Survey of Large Forest Owl Habitat Trees
Land off George Booth Drive, Edgeworth
City of Lake Macquarie

Prepared for
Lake Macquarie City Council

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Survey of Potential Large Forest Owls

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This report prepared by

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1.0 INTRODUCTION

Lake Macquarie City Council is presently preparing a draft amendment to Lake Macquarie Local Environmental Plan 2004 for approximately 95 hectares of zone 10 Investigation land off George Booth Drive, Edgeworth, to accommodate urban development and conservation. The NSW Department of Planning has since directed Council to prepare a Local Environmental Study (LES) in accordance with section 57 of the Environmental Planning and Assessment Act, 1979 and issued specifications for the LES. The environmental study will be used to inform the preparation of a draft Local Environmental Plan (LEP) for the study area and will form part of public exhibition material. The study area contains approximately 95 hectares of mostly vegetated land.

Ecological investigations have been conducted on the site over the period 2008 – 2010, which identified a number of significant habitat trees occurring on the land. Several of the habitat trees were identified as potential threatened large forest owl roost and or nest trees, particularly the Masked Owl *Tyto novaehollandiae* and Powerful Owl *Ninox strenua*, which has been recorded in the locality (<5km radius). A total of 11 habitat trees were initially identified as potential roost or nest sites for threatened large forest owls. The location of the potential owl trees is presented below in **Figure 1**. This report presents information regarding specific investigations for threatened large forest owls on the subject site. These investigations were conducted over the period November to April 2010.

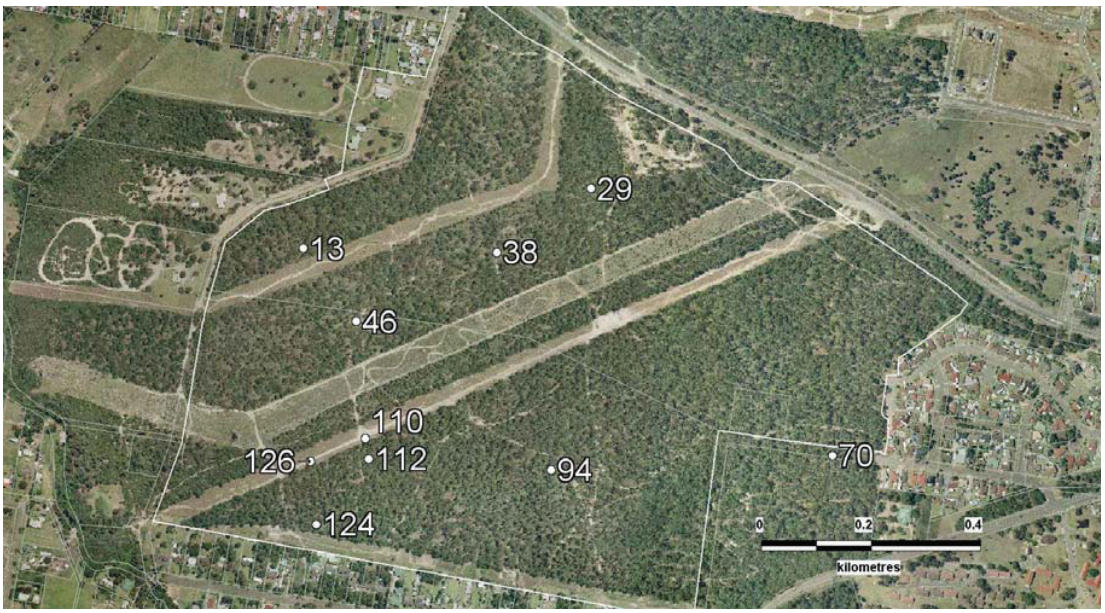


Figure 1. Location of Potential Large Forest Owl Habitat Trees, land off George Booth Drive.

2.0 SURVEY METHODOLOGY

The survey comprised two methodologies which are described below;

Dusk "stagwatch" observations of potential owl trees for emergence of individual owls. These observations were conducted for a period of 40 – 50 minutes immediately following dusk. A short spotlight search of the immediate vicinity of the potential owl tree was conducted for a period of 10 – 15 minutes. Quiet listening was also undertaken within this period for vocalisations of the Masked or Powerful Owl. Physical inspection of several of the potential owl trees by use of a mobile elevated work platform (trailer mounted cherry-picker).

The dusk observations were conducted of the potential large forest owl habitat trees, unless they were deemed unsuitable following more detailed assessment of each tree. For instance, tree 110 was initially identified as potential large forest owl tree during the initial habitat tree survey in 2008. However, during the investigations for this report, it became evident that the tree is no longer suitable due to collapse of the dead hollow trunk section. Additionally, tree HT124 was initially identified as a suitable owl tree, but this assessment is based on smaller owl species such as Southern Boobook, rather than the larger threatened forest owls such as the Masked Owl and Powerful Owl.

The survey was conducted over two periods, with stag-watch observations of habitat trees 13 and 46 inspected during November 2009. Habitat trees 29 and 38 were not watched as 29 was identified as unsuitable for large forest owls, whilst tree 38 had fallen over and burnt (presumably by either strong winds and subsequent fire, or was burnt and fell over as a consequence of the fire). Stag-watch of potential owl habitat trees 13 and 46 was conducted over the following period, Friday 6th to Thursday 19th November 2009 (5 nights of approximately 2 hours per night – 10 hours) and a physical inspection on Monday 22 November 2009.

Habitat trees 70, 94, 112, and 126 were observed by stag-watch surveys during the period Saturday 20 February to Sunday 4 April 2010, a total of 6 nights of approximately 1.5 – 2.0 hours per night. Habitat trees 110 and 124 excluded from stag-watch surveys as these two trees were deemed unsuitable for large forest owls. However, due to their close proximity to habitat trees 112 and 126, they were indirectly surveyed for by quiet listening for any large forest owl activity, such as dusk calls. The date and time of each inspection is presented below in **Table 1**.

Table 1. Survey Dates and Details of Stag-watch Inspections of Habitat Trees

Date	Habitat Tree	Stag-watch Time Start	Stag-watch Time Finish
6 November 2009	HT29	19:15	19:50
11 November 2009	HT13	19:05	20:45
13 November 2009	HT46	19:00	20:35
17 November 2009	HT46	19:10	20:45
19 November 2009	HT13	19:00	20:30
22 November 2009	HT13 + HT46	Inspection with cherrypicker	
20 February 2010	HT70	18:30	19:40
22 February 2010	HT94	18:30	19:55

Date	Habitat Tree	Stag-watch Time Start	Stag-watch Time Finish
26 February 2010	HT112 + 126	18:40	20:15
1 March 2010	HT70	18:20	20:00
5 March 2010	HT94	18:20	19:30
7 March 2010	HT70	18:00	19:40

3.0 SURVEY RESULTS

3.1 Stagwatch Observations November 2009

A diurnal inspection of the potential large forest owl habitat trees was initially undertaken to locate the habitat trees present. This was conducted on Friday 6th November prior to the first stag-watch observation. Of the four habitat trees, tree number 38 was destroyed by either fire or wind, or a combination of both. This tree was found laying on the ground, possibly a result of a recent fire in the previous couple of months.

Figure 2. Habitat tree 38 found on ground, 6 November 2009

As a consequence of the reduced number of trees to stag-watch, observations were restricted to trees 13, 29 and 46 over the 5 nights. Tree 29 was observed on only one evening as it was deemed unsuitable for a large forest owl, but could be suitable for a smaller forest owl such as a Southern Boobook, which is not listed as threatened. The remaining 4 evenings were allocated to trees HT13 and HT46 (2 evenings each). A summary of stag-watch observations in November 2009 is presented below in **Table 2**.

Table 2. Results of Stag-watch Observations, November 2009

Date	Habitat Tree	Stag-watch Results
6 November 2009	HT29	No evidence of owls
11 November 2009	HT13	No evidence of owls
13 November 2009	HT46	No evidence of owls
17 November 2009	HT46	No evidence of owls
19 November 2009	HT13	No evidence of owls

No threatened large forest owl was recorded present in the study area during the 4 evenings of stag-watch surveys at trees HT13 and HT46, and no audible calls were heard. No evidence of threatened large forest owls were recorded on the subject site during previous investigations undertaken earlier in the year. No whitewash or regurgitation pellets were located in proximity to the potential owl trees during the stag-watch investigations.

3.2 Inspection by Cherry-picker, November 2009

An inspection of the internal hollow of HT13 and HT46 was conducted on Monday 22 November 2009. The remaining habitat trees could not be inspected by cherry-picker due to several constraints. Vehicular access to several habitat trees was difficult with a trailer mounted cherry-picker. Two of the habitat trees could not be accessed due to growth of juvenile trees around the base of the habitat tree (HT70). To enable vehicle access would have required felling of several smaller trees to access HT70. Additionally, HT94 is located within a small drainage line with some erosion around the base of the tree. No stable and relatively level ground could be accessed in proximity to this habitat tree. For several of the trees, the height of the hollow was too high for the trailer mounted cherry-picker, which is limited to 11 metres vertically. For instance, the large hollow in HT70 is almost 16 metres above ground level, beyond the reach of the cherry-picker. To compensate for inability to inspect the habitat tree hollows by cherry-picker, additional stag-watch observations and nocturnal listening was conducted. A summary of each inspection is presented below.

Tree ID HT13

Tree Species: Dead Stag
Height: 10 metres
Diameter: 100 centimetres
Location Coordinates: [GDA94]
Easting: 368292.233
Northing: 6356582.095

Description

Dead Stag with a large opening at the top. Upon inspection of the hollow, a large vertical pipe extends approximately 3.0 meters down from the top of the tree to the hollow floor. The internal dimension of the hollow pipe is approximately 40 centimetres.

A large adult Masked Owl *Tyto novaehollandiae* was present on the hollow floor but rose to the top and flew away before a photograph could be taken.

The floor of the hollow was covered in copious whitewash and regurgitation pellets, indicative of prolonged use (see photo below).

HT13 – evidence of whitewash and pellets following escape of adult Masked Owl on 22.11.2009

Tree ID HT46

Tree Species: Spotted Gum *Corymbia maculata*
Height: 9.0 metres
Diameter: 69 centimetres
Location Coordinates: [GDA94]
Easting: 368388.58
Northing: 6356448.374

Description

Live Spotted Gum with a large opening on the main trunk approximately 6.0 meters from the ground. An additional vertical spout opening is evident above the trunk opening, and a smaller branch opening is evident to one side of the vertical pipe.

Upon inspection, a large vertical pipe extends down from the top of the tree approximately 3.0 meters to the hollow floor, which is just above the large opening in the main trunk. The entrance to the hollow on the trunk was extensively worn from scratch marks. The internal dimension of the pipe is approximately 35-40 centimetres.

A recent nest of a large forest owl, most likely a Masked Owl *Tyto novaehollandiae* was present on the hollow floor. Extensive down and egg shell fragments were evident on the floor of the hollow, together with copious whitewash and regurgitation pellets.

Internal cavity with extensive down present and broken egg shells – evidence of recent nesting.

Tree ID HT46 (continued)	
Tree HT46 – Hollow Entrance Entrance to hollow pipe with extensive scratching of the entrance. Evidence of extended use of this hollow.	

3.3 Stag-watch Observations February – March 2010

Stag-watch observations were conducted over 6 evenings during the period February 20 to 7 March 2010. Observations were restricted to three trees, HT70, HT94 and HT112, which were each observed on two separate evenings. Habitat tree HT126 was indirectly monitored due to its close proximity to HT112 (150 metres), by quiet listening for owl activity in the general area. No evidence of owls emerging from hollows was observed, and no calling activity was heard in proximity to these trees during the monitoring period. Whitewash was found around the perimeter of HT94 but no evidence of regurgitation pellets was found. A summary of the stag-watch surveys is summarised below in **Table 3**.

Table 3. Stag-watch Observation Results, February – March 2010, land off George Booth Drive

Date	Habitat Tree	Stag-watch Results
20 February 2010	HT70	No evidence of owls
22 February 2010	HT94	No evidence of owls, whitewash (but no regurgitation pellets) found around base and perimeter of tree).
26 February 2010	HT112 + 126	No evidence of owls, HT 126 inspected by ladder due to low height to opening
1 March 2010	HT70	No evidence of owls
5 March 2010	HT94	No evidence of owls
7 March 2010	HT112	No evidence of owls

Following is a summary of each habitat tree inspection conducted in February 2010.

Tree ID HT70

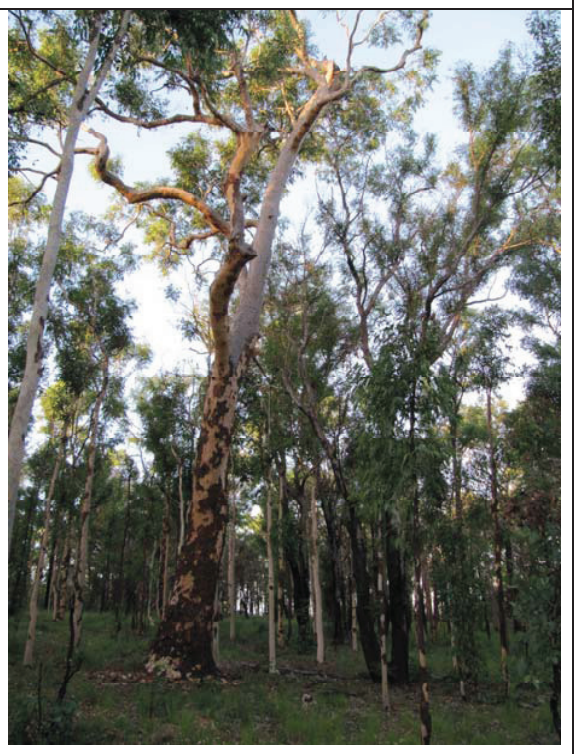
Tree Species: Spotted Gum *Corymbia maculata*
Height: 22.0 metres
Diameter: 103 centimetres
Location Coordinates: [GDA94]
Easting: 369255.189
Northing: 6356204.896

Description

Large Spotted Gum *Corymbia maculata* with 1 very large vertical pipe at approximately 15 metres height (too high for cherry picker). No inspection of the internal cavity of the large hollow was conducted. Vehicle and cherry-picker access to tree difficult due to density of smaller trees around the base of the tree. Would require felling of smaller trees to access the base of the tree.

Stag-watch Results

No evidence of large forest owls utilising the large hollow in this tree. A ground based assessment on the suitability of this tree for large forest owls considers HT70 to be highly suitable as a nest and or roost site for either the Masked Owl or Powerful Owl.



Tree ID HT94

Tree Species: Sydney Red Gum *Angophora costata*
Height: 16 metres
Diameter: 98 centimetres
Location Coordinates: [GDA94]
Easting: 368743.186
Northing: 6356178.719

Description

Sydney Red Gum *A. costata*. Large tree with 2 large vertical spouts at 12m height. Unable to access base of tree due to sloping terrain and washouts along small drainage line at immediate base of tree.

Stag-watch Results

No evidence of large forest owls utilising the large hollow in this tree. However, whitewash evident (but no regurgitation pellets) around perimeter of tree. A ground based assessment on the suitability of this tree for large forest owls considers HT94 to be highly suitable as a nest and or roost site for either the Masked Owl, or possibly the Powerful Owl.

Tree ID HT110

Tree Species: Spotted Gum *Corymbia maculata*
Height: 12 metres
Diameter: 56 centimetres
Location Coordinates: [GDA94]
Easting: 368405.636
Northing: 6356235.228

Description

Small Spotted Gum *C. maculata* with open exposed vertical pipe at approximately 6 metres height. Top of the vertical pipe has fallen off exposing the floor of the hollow to the elements.

Stag-watch Results

No stag-watching of this tree was undertaken as it was deemed no longer suitable for threatened large forest owls.

Tree ID HT112

Tree Species: Spotted Gum *Corymbia maculata*
Height: 18 metres
Diameter: 71 centimetres
Location Coordinates: [GDA94]
Easting: 368410.995
Northing: 6356199.031

Description

Large tall Spotted Gum *C. maculata* with large vertical pipe located at approximately 14m height. Access is good to base of tree but height of hollow too high for cherry picker.

Stag-watch Results

No evidence of large forest owls utilising the large hollow in this tree. A ground based assessment on the suitability of this tree for large forest owls considers HT112 to be suitable as a nest and or roost site for the Masked Owl.

Tree ID HT124

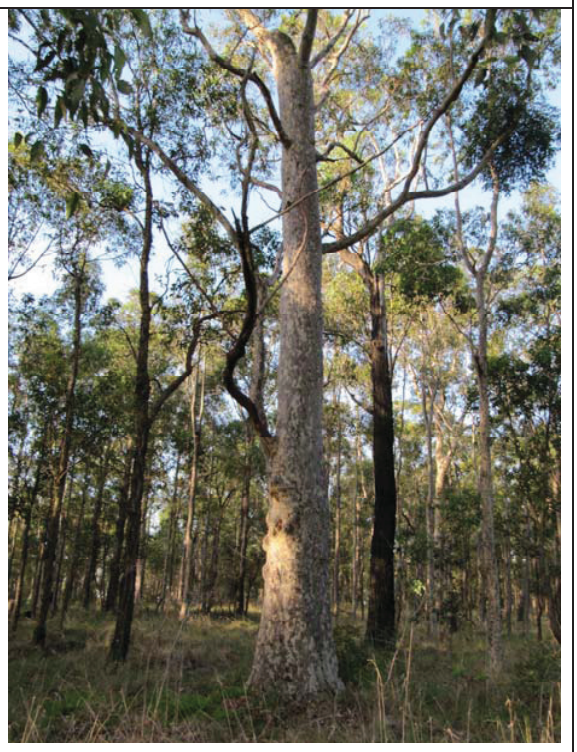
Tree Species: Spotted Gum *Corymbia maculata*
Height: 16 metres
Diameter: 83 centimetres
Location Coordinates: [GDA94]
Easting: 368315.734
Northing: 6356079.992

Description

Smaller Spotted Gum *C. maculata* located along southern boundary of site. Tree has a small vertical pipe suitable for a forest owl, but potentially too small for Masked Owl. Height of hollow is 10 metres with good access.

Stag-watch Results

No stag-watching of this tree was conducted as it was deemed unsuitable for large forest owls. However, due to its close proximity to HT112 it was indirectly monitored for owl activity during the stag-watch / quiet listening component of the monitoring of HT112.



Tree ID HT126

Tree Species: Spotted Gum *Corymbia maculata*
Height: 12 metres
Diameter: 80 centimetres
Location Coordinates: [GDA94]
Easting: 368305.558
Northing: 6356193.858

Description
Low Spotted Gum *C. maculata* located on edge of powerline easement. Has large vertical trunk hollow at 5m height suitable for large forest owl.

Stag-watch Results
No stag-watching of this tree was conducted but was physically inspected by ladder for hollow use by large forest owls. No activity by large forest owls was noted. However, due to its close proximity to HT112 it was indirectly monitored for owl activity during the stag-watch / quiet listening component of the monitoring of HT112.

4.0 CONCLUSION

Based on the inspection of habitat trees HT13 and HT46, the threatened Masked Owl *Tyto novaehollandiae* utilises these habitat trees on the subject site for both nesting and roosting. Tree number HT13 was identified as a roost tree with evidence of extended use due to abundance of regurgitation pellets and bone fragments on the hollow floor, whilst HT46 was identified as a roost and nest tree based on the presence of whitewash, regurgitation pellets, bones, egg shell fragments and feather down. The location of both trees has been incorporated into an area designated for exclusion from development based on initial discussions with LMCC and the developer. With regard to the remaining habitat trees identified as potential large forest owl trees, HT70 and HT94 appear also to be highly suitable for species such as the Masked Owl. However, the significant hollows in both trees could be inspected to confirm usage by threatened large forest owls. It is recommended that the rezoning process presently being undertaken attempt to preserve both habitat trees. The occurrence of significant habitat trees for threatened large forest owls will decrease over time due to clearing for several large scale land developments in the local area.