk of smooth-skinned eucalypt encourages colony to leave the box.
	Open bottom prevents ant infestations in bat boxes.
Wasps	2cm roost spacing reduces wasp infestations in bat boxes.
European Honeybee	Insecticide strip placed inside box kills bee colonies. This practice is hazardous.
	Lining the ceiling of nest box with carpet prior to installation may thwart attachment of wax comb to ceiling.
	A small box volume reduces incidents of hive building.
	Greasing the underside of the lid and top of the walls with marine grease or lanolin prevents bees from attaching honeycomb.
	2 cm roost spacing reduces bee infestations in bat boxes.
Common Myna	A board of ply attached to overhanging box lid and positioned approximately 10 cm parallel to the front face (ie side including entrance hole) of the box successfully excluded the common myna, but not native species.
	Nest removal deters nesting, but may need to be repeated several times.

Potential invading Species	Preventative Measure
Common Starling	Starlings actively avoid nest boxes with painted white interiors.
Common Brushtail Possum	Metal guards (ie corrugated iron) around base of tree prevents possums from killing Glossy black cockatoo nestlings.

6.3.4 Nest box installation

Seventy per cent (70%) of the nominated nest boxes will be installed prior to or during the proposed clearing works with the objective of providing temporal refuge habitat for those hollow dependent fauna displaced during clearing operations. The remaining 30 per cent (30%) of nest boxes will be installed once a final tally of functional tree hollows has been compiled and reviewed as a result of the data collected during the clearing supervision. Occupancy rates of tree hollows during the clearing supervision would also facilitate the final number and types of nest boxes being installed. Ultimately, a suitably qualified Ecologist will be responsible for determining these values as they will be performing the clearing supervision.

Once the clearing works have been undertaken, and subsequent hollow-bearing tree appraisal has been completed hollow-bearing trees and tree hollows where feasible will be salvaged from the Study Area and placed in adjacent habitat to ensure that hollow resources are preserved in the landscape. This is especially important for scansorial mammals, such as the Spotted-tail Quoll and Common Planigale that are known to utilise various modes of den sites.

A number of studies on the significance of fallen wood in influencing species occurrence have been correlative, with more recent manipulations of salvaged wood sites showing that some scansorial mammal species show a preference for sites with higher salvaged wood loads, particularly during breeding seasons. Higher loads of salvaged wood derived from tree crowns have also been shown to increase the species richness and numbers of birds (MacNally & Horrocks 2007, 2008 in Gleeson & Gleeson 2012).

A suitably qualified ecologist will provide advice on re-use of woody debris to ensure consistency with Roads and Maritime's Biodiversity Guidelines Re-use of Woody Debris and Bush Rock and that:

- There are no negative impacts on the receiving environment.
- Correct positioning in designated relocation areas.

6.3.5 Location of nest boxes

The zones where nest boxes should be placed are outlined in Table 4. The selected location and positioning of nest boxes is considered to be a fundamental component of this plan given that it will ultimately determine the effectiveness of this as a mitigation tool.

As a general rule, nest boxes should be installed on large mature trees (DBH > 400mm) close to or on the main trunk. It is recommended that a cross-section of nest boxes of each type should be installed on either side of the road corridor in each zone. Installation areas will be largely dependent upon:

- The presence of suitable mature trees.
- Property access and permission.
- Consultation with land owners.
- Placement of other fauna mitigation devices and their locations in the project area (e.g. fauna underpasses, glider poles and vegetated medians).

It is preferable to Roads and Maritime to install nest boxes in vegetation retained within the project corridor as far as practicable. Where suitable vegetation is not present within the project corridor, Roads and Maritime will firstly look to install nest boxes in Roads and Maritime owned land. Secondly, the ability to install nest

boxes on Crown land (including State Forests, National Parks etc.) will be investigated. As third preference, private property with suitable areas of vegetation adjacent to the project corridor will be utilised, where permission is granted by the landholder. Property access agreements will be confirmed prior to awarding tender for construction of Section 7 and all relevant Government Agencies will be informed of the access agreements in due course.

It is noted that the southern portion of the Study Area adjoins Tabbimoble Swamp Nature Reserve which supports dry forest habitats that are potentially suitable for nest box installation. Roads and Maritime have successfully negotiated with the National Parks and Wildlife Service the placement of nest boxes in National Park Reserve system in other section of the W2B Upgrade and the opportunity to achieve similar outcomes should be explored for Section 7.

Section 7 of the W2B Upgrade traverse Tabbimoble and Double Duke State Forests. Roads and Maritime are currently negotiating a Memorandum of Understanding (MoU) with the NSW Forestry Corporation. The key elements of the draft MoU are provided below.

a) *If RMS installs structures for Fauna Mitigation Measures on the Minister's Land for the Project, RMS will, as far as practicable, and in consultation with the Forestry Corporation place the structures in locations that minimise the potential impact on Forestry Operations on State Forest.*

b) *If RMS proposes to install Fauna Mitigation Measures such as nest boxes or pole structures or to translocate flora on State Forest land, RMS will consult with, and obtain prior approval from, the Forestry Corporation for the use of State forest. In determining the location, priority should be given to locating the structures within:*

    i. *Sterilised Land; and*

    ii. *Special Management Zones or other existing Buffer Zones on State Forest land, allowing a minimum of 10 metres distance from a harvestable area.*

c) *Where the Parties agree that any Forestry Operations should be either modified or excluded from an area of State Forest land to improve the efficacy of the measures, it will create an Edge Effect.*

d) *RMS will obtain a forest permit authorising the use of State Forest for these purposes and pay an annual permit fee based on the number of active Projects. RMS will prepare and maintain a schedule of Projects on State Forest land on an annual basis to facilitate the issue and renewal of the forest permit.*

e) *RMS will be solely responsible for the management, maintenance, monitoring and decommissioning of the Fauna Mitigation Measures.*

f) *RMS will compensate the Forestry Corporation for Edge Effects based on the effect on timber production and forest management costs.*

Table 9 details land which may be suitable for the installation of nest boxes (pending access agreements etc.). Only those properties adjacent or nearby nest box zones requiring nest box installation have been considered. It is noted that vegetation external to nest box zones 19–25 achieved a zero count for HBTs However, given the low density of HBTs within the Study Area within these zones installing nest boxes in adjoining vegetation adjacent to nest box zones 19–25 would reflect the current availability of hollows in this area. The predominant fauna habitat types within nest box zones 19–25 are Wet Sclerophyll Forest and Swamp Forest and as such adjoining properties supporting similar habitat types would be suitable for installation of nest boxes such as Lot 10 DP 1181313 (nest box zone 19), Lot 6 DP 755614 (nest box zone 19) and Lot 7 DP 262921(nest box zone 23/24). Alternatively, the properties identified within nest box zone 10 that are owned by Roads and Maritime and the National Parks and Wildlife Service would be suitable receiver sites for the nest boxes required for loss of HBTs in nest box zones 19-25.

Table 9. Properties adjacent to the Study Area suitable for nest box installation

Lot/DP	Nest Box Zone/s	Main Fauna Habitat Type/s[#]	Land Tenure
Lot 13 DP 755610	10	WSF, SwF	Roads and Maritime
Lot 3 DP 755610	10	WSF, SwF	National Parks & Wildlife Service
Lot 10 DP 1181313	19	WSF	Private property
Lot 6 DP 755614	19	WSF	Private property
Lot 1 DP 828347	19,20	WSF	Private property
Lot 10 DP 1146649	20	WSF	Private property
Lot 3 DP 616005	20,21	WSF, SwF	Private property
Lot 2 DP 616005	20/21	WSF, SwF	Roads and Maritime
Lot 8 DP 262921	21	WSF	Private property
Lot 45 DP 155609	21	WSF	Private property
Lot 1 DP 631303	22	WSF	Private property
Lot 1 DP 113832	23	WSF	Private property
Lot 7 DP 262921	23,24	SwF	Private property
Lot 57 DP 658014	23,24	SwF	Private property
Lot 65 DP 755614	25	WSF, SwF	Private property
Lot 100 DP 1138614	25,27	WSF, SwF	Private property
Lot 2 DP 1180470	29	WSF	Private property
Lot 10 DP 11098270	30	WSF	Private property
Lot 1 on DP935463	30	WSF	Private property

[#]WSF- Wet Sclerophyll Forest; SwF - Swamp Forest.

Nest box position and specifications

Within the deployment areas, the behavioural ecology of the target species should be considered, together with aspect, height, installation techniques and the spatial arrangement or density of nest boxes, to determine the fine-scale installation locations and specifications. Table 7 details the behaviour of the target species and makes recommendations for the spatial arrangement of nest boxes in order to provide for the territorial and other requirements of each species. This can be used as a guide to determine the density of nest boxes within any given area.

Studies have suggested that there is a spatial trend in the occupancy pattern of nest box use where nest boxes used for arboreal marsupials (specifically gliders) placed in a clump of four had greater occupancy rates over time (Lindenmayer et al. 2003). For this reason, it is recommended that nest boxes for target arboreal species be installed in clumps of four boxes if possible. As only 7 glider boxes are to be installed, this is not practicable. It is therefore recommended that one clump of four be installed and the remaining three be spread between mature trees which already contain hollows.

The fine-scale position of the nest box on the host tree has also been considered, specifically in the context of predominant weather patterns and light and noise disturbances arising from the highway upgrade. It is

proposed that nest boxes be installed with their entrances facing away from the lights of the traffic and from a north-west to south-easterly position on the tree trunk to provide additional shelter from the rain and wind (i.e. dominant rain is from the south-west). Should this not be possible, an alternative for some fauna groups (e.g. gliders) is to have the entrance facing the tree. This requires a gap of around 100 mm to be maintained between the nest box entrance and the tree.

It is recommended that nest boxes be placed high off the ground (i.e. at least 2 m) to protect the occupants from predation and low enough to allow for safe monitoring and maintenance. Recommendations have been made in Table 7 for the height of nest boxes based on the specific requirements of each species/group. Nest boxes should be installed by a specialist nest box contractor with appropriate tree climbing certification (i.e. Arborist Tree Climbing Certificate and Work Safely at Heights certification). Monitoring and maintenance will also need to be undertaken by appropriately height-certified personnel (preferably ecologists).

6.4 Nest Box Monitoring and Maintenance

Roads and Maritime have committed to developing a suitable monitoring and maintenance strategy to evaluate the effectiveness of the nest boxes. As such, it will be important to assign each nest box a number and ensure its location is recorded using a GPS. This section details the timing, frequency and methods for monitoring. Nest Box Maintenance is discussed in Section 6.5.

6.4.2 Timing and frequency

It is proposed that combined Summer and Winter monitoring would take place shortly after the installation period and be undertaken in successive years to allow for seasonal variation in the use of nest boxes and this would continue in progressive years (i.e. years 3, 4 ,6 and 8). An annual maintenance program will align with this monitoring program after which a pre-handover maintenance inspection will be undertaken (i.e. year 8).

Table 10: Timing of NBMP Actions

Management Action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Responsibility	Documentation Requirements
Pre-construction										
Prepare Nest Box Plan	☒								Roads and Maritime	Construction Environmental Management Plan (CEMP)
Construction										
Commission construction of Nest Boxes	☒								Roads and Maritime	N/A
Install Nest Boxes	☒	☒							Contractor	CEMP
Monitoring										
Summer			☒	☒		☒		☒	Roads and Maritime	Annual reporting
Winter			☒	☒		☒		☒	Roads and Maritime	Annual reporting

Management Action	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Responsibility	Documentation Requirements
Maintenance										
Maintenance of Nest Boxes			☒	☒		☒			Roads and Maritime	N/A
Pre-Handover Maintenance Inspection								☒	Roads and Maritime	Nest Box Reporting

6.4.3 Nest box monitoring

The number and type of nest boxes required for the project area are detailed in Section 5 of this NBMP. Monitoring will be required to determine the usage of nest boxes by the target species and inform any maintenance requirements.

During each monitoring event, a visual inspection of each nest box will be conducted to collect the following data using a field proforma (refer to Appendix B for an example proforma):

- Inspection dates, weather conditions (i.e. rain, wind, cloud cover, ambient temperature) and time each box was inspected.
- Nest box number.
- Is the nest box currently occupied by native fauna?
  - If yes, which species?
  - If no, are there signs of use and can the species be identified or assigned to a group (i.e. bats, birds)?
- Has the nest box been used by a pest species (i.e. European Bees, Common Myna, Termites)?
- Is there any deterioration of the nest box?
- Is there any maintenance required?
- Has the surrounding landscape changed (i.e. clearing, partial clearing, fauna mitigation devices such as underpass)?

Visual inspection would enable the observer to perform a close inspection for signs of feathers, droppings/scats, hair, nesting material or individuals themselves. At this time some maintenance considerations/actions could be undertaken. For example, changing the aspect of nest boxes to address thermoregulatory considerations.

6.4.4 Nest box maintenance

It is proposed that combined Summer and Winter monitoring would take place shortly after the installation period and be undertaken in successive years to allow for seasonal variation in the use of nest boxes and this would continue in progressive years (i.e. years 3, 4 ,6 and 8). An annual maintenance program will align with this monitoring program after which a pre-handover maintenance inspection will be undertaken (i.e. year 8).

It is **proposed that combined Summer and Winter monitoring would take place shortly after the installation period and be undertaken in successive years to allow for seasonal variation in the use of nest boxes and this would continue in progressive years (i.e. years 3, 4 ,6 and 8). An annual maintenance program will align with this monitoring program after which a pre-handover maintenance inspection will be undertaken (i.e. year 8).**

Table 10 recommends for the nest box maintenance schedule to occur in line with the monitoring schedule. This allows for the monitoring activities to inform what level of maintenance is required. Factors to be considered as part of the maintenance schedule include:

- The need to remove exotic pests species such as Common Mynas, Common Starling and European Bees.
- Replacement of fallen, damaged or degraded nest boxes. Damaged boxes geographic co-ordinates would need to be reported.
- Repositioning, re-erection or relocation of dysfunctional nest boxes.
- Checking each box is not holding water or leaking.
- Removing excess nesting material, which may impede access over time.

6.4.5 Performance indicators and corrective actions

The performance of the nest box program will be assessed against the following parameters.

- Use of nest boxes by a wide range of native fauna.
- Use of nest boxes by the species they were designed for.
- Low rates of exotic fauna using nest boxes.
- Low maintenance requirements.

Performance Indicators and appropriate corrective actions are outlined below in Table 11.

Table 11: Nest box performance monitoring and corrective action plan

Performance Indicator	Corrective Actions	Responsibility
Nest boxes not being used by target species. **Poor uptake/ usage rate by native fauna (i.e. less than 50% of boxes being used by native fauna)**	Review the location, type and number of nest boxes used. Install additional boxes or relocate boxes if deemed necessary.	Roads and Maritime responsible for engaging suitably qualified ecologists to undertake the monitoring and suitably qualified contractors to undertake the maintenance
Nest boxes become occupied by exotic or invasive fauna.	Review/ change nest box design and/or placement on tree to exclude undesirable species, treat if applicable or relocate those nest boxes to another location.	
Nest boxes deteriorating rapidly and requiring maintenance.	Identify causes of nest box failure, modify design and construct accordingly.	

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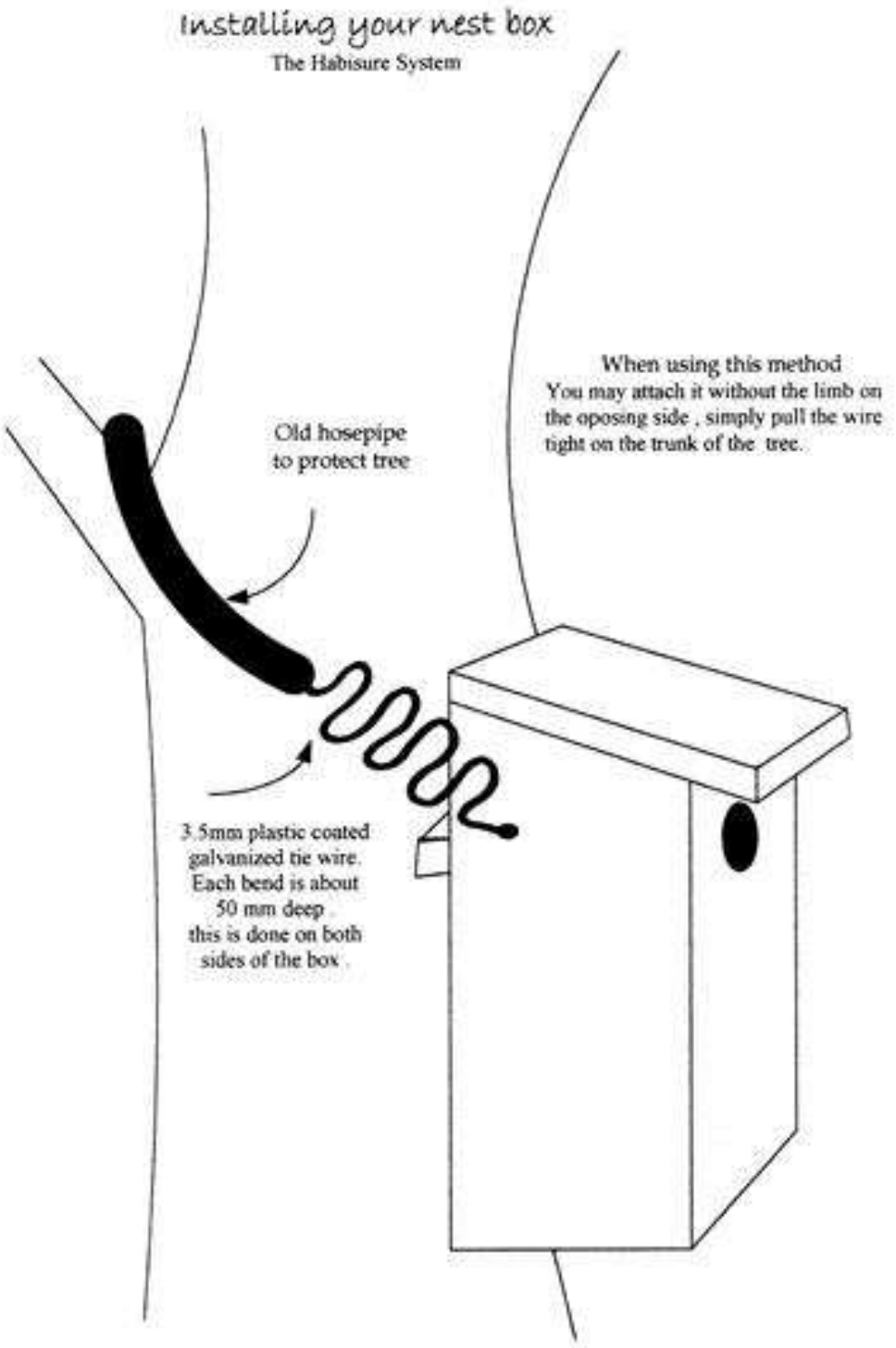
8 Appendices

Appendix A: Habisure Nest Box System



Appendix B: Nest Box Monitoring Proforma

Nest Box Monitoring Sheet

Project #:	
Observer(s):	
Date:	
Project Name:	

9 Weather conditions at start of survey	
Cloud cover:	Moon (if applicable):
Wind direction and speed:	Rain:
Temperature (°C):	Relative Humidity (%):
Comments:	

Cloud cover: Record cover in eighths of sky.
Moon: Record using the following codes: 0 = None, 1 = ¼ Moon, 2 = ½, 3= ¾, 4 = Full.
Wind direction and speed: Record wind direction to the nearest cardinal point. Record wind speed using the following codes: 0 = calm, 1 = light, leaves rustle, 2 = moderate, branches move, 3 = strong, tops of trees move.
Rain: 1 = no rain; 2 = light drizzle; 3 = constant drizzle; 4 = heavy rain; 5 = mist, fog or heavy haze.

Observation types	
O	Observed (sighted)
W	Heard call
S	In scat
T	Trapped or netted
H	Hair or feathers
I	Indirect evidence
X	Dead

Notes:

Nest Box Number	Occupied?	Occupation					Maintenance?	Notes
		Species	Exotic species	Ob. type	Number	Life stage		

Appendix C: Catalogue of Hollow-bearing Trees

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT1	524540	6766452	Blackbutt	A	40	220	2	2	0	4
7HBT2	524565	6766503	Stag	D	25	40	1	0	0	1
7HBT3	524618	6766621	*Corymbia intermedia*	A	25	120	0	1	0	1
7HBT4	524639	6766663	*Eucalyptus racemosa*	A	40	220	3	3	0	6
7HBT5	524806	6766881	*Eucalyptus racemosa*	A	35	120	0	0	2	2
7HBT6	524814	6766918	Stag	D	15	40	0	1	0	1
7HBT7	524837	6766968	*Eucalyptus racemosa*	A	35	140	0	1	4	5
7HBT8	524738	6766978	*Eucalyptus racemosa*	A	40	110	0	0	3	3
7HBT9	524747	6766991	Stringybark	A	40	60	0	1	0	1
7HBT10	524850	6766999	*Eucalyptus racemosa*	A	35	130	0	1	1	2
7HBT11	524783	6767022	Stag	D	12	125	0	0	1	1
7HBT12	524860	6767025	*Eucalyptus resinifera*	A	30	90	0	1	0	1
7HBT14	524797	6767044	*Eucalyptus racemosa*	A	25	70	0	5	0	5
7HBT15	524877	6767050	*Eucalyptus resinifera*	A	30	60	0	0	3	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT16	524886	6767178	Stag	D	30	70	0	3	0	3
7HBT17	524962	6767196	Stag	D	7	50	0	1	0	1
7HBT18	524961	6767197	*Eucalyptus resinifera*	A	30	40	0	0	2	2
7HBT19	524901	6767261	Stringybark	A	30	70	0	1	0	1
7HBT20	524925	6767315	Stag	D	10	30	1	0	0	1
7HBT21	524985	6767317	*Corymbia variegata*	A	30	50	0	1	0	1
7HBT22	524985	6767317	*Corymbia variegata*	A	30	40	0	1	0	1
7HBT23	525023	6767388	*Corymbia variegata*	A	30	70	1	0	0	1
7HBT24	525035	6767408	*Corymbia variegata*	A	30	50	0	1	1	2
7HBT25	524990	6767460	Stag	D	15	40	1	0	0	1
7HBT26	525062	6767461	Stag	D	12	40	1	0	0	1
7HBT27	524996	6767476	*Corymbia variegata*	D	20	60	1	0	0	1
7HBT28	525032	6767567	Stag	D	20	40	1	0	0	1
7HBT29	525042	6767574	Stag	D	30	100	0	1	0	1
7HBT30	525051	6767585	*Corymbia variegata*	A	40	200	1	2	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT31	525140	6767634	*Eucalyptus resinifera*	A	35	10	0	1	3	4
7HBT32	525150	6767660	*Eucalyptus resinifera*	A	30	70	0	2	2	4
7HBT33	525090	6767712	*Corymbia intermedia*	D	20	60	1	0	0	1
7HBT34	525120	6767724	Stag	A	8	70	1	0	0	1
7HBT35	525176	6767733	*Corymbia maculata*	A	35	60	0	1	3	4
7HBT36	525139	6767772	Red Stringybark	A	30	60	0	1	0	1
7HBT37	525139	6767772	*Corymbia variegata*	A	30	70	0	1	0	1
7HBT38	525208	6767776	*Corymbia intermedia*	A	30	50	1	1	0	2
7HBT39	525135	6767779	Red Stringybark	A	30	110	0	3	0	3
7HBT40	525225	6767804	*Corymbia intermedia*	A	20	50	0	2	0	2
7HBT41	525148	6767817	*Corymbia variegata*	A	35	150	0	0	3	3
7HBT42	525234	6767825	*Corymbia maculata*	A	35	50	0	0	1	1
7HBT43	525173	6767855	*Corymbia variegata*	A	35	120	0	1	2	3
7HBT44	525178	6767855	Red Stringybark	A	30	110	0	2	1	3
7HBT45	525170	6767862	Red Stringybark	A	30	100	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT46	525145	6767909	Blackbutt	A	25	100	1	0	0	1
7HBT47	525277	6767933	*Eucalyptus resinifera*	A	25	50	0	1	2	3
7HBT48	525191	6767948	Red Stringybark	A	35	120	1	1	1	3
7HBT49	525199	6767979	Tallowood	A	30	140	1	2	0	3
7HBT50	525236	6767984	Stag	D	25	40	1	0	0	1
7HBT51	525128	6767986	*Eucalyptus racemosa*	A	20	140	0	2	3	5
7HBT52	525153	6767987	*Eucalyptus racemosa*	A	25	80	0	0	1	1
7HBT53	525313	6767987	*Eucalyptus resinifera*	A	30	80	0	0	1	1
7HBT54	525222	6767990	Stringybark	A	35	60	0	1	0	1
7HBT55	525218	6767996	Stringybark	A	25	80	0	2	1	3
7HBT56	525209	6767998	Stringybark	A	25	120	0	0	2	2
7HBT57	525190	6768029	Blackbutt	A	25	120	0	2	0	2
7HBT58	525191	6768041	*Eucalyptus seeana*	A	30	20	0	2	1	3
7HBT59	525186	6768075	*Lophostemon suaveolens*	A	12	40	0	1	1	2
7HBT60	525362	6768083	Stag	D	20	40	0	1	1	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT61	525179	6768084	*Eucalyptus resinifera*	A	25	30	0	1	0	1
7HBT62	525368	6768087	Stag	D	25	60	0	0	2	2
7HBT63	525204	6768098	Stag	D	30	60	1	0	0	1
7HBT64	525378	6768103	*Eucalyptus propinqua*	A	20	40	0	1	0	1
7HBT65	525204	6768104	*Eucalyptus resinifera*	A	25	120	0	3	0	3
7HBT66	525214	6768105	Stag	D	35	50	0	1	0	1
7HBT67	525202	6768114	*Eucalyptus seeana*	A	30	70	0	0	2	2
7HBT68	525405	6768151	Stag	D	12	40	0	2	2	4
7HBT69	525426	6768177	*Melaleuca quinquenervia*	A	20	50	0	2	0	2
7HBT70	525423	6768196	*Eucalyptus propinqua*	A	35	50	0	2	0	2
7HBT71	525454	6768229	Stag	D	15	60	1	2	1	4
7HBT72	525247	6768248	*Eucalyptus racemosa*	A	15	130	1	2	1	4
7HBT73	525269	6768321	*Eucalyptus racemosa*	A	30	110	1	2	0	3
7HBT74	525254	6768325	*Eucalyptus racemosa*	A	20	110	1	0	1	2
7HBT75	525497	6768337	Stag	D	25	40	0	0	3	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT76	525303	6768341	*Eucalyptus racemosa*	A	25	90	0	2	2	4
7HBT77	525282	6768341	*Corymbia intermedia*	A	30	50	0	0	1	1
7HBT78	525203	6768346	*Eucalyptus racemosa*	A	18	100	1	0	0	1
7HBT79	525332	6768347	*Eucalyptus racemosa*	A	25	90	1	0	0	1
7HBT80	525343	6768351	*Eucalyptus racemosa*	A	25	110	2	2	2	6
7HBT82	525504	6768358	*Eucalyptus resinifera*	A	25	100	0	1	0	1
7HBT84	525398	6768377	*Eucalyptus resinifera*	A	25	100	0	1	0	1
7HBT85	525371	6768424	*Eucalyptus resinifera*	A	25	70	1	2	1	4
7HBT86	525475	6768425	*Eucalyptus resinifera*	A	30	70	0	1	0	1
7HBT87	525418	6768430	*Melaleuca*	A	25	20	0	2	0	2
7HBT88	525388	6768431	*Eucalyptus resinifera*	A	20	70	0	2	1	3
7HBT89	525359	6768437	Stag	D	25	35	2	1	0	3
7HBT90	525356	6768438	*Corymbia intermedia*	A	10	35	0	1	0	1
7HBT91	525576	6768442	Stag - *Eucalyptus sp*	D	20	60	0	1	3	4
7HBT92	525470	6768444	*Eucalyptus resinifera*	A	15	80	0	4	0	4

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT93	525569	6768444	*Eucalyptus racemosa*	A	18	110	1	4	5	10
7HBT94	525318	6768445	*Corymbia intermedia*	A	25	110	0	1	1	2
7HBT95	525436	6768446	Stag	D	35	60	0	0	1	1
7HBT96	525326	6768449	*Eucalyptus racemosa*	A	20	110	0	2	1	3
7HBT97	525585	6768465	*Eucalyptus racemosa*	A	25	50	0	1	0	1
7HBT98	525399	6768470	*Eucalyptus resinifera*	A	20	70	1	0	0	1
7HBT99	525328	6768476	*Eucalyptus resinifera*	A	30	120	1	0	0	1
7HBT100	525332	6768481	Stag	D	20	100	1	1	0	2
7HBT102	525339	6768489	*Eucalyptus resinifera*	A	30	120	1	0	0	1
7HBT103	525602	6768500	*Eucalyptus racemosa*	A	30	100	2	3	0	5
7HBT104	525646	6768577	*Eucalyptus resinifera*	A	30	80	0	0	1	1
7HBT105	525663	6768609	*Eucalyptus racemosa*	A	30	120	0	3	2	5
7HBT106	525676	6768625	*Eucalyptus racemosa*	A	25	180	4	2	0	6
7HBT107	525492	6768627	Stag	D	30	40	0	1	0	1
7HBT108	525460	6768630	Blackbutt	A	15	150	1	2	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT109	525582	6768633	*Eucalyptus resinifera*	A	25	40	0	0	2	2
7HBT110	525610	6768642	*Eucalyptus resinifera*	A	15	120	0	1	0	1
7HBT111	525677	6768643	Stag	D	30	50	1	0	0	1
7HBT112	525508	6768658	*Eucalyptus racemosa*	A	30	130	1	0	0	1
7HBT113	525444	6768659	*Corymbia intermedia*	A	30	50	0	2	0	2
7HBT114	525580	6768670	*Eucalyptus pilularis*	A	35	80	0	2	0	2
7HBT115	525590	6768671	*Eucalyptus racemosa*	A	25	120	1	3	2	6
7HBT116	525594	6768672	*Eucalyptus resinifera*	A	35	50	2	1	2	5
7HBT117	525454	6768679	*Eucalyptus pilularis*	A	35	150	2	5	2	9
7HBT118	525484	6768680	*Eucalyptus racemosa*	A	8	110	2	3	0	5
7HBT119	525457	6768683	Stag	D	35	30	0	1	0	1
7HBT120	525486	6768685	*Eucalyptus pilularis*	A	15	60	0	1	0	1
7HBT121	525696	6768695	*Angophora floribunda*	A	35	50	0	1	0	1
7HBT122	525594	6768700	*Eucalyptus pilularis*	A	35	170	0	3	3	6
7HBT123	525476	6768702	*Eucalyptus racemosa*	A	35	120	0	2	3	5

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT124	525559	6768710	*Eucalyptus pilularis*	A	35	160	0	11	2	13
7HBT125	525506	6768711	*Eucalyptus racemosa*	A	30	110	0	0	7	7
7HBT126	525506	6768723	*Corymbia intermedia*	A	35	80	1	0	0	1
7HBT127	525643	6768737	Scribbly Gum	A	15	150	5	0	0	5
7HBT128	525500	6768738	Stag	D	20	50	1	0	0	1
7HBT129	525513	6768739	*Corymbia intermedia*	A	20	60	0	1	0	1
7HBT130	525640	6768752	Stag	D	20	40	0	1	1	2
7HBT131	525641	6768755	*Corymbia intermedia*	A	20	40	1	0	0	1
7HBT132	525530	6768757	Stag	D	30	50	0	2	1	3
7HBT133	525485	6768760	*Eucalyptus racemosa*	A	15	50	0	1	4	5
7HBT134	525645	6768761	Stringybark	A	20	30	0	0	2	2
7HBT135	525541	6768762	Stag	D	20	100	1	0	0	1
7HBT136	525586	6768763	*Corymbia intermedia*	A	35	60	0	1	0	1
7HBT137	525677	6768765	Stringybark	A	35	130	3	1	1	5
7HBT138	525627	6768766	*Eucalytus racemosa*	A	25	110	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT139	525743	6768766	*Angophora floribunda*	A	25	70	1	0	0	1
7HBT140	525612	6768767	*Corymbia intermedia*	A	12	40	0	1	0	1
7HBT141	525632	6768775	Stag	D	35	30	1	0	0	1
7HBT142	525546	6768777	*Eucalyptus racemosa*	A	25	160	0	0	3	3
7HBT143	525569	6768778	*Corymbia intermedia*	A	25	60	0	1	0	1
7HBT144	525569	6768782	*Corymbia intermedia*	A	35	50	0	0	1	1
7HBT145	525547	6768784	*Eucalyptus racemosa*	A	30	150	2	1	1	4
7HBT146	525509	6768785	*Eucalyptus pilularis*	A	30	140	1	0	0	1
7HBT147	525629	6768789	*Corymbia intermedia*	A	25	70	3	0	0	3
7HBT148	525758	6768795	*Eucalyptus resinifera*	A	20	70	0	0	3	3
7HBT149	525627	6768796	Unknown	A	40	30	0	1	1	2
7HBT150	525612	6768799	Stag	D	40	120	0	5	2	7
7HBT151	525668	6768800	Stringybark	A	35	160	5	2	0	7
7HBT152	525545	6768801	*Corymbia intermedia*	A	35	70	1	0	0	1
7HBT153	525667	6768807	Stringybark	A	30	110	4	2	0	6

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT154	525538	6768811	*Corymbia intermedia*	A	10	70	2	2	0	4
7HBT155	525524	6768813	Stag	D	30	30	1	0	0	1
7HBT156	525532	6768815	*Corymbia intermedia*	A	25	50	0	1	1	2
7HBT157	525766	6768816	*Eucalyptus resinifera*	A	35	70	0	1	2	3
7HBT158	525526	6768821	Scribbly Gum	A	35	100	0	1	1	2
7HBT159	525693	6768826	Stringybark	A	30	110	0	2	0	2
7HBT160	525666	6768828	Stag	D	20	50	0	0	2	2
7HBT161	525782	6768831	Stag	D	20	80	1	2	0	3
7HBT162	525509	6768833	*Eucalyptus racemosa*	A	35	40	0	0	1	1
7HBT163	525542	6768840	Scribbly Gum	A	35	100	0	1	2	3
7HBT164	525648	6768842	Stag	D	30	40	0	2	0	2
7HBT165	525787	6768845	*Eucalyptus pilularis*	A	30	110	0	3	2	5
7HBT166	525642	6768847	*Eucalyptus pilularis*	A	40	100	1	0	0	1
7HBT167	525569	6768849	*Corymbia intermedia*	A	40	110	0	2	2	4
7HBT168	525550	6768849	Scribbly Gum	A	40	80	0	1	1	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT169	525551	6768849	Scribbly Gum	A	35	50	0	0	2	2
7HBT170	525548	6768851	Scribbly Gum	A	20	100	0	0	2	2
7HBT171	525802	6768861	*Eucalyptus pilularis*	A	25	160	2	3	3	8
7HBT172	525673	6768866	Paperbark	A	20	40	2	0	0	2
7HBT173	525713	6768866	Stringybark	A	25	90	1	0	0	1
7HBT174	525561	6768872	Stag	D	35	20	0	1	0	1
7HBT175	525525	6768876	*Eucalyptus racemosa*	A	40	50	0	0	2	2
7HBT176	525579	6768877	*Eucalyptus pilularis*	A	40	70	0	2	1	3
7HBT177	525582	6768885	*Eucalyptus pilularis*	A	30	200	1	2	0	3
7HBT178	525632	6768892	Stag	D	20	90	4	4	0	8
7HBT180	525721	6768895	*Corymbia intermedia*	A	35	50	0	1	0	1
7HBT181	525586	6768899	Stag	D	10	50	1	0	3	4
7HBT182	525742	6768925	Scribbly Gum	A	25	70	0	1	0	1
7HBT183	525747	6768926	Stag	D	20	30	0	1	2	3
7HBT184	525903	6768926	Stag	D	20	140	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT185	525668	6768932	Paperbark	A	40	30	0	1	0	1
7HBT186	525661	6768934	Paperbark	A	30	40	0	1	0	1
7HBT187	525734	6768934	Scribbly Gum	A	35	180	2	2	0	4
7HBT188	525622	6768934	*Eucalyptus resinifera*	A	30	70	0	2	0	2
7HBT189	525734	6768936	Scribbly Gum	A	25	90	3	0	0	3
7HBT190	525735	6768937	*Eucalyptus racemosa*	A	20	60	0	0	2	2
7HBT191	525894	6768939	Stag	D	25	60	1	0	2	3
7HBT192	525724	6768941	*Corymbia intermedia*	A	25	40	0	0	3	3
7HBT193	525756	6768944	*Eucalyptus resinifera*	A	15	60	0	0	3	3
7HBT194	525713	6768955	*Corymbia intermedia*	A	25	60	1	1	0	2
7HBT195	525858	6768955	Stag	D	35	40	0	0	1	1
7HBT196	525577	6768967	*Eucalyptus pilularis*	A	20	160	1	1	0	2
7HBT197	525714	6768968	*Eucalyptus racemosa*	A	30	110	0	2	0	2
7HBT198	525758	6768968	*Corymbia intermedia*	A	40	50	0	0	1	1
7HBT199	525915	6768968	*Eucalyptus racemosa*	A	25	170	2	1	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT200	525716	6768973	Stringybark	A	20	100	1	1	3	5
7HBT201	525578	6768986	*Corymbia intermedia*	A	35	90	0	2	0	2
7HBT202	525694	6768987	*Corymbia intermedia*	A	15	70	0	1	0	1
7HBT203	525911	6768989	*Corymbia intermedia*	A	25	200	1	0	0	1
7HBT204	525883	6768996	Stag	D	20	120	3	0	0	3
7HBT205	525755	6768998	*Corymbia intermedia*	A	30	50	0	2	0	2
7HBT206	525718	6769001	*Corymbia intermedia*	A	25	60	1	0	0	1
7HBT207	525998	6769001	Stringybark	A	10	60	0	1	1	2
7HBT208	525696	6769001	*Eucalyptus racemosa*	A	20	80	0	2	0	2
7HBT209	525746	6769019	*Eucalyptus resinifera*	A	40	50	0	0	2	2
7HBT210	525733	6769019	Stag	D	15	30	0	0	1	1
7HBT211	525811	6769027	Stag	D	40	70	0	1	2	3
7HBT212	525877	6769029	Stringybark	A	35	100	0	2	0	2
7HBT213	525783	6769029	*Corymbia intermedia*	A	20	70	1	0	0	1
7HBT214	525895	6769039	*Corymbia intermedia*	A	18	200	0	2	2	4

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT215	525894	6769041	Stringybark	A	6	180	0	0	1	1
7HBT216	525795	6769044	*Corymbia trachyfloia*	A	20	100	1	3	0	4
7HBT217	525935	6769052	Stag	D	15	200	1	0	0	1
7HBT218	525820	6769057	Stag	D	15	60	1	0	0	1
7HBT219	525694	6769059	Stag	D	40	70	0	0	3	3
7HBT220	525717	6769070	Stag	D	30	70	0	3	0	3
7HBT221	525945	6769076	*Corymbia maculata*	A	40	230	4	4	0	8
7HBT222	525733	6769077	*Eucalyptus racemosa*	A	25	80	1	2	2	5
7HBT223	525960	6769081	*Corymbia intermedia*	A	20	60	0	1	0	1
7HBT224	525731	6769087	Stag	D	25	100	1	0	2	3
7HBT225	525742	6769107	Stag	D	25	70	1	2	2	5
7HBT226	525788	6769129	*Eucalyptus resinifera*	A	30	60	0	1	2	3
7HBT227	525804	6769152	*Eucalyptus resinifera*	A	25	80	0	3	0	3
7HBT228	525815	6769157	*Corymbia intermedia*	A	25	60	0	1	0	1
7HBT230	525860	6769180	*Eucalyptus resinifera*	A	25	100	0	1	3	4

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT231	525888	6769204	Stag	D	20	90	0	0	2	2
7HBT232	525887	6769206	Stag	D	40	60	0	0	2	2
7HBT233	525881	6769220	Stag	D	20	50	0	2	2	4
7HBT234	525979	6769233	*Eucalyptus pilularis*	A	25	120	0	2	2	4
7HBT235	525903	6769245	Stag	D	25	40	0	0	1	1
7HBT236	525907	6769268	Stag	D	30	60	0	0	3	3
7HBT237	525924	6769288	*Eucalyptus crebra*	A	20	60	0	0	2	2
7HBT238	525988	6769400	*Eucalyptus pilularis*	A	15	50	1	0	0	1
7HBT244	526155	6769535	*Corymbia intermedia*	A	30	50	0	1	0	1
7HBT245	526084	6769574	Paperbark	A	25	90	0	0	2	2
7HBT246	526128	6769685	Grey Gum	A	35	100	1	0	0	1
7HBT247	526145	6769787	Stag	D	35	70	0	2	2	4
7HBT248	526154	6769835	Grey Gum	A	30	110	1	2	1	4
7HBT249	526187	6769836	Stag	D	35	100	0	0	2	2
7HBT250	526178	6769916	*Corymbia intermedia*	A	35	120	1	1	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT251	526186	6769964	Grey Gum	A	30	110	0	1	2	3
7HBT252	526323	6769975	Grey Gum	A	35	110	0	1	2	3
7HBT253	526200	6769976	Grey Gum	A	30	50	0	1	1	2
7HBT254	526397	6770012	Grey Gum	A	35	120	0	2	1	3
7HBT255	526273	6770064	Stringybark	A	30	90	1	0	0	1
7HBT256	526284	6770093	Grey Gum	A	20	80	1	1	0	2
7HBT257	526422	6770123	Scribbly Gum	A	35	150	4	3	0	7
7HBT258	526330	6770130	Grey Gum	A	35	150	4	2	0	6
7HBT259	526391	6770131	Paperbark	A	35	60	1	0	0	1
7HBT260	526410	6770142	Scribbly Gum	A	40	50	2	0	0	2
7HBT261	526324	6770178	Grey Gum	A	35	220	3	3	1	7
7HBT262	526305	6770209	Grey Gum	A	35	230	5	2	1	8
7HBT263	526390	6770261	Grey Gum	A	30	150	0	1	2	3
7HBT264	526501	6770318	Scribbly Gum	A	15	120	3	0	0	3
7HBT265	526447	6770322	Stag	D	20	40	0	1	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT266	526489	6770325	Paperbark	A	20	50	1	0	0	1
7HBT267	526518	6770344	Paperbark	A	30	60	2	0	0	2
7HBT268	526495	6770346	*Corymbia intermedia*	A	20	120	0	3	0	3
7HBT269	526498	6770360	*Corymbia intermedia*	A	30	130	2	0	0	2
7HBT270	526524	6770370	*Corymbia intermedia*	A	25	110	3	0	0	3
7HBT271	526515	6770371	*Corymbia intermedia*	A	35	80	0	1	0	1
7HBT272	526526	6770374	*Corymbia intermedia*	A	35	90	0	1	0	1
7HBT273	526527	6770386	*Corymbia intermedia*	A	25	60	0	2	0	2
7HBT274	526529	6770390	*Corymbia intermedia*	A	25	90	0	2	0	2
7HBT275	526530	6770394	Ironbark	A	15	70	0	1	0	1
7HBT276	526487	6770406	*Corymbia intermedia*	A	25	60	0	1	0	1
7HBT277	526491	6770411	Paperbark	A	25	60	1	0	0	1
7HBT278	526541	6770421	*Corymbia intermedia*	A	10	70	0	3	0	3
7HBT279	526539	6770424	Paperbark	A	20	100	1	0	0	1
7HBT280	526518	6770432	*Corymbia intermedia*	A	30	130	1	1	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT281	526542	6770433	Stag	D	20	40	1	0	0	1
7HBT282	526562	6770438	Stag	D	40	40	0	0	1	1
7HBT283	526466	6770443	Scribbly Gum	A	30	60	1	0	0	1
7HBT284	526520	6770443	Paperbark	A	15	70	0	1	0	1
7HBT285	526469	6770460	Stag	D	30	110	3	3	0	6
7HBT286	526542	6770464	Stag	D	20	50	1	1	0	2
7HBT287	526553	6770469	*Corymbia intermedia*	A	20	90	2	0	0	2
7HBT288	526559	6770475	Stag	D	4	70	0	2	1	3
7HBT289	526499	6770480	*Corymbia intermedia*	A	20	100	1	0	0	1
7HBT290	526577	6770481	*Corymbia intermedia*	A	20	80	0	1	0	1
7HBT291	526599	6770499	Stag	D	25	30	1	0	0	1
7HBT292	526592	6770539	Stag	D	15	100	1	0	0	1
7HBT293	526629	6770542	*Lophostemon suaveolens*	A	20	60	0	1	0	1
7HBT294	526525	6770544	*Lophostemon suaveolens*	A	30	80	1	0	1	2
7HBT295	526595	6770545	Stag	D	15	120	2	0	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT296	526606	6770547	Paperbark	A	25	90	0	1	0	1
7HBT297	526603	6770553	*Eucalyptus resinifera*	A	15	70	0	1	1	2
7HBT298	526634	6770555	*Eucalyptus resinifera*	A	25	40	1	0	0	1
7HBT299	526552	6770561	*Eucalyptus resinifera*	A	15	90	0	1	0	1
7HBT300	526526	6770567	*Lophostemon suaveolens*	A	30	50	0	0	1	1
7HBT301	526618	6770574	*Eucalyptus racemosa*	A	30	70	0	0	2	2
7HBT302	526628	6770574	*Lophostemon suaveolens*	A	25	50	0	1	0	1
7HBT303	526648	6770577	*Eucalyptus resinifera*	A	10	90	0	0	1	1
7HBT304	526570	6770583	*Eucalyptus resinifera*	A	20	60	0	1	0	1
7HBT305	526642	6770583	*Corymbia intermedia*	A	30	30	0	1	0	1
7HBT306	526638	6770586	Stag	D	25	60	2	0	0	2
7HBT307	526623	6770592	*Eucalyptus racemosa*	A	25	40	0	0	2	2
7HBT308	526623	6770593	*Eucalyptus racemosa*	A	25	60	0	1	2	3
7HBT309	526642	6770594	*Eucalyptus microcorys*	A	25	50	0	0	2	2
7HBT311	526653	6770598	*Eucalyptus microcorys*	A	25	200	0	2	4	6

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT312	526588	6770609	Stag	D	30	50	0	1	3	4
7HBT313	526633	6770616	*Eucalyptus resinifera*	A	25	70	0	1	5	6
7HBT314	526602	6770618	Stag	D	30	50	0	2	2	4
7HBT315	526661	6770623	*Eucalyptus racemosa*	A	30	50	0	0	1	1
7HBT316	526678	6770625	*Corymbia intermedia*	A	25	50	0	0	2	2
7HBT317	526660	6770630	*Eucalyptus racemosa*	A	25	70	0	0	1	1
7HBT318	526607	6770633	*Eucalyptus resinifera*	A	25	80	0	0	2	2
7HBT319	526678	6770636	*Corymbia intermedia*	A	30	60	0	1	2	3
7HBT320	526608	6770639	*Eucalyptus microcorys*	A	20	50	0	1	0	1
7HBT321	526606	6770643	*Eucalyptus racemosa*	A	30	50	0	1	0	1
7HBT322	526672	6770650	*Eucalyptus fibrosa*	A	25	110	0	0	4	4
7HBT323	526675	6770652	*Eucalyptus resinifera*	A	30	60	0	0	6	6
7HBT325	526588	6770655	*Eucalyptus propinqua*	A	15	70	1	1	1	3
7HBT326	526685	6770667	*Eucalyptus resinifera*	A	30	50	0	1	2	3
7HBT327	526626	6770668	*Eucalyptus resinifera*	A	15	50	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT328	526677	6770673	*Eucalyptus resinifera*	A	12	30	0	1	2	3
7HBT329	526640	6770674	*Eucalyptus resinifera*	A	25	60	0	0	1	1
7HBT330	526613	6770674	Stag	D	20	60	0	2	1	3
7HBT331	526628	6770679	*Eucalyptus resinifera*	A	20	40	0	1	0	1
7HBT332	526642	6770683	*Eucalyptus fibrosa*	A	35	120	0	3	3	6
7HBT333	526694	6770694	*Eucalyptus resinifera*	A	40	50	0	0	1	1
7HBT334	526711	6770712	*Eucalyptus resinifera*	A	12	40	0	1	0	1
7HBT335	526655	6770718	*Corymbia intermedia*	A	10	40	0	0	1	1
7HBT336	526667	6770718	*Eucalyptus resinifera*	A	30	100	0	0	1	1
7HBT337	526658	6770721	*Eucalyptus fibrosa*	A	30	60	0	0	1	1
7HBT338	526736	6770745	Stag	D	30	30	1	1	0	2
7HBT339	526696	6770757	Stag	D	30	30	0	0	1	1
7HBT340	526666	6770758	*Eucalyptus resinifera*	A	30	50	0	2	0	2
7HBT341	526699	6770762	*Eucalyptus resinifera*	A	30	50	0	1	1	2
7HBT342	526698	6770762	*Eucalyptus resinifera*	A	25	40	0	0	1	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT343	526761	6770782	*Eucalyptus resinifera*	A	20	70	0	1	0	1
7HBT344	526687	6770783	*Eucalyptus resinifera*	A	30	60	0	0	1	1
7HBT345	526713	6770789	*Eucalyptus fibrosa*	A	25	60	0	0	2	2
7HBT346	526725	6770793	*Eucalyptus resinifera*	A	25	70	0	0	1	1
7HBT347	526721	6770794	*Eucalyptus resinifera*	A	15	40	0	0	2	2
7HBT348	526785	6770869	*Eucalyptus resinifera*	A	25	40	0	0	1	1
7HBT349	526739	6770875	*Eucalyptus resinifera*	A	25	60	1	1	0	2
7HBT350	526750	6770882	*Corymbia intermedia*	A	30	60	0	1	0	1
7HBT351	526758	6770884	*Eucalyptus resinifera*	A	25	80	0	1	1	2
7HBT352	526890	6770914	*Corymbia intermedia*	A	25	100	0	1	0	1
7HBT353	526777	6770921	*Eucalyptus resinifera*	A	30	80	0	0	1	1
7HBT354	526825	6770929	*Corymbia intermedia*	A	30	60	0	0	2	2
7HBT355	526794	6770933	*Corymbia intermedia*	A	25	30	0	0	1	1
7HBT356	526827	6770938	*Eucalyptus racemosa*	A	30	60	0	1	0	1
7HBT357	526839	6770955	*Eucalyptus resinifera*	A	30	60	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT358	526839	6770968	*Eucalyptus resinifera*	A	35	80	1	2	1	4
7HBT359	526848	6770981	*Corymbia intermedia*	A	30	50	0	0	2	2
7HBT360	526768	6770982	Stag	D	25	50	0	2	2	4
7HBT361	526773	6770991	*Eucalyptus resinifera*	A	30	70	0	1	0	1
7HBT362	526842	6771009	*Eucalyptus resinifera*	A	40	80	0	0	1	1
7HBT363	526794	6771013	*Corymbia intermedia*	A	35	40	0	1	0	1
7HBT364	526857	6771013	*Eucalyptus pilularis*	A	30	80	0	1	2	3
7HBT365	526782	6771038	*Corymbia intermedia*	A	25	30	0	2	0	2
7HBT366	526815	6771043	*Corymbia variegata*	A	30	100	0	1	1	2
7HBT367	526824	6771057	*Corymbia variegata*	A	35	80	0	1	1	2
7HBT368	526872	6771093	*Eucalyptus racemosa*	A	30	70	0	0	2	2
7HBT369	526771	6771096	*Eucalyptus resinifera*	A	30	50	0	1	2	3
7HBT370	526873	6771115	Stag	D	20	120	3	0	0	3
7HBT371	526901	6771116	*Corymbia intermedia*	A	25	70	0	0	2	2
7HBT372	526784	6771116	Stag	D	35	40	1	2	1	4

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT373	526904	6771120	*Eucalyptus racemosa*	A	30	150	2	2	0	4
7HBT374	526905	6771125	*Corymbia intermedia*	A	30	40	0	0	1	1
7HBT375	526892	6771150	*Corymbia intermedia*	A	15	70	2	2	0	4
7HBT376	526835	6771151	Stag	D	18	120	1	5	4	10
7HBT377	526843	6771155	*Eucalyptus resinifera*	A	8	70	0	1	1	2
7HBT378	526924	6771170	*Corymbia intermedia*	A	30	60	0	1	0	1
7HBT380	526915	6771179	*Corymbia intermedia*	A	25	70	0	0	1	1
7HBT381	526843	6771186	*Corymbia intermedia*	A	25	70	0	2	0	2
7HBT383	526835	6771199	*Melaleuca quinquenervia*	A	30	50	0	1	0	1
7HBT384	526852	6771201	*Lophostemon suaveolens*	A	25	30	0	0	3	3
7HBT385	526855	6771203	*Lophostemon suaveolens*	A	30	50	0	1	2	3
7HBT386	526917	6771203	*Eucalyptus resinifera*	A	25	100	0	3	2	5
7HBT387	526857	6771212	Stag	D	30	50	0	0	3	3
7HBT388	526835	6771218	*Eucalyptus acmenoides*	A	25	60	1	0	0	1
7HBT390	526857	6771245	*Eucalyptus resinifera*	A	35	40	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT392	526810	6771248	*Lophostemon suaveolens*	A	30	50	1	0	0	1
7HBT393	526920	6771249	*Eucalyptus resinifera*	A	15	70	2	1	0	3
7HBT394	526862	6771251	Stag	D	20	40	0	0	2	2
7HBT395	526855	6771266	*Corymbia intermedia*	A	20	100	3	3	2	8
7HBT396	526811	6771267	*Eucalyptus resinifera*	A	15	70	1	2	0	3
7HBT397	526824	6771268	*Eucalyptus resinifera*	A	30	80	1	3	2	6
7HBT398	526912	6771283	*Eucalyptus racemosa*	A	25	120	3	2	2	7
7HBT399	526942	6771287	*Eucalyptus resinifera*	A	12	70	0	0	2	2
7HBT400	526936	6771288	*Eucalyptus resinifera*	A	25	70	0	1	0	1
7HBT401	526839	6771289	*Eucalyptus resinifera*	A	40	60	1	1	1	3
7HBT402	526838	6771291	*Eucalyptus resinifera*	A	20	50	0	2	0	2
7HBT403	526835	6771296	*Eucalyptus resinifera*	A	20	40	1	0	1	2
7HBT404	526908	6771296	*Eucalyptus resinifera*	A	25	110	0	1	1	2
7HBT405	526932	6771300	*Eucalyptus racemosa*	A	30	110	0	0	2	2
7HBT406	526910	6771302	*Corymbia intermedia*	A	35	60	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT407	526944	6771310	*Corymbia intermedia*	A	15	60	0	3	0	3
7HBT408	526841	6771314	*Eucalyptus resinifera*	A	12	40	0	0	1	1
7HBT409	526924	6771319	*Eucalyptus racemosa*	A	25	120	0	1	2	3
7HBT410	526905	6771320	*Eucalyptus racemosa*	A	25	70	0	1	2	3
7HBT411	526937	6771320	*Corymbia intermedia*	A	30	80	1	0	0	1
7HBT412	526834	6771323	*Eucalyptus resinifera*	A	20	60	1	1	1	3
7HBT413	526907	6771323	*Corymbia intermedia*	A	25	50	0	1	0	1
7HBT414	526860	6771338	*Corymbia intermedia*	A	20	80	3	1	0	4
7HBT415	526870	6771339	Stag	D	25	50	0	0	2	2
7HBT416	526884	6771357	*Eucalyptus racemosa*	A	25	120	2	2	2	6
7HBT417	526870	6771358	*Eucalyptus racemosa*	A	30	70	2	1	0	3
7HBT418	526855	6771359	*Eucalyptus racemosa*	A	25	110	4	3	0	7
7HBT419	526885	6771374	*Corymbia intermedia*	A	30	70	0	1	0	1
7HBT420	526955	6771374	*Eucalyptus racemosa*	A	30	100	1	1	1	3
7HBT421	526847	6771382	*Eucalyptus resinifera*	A	35	112	3	1	0	4

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT422	526836	6771393	*Eucalyptus resinifera*	A	25	60	1	0	0	1
7HBT423	526953	6771393	*Eucalyptus resinifera*	A	25	60	3	2	2	7
7HBT424	526853	6771399	*Eucalyptus resinifera*	A	20	60	0	3	0	3
7HBT425	526883	6771399	*Corymbia intermedia*	A	25	50	0	0	2	2
7HBT426	526953	6771400	*Eucalyptus racemosa*	A	30	70	0	0	1	1
7HBT427	526865	6771404	Stag	D	30	50	0	4	0	4
7HBT428	526847	6771405	Stag	D	25	40	0	0	3	3
7HBT429	526952	6771406	*Corymbia intermedia*	A	20	50	0	0	1	1
7HBT430	526939	6771408	*Corymbia intermedia*	A	15	50	0	0	1	1
7HBT431	526857	6771409	*Corymbia intermedia*	A	25	50	0	1	2	3
7HBT432	526946	6771410	*Eucalyptus resinifera*	A	10	70	0	1	0	1
7HBT433	526953	6771414	Stag	D	25	70	0	1	1	2
7HBT434	526861	6771423	Stag	D	25	80	1	0	0	1
7HBT435	526948	6771430	*Eucalyptus resinifera*	A	25	50	0	0	2	2
7HBT436	526868	6771433	Stag	D	20	60	0	1	2	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT437	526962	6771435	*Eucalyptus microcorys*	A	20	80	0	1	1	2
7HBT438	526888	6771435	*Corymbia intermedia*	A	30	50	0	2	1	3
7HBT439	526941	6771444	*Eucalyptus resinifera*	A	30	40	0	0	2	2
7HBT440	526947	6771454	*Eucalyptus racemosa*	A	25	100	2	2	2	6
7HBT441	526852	6771460	*Eucalyptus resinifera*	A	40	60	2	0	0	2
7HBT442	526875	6771464	*Eucalyptus racemosa*	A	30	170	3	2	0	5
7HBT443	526868	6771468	*Eucalyptus resinifera*	A	30	50	0	0	2	2
7HBT445	526964	6771495	*Corymbia intermedia*	A	40	60	0	0	2	2
7HBT446	526848	6771496	*Eucalyptus resinifera*	A	30	40	0	1	3	4
7HBT447	526950	6771497	*Corymbia intermedia*	A	25	50	0	2	0	2
7HBT448	526961	6771498	Stag	D	15	50	2	3	0	5
7HBT449	526949	6771502	*Eucalyptus resinifera*	A	30	30	0	0	2	2
7HBT450	526960	6771508	Stag	D	15	30	0	0	3	3
7HBT451	526861	6771510	*Eucalyptus resinifera*	A	30	60	0	1	3	4
7HBT452	526938	6771513	*Eucalyptus racemosa*	A	15	60	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT453	526976	6771517	Stag	D	12	30	0	1	0	1
7HBT454	526866	6771521	*Eucalyptus resinifera*	A	10	60	0	1	3	4
7HBT455	526864	6771522	*Eucalyptus resinifera*	A	8	70	0	1	0	1
7HBT456	526858	6771526	*Eucalyptus resinifera*	A	25	60	1	0	0	1
7HBT457	526857	6771532	*Eucalyptus resinifera*	A	20	50	0	0	1	1
7HBT458	526917	6771540	*Corymbia intermedia*	A	20	50	0	0	1	1
7HBT459	526920	6771541	*Eucalyptus resinifera*	A	20	60	0	1	0	1
7HBT460	526949	6771546	*Corymbia intermedia*	A	25	40	0	2	2	4
7HBT461	526899	6771546	Stag	D	30	60	0	1	3	4
7HBT462	526971	6771551	*Eucalyptus pilularis*	A	10	110	0	2	3	5
7HBT463	526881	6771556	*Eucalyptus resinifera*	A	10	60	0	1	1	2
7HBT464	526980	6771567	*Eucalyptus racemosa*	A	15	60	2	2	0	4
7HBT465	526923	6771567	*Corymbia intermedia*	A	25	40	0	1	0	1
7HBT466	526981	6771569	*Eucalyptus racemosa*	A	18	80	1	2	0	3
7HBT467	526969	6771571	*Eucalyptus racemosa*	A	25	90	1	2	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT468	526932	6771589	*Corymbia intermedia*	A	30	40	0	0	2	2
7HBT469	526975	6771598	*Corymbia intermedia*	A	25	50	0	0	2	2
7HBT470	526966	6771607	*Corymbia intermedia*	A	20	60	0	0	2	2
7HBT471	526985	6771608	*Eucalyptus resinifera*	A	35	60	0	0	1	1
7HBT472	526966	6771620	Stag	D	30	60	0	2	3	5
7HBT473	526977	6771624	*Eucalyptus racemosa*	A	30	70	1	1	1	3
7HBT474	526909	6771626	*Eucalyptus resinifera*	A	40	60	1	1	0	2
7HBT475	526963	6771627	*Corymbia intermedia*	A	25	60	0	1	3	4
7HBT476	526986	6771633	Stag	D	20	70	0	1	2	3
7HBT477	526920	6771635	Stag	D	20	60	1	0	0	1
7HBT478	526914	6771639	*Eucalyptus resinifera*	A	20	70	1	1	0	2
7HBT479	526915	6771641	*Eucalyptus resinifera*	A	20	40	0	1	0	1
7HBT480	526943	6771644	*Eucalyptus resinifera*	A	20	60	0	1	0	1
7HBT481	526948	6771691	*Eucalyptus racemosa*	A	20	90	0	2	2	4
7HBT482	526997	6771706	*Eucalyptus racemosa*	A	15	60	0	0	3	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT483	526996	6771708	Stag	D	15	30	0	1	0	1
7HBT484	526986	6771725	*Eucalyptus racemosa*	A	35	70	0	0	2	2
7HBT485	526931	6771728	*Eucalyptus racemosa*	A	20	110	1	1	0	2
7HBT486	526937	6771729	Stag	D	8	50	0	0	2	2
7HBT487	526994	6771737	Stag	D	12	70	0	3	3	6
7HBT488	526994	6771738	Stag	D	12	50	0	0	2	2
7HBT489	526934	6771743	*Eucalyptus resinifera*	A	25	60	0	2	0	2
7HBT490	526938	6771757	*Eucalyptus racemosa*	A	25	110	0	3	0	3
7HBT491	526945	6771762	Stag	D	20	110	0	2	2	4
7HBT492	527006	6771771	Stag	D	10	50	1	0	0	1
7HBT493	526947	6771779	*Eucalyptus racemosa*	A	<Null>	100	1	0	0	1
7HBT494	527010	6771780	Stag	D	25	80	0	0	4	4
7HBT495	526934	6771781	*Eucalyptus racemosa*	A	15	70	0	1	1	2
7HBT496	526916	6771790	*Eucalyptus racemosa*	A	20	80	2	2	0	4
7HBT497	526944	6771791	*Eucalyptus racemosa*	A	35	130	2	1	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT498	527009	6771791	Stag	D	20	60	0	0	1	1
7HBT499	527005	6771798	*Corymbia intermedia*	A	<Null>	70	0	2	0	2
7HBT500	527003	6771801	*Eucalyptus racemosa*	A	<Null>	60	0	2	1	3
7HBT501	526950	6771807	*Eucalyptus racemosa*	A	30	110	0	2	1	3
7HBT502	527027	6771807	Stag	D	30	50	0	0	3	3
7HBT503	527009	6771843	*Eucalyptus racemosa*	A	<Null>	110	0	1	1	2
7HBT504	526985	6771858	*Eucalyptus racemosa*	A	15	120	0	2	0	2
7HBT505	527075	6771871	*Corymbia intermedia*	A	30	150	1	0	0	1
7HBT506	526961	6771872	*Eucalyptus resinifera*	A	25	90	0	3	4	7
7HBT507	526975	6771874	*Corymbia intermedia*	A	25	60	0	0	1	1
7HBT508	526968	6771885	Stag	D	30	50	0	1	2	3
7HBT509	526990	6771892	*Eucalyptus racemosa*	A	25	60	0	3	2	5
7HBT510	527021	6771899	*Corymbia intermedia*	A	30	70	0	2	2	4
7HBT511	527031	6771907	*Eucalyptus racemosa*	A	25	60	0	2	2	4
7HBT512	527036	6771913	*Eucalyptus racemosa*	A	45	70	0	0	1	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT513	527026	6771918	*Eucalyptus racemosa*	A	25	60	0	0	2	2
7HBT514	526995	6771993	*Eucalyptus resinifera*	A	30	40	0	1	1	2
7HBT515	527001	6771994	*Eucalyptus resinifera*	A	40	70	0	0	2	2
7HBT516	526957	6772015	Stag	D	15	60	1	0	0	1
7HBT517	527045	6772025	*Eucalyptus resinifera*	A	40	50	0	0	1	1
7HBT518	526960	6772073	*Eucalyptus resinifera*	A	35	70	0	1	1	2
7HBT521	527040	6772203	*Corymbia variegata*	A	40	60	0	1	1	2
7HBT522	526982	6772208	Stag	D	40	60	0	2	2	4
7HBT523	526988	6772219	Stag	D	30	70	0	1	3	4
7HBT524	527048	6772219	*Corymbia variegata*	A	30	70	0	1	2	3
7HBT525	527101	6772223	*Corymbia variegata*	A	30	60	0	0	1	1
7HBT527	527071	6772295	*Corymbia variegata*	A	30	70	0	0	1	1
7HBT528	527042	6772314	*Corymbia variegata*	A	30	100	0	3	0	3
7HBT529	527014	6772317	*Corymbia variegata*	A	35	50	0	1	1	2
7HBT530	526988	6772324	Stag	D	35	60	0	2	3	5

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT531	527046	6772349	*Corymbia variegata*	A	35	100	0	0	3	3
7HBT532	527066	6772353	*Eucalyptus resinifera*	A	30	60	0	1	0	1
7HBT534	527050	6772482	*Eucalyptus resinifera*	A	10	90	0	0	2	2
7HBT535	527061	6772487	Stag	D	35	90	1	0	0	1
7HBT536	527071	6772509	*Eucalyptus resinifera*	A	30	70	0	0	2	2
7HBT537	527076	6772511	Stag	D	35	50	1	0	0	1
7HBT538	527078	6772520	*Eucalyptus resinifera*	A	35	60	0	0	3	3
7HBT539	527080	6772530	Stag	D	30	40	0	0	2	2
7HBT540	527092	6772541	Stag	D	15	40	0	1	0	1
7HBT541	527132	6772614	Stag	D	35	50	1	0	0	1
7HBT542	527097	6772643	Stag	D	35	40	0	1	0	1
7HBT543	527091	6772681	*Eucalyptus microcorys*	A	25	60	0	3	0	3
7HBT545	527126	6772693	*Eucalyptus resinifera*	A	35	60	0	3	2	5
7HBT546	527116	6772722	*Eucalyptus resinifera*	A	25	60	0	0	2	2
7HBT547	527155	6772727	*Corymbia intermedia*	A	25	50	0	1	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT548	527106	6772740	*Eucalyptus resinifera*	A	20	80	0	3	3	6
7HBT549	527132	6772742	*Eucalyptus microcorys*	A	10	80	0	3	3	6
7HBT550	527115	6772752	Stag	D	35	40	0	1	0	1
7HBT551	527115	6772752	Stag	D	25	30	0	1	0	1
7HBT552	527139	6772770	Stag	D	35	30	0	2	1	3
7HBT553	527128	6772779	*Corymbia variegata*	A	35	70	0	2	2	4
7HBT554	527129	6772802	*Corymbia intermedia*	A	35	30	0	0	1	1
7HBT555	527177	6772819	Stringybark	A	30	90	2	1	0	3
7HBT556	527198	6772830	Stringybark	A	35	80	1	0	0	1
7HBT558	527201	6772833	*Eucalyptus resinifera*	A	30	60	1	0	0	1
7HBT559	527209	6772834	*Corymbia intermedia*	A	10	30	0	0	2	2
7HBT560	527179	6772851	Stag	D	30	70	0	2	0	2
7HBT561	527179	6772853	Grey Gum	A	35	90	0	3	1	4
7HBT562	527221	6772860	*Corymbia intermedia*	A	30	70	2	1	0	3
7HBT563	527235	6772906	*Corymbia intermedia*	A	35	80	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT564	527260	6772962	Stringybark	A	30	110	0	1	0	1
7HBT565	527276	6772965	Stag	D	20	30	0	1	0	1
7HBT566	527280	6772971	*Corymbia intermedia*	A	35	70	1	1	0	2
7HBT567	527279	6772971	Stringybark	A	35	110	2	1	0	3
7HBT568	527324	6772996	*Corymbia intermedia*	A	10	50	0	0	3	3
7HBT569	527312	6772998	Paperbark	A	30	30	1	0	0	1
7HBT570	527303	6773002	*Corymbia intermedia*	A	35	110	1	1	0	2
7HBT571	527317	6773002	*Corymbia intermedia*	A	30	50	0	0	2	2
7HBT572	527268	6773003	Paperbark	A	35	70	2	0	0	2
7HBT573	527329	6773006	*Corymbia intermedia*	A	20	30	1	0	1	2
7HBT574	527350	6773053	Stag	D	35	80	2	0	0	2
7HBT575	527329	6773057	Corymbia intermedia	A	30	60	1	0	0	1
7HBT576	527365	6773079	Corymbia intermedia	A	10	50	0	1	1	2
7HBT577	527341	6773088	Stag	D	30	70	1	0	0	1
7HBT578	527421	6773109	Stag	D	20	50	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT579	527394	6773112	Stag	D	30	50	1	0	0	1
7HBT580	527364	6773114	Stag	D	30	50	2	0	0	2
7HBT581	527414	6773118	*Corymbia intermedia*	A	30	40	1	0	0	1
7HBT582	527368	6773130	Stag	D	12	110	2	1	0	3
7HBT583	527385	6773148	Stag	D	35	30	2	0	0	2
7HBT584	527427	6773153	Stag	D	25	100	1	1	0	2
7HBT585	527424	6773156	Stag	D	35	70	1	3	0	4
7HBT586	527385	6773158	Stag	D	25	30	1	0	0	1
7HBT587	527396	6773159	Stag	D	30	40	0	1	0	1
7HBT588	527443	6773167	Stringybark	A	10	80	1	0	0	1
7HBT589	527451	6773172	Stringybark	A	30	100	1	0	0	1
7HBT590	527462	6773172	Stringybark	A	30	100	0	2	0	2
7HBT594	527499	6773236	Stag	D	25	130	3	4	0	7
7HBT595	527535	6773281	Stag	D	35	120	0	2	0	2
7HBT596	527547	6773281	*Corymbia intermedia*	A	30	60	1	1	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT597	527494	6773292	Stag	D	30	20	0	0	1	1
7HBT598	527497	6773314	Stag	D	25	30	0	0	1	1
7HBT599	527531	6773328	Stag	D	35	50	0	0	1	1
7HBT600	527602	6773344	*Corymbia intermedia*	A	30	50	0	1	0	1
7HBT601	527604	6773352	*Corymbia intermedia*	A	30	60	0	1	1	2
7HBT602	527597	6773355	Stringybark	A	35	50	1	0	0	1
7HBT603	527593	6773356	Stag	D	40	100	0	2	0	2
7HBT604	527603	6773362	Stringybark	A	15	70	0	1	0	1
7HBT605	527526	6773370	Stag	D	25	50	0	0	2	2
7HBT606	527586	6773388	*Corymbia intermedia*	A	20	130	1	1	0	2
7HBT607	527588	6773392	Stringybark	A	35	70	0	2	0	2
7HBT608	527609	6773400	Stag	D	35	80	0	1	1	2
7HBT609	527582	6773406	Grey Gum	A	20	70	1	0	0	1
7HBT610	527589	6773406	Stag	D	30	40	1	0	0	1
7HBT611	527603	6773407	Stringybark	A	30	120	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT612	527648	6773407	Stag	D	35	110	0	1	1	2
7HBT613	527627	6773408	Stringybark	A	35	150	2	1	0	3
7HBT614	527622	6773422	Stringybark	A	30	80	0	0	2	2
7HBT615	527662	6773425	*Corymbia intermedia*	A	30	90	1	1	0	2
7HBT616	527618	6773429	Grey Gum	A	35	70	0	2	0	2
7HBT617	527613	6773433	Stag	D	30	90	3	5	1	9
7HBT618	527676	6773435	Stag	D	25	100	2	1	0	3
7HBT619	527679	6773438	*Corymbia intermedia*	A	20	70	1	0	0	1
7HBT620	527659	6773451	Stringybark	A	25	80	0	2	0	2
7HBT621	527673	6773451	Stag	D	35	80	1	0	0	1
7HBT622	527612	6773464	Grey Gum	A	30	40	1	0	0	1
7HBT623	527633	6773465	Stag	D	30	100	2	2	0	4
7HBT624	527681	6773468	Stag	D	35	30	0	2	1	3
7HBT625	527681	6773469	Stringybark	A	35	70	0	1	1	2
7HBT626	527694	6773481	Stringybark	A	40	60	0	2	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT627	527693	6773488	Scribbly Gum	A	30	130	2	1	1	4
7HBT628	527663	6773502	Scribbly Gum	A	35	40	1	0	0	1
7HBT629	527713	6773505	Stag	D	30	70	0	1	2	3
7HBT630	527716	6773510	Stag	D	40	30	1	0	0	1
7HBT631	527733	6773518	Stag	D	20	90	1	2	1	4
7HBT632	527711	6773535	Stringybark	A	20	40	0	1	0	1
7HBT633	527701	6773541	Stag	D	35	40	0	2	0	2
7HBT634	527704	6773543	Stringybark	A	20	50	0	1	0	1
7HBT635	527696	6773550	Stag	D	25	40	0	2	1	3
7HBT636	527758	6773553	Stringybark	A	30	70	2	0	0	2
7HBT637	527753	6773561	Stag	D	30	40	1	3	1	5
7HBT638	527780	6773569	Stag	D	30	40	1	0	0	1
7HBT639	527709	6773572	Stringybark	A	15	80	1	0	0	1
7HBT640	527715	6773572	Stag	D	20	40	0	0	2	2
7HBT641	527749	6773608	*Corymbia intermedia*	A	40	80	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT642	527791	6773630	Stag	D	20	50	1	0	0	1
7HBT643	527823	6773632	Stringybark	A	15	70	0	1	0	1
7HBT644	527825	6773636	Stringybark	A	25	80	0	3	0	3
7HBT645	527835	6773644	*Corymbia intermedia*	A	40	90	1	3	0	4
7HBT646	527817	6773692	Stag	D	20	70	0	1	1	2
7HBT647	527874	6773700	Stag	D	15	30	3	0	0	3
7HBT648	527877	6773702	*Eucalyptus pilularis*	A	20	90	1	1	1	3
7HBT649	527890	6773702	Stag	D	45	70	1	2	0	3
7HBT650	527824	6773704	*Eucalyptus pilularis*	A	25	70	0	0	2	2
7HBT651	527862	6773706	Stringybark	A	8	60	0	1	0	1
7HBT652	527899	6773735	*Eucalyptus pilularis*	A	25	80	0	3	0	3
7HBT653	527886	6773761	Stag	D	30	30	2	0	0	2
7HBT654	527878	6773762	*Eucalyptus pilularis*	A	20	100	3	1	0	4
7HBT655	527883	6773763	Stag	D	20	50	0	1	0	1
7HBT656	527873	6773765	Stag	D	25	50	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT657	527969	6773811	Stag	D	10	50	0	0	1	1
7HBT658	527976	6773813	Stag	D	20	50	0	2	0	2
7HBT659	527975	6773822	*Eucalyptus pilularis*	A	20	110	0	2	1	3
7HBT660	527994	6773836	*Eucalyptus pilularis*	A	25	130	0	2	1	3
7HBT661	527925	6773848	Stag	D	25	50	0	1	0	1
7HBT662	527967	6773851	Stag	D	12	60	0	0	3	3
7HBT663	527968	6773852	*Eucalyptus pilularis*	A	25	90	2	1	0	3
7HBT664	527959	6773855	Stag	D	20	30	1	0	0	1
7HBT665	527970	6773859	*Eucalyptus pilularis*	A	20	100	1	1	0	2
7HBT666	527961	6773861	Stag	D	30	40	1	0	2	3
7HBT667	528023	6773878	Stringybark	A	30	80	0	1	1	2
7HBT668	528030	6773883	Stringybark	A	25	80	1	2	0	3
7HBT669	528030	6773885	Stag	D	30	120	1	3	1	5
7HBT670	528042	6773889	Stag	D	30	20	1	0	0	1
7HBT671	528080	6773951	Stringybark	A	30	60	0	1	1	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT672	528092	6773963	Stringybark	A	30	60	0	2	1	3
7HBT673	528111	6773985	Stag	D	25	60	0	3	0	3
7HBT674	528110	6773985	Stringybark	A	25	20	0	2	0	2
7HBT675	528113	6773987	Stag	D	25	30	0	2	0	2
7HBT676	528395	6774329	Stag	D	15	35	1	0	0	1
7HBT677	528451	6774376	Stringybark	A	25	70	0	2	0	2
7HBT678	528478	6774425	Stringybark	A	30	70	1	0	0	1
7HBT679	528501	6774439	Stringybark	A	40	70	0	1	0	1
7HBT680	528537	6774503	Stringybark	A	35	90	1	0	0	1
7HBT681	528730	6774665	Stringybark	A	35	120	1	2	0	3
7HBT682	528780	6774709	Grey Gum	A	6	30	0	1	0	1
7HBT683	528805	6774728	Grey Gum	A	30	70	3	1	0	4
7HBT684	528845	6774765	Grey Gum	A	25	80	1	0	0	1
7HBT685	528830	6774778	Grey Gum	A	10	70	0	2	0	2
7HBT686	528855	6774805	Grey Gum	A	15	80	0	2	0	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT687	528942	6774859	Grey Gum	A	25	50	0	1	0	1
7HBT688	528996	6774893	Grey Gum	A	25	70	0	0	1	1
7HBT689	529234	6775031	*Eucalyptus tereticornis*	A	25	50	0	1	2	3
7HBT690	529246	6775040	*Eucalyptus tereticornis*	A	30	80	0	0	2	2
7HBT691	529154	6775044	*Corymbia intermedia*	A	30	60	0	1	0	1
7HBT693	529762	6775443	*Eucalyptus tereticornis*	A	15	150	0	3	2	5
7HBT694	529792	6775455	*Eucalyptus tereticornis*	A	30	120	1	2	2	5
7HBT695	529729	6775522	Grey Gum	A	20	90	2	0	0	2
7HBT696	529741	6775525	Grey Gum	A	15	200	3	2	0	5
7HBT697	529765	6775567	Grey Gum	A	15	120	0	2	0	2
7HBT698	529814	6775602	Grey Gum	A	15	140	3	0	0	3
7HBT699	529856	6775625	Grey Gum	A	25	120	3	1	0	4
7HBT700	529965	6775705	Grey Gum	A	40	100	1	3	2	6
7HBT701	529954	6775725	Grey Gum	A	25	90	4	2	0	6
7HBT702	529962	6775731	Grey Gum	A	25	120	5	1	0	6

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT703	529997	6775739	*Corymbia intermedia*	A	40	90	0	2	2	4
7HBT704	530010	6775746	*Corymbia intermedia*	A	35	90	0	0	2	2
7HBT705	530046	6775763	Grey Gum	A	15	110	1	0	1	2
7HBT706	530125	6775804	Paperbark	A	35	50	0	0	1	1
7HBT707	530151	6775816	Paperbark	A	40	90	0	1	0	1
7HBT708	530515	6775923	*Corymbia intermedia*	A	40	110	4	0	0	4
7HBT709	530649	6776014	Stringybark	A	35	120	0	1	1	2
7HBT710	530855	6776172	*Corymbia intermedia*	A	12	110	0	2	0	2
7HBT711	530808	6776185	*Corymbia intermedia*	A	30	150	1	1	0	2
7HBT712	530872	6776226	Stringybark	A	25	110	1	0	0	1
7HBT713	530821	6776237	Stringybark	A	30	120	1	0	0	1
7HBT714	530876	6776245	Stringybark	A	30	150	1	1	0	2
7HBT715	530924	6776270	*Eucalyptus resinifera*	A	7	110	0	5	0	5
7HBT716	530843	6776272	*Corymbia intermedia*	A	30	90	2	0	0	2
7HBT717	530823	6776282	Stag	D	30	110	1	0	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT718	530883	6776294	*Corymbia intermedia*	A	10	120	2	0	0	2
7HBT719	530926	6776308	*Corymbia intermedia*	A	30	50	2	0	0	2
7HBT720	530884	6776312	Stringybark	A	30	70	0	1	0	1
7HBT721	530882	6776318	Stringybark	A	30	70	1	0	0	1
7HBT722	530922	6776327	Stringybark	A	30	110	0	0	1	1
7HBT723	530884	6776351	Stringybark	A	15	100	1	0	0	1
7HBT724	530946	6776378	Stag - *Lophostemon suaveolens*	D	12	130	0	2	1	3
7HBT725	530936	6776382	Stringybark	A	20	90	1	0	0	1
7HBT726	530907	6776389	Paperbark	A	20	40	0	1	0	1
7HBT727	530898	6776403	*Corymbia intermedia*	A	30	70	0	0	1	1
7HBT728	530900	6776405	Stringybark	A	40	200	3	0	0	3
7HBT729	530966	6776410	*Lophostemon suaveolens*	A	35	160	1	0	0	1
7HBT730	530967	6776425	*Lophostemon suaveolens*	A	30	50	1	0	0	1
7HBT731	530963	6776429	*Lophostemon suaveolens*	A	20	80	0	0	2	2
7HBT732	530937	6776443	*Corymbia intermedia*	A	8	130	3	0	0	3

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT733	530962	6776443	Paperbark	A	35	70	1	0	0	1
7HBT734	530973	6776446	Paperbark	A	30	80	0	1	0	1
7HBT735	530930	6776447	Stringybark	A	30	150	0	1	0	1
7HBT736	530981	6776468	*Eucalyptus resinifera*	A	30	80	0	0	2	2
7HBT737	530989	6776504	*Lophostemon suaveolens*	A	30	80	0	1	0	1
7HBT738	531000	6776536	Stag	D	20	50	1	0	1	2
7HBT739	530998	6776584	Paperbark	A	35	50	1	0	0	1
7HBT740	531012	6776614	Paperbark	A	35	60	1	0	0	1
7HBT741	531041	6776622	*Lophostemon suaveolens*	A	35	80	1	1	0	2
7HBT742	531067	6776752	*Lophostemon suaveolens*	A	30	70	0	1	0	1
7HBT743	531070	6776759	*Eucalyptus tereticornis*	A	30	50	0	0	1	1
7HBT744	531069	6776773	*Lophostemon suaveolens*	A	25	40	0	0	1	1
7HBT745	531088	6776788	*Eucalyptus tereticornis*	A	25	40	0	0	1	1
7HBT746	531097	6776790	*Eucalyptus tereticornis*	A	35	40	0	0	2	2
7HBT747	531083	6776940	*Lophostemon suaveolens*	A	30	60	0	0	2	2

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT748	531164	6776975	*Corymbia intermedia*	A	25	40	0	0	1	1
7HBT749	531146	6777003	Stag	D	20	30	0	2	0	2
7HBT750	531175	6777017	*Corymbia intermedia*	A	25	40	0	1	0	1
7HBT751	531149	6777017	*Lophostemon suaveolens*	A	30	80	0	1	0	1
7HBT752	531168	6777053	*Lophostemon suaveolens*	A	35	60	0	0	5	5
7HBT753	531145	6777059	*Eucalyptus resinifera*	A	25	70	0	0	2	2
7HBT754	531191	6777067	*Corymbia intermedia*	A	25	60	0	0	2	2
7HBT755	531181	6777095	*Eucalyptus resinifera*	A	25	50	0	1	0	1
7HBT756	531160	6777124	*Corymbia intermedia*	A	30	100	0	3	2	5
7HBT757	531214	6777140	*Lophostemon suaveolens*	A	12	80	0	3	2	5
7HBT758	531217	6777217	*Lophostemon suaveolens*	A	20	60	0	0	1	1
7HBT759	531233	6777231	*Lophostemon suaveolens*	A	25	220	0	0	2	2
7HBT760	531202	6777250	*Lophostemon suaveolens*	A	25	200	0	1	0	1
7HBT761	531292	6777275	*Eucalyptus robusta*	A	30	40	0	0	2	2
7HBT762	531265	6777287	*Lophostemon suaveolens*	A	20	50	0	0	1	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT763	531246	6777322	*Lophostemon suaveolens*	A	25	100	0	0	1	1
7HBT764	531322	6777461	Stag	D	35	30	0	0	2	2
7HBT765	531318	6777518	*Lophostemon suaveolens*	A	30	90	1	0	3	4
7HBT766	531355	6777586	*Eucalyptus resinifera*	A	12	200	2	0	0	2
7HBT767	531332	6777624	*Eucalyptus microcorys*	A	20	210	1	2	0	3
7HBT768	531363	6777697	*Eucalyptus resinifera*	A	35	180	2	0	0	2
7HBT769	531425	6777828	*Angophora paludosa*	A	15	160	1	0	0	1
7HBT770	531502	6778011	Stag - *Melaeuca quinquenervia*	D	15	40	2	0	0	2
7HBT771	531523	6778132	*Corymbia intermedia*	A	30	190	1	3	0	4
7HBT772	531530	6778164	*Corymbia intermedia*	A	20	120	0	0	1	1
7HBT773	531635	6778221	Stag	D	25	40	1	0	0	1
7HBT774	531625	6778239	*Melaeuca quinquenervia*	A	25	90	1	1	0	2
7HBT775	531894	6778440	*Corymbia intermedia*	A	30	110	2	0	1	3
7HBT776	531907	6778482	*Corymbia intermedia*	A	18	120	0	6	0	6
7HBT777	532142	6778607	*Angophora paludosa*	A	25	40	0	1	0	1

Unique ID	Easting MGA56	Northing MGA56	Species	Dead/ Alive	Height (m)	DBH (cm)	Large Hollows	Medium Hollows	Small Hollows	Total Number of Hollows
7HBT778	532184	6778626	*Angophora paludosa*	A	25	50	0	1	1	2
7HBT779	532190	6778635	*Angophora paludosa*	A	25	80	0	0	1	1
7HBT780	532209	6778648	*Lophostemon suaveolens*	A	25	80	0	0	2	2
7HBT781	532287	6778714	*Corymbia intermedia*	A	25	80	0	0	1	1
7HBT782	532291	6778719	*Lophostemon suaveolens*	A	30	60	0	1	0	1
7HBT783	532298	6778730	*Lophostemon suaveolens*	A	25	60	0	0	3	3
7HBT784	532311	6778749	*Corymbia intermedia*	A	20	90	0	1	2	3