northbarker
ECOSYSTEM SERVICES

Ecclestone Road Subdivision

Wedge-tailed eagle nest and masked owl RFI assessment

23 November 2022

For 6ty°

SIX001

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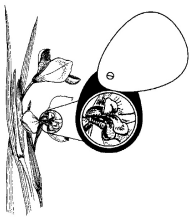

Summary

A 22-lot subdivision is proposed for Ecclestone Road in Riverside, northern Tasmania. This will involve the clearing of native vegetation. North Barker Ecosystem Services (NBES) has been engaged to survey previously identified potential masked owl nesting trees and an eagle nest within the boundaries of the proposed subdivision to determine their status as active breeding habitat. A summary of the findings, impact and recommendations is as follows:

Wedge-tailed eagle nest

A wedge-tailed eagle (*Aquila audax fleayi*) nest was identified in the balance area (506443 E, 5414498 N) in late 2019. During the 2019 breeding season the nest was determined as being inactive. The nest was resurveyed during the 2022 breeding season to establish whether the nest was active.

The nest was viewed for 1.25 hrs on November 2nd and over 2.5 hrs on the 3rd. No wedge-tailed eagle activity was directly observed during nest monitoring.

Masked owl survey

The survey included listening surveys and recorded call playback survey as well targeted assessments of eleven large, hollow-bearing trees previously identified by NBES during natural values assessments as comprising suitable nesting habitat, to determine if they are being utilised by Tasmanian masked owls (masked owl; *Tyto novaehollandiae castanops)*.

No evidence of masked owl presence was detected during visual assessment of all hollow bearing trees and no owls were flushed from hollows using a tapping method. No unelicited calls were recorded. Two elicited calls were recorded on two nights: one from within the balance area and one from within the proposed development area. A song meter has been installed to provide further understanding of how masked owls may be using the proposed development area.

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1 Introduction

1.1 Background

6ty° Pty Ltd is proposing to build a 22-lot subdivision on Ecclestone Road, Riverside (Property ID 7655464, Title Reference 43468/1). The development will require the clearance of native vegetation and potential disturbance to identified natural values, including a Tasmanian wedge-tailed eagle (*Aquila audax fleayi*) nest within the balance area, and multiple large hollow-bearing trees that may contain Tasmanian masked owl nests (*Tyto novaehollandiae castanops)*. This survey focused on determining if the threatened fauna breeding values identified in previous natural values assessments conducted by North Barker Ecosystem Services (NBES) currently comprise active breeding habitat for these two endangered Tasmanian raptor species.

Tasmanian wedge-tailed eagle nest

A wedge-tailed eagle nest was identified in the balance area (506443 E, 5414498 N) in late 2019. The nest exists in a large *Eucalyptus amygdalina* tree (~70 cm DBH) on a south-easterly facing slope, approximately 150m from the nearest occupied residential lot and 170 m from Ecclestone Road. The proposal would result in the nest being ~170 m from proposed new residential lots.

In November 2019, the nest was aged at between a few months to two years old (pers. comm. Bill Brown and Jason Wiersma). The nest was visited during the breeding season in 2019 and there was no indication the nest was being used at that time. The site is largely sub-optimal for nesting trees ((<4 FPA wedge-tailed eagles nesting habitat model[1]), and the nest tree itself is relatively small for wedge-tailed eagles. Given the relatively exposed location of the tree, the relatively small size of the tree and supporting boughs, and the nest structure itself, it is quite possible this nest will not be used for breeding. Although birds have been seen near the nest, there has been no prior evidence indicating that it has been used for breeding.

The present study observed the eagle nest during the 2022 breeding season to determine if the nest was being used for breeding.

Masked owl call back and habitat trees survey

During previous NBES ground surveys, multiple hollow-bearing trees were identified that may support potential nesting habitat for Tasmanian masked owls, listed as endangered under state law[2] and vulnerable under Commonwealth law[3]. The present study included a targeted survey of these trees to determine if they are being used as nesting habitat for masked owls. This was complemented with both nocturnal callback surveys[4] and the installation of a song meter to passively record masked owl calls.

1.2 Study area

The study area is in Riverside, Launceston in northern Tasmania (Figure 1). It is in the Tasmanian Northern Midlands bioregion in the West Tamar City Council and is approximately 36.95 ha in extent. The western side is proposed for the 22-lot subdivision with the eastern half being the protected balance lot (Figure 2).

[1] Forest Practices Authority 2014
[2] Tasmanian *Threatened Species Act 1995*
[3] Commonwealth *Environment Protection and Biodiversity Conservation Act 1999*
[4] Todd *et al*. 2018

The mean annual rainfall for Launceston (Kings Meadows) is 693 mm (Bureau of Meteorology). The site is at ~ 170 m asl and is relatively flat with a gentle north-east aspect. There is a small creek in the southeast of the study area. The geology is Jurassic dolerite.

The site is zoned as Low Density Residential and is subject to the Biodiversity Code Under the West Tamar Interim Planning Scheme 2013.

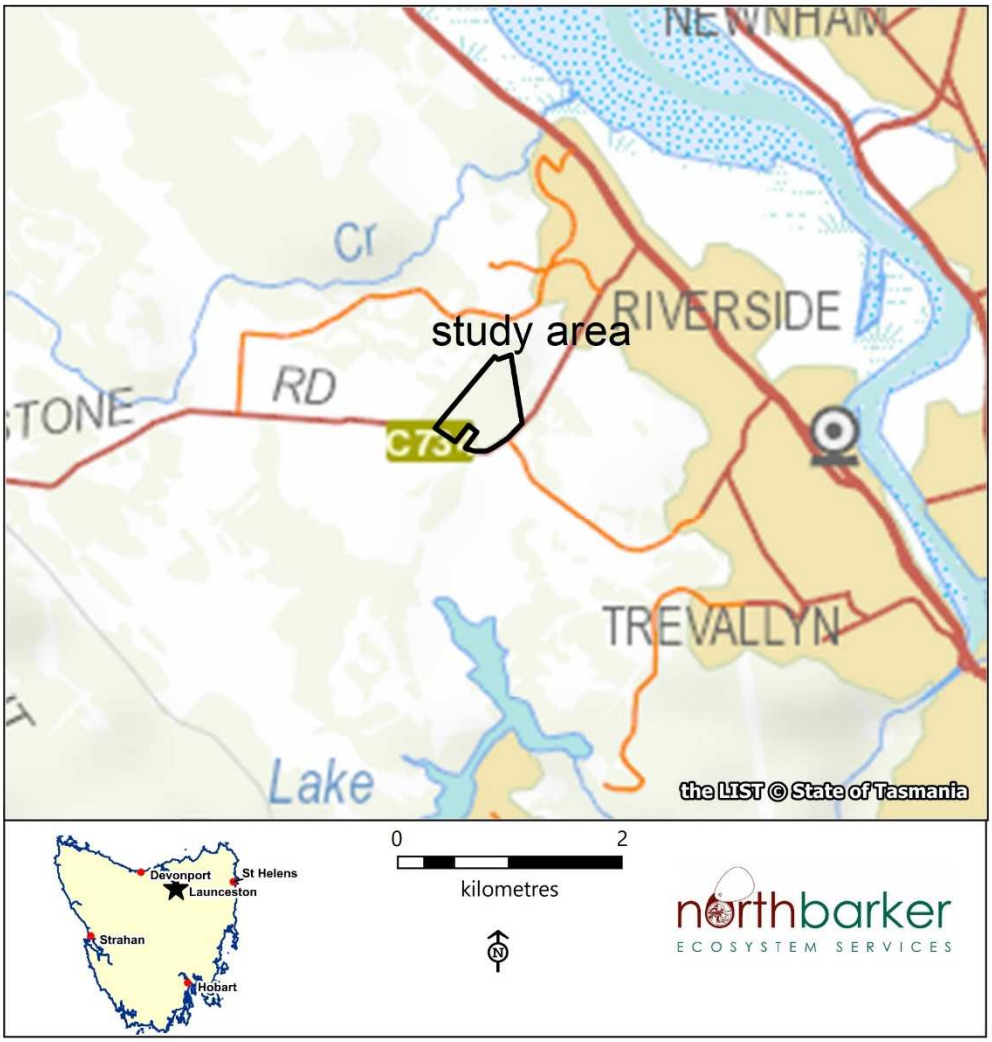

Figure 1. The location of the site

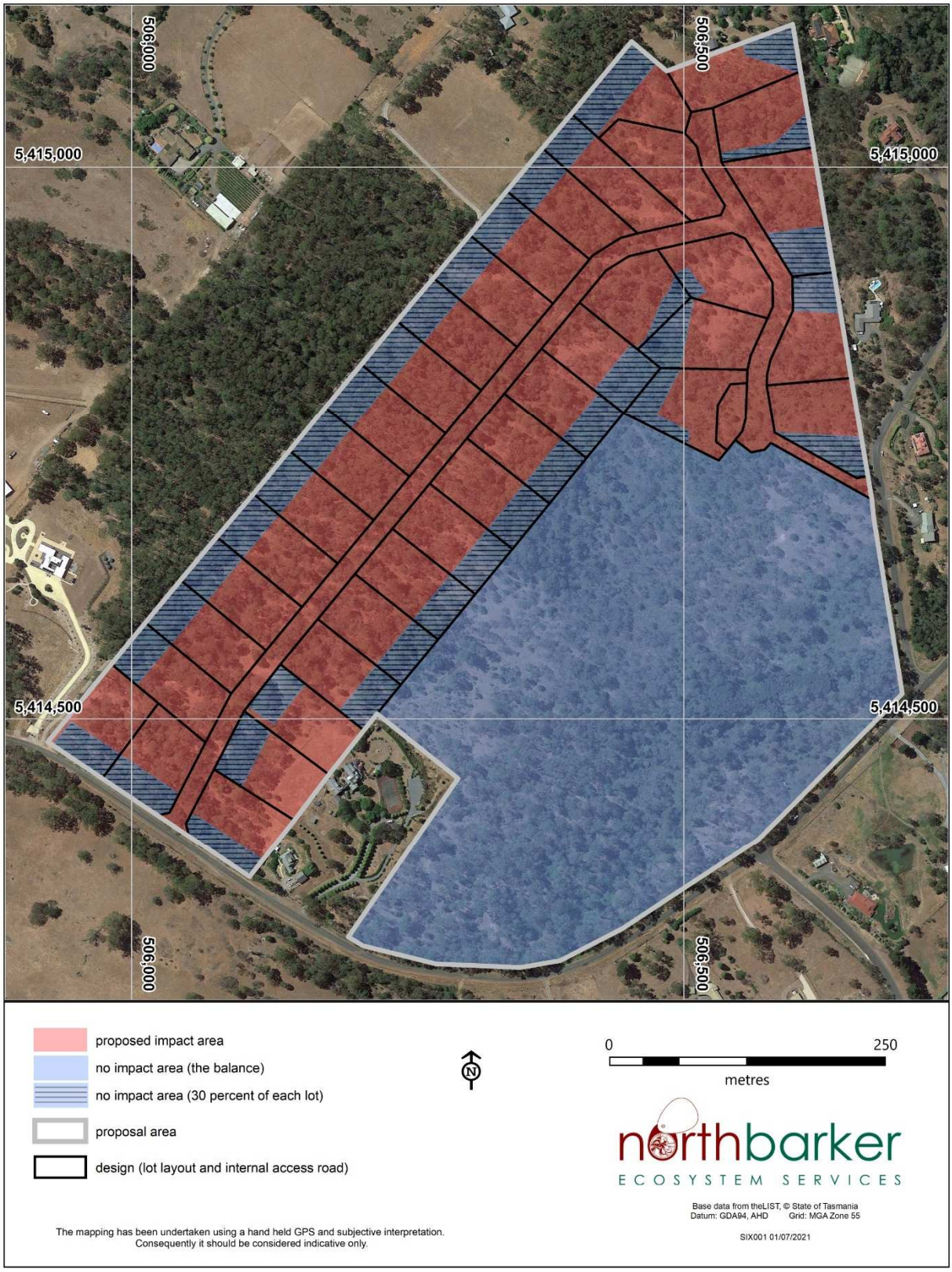

Figure 2. The layout of the subdivision and impact area

2 Methods

2.1 Wedge-tailed Eagle Nest Survey

Observations of the eagle nest (Figure 3) were conducted in two sampling periods on November 2nd and 3rd. The observer found a suitably concealed upslope hide at ground level approximately 70m from the nest that permitted a clear, unobstructed view. The nest was monitored consistently through binoculars between the below times:

DATE	TIME STARTED	TIME FINISHED
02/11/2022	1630	1745
03/11/2022	0900	1130

Additionally, a visual assessment around the base of the tree for whitewash, bones/carrion, feathers was undertaken. No Sign evidence was observed.

2.2 Tasmanian Masked Owl Targeted Tree Survey

This survey included targeted assessments of eleven hollow-bearing trees previously identified by NBES natural values assessments to determine if they are being utilised by masked owls. The location of these trees unillustrated in Figure 3.

Trees were examined during daylight hours for owl presence by searching for owl pellets, whitewash, carrion, feathers, and scratchings.

2.3 Tasmanian Masked Owl Call Survey

Masked owl call surveys were conducted over three nights in November (02/11, 03/11 and 21/11). The weather over the three nights was clear with little to no wind, making ideal survey conditions for detecting owl presence.

At last light the observer began listening for unelicited calls for one hour in silence while moving quietly between the identified potential habitat trees.

After one hour, if no calls were heard, masked owl calls were broadcast via a portable Bluetooth speaker for approximately five minutes. During this time the observer watched for silhouettes and listened for birds landing in proximity of the speaker. After 5 minutes the audio was stopped, and the observer listened a further 5 minutes in silence. If no owl activity was observed, the audio was rebroadcast a further two more times with additional torchlight used to scan nearby trees for perched owls.

The above process was conducted in five locations illustrated in Figure 4.

1. 506480E, 5414356.79N
2. 506560.629E, 5414411.667N
3. 506115.53E, 5414537.877N
4. 506357.391E, 5414788.076N
5. 506463.394E, 5414957.284N

The following morning the observer conducted a further callback survey while moving quietly between habitat trees. After sunrise, identified habitat trees were 'tapped' with a hammer to flush owls from hollows, and the approximate locations of callbacks were scoured for both signs of owl presence and unrecorded hollow-bearing trees.

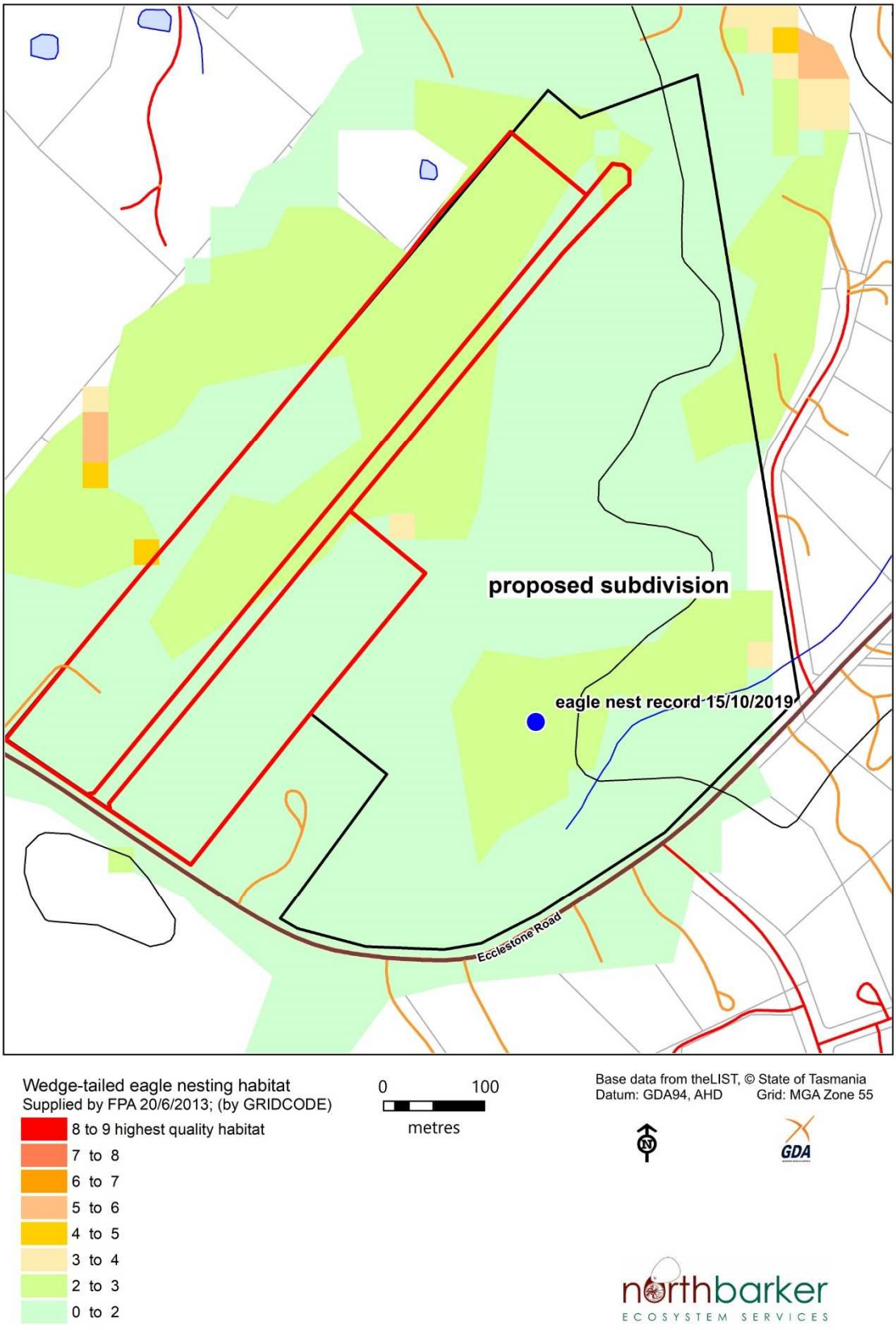

Figure 3. The location of the eagle nest and eagle nest habitat suitability model

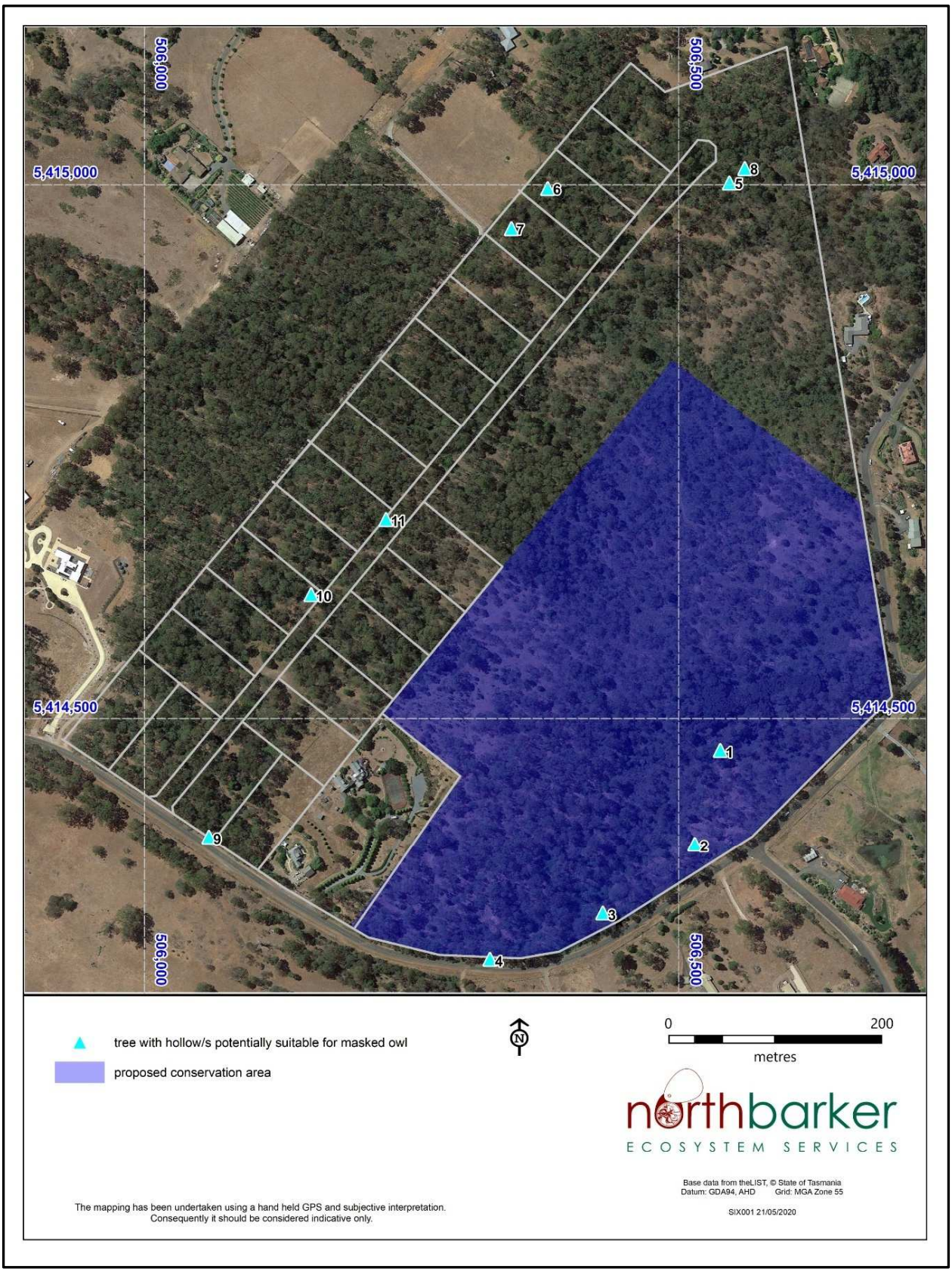

Figure 4. Location of hollow bearing trees

2.4 Audio Recording

A song meter (Wildlife Acoustics SM4 acoustic recorder) was installed post hoc within the development area.

The device was programmed to record during optimal masked owl call periods (4 hours of recording each day including half an hour either side of sunrise and half an hour before sunset to two and a half hours after sunset). This follows the survey methodology recommended by Todd[5]. The audio recordings are stored as wave (.wav) files using a 48 kHz sampling rate to cover the maximum frequency of the call of the Tasmanian masked owl.

The audio recorder will be left *in situ* until sufficient time has elapsed to gain sufficient data.

Subsequent analysis of audio-recordings will be conducted using Wildlife Acoustics Kaleidoscope software. The recordings will be manually assessed and all calls within the characteristic signatures of masked owl analysed and verified as appropriate.

2.5 Limitations

2.5.1 Wedge-tail eagle survey limitations

Due to various limitations (e.g., variations in species presence and detectability), no biological survey can guarantee that all species will be recorded during a single visit. Ground-based nest assessments may not always detect active nest usage, hence the requirement for subsequent aerial assessment using a drone.

2.5.2 Masked owl survey limitations

Due to various limitations (e.g., variations in species presence and detectability), no biological survey can guarantee that all species will be recorded during a single visit. This is particularly true for masked owls, who can be particularly challenging to detect[6] [7]

Potential nest habitat for the masked owl is defined as all areas that have trees with large hollows (≥15 cm entrance diameter)[8]. It can be difficult to detect suitable hollows from the ground, thus in the absence of aerial assessment it is inferred that hollows identified from ground level in the surveyed trees are suitable for masked owls.

An elicited call-back does not indicate that masked owls use the survey area. Masked owl home ranges occupy 1000-2000 hectares[9] [10], thus individuals may be called in to an area not usually visited during nightly foraging activities by call playback.

3 Results

3.1 Wedge-tailed Eagle Nest Survey

No wedge-tailed eagle activity was observed during nest monitoring. A very small amount of whitewash was recorded on understory vegetation below the nest; however, it is likely that this belonged to a brown falcon (*Falco berigora*) that was observed perched on a branch directly adjacent to the eagle nest for a ~20-minute period on 03/11/2022 (Plate 1). This species is known to utilise abandoned raptor nests[11]. Consequently, the eagle nest is considered inactive but may be utilised by brown falcons for nesting.

[5] Todd 2012
[6] Todd et al. 2018
[7] FPA 2014
[8] Conservation Advice 2010
[9] Young 2006
[10] Todd 2012
[11] McDonald *et al*. 2003

Plate 1 Wedge-tailed eagle nest with brown falcon perched nearby

3.2 Tasmanian Masked Owl Targeted Tree Survey

No evidence of Tasmanian masked owl presence was detected during visual assessment of the eleven trees detailed in section 2.2, and no owls were flushed from hollows using the tapping method (Figure 4).

3.3 Tasmanian Masked Owl Call Survey

Table 1 results of masked owl call surveys

DATE	START SURVEY (TIME)	UNELICITED CALLS	ELICITED CALLS	TIME OF CALL	SITE OF CALL	END SURVEY (TIME)	COMMENTS
02/11/2022	20:30	No	No	N/A	N/A	22:30	Tawny frogmouths and southern boobook observed (Plate 2)
03/11/2022	20:30	No	Yes	21:13	2	22:30	Each call event consisted of 2-3 separate 'screeches' followed by ~30 seconds to a minute of silence for a total of four times before going silent. Recorded after ~10 minutes of playback Tawny frogmouths and southern boobook observed
21/11/2022	20:45	No	Yes	22:15	5	23:15	Two short 'screeches'. 30 seconds of silence between each screech. After ~2 minutes of playback

22/11/2022	03:30	No	No	N/A	N/A	05:30	No owl activity recorded

The morning after each call back was recorded, the estimated location of the call was assessed for evidence of masked owl presence (Figure 5). No masked owls were flushed from hollows following 'tapping' trees and no scratchings, pellets, or potential unrecorded nest hollows were identified.

Estimated location of masked owl calls:

Callback #1 506408.817E, 5414405.328N

Callback #2 506307.316E, 5414863.365N

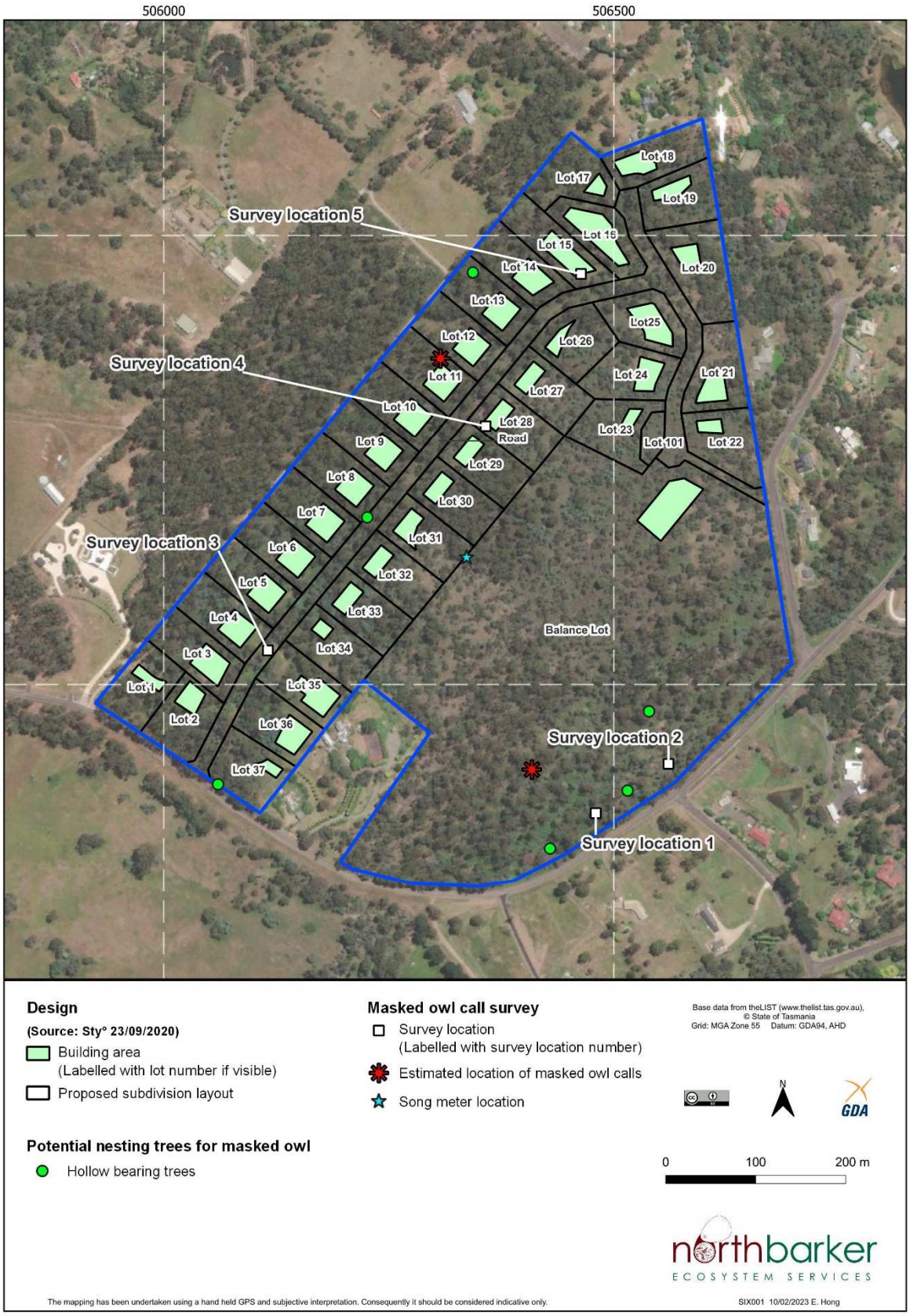

Figure 5. Location of call back surveys and estimated location of calls

3.4 Audio recording

The song meter will be collected at a subsequent date once sufficient time has passed to record adequate data.

Plate 2 Tawny frogmouth (L) and southern boobook owls (R) in surveyed trees.

4 Conclusion

4.1 Wedge-tailed Eagle Nest Survey

A total time of three hours and forty-five minutes was spent observing the eagle nest over two observing periods (section 2.1). No eagle activity was observed and there was no evidence to suggest that the nest was active (e.g., no significant whitewash, feathers, carrion at tree base). These facts, combined with the brown falcon observed at the nest for an extended period, strongly indicate that the nest is not being used by wedge-tailed eagles. Consequently, the eagle nest is inactive but may utilised by brown falcons for nesting. There is no evidence that this nest has ever been active. It is likely that the construction was done by juvenile birds that failed to breed in that year and subsequently abandoned the attempt.

4.2 Masked Owl Targeted Tree Survey

Direct examination of the eleven trees identified in prior NBES natural values surveys did not show evidence of masked owl presence (owl pellets, scratchings, carrion, whitewash) and no masked owls were flushed from hollows following tapping at sunrise. It is unlikely that the surveyed trees are used as masked owl nest or roost habitat,

4.3 Masked Owl Targeted Call Survey

No unelicited masked owl calls were recorded over all survey nights.

Two elicited calls following call playback were recorded on the second and third surveys. Subsequent ground searches of the areas estimated to be where the calls were recorded did

not yield both further evidence of owl residence or unrecorded hollow-bearing trees suitable for masked owl nesting. With no evidence of masked owls utilising trees within the proposed development, it is more likely that callbacks came from masked owls that depend on trees outside of the development area , that were called into the development area by audio playback from adjacent bushland or use the bushland interface for hunting. Based on current evidence it is most likely that masked owls are not nesting on the site, but the site is likely to be within the home range of a pair of masked owls.

4.4 Audio Recording

If song meter data proves to record regular calls, it may indicate that the site is core foraging habitat. However, in the existing landscape matrix the most abundant and easily available prey may not occur in the native forest on the site but rather at the margins of the agricultural land where key prey species have less cover from predators.

The song meter data will be analysed once sufficient time has passed for adequate data to be collected. This is likely to be in early 2023.

References

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