



Biodiversity Development Assessment Report

Bobs Farm Sand Quarry (SSD-99860959)

3631 Nelson Bay Road, Bobs Farm, NSW 2316

Prepared for Newcastle Sands



Prepared by David Martin, Accredited Assessor Number BAAS21021

Final Report - 18 May 2026



Document control

Version	Date	Author	Reviewer	Details
1.0	18 May 2026	David Martin	Jonathan Berry	For Submission

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Summary

Wedgetail Project Consulting Pty Ltd (Wedgetail) was engaged by Newcastle Sands Pty Ltd (hereafter known as “the Proponent”) to prepare a Biodiversity Development Assessment Report (BDAR) to assess the biodiversity impacts of the proposed Bobs Farm Sand Quarry State Significant Development (SSD)(SSD-99860959). The proponent seeks to establish a sand quarry at 3631 Nelson Bay Road, Bobs Farm, NSW 2316 (254/DP753204) (“Subject Land”). The proposed sand quarry will have an annual extraction of up to 530,000tpa for a maximum of 10 years, equating to a total life-of-quarry sand extraction of approximately 4.4 million tonnes. It is anticipated the proposal would facilitate maximum average sales of 10,000 to 12,000 tonnes per week. The proposal sand quarry includes:

- Establishment of site infrastructure including access roads, screens, and repurposing existing sheds;
- Staged vegetation clearing; and
- Topsoil stripping and establishment of stockpiling and wash area.

The proposed development will avoid impacts to a 15m buffer along the western, northern and eastern boundaries, applies a 3m buffer from the existing electricity easement, and right of carriage way and avoids the vegetated area south of the easement. No dredging activity or below-groundwater-level extraction is proposed with only dry (surface) sand extraction being employed.

The proposed development requires consent under Part 4 of the EP&A Act and must consider the Secretary’s Environmental Assessment Requirements (SEARs). Entry into the NSW Biodiversity Offset Scheme (BOS) is triggered by the proposal’s SSD status, the requirement for the SSDA to include a Biodiversity Development Assessment Report (BDAR) is detailed within the SEARs.

A total of two (2) Plant Community Types (PCTs) were recorded within the Subject Land;

- *PCT 3544: Coastal Sands Apple-Blackbutt Forest* (majority of the Subject Land)
- *PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest* (small pocket located outside the Impact Area)

PCT 4006 is considered a Threatened Ecological Community (TEC) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act), and the Commonwealth’s *Environment Protection Biodiversity Conservation Act 1999* (EPBC Act), described as follows:

- *Swamp sclerophyll forest on coastal floodplains of the NSW North Coast, Sydney Basin and South East Corner bioregions* Endangered Ecological Community (EEC) under the NSW BC Act.
- *Coastal swamp sclerophyll forests of south-eastern Australia* EEC under the Commonwealth’s EPBC Act.

Targeted surveys identified a total of 16 threatened species within the Subject Land;

- *Diuris areanaria* (Sand Doubletail) – (Vulnerable under the BC Act). The species recorded within the Subject Land, outside of the Impact Area
- Powerful Owl (*Ninox strenua*) – (Vulnerable under the BC Act). The species was recorded during spotlighting and call playback surveys in 2026.
- Masked Owl (*Tyto novaehollandiae*) – (Vulnerable under the BC Act). The species was recorded during spotlighting and call playback surveys in 2026.

- Squirrel Glider (*Petaurus norfolcensis*) – (Vulnerable under the BC Act). The species was recorded during spotlighting surveys and Remote Cameras in 2026 and recorded during initially surveys completed by Wildthing in 2013-2017.
- Koala (*Phascolarctos cinereus*) [Assumed Present] – (Endangered under the BC Act and EPBC Act). The species was recorded within the Subject Land and the vegetation within the Subject Land is considered broadly suitable habitat for the species.
- Grey-headed Flying-fox (*Pteropus poliocephalus*) – (Vulnerable under the BC Act and the EPBC Act). The species has been recorded flying over the Subject Land during spotlighting surveys. There are no Flying Fox camps within the Subject Land.
- Little Bentwing-bat (*Miniopterus australis*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Large Bentwing-bat (*Miniopterus orianae oceanensis*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Greater Broad-nosed Bat (*Scoteanax rueppellii*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Southern Myotis (*Myotis macropus*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Eastern Cave Bat (*Vespadelus troughtoni*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*) – (Vulnerable under the BC Act). The species was recorded during Anabat surveys.
- White-bellied Sea Eagle (*Haliaeetus leucogaster*) - (Vulnerable under the BC Act). The species has been recorded flying over the Subject Land during surveys. There are no large eagle nests within the Subject Land.
- Varied Sittella (*Daphoenositta chrysoptera*) – (Vulnerable under the BC Act). The species was recorded during targeted bird surveys

Avoidance and impact minimisation measures include the avoidance of higher condition areas of native vegetation and Threatened Ecological Communities (TEC), avoidance of impacts to threatened species and their habitats (e.g. *Diuris arenaria*), and avoidance of impacts to the watertable and Groundwater Dependent Ecosystems (GDEs). The proposal minimises impacts to threatened species habitat, connectivity, and threatened ecological communities listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Management of retained areas and the staged rehabilitation of the Impact Area will be managed in accordance with a site specific Biodiversity Management Plan.

One (1) listed Serious and Irreversible Impacts (SAIL) entity was recorded within the Subject Land during targeted surveys, *Diuris arenaria* (Sand Doubletail). The SAIL assessment was completed in accordance with Section 2.3 of the 'Guidance to assist a decision-maker to determine a serious and irreversible impact' (DPIE 2019). The proposal is unlikely to result in a SAIL for this species as the proposal avoids impacts to the species. As such, it is unlikely that the proposed development will result in an SAIL.

Residual impacts associated with the proposed development include:

- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Mod-Good) – 22.99 ha
- PCT 3544: Coastal Sands Apple-Blackbutt Forest Regen) – 1.00 ha
- Exotic Vegetation – 2.10 ha
- Exotic Grassland – 6.14 ha
- Masked Owl (*Tyto novaehollandiae*) – 22.99 ha
- Powerful Owl (*Ninox strenua*) – 22.99 ha
- Squirrel Glider (*Petaurus norfolcensis*) – 22.99 ha
- Koala (*Phascolarctos cinereus*) – 22.99 ha

Offsets are required as a result of residual impacts to vegetation and threatened species (and/or their habitat) in accordance with the BAM, including:

- Coastal Dune Dry Sclerophyll Forests - < 50% - **552 credits**
- Masked Owl (*Tyto novaehollandiae*) – **737 credits**
- Powerful Owl (*Ninox strenua*) – **737 credits**
- Squirrel Glider (*Petaurus norfolcensis*) – **737 credits**
- Koala (*Phascolarctos cinereus*) – **737 credits**

Offset requirements are detailed further in Section 6.2.

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Shortened forms

APZ	asset protection zone
BAM	Biodiversity Assessment Method
BAM-C	Biodiversity Assessment Method Calculator
BC Act	Biodiversity Conservation Act 2016 (NSW)
BC Regulation	Biodiversity Conservation Regulation 2017 (NSW)
BDAR	Biodiversity Development Assessment Report
BOAMS	Biodiversity Offsets and Agreement Management System
BOS	Biodiversity Offsets Scheme
CEEC	critically endangered ecological community
DBH	diameter at breast height over bark
EC	ecological community listed under the EPBC Act
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cwlth)
EP&A Act	Environmental Planning and Assessment Act 1979 (NSW)
EEC	endangered ecological community
HTW	high threat weed
IBRA	Interim Biogeographic Regionalisation for Australia
LLS Act	Local Land Services Act 2013 (NSW)
MNES	matters of national environmental significance
NPW Act	National Parks and Wildlife Act 1974 (NSW)
NSW	New South Wales
PCT	plant community type
SAII	serious and irreversible impact
SEARs	Secretary's Environmental Assessment Requirements
TBDC	Threatened Biodiversity Data Collection
TEC	threatened ecological community
VEC	vulnerable ecological community
Vegetation SEPP	State Environmental Planning Policy (Vegetation in Non-Rural Areas) 2017 (NSW)

Declarations

i. Certification under clause 6.15 Biodiversity Conservation Act 2016

I certify that this report has been prepared based on the requirements of, and information provided under, the Biodiversity Assessment Method and clause 6.15 of the *Biodiversity Conservation Act 2016* (BC Act).

Name:	David Martin
Signature:	
Date:	18/05/2026
BAM Assessor Accreditation No:	BAAS21021

This BDAR has been prepared to meet the requirements of BAM 2020. Appendix A provides an assessment of compliance with the minimum information requirements outlined in BAM Appendix K.

ii. Details and experience of author/s and contributors

Name	BAM Assessor Accreditation No. (if relevant)	Position/Role	Tasks performed	Relevant qualifications
David Martin	BAAS21021	Senior Ecologist	Report author, BAM calculations, BAM plot surveys, targeted threatened flora and fauna surveys	MSc BEnvSc & Mgt
Samara Schulz	BAAS17039	Principal Botanist	Report review	BEnvSc & Mgt (Hons)
Mark Dean		Senior Ecologist	Targeted threatened fauna surveys	BEnvSc & Mgt
Olivia Szekelyhindy		Ecologist	Flora & Fauna Surveys	BSc Zoology
Keryn Dowling		GIS	GIS mapping, figure preparation	BSc Zoology
Theo Tasoulis		Senior Ecologist	Flora & Fauna Surveys	BSc. (Hons) PhD

iii. Conflict of interest

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest OR I wish to openly declare the following actual, perceived or potential conflict of interest and the management strategies employed:

This declaration has been made in the interests of full disclosure to the decision-maker. Full disclosure has also been provided to the client.

Name:	David Martin
Signature:	
Date:	18/05/2026
BAM Assessor Accreditation No:	BAAS21021

STAGE 1: BIODIVERSITY ASSESSMENT

1. Introduction

Wedgetail Project Consulting Pty Ltd (Wedgetail) was engaged by Newcastle Sands Pty Ltd (hereafter known as “the Proponent”) to prepare a Biodiversity Development Assessment Report (BDAR) to assess the biodiversity impacts of the proposed Bobs Farm Sand Quarry, located at 3631 Nelson Bay Road, Bobs Farm, NSW 2316 (Lot 254/DP753204) (“Subject Land”). The proposed development constitutes a State Significant Development (SSD) (SSD-99860959), pursuant to Schedule 1, Clause 7 of the *State Environmental Planning Policy (Planning Systems) 2021*.

This assessment has been undertaken in accordance with the NSW Biodiversity Assessment Method 2020 (BAM) (Department of Planning, Infrastructure and Environment [DPIE] 2020a, now NSW Department of Climate Change, Energy, Environment, and Water [DCCEEW]) under the *Biodiversity Conservation Act 2016* (NSW) (BC Act) and the *Biodiversity Conservation Regulation 2017* (BC Regulation) to support the State Significant Development Application (SSDA).

1.1 Proposed development

1.1.1 Development overview and location

The following terms are used throughout to describe geographical areas applicable to the assessment:

- **Subject Land** - 3631 Nelson Bay Road, Bobs Farm, NSW 2316 (254/DP753204)
- **Impact Area** - Areas subject to direct and indirect impacts
- **Locality** – Area within 5km of the Subject Land.

The proposed development has been designed to facilitate the efficient and economically viable extraction of the identified sand resource, while ensuring that potential environmental and community impacts are avoided or minimised wherever practicable. In addition, the proposed development is expected to generate a range of socio-economic benefits that will support regional development.

1.1.2 Local context

The Subject Land is located approximately 28 kilometres (km) to the north east of Newcastle within the Port Stephens Council Local Government Area (LGA) and is currently zoned as RU2 Rural Landscape under the Port Stephens Local Environmental Plan 2013 (PSLEP).

The Subject Land is located to the west of Nelson Bay Road and is characterized by a mix of cleared exotic grassland, agricultural land (olive and fruit tree orchard), and remnant dry sclerophyll forest on Holocene sand dunes. Two (2) existing habitable buildings, sheds and associated infrastructure (i.e. tracks) also occur within the Subject Land. Clearing on the Subject Land commenced around 2000 associated with the house and small area of agriculture, with some clearing continuing to around 2010 for the purpose of agriculture.

No mapped watercourses occur within the Subject Land, however a wetland area occurs within the north western corner of the Subject Land beyond the extent of proposed extraction (**Figure 2**).

1.1.3 Proposed development and the subject land

The Proponent seeks to develop the site for an extractive industry as a sand quarry (**Figure 3**). Consent is sought for annual extraction of 530,000tpa for 10 years, equating to a total life-of-quarry of approximately 4.4 million tonnes. It is anticipated the proposal will average sales of 10,000 to 12,000 tonnes per week.

The site has an area of approximately 40.9ha with the proposal seeking to use the entirety of the subject site for extractive industry purposes with the exception of:

A minimum 15m buffer between the site boundary and any areas of extraction

The existing right-of-carriage way including a 3m buffer in the north-east of the site including the area east of this right-of-carriageway

The existing electricity easement including a 3m buffer at the southern end of the site and the vegetated area to the south of this easement

No dredging is proposed with only dry (surface) sand extraction being employed.

Preparation of the site and proposed sand quarry operations would broadly comprise:

- Construction of a new left-in left-out intersection
- Establishment of processing and sales area including installation of onsite office (Atco structure), installation of screening and wash facilities, designation of stockpiling areas, associated ancillary structures, and use of the existing dwelling at the site for a manager's residence
- Staged vegetation clearing and topsoil stripping in accordance with the approved staging plan with topsoil stored onsite to be used for future rehabilitation works.
- Dry extraction down to a maximum of 0.7m above the ground water table
- Ongoing rehabilitation

Day-to-day operations would require two (2) articulated haul trucks (Volvo A40G) loaded by a hydraulic excavator (Volvo EC350) to transport sand from the extraction area to the on-site processing facility being a full electric screen and wash plant. Equipment will include excavators, front-end loaders, haul trucks, conveyors and water carts. Operations will utilise modern, well-maintained equipment incorporating advanced noise attenuation and water saving measures as well as fuel efficiency technology to reduce operational impacts on the surrounding environment.

The site benefits from a Water Access Licence (WAL5960) for 40ML per annum which is proposed to be used for sand washing purposes. Approximately 85% of extracted sand will be washed requiring a total of approximately 32ML per annum which is within the current Water Access Licence.

All essential services are available, or able to be made available, at the site including electricity, water tanks for potable water, pump-out system for sewage management, stormwater drainage and suitable vehicular access.

Sales would be by haulage truck at a maximum of ten (10) loaded trucks per hour equating to a maximum of 120 loaded trucks per day but with an average of 46 loaded trucks per day. All

transport trucks would travel east along Nelson Bay Road and complete a U-turn at the Port Stephens Drive roundabout. Haulage trucks will be prohibited from using Marsh Road.

The site will be accessed by way of a new left-in left-out intersection onto Nelson Bay Road. The existing access to the site at the electricity easement is proposed to be retained for light vehicle access for the quarry as well as for access to the manager's residence.

Progressive rehabilitation of exhausted areas will take place in accordance with the approved rehabilitation plan. The proposed post-quarry use of the site is to return the site to its current condition, being the same ratio of vegetated land and land used for the purpose of extensive agriculture.

1.1.4 Other documentation

The key documentation relevant to the proposed development includes:

- Secretary's Environmental Assessment Requirements (SEARs) for SSD-99860959
- *Biodiversity Assessment Report for a proposed Sand Mine at Lot 10 DP 1071458, Lot 51 DP 1015671 Lot 245 DP 753204 Nelson Bay Road Bobs Farm NSW* (Wildthing Environmental Consultants 2020)
- *Office of Environment and Heritage (OEH) Recommendations – Bobs Farm Sand Mine Project (SSD_6395) (OEH 2019)*
- *Biodiversity and Conservation Division (BCD) Response to Submissions Report – Bobs Farm Sand Mine Project (SSD-6395) (BCD 2021)*
- *Port Stephens Council Advice on Response to Submissions (RTS) – Bobs Farm Sand Mine (PSC 2021)*

1.2 Biodiversity Offsets Scheme entry

Entry into the Biodiversity Offset Scheme (BOS) is triggered by activities that meet criteria or certain thresholds for significant impacts on biodiversity in accordance with Section 6.3 of the BC Act. Alternatively, the BOS can be entered into on an opt-in basis.

Criteria to which the BOS applies includes the following:

- Local Development (assessed under Part 4 of the Environmental Planning and Assessment Act 1979) that is likely to significantly affect threatened species. Local development is likely to significantly affect threatened species and require a biodiversity development assessment report (section 7.7 of the Biodiversity Conservation Act 2016) if impacts either:
 - exceed the Biodiversity Offsets Scheme threshold (BC Act, section 7.4); the threshold includes clearing on land within the Biodiversity Values Map or clearing of an area that exceeds the threshold.
 - are carried out on an Area of Outstanding Biodiversity Value (AOBV)
 - are likely to significantly affect threatened species, ecological communities, and their habitats according to the test in section 7.3 of the BC Act
- State Significant Development (SSD) and State Significant Infrastructure (SSI) projects, unless "the Secretary of the Department of Planning and Environment and the environment agency head determine that the project is not likely to have a significant impact".
- Biodiversity certification proposals.

- Clearing of native vegetation in urban areas and areas zoned for environmental conservation that exceeds the BOS threshold and does not require development consent.
- Clearing of native vegetation that requires approval by the Native Vegetation Panel under the LLS Act.
- Activities assessed and determined under Part 5 of the EP&A Act (generally, proposals by government entities) if proponents choose to 'opt in' to the Scheme.

Application of the BOS for the proposed development is summarised below in **Table 1**.

Table 1: Biodiversity Offset Scheme Triggers

BOS Threshold	Proposed Development
State Significant Development / State Significant Infrastructure trigger (BC Act Section 7.14)	BOS Triggered: As the proposal is considered an SSD, entry into the BOS and the production of a BDAR is required.
Clearing of native vegetation, or other activity, on land included on the Biodiversity Values Map	N/A – BOS Triggered by SSD:
Clearing of native vegetation that exceeds the clearing thresholds	N/A – BOS Triggered by SSD:
Undertaking an activity that is likely to significantly affect threatened species or communities	N/A – BOS Triggered by SSD

1.3 Excluded impacts

Clause 6.8(3) of the BC Act specifies that the BAM is to exclude the assessment of the impacts of any clearing of native vegetation and loss of habitat on category 1-exempt land (as defined in Part 5A of the LLS Act), other than prescribed impacts (as defined in clause 6.1 of the *Biodiversity Conservation Regulation 2017* (BC Regulation)). Prescribed impacts must therefore be assessed for category 1-exempt land. Excluded impacts include areas within the approved quarry footprint.

Excluded impacts applicable to the proposed development include:

- **Category 1 Land** - A total of 7.38 ha of Exotic Grassland commensurate with category 1-exempt land as defined under Part 5A of the LLS Act occurs within the Subject Land (**Figure 5**).

1.4 Matters of national environmental significance

The Environmental Protection and Biodiversity Conservation Act 1999 (EPBC Act) provide a legal framework to protect and manage nationally and internationally important flora, fauna, ecological communities, heritage places and water resources which are defined as Matters of National Environmental Significance (MNES) under the EPBC Act. These are:

- World heritage properties.
- Places listed on the National Heritage Register.
- Ramsar wetlands of international significance.
- Threatened flora and fauna species and ecological communities.
- Migratory species.
- Commonwealth marine areas.

- The Great Barrier Reef Marine Park.
- Nuclear actions (including uranium mining).
- Water resources, in relation to coal seam gas or large coal mining development.

The EPBC Act requires that developments or undertakings that are likely to have a significant impact on MNES be referred for a determination as to whether they are a controlled action that requires approval under the EPBC Act (Section 1.5.1). Of the nine (9) MNES listed under the EPBC Act, one (1) MNES was considered relevant to the proposed development; impacts on *Threatened flora and fauna species and ecological communities*.

Referral to the Commonwealth was undertaken in March 2026. On 10 April 2026 the Commonwealth determined that the proposed action was a controlled action under section 75 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), with the controlling provision for the proposed action being; “listed threatened species and communities (sections 18 and 18A)”. The proposed action will be assessed in accordance with the bilateral assessment agreement between the Australian and NSW governments (Amending Agreement No.1, 2020).

Supplementary SEARs for Bobs Farm Sand Quarry (SSD-99860959) (EPBC 2026/10456) were provided to the proponent on 17 April 2026, detailing assessment requirements for the controlled action.

Item 3 of the Supplementary SEARs require:

The Applicant must undertake an assessment of all protected matters that may be impacted by the development under the controlling provision identified in paragraph 1. The Australian Government Department of Climate Change, Energy, the Environment and Water (DCCEEW) considers that there is likely to be a significant impact on the following:

- Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) (*Phascolarctos cinereus*) – Endangered. The proposed action involves the removal of up to approximately 24.5 ha of habitat critical to the survival of the Koala.*
- Grey -headed Flying -fox (*Pteropus poliocephalus*) – Vulnerable. The proposed action involves the removal of up to approximately 24.5 ha of habitat critical to the survival of the Grey -headed Flying -fox.*
- Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland – Endangered – The proposed action is likely to adversely affect habitat critical to the survival of up to approximately 0.35 ha of Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland.*

Item 4 of the Supplementary SEARs require:

- Swift Parrot (*Lathamus discolor*) – Critically endangered ;*
- Regent Honeyeater (*Anthochaera phrygia*) - Critically endangered ;*
- Spotted -tailed Quoll (southeastern mainland population) (*Dasyurus maculatus maculatus*) – Endangered ;*
- South -eastern Glossy Black Cockatoo (*Calyptorhynchus lathami lathami*) – Vulnerable ;*
- Yellow -bellied Glider (south -eastern) (*Petaurus australis australis*) – Vulnerable ; and*
- New Holland Mouse (*Pseudomys novaehollandiae*) – Vulnerable.*

These species require further assessment, surveys and analysis to determine whether they are likely to be significantly impacted.

Assessment in accordance with the Supplementary SEARs is provided in **Appendix G**.

1.5 Information sources

Existing information on the flora and fauna of the Subject Land and the locality, including relevant threatened biota, was obtained from the following resources:

- The NSW Department of Climate Change, Energy, Environment and Water (NSW DCCEEW) BioNet (<http://www.bionet.nsw.gov.au/>) (NSW DCCEEW 2026a) for previous records of threatened species, populations and ecological communities within a 10 km radius centred on the centre of the Subject Land.
- The NSW DCCEEW BioNet Vegetation Classification (NSW DCCEEW 2026) for vegetation community profiles
- Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) Species Profile and Threats Database (SPRAT) (<https://environment.gov.au/cgi-bin/sprat/public/sprat.pl>)
- Commonwealth DCCEEW Protected Matters Search Tool (<https://www.environment.gov.au/epbc/protected-matters-search-tool>) for previous records of threatened species, populations and ecological communities within a 10 km radius centred on the centre of the Subject Land.
- Biodiversity Assessment Method 2020.
- Relevant published literature (see **Section 12**).

Base map data was obtained from NSW Department of Finance, Services and Innovation (DFSI) databases, with cadastral data obtained from DFSI digital cadastral database. Mapping for stream orders was obtained from NSW Department of Primary Industry (DPI).

The following spatial datasets were utilised during the development of this report:

- *Interim Biogeographic Regionalisation of Australia (IBRA) Version 7 (DoEE 2018).*
- *Mitchell Landscapes Version V3.1 (OEH 2017).*
- *Directory of important wetlands in Australia (DAWE 2021a).*
- *Australian Ramsar Wetlands (DAWE 2021b).*
- *Fauna Corridors for North East NSW (OEH 2018).*
- *SEED Portal (Acid Sulfate Soil Risk) (NSW Government 2018).*
- *NSW Hydrography (Department of Finance, Services and Innovation 2018).*
- *NVR Map (State Government of NSW 2022)*

2. Methods

2.1 Site context methods

2.1.1 Landscape features

A desktop assessment using identified information sources was undertaken throughout the assessment period. Desktop information was further validated through the completion of vegetation and habitat surveys across the Subject Land on 09 and 10 February 2026. The extent of native vegetation and the presence of key landscape features, as described in Section 3 of the BAM (DPIE 2020a), were identified within the Subject Land and Locality during these surveys. The results of these assessments are detailed in **Section 3.2**.

2.1.2 Native vegetation cover

Native vegetation cover was assessed as per Section 3.2 of the BAM (DPIE 2020a). Whereby, the native vegetation cover is assessed within the Subject Land and within a 1,500 m buffer area surrounding the outside edge of the boundary of the Subject Land. The results of this assessment are provided in **Section 3.3**.

2.2 Native vegetation, threatened ecological communities and vegetation integrity methods

2.2.1 Existing information

The following data sources and studies were reviewed prior to conducting the vegetation assessment within the Subject Land. These were used to assist with the stratification of the site into vegetation zones, selection of plot/transect locations and determination of plant community types (PCTs) (**Section 4.2**):

- State Vegetation Type Mapping C2.0
- BioNet Vegetation Classification (NSW DCCEEW)
- Aerial imagery from multiple sources
- Previous mapping; *Biodiversity Assessment Report for a proposed Sand Mine at Lot 10 DP 1071458, Lot 51 DP 1015671 Lot 245 DP 753204 Nelson Bay Road Bobs Farm NSW* (Wildthing Environmental Consultants 2020)

2.2.2 Mapping native vegetation extent

Native vegetation within the Subject Land was assessed in accordance with Section 4 of the BAM (DPE 2020a) (**Section 4.1**).

Field Surveys

The boundaries of the identified vegetation communities within the Subject Land were mapped using a combination of rapid data points (RDPs) and walking transects. RDPs involved collecting waypoints over the Subject Land using a handheld GPS unit and recording dominant species, structure and condition. Walking transects involved verifying polygons were

homogenous in floristic composition and condition, as well as walking vegetation ecotones and using the recorded tracks to define vegetation community boundaries.

Linework and Attribution

The RDPs and survey tracks were overlaid on aerial photograph and used to delineate and/or clarify vegetation boundaries using RDP data including dominant species, structure and condition. RDPs and vegetation community polygons within the Subject Land were assigned to best-fit PCTs as described below.

Plant Community Type and TEC Determination

The identification of vegetation communities was based on dominant species present in the overstorey, mid-storey, shrub and ground layers as recorded in RDPs and floristic plots. The best-fit PCT for vegetation within the Subject Land was determined through the comparison of collected data with available PCT descriptions with emphasis on: floristic composition, community structure, location (IBRA region/subregions), landscape position, geology, soils, and other diagnostic features.

Vegetation within the Subject Land were also assessed against descriptions of relevant listed Threatened Ecological Communities (TECs) listed under the NSW *Biodiversity Conservation Act 2016* (BC Act) and the Commonwealth *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Vegetation Zones

Vegetation zones were identified and delineated within the Subject Land in accordance with Section 4.3 of the BAM (DPIE 2020a). A vegetation zone is defined in the BAM (DPIE 2020a) as a relatively homogenous area that is the same vegetation type and broad condition.

2.2.3 Plot-based vegetation survey

Following stratification of the Subject Land into vegetation zones, plots/transects were undertaken to collect site condition data for the composition, structure and function attributes in accordance with Section 4.3 of the BAM (DPIE 2020a). The location of the plots/transects were selected through stratified random sampling to provide a representative sample of the variation in vegetation composition and condition within each vegetation zone.

The number of plots/transects undertaken across the site meets the minimum number of transects required for each vegetation zone area as detailed in Section 4.3.4, Table 3 of the BAM (DPIE 2020a) (**Figure 6**).

2.2.4 Vegetation integrity survey

Following stratification of the proposed study area into vegetation zones, plots/transects were undertaken to collect site condition data for the composition, structure and function attributes listed in **Table 2** in accordance with Section 4.3 of the BAM (DPIE 2020a). The location of the plots/transects were selected through stratified random sampling to provide a representative sample of the variation in vegetation composition and condition within each vegetation zone.

Table 2 Composition, structure and function components of vegetation integrity

Growth form groups used to assess composition (species richness) and structure (percent foliage cover)	Function attributes
Tree (TG)	Number of large trees
Shrub (SG)	Tree regeneration (presence/absence)
Grass and grass-like (GG)	Tree stem size class (presence/absence)
Forb (FG)	Total length of fallen logs
Fern (EG)	Litter cover
Other (OG)	High threat exotic vegetation cover (HTE)
	Hollow-bearing trees (HBT)

The results of the vegetation integrity surveys are presented in **Subsection 4.5.1**.

2.3 Threatened flora survey methods

2.3.1 Review of existing information

A desktop assessment was undertaken to identify habitat suitability for threatened species and populations within the Subject Land, this assessment included a review of the NSW DPE BioNet Atlas, the Commonwealth's Protected Matters Search Tool (PMST), the Biodiversity Assessment Method Calculator (BAM-C), and the BioNet Atlas Threatened Biodiversity Database Collection (TBDC). The information collected from these online resources was used to identify habitat constraints and potential microhabitats for each species likely to occur within the Subject Land (**Section 5.1**).

2.3.2 Habitat constraints assessment

Habitat constraints for flora species were assessed during the desktop assessment and surveyed for during the site assessments. Identified habitat constraints and microhabitats are described in **Section 5.1**.

2.3.3 Field surveys

Candidate threatened flora species were surveyed in accordance with the *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020b) and species-specific survey requirements detailed in the TBDC. All surveys were conducted using systematic parallel transects. Parallel field traverses were separated by 5 to 10 m for orchids, herbs and forbs, 10 to 15 m for sub-shrubs, and 10 to 20 m for species in all other life forms (shrubs and trees).

Surveys were undertaken across the Subject Land by suitably qualified ecologists. Where necessary known reference populations were inspected candidate species prior to the completion of surveys.

Candidate species are listed in **Section 5.2**.

2.4 Threatened fauna survey methods

2.4.1 Review of existing information

A desktop assessment was undertaken to identify habitat suitability for threatened species and populations within the Subject Land, this assessment included a review of the NSW BioNet Atlas, the Commonwealth's Protected Matters Search Tool (PMST), the Biodiversity Assessment Method Calculator (BAM-C), species-specific survey guidelines, and the BioNet Atlas Threatened Biodiversity Database Collection (TBDC). The information collected from these online resources was used to identify habitat constraints and potential microhabitats for each species likely to occur within the Subject Land. The results of this assessment is provided in **Section 5.1**).

2.4.2 Habitat constraints assessment

A habitat assessment was undertaken across the Subject Land on the 17 December 2025 to identify key habitat constraints including large stick nests. A detailed hollow-bearing tree assessment was undertaken by Wildthing to support the 2020 development application within the Subject Land. This hollow-bearing tree data was used for this assessment, with all large hollows within the Impact Area validated over two-days on the 9 and 10 March 2026 (**Section 5.1**).

The aim of these assessments was to determine the presence of the following specific habitat constraints:

- Location and suitability of hollow-bearing trees (HBTs), particularly in regard to suitable nesting hollows for threatened owls and cockatoos.
- Presence of Flying Fox camps
- Presence of large Eucalypts suitable for raptor nests
- Presence of waterbodies and habitat for threatened frogs and Southern Myotis
- Presence and suitability of potential microbat roost habitat, specifically suitable rock faces, cliffs, caves, suitable human structures.

2.4.3 Field surveys

Threatened fauna surveys were undertaken with reference to the survey notes within the TBDC, as well as the following BAM survey guidelines:

- *NSW Survey Guide for Threatened Frogs* (DPIE 2020b).
- *'Species credit' threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Method* (OEH 2018).
- *Koala (Phascolarctos cinereus) Biodiversity Assessment Method Guide* (DPE 2022)

Survey methods, timing and results are provided in **Section 5.2**. Key survey methods used for this assessment are detailed below.

Arboreal Mammals

A total of **41 remote cameras** were installed at heights of 3 m, each being directed towards a single bait station (metal tea strainer). An additional **ten (10) remote cameras** were installed at a height of 1-1.5 m within known flowering Eastern Pygmy Possum tree and shrub species (e.g. *Banksia spp.*). These bait stations were baited with an oats, peanut butter, treacle, vanilla

essence and truffle oil mixture. Bait stations were accompanied by a 30 cm wooden ruler for scale. During installation, each tree trunk was also sprayed with a diluted honey water mixture. Remote cameras were active for a total of four (4) weeks (28 nights), rebaited two (2) weeks after installation in accordance with relevant survey guidelines (2 February – 5 March 2026). Images captured during these surveys were analysed in-house by experienced fauna ecologists (**Section 5.2**).

Spotlighting surveys were completed across the Subject Land on **12 nights** by two (2) experienced fauna ecologists (7/01, 13/01, 14/01, 15/01, 27/01, 28/01, 29/01, 5/02, 9/02, 10/02, 18/02, 19/02). Each spotlighting survey was conducted during suitable conditions, over a period of two (2) hours, using high-powered headtorches via a mix of transects and random meanders taking advantage of available access tracks located across the Subject Land (**Section 5.2**).

A total of **eight (8) transects** were surveyed using detection dogs in accordance with *Koala (Phascolarctos cinereus) Biodiversity Assessment Method survey Guide* (DPE 2022). Transects were spaced >100m apart and surveyed by a suitably qualified detection dog and handler who walked each transect twice, first in one direction and then the opposite. The detection dog was permitted to roam freely within the 25 m to the side of the transect. Whilst search times will vary with terrain, vegetation and individual dogs, the detection dog handler aimed to walk the transect at approximately 10 m/min. Detection dogs used to complete the surveys were trained ethically to detect koala scat, with prior field experience surveying for koalas, and the relevant approvals and permits. The detection dog and their handler were assessed as a competent team within the 12 months of the surveys in accordance with the guidelines (**Section 5.2**).

Terrestrial Mammals

A total **nine (9) remote cameras** were installed at 0.5m targeting terrestrial marsupials. Bait stations (metal tea strainer) were installed within suitable habitat (e.g. at the base of trees, logs, or rocky outcrops) and baited with an oats, peanut butter, treacle, vanilla essence and truffle oil mixture. Bait stations were accompanied by a 30 cm wooden ruler for scale. During installation, each tree trunk was also sprayed with a diluted honey water mixture. Remote cameras were active for a total of four (4) weeks (28 nights), rebaited two (2) weeks after installation in accordance with relevant survey guidelines (2 February – 5 March 2026). Images captured during these surveys were analysed in-house by experienced fauna ecologists (**Section 5.2**).

A total of **22 pitfall trap lines** were installed targeting Common Planigale (*Planigale maculata*) following guidance received from the BOS Help Desk Portal detailing that “*when the suitable habitat >50ha, 22 pitfall trap arrays plus one additional array for every 10ha above 50ha will be required*”. Each Pitfall trap line consisted of a 10 m of drift-fence with a 20 L or larger bucket with a lid at either end. The lid was elevated 2 to 3 cm (using sticks) above the lip of the bucket. Leaf litter and small twigs was placed in the bottom of each bucket to provide shelter for trapped animals. Following installation pitfall traps were left in-situ across the Subject Land for a total of four (4) nights and checked early in the morning and late afternoon each day (19-23 January 2026). All captured animals were identified and released by experienced fauna ecologists (**Section 5.2**).

A total of **four (4) Elliot A trap lines** were installed across the Subject Land. Each trap line consisted of 20 traps installed in two (2) rows of ten (10) traps, each separated by 10 m. Each trap was baited with an oats, peanut butter, treacle, vanilla essence and truffle oil mixture. Leaf litter and small twigs was placed in the bottom of each bucket to provide shelter for trapped animals. Following installation traps were left in-situ across the Subject Land for a

total of four (4) nights and checked early in the morning and late afternoon each day (19-23 January 2026). All captured animals were identified and released by experienced fauna ecologists (**Section 5.2**).

Microbats

A total of **four (4) Anabat™ bat-call detectors** were installed across the Subject Land within suitable microchiropteran bat habitat and along potential flyways. In accordance with the '*Species credit*' *threatened bats and their habitats – NSW survey guide for the Biodiversity Assessment Method* (OEH 2018) the Anabats were left recording for a total of four (4) nights (19-23 January 2026). Collected bat calls were analysed in-house by an experienced fauna ecologist using ANABAT info software (**Section 5.2**).

A total of **four (4) harp traps** were installed across the Subject Land within suitable microchiropteran bat habitat and along potential flyways. In accordance with the '*Species credit*' *threatened bats and their habitats – NSW survey guide for the Biodiversity Assessment Method* (OEH 2018). Following installation harp traps were left in-situ across the Subject Land for a total of four (4) nights and checked early in the morning and late afternoon each day (19-23 January 2026). All captured animals were identified and released by experienced fauna ecologists (**Section 5.2**).

Diurnal Birds

A total of **three (3) dawn bird surveys** were completed within the Subject Land (20/01, 21/01, 22/01), with opportunistic bird surveys being completed during morning and afternoon trap checking, and prior to spotlighting surveys (dusk surveys). Species were identified visually with the aid of binoculars or aurally from call identification. All species were identified by experienced fauna ecologists (**Section 5.2**).

A total of **one (1) large stick nest search** was completed across the Subject Land (17/12/2025). During this survey all nests and dreys were recorded using a handheld GPS device. Descriptive attributes including size, height, condition and potential nesting species were recorded using the GPS device to inform this assessment. Nest surveys were completed by experienced fauna ecologists (**Section 5.2**).

Nocturnal Birds

Call Playback surveys were completed at two (2) evenly distributed survey locations across the Subject Land on **10 nights** by two (2) experienced fauna ecologists (7/01, 13/01, 14/01, 27/01, 28/01, 5/02, 9/02, 10/02, 18/02, 19/02). Each call playback survey was conducted during suitable conditions, allowed 10mins of listening time, broadcasted pre-recorded calls (for target species) for no more than 15 seconds followed by 30 seconds of listening time. This was repeated for 15mins for each target species, unless the target species is detected before 15mins expired. Following call playback surveyors completed 15mins of spotlighting (**Section 5.2**).

Frogs

A total of **12 nights** of nocturnal aural-visual surveys were completed within suitable habitat across the Subject Land in accordance with the *NSW Survey Guide for Threatened Frogs* (DPIE 2020b) (7/01, 13/01, 14/01, 15/01, 27/01, 28/01, 29/01, 5/02, 9/02, 10/02, 18/02, 19/02). Surveys involved active searches following suitable rainfall inspecting of emergent vegetation with a spotlight or head torch. Adult frogs encountered were identified by visual confirmation or aurally from call identification.

Invertebrates

A total of **one (1) round** of targeted Giant Dragonfly surveys were completed within areas of suitable wetland habitat in the Subject Land (27/01/2026). Surveys included the completion of random meanders through wetland habitat and visual identification of potential specimens for capture and close identification. Capture was completed using a Insect Sweep Net (380 mm diameter hoop). All species were identified by experienced fauna ecologists (**Section 5.2**).

2.5 Weather conditions

Table 3 document environmental conditions at the time of threatened species surveys.

Table 3 Environmental conditions during threatened species surveys

Survey undertaken (e.g. method / targeted species)	Date	Time	Temperature (°C)		Wind (light, mod...)	Rainfall (mm) to 9am	Other conditions relevant to the species
			Min	Max			
Vegetation and Habitat Assessments							
Vegetation mapping and plot surveys	09/02/2026	Day	21.2	27.6	Light	0	N/A
	10/02/2026	Day	19.6	28.4	Light	1.4	N/A
Habitat Assessment (Nest Search)	17/12/2026	Day	18.3	27.9	Light	0	N/A
Habitat Assessment (HBTs)	10/03/2026	Day	20.1	27.5	Light	5.2	N/A
Threatened Flora Surveys							
Threatened Flora (Round 10/11)	20/10/2025	Day	15.4	36	Light	0	N/A
	21/10/2025	Day	19.3	23.8	Light	0	N/A
	22/10/2025	Day	17.6	39.8	Light	0	N/A
	23/10/2025	Day	17.8	23	Light	0	N/A
Threatened Flora (Round 1)	02/12/2025	Day	11.3	22.2	Light	2	N/A
	03/12/2025	Day	11.8	26	Light	0	N/A
	04/12/2025	Day	12.3	32.7	Light	0	N/A
	05/12/2025	Day	14.6	38.3	Light	0	N/A
Threatened Flora (Round 2)	19/01/2026	Day	18.1	25.8	Light	5.8	N/A
	20/01/2026	Day	16.7	25.9	Light	0.2	N/A
	21/01/2026	Day	16	25.5	Light	0	N/A
Threatened Flora (Round 3)	02/02/2026	Day	17.3	23	Light	12.2	N/A
	03/02/2026	Day	16.6	24.6	Light	0.4	N/A
	05/02/2026	Day	17.4	37.4	Light	0	N/A

Survey undertaken (e.g. method / targeted species)	Date	Time	Temperature (°C)		Wind (light, mod...)	Rainfall (mm) to 9am	Other conditions relevant to the species
			Min	Max			
Threatened Flora (Round 4)	29/01/2026	Day	18.8	27.8	Light	0	N/A
Threatened Fauna Surveys							
Spotlighting	07/01/2026	Night	18.2	32.9	Light	0	Clear
	13/01/2026	Night	20	28	Light	3.4	Clear
	14/01/2026	Night	20.5	27	Light	0	Clear
	27/01/2026	Night	17.2	26.2	Light	0	Clear
	28/01/2026	Night	14.1	30.4	Light	0	Clear
	29/01/2026	Night	18.8	27.8	Light	0	Clear
	08/02/2026	Night	22	26.1	Light	0.2	Clear
	09/02/2026	Night	21.2	27.6	Light	0	Clear
	10/02/2026	Night	19.6	28.4	Light	1.4	Clear
	09/03/2026	Night	19.6	25.9	Light	24.6	Clear
3 days prior to Detection Dog Surveys	14/03/2026	Day	14	25.5	Light	1.2	Clear
	15/03/2026	Day	11.5	28.4	Light	0	Clear
	16/03/2026	Day	13.6	30.4	Light	0	Clear
Detection Dog Surveys	17/03/2026	Day	18.7	34.5	Light	0	Clear
Fauna Trapping (harp traps, pitfall traps, Elliot A traps, Anabats) - Install	19/01/2026	AM/ PM	18.1	25.8	Light	5.8	Clear
Fauna Trapping (harp traps, pitfall traps, Elliot A traps) – checks	20/01/2026	AM/ PM	16.7	25.9	Light	0.2	Clear
Fauna Trapping (harp traps, pitfall traps, Elliot A traps) – checks	21/01/2026	AM/ PM	16	25.5	Light	0	Clear
Fauna Trapping (harp traps, pitfall traps, Elliot A traps) – checks Dawn Bird Survey	22/01/2026	AM/ PM	16.2	27.3	Light	0	Clear
Fauna Trapping (harp traps, pitfall	23/01/2026	AM/ PM	20	24.9	Light	0	Clear

Survey undertaken (e.g. method / targeted species)	Date	Time	Temperature (°C)		Wind (light, mod...)	Rainfall (mm) to 9am	Other conditions relevant to the species
			Min	Max			
traps, Elliot A traps, Anabats) – Collect Dawn Bird Survey							
Remote Cameras - install	02/02/2026	Day	17.3	23	Light	12.2	N/A
	03/02/2026	Day	16.6	24.6	Light	0.4	N/A
Remote cameras re- baited	18/02/2026	Day	17.2	38.5	Light	0	N/A
Remote cameras collected	05/03/2026	Day	19.9	30.6	Light	0.8	N/A
Dragonfly Surveys	29/01/2026	Day	18.8	27.8	Light	0	Clear

3. Site context

3.1 Assessment area

The assessment area is land within a 1,500 metre buffer of the Subject Land (**Figure 2**).

3.2 Landscape features

Landscape features identified within the Subject Land and assessment area are shown on **Figure 1** Site Map and **Figure 2** Location Map, respectively. A discussion of relevant landscape features is provided in **Table 4**.

Table 4 Landscape Features relevant to the subject land

Landscape Feature	Summary
IBRA Region	Sydney Basin IBRA Region
IBRA Subregion	Karuah Manning IBRA Subregion
Local Government Area (LGA)	Port Stephens Council Local Government Area
Mitchell Landscapes	Sydney-Newcastle Barriers and Beaches Quaternary coastal sediments on long recurved quartz sand beaches between rocky headlands backed by sand dunes and intermittently closed and open lagoons. Includes areas of more extensive high dunes often located on top of the headlands. General elevation 0 to 30m, local relief 10m. Cliff top dunes may be found as high as 90m above sea level. Distinct zonation of vegetation and increasing soil development from the beach to the inland dunes. At the beach; spinifex (<i>Spinifex hirsutus</i>), spiky mat-rush (<i>Lomandra longifolia</i>), coast wattle (<i>Acacia longifolia</i> ssp. <i>sophorae</i>) and coast tea-tree (<i>Leptospermum laevigatum</i>) colonise the frontal dune in which there is little soil development. Coast banksia (<i>Banksia integrifolia</i>) and old man banksia (<i>Banksia serrata</i>) are found on the second dunes and these merge with more complex forest containing blackbutt (<i>Eucalyptus pilularis</i>), red bloodwood (<i>Corymbia gummifera</i>), grass trees (<i>Xanthorrhoea</i> sp.) and numerous understorey shrubs on deep sands that have an organic rich A horizon, a bleached A2 horizon and the initial development of weak iron or organic pans in the sandy subsoil. Well-developed, deep podsol profiles are present in cliff top dunes with swampy swales indicating that these forms are probably older than the coastal dunes. Vegetation of Banksia aemula heathland and open scrub of coast banksia (<i>Banksia integrifolia</i>), coast rosemary (<i>Westringea fruticosa</i>), coast tea-tree and grass tree, with dwarfed smooth-barked apple (<i>Angophora costata</i>) and red bloodwood. Freshwater sedge swamps in larger areas of sand. In the lagoons salinity varies depending on tidal flushing and they are often surrounded by broad-leaved tea-tree (<i>Melaleuca quinquenervia</i>) and swamp oak (<i>Casuarina glauca</i>). Water margins are occupied by Juncus sp. and common reed (<i>Phragmites australis</i>) in fresh water areas. Grey mangrove (<i>Avicennia marina</i>) may occur in some tidal inlets.
Rivers, streams, and estuaries	No mapped watercourses or estuaries occur within the Subject Land. The nearest estuary is Port Stephens Estuary approx. 500 m to the north of the Subject Land. This is a Nationally Important Wetland

Landscape Feature	Summary
Wetlands	Wetland vegetation occurs in the north-western corner of the Subject Land. Port Stephens Estuary approx. 500 m to the north of the Subject Land is a Nationally Important Wetland. No mapped Coastal Wetlands or mapped Coastal Proximity Areas occur within the Subject Land.
Habitat connectivity	Vegetation within the Subject Land and areas south of Nelson Bay Road likely facilitate east-west movement of local fauna along Tomaree Peninsula
Areas of geological significance (caves, karsts, crevices etc.)	No areas of geological significance occur within the Subject Land
Soil hazard features	The majority of the Subject Land is mapped as Class 4 Acid Sulphate Soils. A small area of Class 3 Acid Sulphate Soils occurs within the wetland area in the north-western corner of the Subject Land (outside of the Impact Area).
Areas of outstanding biodiversity value	No areas of outstanding biodiversity value occur within the Subject Land
Geology and Soils	The geology of the Subject Land is characterised by Holocene (0.0117 million years ago – Present) marine deposited and aeolian-reworked coastal sand dunes (QH_bd Coastal). The following Soil Landscapes are mapped within the Subject Land: Hawks Nest (hn) Stable low Holocene beach ridges and windblown sand sheets on the Tomago Coastal Plain. Characterised by gently undulating, Holocene sand sheets and beach ridges, 3-12m ASL, dominated by low sandy dunes and swales. Boyces Track (bt) Steep stable Quaternary Holocene dunes on the Tomago Coastal Plain between North Stockton and Bobs Farm. Two long walled ridges, parallel to the shoreline, form the major part of this landscape, separated by a low relief sand plain (Hawks Nest Soil Landscape). Windward slopes are generally longer and more gently inclined than leeward slopes which are shorter and steeper, often having formed at the angle of repose of the sand.
Additional landscape features identified in SEARS	Not Applicable

3.3 Native vegetation cover

Native vegetation cover was assessed as per Section 3.2 of the BAM 2020 (DPIE 2020a). **Table 5** summarises the extent of native vegetation cover within the assessment area. **Figure 2** Location Map shows native vegetation cover within the assessment area.

Table 5 Native vegetation cover in the assessment area

Assessment area (ha)	1,771.97 ha
Total area of native vegetation cover (ha)	970.56 ha
Percentage of native vegetation cover (%)	55%
Class (0-10, >10-30, >30-70 or >70%)	>30-70

4. Native vegetation, threatened ecological communities and vegetation integrity

4.1 Native vegetation extent

A total of 32.92 ha of native vegetation occurs within the Subject Land (**Figure 18**)

4.1.1 Areas that are not native vegetation

4.1.1.1 Exotic Vegetation

A total of 2.42 ha of vegetation within the Subject Land is “Exotic Vegetation” being a mix of planted exotics including African Olive (*Olea europaea*), Avocado Tree (*Persea americana*), Mango Tree (*Mangifera indica*), and garden ornamentals. The groundcover includes a high proportion of exotic species (*Eragrostis curvula*, *Petrorhagia dubia*, *Sida rhombifolia*, *Conyza bonariensis*, *Acanthospermum hispidum*, *Baccharis halimifolia*, *Bidens pilosa*, *Hypochaeris radicata*, *Senecio angulatus*, *Brassica spp.*).

4.1.1.2 Exotic Grassland

A total of 7.38 ha of vegetation within the Subject Land is “Exotic Grassland” and is characterised by a high proportion of exotic species (*Eragrostis curvula*, *Petrorhagia dubia*, *Sida rhombifolia*, *Conyza bonariensis*, *Acanthospermum hispidum*, *Baccharis halimifolia*, *Bidens pilosa*, *Hypochaeris radicata*, *Senecio angulatus*, *Brassica spp.*), and very few native species (*Tetragonia tetragonioides*, *Tricoryne simplex*, *Cynodon dactylon*).

4.1.1.3 Existing Infrastructure

A total of 3.02 ha of existing infrastructure including sheds and residential dwellings occur within the Subject Land.

4.2 Plant community types

4.2.1 Overview

Vegetation within the subject land has been assessed as aligning with the BioNet Vegetation Classification PCTs identified within **Table 6** and their extent is shown in **Figure 19** Plant community types. Detailed descriptions of each PCT are provided in the following subsections.

Table 6 PCTs identified within the subject land

PCT ID	PCT name	Impact Area (ha)	Subject land area (ha)
PCT 3544	Coastal Sands Apple-Blackbutt Forest	23.99	32.56
PCT 4006	Northern Paperbark-Swamp Mahogany Saw-sedge Forest	0	0.35
Total area		23.99	32.92

4.2.2 PCT 3544: Coastal Sands Apple-Blackbutt Forest



Plate 1: PCT 3544: Coastal Sands Apple-Blackbutt Forest

4.2.2.1 PCT overview

Description: Tall dry sclerophyll forest occurring on Holocene sand dunes within the Subject Land. The vegetation within the Subject Land is characterised by a canopy dominated by *Eucalyptus pilularis* (Blackbutt) and *Angophora costata* (Smooth-barked Apple), with a midstory of *Banksia serrata* (Old Man Banksia), *Monotoca elliptica* (Tree Broom-heath), and *Endiandra sieberi* (Hard Corkwood). The shrub layer and groundcover is dominated by ferns (*Pteridium esculentum* [Bracken Fern]) and shrubs (*Breynia oblongifolia* [Breynia], *Leucopogon lanceolatus* [Lance Beard-heath], *Pimelea linifolia* [Rice Flower]), with a low cover of grasses (*Themeda triandra* [Kangaroo Grass], *Imperata cylindrica* [Blady Grass], and *Lomandra longifolia* [Spiny Mat Rush]). The vegetation within the Subject Land commonly includes a number of vine species either amongst the shrub layer or midstory including; *Parsonsia straminea* (Common Silkpod), *Kennedia rubicunda* (Kennedia), and *Pandorea pandorana* (Wong Wonga Vine). This PCT is also characterised by a number of large patches of weeds (especially at the edges of the PCT including; *Lantana camara* (Lantana), *Chrysanthemoides monilifera* subsp. *rotundata* (Bitou Bush), and *Eragrostis curvula* (African Lovergrass). Lower condition and derived forms of this PCT occur within the Subject Land and are further detailed below.

Table 7 provides an overview of this PCT within the Subject Land.

Table 7 PCT 3544: Coastal Sands Apple-Blackbutt Forest

Vegetation formation	Dry Sclerophyll Forests (Shrubby sub-formation)
Vegetation class	Coastal Dune Dry Sclerophyll Forests
Per cent cleared value (%)	21.67%
Extent within subject land (ha)	32.56 ha
Extent within Impact Area (ha)	23.99 ha
Survey effort	Required: 4 plot/transect Conducted: 4 plot/transect

Canopy: *Angophora costata*, *Eucalyptus pilularis*

Mid-stratum: *Banksia serrata*, *Monotoca elliptica*, *Acacia longifolia*, *Dodonaea triquetra*, *Leptospermum polygalifolium*, *Persoonia levis*, *Polyscias sambucifolia*

Groundcover: *Bossiaea rhombifolia*, *Breynia oblongifolia*, *Dillwynia retorta*, *Hibbertia linearis*, *Leucopogon lanceolatus*, *Monotoca scoparia*, *Pimelea linifolia*, *Ricinocarpos pinifolius*, *Billardiera scandens*, *Brunoniella australis*, *Cassytha glabella* f. *glabella*, *Chrysanthemoides monilifera*, *Cissus antarctica*, *Conyza bonariensis*, *Dendrophthoe vitellina*, *Dianella caerulea* var. *producta*, *Dichelachne micrantha*, *Entolasia stricta*, *Eragrostis curvula*, *Glycine clandestina*, *Gonocarpus teucroides*, *Grona varians*, *Hardenbergia violacea*, *Hypochaeris radicata*, *Imperata cylindrica*, *Kennedia rubicunda*, *Livistona australis*, *Lomandra longifolia*, *Pandorea pandorana*, *Parsonsia straminea*, *Pomax umbellata*, *Pteridium esculentum*, *Themeda triandra*, *Tricoryne simplex*

4.2.2.2 Justification of PCT selection

In its highest condition form within the Subject Land (Vegetation Zone 1) the vegetation was determined to be within the Dry Sclerophyll Forests (Shrubby sub-formation) vegetation formation and the Coastal Dune Dry Sclerophyll Forests vegetation class (Keith 2004). The vegetation occurs within the Karuah Manning IBRA Subregion (within the Sydney Basin IBRA Region) and is characterised by a canopy of *Eucalyptus pilularis* (Blackbutt), *Angophora costata* (Smooth-barked Apple), and midstory with *Banksia serrata* (Old Man Banksia). Vegetation community determination included a review of the following key local references:

Previous Mapping (Wildthing 2020)

The vegetation within the Subject Land was mapped as HU860 – Smooth-barked Apple – Blackbutt – Old Man Banksia woodland on coastal sands of the Central and Lower North Coast, and associated with the (now decommissioned) PCT 1646 Smooth-barked Apple - Blackbutt - Old Man Banksia woodland on coastal sands of the Central and Lower North Coast. Following the establishment of the new Eastern NSW PCTs this PCT was split into three new PCTs being; PCT 3555 (very strong), PCT 3549 (very strong), and PCT 3544 (very strong).

Vegetation Mapping of Port Stephens LGA (Stages 1 and 2) (Bell 2025)

The vegetation within the Subject Land is commensurate with vegetation within the group; Coastal Sand Apple – Blackbutt Forest, specifically Unit 33a Frontal Dune Blackbutt Apple Forest based on the occurrence of *Eucalyptus pilularis*, *Angophora costata*, *Banksia serrata*, *Monotoca elliptica*, *Pteridium esculentum*, *Themeda triandra*, and *Gonocarpus teucroides*. The map unit is mapped within the Subject Land (Bell 2025) and is linked to the “best-fit PCT” PCT 3544: Coastal Sands Apple-Blackbutt Forest.

Eastern New South Wales Plant Community Type (PCT)

A search of suitable Eastern NSW PCTs was completed within the NSW Vegetation Information System (VIS) filtering for PCTs belonging to the Coastal Dune Dry Sclerophyll Forests vegetation class, within the Karuah Manning IBRA Subregion (within the NSW North Coast IBRA Region), characterised by the presence of *Eucalyptus pilularis* (Blackbutt), *Angophora costata* (Smooth-barked Apple), *Banksia serrata* (Old Man Banksia), and *Monotoca elliptica* (Tree Broom-heath).

The search returned the following PCTs:

- PCT 3544: Coastal Sands Apple-Blackbutt Forest
- PCT 3545: Coastal Sands Bloodwood Low Forest
- PCT 3549: Lower North Sandplain Heathy Forest
- PCT 3546: Coastal Sands Littoral Scrub-Forest

PCT 3546 is considered a tall shrubland dominated by *Banksia integrifolia*, with *Leptospermum laevigatum*, *Cupaniopsis anacardioides*, and *Pittosporum undulatum*, with a eucalypt canopy of *Eucalyptus botryoides* or *Eucalyptus pilularis* rarely present. As this is inconsistent with the vegetation found within the Subject Land this PCT was not selected.

PCT 3549 is more consistent with the vegetation structure of the vegetation within the Subject Land being defined as a tall open woodland on Quaternary sand dunes between the Hunter River and south-west Rocks. However, the PCT is described as having a high cover of *Angophora costata* and a low cover of *Eucalyptus pilularis*, a shrub layer dominated by *Banksia aemula*, *Leptospermum polygalifolium*, and *Leptospermum trinervium*. While these share some similarities with the vegetation within the Subject Land, the relative densities of described key flora species is inconsistent with the vegetation within the Subject Land.

PCT 3545 is a close fit with the vegetation within the Subject Land owing to the PCT's location on transgressive sand dunes between Jervis Bay and Port Stephens, canopy of *Angophora costata*, midstory of *Banksia serrata* and *Monotoca elliptica*, and groundcover dominated by *Pteridium esculentum* with patches of *Lomandra longifolia*. This PCT was ultimately not selected as PCT 3544 had a canopy mix more consistent with the vegetation within the Subject Land – especially the high cover of *Eucalyptus pilularis* which is known to only rarely occur within PCT 3545.

PCT 3544 was determined to be the best fit PCT for the vegetation within the Subject Land. This was based on the community's description as a "tall to very tall sclerophyll forest with a dry shrubby understory and ferny ground cover", location between Jervis Bay and Port Macquarie, and canopy including a "high cover of *Eucalyptus pilularis* and *Angophora costata*". The PCT has a similar sparse midstory of *Banksia serrata* and lower shrub layer of *Monotoca elliptica* with a mix of others including *Persoonia levis*. This PCT is also described as being the best-fit PCT for the Port Stephens LGA Unit 33a (Bell 2025) and has a strong link with the now decommissioned PCT 1646 previously mapped within the Subject Land.

As such, **PCT 3544** was selected as the best fit PCT based on floristic composition, structure, geology, and location.

Plot to PCT Assignment Tool

The Plot to PCT Assignment Tool helps identify NSW Plant Community Types (PCTs) using the standard floristic survey methods required under the NSW Biodiversity Assessment Method (BAM) and promoted by the NSW Vegetation Survey Standards.

The BAM plots completed within this vegetation community were uploaded into the Tool. Results from the Centroid matching determined that the vegetation within the Subject Land has the strongest quantitative floristic relationship with PCT 3544 (**Table 8**).

Table 8: Plot to PCT Assignment Tool Results

Site No	PCT Match1	Distance Centroid1 to	PCT Match2	Distance Centroid2 to	PCT Match3	Distance Centroid3 to
Q01	3544	0.52	3556	0.611	3996	0.646
Q02	3544	0.49	3556	0.619	3996	0.623
Q03	3544	0.653	3996	0.683	3556	0.725
Q04	3544	0.474	3556	0.655	3549	0.656

Condition states

Two (2) condition states were determined to occur within the *PCT 3544 Coastal Sands Apple-Blackbutt Forest*; Moderate-Good and Derived Grassland as described below.

Table 9 Vegetation Zones for PCT 3544

Vegetation Zone no.	Condition state	Description
1	Moderate	Intact PCT 3544 with all vegetation strata present, with occasional dense patches exotics including Lantana and Bitou Bush.
2	Regen	Regen form of PCT 3544, managed under a powerline easement or adjacent to more intact areas of PCT 3544 within the Subject Land. This zone contains a number of groundcover and shrub species characteristic of the PCT, albeit with a high cover of exotics including Lantana, Bitou Bush and African Lovegrass.

4.2.2.3 Alignment with BC Act listed TECs

The PCT is not associated with any Threatened Ecological Communities (TECs) listed under the NSW BC Act.

See **Section 4.3** for a summary of TECs within the Subject Land.

4.2.2.4 Alignment with EPBC Act listed ECs

The PCT is not associated with any Threatened Ecological Communities (TECs) listed under the Commonwealth's EPBC Act.

See **Section 4.3** for a summary of TECs within the Subject Land.

4.2.3 PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest



Plate 2: PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest

4.2.3.1 PCT overview

Description: A tall, forested wetland with a mixed canopy of *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus grandis* (Flooded Gum), and *Livistona australis* (Cabbage Palm), with occasional *Eucalyptus pilularis* (Blackbutt) on the edge of the narrow community (ecotone). The vegetation occurs on the back barrier sand flats in the north-western corner of the Subject Land, within a low area of the Subject Land subject to more frequent inundation. As such, the ground layer is dominated by a mix of wetland species characteristic of a forested wetland including *Gahnia clarkei* (Saw-sedge). This vegetation community contains elements of both a forested wetland and wet sclerophyll forest community (mesic species and high cover of *Eucalyptus grandis*), and this is likely the result of the community's small size and likelihood that it represents an ecotonal area between dry sclerophyll, wet sclerophyll and forested wetland communities. For the purpose of this assessment a forested wetland community was deemed to be the best fit for the vegetation within the Subject Land.

Table 10 provides an overview of this PCT within the Subject Land.

Table 10 PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest

Vegetation formation	Forested Wetlands
Vegetation class	Coastal Swamp Forests

Per cent cleared value (%)	22.61%
Extent within subject land (ha)	0.35 ha
Extent within Impact Area (ha)	0 ha
Survey effort	Required: 0 plot/transect Conducted: 1 plot/transect

Canopy: *Eucalyptus grandis*, *Melaleuca quinquenervia*

Mid-stratum: *Cryptocarya rigida*, *Diospyros australis*, *Livistona australis*, *Melaleuca quinquenervia*, *Pittosporum revolutum*

Groundcover: *Blechnum cartilagineum*, *Calochlaena dubia*, *Commelina cyanea*, *Cyclosorus interruptus*, *Gahnia clarkei*, *Lobelia purpurascens*

4.2.3.2 Justification of PCT selection

In its highest condition form within the Subject Land (Vegetation Zone 3) the vegetation was determined to be within the Forested Wetland vegetation formation and the Coastal Swamp Forests vegetation class (Keith 2004). The vegetation occurs within the Karuah Manning IBRA Subregion (within the Sydney Basin IBRA Region) and is characterised by a canopy of *Eucalyptus grandis* (Flooded Gum), *Melaleuca quinquenervia* (Broad-leaved Paperbark), a midstory of *Cryptocarya rigida*, *Diospyros australis*, *Livistona australis*, *Melaleuca quinquenervia*, and *Pittosporum revolutum*. Vegetation community determination included a review of the following key local references:

Previous Mapping (Wildthing 2020)

The vegetation within the Subject Land was mapped as HU938 – Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast, and associated with the (now decommissioned) *PCT 1724 - Broad-leaved Paperbark - Swamp Oak - Saw Sedge swamp forest on coastal lowlands of the Central Coast and Lower North Coast*. Following the establishment of the new Eastern NSW PCTs this PCT was split into three new PCTs being; PCT 4000 (weak), PCT 4004 (weak), and PCT 4006 (weak).

Vegetation Mapping of Port Stephens LGA (Stages 1 and 2) (Bell 2025)

The vegetation within the Subject Land shows characteristics of two local units; 5f: Alluvial Flooded Gum Forest and 37: Swamp Mahogany-Paperbark Forest. With the *Eucalyptus grandis* and *Livistona australis* common in 5f and the *Melaleuca quinquenervia* and *Gahnia clarkei* groundcover characteristic of Unit 37. Considering the wetland elements present in the groundlayer a Forest Wetland was determined to be the best fit vegetation formation for the vegetation within the Subject Land. The best-fit PCT for Unit 37 is *PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest*.

Eastern New South Wales Plant Community Type (PCT)

A search of suitable Eastern NSW PCTs was completed within the NSW Vegetation Information System (VIS) filtering for PCTs belonging to the Coastal Swamp Forests vegetation class, within the Karuah Manning IBRA Subregion (within the NSW North Coast IBRA Region), characterised by the presence of *Melaleuca quinquenervia* (Broad-leaved Paperbark), *Eucalyptus grandis* (Flooded Gum), *Livistona australis* (Cabbage Palm), and *Gahnia clarkei* (Tall Saw-sedge).

The search returned the following PCTs:

- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest
- PCT 4004: Northern Melaleuca quinquenervia Swamp Forest
- PCT 4008: Northern Sands Swamp Mahogany Shrubby Rush Forest
- PCT 3133: Sydney Coast Tuckeroo Littoral Rainforest
- PCT 3158: Lower North Foothills Turpentine-Flooded Gum Wet Forest
- PCT 3171: Northern Lowland Viney Wet Forest
- PCT 3174: Northern Turpentine-Brush Box Wet Forest

PCT 3174 is an extremely tall sclerophyll open forest occurring within two disjunct occurrences one, north of Woodburn, the other between Grafton and Bulahdelah. The canopy is dominated by *Syncarpia glomulifera* and *Lophostemon confertus*, commonly with *Eucalyptus microcorys*. As this PCT is not known to occur within the vicinity of the Subject Land, and has a canopy floristic mix inconsistent with the vegetation within the Subject Land the PCT was not selected.

PCT 3171 is a very tall to extremely tall sclerophyll open forest with a canopy characterised by a mix of *Eucalyptus saligna*, *Eucalyptus microcorys*, *Corymbia intermedia* and *Lophostemon confertus*, and rarely *Eucalyptus grandis*. As this is inconsistent with the vegetation within the Subject Land the PCT was not selected.

PCT 3158 is a very tall sclerophyll open or closed forest with a mid-dense mesic tree understorey. The canopy is comprised of *Syncarpia glomulifera*, commonly with *Lophostemon confertus* and *Eucalyptus grandis*. Other less frequent canopy species occasionally include *Eucalyptus microcorys*, rarely with *Eucalyptus propinqua* and *Eucalyptus saligna*. This PCT occurs on a range of clay-rich sedimentary and metasedimentary substrates. While this PCT shares some floristic similarities with the vegetation within the Subject Land the PCT was ultimately not selected based on the absence of key canopy species recorded within the Subject Land (*Melaleuca quinquenervia*), inconsistencies in the substrate described for the PCT, and the dominance of a *Gahnia clarkei* groundcover more consistent with vegetation experiencing high levels of inundation (Coastal Swamp Wetland).

PCT 3133 is a mid-dense to dense rainforest with a canopy frequently including *Cupaniopsis anacardioides*, *Myrsine variabilis* and *Notelaea longifolia* with variable foliage cover, commonly with *Glochidion ferdinandi*, *Acmena smithii*, *Banksia integrifolia*, *Guioa semiglaucula* and *Endiandra sieberi* with low cover. As this PCT description is inconsistent with the canopy of the vegetation within the Subject Land the PCT was not selected.

PCT 4008 is described as a tall sclerophyll woodland or open forest with a tree canopy very frequently includes a high cover of *Eucalyptus robusta*, which is rarely accompanied or replaced by *Eucalyptus signata*, *Eucalyptus resinifera*, *Corymbia gummifera* amongst a range of other rarely recorded eucalypt species. As this is inconsistent with the vegetation within the Subject Land the PCT was not selected.

PCT 4004 is a close fit for the vegetation within the Subject Land being characterised by a canopy of *Melaleuca quinquenervia* with eucalypts. However, the community is described as having a high cover of *Casuarina glauca* and the eucalypts being *Eucalyptus robusta* (absent from the Subject Land). The groundcover is consistent broadly with swamp forest communities with a high cover of sedges including *Gahnia clarkei*.

PCT 4006 was ultimately selected for the vegetation within the Subject Land based on the dominance of *Melaleuca quinquenervia*, midstory of *Livistona australis*, shrub layer including more mesic species such as *Glochidion ferdinandi*, sedge dominated groundcover including a high cover of *Gahnia clarkei*, with a high cover of ferns including *Pteridium esculentum*.

As such, **PCT 4006** was selected as the best fit PCT based on floristic composition, structure, geology, and location.

Plot to PCT Assignment Tool

The Plot to PCT Assignment Tool helps identify NSW Plant Community Types (PCTs) using the standard floristic survey methods required under the NSW Biodiversity Assessment Method (BAM) and promoted by the NSW Vegetation Survey Standards.

The BAM plots completed within this vegetation community were uploaded into the Tool. Results from the Centroid matching determined that the vegetation within the Subject Land has the strongest quantitative floristic relationship with PCT 4006 (**Table 11**).

Table 11: Plot to PCT Assignment Tool Results – PCT 4006

Site No	PCT Match1	Distance to Centroid1	PCT Match2	Distance to Centroid2	PCT Match3	Distance to Centroid3
Q05	4006	0.753	4047	0.78	4048	0.801

Condition states

One (1) condition state was determined to occur within *PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest* (Moderate) as described below.

Table 12 Vegetation Zones for PCT 3544

Vegetation Zone no.	Condition state	Description
3	Moderate	Intact PCT 4006 with all vegetation strata present, with occasional dense patches exotics including Lantana and Bitou Bush.

4.2.3.3 Alignment with BC Act listed TECs

The PCT is associated with Threatened Ecological Communities (TECs) listed under the NSW BC Act including:

- *Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions* (EEC)

See **Section 4.3** for a summary of TECs within the Subject Land.

4.2.3.4 Alignment with EPBC Act listed ECs

The PCT is associated with Threatened Ecological Communities (TECs) listed under the Commonwealth's EPBC Act, including:

- *Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland* (EEC)

See **Section 4.3** for a summary of TECs within the Subject Land.

4.2.4 Exotic Vegetation



Plate 3: PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest

4.2.4.1 PCT overview

Description: Characterised as a mix of planted exotics including African Olive (*Olea europaea*), Avocado Tree (*Persea americana*), Mango Tree (*Mangifera indica*), and garden ornamentals. The groundcover includes a high proportion of exotic species (*Eragrostis curvula*, *Petrorhagia dubia*, *Sida rhombifolia*, *Conyza bonariensis*, *Acanthospermum hispidum*, *Baccharis halimifolia*, *Bidens pilosa*, *Hypochaeris radicata*, *Senecio angulatus*, *Brassica spp.*).

Table 10 provides an overview of this PCT within the Subject Land.

Table 13 Exotic Vegetation

Vegetation formation	Not Applicable
Vegetation class	Not Applicable
Per cent cleared value (%)	Not Applicable
Extent within subject land (ha)	2.42 ha
Extent within Impact Area (ha)	2.10 ha
Survey effort	Required: None / Conducted: None

4.2.5 Exotic Grassland



Plate 4: Exotic Grassland

4.2.5.1 PCT overview

Description: Characterised by a high proportion of exotic species (*Eragrostis curvula*, *Petrorhagia dubia*, *Sida rhombifolia*, *Conyza bonariensis*, *Acanthospermum hispidum*, *Baccharis halimifolia*, *Bidens pilosa*, *Hypochaeris radicata*, *Senecio angulatus*, *Brassica spp.*), and very few native species (*Tetragonia tetragonioides*, *Tricoryne simplex*, *Cynodon dactylon*).

Table 10 provides an overview of this PCT within the Subject Land.

Table 14 Exotic Grassland

Vegetation formation	Not Applicable
Vegetation class	Not Applicable
Per cent cleared value (%)	Not Applicable
Extent within subject land (ha)	7.38 ha
Extent within Impact Area (ha)	6.14 ha
Survey effort	Required: None / Conducted: 2 plot/transects

4.3 Threatened ecological communities

TECs and where relevant, ECs identified within the subject land are listed in **Table 15** and their extent is shown on **Figure 20** Threatened ecological communities

Table 15 **TECs within the subject land**

TEC name	Profile ID (from TBDC)	BC Act status	EPBC Act status	Associated vegetation zones within the subject land	Area within impact area (ha)	Area within subject land (ha)
<i>Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i>	10786	E	-	PCT 4006	0	0.35
<i>Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland</i>	N/A	-	E	PCT 4006	0	0.35

4.4 Vegetation zones

The patch size for PCT 3544 (Vegetation Zones 1 and 2) and PCT 4006 (Vegetation Zone 3) was assessed as >100 ha as this vegetation is connected to larger intact areas of native forest vegetation extending to the north, south and west of the Subject Land. Any gaps in the connective vegetation considered for the patch sizes are less than 100 m (appropriate for woody vegetation). Vegetation Zones are outlined in **Table 16** and illustrated in **Figure 21**.

Table 16 **Vegetation zones and patch sizes**

Vegetation zone ID	PCT ID number and name	Condition / other defining feature	Area within Subject Land (ha)	Area within Impact Area (ha)	Patch size class (select multiple if areas of native vegetation are discontinuous)	No. vegetation integrity plots required	No. vegetation integrity plots completed	No. vegetation integrity plots used in assessment	Plot IDs of vegetation integrity plots used in assessment
1	<i>PCT 3544: Coastal Sands Apple-Blackbutt Forest</i>	Mod-Good condition	31.31	22.99	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	4	4	4	Q01, Q02, Q04, Q07
2	<i>PCT 3544: Coastal Sands Apple-Blackbutt Forest</i>	Regen condition	1.26	1.00	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	1	1	1	Q03
3	<i>PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest</i>	Mod-Good condition	0.35	0	☐ <5 ha ☐ 5–24 ha ☐ 25–100 ha ☒ >100 ha	0	1	1	Q05

4.5 Vegetation integrity (vegetation condition)

4.5.1 Vegetation integrity survey plots

Following stratification of the Development Site into vegetation zones, plots/transects were undertaken to collect site condition data for the composition, structure and function attributes in accordance with Section 4.3 of the BAM (DPIE 2020a). The location of the plots/transects were selected through stratified random sampling to provide a representative sample of the variation in vegetation composition and condition within each vegetation zone.

The number of plots/transects undertaken across the site meets the minimum number of transects required for each vegetation zone area as detailed in Section 4.3.4, Table 3 of the BAM (DPIE 2020a).

4.5.2 Scores

The current vegetation integrity scores for each vegetation zone within the Impact Area are outlined below in **Table 17**.

Table 17 **Vegetation integrity scores**

Vegetation zone ID	PCT	Composition condition score	Structure condition score	Function condition score (where relevant)	Vegetation integrity score	Hollow bearing trees present?
1	3544	53.6	50	98.1	64.1	Y
2	3544	36.2	2.8	12	10.7	N
3	4006	34.7	88.8	83.7	63.7	Y

4.5.3 Use of benchmark data

No alternative benchmark data was used for this assessment.

5. Habitat suitability for threatened species

5.1 Identification of threatened species for assessment

5.1.1 Ecosystem credit species

The following assessment of habitat suitability for ecosystem credit species was conducted in accordance with Section 6.2 of the BAM. Ecosystem credits represent threatened species that can be predicted to be present by the type and condition of vegetation at the Development Site. Targeted surveys are not required for ecosystem credit species.

Step 1: Identify threatened species for assessment

A list of predicted ecosystem credit species for the Development Site was reviewed in the BAM calculator, according to PCTs present.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land

The potential for identified ecosystem credit species to occur on the Development Site was assessed according to species specific habitat requirements, as detailed in **Table 18**. Where habitat features were not present due to the degraded condition of the site vegetation, ecosystem credit species were determined to not be predicted species and no further assessment was required within these vegetation zones.

Table 18 Predicted ecosystem credit species

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Regent Honeyeater	<i>Anthochaera phrygia</i>	CE	CE	Species	☑ BAM-C	Yes	N/A	3544, 4006	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Dusky Woodswallow	<i>Artamus cyanopterus cyanopterus</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Australasian Bittern	<i>Botaurus poiciloptilus</i>	E	E	Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Sanderling	<i>Calidris alba</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Red Knot	<i>Calidris canutus</i>	V	E	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Curlew Sandpiper	<i>Calidris ferruginea</i>	CE	CE	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Great Knot	<i>Calidris tenuirostris</i>	V	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	E	E	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	V	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Greater Sand-plover	<i>Charadrius leschenaultii</i>	V	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Lesser Sand-plover	<i>Charadrius mongolus</i>	V	E	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Speckled Warbler	<i>Chthonicola sagittata</i>	-	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544	High
Spotted Harrier	<i>Circus assimilis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Brown Treecreeper (eastern subspecies)	<i>Climacteris picumnus victoriae</i>	V	V	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Barred Cuckoo-shrike	<i>Coracina lineata</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Varied Sittella	<i>Daphoenositta chrysoptera</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	V	E	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Black-necked Stork	<i>Ephippiorhynchus asiaticus</i>	E	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Beach Stone-curlew	<i>Esacus magnirostris</i>	CE	-	Ecosystem	☒ BAM-C	Yes	N/A	3544	High

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Eastern False Pipistrelle	<i>Falsistrellus tasmaniensis</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Little Lorikeet	<i>Glossopsitta pusilla</i>	-	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Little Eagle	<i>Hieraaetus morphnoides</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
White-throated Needletail	<i>Hirundapus caudacutus</i>	V	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Black Bittern	<i>Ixobrychus flavicollis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Swift Parrot	<i>Lathamus discolor</i>	E	CE	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Bar-tailed Godwit (baueri)	<i>Limosa lapponica baueri</i>	E	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Square-tailed Kite	<i>Lophoictinia isura</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
South-eastern Hooded Robin	<i>Melanodryas cucullata cucullata</i>	E	E	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Black-chinned Honeyeater (eastern subspecies)	<i>Melithreptus gularis gularis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544	Moderate
Eastern Coastal Free-tailed Bat	<i>Micronomus norfolkensis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Little Bent-winged Bat	<i>Miniopterus australis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Turquoise Parrot	<i>Neophema pulchella</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544	High
Eastern Curlew	<i>Numenius madagascariensis</i>	CE	CE	Ecosystem	☒ BAM-C	Yes	N/A	4006	High
Eastern Osprey	<i>Pandion cristatus</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Yellow-bellied Glider	<i>Petaurus australis</i>	V	V	Species/ Ecosystem	☒ BAM-C	Yes	N/A	3544	High
Scarlet Robin	<i>Petroica boodang</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544	Moderate
Golden-tipped Bat	<i>Phoniscus papuensis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	Moderate
Eastern Chestnut Mouse	<i>Pseudomys gracilicaudatus</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	4006	High
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	V	V	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Wompoo Fruit-Dove	<i>Ptilinopus magnificus</i>	V	-	Species/ Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Rose-crowned Fruit-Dove	<i>Ptilinopus regina</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID	Sensitivity to gain class
		BC Act	EPBC Act						
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544	Moderate
Australian Painted Snipe	<i>Rostratula australis</i>	E	E	Ecosystem	☒ BAM-C	Yes	N/A	4006	Moderate
Yellow-bellied Sheath-tail-bat	<i>Saccolaimus flaviventris</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Diamond Firetail	<i>Stagonopleura guttata</i>	V	V	Ecosystem	☒ BAM-C	Yes	N/A	3544	Moderate
Common Blossom-bat	<i>Syconycteris australis</i>	V	-	Ecosystem	☒ BAM-C	Yes	N/A	3544, 4006	High
Terek Sandpiper	<i>Xenus cinereus</i>	V	V	Ecosystem	☒ BAM-C	Yes	N/A	4006	High

5.1.2 Species credit species

Step 1: Identify threatened species for assessment

A preliminary list of Candidate Species Credit species for the Disturbance Area was reviewed in the BAM calculator. Species credits pertain to threatened species that cannot be reliably predicted by the vegetation present.

Step 2: Assessment of the habitat constraints and vagrant species on the subject land

The potential for identified species credit species to occur on the Development Site was assessed according to species specific habitat requirements, as detailed in **Table 19**. In addition to those Species Credit Species populated in the Biodiversity Assessment Method Calculator (i.e. the BAM – C), threatened species known to occur within proximity to the Subject Land and are considered to have a high potential of occurring on the Subject Land have been included as Candidate Species for further assessment.

Step 3: Identify candidate species credit species for further assessment

A number of species credit species were excluded as candidate species due to their geographic or habitat constraints not being met within the Subject Lands and Subject Land. As a result, no further assessment of these species was required (**Table 19** and **Table 20**).

Table 19 Candidate flora species credit species

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Nabiac Casuarina	<i>Allocasuarina simulans</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Charmhaven Apple	<i>Angophora inopina</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Trailing Woodruff	<i>Asperula asthenes</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Netted Bottle Brush	<i>Callistemon linearifolius</i>	V	-	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Dwarf Kerrawang	<i>Commersonia prostrata</i>	E	E	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Red Helmet Orchid	<i>Corybas dowlingii</i>	E	-	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
White-flowered Wax Plant	<i>Cynanchum elegans</i>	E	E	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Sand Doubletail	<i>Diuris arenaria</i>	E	-	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Rough Doubletail	<i>Diuris praecox</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Eucalyptus parramattensis subsp. decadens	<i>Eucalyptus parramattensis subsp. decadens</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
Eucalyptus seeana population in the Greater Taree local government area	<i>Eucalyptus seeana</i> - endangered population	E	-	☒ BAM-C	No	Geographic Constraint Subject Land is not within the "Greater Taree LGA"	
Tuncurry Midge Orchid	<i>Genoplesium littorale</i>	CE	CE	☒ BAM-C	No	Geographic Constraint Subject land is not within the "Parish boundaries of Tuncurry, Wang Wauk and Forster"	-
Small-flower Grevillea	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Noah's False Chickweed	<i>Lindernia alsinoides</i>	E	-	☒ BAM-C	Yes	-	PCT 4006
Tall Knotweed	<i>Persicaria elatior</i>	V	V	☒ BAM-C	Yes	-	PCT 4006
Villous Mint-bush	<i>Prostanthera densa</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i>	V	E	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i> - endangered population	-	-	☒ BAM-C	No	Geographic Constraint The Subject Land is not within "the former Great	-

Common name	Scientific name	Listing status		Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act				
						Lakes LGA, now Mid Coast Council LGA"	
Scrub Turpentine	<i>Rhodamnia rubescens</i>	CE	CE	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Native Guava	<i>Rhodomyrtus psidioides</i>	CE	CE	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Coast Groundsel	<i>Senecio spathulatus</i>	E	-	☒ BAM-C	No	Habitat Constraint Subject Land does not contain habitat constraints including "Headlands within 500m of the coast"	-
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Black-eyed Susan	<i>Tetradlea juncea</i>	V	V	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Table 20 Predicted fauna species credit species

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Rufous Bettong	<i>Aepyprymnus rufescens</i>	V	-	Species	☒ BAM-C	No	Geographic Constraint The Subject Land is not located "North of Gloucester"	
Regent Honeyeater	<i>Anthochaera phrygia</i>	CE	CE	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Bush Stone-curlew	<i>Burhinus grallarius</i>	E	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Sanderling	<i>Calidris alba</i>	V	-	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Red Knot	<i>Calidris canutus</i>	V	E	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Curlew Sandpiper	<i>Calidris ferruginea</i>	CE	CE	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint	

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
							The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Great Knot	<i>Calidris tenuirostris</i>	V	V	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	E	E	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	V	V	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Eastern Pygmy-possum	<i>Cercartetus nanus</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Large-eared Pied Bat	<i>Chalinolobus dwyeri</i>	E	E	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Greater Sand-plover	<i>Charadrius leschenaultii</i>	V	V	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Lesser Sand-plover	<i>Charadrius mongolus</i>	V	E	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Wallum Froglet	<i>Crinia tinnula</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	<i>Dromaius novaehollandiae</i> - endangered population	-	-	#N/A	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Beach Stone-curlew	<i>Esacus magnirostris</i>	CE	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Little Eagle	<i>Hieraaetus morphnoides</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Stephens' Banded Snake	<i>Hoplocephalus stephensii</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Swift Parrot	<i>Lathamus discolor</i>	E	CE	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Alaskan Bar-tailed Godwit	<i>Limosa lapponica baueri</i>	E	V	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Green and Golden Bell Frog	<i>Litoria aurea</i>	E	V	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Square-tailed Kite	<i>Lophoictinia isura</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Little Bent-winged Bat	<i>Miniopterus australis</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Giant Barred Frog	<i>Mixophyes iteratus</i>	V	V	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Southern Myotis	<i>Myotis macropus</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Barking Owl	<i>Ninox connivens</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Powerful Owl	<i>Ninox strenua</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Eastern Curlew	<i>Numenius madagascariensis</i>	CE	CE	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	
Eastern Osprey	<i>Pandion cristatus</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Giant Dragonfly	<i>Petalura gigantea</i>	E	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Southern Greater Glider	<i>Petauroides volans</i>	E	E	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Brush-tailed Rock-wallaby	<i>Petrogale penicillata</i>	E	V	Species	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "Land within 1km of rocky escarpments, gorges, steep slopes, boulder piles, rock outcrops or clifflines"	
Brush-tailed Phascogale	<i>Phascogale tapoatafa</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Koala	<i>Phascolarctos cinereus</i>	E	E	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Common Planigale	<i>Planigale maculata</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Long-nosed Potoroo	<i>Potorous tridactylus</i>	-	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	V	V	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Masked Owl	<i>Tyto novaehollandiae</i>	V	-	Species/Ecosystem	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Mahony's Toadlet	<i>Uperoleia mahonyi</i>	E	E	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006

Common name	Scientific name	Listing status		Dual credit species	Sources	Species retained for further assessment?	Reason for exclusion from further assessment	Vegetation zone ID species retained within, including PCT ID
		BC Act	EPBC Act					
Eastern Cave Bat	<i>Vespadelus troughtoni</i>	V	-	Species	☒ BAM-C	Yes	-	PCT 3544, PCT 4006
Terek Sandpiper	<i>Xenus cinereus</i>	V	V	Species/Ecosystem	☒ BAM-C	No	Habitat Constraint The Subject Land does not contain habitat constraint: "As per Important Habitat Map"	

5.2 Threatened species surveys

Targeted surveys were completed for candidate species in accordance with the Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method (DPIE 2020h) and species specific survey requirements detailed in the TBDC (see **Table 21** and **Table 22**. Detailed survey methods are provided in **Section 2.3.3** and **Section 2.4.3**.

Table 21 Threatened species surveys for candidate flora species credit species on the subject land

Common name	Scientific name	Threatened flora species surveys				Present	Further assessment t required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Nabiac Casuarina	<i>Allocasuarina simulans</i>	Transects	☒ Yes 2/02/26 2/02/26 5/02/26 13/02/26	☐ No	4 people, 4 days	No	No
Charmhaven Apple	<i>Angophora inopina</i>	Transects	☒ Yes 2/02/26 2/02/26 5/02/26 13/02/26	☐ No	4 people, 4 days	No	No
Trailing Woodruff	<i>Asperula asthenes</i>	Transects	☒ Yes 20/10/25 21/10/25 22/10/25 23/10/25	☐ No	4 people, 4 days	No	No
Netted Bottle Brush	<i>Callistemon linearifolius</i>	Transects	☒ Yes 19/01/26 20/01/26 21/01/26	☐ No	4 people, 3 days	No	No
Dwarf Kerrawang	<i>Commersonia prostrata</i>	Transects	☒ Yes 2/12/25 3/12/25 4/12/25 5/12/25	☐ No	4 people, 4 days	No	No
Red Helmet Orchid	<i>Corybas dowlingii</i>	Transects	☒ Yes 28/06/13	☐ No	4 person hours	No	No

Common name	Scientific name	Threatened flora species surveys				Present	Further assessment t required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Leafless Tongue Orchid	<i>Cryptostylis hunteriana</i>	Transects	☒ Yes 2/12/25 3/12/25 4/12/25 5/12/25	☐ No	4 people, 4 days	No	No
White-flowered Wax Plant	<i>Cynanchum elegans</i>	Transects	☒ Yes 2/02/26 2/02/26 5/02/26 13/02/26	☐ No	4 people, 4 days	No	No
Sand Doubletail	<i>Diuris arenaria</i>	Transects	☒ Yes 13/08/13 21/08/13 13/09/13 25/09/13 05/09/16 02/09/19	☐ No	46 person hours	Yes	No
Rough Doubletail	<i>Diuris praecox</i>	Transects	☒ Yes 13/08/13 21/08/13 13/09/13 05/09/16 02/09/19	☐ No	46 person hours	Yes	No
Eucalyptus parramattens is subsp. decadens	<i>Eucalyptus parramattens</i> is subsp. <i>decadens</i>	Transects	☒ Yes 2/02/26 2/02/26 5/02/26 13/02/26	☐ No	4 people, 4 days	No	No
Small-flower Grevillea	<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Transects	☒ Yes 04/02/13 06/02/13 13/11/13	☐ No	20 person hours	No	No
Noah's False Chickweed	<i>Lindernia alsinoides</i>	Transects	☒ Yes 27/01/26	☐ No	2 people, 4 hours	No	No

Common name	Scientific name	Threatened flora species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (transects or grids)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Tall Knotweed	<i>Persicaria elatior</i>	Transects	☒ Yes 27/01/26	☐ No	2 people, 4 hours	No	No
Villous Mint-bush	<i>Prostanthera densa</i>	Transects	☒ Yes 19/01/26 20/01/26 21/01/26	☐ No	4 people, 3 days	No	No
Eastern Australian Underground Orchid	<i>Rhizanthella slateri</i>	Transects	☒ Yes 20/10/25 21/10/25 22/10/25 23/10/25	☐ No	4 people, 4 days	No	No
Scrub Turpentine	<i>Rhodamnia rubescens</i>	Transects	☒ Yes 19/01/26 20/01/26 21/01/26	☐ No	4 people, 3 days	No	No
Native Guava	<i>Rhodomyrtus psidioides</i>	Transects	☒ Yes 19/01/26 20/01/26 21/01/26	☐ No	4 people, 3 days	No	No
Magenta Lilly Pilly	<i>Syzygium paniculatum</i>	Transects	☒ Yes 19/01/26 20/01/26 21/01/26	☐ No	4 people, 3 days	No	No
Black-eyed Susan	<i>Tetradlea juncea</i>	Transects	☒ Yes 20/10/25 21/10/25 22/10/25 23/10/25	☐ No	4 people, 4 days	No	No

Table 22 **Threatened species surveys for candidate fauna species credit species on the subject land**

Common name	Scientific name	Threatened fauna species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)	
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)				Effort (hours & no. people)
Bush Stone-curlew	Burhinus grallarius	Bird Surveys and Nocturnal Surveys	☒ Yes 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	10 nights, 2 people	No	No
Gang-gang Cockatoo	Callocephalon fimbriatum	Bird Surveys	☒ Yes Dawn 22/1/26 23/1/26 Dusk 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	2 days, 2 people	No	No
South-eastern Glossy Black-Cockatoo	Calyptorhynchus lathami lathami	Bird Surveys	☒ Yes Dawn 22/1/26 23/1/26 Dusk 7/01/26 13/1/26 14/1/26	☐ No	2 days, 2 people	No	No

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
			27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26				
Eastern Pygmy-possum	Cercartetus nanus	Spotlighting (Noc) and Remote Cameras (RC)	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras	No	No
Large-eared Pied Bat	Chalinolobus dwyeri	Anabats and Harp Traps	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights	No	No
Wallum Froglet	Crinia tinnula	Frog Surveys	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26	☐ No	Noc 10 nights, 2 people (2 hrs per person)	No	No

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
			8/02/26 9/02/26 10/2/26 9/3/26				
Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	Dromaius novaehollandiae - endangered population	Bird Surveys	☒ Yes 22/1/26 23/1/26	☐ No	2 days, 2 people	No	No
Beach Stone-curlew	Esacus magnirostris	Spotlighting and Call Playback	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	10 nights, 2 people (2 hrs per person)	No	No
White-bellied Sea-Eagle	Haliaeetus leucogaster	Nest Search	☒ Yes 18/12/25	☐ No	1 day, 2 people	No	No
Little Eagle	Hieraaetus morphnoides	Nest Search	☒ Yes 18/12/25	☐ No	1 day, 2 people	No	No
Stephens' Banded Snake	Hoplocephalus stephensii	Spotlighting	☒ Yes Noc 7/01/26 13/1/26	☐ No	10 nights, 2 people (2 hrs	No	No

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
			14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26		per person)		
Green and Golden Bell Frog	Litoria aurea	Frog Surveys	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	10 nights, 2 people (2 hrs per person)	No	No
Square-tailed Kite	Lophoictinia isura	Nest Search	☒ Yes 18/12/25	☐ No	1 day, 2 people	No	No
Little Bent-winged Bat	Miniopterus australis	Anabats and Harp Traps	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights	Yes	Yes
Large Bent-winged Bat	Miniopterus orianae oceanensis	Anabats and Harp Traps	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights	No	No
Giant Barred Frog	Mixophyes iteratus	Frog Surveys	☒ Yes Noc 7/01/26 13/1/26 14/1/26	☐ No	10 nights, 2 people (2 hrs per person)	No	No

Common name	Scientific name	Threatened fauna species surveys			Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)	
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)				
			27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26				
Southern Myotis	Myotis macropus	Anabats and Harp Traps	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights	Yes	Yes
Barking Owl	Ninox connivens	Call Playback	☒ Yes 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26	☐ No	9 nights, 2 people	No	No
Powerful Owl	Ninox strenua	Call Playback	☒ Yes 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26	☐ No	9 nights, 2 people	Yes	Yes
Eastern Osprey	Pandion cristatus	Nest Search	☒ Yes 18/12/25	☐ No	1 day, 2 people	No	No

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Giant Dragonfly	Petalura gigantea	Insect Surveys	☒ Yes 27/1/26	☐ No	4 hours, 2 people	No	No
Southern Greater Glider	Petauroides volans	Spotlighting (Noc) and Remote Cameras (RC)	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras	No	No
Squirrel Glider	Petaurus norfolcensis	Spotlighting (Noc) and Remote Cameras (RC)	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras	Yes	Yes

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Brush-tailed Phascogale	Phascogale tapoatafa	Spotlighting (Noc) and Remote Cameras (RC)	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras	No	No
Koala	Phascolarctos cinereus	Spotlighting (Noc), Remote Cameras (RC) Detection Dog Surveys	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26 Dec Dogs 17/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras Dogs	Yes	Yes

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
					8 transects, 1 day		
Common Planigale	Planigale maculata	Pitfall Trapping	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights (22 pitfall traps and 4x 20 Elliot Traps)	No	No
Long-nosed Potoroo	Potorous tridactylus	Spotlighting (Noc) and Remote Cameras (RC)	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26 RC 2/2/26-5/3/26	☐ No	Noc 10 nights, 2 people (2 hrs per person) RC 28 nights, 40 arboreal cameras , 10 terrestrial cameras , 10 pygmy cameras	No	No
Grey-headed Flying-fox	Pteropus poliocephalus	Spotlighting	☒ Yes 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	10 nights, 2 people	No	No

Common name	Scientific name	Threatened fauna species surveys				Present	Further assessment required (BAM Subsections 5.2.5 and 5.2.6)
		Survey method (e.g. harp trap, Elliott trap, bioacoustics, etc.)	Timing of survey – within recommended period? (BAM-C / TBDC)		Effort (hours & no. people)		
Masked Owl	Tyto novaehollandiae	Call Playback	☒ Yes 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26	☐ No	9 nights, 2 people	Yes	Yes
Mahony's Toadlet	Uperoleia mahonyi	Frog Surveys	☒ Yes Noc 7/01/26 13/1/26 14/1/26 27/1/26 28/1/26 29/1/26 8/02/26 9/02/26 10/2/26 9/3/26	☐ No	10 nights, 2 people (2 hrs per person)	No	No
Eastern Cave Bat	Vespadelus troungtoni	Anabats and Harp Traps	☒ Yes Trapping 13/1/26-23/1/26	☐ No	4 nights	Yes	Yes

5.3 Identified Threatened Species

A total of 15 threatened species have been recorded within the Subject Land:

- ***Diuris arenaria* (Sand Doubletail)** (Vulnerable under the BC Act) – A total of 108 specimens of the species was recorded within the Subject Land, outside of the Impact Area – the proposal avoids all direct impacts to the species. As such, no species polygon was created for this Species Credit Species.
- **Masked Owl (*Tyto novaehollandiae*)** – (Vulnerable under the BC Act). The species was recorded during spotlighting and call playback surveys in 2026. A species polygon was created for this Species Credit Species in accordance with the TBDC.
- **Powerful Owl (*Ninox strenua*)** – (Vulnerable under the BC Act). The species was recorded during spotlighting and call playback surveys in 2026. A species polygon was created for this Species Credit Species in accordance with the TBDC.
- **Squirrel Glider (*Petaurus norfolcensis*)** – (Vulnerable under the BC Act). The species was recorded during spotlighting surveys and on eleven (11) remote cameras (RC14, RC20, RC29, RC301, RC307, RC314, RC315, RC320, RC10, RC2) in 2026 and recorded during initial surveys completed by Wildthing in 2013-2017. A species polygon was created for this Species Credit Species in accordance with the TBDC.
- **Koala (*Phascolarctos cinereus*)** [Assumed Present] – (Endangered under the BC Act and EPBC Act). The species was recorded within the Subject Land during detection dog surveys (at four [4] locations), the vegetation within the Subject Land is considered broadly suitable foraging habitat for the species. A species polygon was created for this Species Credit Species in accordance with the TBDC.
- **Grey-headed Flying-fox (*Pteropus poliocephalus*)** – (Vulnerable under the BC Act and the EPBC Act). The species has been recorded flying over the Subject Land during spotlighting surveys. There are no Flying Fox camps within the Subject Land, as such no species polygon was required for this Ecosystem/Species Credit Species (Dual Credit Species).
- **Southern Myotis (*Myotis macropus*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. “Potential habitat” for this species is defined as “all PCTs associated with the species (as per the TBDC) within 200 metres of the bank of any medium to large permanent creeks, rivers, lakes or other waterways (i.e. with pools/stretches 3 metres or wider) on the Subject Land” in accordance with *Species credit threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method* (DPIE 2021). As no permanent creeks, rivers, lakes or other waterways occur within the Subject Land or within 200m of the Subject Land, no species polygon could be created.
- **Eastern Cave Bat (*Vespadelus troughtoni*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. “Potential habitat” for this Species Credit Species is defined as land “within 2 kilometres of caves, scarps, cliffs, rock overhangs and disused mines” under the *Species credit threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method* (DPIE 2021). “Potential breeding habitat” is similarly defined as “all potential habitat on the Subject Land where the

Subject Land is within 100 metres of caves, scarps, cliffs, rock overhangs and disused mines". As no caves, scarps, cliffs, rock overhangs, or disused mines occur within 2 km of the Subject Land no "potential habitat" or "potential breeding habitat" occurs within the Subject Land and no species polygon is required.

- **Little Bentwing-bat (*Miniopterus australis*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. As "potential habitat" as defined in *Species credit threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method* (DPIE 2021) does not occur within the Subject Land or within 100m of the Subject Land no species polygon was created for this Ecosystem/Species Credit Species (Dual Credit Species).
- **Large Bentwing-bat (*Miniopterus orianae oceanensis*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. As "potential habitat" as defined in *Species credit threatened bats and their habitats – NSW guide for the Biodiversity Assessment Method* (DPIE 2021) does not occur within the Subject Land or within 100m of the Subject Land no species polygon was created for this Ecosystem/Species Credit Species (Dual Credit Species).
- **Greater Broad-nosed Bat (*Scoteanax rueppellii*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. This Ecosystem Credit species does not require the creation of a species polygon or retirement of Species Credits.
- **Eastern False Pipistrelle (*Falsistrellus tasmaniensis*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. This Ecosystem Credit species does not require the creation of a species polygon or retirement of Species Credits.
- **White-bellied Sea Eagle (*Haliaeetus leucogaster*)** - (Vulnerable under the BC Act). The species has been recorded flying over the Subject Land during surveys. There are no large eagle nests within the Subject Land. As such, no species polygon could be established for this Dual Credit Species.
- **Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*)** – (Vulnerable under the BC Act). The species was recorded during Anabat surveys. This Ecosystem Credit species does not require the creation of a species polygon or retirement of Species Credits.
- **Varied Sittella (*Daphoenositta chrysoptera*)** – (Vulnerable under the BC Act). The species was recorded within the Subject Land during targeted bird surveys. This Ecosystem Credit species does not require the creation of a species polygon or retirement of Species Credits.

One (1) additional species was recorded outside of the Subject Land during surveys, *Diuris praecox* (Newcastle Doubletail) (Vulnerable under the BC Act and EPBC Act). The species was recorded along the powerline easement to the west of the Subject Land during surveys completed by Wildthing in 2013. No records of the species occur within the Impact Area.

The location of threatened species detections is illustrated in **Figure 23** and **Figure 24**.

Species requiring offsetting are assessed further in **Section 5.4** below.

5.4 Area or count, and location of suitable habitat for a species credit species (a species polygon)

Step 5: Determine the area or count, and location of suitable habitat for species credit species and Step 6: Determine the habitat condition within the species polygon for species assessed by area.

Species Credit species identified within the Subject Land is outlined below:

5.4.1 Masked Owl (*Tyto novaehollandiae*)

The species was recorded within Vegetation Zone 1 and 2 within the proposed Impact Area. As per the TBDC “the species polygon must be drawn to include all vegetation zones; 1. within 800 m from the location of a detected owl, and 2. containing a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground”. Vegetation Zone 1 meets the species polygon requirements, while Vegetation Zone 2 does not contain suitable hollows. The total area of the species polygon for this species is 22.99 ha (**Figure 25**).

5.4.2 Powerful Owl (*Ninox strenua*)

The species was recorded within Vegetation Zone 1 and 2 within the proposed Impact Area. As per the TBDC “the species polygon must be drawn to include all vegetation zones; 1. within 800 m from the location of a detected owl, and 2. containing a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground”. Vegetation Zone 1 meets the species polygon requirements, while Vegetation Zone 2 does not contain suitable hollows. The total area of the species polygon for this species is 22.99 ha (**Figure 26**).

5.4.3 Squirrel Glider (*Petaurus norfolcensis*)

The species was recorded during spotlighting surveys and on eleven (11) remote cameras (RC14, RC20, RC29, RC301, RC307, RC314, RC315, RC320, RC10, RC2) throughout the Subject Land. Habitat for the species within the Subject Land is considered to be areas of intact native vegetation (with foraging canopy species and hollow-bearing trees) within PCTs associated with the species in the TBDC. As such, the species polygon was established across all of Vegetation Zone 1, with a combined area of 22.99 ha (**Figure 27**).

5.4.4 Koala (*Phascolarctos cinereus*)

Signs of the species (scats) were recorded at four (4) locations during detection dog surveys within broadly suitable foraging habitat (Vegetation Zone 1) within the Subject Land. In accordance with the *Koala (Phascolarctos cinereus): Biodiversity Assessment Method Survey Guide* (DPE 2022) the species polygon should include “all vegetation zones that are continuous suitable habitat” with the vegetation zone the species was detected. The guidelines define “Suitable Habitat” as “any PCT associated with koala in the TBDC, and with a minimum of one koala use tree present, for the relevant region”. Vegetation Zone 1 contains two (2) Koala use trees listed in Table 4 of the guidelines, including; *Angophora costata* (Sydney Red Gum) and *Eucalyptus pilularis* (Blackbutt). As such, Vegetation Zone 1 meets the definition of Suitable Habitat for the Koala and the species polygon includes all areas of this vegetation zone within the Impact Area, with a total area of 22.99 ha (**Figure 28**).

Table 23 Results for present species (recorded within the subject land)

Common name	Scientific name	Biodiversity risk weighting (BAM-C & TBDC*)	SAll entity** (BAM-C & TBDC)	Habitat constraints / microhabitats present on the subject land / vegetation zone	Abundance – No. individual plants present on subject land (flora with unit of measure of count)	Extent (ha) of suitable habitat present on site (flora or fauna with unit of measure of area)	TBDC species specific recommendations e.g. buffers, general comments (where relevant)	Habitat condition (vegetation integrity score for each vegetation zone in the polygon – area species only)
Masked Owl	<i>Tyto novaehollandiae</i>	High (2)	No	Hollow bearing trees;a living or dead tree with a hollow >20 cm diameter that occurs >4 metres above the ground	N/A	22.99 ha	The species polygon must be drawn to include all vegetation zones; 1. within 800 m from the location of a detected owl, and 2. containing a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground.	64.1
Powerful Owl	<i>Ninox strenua</i>	High (2)	No	Hollow bearing trees;a living or dead tree with a hollow >20 cm diameter that occurs >4 metres above the ground	N/A	22.99 ha	The species polygon must be drawn to include all vegetation zones; 1. within 800 m from the location of a detected owl, and 2. containing a living or dead tree with a hollow >20cm diameter that occurs >4m above the ground.	64.1
Squirrel Glider	<i>Petaurus norfolcensis</i>	High (2)	No	-	N/A	22.99 ha		64.1
Koala	<i>Phascolarctos cinereus</i>	High (2)	No	Presence of koala use trees	N/A	22.99 ha	The guidelines define "Suitable Habitat" as "any PCT associated with koala in the TBDC, and with a minimum of one koala use tree present, for the relevant region"	64.1

Table 24 Results for EPBC Act listed species present (recorded within the subject land)

Common name	Scientific name	Abundance – No. individual plants present on Impact Area (flora with unit of measure as count)	Extent (ha) of suitable habitat present within Impact Area (flora or fauna with unit of measure as area)
Koala	<i>Phascolarctos cinereus</i>	N/A	22.99 ha
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	N/A	22.99 ha
Rough Doubletail	<i>Diuris praecox</i>	0	0ha
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	N/A	23.99 ha (assumed)

6. Identifying prescribed impacts

The following are prescribed impacts which need to be considered as per section 8.3 of the BAM (DPIE 2020a) (Table 25).

Table 25 Prescribed impacts identified

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
Karst, caves, crevices, cliffs, rocks or other geological features of significance	☐ Yes / ☒ No	This feature does not occur within the Subject Land	
Human-made structures	☐ Yes / ☒ No	This feature does not occur within the Subject Land	
Non-native vegetation	☒ Yes / ☐ No	Exotic Vegetation (fruit trees) within the Subject is likely representative of foraging habitat for threatened species	Grey-headed Flying-fox

Feature	Present	Description of feature characteristics and location	Threatened entities that use, are likely to use, or are part of the habitat feature. Where relevant, threatened species or fauna that are part of a TEC or EC, that are at risk of vehicle strike
Habitat connectivity	☒ Yes / ☐ No	The vegetation within the Subject Land likely contributes to habitat connectivity within the locality.	Koala, Squirrel Glider, Grey-headed Flying-fox, Powerful Owl, and Masked Owl.
Waterbodies, water quality and hydrological processes	☒ Yes / ☐ No	While no waterbodies occur within the Subject Land, hydrological processes including groundwater that may support habitat for threatened species, or threatened ecological communities are relevant to this assessment	Swamp Sclerophyll Forest TEC
Wind turbine strikes (wind farm development only)	☐ Yes / ☒ No	Not applicable	Not applicable
Vehicle strikes	☐ Yes / ☒ No	Not applicable	Not applicable

STAGE 2: IMPACT ASSESSMENT (BIODIVERSITY VALUES AND PRESCRIBED IMPACTS)

7. Avoid and minimise impacts

7.1 Avoid and minimise direct and indirect impacts

The proposed layout of the sand quarry and associated infrastructure has undergone a design process, taking into consideration engineering, surface water, traffic and transport and biodiversity values. Avoidance of impacts on native vegetation, fauna habitats and other biodiversity values have been taken into consideration in the design.

For the purpose of this assessment the following terms are defined in accordance with the BAM 2020 below:

- **Avoid** - measures taken by a proponent such as careful site selection, or actions taken through the design, planning, construction and operational phases of the development to completely prevent impacts on biodiversity values, or certain areas of biodiversity.
- **Minimise** – a process applied throughout the development planning and design life cycle that seeks to reduce the residual impacts of development on biodiversity values.

The proposed development will impact a total of 32.49 ha, including 0.26 ha of existing infrastructure, 2.10 ha of exotic vegetation, and 6.14 ha of exotic grassland. Direct and indirect impacts to native vegetation have been avoided and minimised through the implementation of the following:

- The proposed development has been located to minimise impacts to higher condition vegetation (Vegetation Zone 1) and areas of TEC (Vegetation Zone 3), prioritising impacts within lower condition vegetation where possible as a resource project:
 - A total of 22.99 ha of Vegetation Zone 1 (PCT 3544: Moderate – Good Condition) will be impacted by the proposed action. Retained areas of this PCT include the southern corner of the Subject Land, and vegetation within the road reserve and a 15 m boundary buffer. The proposed development will impact 73% of Vegetation Zone 1, retaining 27% within the Subject Land.
 - A total of 0.35 ha of Vegetation Zone 3 (PCT 4006: Moderate Condition) (EEC) occurs within the Subject Land. All of this Vegetation Zone and Commonwealth listed Swamp Sclerophyll Forest EEC occurring within the Subject Land will be retained under the proposed development.
- The proposed development will impact a total of 793 Hollow-bearing Trees (HBTs) representing a total of 73% of HBTs within the Subject Land. The remaining 27% are retained within the southern corner of the Subject Land, the road reserve, retained vegetation in the north-east of the Subject Land, and vegetated buffer areas (15m boundary buffer, 3m powerline easement buffer, and 3m right of carriageway buffer).

- The proposed development avoids impacts to a wetland area associated with PCT 4006 in the north-western corner of the Subject Land.
- The proposed development avoids impacts to the north-eastern corner of the Subject Land, east of the right-of-carriageway.
- The proposed development will minimise impacts to threatened species recorded within the Subject Land, including the following EPBC Act listed species:
 - *Diuris praecox* (Newcastle Doubletail) – was not recorded within the Subject Land, however broadly suitable habitat occurs within the powerline easement. No additional impacts (beyond existing uses) to the powerline easement are proposed under the proposed development.
 - Koala (*Phascolarctos cinereus*) – This species was recorded within the Subject Land and the vegetation within the Subject Land broadly represents foraging habitat for the species, albeit considered “supplementary” foraging habitat under the Port Stephens CKPoM. A total of 22% of suitable habitat for the species within the Project Area will not be impacted by the proposed action.
 - Grey-headed Flying-fox (*Pteropus poliocephalus*) – the vegetation within the Subject Land is considered foraging habitat for the species.
- The proposed development will minimise impacts to suitable habitat for the following EPBC Act listed threatened species (not recorded within the Subject Land, only suitable habitat):
 - Spotted-tailed Quoll (*Dasyurus maculatus*) - the vegetation within the Subject Land is considered possible habitat for the species. Moderate likelihood of occurrence.
 - New Holland Mouse (*Pseudomys novaehollandiae*) – the vegetation within the Subject Land is considered potential habitat for the species, however the species has not been recorded within the Subject Land during targeted surveys. Moderate likelihood of occurrence.
- Dust suppression using water carts will minimise indirect impacts caused by excessive dust
- The proposed action will be staged along with progressive revegetation over the life of the sand quarry. This allows for the maintenance of connectivity east-west across the Subject Land. This revegetation is based on successful revegetation undertaken within the Cabbage Tree Road Sand Quarry (see 2-year old rehabilitation from Cabbage Tree Road Sand Quarry below in **Plate 5**).
- Rehabilitation and management of retained areas will be detailed within a site-specific Biodiversity Management Plan.
- Additional impact mitigation measures and controls are detailed in **Section 8.4**



Plate 5: 2-year old Rehabilitation at Cabbage Tree Road Sand Quarry

8. Impact assessment

8.1 Direct impacts

8.1.1 Residual direct impacts

Residual impacts to biodiversity values within the Subject Land after steps to avoid and minimise are detailed in **Table 26**.

Table 26 Summary of residual direct impacts

Direct impact (Describe the impact on PCT/TEC/EC or threatened species and their habitat)	BC Act status	EPBC Act status	SAIL entity	Project phase/timing of impact (e.g. construction, operation, rehabilitation)	Extent (ha, number of individuals)
PCT 3544: Coastal Sands Apple-Blackbutt Forest	-	-	No	Operation	23.99 ha
Masked Owl (<i>Tyto novaehollandiae</i>)	V	-	No	Operation	22.99 ha
Powerful Owl (<i>Ninox strenua</i>)	V	-	No	Operation	22.99 ha
Squirrel Glider (<i>Petaurus norfolcensis</i>)	V	-	No	Operation	22.99 ha
Koala (<i>Phascolarctos cinereus</i>)	E	E	No	Operation	22.99 ha

8.1.2 Change in vegetation integrity score

Table 27 Impacts to vegetation integrity

Vegetation zone	PCT ID/Species	Management zone	Impact Area (ha)	Before development				After development				Change
				Composition	Structure	Function	VI score	Composition	Structure	Function	VI score	Change in VI score
1	3544	Mod-Good	22.99	53.6	50	98.1	64.1	0	0	0	0	-64.1
2	3544	Regen	1.00	36.2	2.8	12	10.7	0	0	0	0	-10.7

8.2 Indirect impacts

Indirect impacts likely to occur on native vegetation, threatened entities and their habitat beyond the Impact Area is detailed in **Table 28**.

Table 28 Summary of residual indirect impacts

Indirect impact (Describe impact, e.g. transport of weeds and pathogens from the site to adjacent vegetation)	Impacted entities (PCT/threatened entity and their habitats and where relevant, EPBC Act listing)	Extent (ha or zone reference)	Frequency	Duration (long-term/ short-term/ medium-term)	Project phase/ timing of impact (e.g. construction, operation, rehabilitation)	Likelihood and consequences
Transfer of weeds and pathogens to and from site	Koala, Squirrel Glider, Swamp Sclerophyll Forest TEC	0	1	Medium	During vegetation clearing and operation	Low likelihood under management
Noise, vibration, lighting, waste and air pollution impacts to adjacent sensitive habitat areas	Koala, Squirrel Glider, Masked Owl, Powerful Owl, Swamp Sclerophyll Forest, <i>Diuris arenaria</i> .	0	1	Medium	During vegetation clearing and operation	Low likelihood under management

8.3 Prescribed impacts

8.3.1 Karst, caves, crevices, cliffs, rocks and other geological features

Not applicable to the current application.

8.3.2 Habitat connectivity

Likely movement corridors include an east-west corridor parallel to the north and south of Nelson Bay Road. Impacts to habitat connectivity for locally occurring species are likely to occur as a result of the proposal, however impacts have been avoided through the retention of a vegetated corridor in the north of the Subject Land (minimum 40m wide). Impacts to connectivity have been further minimised by staging impacts and rehabilitation (**Plate 6**) allowing the enhancement of the east-west corridor as the rehabilitation matures.

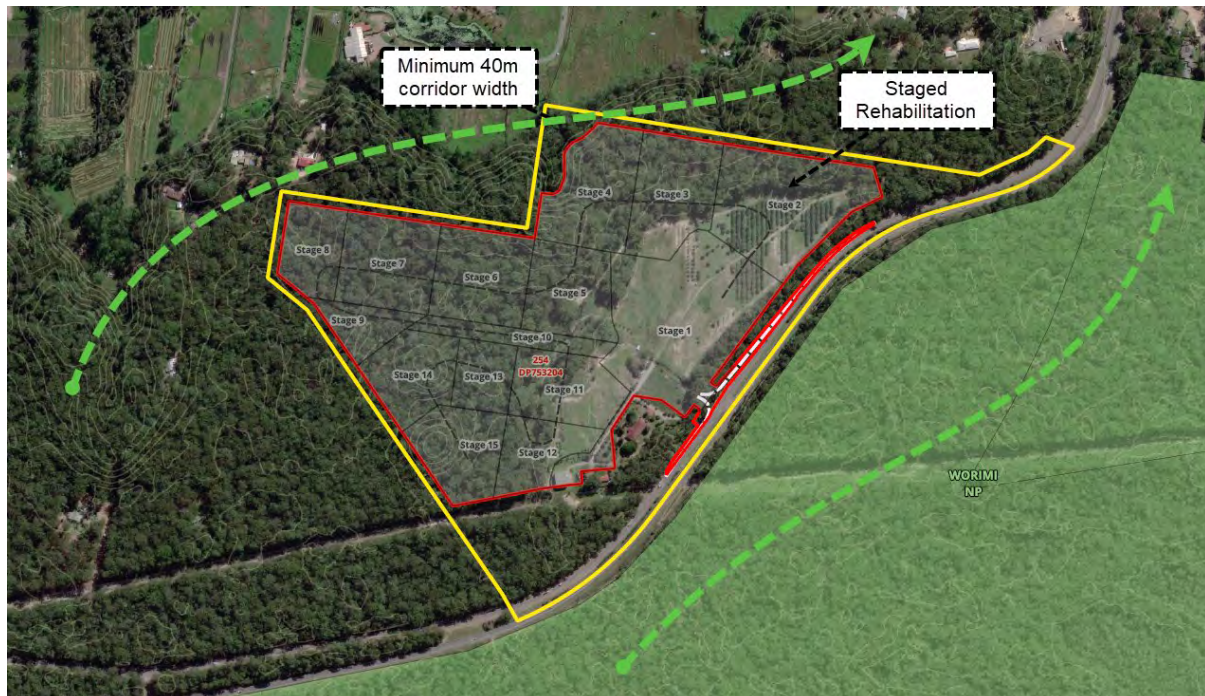


Plate 6: Habitat Connectivity within the Subject Land

8.3.3 Waterbodies, water quality and hydrological processes

Impacts to Groundwater Dependent Ecosystems (GDEs) within the Subject Land are avoided through the location of the proposed extraction and limitations on the depth of extraction.

The depth of the proposed extraction is to 0.7 m above the maximum predicted groundwater, with the rehabilitated final landform to be 1 m. At this depth the modification will not impact groundwater aquifer, therefore there will not be a drawdown effect on the aquifer which sustains obligate GDEs identified within the Subject Land including areas of Swamp Sclerophyll Forest TEC. Considering the depth of the watertable within the Impact Area, the vegetation directly impacted by the proposal is considered to be either facultative or non-GDE communities.

Ongoing monitoring of groundwater will occur throughout operation in accordance with the Maximum Excavation Level (MEL) Management Plan.

As such, the proposal is not expected to result in impacts to water quality, waterbodies, or hydrological processes that would adversely affect the aquatic habitat of identified threatened species.

8.3.4 Impact of wind turbine strikes on protected animals

Not applicable to the current application.

8.3.5 Vehicle strikes

Given the nature of the proposal, and the restriction of quarry operations to daylight hours, impacts of vehicle strikes on threatened species or animals are unlikely to have a significant impact on threatened species or species occurring within threatened ecological communities.

8.4 Mitigate and Manage Residual Impacts to Biodiversity Values

The measures outlined below in **Table 29** are proposed to further manage and mitigate impacts associated with the proposed development.

Table 29 Additional Impact Mitigation Measures

Action	Outcome (Describe the outcome of implementing the measure, with reference to specific entities identified in Sections 4 and 5)	Timing	Responsibility
Clearing of native vegetation	- Avoid and minimise clearing impacts to native vegetation where possible. - Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent. This includes the installation of appropriate fencing or demarcation. This demarcation should clearly show the extent of permitted disturbance area, with signage to restrict entry into the retained vegetation. - Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed surrounding the area of retained native vegetation and wetlands. - Clearly identify and communicate the location of any 'no go zones' in site inductions. - Excavation along the boundary of the excavation area will have regard to Tree protection measures and consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009) where feasible. - A suitably licenced and trained fauna handler will be present during clearing (where clearing is vegetation above 3m in height).	Prior to and during vegetation clearing and operation of the sand quarry	Quarry manager
Removal of hollow-bearing trees / habitat trees, resulting in	Pre-clearance surveys will be undertaken to determine presence of fauna habitat features (i.e. nests or hollows) are present.	During vegetation clearing and operation	Quarry manager

Action	Outcome (Describe the outcome of implementing the measure, with reference to specific entities identified in Sections 4 and 5)	Timing	Responsibility
fauna injury and mortality	- A suitably licenced and trained fauna handler will be present during clearing hollow-bearing tree clearing to rescue and relocate displaced fauna. - A suitable hollow offset program will be detailed within the Biodiversity Management Plan and will include: - Provision of 793 replacement hollows (being reclaimed hollows from site and/or nest boxes). - Replacement of a suitable range of hollow types representative of the expected carrying capacity of rehabilitated landscape. - Erection of suitable posts (reclaimed trees or otherwise) within the rehabilitation area to support nest box installation, (treated pine should not be used for posts). - Installation of a range of nest boxes within the retained vegetation. - Maintenance and replacement of these hollows as needed for a minimum 15 year period (i.e. quarrying life plus five years). - In Year 10 of quarrying, compile a Replacement Hollow Report that documents details of the Hollow Offset Program including the use and maintenance costs of hollows and associated influences on these outcomes. The report should be made available on a suitable website for future public access (e.g. Council library).		
Impacts to surface and groundwater quality and quantity due to sediment run-off and/or contaminant runoff into adjacent watercourses	- Erosion and sediment controls employed as needed (noting no water courses onsite and limited risk of runoff due to sandy soils). - Employ appropriate hydrocarbon controls onsite for containment of spills. - Excavation limited to 0.7m above groundwater, with exception to installation of poles, piers etc required for construction. - Rehabilitation to 1.0m above groundwater table. - Site-based vehicles will carry spill kits. - Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby wetland areas.	During operation	Quarry manager
Vehicle collision with fauna	- Speed limits within the Subject Land should be limited to 40 km/hr. - This limit should be clearly signed at all entry points to site. - All staff and haulage contractors must be suitably inducted to the site including awareness of speed limits and fauna presence.	During operation	Quarry manager

Action	Outcome (Describe the outcome of implementing the measure, with reference to specific entities identified in Sections 4 and 5)	Timing	Responsibility
Transfer of weeds and pathogens to and from site	- The fungal pathogens <i>Phytophthora cinnamomi</i> and Myrtle Rust (<i>Puccinia psidii</i>) are known to occur in the Port Stephens LGA, however, it is unknown if they occur within the Subject Land. These pathogens can have devastating impacts on native plant communities and inhabiting fauna if not properly managed. - All vehicles working outside the established hardstand areas of the site must arrive to site in a clean condition. - Ensure soil and seed material is not transferred in accordance with measures outlined in the Biodiversity Management Plan. - Weed infestations within the Subject Land are to be identified and mapped within the Biodiversity Management Plan. - The Biodiversity Management Plan must detail requirements for the control of weeds within areas of retained vegetation.	During vegetation clearing and operation	Quarry manager
Noise, vibration, lighting, waste and air pollution impacts to adjacent sensitive habitat areas	- Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. - Impacts from operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas of previously suitable habitat. - Measures to mitigate impacts on flora and fauna from noise, vibration, waste, light and air pollution such as: - Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on-site during operation to avoid waste materials entering adjacent vegetation. - Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction. - Fence sensitive areas to delineate 'no go' zones. - The sand quarry will only be in operation during daylight hours - Levels of lighting associated with the sand quarry will be reduced to a minimal level and directed away from retained vegetation areas to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. Lighting design and utilisation	During operation	Quarry manager

Action	Outcome (Describe the outcome of implementing the measure, with reference to specific entities identified in Sections 4 and 5)	Timing	Responsibility
	during construction and operational phases of the development should be based on principles detailed in Appendix A of the National Light Pollution Guidelines for Wildlife (DEE 2020). This includes consideration of adaptive controls, and measures to reduce light intensity and inappropriate light spill into retained vegetation and fauna habitat. ○ Lighting should also comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting. ○ Noise minimisation practices in accordance with the Noise Management Plan. ○ Dust control measures such as covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required, to control dust; and rehabilitation of native vegetation. ○ Induction of all personnel on measures to minimise noise, dust and vibration on the adjoining environment and community.		

9. Serious and irreversible impacts

9.1 Assessment for serious and irreversible impacts on biodiversity values

One (1) listed serious and irreversible impacts (SAIL) entity was recorded within the Subject Land; *Diuris arenaria* (Sand Doubletail) (**Table 30**). The SAIL assessment for this species was completed in accordance with Subsection 9.1.2 of the BAM, these assessments are provided in **Appendix H** and summarised below.

Steps to avoid and minimise impacts on the SAIL species are identified and addressed in the table assessing the impacts on those species in Section 7, as well as Section 5.1 and **Appendix H**.

Table 30 Entities at risk of an SAIL

Common name	Scientific name	Reason for inclusion in assessment
Sand Doubletail	<i>Diuris arenaria</i>	Included in current list of entities at risk of an SAIL and is likely to be impacted by the proposal

10. Impact summary

10.1 Determine an offset requirement for impacts

10.1.1 Impacts on native vegetation and TECs or ECs (ecosystem credits)

This section provides an assessment of the impacts requiring offsetting in accordance with Section 10.1 of the BAM (DPIE 2020a).

In accordance with the BAM (Section 9.2.1 [DPIE 2020a]) assessors must determine an offset for all impacts of proposals on PCTs that are associated with a vegetation zone that has a vegetation integrity score of:

- ≥ 15 , where the PCT is representative of an EEC or a CEEC.
- ≥ 17 , where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or represents a vulnerable ecological community.
- ≥ 20 , where the PCT does not represent a TEC and is not associated with threatened species habitat.

A summary of the impacts on native vegetation and the required ecosystem credits is provided in Table 22.

Impacts to native vegetation that do not require offsetting are outlined in **Table 33**. Impacts to native vegetation and TECs that do require offsetting are outlined in **Table 31**. Refer to **Figure 32** Thresholds for assessment and offsetting impacts.

Table 31 Impacts that require an offset – ecosystem credits

Vegetation zone	PCT name	TEC	Impact area (ha)	Current VI score	Future VI score	Change in VI score	Biodiversity risk weighting	Number of ecosystem credits required
1	PCT 3544: Coastal Sands Apple-Blackbutt Forest	N/A	22.99	64.1	0	-64.1	1.5	552
2	PCT 3544: Coastal Sands Apple-Blackbutt Forest	N/A	1.00	10.7	0	-10.7	1.5	0
Total credits								552

10.1.2 Impacts on threatened species and their habitat (species credits)

A summary of the impacts on threatened species and the required species credit species is provided in **Table 32**. The Biodiversity Credit Reports are provided in **Appendix E**.

Table 32 **Impacts that require an offset – species credits**

Common name	Scientific name	BC Act status	EPBC Act status	Loss of habitat (ha) or individuals	Biodiversity risk weighting	Number of species credits required
Masked Owl	<i>Tyto novaehollandiae</i>	V	-	22.99 ha	2	737
Powerful Owl	<i>Ninox strenua</i>	V	-	22.99 ha	2	737
Squirrel Glider	<i>Petaurus norfolcensis</i>	V	-	22.99 ha	2	737
Koala	<i>Phascolarctos cinereus</i>	E	E	22.99 ha	2	737
Total credits						2,948

10.2 Impacts that do not need further assessment

Impacts that do not need further assessment for ecosystem credits (as per BAM Section 9.3(1–2.)) are outlined in **Table 33**. Refer to **Figure 32** Thresholds for assessment and offsetting impacts

Table 33 **Impacts that do not need further assessment for ecosystem credits**

Impact	Location within subject land	Justification why no further assessment is required
Clearance of 2.10 ha of Exotic Vegetation including planted fruit trees	Eastern half of the Impact Area	Exotic Vegetation
Clearance of 6.14 ha of Exotic Grassland	Eastern half of the Impact Area	Exotic Vegetation

11. Biodiversity credit report

The BAM-C credit reports (Appendix E) identify the numbers and classes of biodiversity credits required to be retired in accordance with the like-for-like requirements of the offset rules and those that could be retired in accordance with the variation rules .

11.1 Ecosystem credits

Table 34 Ecosystem credit class and matching credit profile

Ecosystem credit	Attributes shared with matching credits						
	PCT name	PCT vegetation class	PCT vegetation formation	Associated TEC or EC	Offset trading group (BAM Section 10.2, Tables 4 & 5)	Hollow bearing trees present?	IBRA subregion (in which proposal is located)
552	PCT 3544: Coastal Sands Apple-Blackbutt Forest	Coastal Dune Dry Sclerophyll Forests	Dry Sclerophyll Forests (Shrubby sub-formation)	N/A	Coastal Dune Dry Sclerophyll Forests - < 50% cleared group (including Tier 4 or higher threat status).	Yes	Karuah Manning, Hunter, Macleay Hastings, Mummel Escarpment and Upper Hunter. or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

11.2 Species credits

Table 35 Species credit class and matching credit profile

Species credit	Attributes shared with matching credits				
	Name of threatened species	Kingdom	BC Act status	EPBC Act status	IBRA region
737	Powerful Owl	Animalia	V	-	All IBRA Subregions

Species credit	Attributes shared with matching credits				
	Name of threatened species	Kingdom	BC Act status	EPBC Act status	IBRA region
737	Squirrel Glider	Animalia	V	-	All IBRA Subregions
737	Koala	Animalia	E	E	All IBRA Subregions
737	Masked Owl	Animalia	V	-	All IBRA Subregions

12. References

Anstis, M. (2002). *Tadpoles of South-eastern Australia: A Guide with Keys*. Sydney: Reed New Holland.

Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) (2023b). *Species Profile and Threats Database (SPRAT)*. Available at: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>

Department of Agriculture, Water and the Environment (DAWE) (2022a). *Protected Matters Search Tool*. Available at: [Protected Matters Search Tool | Department of Agriculture, Water and the Environment](#)

Department of Environment and Conservation (DEC). (2004). *Threatened Species Survey and Assessment: Guidelines for developments and activities (working draft)*. New South Wales Department of Environment and Conservation, Hurstville, NSW.

Department of Environment and Climate Change (DECC) (2002). *Descriptions for NSW (Mitchell) Landscapes, Version 2*. Based on descriptions compiled by Dr. Peter Mitchell.

Department of the Environment and Energy (2020). *Light Pollution Guidelines National, Light Pollution Guidelines for Wildlife Including marine turtles, seabirds and migratory shorebirds*.

Department of Planning and Environment (DPE) (2022). *NSW State Vegetation Type Map (SVTM)*.

Department of Planning, and Environment (DPE) (2023a). *BioNet Atlas of NSW*. Available at: <http://www.bionet.nsw.gov.au/>

Department of Planning, and Environment (DPE) (2023b). *BioNet Vegetation Classification*. Available at: <https://www.environment.nsw.gov.au/research/Visclassification.htm>

Department of Planning, and Environment (DPE) (2023c). *BioNet Threatened Biodiversity Data Collection*. Available at: <https://www.environment.nsw.gov.au/threatenedSpeciesApp/>

Department of Planning, and Environment (DPE) (2023d). *Threatened Biodiversity Profile Search*. Available at: <https://www.environment.nsw.gov.au/threatenedspeciesapp/>

Department of Planning, and Environment (DPE) (2023e). *NSW Threatened Species Scientific Committee – Final Determinations*. Available at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations>

Department of Planning, and Environment (DPE) (2023f). *Biodiversity Assessment Method – Important Area Mapping*. Available at: https://webmap.environment.nsw.gov.au/Html5Viewer291/index.html?viewer=BAM_ImportantAreas

Department of Planning, Industry and Environment (DPIE) (2019). *Guidance to assist a decisionmaker to determine a serious and irreversible impact*. Available at: <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/guidance-decision-makers-determine-serious-irreversible-impact-190511.pdf>

Department of Planning, Industry and Environment (DPIE) (2020a). *Biodiversity Assessment Method*. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Department of Planning, Industry and Environment (DPIE) (2020b). *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method*. Published by Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Harden, G.J. (ed.) (1992). *Flora of New South Wales*, Volume 3, NSW University Press, Sydney.

Harden, G.J. (ed.) (1993). *Flora of New South Wales*, Volume 4, NSW University Press, Sydney.

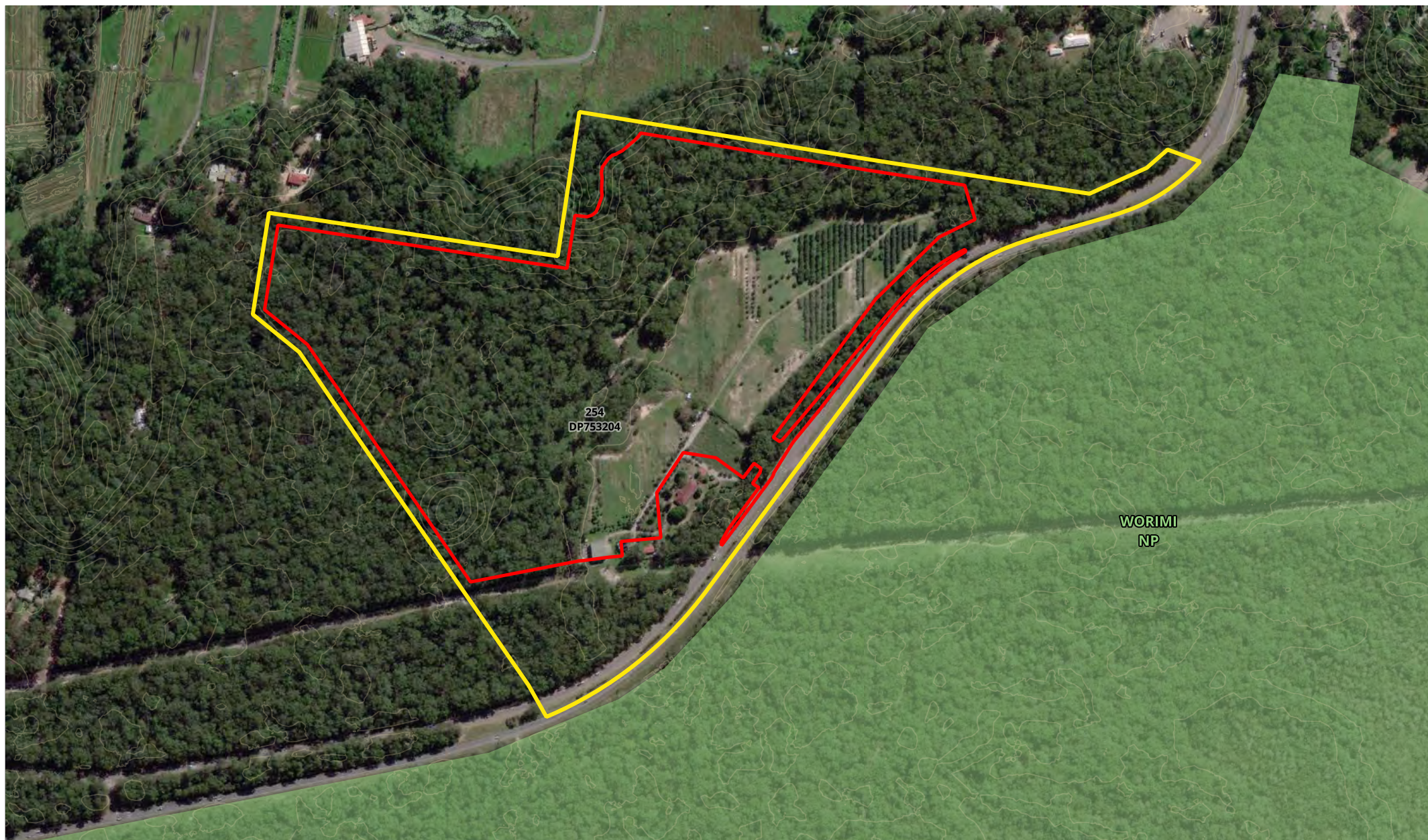
Harden, G.J. (ed) (2000). *Flora of New South Wales*, Volume 1, NSW University Press, Sydney.

Harden, G.J. (ed.) (2002). *Flora of New South Wales*, Volume 2, NSW University Press, Sydney.

Landcom (2004). *Managing Urban Stormwater: Soils and Construction*. 4th edition, NSW Government, March 2004.

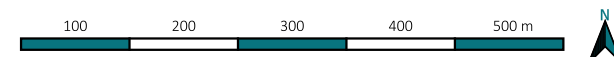
Phillips, S., and Callaghan, J. (2011). The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas *Phascolarctos cinereus*. Australian Koala Foundation. Brisbane, Queensland, Australia.

13. Figures



- Subject land
- Impact area
- Surrounding lot
- NPWS Reserve
- Contour (5m)

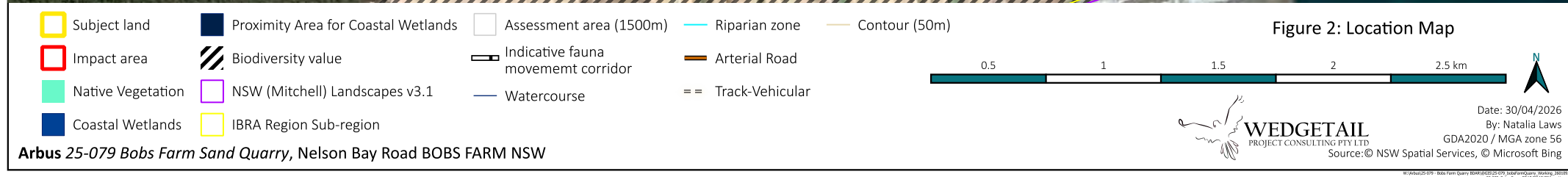
Figure 1: Site Map



Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW



Date: 30/04/2026
 By: Natalia Laws
 GDA2020 / MGA zone 56
 Source: © Microsoft Bing

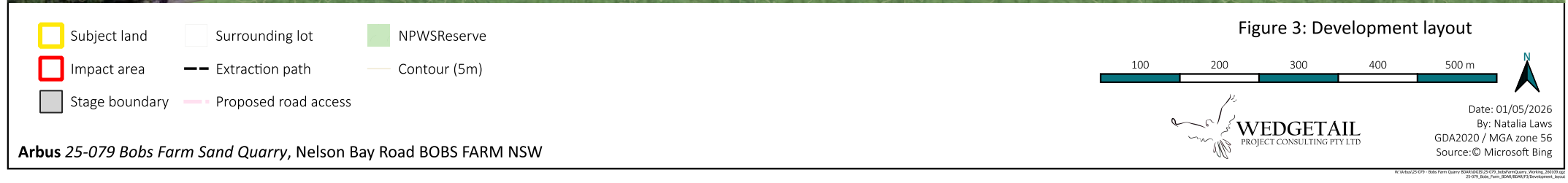


A horizontal bar divided into five equal segments. Above the bar, the distances 0.5, 1, 1.5, 2, and 2.5 km are labeled for each segment respectively.

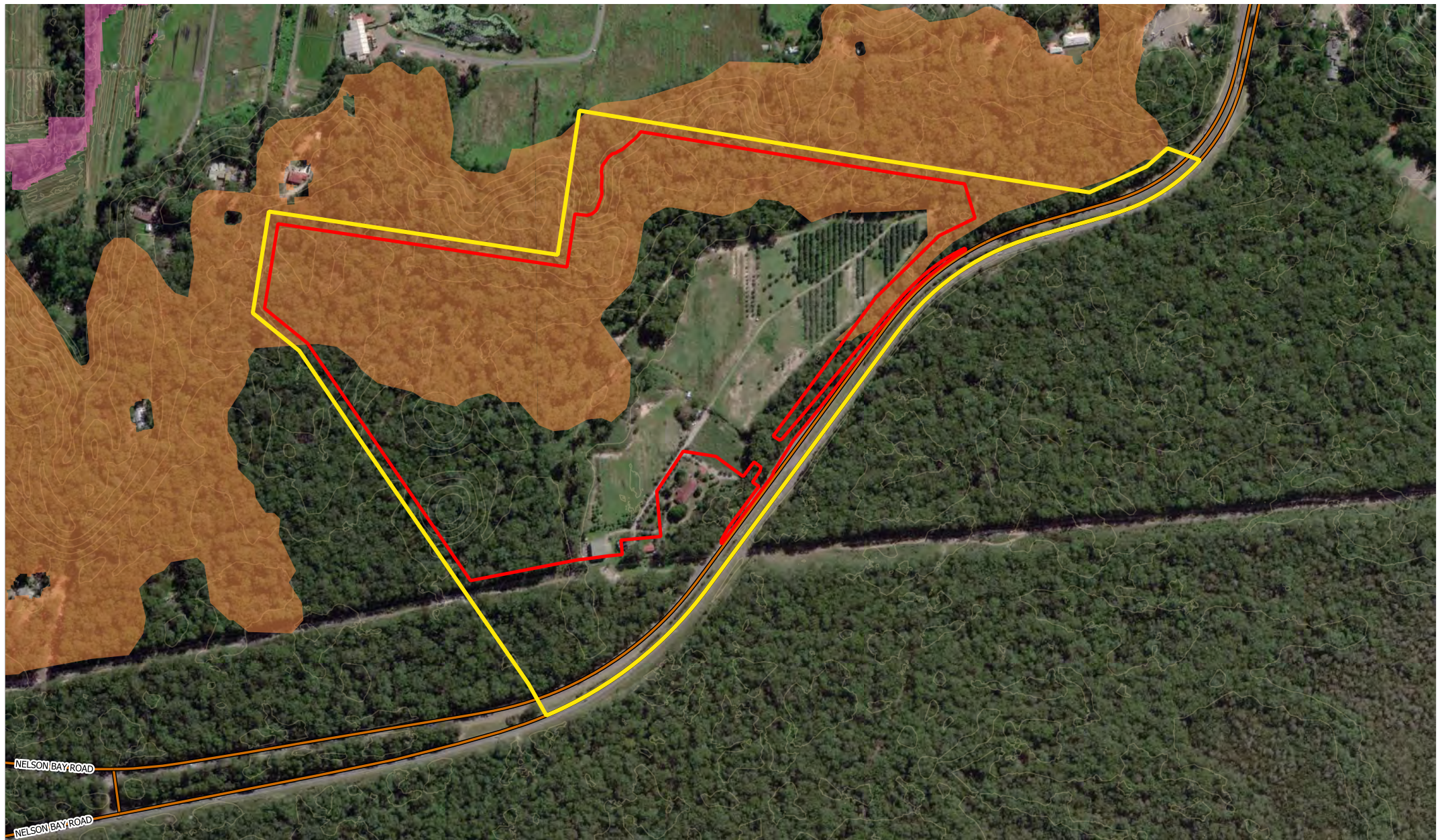


Source: © NSW Spatial Services, © Microsoft Bing

Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW

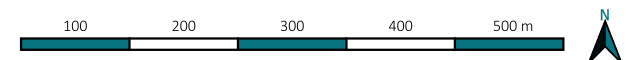


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- | | | |
|--|---|---|
| Subject land | Biodiversity value | Arterial Road |
| Impact area | Core Habitat within an approved Koala Plan of Management (Koala SEPP) | Contour (5m) |
| | Identified Old Growth Forest | |

Figure 4: Biodiversity Values Map



Date: 30/04/2026
 By: Natalia Laws
 GDA2020 / MGA zone 56
 Source: © Microsoft Bing

Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW

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- | | | |
|---|---|---|
|  Subject land |  Native vegetation |  Track-Vehicular |
|  Category 1- exempt land |  Arterial Road |  Contour (5m) |

Figure 5: Excluded impacts

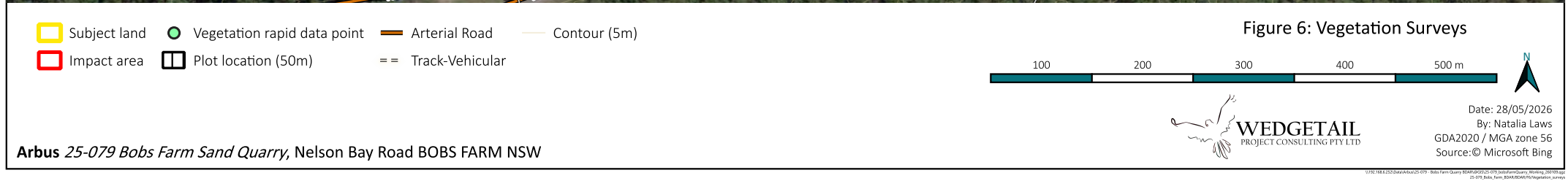


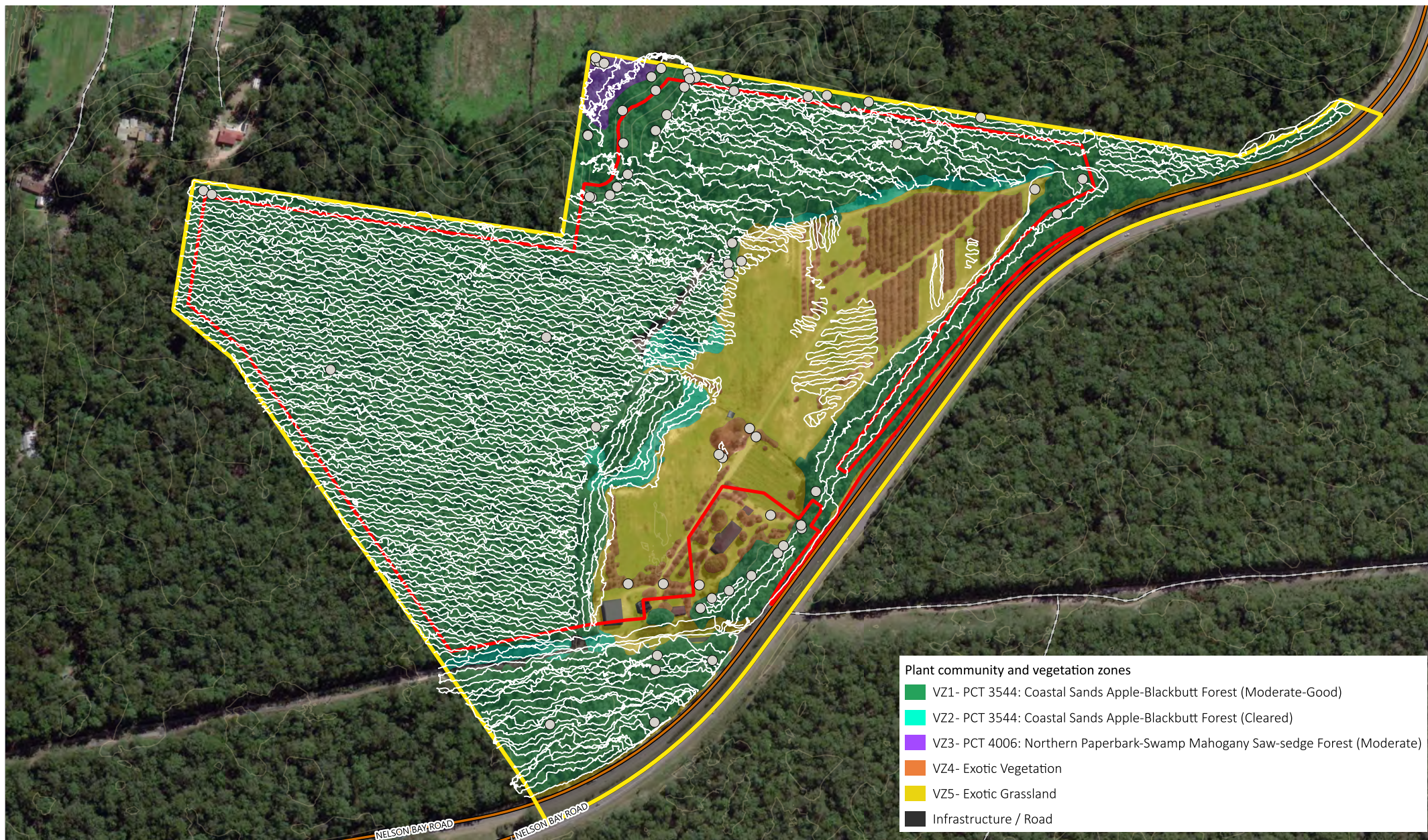
Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW

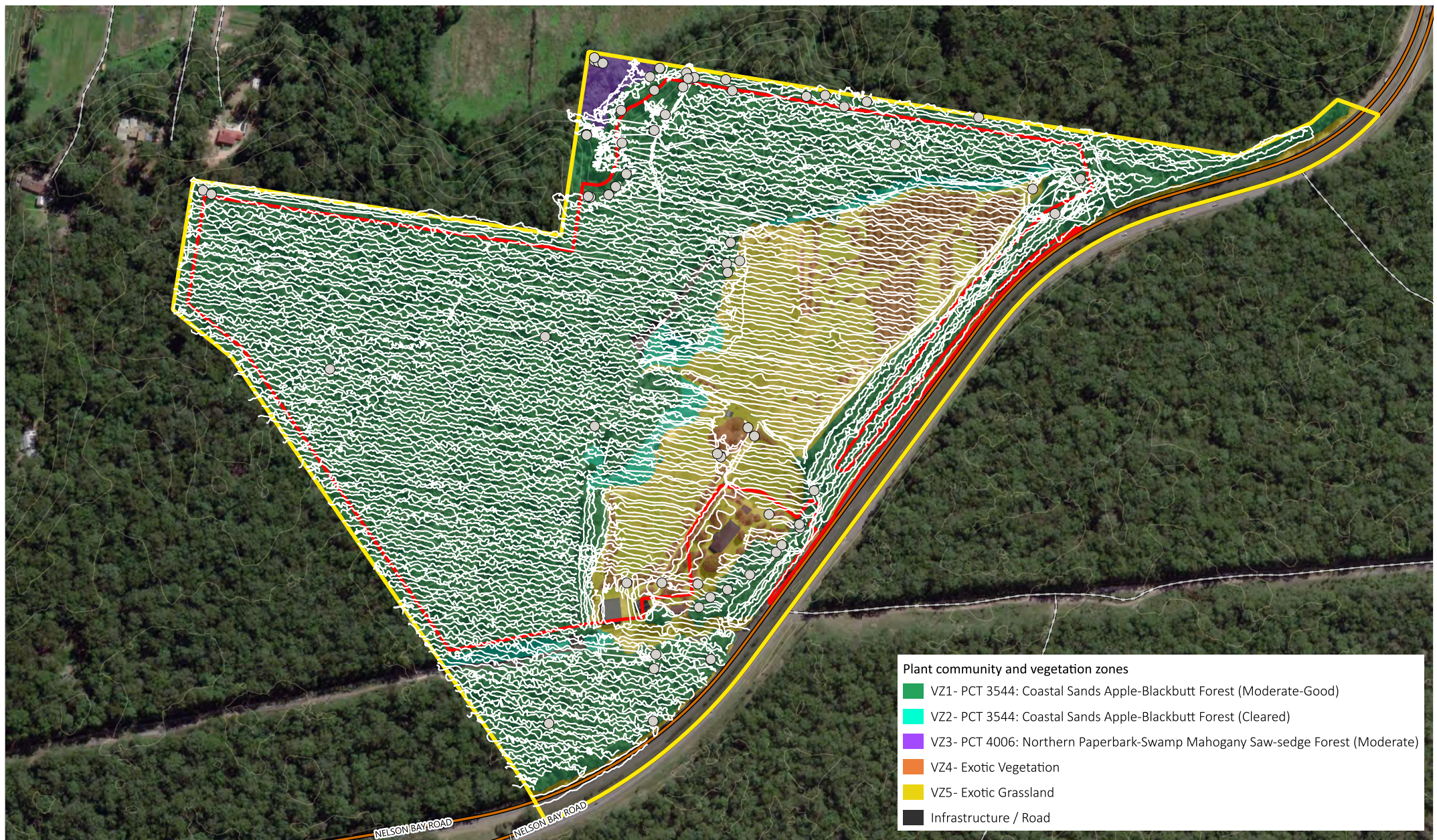


Date: 30/04/2026
 By: Natalia Laws
 GDA2020 / MGA zone 56
 Source: © Microsoft Bing

\\1944\25-079 - Bobs Farm Quarry\BOBS\2025\25-079_BobsFarmQuarry_Working_202509_102
 25-079_Bobs_Farm_BOBS\BOBS\25\Excluded_Impacts



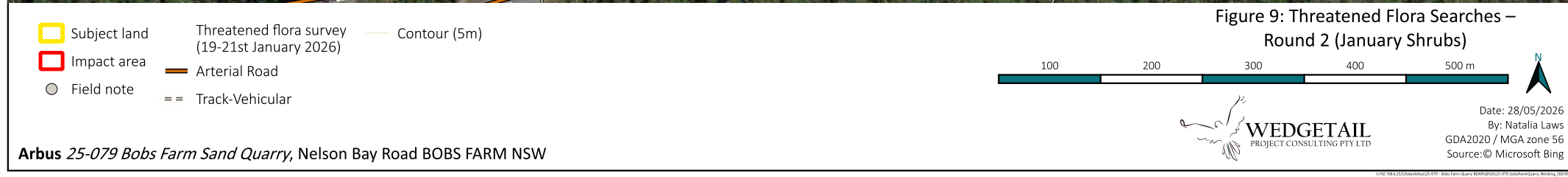




Subject land
 Threatened flora survey (2-5th December 2025)
 Track-Vehicular
 Arterial Road
 Contour (5m)
 Field note

Figure 8: Threatened Flora Searches – Round 1 (December Groundcover)





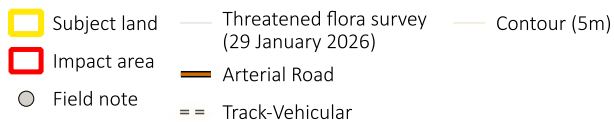
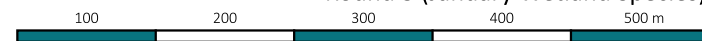
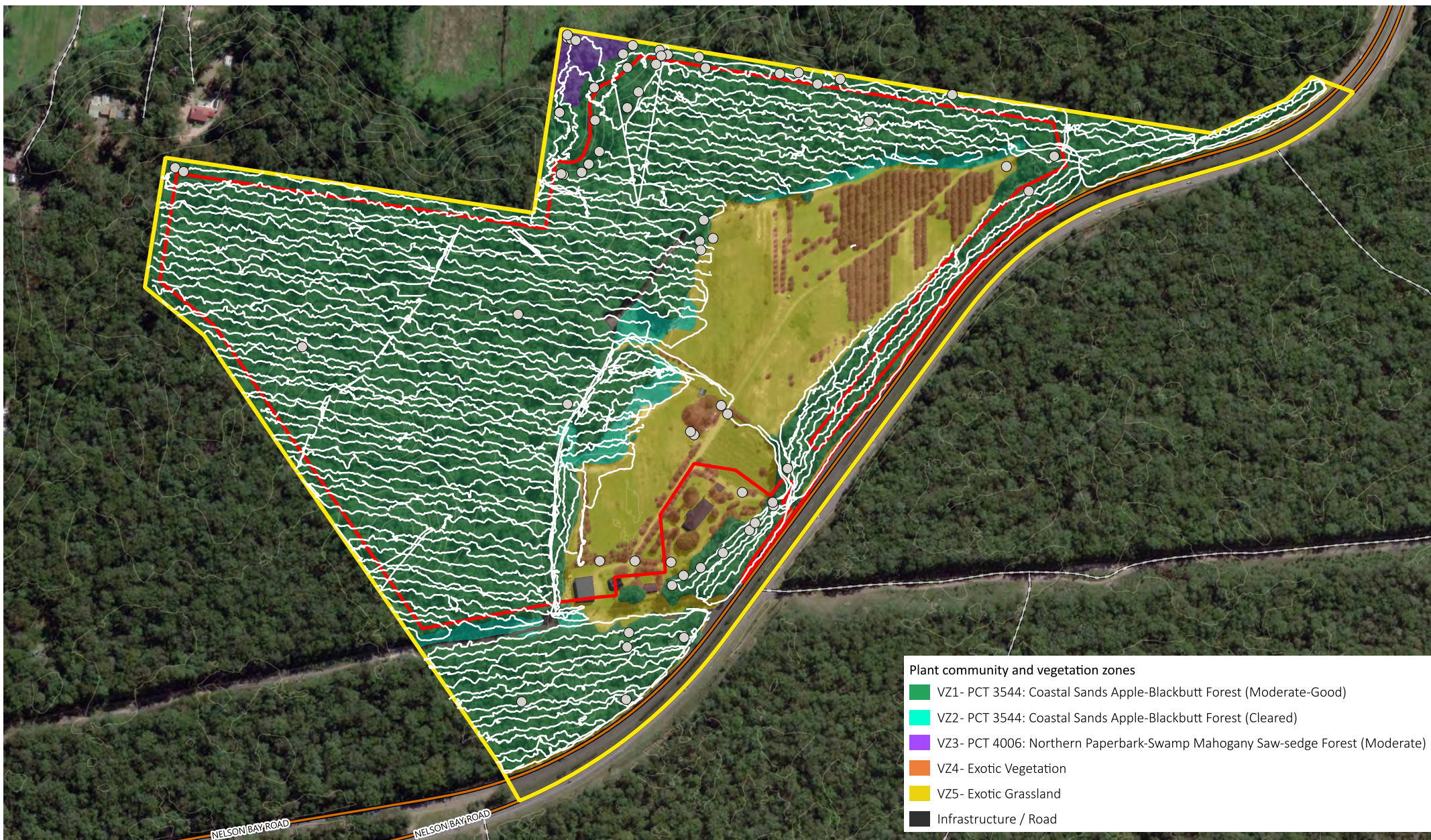


Figure 10: Threatened Flora Searches – Round 3 (January Wetland Species)



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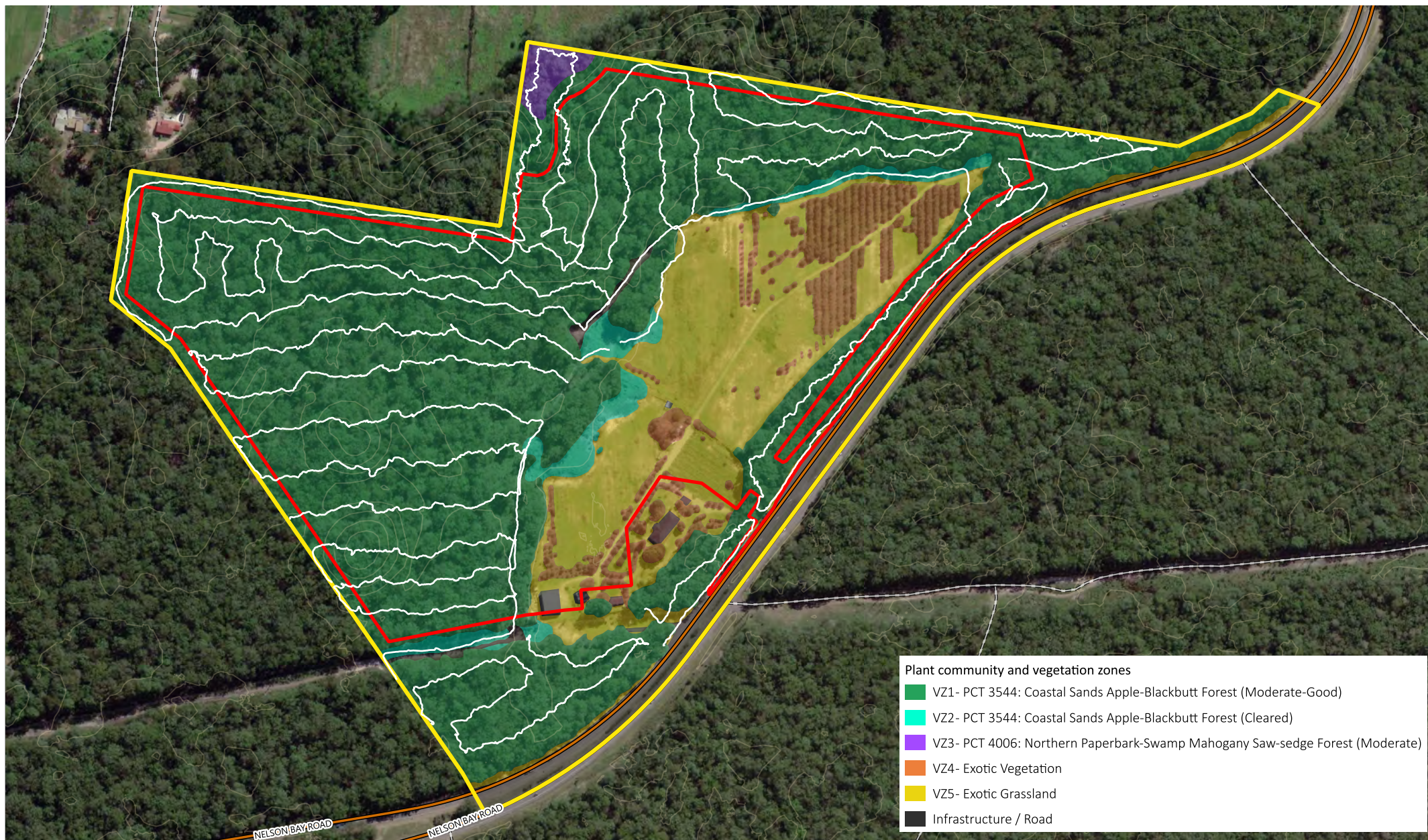
Date: 28/05/2026
By: Natalia Laws
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Source:© Microsoft Bing



- Subject land
- Threatened flora survey (2nd, 3rd, 5th, 21st, 29th January 2026)
- Contour (5m)
- Impact area
- Arterial Road
- Track-Vehicular
- Field note

Figure 11: Threatened Flora Searches – Round 4 (February Trees)



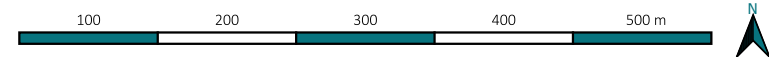


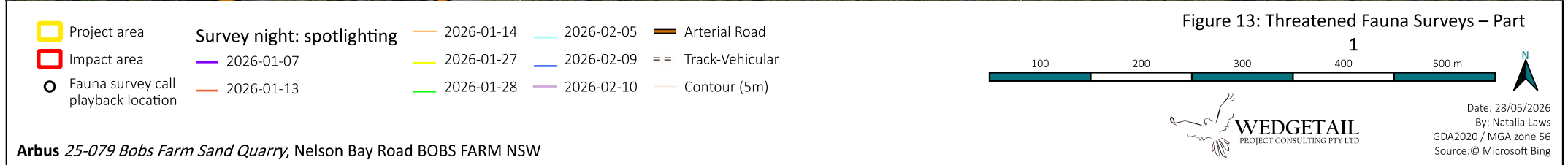
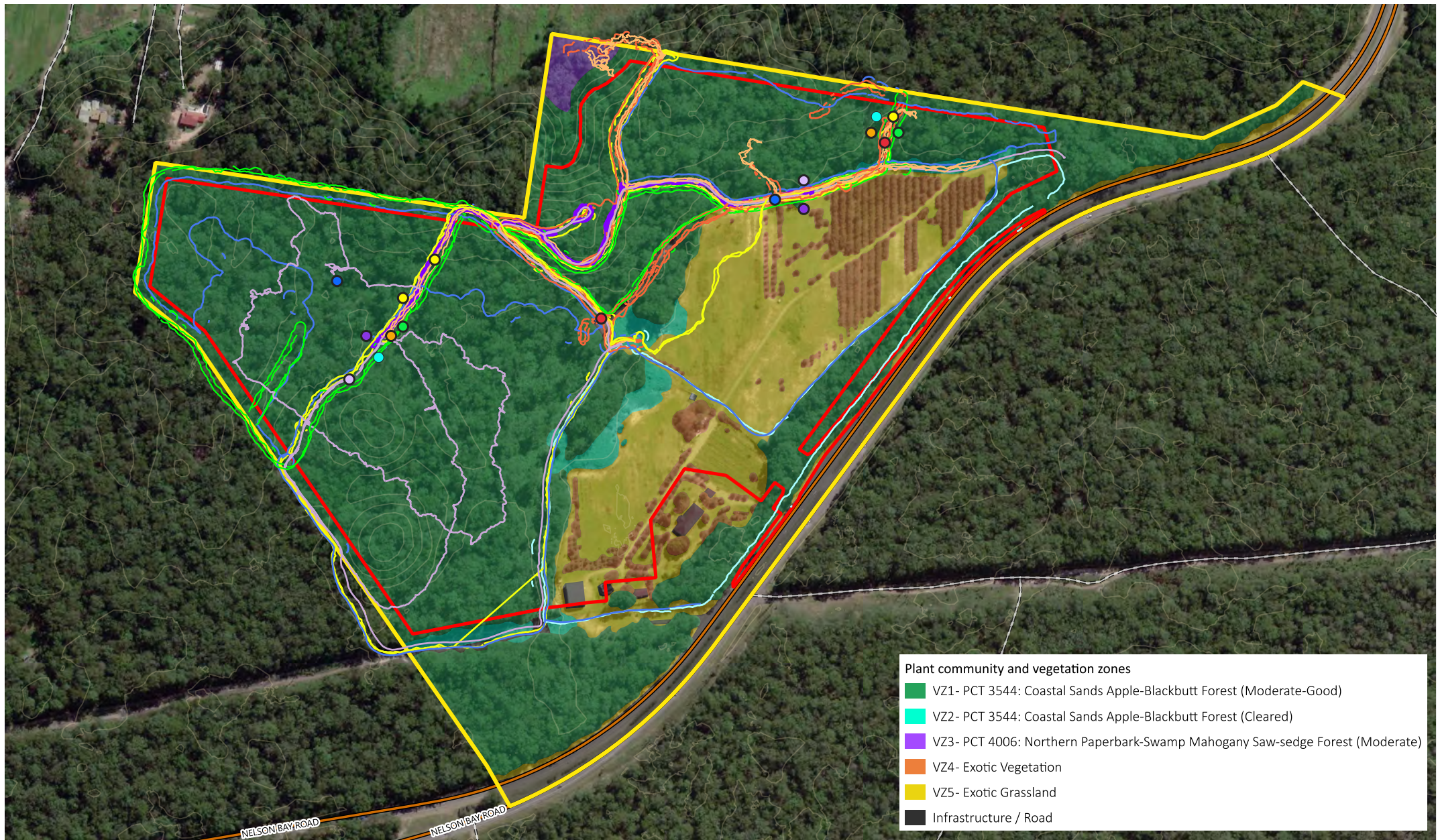
Plant community and vegetation zones

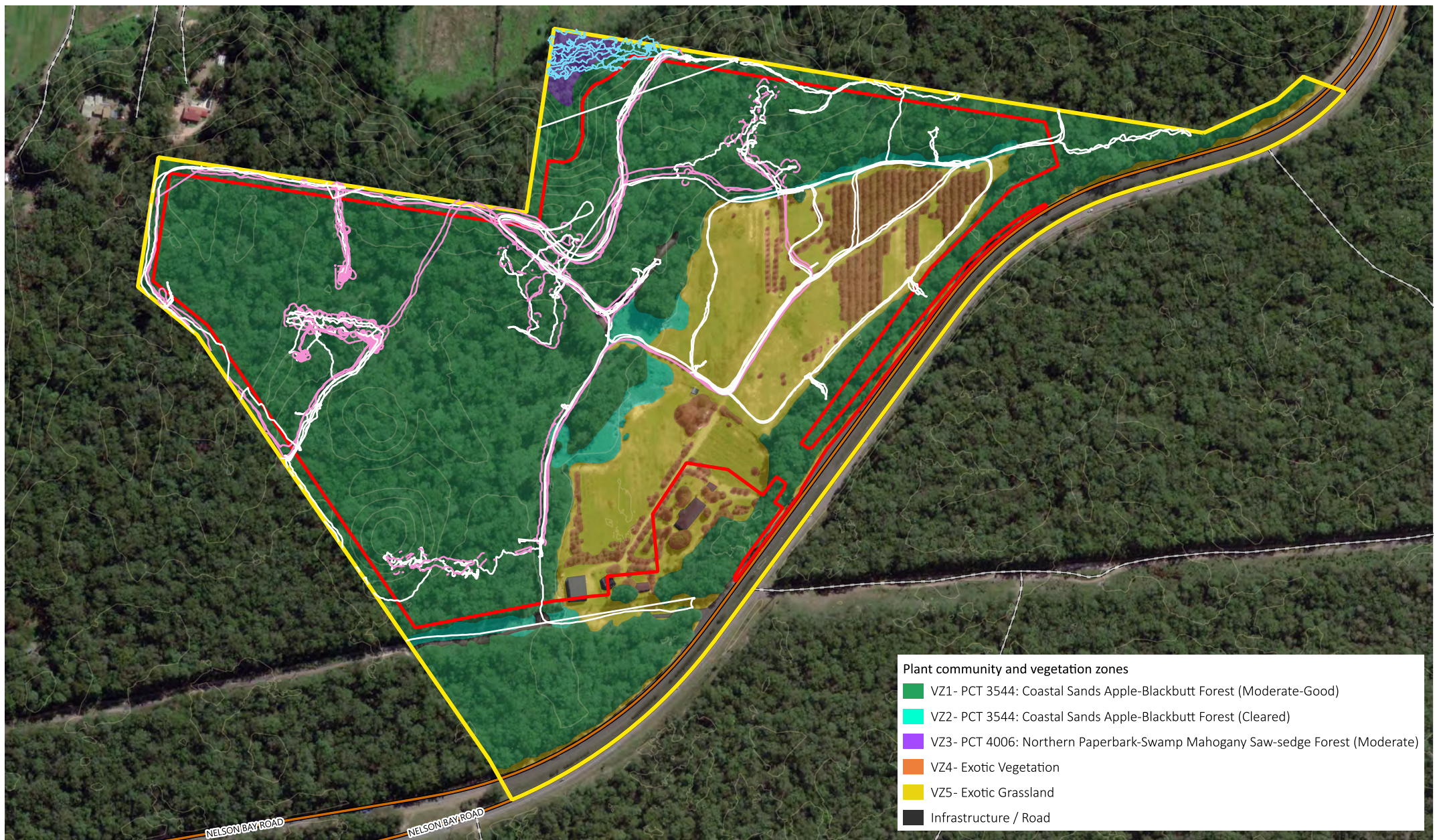
- VZ1- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Moderate-Good)
- VZ2- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Cleared)
- VZ3- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest (Moderate)
- VZ4- Exotic Vegetation
- VZ5- Exotic Grassland
- Infrastructure / Road

- Subject land
- Survey track: Nest search
- Track-Vehicular
- Impact area
- Arterial Road
- Contour (5m)

**Figure 12: Threatened Fauna Surveys –
Habitat Assessments**



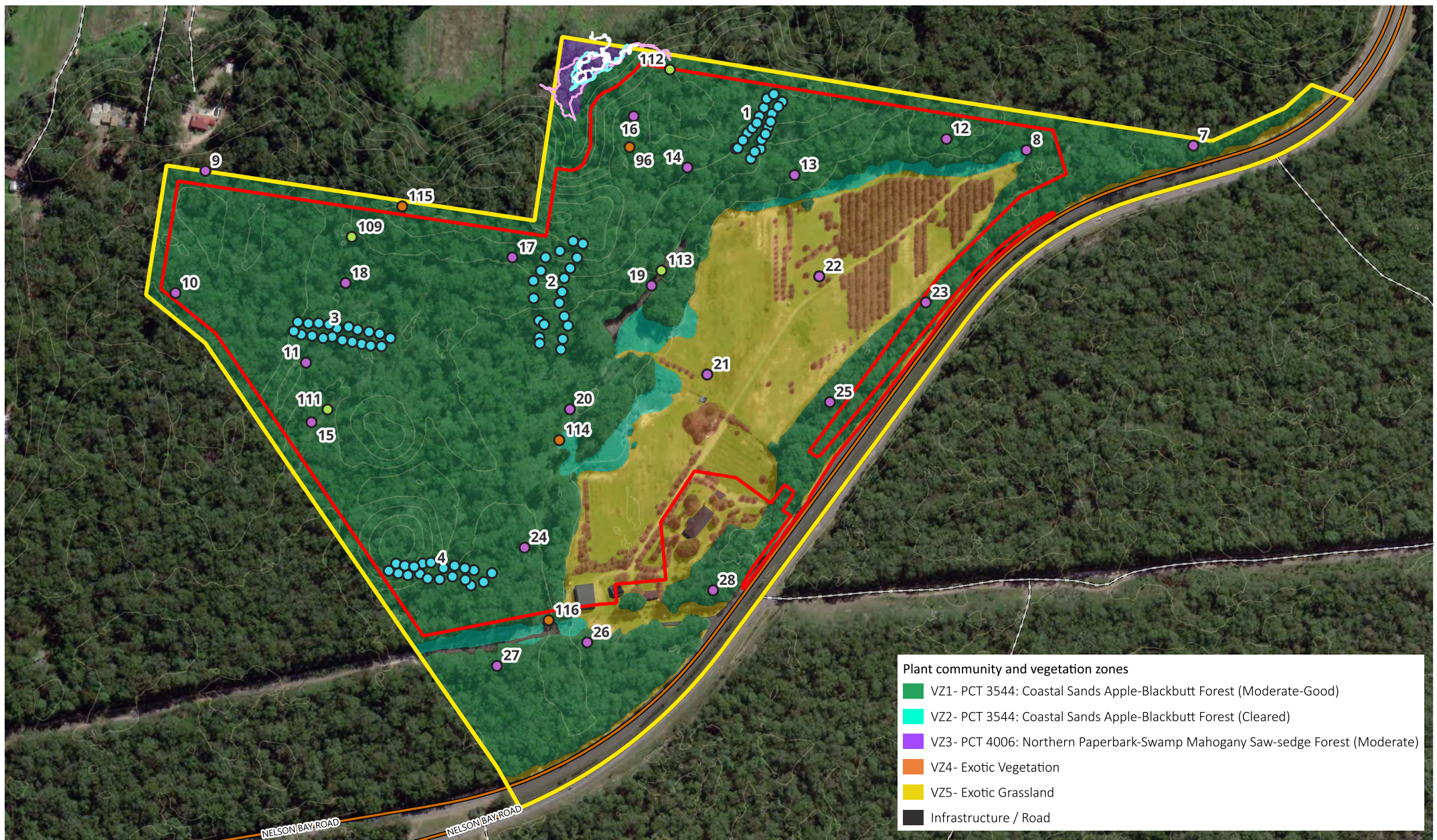




 Subject land — Dragonfly survey tracks Track-Vehicular
 Impact area Arterial Road — Contour (5m)

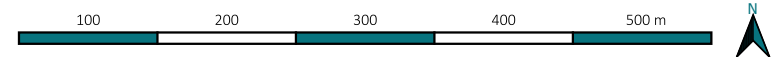
Figure 14: Threatened Fauna Surveys – Part 2

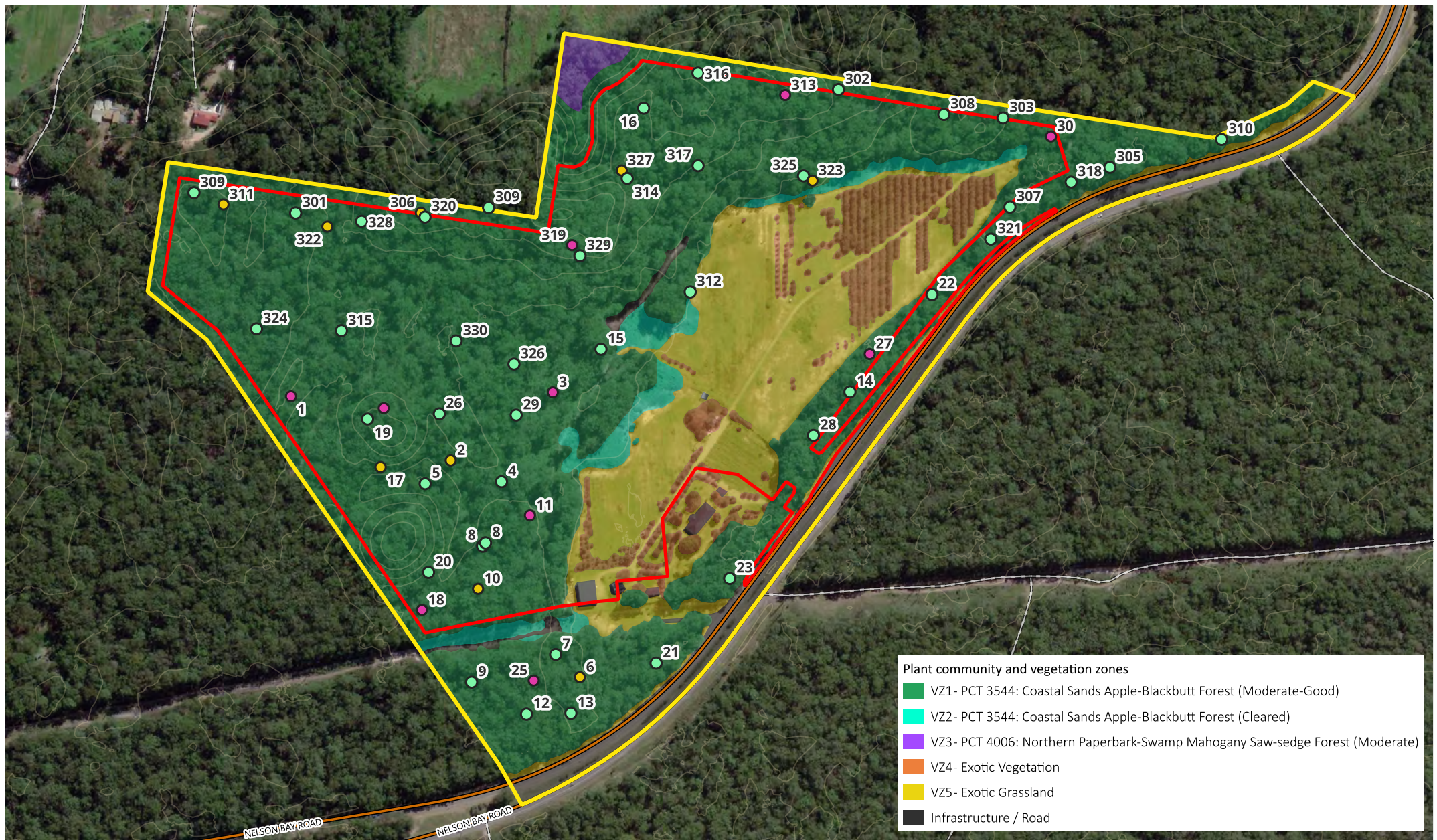




 Subject land Survey track: Amphibian 2026-02-09 Harp Trap Arterial Road Contour (5m)
 Impact area 2026-01-13 Anabat Pitfall Trap Line Track-Vehicular
 2026-01-14 Elliot A- Terrestrial

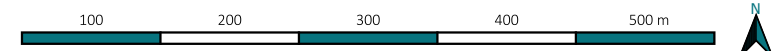
Figure 15: Threatened Fauna Surveys – Part 3

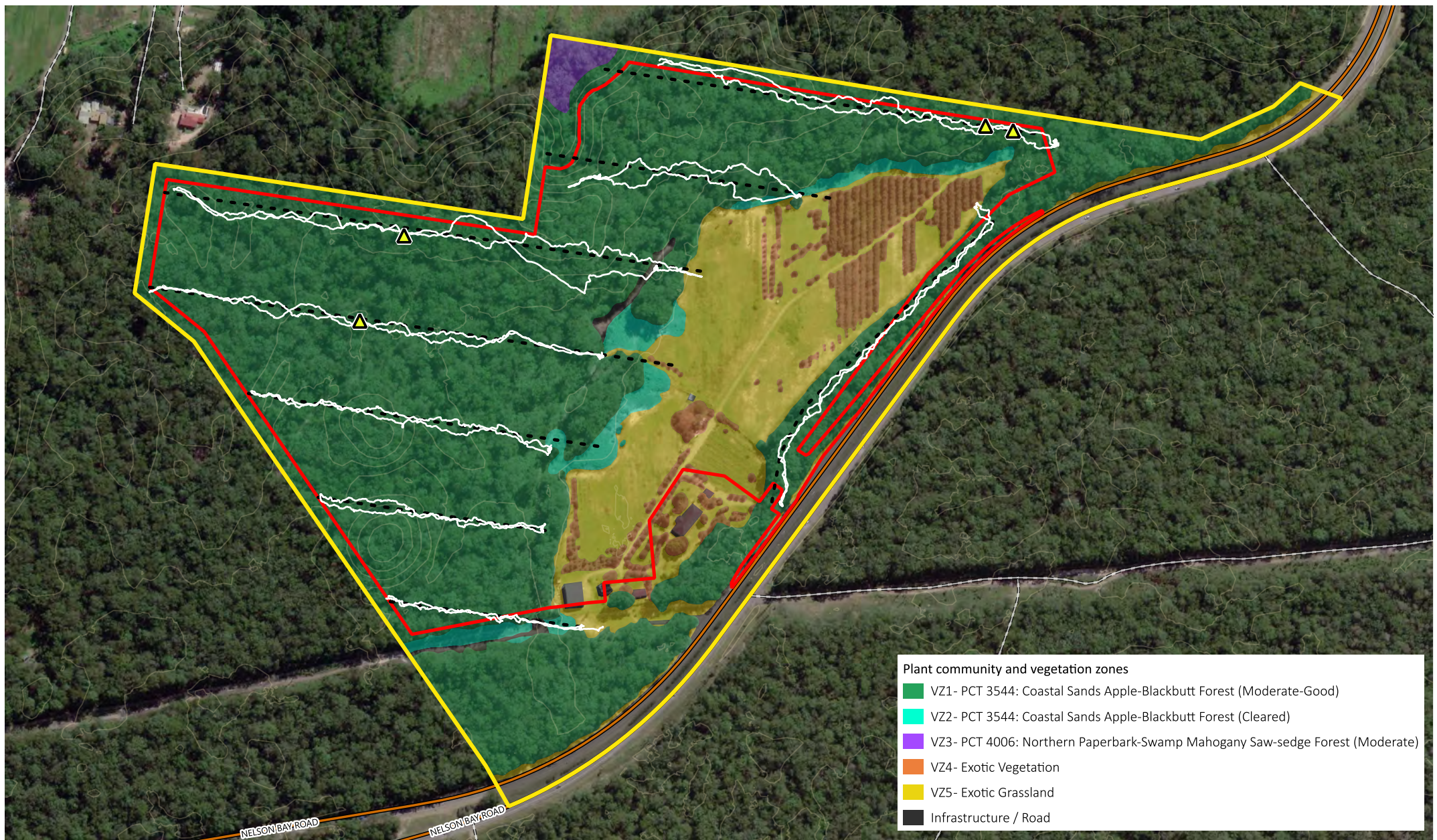




 Subject land
 ● Camera- Arboreal
 ● Camera- Terrestrial
 == Track-Vehicular
 Impact area
 ● Camera- Pygmy
 Arterial Road
— Contour (5m)

Figure 16: Threatened Fauna Surveys – Part 4

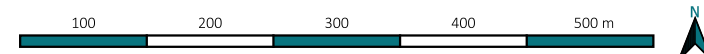


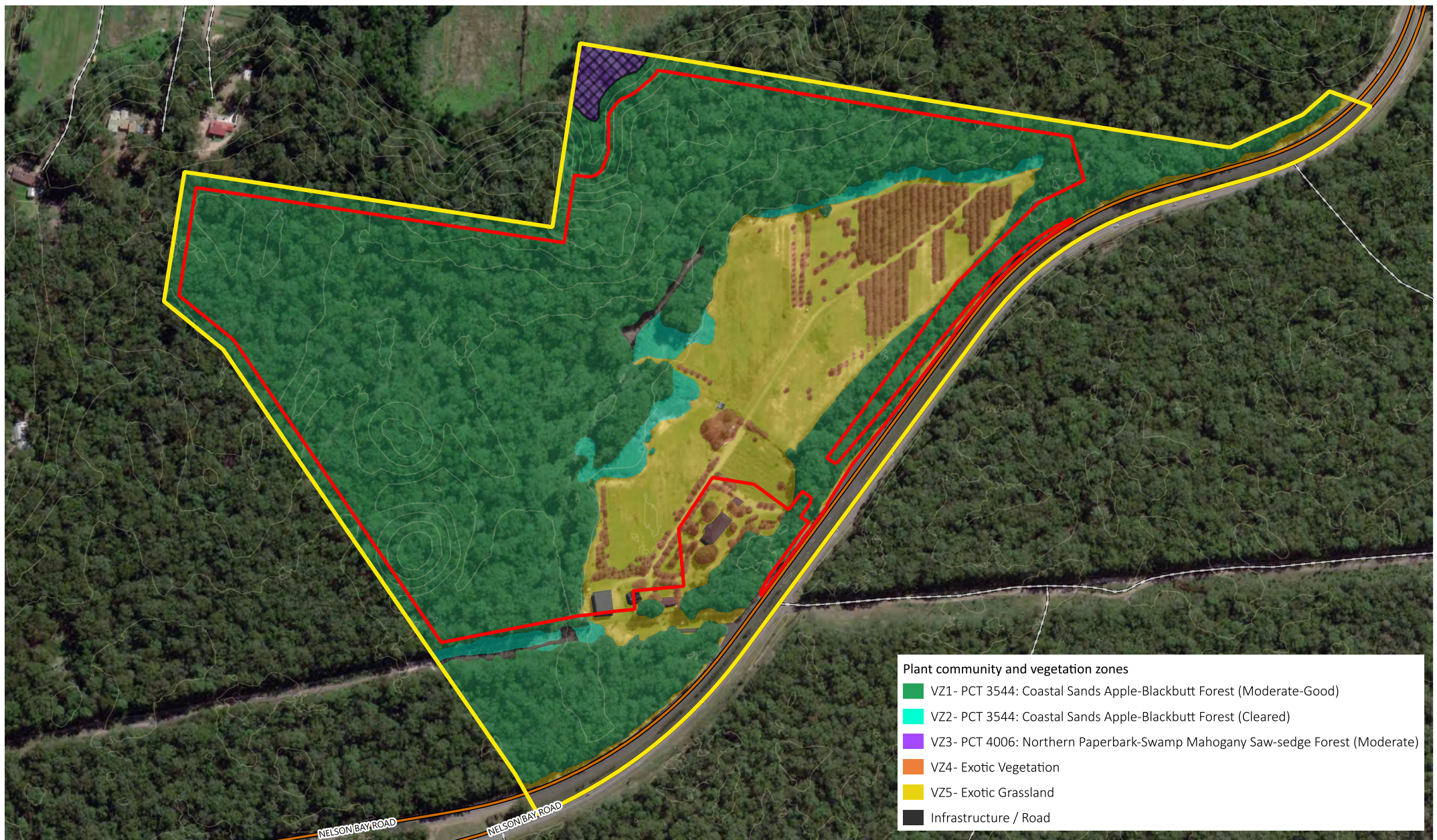




- | | | | |
|---|---|---|--|
|  Subject land |  Non-Native vegetation |  Arterial Road |  Contour (5m) |
|  Impact area |  Native vegetation |  Track-Vehicular | |

Figure 18: Native vegetation extent





Plant community and vegetation zones

- VZ1- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Moderate-Good)
- VZ2- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Cleared)
- VZ3- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest (Moderate)
- VZ4- Exotic Vegetation
- VZ5- Exotic Grassland
- Infrastructure / Road

Subject land

Impact area

Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community (EEC) (BC Act)

Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland Endangered Ecological Community (EEC) (EPBC Act)

Arterial Road

Track-Vehicular

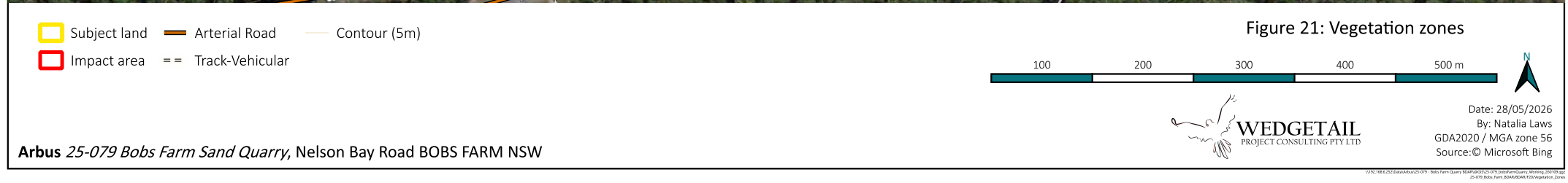
Contour (5m)

Figure 20: Threatened ecological communities and ecological communities

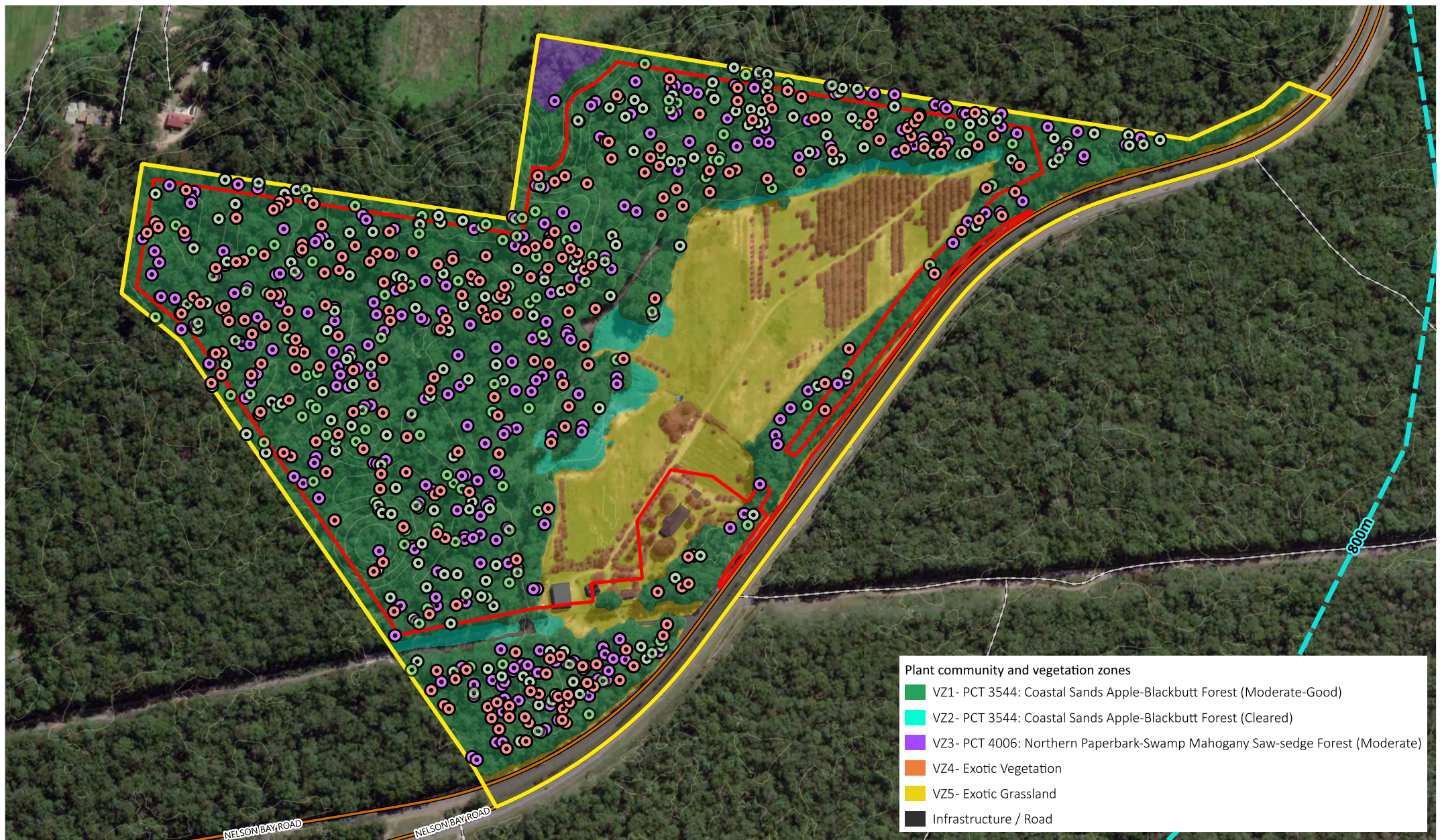
100 200 300 400 500 m

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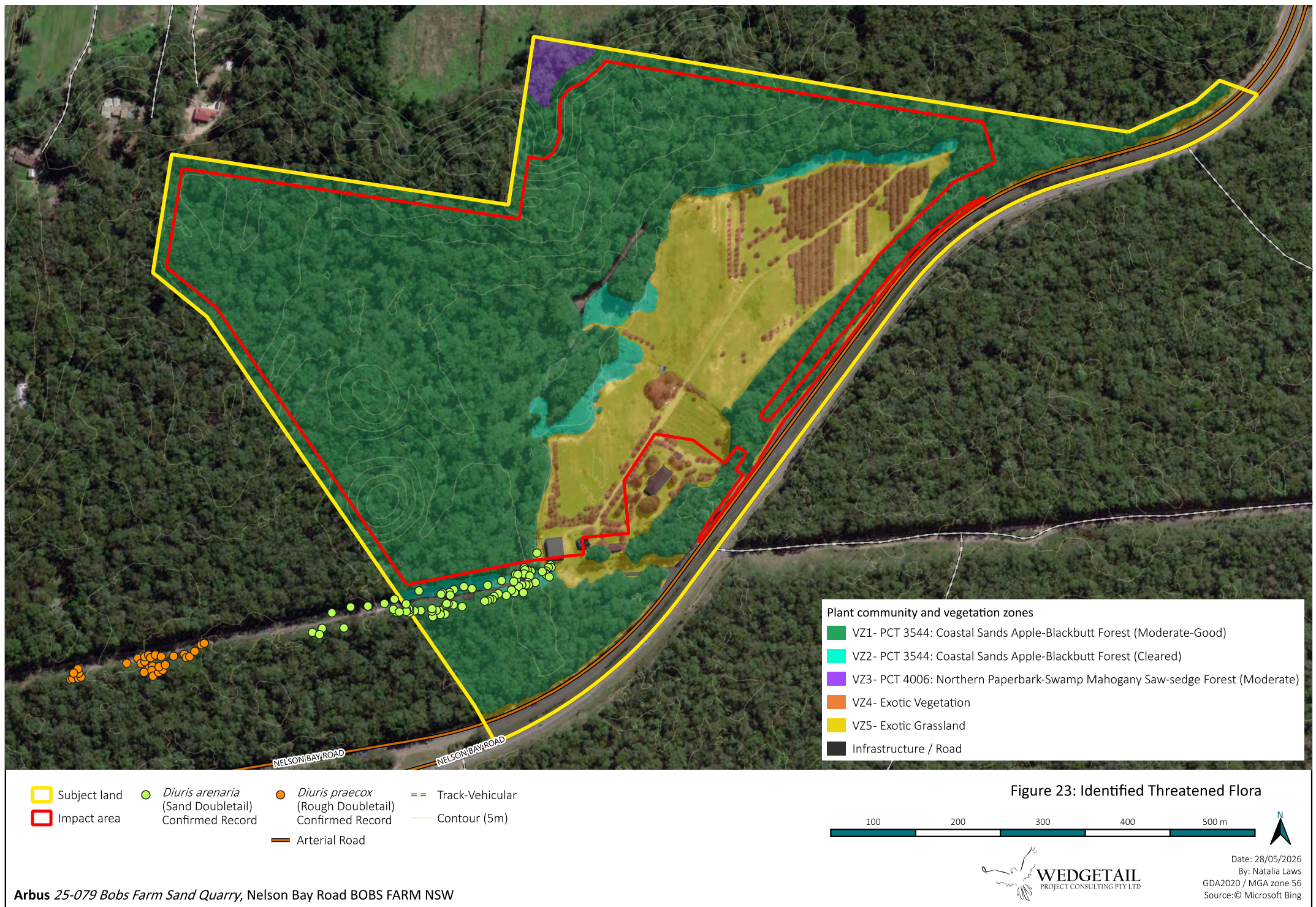
Source: © Microsoft Bing

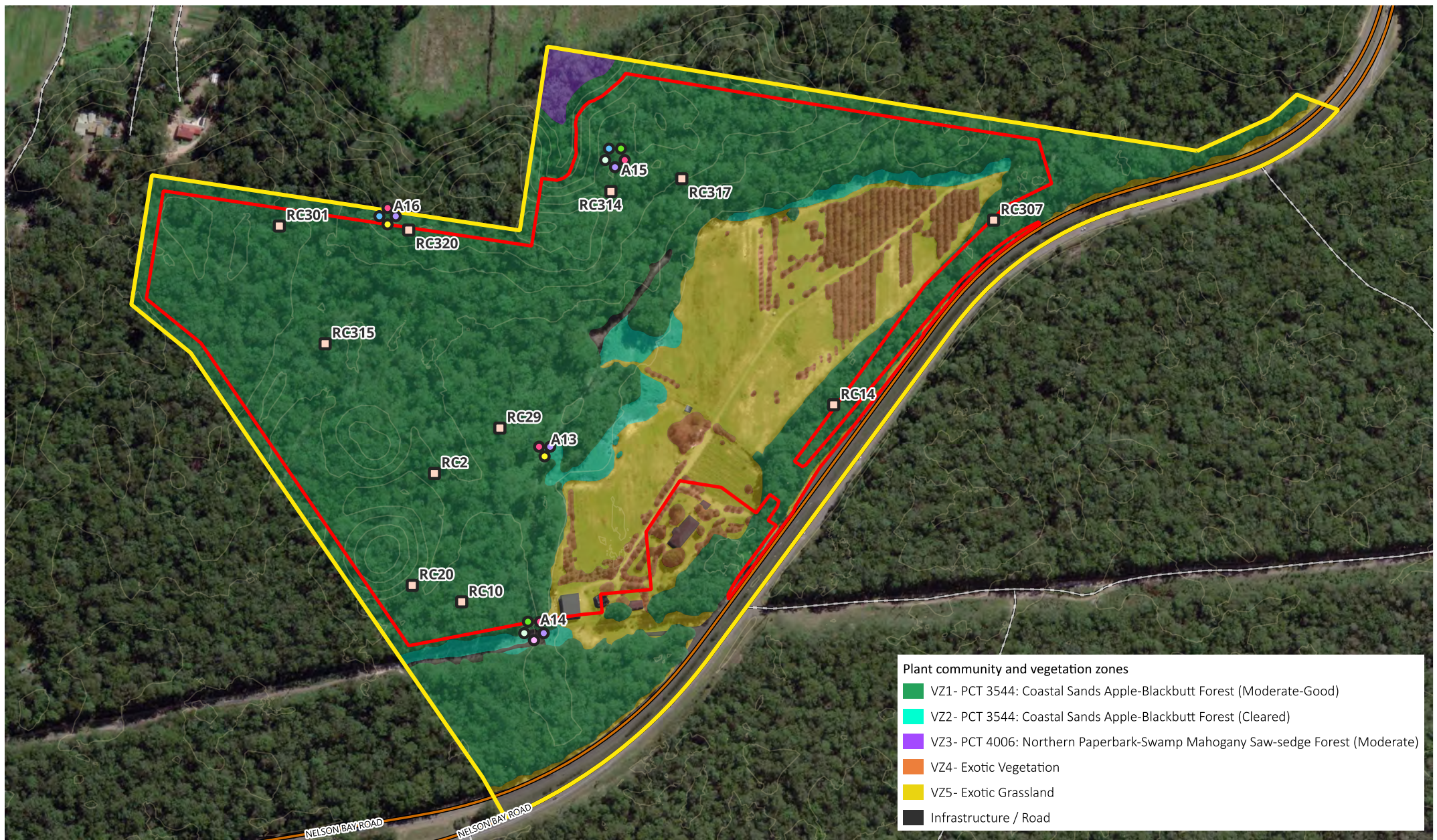


- Subject land
- Impact area
- Class 1 – very large sized hollow openings (i.e. >20cm)
- Class 2- large sized hollow openings (i.e 15-20m)
- Class 3 – medium sized hollow-openings (i.e. 5-15cm)
- Arterial Road
- Track-Vehicular
- Contour (5m)

Figure 22: Habitat Features







- | | | | | |
|---|---|---|--|--|
| <ul style="list-style-type: none"> Subject land Impact area | Anabat <ul style="list-style-type: none"> Eastern Cave Bat (<i>Vespadelus troughtoni</i>) Eastern Coastal Free-tailed Bat (<i>Micronomus norfolkensis</i>) | <ul style="list-style-type: none"> Eastern False Pipistrelle (<i>Falsistrellus tasmaniensis</i>) Greater Broad-nosed Bat (<i>Scoteanax rueppellii</i>) Little Bent-winged Bat (<i>Miniopterus australis</i>) | <ul style="list-style-type: none"> Southern Myotis (<i>Myotis macropus</i>) Yellow-bellied Sheath-tail-bat (<i>Saccolaimus flaviventris</i>) | <ul style="list-style-type: none"> Arterial Road Track-Vehicular Contour (5m) |
| | | Remote camera <ul style="list-style-type: none"> Squirrel Glider (<i>Petaurus norfolcensis</i>) | | |

Figure 24: Identified Threatened Fauna

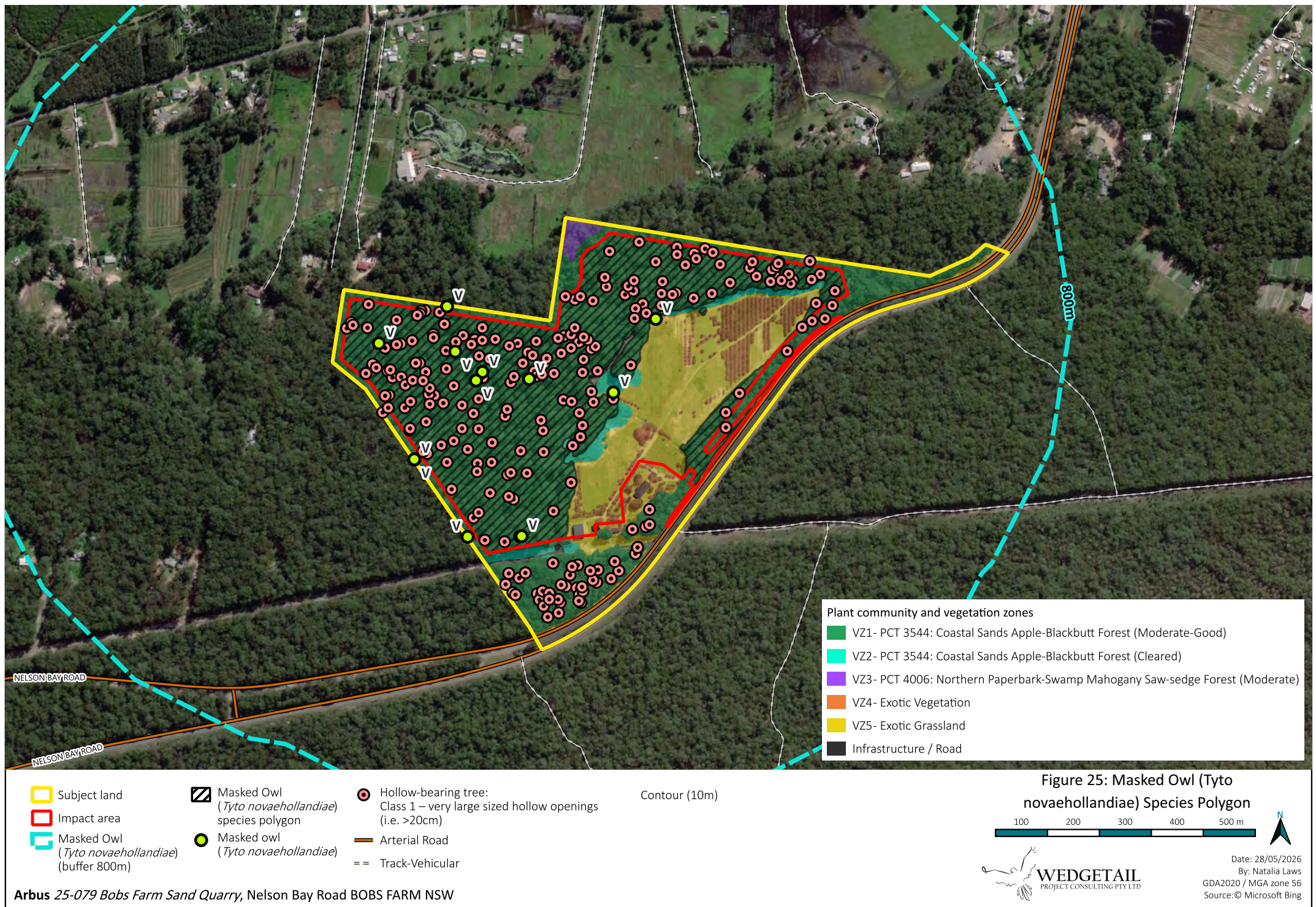


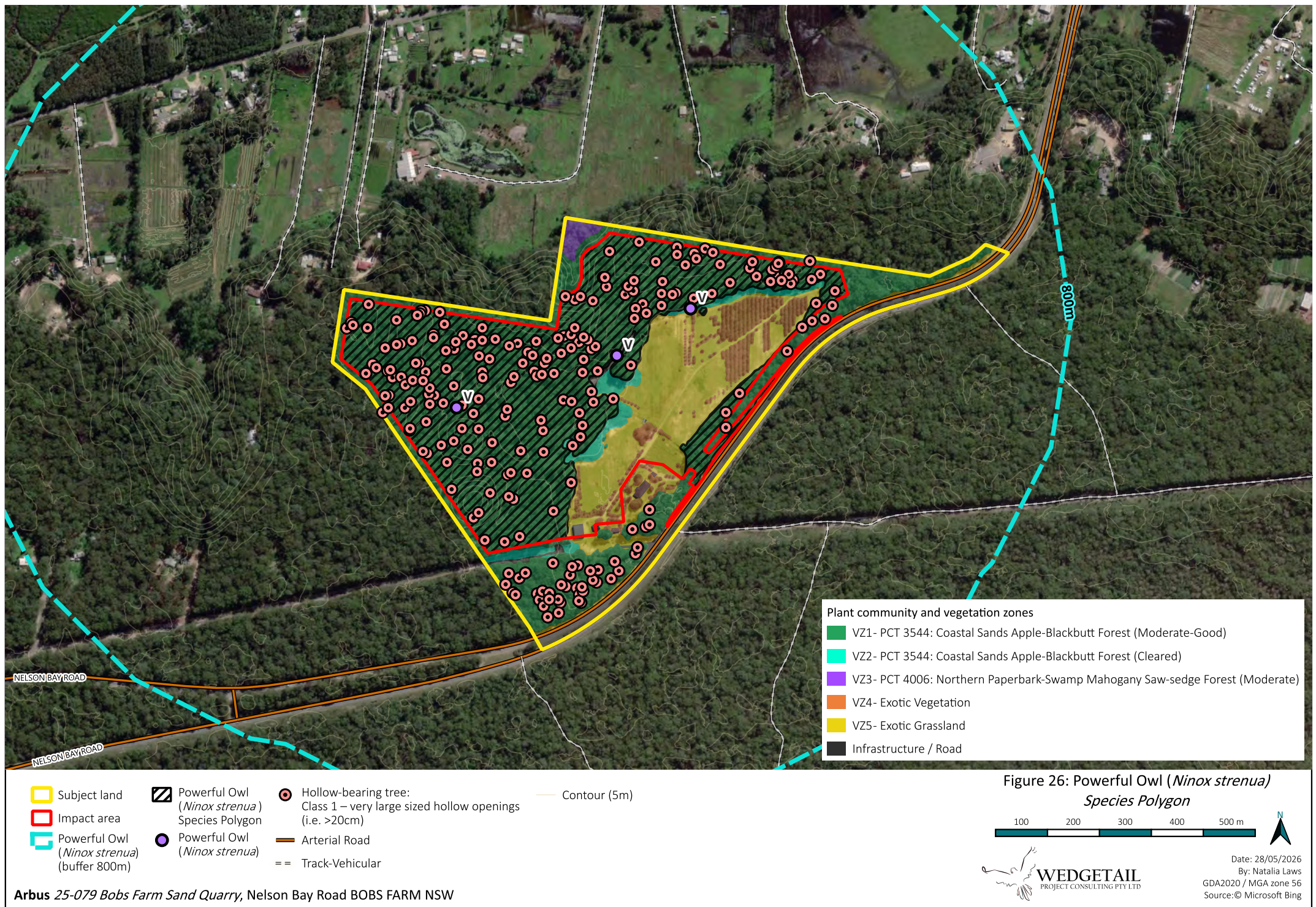
Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW

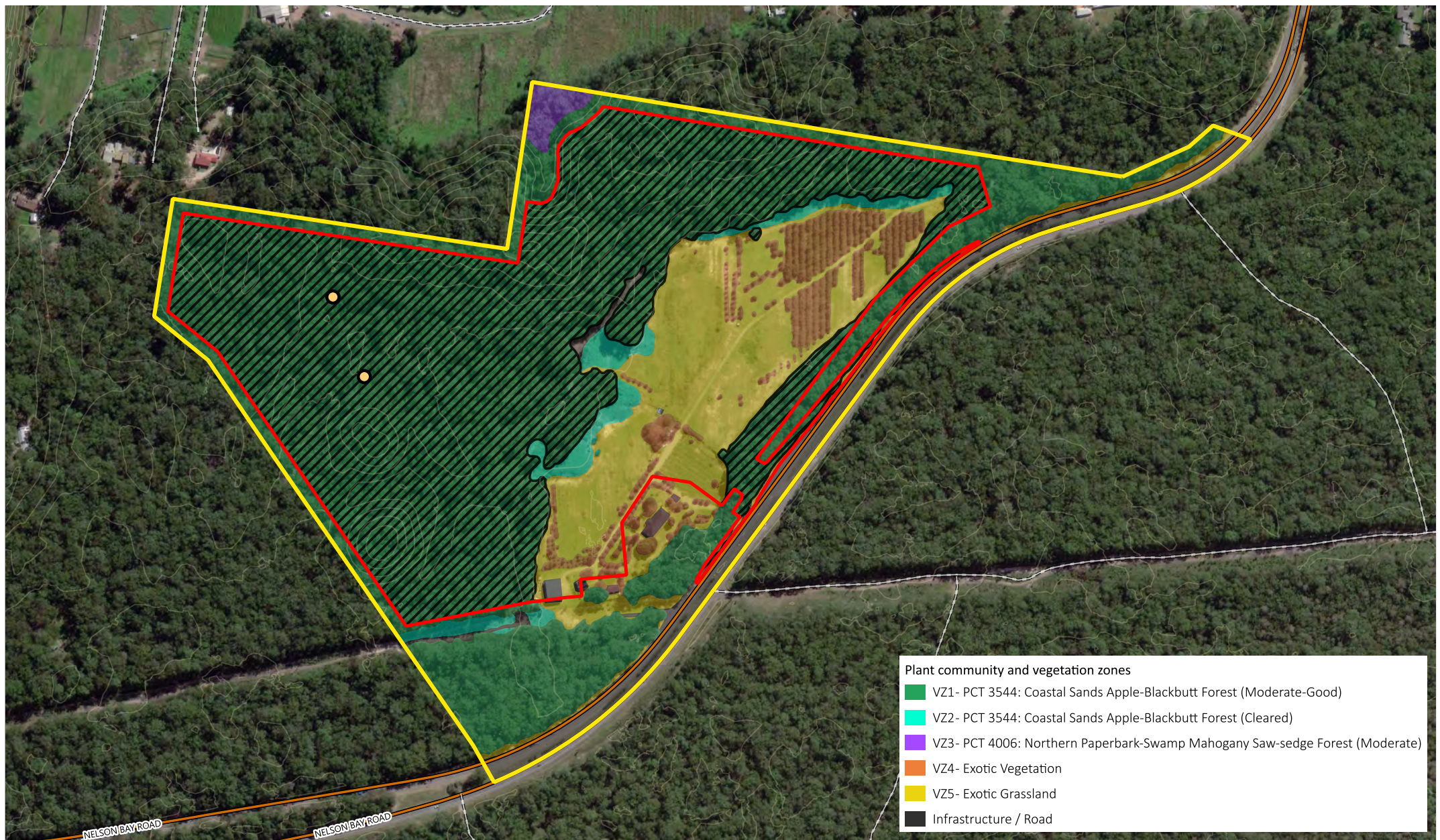


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\\001168.125\Drawings\Arbus25-079 - Bobs Farm Quarry\GIS\25-079 Bobs Farm Quarry_Threatened Fauna_28052026







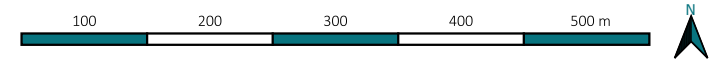
Plant community and vegetation zones

- VZ1- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Moderate-Good)
- VZ2- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Cleared)
- VZ3- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest (Moderate)
- VZ4- Exotic Vegetation
- VZ5- Exotic Grassland
- Infrastructure / Road

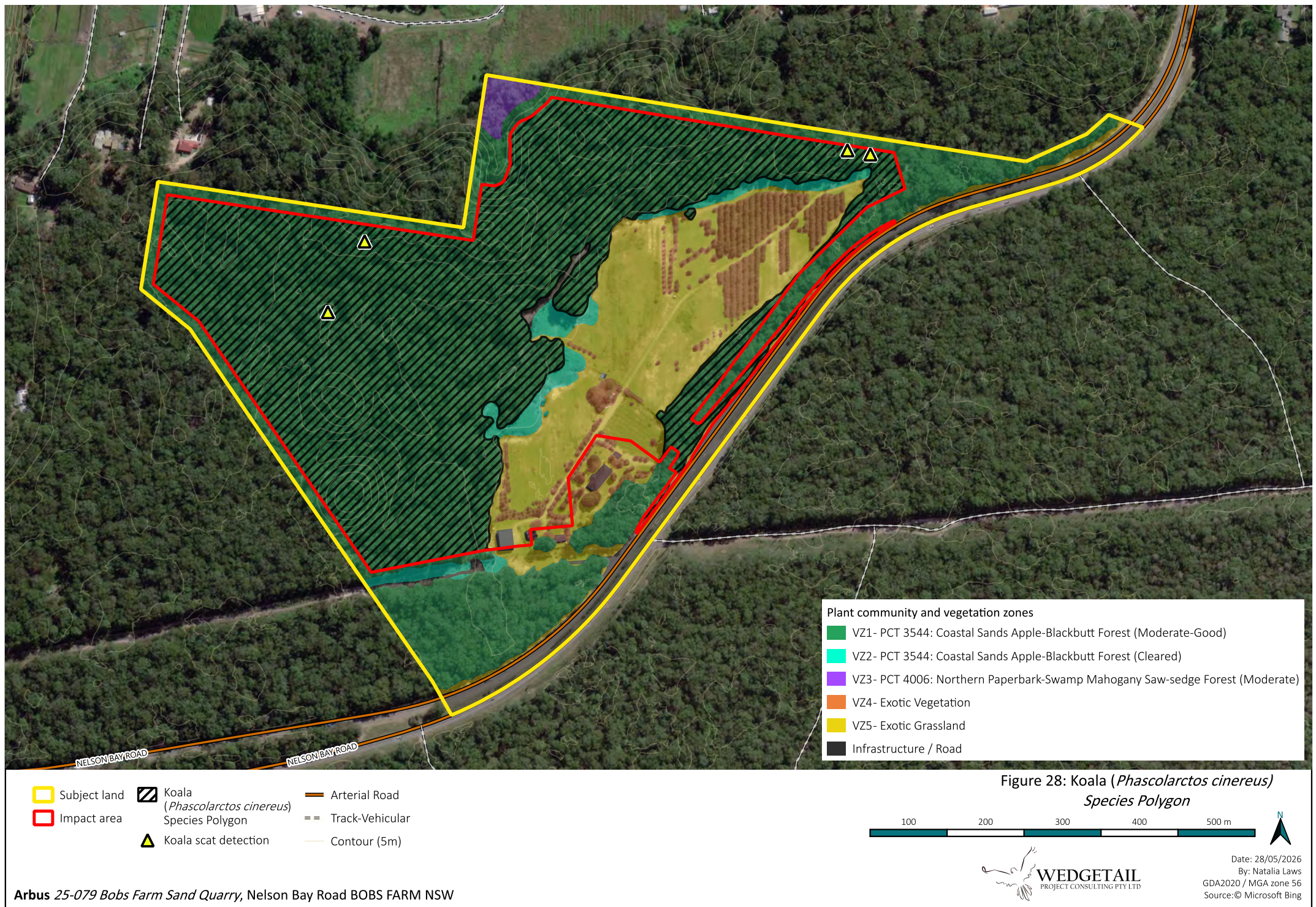
- Subject land
- Impact area
- Squirrel Glider (*Petaurus norfolcensis*) Species Polygon
- Squirrel glider (*Petaurus norfolcensis*)
- Arterial Road
- Track-Vehicular
- Contour (5m)

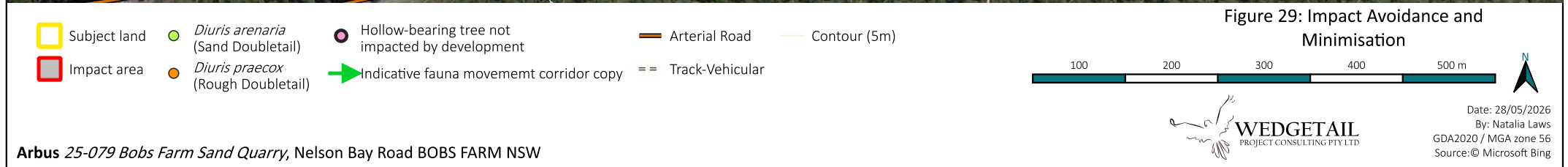
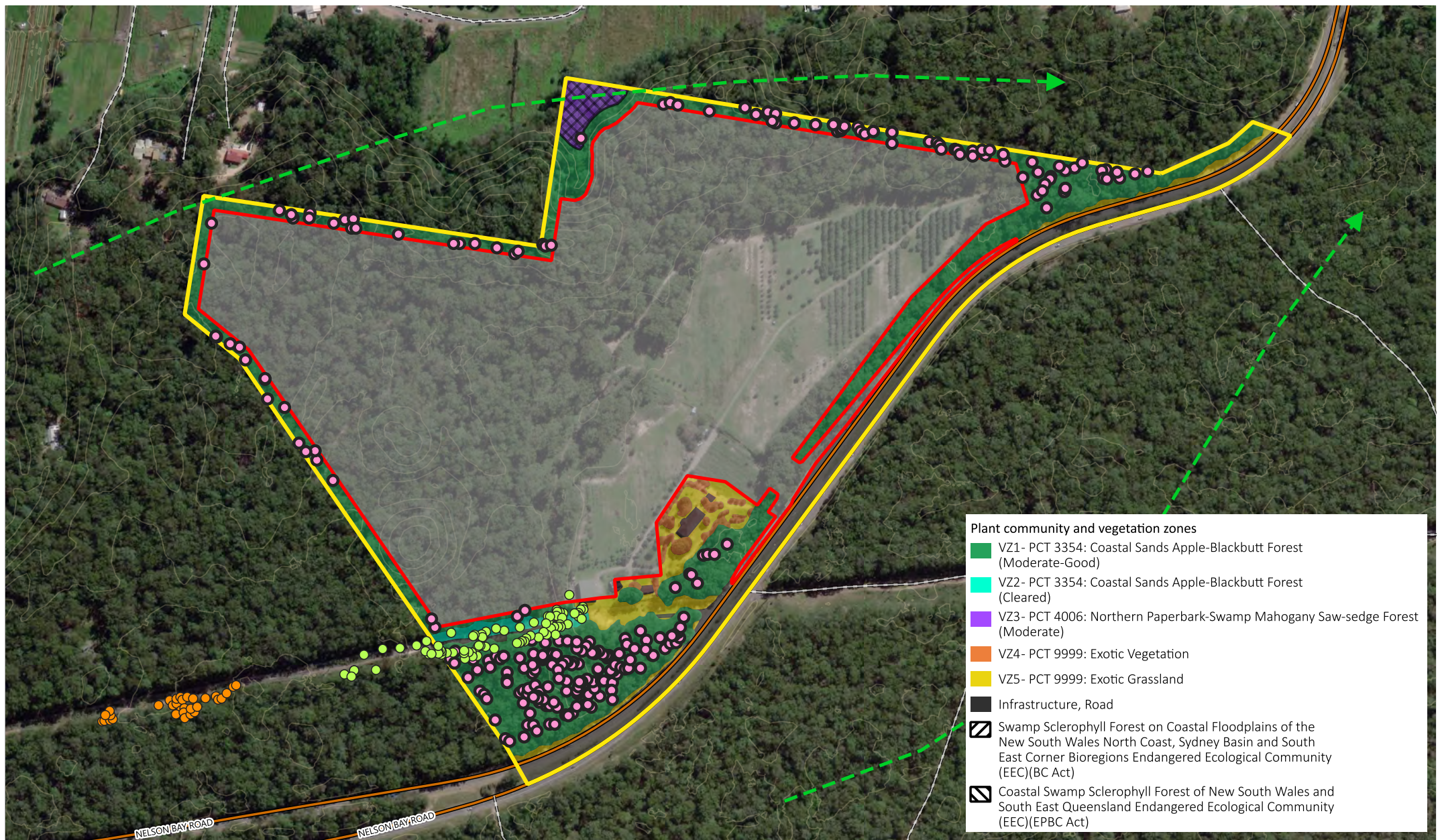
Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW

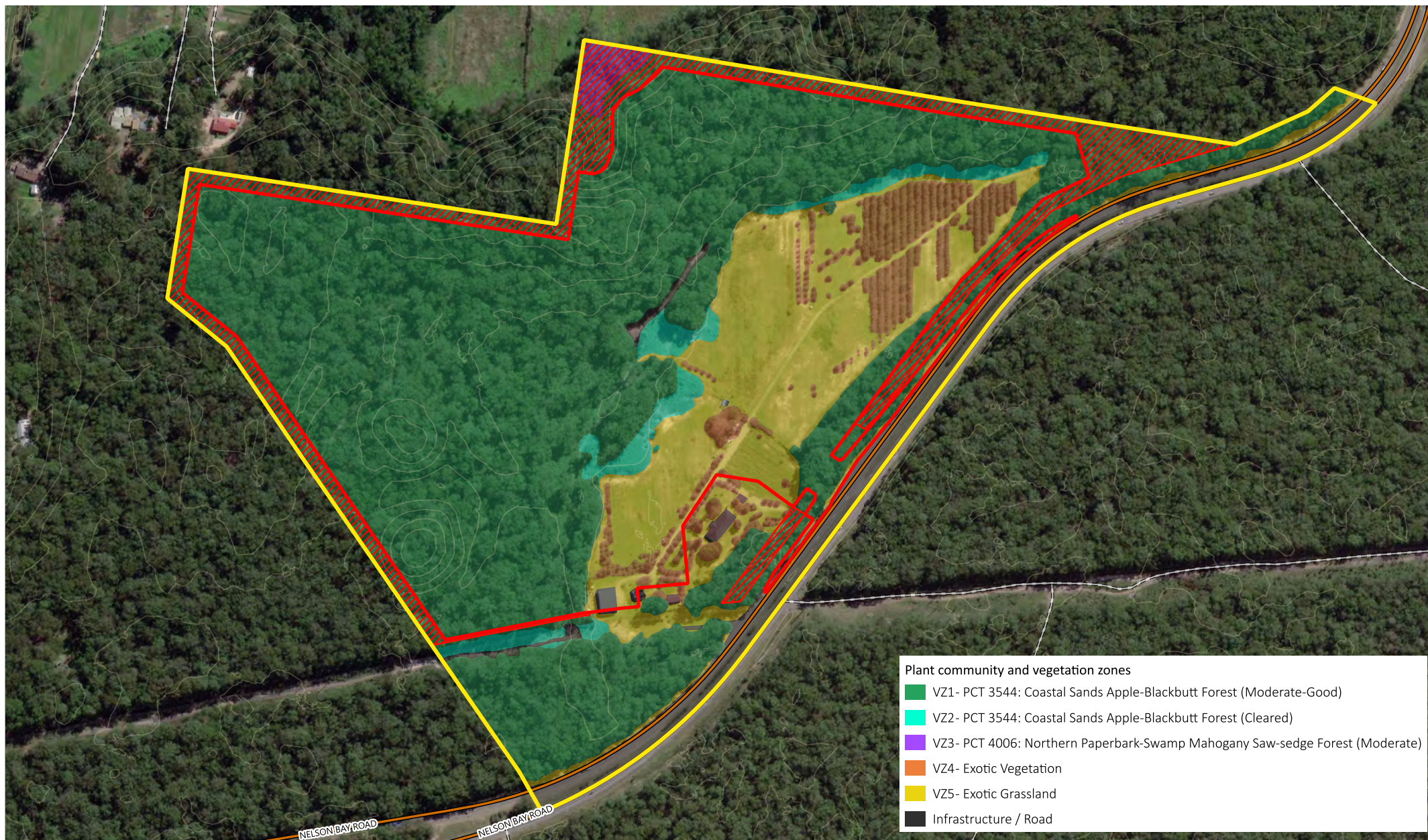
Figure 27: Squirrel Glider (*Petaurus norfolcensis*) Species Polygon



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Plant community and vegetation zones

- VZ1- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Moderate-Good)
- VZ2- PCT 3544: Coastal Sands Apple-Blackbutt Forest (Cleared)
- VZ3- PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest (Moderate)
- VZ4- Exotic Vegetation
- VZ5- Exotic Grassland
- Infrastructure / Road

Legend

- Subject land
- Impact area
- Extent of direct and indirect impact
- Arterial Road
- Track-Vehicular
- Contour (5m)

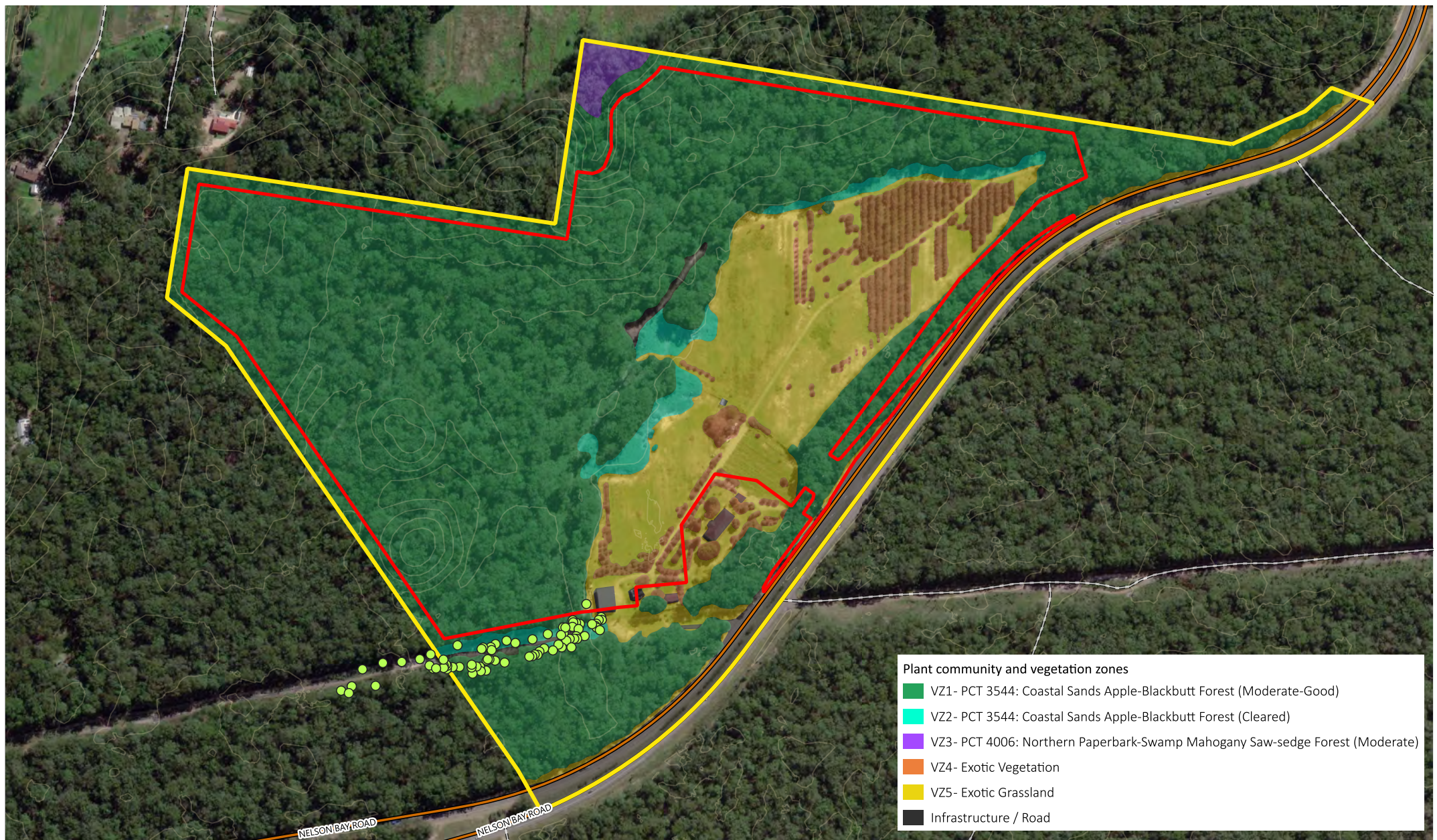
Figure 30: Final impacts likely to occur on the subject land

100 200 300 400 500 m

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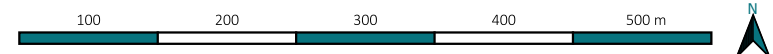
Date: 28/05/2026
By: Natalia Laws
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Source: © Microsoft Bing

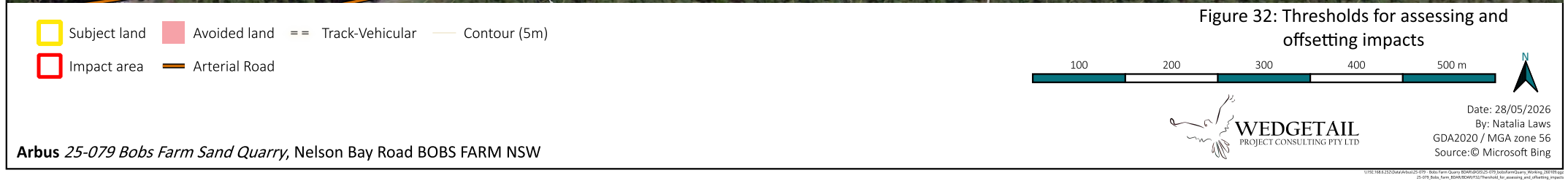
Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW



Subject land
 ● *Diuris arenaria* (Sand Doubletail)
 Track-Vehicular
 Impact area
 Arterial Road
 Contour (5m)

Figure 31: Serious and irreversible impacts





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Appendix A: Threatened Species Database Search

A list of threatened species, populations and ecological communities that have been reported or modelled to occur from within a five-kilometre radius of the Subject Land was obtained from the following databases:

- NSW Bionet Atlas;
- Commonwealth Protected Matters search tool
- NSW Bionet Threatened Biodiversity Profiles
- Commonwealth Species Profile and Threats Database (SPRAT)

An assessment was then made of the likelihood of the threatened species, populations, and ecological communities reported or modelled to occur in the locality occurring within the Subject Land or using the habitat within the Subject Land as an essential part of a foraging range.

The table below summarises the likelihood of threatened species and EPBC Act listed migratory species occurring within the Subject Land based on the habitat requirements of each species.

A brief definition of the likelihood of occurrence criteria is provided below:

- **Known** – species identified within the site during surveys;
- **High** – species known from the area (DPIE BioNet Atlas records), suitable habitat (such as roosting and foraging habitat) present within the site;
- **Moderate** – species may be known from the area, potential habitat is present within the site;
- **Low** – species not known from the area and/or marginal habitat is present within the site; and
- **Nil** – habitat requirements not met for this species within the site

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
Flora								
1.	<i>Angophora inopina</i> Charmhaven Apple	V	V	P	PMST	This species is endemic to the central coast region of NSW and is known to occur in four main vegetation communities: Eucalyptus haemastoma / Corymbia gummifera / Angophora inopina woodland / forest; Hakea teretifolia / Banksia oblongifolia wet heath; Eucalyptus resinifera / Melaleuca sieberi / Angophora inopina sedge / woodland; and Eucalyptus capitellata / Corymbia gummifera / Angophora inopina woodland / forestelegans. Flowering generally poor and sporadic.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
2.	<i>Arthraxon hispidus</i> Hairy Jointgrass	V	V	P	PMST	The species has been recorded from scattered locations throughout Queensland and on the northern tablelands and north coast of NSW. Hairy-joint Grass is found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps as well as woodland.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
3.	<i>Asperula asthenes</i> Trailing Woodruff	V	V	P	PMST	This small herb occurs only in NSW. It is found in scattered locations from Bulahdelah north to near Kempsey, with several records from the Port Stephens/Wallis Lakes area. Occurs in damp sites, often along river banks.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
4.	<i>Commersonia prostrata</i> Dwarf Kerrawang	E	E	P	PMST	Dwarf Kerrawang occurs on the Southern Highlands and Southern Tablelands (one plant at Penrose State Forest, one plant at Tallong, a small population near the Corang and about 2000 plants at Rowes Lagoon), a larger population in the Thirlmere Lakes area (particularly among the dying reeds at the edge of the water), and on	Nil	No suitable habitat within the Subject Land. No records within the locality.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						the North Coast (less than 100 plants at the Tomago sandbeds north of Newcastle). Occurs on sandy, sometimes peaty soils in a wide variety of habitats: Snow Gum (<i>Eucalyptus pauciflora</i>) Woodland and Ephemeral Wetland floor at Rows Lagoon; Blue leaved Stringybark (<i>E. agglomerata</i>) Open Forest at Tallong; and in Brittle Gum (<i>E. mannifera</i>) Low Open Woodland at Penrose; Scribbly Gum (<i>E. haemostoma</i>)/ Swamp Mahogany (<i>E. robusta</i>) Ecotonal Forest at Tomago.		Not recorded during targeted surveys
5.	<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	V	V	7	BioNet	The species occurs in coastal areas from East Gippsland to southern Queensland. Habitat preferences for this species are not well defined, however it is known to grow in coastal heathlands, margins of coastal swamps and sedgeland, coastal forest, dry woodland, and lowland forest. Prefers open areas in the understorey and is often found in association with <i>Cryptostylis subulata</i> and <i>Cryptostylis erecta</i> .	Low	Broadly suitable habitat within the Subject Land. Records within the locality. Not recorded during targeted surveys
6.	<i>Cynanchum elegans</i> White-flowered Wax Plant	E	E	P	PMST	The species occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby LGAs, may also occur in the western part of Gosford LGA. Habitat for the species includes Hawkesbury sandstone, commonly amongst rocky outcrops and boulders in sheltered forests on mid-to lower slopes and valleys.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
7.	<i>Diuris arenaria</i> Sand Doubletail	E	-	775	BioNet	Sand Doubletail is known from the Tomaree Peninsula near Newcastle. This species occurs in coastal heath and dry grassy eucalypt forest on sandy flats. Grows in gently undulating country in eucalypt forest with a grassy understorey on clay soil.	Present	Species was recorded within the Subject Land, outside of the Impact Area. Recorded during targeted surveys

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
8.	<i>Diuris praecox</i> Rough Doubletail	V	V	769, P	BioNet PMST	Occurs between Ourimbah and Nelson Bay on the New South Wales (NSW) north coast. This species has also been identified on the Wallarah Peninsula, near Lake Macquarie in NSW. Grows on hills and slopes of near-coastal districts, in open heathy forests which have a grassy to fairly dense understorey.	Moderate	Species was recorded to the west of the Subject Land. Broadly suitable habitat occurs within the Subject Land.
9.	<i>Eucalyptus camfieldii</i> Camfield's Stringybark	V	V	P	PMST	Occurs from Raymond Terrace to Waterfall, with populations known from Norah Head (Tuggerah Lakes), Peats Ridge, Mt Colah, Elvina Bay Trail (West Head), Terrey Hills, Killara, North Head, Menai and the Royal NP. Occurs in exposed situations on sandstone plateaus, ridges and slopes near the coast, often on the boundary of tall coastal heaths or low open woodland. It grows in shallow sandy soils overlying Hawkesbury sandstone.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
10.	<i>Eucalyptus parramattensis</i> <i>subsp. decadens</i>	V	V	5	BioNet	There are two separate meta-populations of <i>E. parramattensis</i> subsp. <i>decadens</i> . The Kurri Kurri meta-population is bordered by Cessnock—Kurri Kurri in the north and Mulbring—Abedare in the south. Large aggregations of the subspecies are located in the Tomalpin area. The Tomago Sandbeds meta-population is bounded by Salt Ash and Tanilba Bay in the north and Williamstown and Tomago in the south. Generally occupies deep, low-nutrient sands, often those subject to periodic inundation or where water tables are relatively high.	Low	No suitable periodically inundated, low-nutrient sand habitat present within the Subject Land. Not recorded during targeted surveys
11.	<i>Euphrasia arguta</i>	CE	CE	P	PMST	Known from Nundle State Forest and adjacent private land, in New South Wales. The species is known from three locations in two areas approximately 14 km apart. Occur in eucalypt forest with a mixed grass and shrub understorey within Nundle State Forest.	Nil	No suitable habitat within the Subject Land. No records within the locality.

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
								Not recorded during targeted surveys
12.	<i>Grevillea parviflora</i> <i>subsp. parviflora</i> Small-flower Grevillea	V	V	1	BioNet	The species distribution is between Moss Vale/Bargo and the lower Hunter Valley, with most occurrences in Appin, Wedderburn, Picton and Bargo. The habitat for the species is broad including heath, shrubby woodland and open forest on light clay or sandy soils, and often in disturbed areas such as on the fringes of tracks.	Low	Broadly suitable habitat within the Subject Land. Only one (1) record within the locality. Not recorded during targeted surveys
13.	<i>Prasophyllum</i> sp. <i>Wybong</i>	CE	CE	P	PMST	The species occurs within the Sydney Basin, New England Tablelands, Brigalow Belt South and NSW South Western Slopes IBRA Bioregions and the Border Rivers–Gwydir, Namoi, Hunter–Central Rivers and Central West Natural Resource Management Regions. The distribution of this species overlaps with the White Box–Yellow Box–Blakely's Red Gum Grassy Woodland and Derived Native Grassland EPBC Act-listed threatened ecological community.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded within the Subject Land
14.	<i>Rhizanthella slateri</i>	E	E	P	PMST	The species grows in eucalypt forest but no informative assessment of the likely preferred habitat for the species is available. Currently known only from 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
15.	<i>Rhodamnia rubescens</i> Scrub Turpentine	CE	CE	P	PMST	Small shrub to tree up to 25m tall occurring in coastal districts north from Batemans Bay in NSW to areas of inland Bundaberg, QLD. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	Low	No suitable habitat within the Subject Land. No records within the locality.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
								Not recorded during targeted surveys
16.	<i>Rhodomirtus psidioides</i> Native Guava	CE	CE	P	PMST	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW. Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	Low	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
17.	<i>Syzygium paniculatum</i> Magenta Lilly Pilly	V	V	4, P	BioNet PMST	The species occurs in a narrow coastal strip from Bulahdelah to Conjola State Forest. Rainforest on sandy soils or stabilised Quaternary sand dunes at low altitudes in coastal areas, often in remnant littoral or gallery rainforests. Plants produce white flower-clusters at the end of each branch is the preferred habitat for this species. The petals are small accompanied by prominent long stamens.	Low	No suitable habitat within the Subject Land. A total of four (4) records within the locality. Not recorded during targeted surveys
18.	<i>Tetralthea juncea</i> Black-eyed Susan	V	V	P	PMST	Regarded as extinct within the Sydney area, current range from Wyong north to Bulahdelah and inland 50km to edge of Sugarloaf Range. Occurs predominately in areas of over 1000 mm annual rainfall, within dry sclerophyll forest, and sometimes heath and moist forest, with a preference for Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during targeted surveys
Birds								

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
1.	<i>Anthochaera phrygia</i> Regent Honeyeater	CE	CE	1, P	BioNet PMST	In NSW the species is confined to two known breeding areas: the Capertee Valley and Bundarra-Barraba region. Non-breeding flocks are seen occasionally in coastal areas foraging in flowering Spotted Gum and Swamp Mahogany forests. Habitat for the species includes dry open forest and woodlands, particularly Box-Ironbark woodland and riparian forests of River Sheoak, with an abundance of mature trees, high canopy cover and abundance of mistletoes.	Low	No suitable foraging habitat within the Subject Land. Not recorded during bird surveys
2.	<i>Apus pacificus</i> Fork-tailed Swift	-	C,J,K	2	BioNet	The Fork-tailed Swift is a non-breeding visitor to all states and territories of Australia. They mostly occur over inland plains but sometimes above foothills or in coastal areas.	Low	Broadly suitable aerial foraging habitat present within the Subject Land. Not recorded during bird surveys
3.	<i>Artamus cyanopterus cyanopterus</i> Dusky Woodswallow	V	-	8	BioNet	Found in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests, very occasionally in moist forests or rainforests. Prefers habitat with an open understorey. Often observed in farmland tree patches or roadside remnants.	Low	Broadly suitable foraging habitat present within the Subject Land. Not recorded during bird surveys
4.	<i>Botaurus poiciloptilus</i> Australasian Bittern	E	E	1, P	BioNet PMST	Found in or over water of shallow freshwater or brackish wetlands with tall reedbeds, sedges, rushes, cumbungi, lignum and also in ricefields, drains in tussocky paddocks, occasionally saltmarsh, brackish wetlands.	Nil	No suitable habitat within the Subject Land. One (1) record within the locality. Not recorded during bird surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
5.	<i>Burhinus grallarius</i> Bush Stone-curlew	E	-	42	BioNet	Scattered distribution across NSW. Inhabits lowland grassy woodland and open forest and, in coastal areas, Casuarina and Melaleuca woodlands, saltmarsh and mangroves. Requires a low, sparse groundcover, some fallen timber and leaf litter, and a general lack of a shrubby understory.	Low	Broadly suitable habitat within the Subject Land. Records within the locality. Not recorded during targeted surveys
6.	<i>Calidris alba</i> Sanderling	V	C,J,K	9	BioNet	Found in coastal areas on low beaches of firm sand, near reefs and inlets, along tidal mudflats and bare open coastal lagoons. Breeding occurs in the Northern Hemisphere	Nil	No suitable wetland habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
7.	<i>Calidris canutus</i> Red Knot	P	E,C,J,K	5	BioNet	Medium sized wader that migrated south from breeding grounds in Siberia the species is widespread around the Australian coast. The species is known to gather in large flocks on sandy estuaries.	Nil	No suitable wetland habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
8.	<i>Calidris ferruginea</i> Curlew Sandpiper	V	CE,C,J,K	1, P	BioNet, PMST	The species occurs along the entire coast of NSW, particularly in the Hunter Estuary, and freshwater wetlands in the Murray-Darling Basin. Breeds in Siberia and migrates to Australia (as well as Africa and Asia) for the non-breeding period, arriving between August and November, and departing between March and mid-April. It generally occupies littoral and estuarine habitats, and in New South Wales can be found mainly in intertidal mudflats of sheltered coasts.	Nil	No suitable wetland habitat within the Subject Land. Records within the locality. Not recorded during bird surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
9.	<i>Calidris tenuirostris</i> Great Knot	V	CE,C,J ,K	2	BioNet	In NSW, occurs in scattered sites along the coast to Narooma – it has been observed inland at Tullakool, Armidale, Gilgandra and Griffith. Occurs within sheltered, coastal habitats containing large, intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.	Nil	No suitable wetland habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
10.	<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	V	E	P	PMST	In spring and summer, generally found in tall mountain forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. In autumn and winter, the species often moves to lower altitudes in drier more open eucalypt forests and woodlands, particularly box-gum and box-ironbark assemblages, or in dry forest in coastal areas and often found in urban areas. May also occur in sub-alpine Snow Gum (<i>Eucalyptus pauciflora</i>) woodland and occasionally in temperate rainforests.	Low	Broadly suitable foraging habitat within the locality. No records within the locality. Not recorded during surveys
11.	<i>Calyptorhynchus lathami lathami</i> South-eastern Glossy Black-Cockatoo	V	V	2	BioNet	A small brown – black cockatoo with a large bill, short crest, and a coloured tail panel. Males typically have red tail panels and females have yellow to orange. Feeds almost exclusively on the seeds of several species of she-oak (<i>Casuarina</i> and <i>Allocasuarina</i> species) therefore inhabiting open forests and woodlands. The species is uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW, with a small population in the Riverina.	Low	Broadly suitable foraging habitat within the locality. Records within the locality. Not recorded during surveys
12.	<i>Charadrius mongolus</i> Lesser Sand-plover	V	E,C,J, K	1, P	BioNet PMST	Found around the entire coast but is most common in the Gulf of Carpentaria, and along the east coast of Queensland and northern NSW. Almost entirely coastal in NSW, favouring the beaches of sheltered bays,	Nil	No suitable wetland habitat within the Subject Land. One (1)

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						harbours and estuaries with large intertidal sandflats or mudflats; occasionally occurs on sandy beaches, coral reefs and rock platforms.		record within the locality. Not recorded during bird surveys
13.	<i>Daphoenositta chrysoptera</i> Varied Sittella	V	-	26	BioNet	Sedentary, occurs across NSW from the coast to the far west. Inhabits eucalypt forests and woodlands, especially rough-barked species and mature smooth-barked gums with dead branches, mallee and Acacia woodland. Sensitive to habitat isolation and loss of structural complexity, and adversely affected by dominance of Noisy Miners. Cleared agricultural land is potentially a barrier to movement. Builds a cup-shaped nest of plant fibres and cobwebs in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.	Low	Broadly suitable foraging habitat within the locality. Records within the locality. Not recorded during surveys
14.	<i>Diomedea antipodensis</i> Antipodean Albatross	V	V	P	PMST	A large Albatross species, with breeding confined to New Zealand, the species ranges across the southern Pacific Ocean, east to the coast of Chile and west to eastern Australia. This species regularly occurs in small numbers off the NSW south coast from Green Cape to Newcastle during winter where they feed on cuttlefish.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
15.	<i>Diomedea exulans</i> Wandering Albatross	E	E	P	PMST	Visits Australian waters extending from Fremantle, Western Australia, across the southern water to the Whitsunday Islands in Queensland between June and September. The species has the largest wingspan of all albatross measuring up to 3.5 m.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
16.	<i>Dromaius novaehollandiae</i> Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	E	-	2	BioNet	Occur in a range of predominantly open lowland habitats, including grasslands, heathland, shrubland, open and shrubby woodlands, forest, and swamp and sedgeland communities, as well as the ecotones between these habitats. Breeding occurs in late autumn and winter	Low	Broadly suitable foraging habitat within the locality. Records within the locality. Not recorded during surveys
17.	<i>Ephippiorhynchus asiaticus</i> Black-necked Stork	E	-	4	BioNet	Primarily inhabits permanent freshwater wetlands and surrounding vegetation including swamps, floodplains, watercourses and billabongs, freshwater meadows, wet heathland, farm dams and shallow floodwaters. Will also forage in inter-tidal shorelines, mangrove margins and estuaries. Feeds in shallow, still water. This species breeds during summer, nesting in or near a freshwater swamp.	Nil	No suitable wetland habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
18.	<i>Epthianura albifrons</i> White-fronted Chat	V	-	6	BioNet	Small passerine bird 12cm in length, with a short slender bill, square tipped tail, and rounded wings. Found mostly in temperate to arid climates and very rarely sub-tropical areas, it occupies foothills and lowlands up to 1000 m above sea level. In NSW, it occurs mostly in the southern half of the state, in damp open habitats along the coast, and near waterways in the western part of the state. Two isolated sub-populations of are currently known from the Sydney Metropolitan Catchment Management Authority (CMA) area; one at Newington Nature Reserve and one at Towra Point Nature Reserve.	Low	Broadly suitable foraging habitat within the locality. Records within the locality. Not recorded during surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
19.	<i>Erythroriorchis radiatus</i> Red Goshawk	E	E	P	PMST	Inhabit open woodland and forest, preferring a mosaic of vegetation types, a large population of birds as a source of food, and permanent water, and are often found in riparian habitats along or near watercourses or wetlands. In NSW, preferred habitats include mixed subtropical rainforest, Melaleuca swamp forest and riparian Eucalyptus forest of coastal rivers.	Low	Broadly suitable foraging habitat within the locality. No records within the locality. Not recorded during surveys
20.	<i>Falco hypoleucos</i> Grey Falcon	V	V	P	PMST	Medium-sized, compact, pale falcon with a heavy, thick-set, deep-chested appearance. The species is sparsely distributed in NSW, chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range. Usually restricted to shrubland, grassland and wooded watercourses of arid and semi-arid regions, although it is occasionally found in open woodlands near the coast.	Low	Broadly suitable foraging habitat within the locality. No records within the locality. Not recorded during surveys
21.	<i>Glossopsitta pusilla</i> Little Lorikeet	V	-	14	BioNet	The species occurs from the coast to western slopes of the Great Dividing Range and inhabits dry, open eucalypt forests and woodlands. Occurrence is positively associated with patch size, and with components of habitat complexity including canopy cover, shrub cover, ground cover, logs, fallen branches and litter. Feed primarily on profusely-flowering eucalypts and a variety of other species including melaleucas and mistletoes. On the western slopes and tablelands Eucalyptus albens and E. melliodora are particularly important food sources for pollen and nectar respectively. Mostly nests in small (opening approx. 3cm) hollows in living, smooth-barked eucalypts, especially Eucalyptus viminalis, E. blakelyi and E. dealbata. Most breeding records are from the western slopes.	Present	Species recorded within the Subject Land.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
22.	<i>Grantiella picta</i> Painted Honeyeater	V	V	P	PMST	The species is nomadic, occurring in low densities across most of NSW. Highest concentrations and almost all breeding occur on inland slopes of the Great Dividing Range. Habitat for the species includes Boree, Brigalow and Box Gum woodlands and Box-Ironbark forests.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
23.	<i>Haematopus fuliginosus</i> Sooty Oystercatcher	V	-	9	BioNet	Evenly distributed along NSW coast, including offshore islands. Favours rocky headlands, rocky shelves, exposed reefs with rock pools, beaches and muddy estuaries. Forages on exposed rock or coral at low tide. Breeds almost exclusively on offshore islands, and occasionally on isolated promontories.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
24.	<i>Haematopus longirostris</i> Pied Oystercatcher	E	-	102	BioNet	Scattered along NSW coast. Favours intertidal flats of inlets and bays, open beaches and sandbanks. Forages on exposed sand, mud and rock at low tide. Nests mostly on coastal or estuarine beaches; occasionally saltmarsh or grassy areas.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
25.	<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	V	-	180	BioNet	The White-bellied Sea-Eagle is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia and its offshore islands. Feed mainly on fish and freshwater turtles, but also waterbirds, reptiles, mammals and carrion. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat. Nest trees are typically large emergent eucalypts and often have emergent dead branches or large dead trees nearby which	Present	Species recorded within the Subject Land. No breeding habitat present within the Subject Land (nests), species was recorded flying over the Subject Land.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						are used as 'guard roosts'. Nests are large structures built from sticks and lined with leaves or grass.		
26.	<i>Hieraaetus morphnoides</i> Little Eagle	V	-	5	BioNet	Occurs throughout NSW except most densely forested parts of the Dividing Range escarpment. Occupies habitats rich in prey within open eucalypt forest, woodland or open woodland. Sheoak or acacia woodlands and riparian woodlands of interior NSW are also used. For nest sites it requires a tall living tree within a remnant patch, where pairs build a large stick nest in winter and lay in early spring.	Low	Broadly suitable habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
27.	<i>Hirundapus caudacutus</i> White-throated Needletail	-	V,C,J,K	17, P	BioNet PMST	Widespread in eastern and south-eastern Australia. In Australia, the White-throated Needletail is almost exclusively aerial, from heights of less than 1 m up to more than 1000 m above the ground.	Low	Broadly suitable aerial foraging habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
28.	<i>Lathamus discolor</i> Swift Parrot	E	CE	22, P	BioNet PMST	A migratory species that travels to the mainland from March to October, the species breeds in Tasmania from September to January. Principal over-winter habitat is box-ironbark communities on the inland slopes and plains. Eucalyptus robusta, Corymbia maculata and C. gummifera dominated coastal forests are also important habitat.	Low	Broadly suitable foraging habitat within the Subject Land, albeit not preferred species. Records within the locality. Not recorded during bird surveys
29.	<i>Limosa lapponica</i> Bar-tailed Godwit	-	C,J,K	115	BioNet PMST	Bar-tailed Godwits are quite large waders, with females being bigger than males. The Bar-tailed Godwit is mainly mottled brown above and lighter and more uniform buff	Nil	No suitable habitat within the Subject Land.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						below. The species arrives in Australia each year in August from breeding grounds in the northern hemisphere. The species is known to inhabit estuarine mudflats, mangroves and beaches.		Records within the locality. Not recorded during bird surveys
30.	<i>Limosa limosa</i> Black-tailed Godwit	V	C,J,K	3, P	BioNet PMST	The Black-tailed Godwit is a migratory wading bird that breeds in Mongolia and Eastern Siberia and flies to Australia for the southern summer, arriving in August and leaving in March. In NSW, it is most frequently recorded at Kooragang Island (Hunter River estuary), with occasional records elsewhere along the north and south coast, and inland. Records in western NSW indicate that a regular inland passage is used by the species, as it may occur around any of the large lakes in the western areas during summer, when the muddy shores are exposed. It is usually found in sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. It has also been found around muddy lakes and swamps, wet fields and sewerage treatment works.	Nil	No suitable habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
31.	<i>Macronectes giganteus</i> Southern Giant Petrel	E	E	P	PMST	The species has a circumpolar range and commonly visits the coast of NSW. Over summer, the species nests in small colonies amongst open vegetation on Antarctic and subantarctic islands.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
32.	<i>Macronectes halli</i> Northern Giant-Petrel	V	V	P	PMST	A large seabird up to 95cm in length with a wingspan of 150-210cm the species has a circumpolar pelagic distribution, usually between 40-64°S in open oceans. Breeding in Australian territory is limited to Macquarie Island and occurs during spring and summer.	Nil	No suitable habitat within the Subject Land. No records within the locality.

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
								Not recorded during bird surveys
33.	<i>Melanodryas cucullata cucullata</i> Hooded Robin (south-eastern form)	V	-	1, P	BioNet PMST	Widespread, found across Australia, except for the driest deserts and the wetter coastal areas - northern and eastern coastal Queensland and Tasmania. The south-eastern form (subspecies <i>cucullata</i>) is found from Brisbane to Adelaide and throughout much of inland NSW. Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.	Low	Broadly suitable habitat within the Subject Land. One (1) record within the locality. Not recorded during bird surveys
34.	<i>Neophema pulchella</i> Turquoise Parrot	V	-	1	BioNet	Inhabits fringes of eucalypt woodlands, often adjacent to clearings, ridges and farmland creeks. Typically forages on the ground under trees. Distributed from southern Queensland to northern Victoria, extending from the coast to the western slopes of the Great Dividing Range. Nesting occurs from December to August in tree hollows.	Low	Broadly suitable habitat within the Subject Land. One (1) record within the locality. Not recorded during bird surveys
35.	<i>Ninox strenua</i> Powerful Owl	V	-	6	BioNet	Forests containing mature trees for shelter or breeding and densely vegetated gullies for roosting. Breeding requires large tree hollows >20 cm diameter. Distribution limits: N-Border Ranges National Park. S-Eden	Present	Species recorded within the Subject Land during targeted surveys
36.	<i>Numenius madagascariensis</i> Eastern Curlew	P	CE,C,J ,K	94, P	BioNet PMST	The eastern curlew is Australia's largest shorebird and a long-haul flyer. It is easily recognisable, with its long, down-curved bill. The species takes an annual migratory flight to Russia and northeastern China to breed, arriving back home to Australia in August.	Nil	No suitable habitat within the Subject Land. Records within the locality.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
								Not recorded during bird surveys
37.	<i>Pandion cristatus</i> Eastern Osprey	V	M	26	BioNet	Favour coastal areas, especially the mouths of large rivers, lagoons and lakes. Feed on fish over clear, open water. Breed from July to September in NSW. Nests are made high up in dead trees or in dead crowns of live trees, usually within one kilometre of the sea.	Low	No suitable breeding or foraging habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
38.	<i>Petroica boodang</i> Scarlet Robin	V	-	2	BioNet	Lives in dry eucalypt forests and woodlands. The understorey is usually open and grassy with few scattered shrubs. It occasionally occurs in mallee or wet forest communities, or in wetlands and tea-tree swamps. Habitat usually contains abundant logs and fallen timber: these are important components of its habitat. Mainly breed between the months of July and January.	Low	Broadly suitable habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
39.	<i>Ptilinopus magnificus</i> Wompoo Fruit-Dove	V	-	1	BioNet	Occurs from Hunter River to Cape York, but rare south of Coffs Harbour. No recent records from Illawarra where it once occurred. Inhabits rainforest, low elevation moist eucalypt forest and brush box forests, mostly in mature forest but also remnant and regenerating rainforest. Feeds on fruit and is locally nomadic following food availability. Builds nest platform on thin branch or palm frond, often over water, usually 3-10m above ground.	Nil	No suitable habitat within the Subject Land. One (1) record within the locality. Not recorded during bird surveys
40.	<i>Rostratula australis</i> Australian Painted Snipe	E	E	P	PMST	Normally found in permanent or ephemeral shallow inland wetlands, either freshwater or brackish. The species nests on the ground amongst tall reed-like vegetation near water. Habitat for the species includes the fringes of	Nil	No suitable habitat within the Subject Land. No records within the locality.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						swamps, dams and nearby marshy areas with cover of grasses, lignum, low scrub or open timber.		Not recorded during bird surveys
41.	<i>Stagonopleura guttata</i> Diamond Firetail	V	-	P	PMST	Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum (<i>Eucalyptus pauciflora</i>) Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities. Often found in riparian areas (rivers and creeks), and sometimes in lightly wooded farmland. Groups separate into small colonies to breed, between August and January.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
42.	<i>Thalassarche bulleri</i> Buller's Albatross	-	V	P	PMST	Abundant, small albatross occurring around coastal areas of New Zealand. During the breeding season it is commonly found in seas off the South Island and off south-eastern Australia.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
43.	<i>Thalassarche cauta</i> Shy Albatross	E	E	P	PMST	Predominantly white body with dark grey wings and back the species has a distinctive dark-grey-black brow. The species occurs in a wide range throughout the Southern Ocean, spending the majority of the time at sea. Breeding occurs in September-December in a few colonies off the coast of Tasmania and New Zealand.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
44.	<i>Thalassarche cauta</i> steadii White-capped Albatross	-	V	1	BioNet	The species is distinguished by the grey back and wings; faint or absent greyish wash on cheeks; and a white head, neck and rump. The species is predominately marine and commonly occurs of the coast of south eastern Australia throughout the year.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
45.	<i>Thalassarche impavida</i> Campbell Albatross	-	V	P	PMST	Medium sized albatross, with a wingspan of 210–250 cm the species has a white head with a distinctive black brow, bright yellow-orange bill and broad black leading edge on the underwing. The Campbell Albatross is a non-breeding visitor to Australian waters. Non-breeding birds are most commonly seen foraging over the oceanic continental slopes off Tasmania, Victoria and New South Wales.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
46.	<i>Thalassarche melanophrys</i> Black-browed Albatross	V	V	P	PMST	The species is white with dark-brown irides; an orange-yellow bill; a black brow, back, upper wing and tail. Breeding for this species occurs on several islands off the Australian coast. The species is predominately marine inhabiting Antarctic, subantarctic and temperate waters.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
47.	<i>Thalassarche salvini</i> Salvin's Albatross	-	V	P	PMST	Large albatross, with a wingspan of 212–256 cm. The species is predominately marine occurring in subantarctic and sub-tropical waters. The breeding biology of Salvin's Albatross is poorly known.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
48.	<i>Tyto novaehollandiae</i> Masked Owl	V	-	1	BioNet	Occurs across NSW except NW corner. Most common on the coast. Inhabits dry eucalypt woodlands from sea level to 1100 m. Roosts and breeds in large (>40cm) hollows and sometime caves in moist eucalypt forested gullies. Hunts along the edges of forests and roadsides. Home range between 500 ha and 1000 ha. Prey mostly terrestrial mammals but arboreal species may also be taken.	Present	Species recorded within the Subject Land during targeted surveys
49.	<i>Tyto tenebricosa</i> Sooty Owl	V	-	1	BioNet	Occurs in the coastal, escarpment and tablelands regions of NSW. More common in the north and absent from the western tablelands and further west. Inhabits tall, moist	Moderate	Broadly suitable habitat for the species within the North-western

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						eucalypt forests and rainforests, and are strongly associated with sheltered gullies, particularly those with tall rainforest understorey. Roosts in tree hollows, amongst dense foliage in gullies or in caves, recesses or ledges of cliffs or banks. Nest in large (>40cm wide, 100cm deep) tree hollows in unlogged/unburnt gullies within 100m of streams or in caves.		corner of the Subject Land. Not recorded during targeted surveys
50.	<i>Xenus cinereus</i> Terek Sandpiper	V	C,J,K	4	BioNet	The two main sites for this species in NSW are the Richmond River and Hunter River estuaries. Inhabits coastal mudflats, lagoons, creeks and estuaries. Favours mudbanks and sandbanks near mangroves, also observed on rocky pools and reefs and up to 10 km inland around brackish pools. Roost communally in mangroves or dead trees. Forages in open intertidal mudflats. This species is a rare migrant to Australia.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
Mammals								
1.	<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	V	V	P	PMST	The species occurs from the coast to the western slopes of the divide. The largest numbers of records are from sandstone escarpment country in the Sydney Basin and Hunter Valley. The species roosts in caves and mines and most commonly recorded from dry sclerophyll forests and woodlands. In southern Sydney appears to be largely restricted to the interface between sandstone escarpments and fertile valleys.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
2.	<i>Dasyurus maculatus</i> Spotted-tailed Quoll	V	E	5, P	BioNet PMST	Found in eastern NSW, eastern Victoria, south-east and north-eastern Queensland, and Tasmania the species has been recorded across a range of habitat types, including rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline	Moderate	Broadly suitable habitat within the Subject Land. Not recorded during targeted surveys

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
3.	<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	V	-	4	BioNet	The species occurs on southeast coast and ranges. Prefers tall (>20m) and wet forest with dense understorey. Absent from small remnants, preferring continuous forest but can move through cleared landscapes and may forage in open areas. Roosts include hollow trunks of Eucalypts, underneath bark or in buildings. Forages in gaps and spaces within forest, with large foraging range (12km foraging movements recorded).	Present	Species recorded within the Subject Land.
4.	<i>Micronomus norfolkensis</i> Eastern Coastal Free-tailed Bat	V	-	3	BioNet	Inhabits open forests and woodlands foraging above the canopy and along the edge of forests. Roosts in tree hollows, under bark and buildings. Distribution limit: N-Woodenbong. S-Pambula.	Low	No suitable habitat within the Subject Land. Three (3) records within the locality. Not recorded during bird surveys
5.	<i>Miniopterus australis</i> Little Bent-winged Bat	V	-	16	BioNet	Roosts in caves, old buildings and structures in the higher rainfall forests along the south coast of Australia. Distribution limit: N-Border Ranges National Park. S-Sydney.	Present	Species recorded within the Subject Land.
6.	<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	V	-	2	BioNet	Prefers areas where there are caves, old mines, old buildings, stormwater drains and well-timbered areas. Distribution limit: N-Border Ranges National Park. S-South of Eden.	Present	Species recorded within the Subject Land.
7.	<i>Myotis macropus</i> Southern Myotis	V	-	3	BioNet	Roosts in caves, mines, tunnels, buildings, tree hollows and under bridges. Forages over open water. Distribution limit: N-Border Ranges National Park. S-South of Eden.	Low	No suitable habitat within the Subject Land. Three (3) records within the locality. Not recorded during bird surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
8.	<i>Notamacropus parma</i> Parma Wallaby	V	V	P	PMST	Inhabits rainforests and wet and dry sclerophyll forests with a dense understorey and associated grassy patches. Distribution limit: N-Border Ranges National Park. S-Morton National Park.	Nil	No suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
9.	<i>Petauroides volans</i> Southern Greater Glider	E	E	3	BioNet PMST	The species occurs in eucalypt forests and woodlands along the east coast of Australia from north east Queensland to the Central Highlands of Victoria. Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe. Occupy a relatively small home range with an average size of 1 to 3 ha .	Nil	No suitable habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
10.	<i>Petaurus australis</i> Yellow-bellied Glider	E	V	P	PMST	Found along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria. Occur in tall mature eucalypt forest generally in areas with high rainfall and nutrient rich soils. Very mobile species known to occupy large home ranges between 20 to 85 ha.	Nil	Broadly suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
11.	<i>Petaurus norfolcensis</i> Squirrel Glider	V	-	18	BioNet	The species is widely though sparsely distributed in eastern Australia, from northern Queensland to western Victoria. Inhabits mature or old growth Box, Box-Ironbark woodlands and River Red Gum forest west of the Great Dividing Range and Blackbutt-Bloodwood forest with heath understorey in coastal areas. Prefers mixed species stands with a shrub or Acacia midstorey.	Present	Species recorded within the Subject Land.
12.	<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	V	0	4	BioNet	Prefer dry sclerophyll open forest with sparse groundcover of herbs, grasses, shrubs or leaf litter. Also inhabit heath, swamps, rainforest and wet sclerophyll forest. Mating occurs May – July.	Low	Broadly suitable habitat within the Subject Land. Records within the locality.

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
								Not recorded during bird surveys
13.	<i>Phascolarctos cinereus</i> Koala	E	E	2833, P	BioNet PMST	Fragmented distribution throughout eastern Australia from north-east Queensland to the Eyre Peninsula in South Australia. In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests feeding on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	Present	Signs of the species (scats) were recorded within the Subject Land during targeted surveys.
14.	<i>Potorous tridactylus</i> Long-nosed Potoroo	V	V	P	PMST	Restricted to east of the Great Dividing Range, with annual rainfall >760 mm. Inhabits coastal heath and dry and wet sclerophyll forests. Requires relatively thick ground cover and appears restricted to areas of light and sandy soil. Feeds on fungi, roots, tubers, insects and their larvae, and other soft-bodied animals in the soil.	Nil	Broadly suitable habitat within the Subject Land. No records within the locality. Not recorded during bird surveys
15.	<i>Pseudomys novaehollandiae</i> New Holland Mouse	-	V	4, P	BioNet PMST	The species occurs in disjunct, coastal populations from Tasmania to Queensland. In NSW it inhabits a variety of coastal habitats including heathland, woodland, dry sclerophyll forest with a dense shrub layer and vegetated sand dunes. Species presence is strongly correlated with understorey vegetation density, and high floristic diversity in regenerating heath.	Low	Broadly suitable habitat within the Subject Land. Records within the locality. Not recorded during bird surveys
16.	<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	V	V	537	BioNet	Generally this species is found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. Inhabit subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as	Present	Broadly suitable foraging habitat present within the Subject Land.

	Species	Status*		Records* *	Source***	Habitat	LoO	Summary
		BC	EPBC					
						urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.		Species recorded within the Subject Land
17.	<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	V	-	4	BioNet	The species is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. It extends to the coast over much of its range. In NSW it is widespread on the New England Tablelands, however does not occur at altitudes above 500 m. Inhabits a variety of habitats from woodland to wet and dry sclerophyll forests and rainforest, also remnant paddock trees and timber-lined creeks.	Present	Species recorded within the Subject Land.
Amphibians								
1.	<i>Crinia tinnula</i> Wallum Froglet	V	0	47	BioNet	Found in a wide range of habitats, usually associated with acidic swamps on coastal sand plains. They typically occur in sedgeland and wet heathlands under leaf litter, vegetation and other debris. In NSW the species extends from north of the Queensland border south to Kurnell. Breeding occurs in colder months.	Low	Broadly suitable habitat for the species in the north-western corner of the Subject Land (outside of Impact Area) Not recorded during targeted surveys
2.	<i>Mixophyes balbus</i> Stuttering Frog	E	V	P	PMST	The species occurs along the east coast of Australia. Habitat for the species includes rainforest and wet, tall, open forest, sheltering in deep leaf litter and thick understorey vegetation on the forest floor. Within Sydney Basin the species is now confined to populations in the Watagan Mountains, the southern Blue Mountains and Macquarie Pass. The species does not occur in areas	Nil	No suitable habitat for the species in the Subject Land Not recorded during targeted surveys

	Species	Status*		Records*	Source***	Habitat	LoO	Summary
		BC	EPBC					
						where the riparian vegetation has been disturbed or where there have been significant upstream human impacts.		
3.	<i>Uperoleia mahonyi</i> Mahony's Toadlet	E	E	47, P	BioNet PMST	Mahony's Toadlet is endemic to the mid-north coast of New South Wales (NSW) and to date has been found between Kangy Angy and Seal Rocks. Current observations indicate Mahony's Toadlet inhabits ephemeral and semi-permanent swamps and swales on the coastal fringe of its range. Known records occur in heath or wallum habitats almost exclusively associated with leached (highly nutrient impoverished) white sand. Commonly associated with acid paperbark swamps, Mahony's Toadlet also is known to occur in wallum heath, swamp mahogany-paperbark swamp forest, heath shrubland and Sydney red gum woodland. Recent studies suggest intact vegetation adjacent to and within water bodies is an important habitat feature for this species.	Low	Broadly suitable habitat for the species in the north-western corner of the Subject Land (outside of Impact Area) Not recorded during targeted surveys
Reptiles								
1.	<i>Saltuarius moritzi</i> Moritz's Leaf-tailed Gecko	P	0	P	PMST	Moritz's leaf-tailed gecko is patchily distributed from the Hunter River (NSW) in the south, to the Clarence River in the north.	Nil	No suitable habitat within the Subject Land. Not recorded within the Subject Land

Appendix B: Flora Species List

Family	Scientific Name	Plot ID	Q01		Q2		Q3		Q04		Q05		Q06		Q07		Q08	
		BAM Growth Form / High Threat Weeds	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab
Acanthaceae	<i>Brunoniella australis</i>	Acanthaceae			0.1	5												
Aizoaceae	<i>Tetragonia tetragonioides</i>	Aizoaceae											0.1	3				
Anthericaceae	<i>Tricoryne elatior</i>	Anthericaceae													0.01	1		
Anthericaceae	<i>Tricoryne simplex</i>	Anthericaceae					0.1	10					0.1	2				
Apocynaceae	<i>Parsonsia straminea</i>	Apocynaceae	0.1	10	0.1	5			0.1	1								
Araliaceae	<i>Polyscias sambucifolia</i>	Araliaceae	0.1	4	0.1	3									0.3	80		
Arecaceae	<i>Livistona australis</i>	Arecaceae	0.1	2					0.1	1	10	10			0.1	2		
Asphodelaceae	<i>Dianella caerulea</i> var. <i>producta</i>	Asphodelaceae	2	20	0.2	30			0.5	50								
Asteraceae	<i>Acanthospermum hispidum</i>	Asteraceae											0.1	20				
Asteraceae	<i>Baccharis halimifolia</i>	Asteraceae											0.1	1				
Asteraceae	<i>Bidens pilosa</i>	Asteraceae											0.1	5			1	24
Asteraceae	<i>Chrysanthemoides monilifera</i>	Asteraceae			0.5	10	0.1	3	2	5								
Asteraceae	<i>Chrysanthemoides monilifera</i> subsp. <i>rotundata</i>	Asteraceae													27	7		
Asteraceae	<i>Conyza bonariensis</i>	Asteraceae					0.1	10					0.2	30			20	75
Asteraceae	<i>Hypochaeris radicata</i>	Asteraceae					0.1	10					0.1	10				
Asteraceae	<i>Senecio angulatus</i>	Asteraceae											0.1	10				
Asteraceae	<i>Senecio madagascariensis</i>	Asteraceae															0.3	8
Bignoniaceae	<i>Pandorea pandorana</i>	Bignoniaceae	0.1	15	0.1	20			0.1	10					5	40		
Blechnaceae	<i>Blechnum cartilagineum</i>	Blechnaceae									0.2	10						
Brassicaceae	<i>Brassica</i> spp.	Brassicaceae											0.1	30				

Family	Scientific Name	Plot ID	Q01		Q2		Q3		Q04		Q05		Q06		Q07		Q08	
			C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab
Campanulaceae	<i>Lobelia purpurascens</i>	Campanulaceae									0.1	5						
Caryophyllaceae	<i>Petrorhagia dubia</i>	Caryophyllaceae											0.5	20				
Commelinaceae	<i>Commelina cyanea</i>	Commelinaceae									0.1	5						
Cyperaceae	<i>Gahnia clarkei</i>	Cyperaceae									90	1000						
Dennstaedtiaceae	<i>Pteridium esculentum</i>	Dennstaedtiaceae	85	1000	70	500	90	1000	70	1000					85	1000		
Dicksoniaceae	<i>Calochlaena dubia</i>	Dicksoniaceae									0.5	20						
Dilleniaceae	<i>Hibbertia linearis</i>	Dilleniaceae							0.1	2								
Ebenaceae	<i>Diospyros australis</i>	Ebenaceae									2	4						
Ericaceae	<i>Leucopogon lanceolatus</i>	Ericaceae	0.5	15	0.5	20			0.1	2					0.5	10		
Ericaceae	<i>Leucopogon margarodes</i>	Ericaceae	0.5	5	5	10	0.1	2							0.1	1		
Ericaceae	<i>Monotoca elliptica</i>	Ericaceae	2	7	2	3	0.5	2	6	10					0.1	3		
Euphorbiaceae	<i>Ricinocarpos pinifolius</i>	Euphorbiaceae							0.2	3								
Fabaceae (Faboideae)	<i>Bossiaea rhombifolia</i>	Fabaceae (Faboideae)	0.2	10			0.2	10	0.1	3					0.1	3		
Fabaceae (Faboideae)	<i>Dillwynia retorta</i>	Fabaceae (Faboideae)			0.1	1												
Fabaceae (Faboideae)	<i>Glycine clandestina</i>	Fabaceae (Faboideae)			0.1	10												
Fabaceae (Faboideae)	<i>Grona varians</i>	Fabaceae (Faboideae)			0.1	20												
Fabaceae (Faboideae)	<i>Hardenbergia violacea</i>	Fabaceae (Faboideae)	0.1	2	0.1	1			0.1	1								
Fabaceae (Faboideae)	<i>Kennedia rubicunda</i>	Fabaceae (Faboideae)			0.1	5												
Fabaceae (Mimosoideae)	<i>Acacia longifolia</i>	Fabaceae (Mimosoideae)	0.5	5	1	3									3	8		

Family	Scientific Name	Plot ID	Q01		Q2		Q3		Q04		Q05		Q06		Q07		Q08	
			C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab
Fabaceae (Mimosoideae)	<i>Acacia mearnsii</i>	Fabaceae (Mimosoideae)													0.1	1		
Haloragaceae	<i>Gonocarpus teucroides</i>	Haloragaceae	0.2	100	0.1	20	0.1	20	0.1	20								
Lauraceae	<i>Cassytha glabella f. glabella</i>	Lauraceae							0.2	3								
Lauraceae	<i>Cryptocarya rigida</i>	Lauraceae									2	1						
Lomandraceae	<i>Lomandra longifolia</i>	Lomandraceae	0.1	10	0.2	3	0.1	5	0.1	5					60	200		
Loranthaceae	<i>Dendrophthoe vitellina</i>	Loranthaceae			0.1	1												
Malvaceae	<i>Sida rhombifolia</i>	Malvaceae											0.5	20			0.3	5
Myrtaceae	<i>Angophora costata</i>	Myrtaceae	5	10	25	3	0.1	10	13	10					3	6		
Myrtaceae	<i>Eucalyptus grandis</i>	Myrtaceae									50	10						
Myrtaceae	<i>Eucalyptus pilularis</i>	Myrtaceae	30	5	10	3			20	11					5	8		
Myrtaceae	<i>Leptospermum polygalifolium</i>	Myrtaceae					0.1	1										
Myrtaceae	<i>Melaleuca quinquenervia</i>	Myrtaceae									10	5						
Onagraceae	<i>Oenothera stricta subsp. stricta</i>	Onagraceae															5	25
Phyllanthaceae	<i>Breynia oblongifolia</i>	Phyllanthaceae	0.1	10														
Pittosporaceae	<i>Billardiera scandens</i>	Pittosporaceae			0.1	1			0.1	1								
Pittosporaceae	<i>Pittosporum revolutum</i>	Pittosporaceae									0.1	1						
Poaceae	<i>Briza minor</i>	Poaceae															5	50
Poaceae	<i>Cynodon dactylon</i>	Poaceae											2	100				
Poaceae	<i>Dichelachne micrantha</i>	Poaceae					0.1	10										
Poaceae	<i>Entolasia stricta</i>	Poaceae					0.2	10										

Family	Scientific Name	Plot ID	Q01		Q2		Q3		Q04		Q05		Q06		Q07		Q08	
			C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab	C	Ab
Poaceae	<i>Eragrostis curvula</i>	Poaceae					0.2	10					95	1000				
Poaceae	<i>Eragrostis curvula</i>	Poaceae															65	500
Poaceae	<i>Imperata cylindrica</i>	Poaceae	0.5	200	5	100	0.5	50	0.5	100							25	100
Poaceae	<i>Themeda triandra</i>	Poaceae	0.5	20	0.5	50												
Proteaceae	<i>Banksia serrata</i>	Proteaceae	5	5	6	2									5	5		
Proteaceae	<i>Persoonia levis</i>	Proteaceae							0.1	2								
Rubiaceae	<i>Pomax umbellata</i>	Rubiaceae	1	1000	0.1	100	0.1	30	0.1	20					30	100		
Sapindaceae	<i>Dodonaea triquetra</i>	Sapindaceae					0.1	1							0.6	12		
Solanaceae	<i>Solanum nigrum</i>	Solanaceae															0.5	8
Thelypteridaceae	<i>Cyclosorus interruptus</i>	Thelypteridaceae									0.1	10						
Thymelaeaceae	<i>Pimelea linifolia</i>	Thymelaeaceae	0.1	5	0.1	5	0.1	5										
Vitaceae	<i>Cissus antarctica</i>	Vitaceae	0.1	1														

Appendix C: Fauna Species List

Scientific Name	Common Name	Status		Observation Type*	Location
		BC	EPBC		
<i>Acanthiza chrysorrhoa</i>	Yellow-rumped Thornbill	-	-	Bird Survey	Spotlighting_10(10)
<i>Acanthiza lineata</i>	Striated Thornbill	-	-	Bird Survey	Spotlighting_10(10), Spotlighting_9(9)
<i>Acrobates pygmaeus</i>	Feathertail Glider	-	-	Spotlighting, Remote Camera	Spotlighting_10(10), Spotlighting_7(7), Camera - Arboreal_315(1)
<i>Aegotheles cristatus</i>	Australian Owlet-nightjar	-	-	Spotlighting, Remote Camera	Spotlighting_10(10), Spotlighting_6(6), Spotlighting_7(7), Spotlighting_8(8), Camera - Terrestrial_27(1)
<i>Antechinus sp.</i>	Unidentified Antechinus	-	-	Spotlighting	Spotlighting_9(9)
<i>Antechinus stuartii</i>	Brown Antechinus	-	-	Remote Camera	Camera - Arboreal_14(1), Camera - Arboreal_16(1), Camera - Arboreal_19(1), Camera - Arboreal_26(1), Camera - Arboreal_317(1), Camera - Pygmy_10(1), Camera - Pygmy_311(1), Camera - Pygmy_322(1), Camera - Pygmy_6(1), Camera - Terrestrial_11(1), Camera - Terrestrial_18(1), Camera - Terrestrial_24(1), Camera - Terrestrial_25(1), Camera - Terrestrial_27(1), Camera - Terrestrial_3(1), Camera - Terrestrial_313(1), 0
<i>Austronomus australis</i>	White-striped Freetail-bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1)
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Chalinolobus morio</i>	Chocolate Wattled Bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1)
<i>Cincloramphus mathewsi</i>	Rufous Songlark	-	-	Bird Survey	Spotlighting_9(9)
<i>Cormobates leucophaea</i>	White-throated Treecreeper	-	-	Bird Survey	Spotlighting_10(10), Spotlighting_9(9)
<i>Dacelo novaeguineae</i>	Laughing Kookaburra	-	-	Spotlighting, Bird Survey	Spotlighting_10(10), Spotlighting_9(9)
<i>Daphoenositta chrysoptera</i>	Varied Sittella	V	-	Bird Survey	Spotlighting_10(10)
<i>Egretta novaehollandiae</i>	White-faced Heron	-	-	Bird Survey	Spotlighting_10(10)

Scientific Name	Common Name	Status		Observation Type*	Location
		BC	EPBC		
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	V	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Glossopsitta concinna</i>	Musk Lorikeet	-	-	Bird Survey	Spotlighting_10(10)
<i>Gymnorhina tibicen</i>	Australian Magpie	-	-	Bird Survey	Spotlighting_10(10)
<i>Isodon macrourus</i>	Northern Brown Bandicoot	-	-	Remote Camera	Camera - Terrestrial_27(1)
<i>Limnodynastes peronii</i>	Brown-striped Frog	-	-	Spotlighting	Spotlighting_2(2), Spotlighting_3(3), Spotlighting_7(7)
<i>Macropod sp.</i>	unidentified macropod	-	-	Spotlighting	Spotlighting_10(10), Spotlighting_8(8), Spotlighting_9(9)
<i>Malurus cyaneus</i>	Superb Fairy-wren	-	-	Bird Survey	Spotlighting_10(10)
<i>Manorina melanocephala</i>	Noisy Miner	-	-	Bird Survey	Spotlighting_9(9)
<i>Microeca fascians</i>	Jacky Winter	-	-	Bird Survey	Spotlighting_10(10)
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	V	-	Anabat	Anabat_14(1)
<i>Miniopterus australis</i>	Little Bent-winged Bat	V	-	Anabat	Anabat_14(1), Anabat_15(1)
<i>Myiagra rubecula</i>	Leaden Flycatcher	-	-	Bird Survey	Spotlighting_10(10)
<i>Myotis macropus</i>	Southern Myotis	V	-	Anabat	Anabat_15(1), Anabat_16(1)
<i>Ninox strenua</i>	Powerful Owl	V	-	Callplayback, Spotlighting	Spotlighting_2(2), Spotlighting_5(5), Spotlighting_7(7), Spotlighting_8(8), Spotlighting_9(9)
<i>Nyctophilus sp.</i>	long-eared bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_16(1)
<i>Ozimops ridei</i>	Eastern Free-tailed Bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Petaurus breviceps</i>	Sugar Glider	-	-	Remote Camera, Spotlighting	Camera - Arboreal_308(1), Camera - Arboreal_309(1), Spotlighting_10(10), Spotlighting_6(6), Camera - Arboreal_325(1), Camera - Arboreal_326(1), Camera - Arboreal_7(1)

Scientific Name	Common Name	Status		Observation Type*	Location
		BC	EPBC		
<i>Petaurus norfolcensis</i>	Squirrel Glider	V	-	Remote Camera, Spotlighting	Camera - Arboreal_14(1), Camera - Arboreal_20(1), Camera - Arboreal_29(1), Camera - Arboreal_301(1), Camera - Arboreal_307(1), Camera - Arboreal_314(1), Camera - Arboreal_315(1), Camera - Arboreal_317(1), Camera - Arboreal_320(1), Spotlighting_8(8), Camera - Pygmy_10(1), Camera - Pygmy_2(1)
<i>Phascolarctos cinereus</i>	Koala	E	E	Koala Transect	dog detection_1(1), dog detection_3(1), dog detection_2(1), dog detection_4(1)
<i>Podargus strigoides</i>	Tawny Frogmouth	-	-	Spotlighting	Spotlighting_9(9)
<i>Pseudocheirus peregrinus</i>	Common Ringtail Possum	-	-	Remote Camera	
<i>Rattus fuscipes</i>	Bush Rat	-	-	Remote Camera	Camera - Arboreal_301(1), Camera - Pygmy_311(1), Camera - Pygmy_327(1), Camera - Terrestrial_27(1), Camera - Terrestrial_313(1)
<i>Rhipidura albiscapa</i>	Grey Fantail	-	-	Bird Survey	Spotlighting_10(10)
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	V	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1)
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	V	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Scotorepens orion</i>	Eastern Broad-nosed Bat	-	-	Anabat	Anabat_13(1)
<i>Tachyglossus aculeatus</i>	Short-beaked Echidna	-	-	Remote Camera	Camera - Terrestrial_18(1), Camera - Terrestrial_3(1), Camera - Terrestrial_313(1)
<i>Trichoglossus haematodus</i>	Rainbow Lorikeet	-	-	Bird Survey	Spotlighting_10(10), Spotlighting_9(9)

Scientific Name	Common Name	Status		Observation Type*	Location
		BC	EPBC		
<i>Trichosurus vulpecula</i>	Common Brushtail Possum	-	-	Remote Camera, Spotlighting	Camera - Arboreal_13(1), Camera - Arboreal_14(1), Camera - Arboreal_19(1), Camera - Arboreal_20(1), Camera - Arboreal_23(1), Camera - Arboreal_28(1), Camera - Arboreal_29(1), Camera - Arboreal_301(1), Camera - Arboreal_307(1), Camera - Arboreal_308(1), Camera - Arboreal_315(1), Camera - Arboreal_316(1), Camera - Arboreal_321(1), Camera - Arboreal_324(1), Camera - Arboreal_325(1), Camera - Arboreal_326(1), Camera - Arboreal_330(1), Camera - Arboreal_5(1), Camera - Arboreal_7(1), Camera - Pygmy_10(1), Camera - Pygmy_17(1), Camera - Pygmy_2(1), Camera - Pygmy_322(1), Camera - Pygmy_6(1), Camera - Terrestrial_1(1), Camera - Terrestrial_11(1), Camera - Terrestrial_18(1), Camera - Terrestrial_24(1), Camera - Terrestrial_25(1), Camera - Terrestrial_27(1), Camera - Terrestrial_3(1), Camera - Terrestrial_313(1), Spotlighting_10(10), Spotlighting_3(3), Spotlighting_4(4), Spotlighting_5(5), Spotlighting_6(6), Spotlighting_7(7), Spotlighting_8(8), Spotlighting_9(9), 0
<i>Tyto novaehollandiae</i>	Masked Owl	V	-	Spotlighting, Callplayback	Spotlighting_10(10), Spotlighting_4(4), Spotlighting_5(5), Spotlighting_6(6), Spotlighting_7(7), Spotlighting_9(9)
<i>Vespadelus pumilus</i>	Eastern Forest Bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Vespadelus troughtoni</i>	Eastern Cave Bat	V	-	Anabat	Anabat_13(1), Anabat_16(1)
<i>Vespadelus vulturnus</i>	Little Forest Bat	-	-	Anabat	Anabat_13(1), Anabat_14(1), Anabat_15(1), Anabat_16(1)
<i>Vulpes vulpes</i>	Fox	-	-	Remote Camera	Camera - Arboreal_19(1)
<i>Wallabia bicolor</i>	Swamp Wallaby	-	-	Remote Camera	Camera - Terrestrial_11(1), Camera - Terrestrial_3(1)
<i>Zanda funerea</i>	Yellow-tailed Black-Cockatoo	-	-	Spotlighting	Spotlighting_10(10)

Appendix D: Predicted and Candidate Species Reports

Appendix E: Biodiversity Credit Reports

BAM Predicted Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00061046/BAAS21021/25/00061047	Bobs Farm Sand Quarry BDAR	09/04/2026
Assessor Name	Report Created	BAM Data version *
David Gordon Martin	18/05/2026	Current classification (live - default) (94)
Assessor Number	Assessment Type	BAM Case Status
BAAS21021	Major Projects	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
1		18/05/2026

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Threatened species reliably predicted to utilise the site. No surveys are required for these species. Ecosystem credits apply to these species.

Common Name	Scientific Name	Vegetation Types(s)
Beach Stone-curlew	Esacus magnirostris	3544-Coastal Sands Apple-Blackbutt Forest
Black-chinned Honeyeater (eastern subspecies)	Melithreptus gularis gularis	3544-Coastal Sands Apple-Blackbutt Forest
Black-necked Stork	Ephippiorhynchus asiaticus	3544-Coastal Sands Apple-Blackbutt Forest
Brown Treecreeper (eastern subspecies)	Climacteris picumnus victoriae	3544-Coastal Sands Apple-Blackbutt Forest
Common Blossom-bat	Syconycteris australis	3544-Coastal Sands Apple-Blackbutt Forest
Diamond Firetail	Stagonopleura guttata	3544-Coastal Sands Apple-Blackbutt Forest
Dusky Woodswallow	Artamus cyanopterus cyanopterus	3544-Coastal Sands Apple-Blackbutt Forest
Eastern Coastal Free-tailed Bat	Micronomus norfolkensis	3544-Coastal Sands Apple-Blackbutt Forest
Eastern False Pipistrelle	Falsistrellus tasmaniensis	3544-Coastal Sands Apple-Blackbutt Forest

BAM Predicted Species Report

Eastern Osprey	<i>Pandion cristatus</i>	3544-Coastal Sands Apple-Blackbutt Forest
Gang-gang Cockatoo	<i>Callocephalon fimbriatum</i>	3544-Coastal Sands Apple-Blackbutt Forest
Golden-tipped Bat	<i>Phoniscus papuensis</i>	3544-Coastal Sands Apple-Blackbutt Forest
Greater Broad-nosed Bat	<i>Scoteanax rueppellii</i>	3544-Coastal Sands Apple-Blackbutt Forest
Grey-crowned Babbler (eastern subspecies)	<i>Pomatostomus temporalis temporalis</i>	3544-Coastal Sands Apple-Blackbutt Forest
Grey-headed Flying-fox	<i>Pteropus poliocephalus</i>	3544-Coastal Sands Apple-Blackbutt Forest
Large Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>	3544-Coastal Sands Apple-Blackbutt Forest
Latham's Snipe	<i>Gallinago hardwickii</i>	3544-Coastal Sands Apple-Blackbutt Forest
Little Bent-winged Bat	<i>Miniopterus australis</i>	3544-Coastal Sands Apple-Blackbutt Forest
Little Eagle	<i>Hieraaetus morphnoides</i>	3544-Coastal Sands Apple-Blackbutt Forest
Little Lorikeet	<i>Parvipsitta pusilla</i>	3544-Coastal Sands Apple-Blackbutt Forest
New Holland Mouse	<i>Pseudomys novaehollandiae</i>	3544-Coastal Sands Apple-Blackbutt Forest
Regent Honeyeater	<i>Anthochaera phrygia</i>	3544-Coastal Sands Apple-Blackbutt Forest
Scarlet Robin	<i>Petroica boodang</i>	3544-Coastal Sands Apple-Blackbutt Forest
South-eastern Glossy Black-Cockatoo	<i>Calyptorhynchus lathami lathami</i>	3544-Coastal Sands Apple-Blackbutt Forest
Speckled Warbler	<i>Pyrrholaemus sagittatus</i>	3544-Coastal Sands Apple-Blackbutt Forest
Spotted Harrier	<i>Circus assimilis</i>	3544-Coastal Sands Apple-Blackbutt Forest
Spotted-tailed Quoll	<i>Dasyurus maculatus</i>	3544-Coastal Sands Apple-Blackbutt Forest
Square-tailed Kite	<i>Lophoictinia isura</i>	3544-Coastal Sands Apple-Blackbutt Forest
Superb Fruit-Dove	<i>Ptilinopus superbus</i>	3544-Coastal Sands Apple-Blackbutt Forest
Swift Parrot	<i>Lathamus discolor</i>	3544-Coastal Sands Apple-Blackbutt Forest
Turquoise Parrot	<i>Neophema pulchella</i>	3544-Coastal Sands Apple-Blackbutt Forest
Varied Sittella	<i>Daphoenositta chrysoptera</i>	3544-Coastal Sands Apple-Blackbutt Forest
White-bellied Sea-Eagle	<i>Haliaeetus leucogaster</i>	3544-Coastal Sands Apple-Blackbutt Forest

BAM Predicted Species Report

White-throated Needletail	Hirundapus caudacutus	3544-Coastal Sands Apple-Blackbutt Forest
Yellow-bellied Glider	Petaurus australis	3544-Coastal Sands Apple-Blackbutt Forest
Yellow-bellied Sheath-tail-bat	Saccolaimus flaviventris	3544-Coastal Sands Apple-Blackbutt Forest

Threatened species Manually Added

None added

Threatened species assessed as not within the vegetation zone(s) for the PCT(s)

Refer to BAR for detailed justification

Common Name	Scientific Name	Justification in the BAM-C
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BAM Candidate Species Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00061046/BAAS21021/25/00061047	Bobs Farm Sand Quarry BDAR	09/04/2026
Assessor Name	Report Created	BAM Data version *
David Gordon Martin	18/05/2026	Current classification (live - default) (94)
Assessor Number	Assessment Type	BAM Case Status
BAAS21021	Major Projects	Finalised
Assessment Revision	BOS entry trigger	Date Finalised
1		18/05/2026

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List of Species Requiring Survey

Name	Presence	Survey Months
<i>Allocasuarina simulans</i> Nabiac Casuarina	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Angophora inopina</i> Charmhaven Apple	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Asperula asthenes</i> Trailing Woodruff	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Burhinus grallarius</i> Bush Stone-curlew	No (surveyed)	☒ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Callistemon linearifolius</i> Netted Bottle Brush	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Calyptorhynchus lathami lathami</i> South-eastern Glossy Black-Cockatoo	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☒ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Cercartetus nanus</i> Eastern Pygmy-possum	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Commersonia prostrata</i> Dwarf Kerrawang	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Corybas dowlingii</i> Red Helmet Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☒ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Crinia tinnula</i> Wallum Froglet	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec ☐ Survey month outside the specified months?
<i>Cynanchum elegans</i> White-flowered Wax Plant	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Diuris arenaria</i> Sand Doubletail	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☒ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Diuris praecox</i> Rough Doubletail	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☒ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Dromaius novaehollandiae</i> - endangered population Emu population in the New South Wales North Coast Bioregion and Port Stephens local government area	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Esacus magnirostris</i> Beach Stone-curlew	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Eucalyptus parramattensis subsp. decadens</i> Eucalyptus parramattensis subsp. decadens	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Grevillea parviflora subsp. parviflora</i> Small-flower Grevillea	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☒ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Hieraaetus morphnoides</i> Little Eagle	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Hoplocephalus stephensii</i> Stephens' Banded Snake	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Lindernia alsinoides</i> Noah's False Chickweed	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Litoria aurea</i> Green and Golden Bell Frog	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Lophoictinia isura</i> Square-tailed Kite	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Miniopterus australis</i> Little Bent-winged Bat	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Myotis macropus</i> Southern Myotis	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Ninox connivens</i> Barking Owl	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Ninox strenua</i> Powerful Owl	Yes (surveyed)	☒ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Pandion cristatus</i> Eastern Osprey	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Petauroides volans</i> Southern Greater Glider	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Petaurus norfolcensis</i> Squirrel Glider	Yes (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Phascogale tapoatafa</i> Brush-tailed Phascogale	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Phascolarctos cinereus</i> Koala	Yes (surveyed)	☒ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Planigale maculata</i> Common Planigale	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Potorous tridactylus tridactylus</i> Northern long-nosed potoroo	No (surveyed)	☐ Jan ☒ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?
<i>Prostanthera densa</i> Villous Mint-bush	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec ☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☒ Dec
		☐ Survey month outside the specified months?
<i>Rhodomirtus psidioides</i> Native Guava	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?
<i>Syzygium paniculatum</i> Magenta Lilly Pilly	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☒ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?
<i>Tetratheca juncea</i> Black-eyed Susan	No (surveyed)	☐ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☒ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?
<i>Tyto novaehollandiae</i> Masked Owl	Yes (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?
<i>Uperoleia mahonyi</i> Mahony's Toadlet	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?

BAM Candidate Species Report

<i>Vespadelus troughtoni</i> Eastern Cave Bat	No (surveyed)	☒ Jan ☐ Feb ☐ Mar ☐ Apr ☐ May ☐ Jun ☐ Jul ☐ Aug ☐ Sep ☐ Oct ☐ Nov ☐ Dec
		☐ Survey month outside the specified months?

Threatened species Manually Added

None added

Threatened species assessed as not on site

Refer to BAR for detailed justification

Common name	Scientific name	Justification in the BAM-C
Coast Groundsel	<i>Senecio spathulatus</i>	Habitat constraints
Regent Honeyeater	<i>Anthochaera phrygia</i>	Habitat constraints
Rufous Bettong	<i>Aepyprymnus rufescens</i>	Refer to BAR
Swift Parrot	<i>Lathamus discolor</i>	Habitat constraints
Tuncurry Midge Orchid	<i>Genoplesium littorale</i>	Refer to BAR



BAM Biodiversity Credit Report (Like for like)

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00061046/BAAS21021/25/00061047	Bobs Farm Sand Quarry BDAR	09/04/2026
Assessor Name	Assessor Number	BAM Data version *
David Gordon Martin	BAAS21021	Current classification (live - default) (94)
Proponent Names	Report Created	BAM Case Status
Darren Williams	18/05/2026	Finalised
Assessment Revision	BOS entry trigger	Assessment Type
1		Major Projects
Date Finalised	* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.	
18/05/2026		

Potential Serious and Irreversible Impacts

Name of threatened ecological community	Listing status	Name of Plant Community Type/ID
Nil		
Species		
Nil		

Additional Information for Approval

Assessment Id	Proposal Name
00061046/BAAS21021/25/00061047	Bobs Farm Sand Quarry BDAR



BAM Biodiversity Credit Report (Like for like)

PCT Outside Ibra Added

None added

PCTs With Customized Benchmarks

PCT

No Changes

Predicted Threatened Species Not On Site

Name

No Changes

Ecosystem Credit Summary (Number and class of biodiversity credits to be retired)

Name of Plant Community Type/ID	Name of threatened ecological community	Area of impact	HBT Cr	No HBT Cr	Total credits to be retired
3544-Coastal Sands Apple-Blackbutt Forest	Not a TEC	24.0	552	0	552

BAM Biodiversity Credit Report (Like for like)

3544-Coastal Sands Apple-Blackbutt Forest	Like-for-like credit retirement options					
	Class	Trading group	Zone	HBT	Credits	IBRA region
	Coastal Dune Dry Sclerophyll Forests This includes PCT's: 3544, 3545, 3546, 3547, 3548, 3549, 3550, 3551, 3552, 3553, 3554, 3555, 3556	Coastal Dune Dry Sclerophyll Forests <50%	3544_Mod-Good	Yes	552	Karuah Manning, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.
	Coastal Dune Dry Sclerophyll Forests This includes PCT's: 3544, 3545, 3546, 3547, 3548, 3549, 3550, 3551, 3552, 3553, 3554, 3555, 3556	Coastal Dune Dry Sclerophyll Forests <50%	3544_Cleared	No	0	Karuah Manning, or Any IBRA subregion that is within 100 kilometers of the outer edge of the impacted site.

Species Credit Summary

Species	Vegetation Zone/s	Area / Count	Credits
Ninox strenua / Powerful Owl	3544_Mod-Good	23.0	737.00
Petaurus norfolcensis / Squirrel Glider	3544_Mod-Good	23.0	737.00

BAM Biodiversity Credit Report (Like for like)

Phascolarctos cinereus / Koala	3544_Mod-Good	23.0	737.00
Tyto novaehollandiae / Masked Owl	3544_Mod-Good	23.0	737.00

Credit Retirement Options

Like-for-like credit retirement options

Ninox strenua / Powerful Owl	Spp	IBRA subregion
	Ninox strenua / Powerful Owl	Any in NSW
Petaurus norfolcensis / Squirrel Glider	Spp	IBRA subregion
	Petaurus norfolcensis / Squirrel Glider	Any in NSW
Phascolarctos cinereus / Koala	Spp	IBRA subregion
	Phascolarctos cinereus / Koala	Any in NSW
Tyto novaehollandiae / Masked Owl	Spp	IBRA subregion
	Tyto novaehollandiae / Masked Owl	Any in NSW

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00061046/BAAS21021/25/00061047	Bobs Farm Sand Quarry BDAR	09/04/2026
Assessor Name	Report Created	BAM Data version *
David Gordon Martin	18/05/2026	Current classification (live - default) (94)
Assessor Number	BAM Case Status	Date Finalised
BAAS21021	Finalised	18/05/2026
Assessment Revision	BOS entry trigger	Assessment Type
1		Major Projects

* Disclaimer: BAM data last updated may indicate either complete or partial update of the BAM calculator database. BAM calculator database may not be completely aligned with Bionet.

Ecosystem credits for plant communities types (PCT), ecological communities & threatened species habitat

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAIL	Ecosystem credits
Coastal Sands Apple-Blackbutt Forest												
1	3544_Mod-Good	Not a TEC	64.1	64.1	23	PCT Cleared - 22%	High Sensitivity to Gain			1.50		552

BAM Credit Summary Report

2	3544_Cleared	Not a TEC	10.7	10.7	1	PCT Cleared - 22%	High Sensitivity to Gain			1.50		0
											Subtotal	552
											Total	552

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAI	Species credits
Ninox strenua / Powerful Owl (Fauna)									
3544_Mod-Good	64.1	64.1	23	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	737
								Subtotal	737
Petaurus norfolcensis / Squirrel Glider (Fauna)									
3544_Mod-Good	64.1	64.1	23	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	737
								Subtotal	737

BAM Credit Summary Report

<i>Phascolarctos cinereus / Koala (Fauna)</i>									
3544_Mod-Good	64.1	64.1	23	Biodiversity Conservation Act listing status	Effectiveness of management in controlling threats	Endangered	Endangered	False	737
								Subtotal	737
<i>Tyto novaehollandiae / Masked Owl (Fauna)</i>									
3544_Mod-Good	64.1	64.1	23	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Vulnerable	Not Listed	False	737
								Subtotal	737

Appendix F: Threatened Ecological Community Determinations

NSW Biodiversity Conservation Act 2016

Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions – EEC.

Vegetation Zone 3: PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest



Decision Key Criteria	Answer	Justification
<i>Occurs in the NSW North Coast, Sydney Basin and Southeast Corner IBRA Bioregions?</i>	Yes	The Subject Land Is based within the NSW North Coast Basin IBRA Bioregion.
Occurs within Local Government Areas of Tweed, Byron, Lismore, Ballina, Richmond Valley, Clarence Valley, Coffs Harbour, Bellingen, Nambucca, Kempsey, Hastings, Greater Taree, Great Lakes and Port Stephens, Lake Macquarie, Wyong, Gosford, Hornsby, Pittwater, Warringah, Manly, Liverpool, Rockdale, Botany Bay, Randwick, Sutherland, Wollongong, Shellharbour, Kiama and Shoalhaven but may occur elsewhere in these bioregions.	Yes	The Subject Land is located within the Port Stephens LGA

Decision Key Criteria	Answer	Justification
Is the ecological community associated with humic clay loams and sandy loams, on waterlogged or periodically inundated alluvial flats and drainage lines associated with coastal floodplains – which are generally below 20 m elevation, and no more than 50 m elevation.	Yes	The vegetation occurs on waterlogged and/or periodically inundated coastal floodplains below 50 m elevation.
Does the community have an open to dense tree layer of eucalypts and paperbarks, which may exceed 25 m in height, but can be considerably shorter in regrowth stands or under conditions of lower site quality?	Yes	Canopy is dominated by <i>Melaleuca quinquenervia</i> (Broad-leaved Paperbark) and <i>Eucalyptus grandis</i> (Flooded Gum).
Is the groundcover of the community composed of abundant sedges, ferns, forbs, and grasses?	Yes	A mix of ferns and graminoids including <i>Blechnum cartilagineum</i> (Gristle Fern), <i>Lobelia purpurascens</i> (Whiteroot), <i>Commelina cyanea</i> (Native Wandering Dew), <i>Gahnia clarkei</i> (Tall Saw-sedge), <i>Calochlaena dubia</i> (Rainbow Fern), and <i>Cyclosorus interruptus</i>
Does this community have a relatively dense tree canopy dominated by <i>Eucalyptus robusta</i> , <i>Melaleuca quinquenervia</i> or <i>E. botryoides</i> ? <i>Does this community also contain the relatively infrequent occurrence of other eucalypts, Casuarina glauca or Lophostemon suaveolens; the occasional presence of rainforest elements as scattered trees or understorey plants; and the prominence of large sedges and ferns in the groundcover?</i>	Yes	Canopy is dominated by <i>Melaleuca quinquenervia</i> (Broad-leaved Paperbark) and <i>Eucalyptus grandis</i> (Flooded Gum).
Are the soils are usually waterlogged, stained black or dark grey with humus, and show little influence of saline ground water?	Yes	The geology of the Subject Land is characterised by Holocene (0.0117 million years ago – Present) marine deposited and aeolian-reworked coastal sand dunes (QH_bd Coastal). The following Soil Landscapes are mapped within the Subject Land:
Determination	This Vegetation Zone does meet the definition of the Endangered Ecological Community Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions as listed under the NSW Biodiversity Conservation Act 2016.	

Commonwealth Environment Protection Biodiversity Conservation Act 1999

Coastal Swamp Sclerophyll Forest of New South Wales North Coast and South-east Queensland– EEC

Vegetation Zone 3: PCT 4006: Northern Paperbark-Swamp Mahogany Saw-sedge Forest



The key diagnostic characteristics are designed to allow identification of the ecological community irrespective of the season. Areas of vegetation that do not meet the key diagnostics do not support the nationally listed ecological community. The ecological community is defined as patches of native vegetation meeting the description in Section 1 of the Conservation Advice that meet the following key diagnostic characteristics (see table below).

Decision Key Criteria	Answer	Justification
Occurs on the mainland and islands near to the coast (within 20 km) from South East Queensland to south-eastern NSW specifically within these IBRA Bioregions: South Eastern Queensland (SEQ); NSW North Coast (NNC); Sydney Basin (SYB) and the Bateman sub-region of the South East Corner (SEC).	Yes	The Subject Land Is based within the NSW North Coast Basin IBRA Bioregion.

Decision Key Criteria	Answer	Justification
Occurs in coastal catchments typically below 20m ASL, but occasionally up to 220m ASL	Yes	The Vegetation within the Subject Land occurred at an elevation of <20m ASL.
Occurs on hydric soils with inundation patterns ranging from intermittent to episodic.	Yes	The geology of the Subject Land is characterised by Holocene (0.0117 million years ago – Present) marine deposited and aeolian-reworked coastal sand dunes (QH_bd Coastal). The following Soil Landscapes are mapped within the Subject Land:
The vegetation structure varies from tall closed to open forest to woodland, to dense (closed) shrubland or scrub forest. Minimum crown cover (see footnote 5, p. 4) is at least 10%, but it is more typically in the range 50% to 70%.	Yes	Canopy cover is consistent with an open forest.
From South East Queensland to the Sydney Basin Bioregion, the canopy ⁹ is typically dominated or co-dominated by <i>Melaleuca quinquenervia</i> and/or <i>Eucalyptus robusta</i> . In some areas, the canopy may be locally dominated by other melaleuca species including <i>M. dealbata</i> (SEQ bioregion) (rarely); <i>M. biconvexa</i> (mid-NSW coast to south of Sydney); <i>M. decora</i> (north of Shoalhaven), frequently with <i>Parsonsia straminea</i> climbing on the trunks of canopy species. In the SEC bioregion, <i>M. ericifolia</i> may occur as a dominant canopy or sub-canopy species.	Yes	Canopy is dominated by <i>Melaleuca quinquenervia</i> (Broad-leaved Paperbark) and <i>Eucalyptus grandis</i> (Flooded Gum). A mix of ferns and graminoids including <i>Blechnum cartilagineum</i> (Gristle Fern), <i>Lobelia purpurascens</i> (Whiteroot), <i>Commelina cyanea</i> (Native Wandering Dew), <i>Gahnia clarkei</i> (Tall Saw-sedge), <i>Calochlaena dubia</i> (Rainbow Fern), and <i>Cyclosorus interruptus</i>
Other tree species may occur in the canopy (or sub-canopy) in some areas, but they are not dominant across a patch, including <i>Casuarina glauca</i> , <i>Banksia</i> spp., <i>Callistemon salignus</i> , <i>Corymbia intermedia</i> (Pink Bloodwood), <i>E. tereticornis</i> , (Forest Red Gum/Queensland Blue Gum), <i>E. longifolia</i> (Woollybutt), <i>E. botryoides</i> (Southern Mahogany/Bangalay), <i>E. ovata</i> (Swamp Gum), <i>Livistona australis</i> and/or <i>Lophostemon</i> spp.	Yes	<i>Eucalyptus grandis</i> and <i>Melaleuca quinquenervia</i> , with a high cover of <i>Livistona australis</i> and occasional <i>Eucalyptus pilularis</i> along the edges of the community (influence of adjacent dry sclerophyll forest)
The understorey typically includes a variable ground layer, depending on the canopy cover and inundation rate/period. Tall sedges (typically <i>Gahnia</i> spp.) and/or ferns often dominate the ground layer, mixed with graminoids and other herbs, especially <i>Imperata cylindrica</i> (Blady Grass).	Yes	The groundcover is dominated by <i>Gahnia clarkei</i> (Tall Saw-sedge), with drier areas containing increasing cover of <i>Lomandra longifolia</i> (Spiny-headed Mat-rush), <i>Entolasia stricta</i> (Wiry Panic) and <i>Imperata cylindrica</i> (Blady Grass).
While they can occur regularly in the ground layer, the ecological community is not present if halophytic species, more typically associated with estuarine/saltmarsh areas, dominate the ground layer of a patch, for example, <i>Appium prostratum</i> , <i>Atriplex cineria</i> , <i>Chenopodium glaucum</i> , <i>Rhagodia candolleaus</i> and <i>Samolus repens</i> .	N/A	Not Applicable

Decision Key Criteria	Answer	Justification
Note: Revegetated or replanted sites, or areas of vegetation regeneration (regrowth), are included in the nationally listed ecological community if they meet the key diagnostic characteristics. The inclusion of patches of natural and managed regeneration reflects the ecological community's ability to regenerate.	N/A	Not Applicable – This vegetation zone contains an intact native canopy, midstorey and groundcover.
Determination	This Vegetation Zone <u>meets</u> the definition of the Endangered Ecological Community <i>Coastal Swamp Sclerophyll Forest of New South Wales North Coast and South-east Queensland</i> as listed under the Commonwealth's Environment Protection Biodiversity Conservation Act 1999.	
Notes		
9 The uppermost layers of a vegetation type, formed by plant crowns. In a woodland or forest, the canopy is formed by the crowns of trees and sometimes large shrubs. The canopy can be further divided into upper, mid, and lower canopy layers. The tallest plants of a vegetation type form the upper canopy layer. <i>Identifying a patch</i> – A patch is a discrete and mostly continuous area of the ecological community¹⁰, as defined by the key diagnostic characteristics, but can include small-scale (<30m) variations, gaps, and disturbances within this area. The smallest patch size that can be identified is 0.25 ha. Where a larger forest or woodland area has been classified as a different vegetation type (e.g. by state vegetation mapping), localised areas of the ecological community greater than 0.25 ha may be present within this larger area. 10 Note that NSW vegetation assessment tools/methodologies define a patch as including all intact native vegetation, which may include one or more ecological communities that have a gap of less than 100 m from the next area of moderate to good condition native vegetation. <i>Breaks in a patch</i> - When it comes to defining a patch of the ecological community, allowances are made for “breaks” up to 30 m between areas that meet the key diagnostics. Such breaks may be the result of watercourses, tracks, paths, roads, gaps made by exposed areas of soil, leaf litter or cryptogams, and areas of localised variation in vegetation that do not meet the key diagnostics. Such breaks do not significantly alter the overall functionality of the ecological community and thus form a part of the patch. Small breaks (< 30m across) should be included in the calculation of the size of the patch but be taken into account when determining the overall condition of the patch by excluding them from the calculation of patch condition. Where there is a break in the ecological community of 30 m or more (e.g. due to permanent artificial structures, wide roads or other barriers, water bodies or other types of vegetation) then the gap indicates that separate patches are present.		

Appendix G: MNES Assessment

Appendix H: SAIL Assessments

Introduction

The concept of Serious and Irreversible Impacts (SAIL) in the NSW Biodiversity Offset Scheme (BOS) aims to protect threatened species and threatened ecological communities that are most at risk of extinction from potential development impacts or activities.

The consent authority is to consider SAIL on biodiversity values that remain after the measures proposed to be taken to avoid or minimise the impact on biodiversity values of the proposed development or activity (s7.16 of the BC Act). The consent authority must refuse to grant consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in the case of an application for development consent (other than for State significant development), if it is of the opinion that the proposed development is likely to have serious and irreversible impacts on biodiversity values.

There are four (4) key principles provided for in the BC Act (Section 6.5) and clause 6.7 of the BC Regulation that define the assessment of SAIL. These four (4) principles include the following:

- **Principle 1:** *Species or ecological community currently in a rapid rate of decline*
- **Principle 2:** *Species or ecological communities with a very small population size*
- **Principle 3:** *Species or area of ecological community with very limited geographic distribution*
- **Principle 4:** *Species or ecological community that is unlikely to respond to management and is therefore irreplaceable*

The document titled ‘*Guidance to assist a decision-maker to determine a serious and irreversible impact*’ (DPIE 2019) provides additional guidance and defines the criteria for listing biodiversity values at risk of a SAIL (Section 2.3), as outlined below:

“The Department has applied the criteria to all threatened species and threatened ecological communities listed under the BC Act. Entities that meet the criteria under one or more principle are identified as entities at risk of a SAIL in the Threatened Biodiversity Data Collection housed in BioNet and displayed on the Department website”.

Assessment Requirements

To assist the decision-maker to evaluate the extent and severity of the impact on an entity at risk of an SAIL, the BDAR or BCAR must contain details of the assessment of SAILs, in accordance with the criteria set out in Subsection 9.1.1 of the BAM for impacts on each TEC and in Subsection 9.1.2 for each threatened species. All criteria must be addressed for each TEC or threatened species at risk of an SAIL and likely to be impacted by the proposal. The assessment for each entity is provided in the following subsections.

Assessments for one (1) species at risk of SAIL have been completed for this proposal, including:

- *Diuris arenaria* (Sand Doubletail)

Diuris arenaria (Sand Doubletail)

Species Summary

Sand Doubletail is a small ground orchid, known from the Tomaree Peninsula near Newcastle, NSW (TBDC). Found in coastal heath and dry grassy eucalypt forest on sandy flats (TBDC). It is currently known from three main locations, two of which are reserved but occur in areas subject to disturbance (TBDC). Other scattered individuals are known to occur outside reserves (OEH, 2000). Light purple to mauve flowers appear through the months of August to September, and are 20-30 mm wide. Flowering stems can be up to 40 cm high. Usually there are two leaves, 15-50 cm long by 2-6 mm wide, growing from the base of the plant (TBDC).

Surveys completed

The species was recorded during targeted flora surveys undertaken within the Subject Land as part of the original development application (Wild Thing 2020).

Impact to species

A total of 108 specimens of the species was recorded within the Subject Land, outside of the Impact Area – the proposal avoids all direct impacts to the species. As such, no species polygon was created for this Species Credit Species.

Table H1: Impact Assessment for SAIL species - *Diuris arenaria* (Sand Doubletail)

Criteria	Comments
1. Impact Avoidance	
What actions and measures were taken to avoid direct and indirect impacts on the species at risk of an SAIL?	A total of 108 specimens of the species was recorded within the Subject Land, outside of the Impact Area – the proposal avoids all direct impacts to the species
Consistent with Criteria A within the Guidance Document (DPIE 2019): "The action and measures taken to avoid the direct and indirect impact on the potential entity for a SAIL".	
2. Current Population	
Principle 1: species or ecological community currently in a rapid rate of decline.	Definitions: Rapid decline: In accordance with the Guidance to assist a decision-maker to determine a serious and irreversible impact' (DPIE 2019) a rapid decline is defined as when a "species has an observed, estimated, inferred, suspected or projected population reduction of ≥80% in 10 years or three generations (whichever is longer)".

Criteria	Comments
<i>Evidence of rapid decline</i> <i>i. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or</i> <i>ii. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer) as indicated by: an index of abundance appropriate to the species; decline in geographic distribution and/or habitat quality; exploitation; effect of introduced species, hybridisation, pathogens, pollutants, competitors or parasite</i>	<i>i. decline in population of the species in NSW in the past 10 years or three generations (whichever is longer), or</i> As the species is listed as Endangered under the NSW BC Act, it is likely that the species was determined to meet the minimum requirements for eligibility for listing as an Endangered species (>50% reduction). Therefore, it is reasonable to conclude that the species' population has experienced a rapid rate of decline (>50% decline) in NSW over the past 10 years or three generations. • Endangered species - o "large" population reduction in accordance with Subclause 4.2(1b) in the NSW Biodiversity Conservation Regulation 2017. - o A population reduction of >50% (in accordance with the more stringent A2, A3 and A4 of IUCN (2001)) - o A population reduction of >70% (in accordance with the more stringent A2, A3 and A4 of IUCN (2001))
	<i>Conclusion</i> The species meets Principle 1, the evidence available does confirm the species is experiencing a rapid decline.
Principle 2: species or ecological communities with a very small population size. <i>Evidence of small population size</i> <i>i. an estimate of the species' current population size in NSW, and</i> <i>ii. an estimate of the decline in the species' population size in NSW in three years or one generation (whichever is longer), and</i> <i>iii. where such data is available, an estimate of the number of mature individuals in each subpopulation, or the percentage of mature individuals in each subpopulation, or whether the species is likely to undergo extreme fluctuations</i> <i>Consistent with Criteria B within the Guidance Document (DPIE 2019): "The size of the local population directly and indirectly impacted by the</i>	<i>Definitions</i> Very small population size: species within a known population size that is either: • Fewer than 50 mature individuals independent of whether there are any threats, or • Fewer than 250 mature individuals and the species has an observed, estimated or projected continuing decline: Of at least 25% in three years or one generation (whichever is longer) OR; Where the number of mature individuals in each subpopulation is <50 OR; The percentage of mature individuals in one subpopulation is 90-100% OR; The population is subject to extreme fluctuations in the number of individuals Population: means the total number of mature individuals in NSW. Mature individuals: include individuals known, estimated or inferred to be capable of reproduction. Subpopulations: geographically or otherwise distinct groups in the total population between which there is little demographic or genetic exchange <i>i. New South Wales Population</i> The Saving Our Species 2020-2021 annual report card for this species conducts monitoring of individuals at five locations: • Heatherbrae – accidental disturbance occurred, no data. • North Tomaree – population trend unknown • Shoal Bay – population trend unknown • South Tomaree – 273 individuals • Woromi – 4,255 total individuals (3,135 individuals at the primary monitoring site and 1,120 individuals at second monitoring site (this monitoring occurred after a prescribed burn in 2019 which saw an increase of 50%).) <i>i. Decline in NSW Population in three years</i> Data is not available. <i>i. Number of mature individuals in each subpopulation</i> Data is not available

Criteria	Comments
development, clearing or biodiversity certification".	Conclusion The species does not meet Principle 2 and is not characterized as having a very small population in accordance with <i>Guidance to assist a decision-maker to determine a serious and irreversible impact</i> (DPIE 2019).
Principle 3: species or area of ecological community with very limited geographic distribution Evidence of limited geographic range i. extent of occurrence ii. area of occupancy iii. number of threat-defined locations (geographically or ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences), and iv. whether the species' population is likely to undergo extreme fluctuations Consistent with Criteria B within the Guidance Document (DPIE 2019): "The size of the local population directly and indirectly impacted by the development, clearing or biodiversity certification".	Definitions Very limited geographic distribution for a species: species have a very limited geographic distribution are generally known to: • Have an area of occupancy of <10 km² • Have an extent of occurrence of <100 km² • Have at least two of the following three conditions: - Are severely fragmented or only known from one location - Continuing decline - Extreme fluctuations • Inhabit less than or equal to three locations in New South Wales Severe fragmentation; occurs where there are increased extinction risks when most of the individuals of a species are found in relatively small and isolated populations. Decline can be observed, estimated, inferred or projected in any of the following: extent of occurrence; area of occupancy; area, extent and/or quality of habitat; number of locations or subpopulations; number of mature individuals. Fluctuations can be in any of the following: extent of occurrence; area of occupancy; number of locations or subpopulations; number of mature individuals. Location means a geographically or ecologically distinct area in which a single threatening event can rapidly affect all individuals of the taxon present. The size of the location depends on the area covered by the threatening event and may include part of one or many subpopulations. Where a taxon is affected by more than one threatening event, location should be defined by considering the most serious plausible threat (IUCN 2017). i. Extent of Occurrence The extent of occurrence (EOO) was estimated to be 21,426 km². The EOO is estimated based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2017). The species therefore meets the minimum EOO threshold of <100 km² to be considered as having a "Very limited geographic distribution". ii. Area of Occupancy The area of occupancy (AOO) was estimated to be 72 km². This calculation was based on the species occupying 18 (2 km x 2 km) grid cells, the spatial scale of assessment recommended by IUCN (2017). The species meets the minimum AOO threshold of <10km² to be considered as having a "Very limited geographic distribution". As the species meets the two (2) of the criteria above, and inhabits ≤ 3 locations, other factors were not assessed. Other factors In accordance with the Guidelines a species is considered to have a very limited geographic distribution if the species can meet at least two of the following three conditions: • Are severely fragmented or only known from one location – Not assessed

Criteria	Comments
	• Continuing decline – Not assessed • Extreme fluctuations – Not assessed iii. number of threat-defined locations (geographically or ecologically distinct areas in which a single threatening event may rapidly affect all species occurrences) - Not assessed iv. whether the species' population is likely to undergo extreme fluctuations Not assessed. Inhabit less than or equal to three locations in New South Wales The species occurs at ≤ three locations, however other scatter individuals are known to occur. <i>Conclusion</i> The species meets Principle 3 as it is characterised as having a very limited geographic distribution in accordance with Guidance to assist a decision-maker to determine a serious and irreversible impact' (DPIE 2019). The species occurs within ≤ 3 locations and has an AOO < 10km² and EOO < 100 km²).
Principle 4 – species or ecological community that is unlikely to respond to management and is therefore irreplaceable <i>Evidence that the species is unlikely to respond to management</i> i. known reproductive characteristics severely limit the ability to increase the existing population on, or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site. ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site, or	The consideration of whether an entity is unlikely to respond to management encompasses two key elements. 1. The Species – this is based on the best current ecological knowledge of the species including life history traits and characteristics of the species. Some species display particular life history traits that severely limit the species' ability to increase in abundance, these are species with: • Life history traits and/or ecology which is known, but the ability to control key threats at the site scale is negligible. In general, these are species significantly threatened by uncontrollable disease (e.g. frogs are highly threatened by chytrid fungus) • Known reproductive characteristics that severely limit their ability to increase the existing population on, or occupy new habitat at, a stewardship site. In general, these are plants that are sterile or largely clonal with no or very limited capacity to increase in number through seed production and recruitment. 2. Irreplaceable - Whether an impact on an entity is considered irreplaceable takes into account two factors. The first factor is the likely success in achieving gain in condition, abundance or habitat area. For potential species that are identified in criteria 1 and 2 above, the likelihood of achieving an offset gain is extremely low or highly uncertain. The second factor takes into account consideration of impacts on habitat components that cannot readily be re-created. In general, these are impacts on essential habitat such as caves or cliff lines that are used by threatened species.

Criteria	Comments
iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus).	i. known reproductive characteristics severely limit the ability to increase the existing population on or occupy new habitat (e.g. species is clonal) on, a biodiversity stewardship site. Not applicable ii. the species is reliant on abiotic habitats which cannot be restored or replaced (e.g. karst systems) on a biodiversity stewardship site Not applicable iii. life history traits and/or ecology is known but the ability to control key threatening processes at a biodiversity stewardship site is currently negligible (e.g. frogs severely impacted by chytrid fungus). No, the key threatening process is clearing, and this can be controlled on a BSS Conclusion The species does not meet Principle 4 as the species does not meet the minimum requirements of a species that is unlikely to respond to management.
Is the species at risk of Serious and Irreversible Impacts?	The species is at risk of Serious and Irreversible Impacts (SAIL) – the species meets Principle 1 & 3, as such it is considered a species at risk of SAIL.
3. Impacts of the proposal on the SAIL species	
Impact on the species' population i) Estimate of the number of individuals present in the subpopulation on the subject land and as a percentage of the total NSW population ii) an estimate of the number of individuals (mature and immature) to be impacted by the proposal and as a percentage of the total NSW population, iii) if the species' unit of measure is area, provide data on the number of individuals on the site, and the estimated number that will be impacted, along with the area of habitat to be impacted by the proposal.	A total of 108 specimens of the species was recorded within the Subject Land, outside of the Impact Area – the proposal avoids all direct impacts to the species.

Criteria	Comments			
Impact on geographic range i) the area of the species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW ii) the impact on the subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted. ii) to determine if the persisting subpopulation that is fragmented will remain viable, estimate (based on published and unpublished sources such as scientific publications, technical reports, databases or documented field observations) the habitat area required to support the remaining population, and habitat available within dispersal distance, and distance over which genetic exchange can occur (e.g. seed dispersal) and pollination distance for the species iv) to determine changes in threats affecting remaining subpopulations and habitat if the proposed impact proceeds, estimate changes in environmental factors including changes to fire regimes (frequency, severity); hydrology, pollutants; species interactions (increased competition and effects on pollinators or dispersal); fragmentation, increased edge effects, likelihood of disturbance; and disease.	<i>i. area of species' geographic range to be impacted by the proposal in hectares, and a percentage of the total AOO, or EOO within NSW</i> The proposal is unlikely to result in impacts to the species habitat. Area of Occupancy (AOO) and Extent of Occurrence (EOO) have been calculated for the species in NSW in accordance with the <i>IUCN Guidelines for Using the IUCN Red List Categories and Criteria</i> (2022) as detailed above. The results are as follows: Total Extent of Occurrence (EOO) = 21,426 km2 Total Area of Occupancy (AOO) = 72 km2 The impact of the proposed development on the species as a percentage of EOO and AOO are detailed below.			
	Measure	Impact	NSW AOO / percentage impact (%)	NSW EOO / percentage impact (%)
	Habitat Area (ha)	0	72 km2 (<0 %)	21,426 km2 (0%)
	<i>ii. Impact on Subpopulation as either: all individuals will be impacted (subpopulation eliminated); OR impact will affect some individuals and habitat; OR impact will affect some habitat, but no individuals of the species will be directly impacted.</i> The proposed development will not directly impact the species and will avoid impacts to areas of suitable habitat within the powerline easement.			
<i>ii. Fragmentation of Subpopulation</i> The proposed development will avoid impacts to the species and areas of suitable habitat within the powerline easement. Considering the above the proposal is not anticipated to lead to the fragmentation of a subpopulation of the species.				

Criteria	Comments
<i>pathogens and parasites. Where these factors have been considered elsewhere in relation to the target species, the assessor may refer to the relevant sections of the BDAR or BCAR.</i>	
<i>Criteria 1 in the Guidance Document (DPIE 2019); An estimate of the area, or number of populations and size of populations that is in the reserve system in NSW, the IBRA region and the IBRA subregion.</i>	The most recent accessible data from OEH SoS team is from the 2020-2021 annual report card for the species which provides numbers of individuals in the following two locations located within reserves: • South Tomaree – 273 individuals • Woromi – 4,255 total individuals Data was not available for other locations.
4. New Information	
<i>The assessor may also provide new information that can be used to demonstrate that the principle identifying the species as at risk of an SAIL, is inaccurate.</i>	Not Applicable

Conclusion

The proposal will not result in direct impact to *Diuris arenaria*. As such, the proposed SSD application is unlikely to result in a significant impact to this SAIL species.

Appendix I: BDAR requirements compliance

Table 36 Assessment of compliance with BDAR minimum information requirements

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Introduction	Chapters 2 and 3	Information	
		Introduction to the biodiversity assessment including:	–
		☒ brief description of the proposal	<1.1.1>
		☒ identification of subject land boundary, including:	<1.1.2>
		☒ operational footprint	
		☒ construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure	
		☒ general description of the subject land	<1.1.2>
		☒ sources of information used in the assessment, including reports and spatial data	<1.5>
		☒ identification and justification for entering the BOS	<1.2>
		Maps and tables	
		☒ Map of the subject land boundary showing the final proposal footprint, including the construction footprint for any clearing associated with temporary/ancillary construction facilities and infrastructure	<Figure 1>
Landscape	Sections 3.1 and 3.2, Appendix E	Information	
		Identification of site context components and landscape features, including:	–
		☒ general description of subject land topographic and hydrological setting, geology and soils	<1.1.2>
		☒ per cent native vegetation cover in the assessment area (as described in BAM Section 3.2)	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.))	<2.1>
		☒ rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E)	<2.1>
		☒ wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.))	<2.1>
		☒ connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5–6.))	<2.1>
		☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.))	<2.1>
		☒ areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.))	<2.1>
		☒ any additional landscape features identified in any SEARs for the proposal	<2.1>
		☒ NSW (Mitchell) landscape on which the subject land occurs	<2.1>
		☒ details of field reconnaissance undertaken to confirm the extent and condition of landscape features and native vegetation cover (as described in Operational Manual Stage 1 Section 2.4)	<2.1>
		Maps and tables	
		☒ Site Map	<Figure 1>
		☒ Property boundary	
		☒ Boundary of subject land	
		☒ Cadastre of subject land (including labelling of Lot and DP or section plan if relevant)	
		☒ Landscape features identified in BAM Subsection 3.1.3	
		☒ Location Map	<Figure 2>
		☒ Digital aerial photography at 1:1,000 scale or finer	
		☒ Boundary of subject land	
		☒ Assessment area (i.e. the subject land and either 1500 m buffer area or 500 m buffer for linear development)	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ Landscape features identified in BAM Subsection 3.1.3 ☒ Additional detail (e.g. local government area boundaries) relevant at this scale	
		Landscape features identified in BAM Subsection 3.1.3 and to be shown on the Site Map and/or Location Map include:	–
		☒ IBRA bioregions and subregions ☒ rivers, streams and estuaries ☒ wetlands and important wetlands ☒ connectivity of different areas of habitat ☒ karst, caves, crevices, cliffs, rocks and other geological features of significance and if required, soil hazard features ☒ areas of outstanding biodiversity value occurring on the subject land and assessment area ☒ any additional landscape features identified in any SEARs for the proposal ☒ NSW (Mitchell) landscape on which the subject land occurs	<Figure 1 & Figure 2>
		Data	
		☒ All report maps as separate jpeg files	–
		Individual digital shape files of:	–
		☒ subject land boundary	–
		☒ assessment area (i.e. subject land and 1500 m buffer area) boundary	–
		☒ cadastral boundary of subject land	–
		☒ areas of native vegetation cover	–
		☒ landscape features	–
Native vegetation	Chapter 4, Appendix A	Information	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
	and Appendix H		
		☒ Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1)	<4.1 & Figure 18>
		☒ Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2)	<4.1.1>
		☒ Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1)	<2.2.2>
		☒ Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2	<2.2.3>
		☒ Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A)	<Insert relevant reference & Appendix G>
		For each PCT within the subject land, describe:	–
		☒ PCT name and ID	<4.1 & Figure 18>
		☒ vegetation class	<4.1.1>
		☒ extent (ha) within subject land	<2.2.2>
		☒ evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1–3.))	<2.2.3>
		☒ plant species relied upon for identification of the PCT and relative abundance of each species	<Insert relevant reference and Appendix G>
		☒ if relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1–2.))	<4.1 & Figure 18>
		☒ estimate of per cent cleared value of PCT (BAM Subsection 4.2.1(5.))	<4.1.1>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Describe the vegetation integrity assessment of the subject land, including:	–
		☒ identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1)	<4.4 & Figure 21>
		☒ description of vegetation zones within the subject land (as described in Operational Manual Stage 1 Table 2 and Subsection 3.3.2)	<4.4 & Figure 21>
		☒ area (ha) of each vegetation zone	<4.4>
		☒ assessment of patch size (as described in BAM Subsection 4.3.2)	<4.4>
		☒ survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1–2.)	<4.5.1>
		☒ use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.))	<4.5.3>
		Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A):	–
		☒ identify the PCT or vegetation class for which local benchmark data will be applied	<4.5.3>
		☒ identify published sources of local benchmark data (if benchmarks obtained from published sources)	
		☒ describe methods of local benchmark data collection (if reference plots used to determine local benchmark data)	
		☒ provide justification for use of local data rather than BioNet Vegetation Classification benchmark values	<4.5.3>
		☒ provide written confirmation from the decision-maker that they support the use of local benchmark data	<Appendix G>
		Maps and tables	
		☒ Map of native vegetation extent within the subject land at scale not greater than 1:10,000 including identification of all areas of native vegetation including areas that are ground cover only , cleared areas (as described in BAM Section 4.1(1–3.)) and all parts of the subject land that do not contain native vegetation (BAM Subsection 4.1.2)	<Figure 18>
		☒ Map of PCTs within the subject land (as described in BAM Section 4.2(1.))	<Figure 19>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ Map of vegetation zones within the subject land (as described in BAM Subsection 4.3.1)	<Figure 21>
		☒ Map the location of floristic vegetation survey plots and vegetation integrity survey plots relative to PCT boundaries	<Figure 6>
		☒ Map of TEC distribution on the subject land and table of TEC listing, status and area (ha)	<Figure 20 & Table 15>
		☒ Map of patch size locations for each native vegetation zone and table of patch size areas (as described in BAM Subsection 4.3.2)	<Figure 21 & Table 16>
		Table of current vegetation integrity scores for each vegetation zone within the site and including:	–
		☒ composition condition score	<Table 17>
		☒ structure condition score	
		☒ function condition score	
		☒ presence of hollow bearing trees	
		Data	
		☒ All report maps as separate jpeg files	–
		☒ Plot field data (MS Excel format)	
		☒ Plot field datasheets	<Appendix F>
		Digital shape files of:	–
		☒ PCT boundaries within subject land	–
		☒ TEC boundaries within subject land	–
		☒ vegetation zone boundaries within subject land	–
		☒ floristic vegetation survey and vegetation integrity plot locations	–
Threatened species	Chapter 5	Information	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Identify ecosystem credit species likely to occur on the subject land, including:	–
		☒ list of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.))	< >
		☒ justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.1>
		☒ justification for addition of any ecosystem credit species to the list	<5.1.1>
		Identify species credit species likely to occur on the subject land, including:	–
		☒ list of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1)	<Table 19 & Table 20>
		☒ justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2)	<5.1.2>
		☒ justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2)	<5.1.2>
		☒ justification for addition of any species credit species to the list	<5.1.2>
		From the list of candidate species credit species, identify:	–
		☒ species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.))	
		☒ species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.))	
		☒ species for which targeted surveys are to be completed to determine species presence (BAM Subsection 5.2.4(2.b.))	
		☒ species for which an expert report is to be used to determine species presence (BAM Subsection 5.2.4(2.c.))	
		Present the outcomes of species credit species assessments from:	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ threatened species survey (as described in BAM Section 5.2.4)	<Table 21 & Table 22>
		☒ expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Subsection 5.2.4, Section 5.3, Box 3)	
		Where survey has been undertaken include detailed information on:	–
		☒ survey method and effort (as described in BAM Section 5.3)	<Table 21 & Table 22>
		☒ justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the department's taxa-specific survey guides or where no relevant guideline has been published	<5.2>
		☒ timing of survey in relation to requirements in the TBDC or the department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys	<Table 21 & Table 22 & 5.2>
		☒ survey personnel and relevant experience	<Declarations ii>
		☒ describe any limitations to surveys and how these were addressed/overcome	<5.2>
		Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include:	–
		☒ justification of the use of an expert report	
		☒ identify the expert, provide evidence of their expert credentials and departmental approval of expert status	
		☒ all requirements of Box 3 have been addressed in the expert report	
		Where use of local data is proposed (BAM Subsection 1.4.2):	–
		☒ identify relevant species	
		☒ identify data to be amended	
		☒ identify source of information for local data, e.g. published literature, additional survey data, etc.	
		☒ justify use of local data in preference to VIS Classification or TBDC data	

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ provide written confirmation from the decision-maker that they support the use of local data	<Appendix G>
		Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that:	–
		☒ the unit of measure for each species is documented	<Table 23 & Table 24>
		for species assessed by area:	–
		☒ the polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5)	<Figure 25>
		☒ a description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied	<5.4>
		for species assessed by counts of individuals:	–
		☒ the number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.))	<5.4>
		☒ the method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken	<5.4>
		☒ the polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject land	<Figure 25>
		☒ Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4)	<Table 23 & Table 24>
		Maps and tables	
		☒ Table showing ecosystem credit species in accordance with BAM Subsection 5.1.1, and identifying:	
		☒ the ecosystem credit species removed from the list	<Table 18>
		☒ the sensitivity to gain class of each species	<Table 18>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☑ Table detailing species credit species in accordance with BAM Section 5.2 and identifying:	<Table 19 & Table 20>
		☑ the species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or microhabitat features are not present	<Table 19 & Table 20>
		☑ the candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map	
		☑ Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4)	<5.4 & Table 23 & Table 24>
		☑ Map indicating the GPS coordinates of all individuals of each species recorded within the subject land and the species polygon for each species (as described in BAM Subsection 5.2.5)	<Figure 25>
		Data	
		☑ Digital shape files of suitable habitat identified for survey for each candidate species credit species	–
		☑ Survey locations including GPS coordinates of any plots, transects, grids	
		☑ Digital shape files of each species polygon including GPS coordinates of located individuals	–
		☑ Species polygon map in jpeg format	–
		☑ Expert reports and any supporting data used to support conclusions of the expert report	
		☑ Field datasheets detailing survey information including prevailing conditions, date, time, equipment used, etc.	
Prescribed impacts	Chapter 6	Information	
		Identify potential prescribed biodiversity impacts on threatened entities, including:	–
		☑ karst, caves, crevices, cliffs, rocks and other geological features of significance (as described in BAM Subsection 6.1.1)	<Table 25>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ occurrences of human-made structures and non-native vegetation (as described in BAM Subsection 6.1.2) ☒ corridors or other areas of connectivity linking habitat for threatened entities (as described in BAM Subsection 6.1.3) ☒ waterbodies or any hydrological processes that sustain threatened entities (as described in BAM Subsection 6.1.4)	
		☒ protected animals that may use the proposed wind farm development site as a flyway or migration route (as described in BAM Subsection 6.1.5)	
		☒ where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community (as described in BAM Subsection 6.1.6)	<Table 25>
		☒ Identify a list of threatened entities that may be dependent upon or may use habitat features associated with any of the prescribed impacts	
		☒ Describe the importance of habitat features to the species including, where relevant, impacts on life cycle or movement patterns (e.g. Subsection 6.1.3)	<6>
		Where the proposed development is for a wind farm:	–
		☒ identify a candidate list of protected animals that may use the development site as a flyway or migration route, including: resident threatened aerial species, resident raptor species and nomadic and migratory species that are likely to fly over the proposal area (as described in BAM Subsection 6.1.5)	
		☒ provide details of targeted survey for candidate species of wind farm developments undertaken in accordance with BAM Subsection 6.1.5(2–3.)	
		☒ predict the habitual flight paths for nomadic and migratory species likely to fly over the subject land and map the likely habitat for resident threatened aerial and raptor species (BAM Subsection 6.1.5(4.))	<Figure 1 & Figure 2>
		Where the proposal may result in vehicle strike:	–
		☒ identify a list of threatened fauna or protected fauna species that are part of a TEC and at risk of vehicle strike due to the proposal	<Table 25>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		Maps and tables	
		☒ Map showing location of any prescribed impact features (i.e. karst, caves, crevices, cliffs, rocks, human-made structures, etc.)	<Figure 1 & Figure 2>
		☒ Map showing location of potential vehicle strike locations	<Figure 1>
		☒ Maps of habitual flight paths for nomadic and migratory species likely to fly over the site and maps of likely habitat for threatened aerial species resident on the site (for wind farm developments only)	<Figure 1 & Figure 2>
		Data	
		☒ Digital shape files of prescribed impact feature locations	–
		☒ Prescribed impact features map in jpeg format	–
Avoid and minimise impacts	Chapter 7	Information	
		Demonstration of efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with Chapter 7, including an analysis of alternative:	–
		☒ modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology	
		☒ routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route	
		☒ alternative locations that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed location	
		☒ alternative sites within a property on which the proposal is located that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed site	
		☒ Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design (as described in BAM Sections 7.1 and 7.2)	
		☒ Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal (as described in BAM Subsection 7.2.1(3.))	<7>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ Detail measures or options considered but not implemented because they are not feasible and/or practical (e.g. due to site constraints)	
		Maps and tables	
		☒ Table of measures to be implemented to avoid and minimise the impacts of the proposal, including action, outcome, timing and responsibility	<Table 29>
		☒ Map of alternative footprints considered to avoid or minimise impacts on biodiversity values; and of the final proposal footprint, including construction and operation	<Figure 3>
		☒ Maps demonstrating indirect impact zones where applicable	<Figure 30>
		Data	
		Digital shape files of:	–
		☒ alternative and final proposal footprint	–
		☒ direct and indirect impact zones	–
		☒ Maps in jpeg format	–
Assessment of impacts	Chapter 8, Sections 8.1 and 8.2	Information	
		☒ Determine the impacts on native vegetation and threatened species habitat, including a description of direct impacts of clearing of native vegetation, threatened ecological communities and threatened species habitat (as described in BAM Section 8.1)	<Table 26>
		Assessment of indirect impacts on vegetation and threatened species and their habitat including (as described in BAM Section 8.2):	–
		☒ description of the nature, extent, frequency, duration and timing of indirect impacts of the proposal	<Table 28>
		☒ documenting the consequences to vegetation and threatened species and their habitat including evidence-based justifications	<8.2>
		☒ reporting any limitations or assumptions, etc. made during the assessment	<8.2>

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ identification of the threatened entities and their habitat likely to be affected	<Table 28>
		Assessment of prescribed biodiversity impacts (as described in BAM Section 8.3) including:	–
		assessment of the nature, extent frequency , duration and timing of impacts on the habitat of threatened species or ecological communities associated with:	–
		☒ karst, caves, crevices, cliffs, rocks and other features of geological significance	<8.3.1>
		☒ human-made structures	<8.3.1>
		☒ non-native vegetation	<8.3.1>
		☒ connectivity of different areas of habitat of threatened species that facilitates the movement of those species across their range	<8.3.1>
		☒ movement of threatened species that maintains their life cycle	<8.3.1>
		☒ water quality, waterbodies and hydrological processes that sustain threatened species and threatened ecological communities	<8.3.3>
		☒ assessment of the impacts of wind turbine strikes on protected animals	
		☒ assessment of the impacts of vehicle strikes on threatened species of animals or on animals that are part of a TEC	<8.3.1>
		☒ evaluate the consequences of prescribed impacts	<1.1>
		☒ describe impacts that are uncertain	<8.2 & 1.1>
		☒ document limitations to data, assumptions and predictions	<8.2 & 1.1>
		Maps and tables	
		☒ Table showing change in vegetation integrity score for each vegetation zone as a result of identified impacts	<Table 27>
		Data	
		N/A	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Mitigation and management of impacts	Chapter 8, Sections 8.4 and 8.5	Information	
		Identification of measures to mitigate or manage impacts in accordance with the recommendations in BAM Sections 8.4 and 8.5 including:	–
		☒ techniques, timing, frequency and responsibility	
		☒ identify measures for which there is risk of failure	
		☒ evaluate the risk and consequence of any residual impacts	
		☒ document any adaptive management strategy proposed	<0>
		Identification of measures for mitigating impacts related to:	–
		☒ displacement of resident fauna (as described in BAM Subsection 8.4.1(2.))	
		☒ indirect impacts on native vegetation and habitat (as described in BAM Subsection 8.4.1(3.))	
		☒ mitigating prescribed biodiversity impacts (as described in BAM Subsection 8.4.2)	
		☒ Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain (BAM Section 8.5)	<0>
		Maps and tables	
		☒ Table of measures to be implemented before, during and after construction to mitigate and manage impacts of the proposal, including action, outcome, timing and responsibility	
		Data	
		N/A	–
Impact summary	Chapter 9	Information	
		Identification and assessment of impacts on TECs and threatened species that are at risk of a serious and irreversible impacts (SAII, in accordance with BAM Section 9.1) including:	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ addressing all criteria in Subsection 9.1.1 for each TEC listed as at risk of an SAI present on the subject land	
		☒ for each TEC, report the extent of the TEC in NSW	
		☒ addressing all criteria in Subsection 9.1.2 for each threatened species at risk of an SAI present on the subject land	
		☒ for each threatened species, report the population size in NSW	
		☒ documenting assumptions made and/or limitations to information	
		☒ documenting all sources of data, information, references used or consulted	
		☒ clearly justifying why any criteria could not be addressed	
		☒ Identification of impacts requiring offset in accordance with BAM Section 9.2	<Table 31 & Table 32>
		☒ Identification of impacts not requiring offset in accordance with BAM Subsection 9.2.1(3.)	
		☒ Identification of areas not requiring assessment in accordance with BAM Section 9.3	<Table 33>
		Maps and tables	
		☒ Map showing the extent of TECs at risk of an SAI within the subject land	<Figure 31>
		☒ Map showing location of threatened species at risk of an SAI within the subject land	<Figure 31>
		Map showing location of:	–
		☒ impacts requiring offset	<Figure 32>
		☒ impacts not requiring offset	<Figure 32>
		☒ areas not requiring assessment	<Figure 32>
		Data	
		Digital shape files of:	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
		☒ extent of TECs at risk of an SAIL within the subject land	–
		☒ location of threatened species at risk of an SAIL within the subject land	–
		☒ boundary of impacts requiring offset	–
		☒ boundary of impacts not requiring offset	–
		☒ boundary of areas not requiring assessment	–
		☒ Maps in jpeg format	–
Impact summary	Chapter 10	Information	
		Ecosystem credits and species credits that measure the impact of the development on biodiversity values, including:	–
		☒ future vegetation integrity score for each vegetation zone within the subject land (Equation 25 and Equation 26 in BAM Appendix H)	<Table 31>
		☒ change in vegetation integrity score (BAM Subsection 8.1.1)	
		☒ number of required ecosystem credits for the direct impacts of the proposal on each vegetation zone within the subject land (BAM Subsection 10.1.2)	
		☒ biodiversity risk weighting for each	<Table 31 & Table 32>
		☒ number of required species credits for each candidate threatened species that is directly impacted on by the proposal (BAM Subsection 10.1.3)	<Table 32>
		Maps and tables	
		☒ Table of PCTs requiring offset and the number of ecosystem credits required	<Table 31>
		☒ Table of threatened species requiring offset and the number of species credits required	<Table 32>
		Data	
		☒ Submitted proposal in the BAM Calculator	–

BDAR section	BAM ref.	BAM requirement	Page reference(s) in the BDAR
Biodiversity credit report	Chapter 10	Information	
		☒ Description of credit classes for ecosystem credits and species credits at the development or clearing site or land to be biodiversity certified (BAM Section 10.2)	<Table 34 & Table 35>
		☒ BAM credit report in pdf format	<Appendix H>
		Maps and tables	
		☒ Table of credit class and matching credit profile	<Table 35>
		Data	
		☒ BAM credit report in pdf format	<Appendix H>

Appendix J: Vegetation survey data

Table 37 Vegetation survey data and locations

plot	pct	area	patchsize	condition class	zone	easting	northing	bearing	compTree	compShrub	compGrass	compForbs	compFerns	compOther	strucTree	strucShrub	strucGrass	strucForbs	strucFerns	strucOther	funLargeTrees	funHollowtrees	funLitterCover	funLenFallenLogs	funTreeStem5to9	funTreeStem10to19	funTreeStem20to29	funTreeStem30to49	funTreeStem50to79	funTreeRegen	funHighThreatExotic	Plot-based vegetation survey2	Vegetation integrity survey2
1	3544	22.99	101	Mod-Good	56	406289	6373302	166	3	8	3	3	1	5	40.0	4.0	1.1	3.2	85.0	0.5	6.0	9.0	94.0	34.0	1	1	1	1	6	1	0	☒ Yes	☒ Yes
2	3544	22.99	101	Mod-Good	56	406442	6373113	320	3	7	3	4	1	8	41.0	8.8	5.7	0.5	70.0	0.8	6.0	9.0	92.0	33.0	1	1	1	1	4	1	0	☒ Yes	☒ Yes
4	3544	22.99	101	Mod-Good	56	406546	6373376	21	2	6	2	3	1	6	33.0	6.6	0.6	0.7	70.0	0.7	3.0	8.0	90.0	39.0	1	1	1	1	2	1	0	☒ Yes	☒ Yes
7	3354	22.99	101	Mod-Good	56	406833	6373513	240	3	8	1	2	1	2	13.0	4.8	60.0	30.0	85.0	5.1	4.0	5.0	90.0	49.3	1	1	1	1	0	1	27	☒ Yes	☒ Yes
3	3544	1.00	101	Cleared	56	406583	6373283	105	1	6	4	3	1	0	0.1	1.1	0.9	0.3	90.0	0.0	0.0	0.0	38.0	0.0	0	0	0	0	0	0	0.2	☒ Yes	☒ Yes
5	4006	0.00	101	Moderate	56	406559	6373587	222	2	3	1	2	2	2	60.0	4.1	90.0	0.2	0.3	10.5	14.0	3.0	92.0	12.0	1	1	1	1	11	1	0	☒ Yes	☒ Yes
6	0	2.10	101	Exotic Grassland	56	406721	6373190	37	0	0	1	2	0	0	0.0	0.0	2.0	0.2	0.0	0.0	-	0.0	50.0	0.0	0	0	0	0	0	0	95.2	☒ Yes	☒ Yes
8	0	2.10	101	Exotic Grassland	56	406782	6373419	165	0	0	1	0	0	0	0	0	25	0	0	0	-	0	19.6	0	0	0	0	1	0	0	66.3	☒ Yes	☒ Yes

Appendix K: Hollow Bearing Tree Data

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1	<i>Eucalyptus pilularis</i>	406355	6372951	0.9	27			1	1	2
2	<i>Eucalyptus pilularis</i>	406351	6372961	0.6	20				1	1
3	<i>Angophora costata</i>	406375	6372969	0.5	18		1	1	1	3
4	<i>Dead Stag</i>	406378	6372966	0.35	5	1	1			2
5	<i>Eucalyptus pilularis</i>	406381	6372964	1.2	32	2	3		4	9
6	<i>Dead Stag</i>	406392	6372974	0.5	20	3	3			6
7	<i>Dead Stag</i>	406390	6372980	0.45	18		1			1
8	<i>Angophora costata</i>	406399	6372983	0.65	20				1	1
9	<i>Angophora costata</i>	406400	6372983	0.6	27			1		1
10	<i>Angophora costata</i>	406399	6372992	0.7	20			1		1
11	<i>Eucalyptus pilularis</i>	406389	6373003	0.9	30		3	3	2	8
12	<i>Eucalyptus pilularis</i>	406401	6373020	0.7	30			1	1	2
13	<i>Eucalyptus pilularis</i>	406408	6373017	0.5	25		1	1	1	3
14	<i>Eucalyptus pilularis</i>	406422	6373017	0.6	25		2	1	1	4
15	<i>Angophora costata</i>	406423	6373024	0.6	25				1	1
16	<i>Angophora costata</i>	406426	6373024	0.7	25				2	2
17	<i>Eucalyptus pilularis</i>	406418	6373051	0.6	25				1	1
18	<i>Eucalyptus pilularis</i>	406420	6373052	0.45	18		1		1	2
19	<i>Eucalyptus pilularis</i>	406409	6373056	0.8	25	2			1	3
20	<i>Eucalyptus pilularis</i>	406400	6373061	0.9	25	1				1
21	<i>Angophora costata</i>	406401	6373067	0.5	16		1			1
22	<i>Eucalyptus pilularis</i>	406431	6373124	0.6	20			2		2
23	<i>Eucalyptus pilularis</i>	406427	6373123	0.45	20			1	1	2
24	<i>Eucalyptus pilularis</i>	406418	6373115	0.45	17		1			1
25	<i>Eucalyptus pilularis</i>	406427	6373109	0.8	25		1			1
26	<i>Eucalyptus pilularis</i>	406435	6373106	0.5	22	2				2
27	<i>Eucalyptus pilularis</i>	406438	6373095	0.5	25		3	2	2	7
28	<i>Angophora costata</i>	406440	6373093	0.4	17				1	1
29	<i>Angophora costata</i>	406443	6373083	0.45	20				1	1
30	<i>Angophora costata</i>	406447	6373080	0.8	25			2	2	4
31	<i>Eucalyptus pilularis</i>	406422	6373086	1	30			2	2	4
32	<i>Angophora costata</i>	406424	6373079	0.4	17				1	1
33	<i>Angophora costata</i>	406424	6373064	0.4	17				1	1
34	<i>Eucalyptus pilularis</i>	406430	6373058	0.6	25			4		4
35	<i>Dead Stag</i>	406430	6373054	0.4	5			1		1
36	<i>Eucalyptus pilularis</i>	406441	6373049	0.4	15				1	1
37	<i>Angophora costata</i>	406447	6373029	0.8	17			1	2	3
38	<i>Eucalyptus pilularis</i>	406453	6373010	0.7	25		1	2	2	5

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
39	<i>Angophora costata</i>	406432	6372996	0.7	30		2	2		4
40	<i>Eucalyptus pilularis</i>	406431	6372987	0.7	25			1	1	2
41	<i>Eucalyptus pilularis</i>	406421	6372984	0.8	30	2		1	1	4
42	<i>Eucalyptus pilularis</i>	406415	6372964	0.9	25		1	2		3
43	<i>Eucalyptus pilularis</i>	406452	6372964	0.7	18				1	1
44	<i>Eucalyptus pilularis</i>	406461	6372971	0.8	22				1	1
45	<i>Eucalyptus pilularis</i>	406459	6372979	0.6	20				1	1
46	<i>Eucalyptus pilularis</i>	406461	6372983	0.6	20		1	1		2
47	<i>Angophora costata</i>	406454	6372992	0.7	18		1		1	2
48	<i>Eucalyptus pilularis</i>	406448	6372993	0.55	22		1	2		3
49	<i>Eucalyptus pilularis</i>	406478	6373008	0.5	20		2			2
50	<i>Eucalyptus pilularis</i>	406487	6373019	0.8	20		2	2	1	5
51	<i>Eucalyptus pilularis</i>	406487	6373023	0.45	15			1	1	2
52	<i>Eucalyptus pilularis</i>	406486	6373033	0.5	16	1	1			2
53	<i>Eucalyptus pilularis</i>	406477	6373029	0.8	20			1	1	2
54	<i>Eucalyptus pilularis</i>	406464	6373027	0.3	10		1	1		2
55	<i>Eucalyptus pilularis</i>	406451	6373028	0.5	20				1	1
56	<i>Eucalyptus pilularis</i>	406464	6373054	0.6	20			1		1
57	<i>Eucalyptus pilularis</i>	406478	6373065	0.6	18		1	1		2
58	<i>Eucalyptus pilularis</i>	406476	6373067	0.7	19			1		1
59	<i>Eucalyptus pilularis</i>	406480	6373069	0.5	20				1	1
60	<i>Eucalyptus pilularis</i>	406475	6373074	0.6	20				1	1
61	<i>Angophora costata</i>	406472	6373080	0.6	20					0
62	<i>Angophora costata</i>	406447	6373060	0.6	20			3	2	5
63	<i>Eucalyptus pilularis</i>	406439	6373056	0.75	22			2	1	3
64	<i>Eucalyptus pilularis</i>	406435	6373087	0.5	18		1	1		2
65	<i>Eucalyptus pilularis</i>	406457	6373095	0.7	25			1		1
66	<i>Angophora costata</i>	406454	6373092	0.5	18			1		1
67	<i>Angophora costata</i>	406457	6373088	0.45	17		1	2		3
68	<i>Eucalyptus pilularis</i>	406493	6373121	0.55	18				1	1
69	<i>Eucalyptus pilularis</i>	406471	6373112	0.7	22		2		1	3
70	<i>Eucalyptus pilularis</i>	406461	6373109	0.5	18					0
71	<i>Angophora costata</i>	406457	6373117	0.55	18				1	1
72	<i>Eucalyptus pilularis</i>	406466	6373125	0.7	20			1	1	2
73	<i>Eucalyptus pilularis</i>	406459	6373127	0.6	22				2	2
74	<i>Angophora costata</i>	406463	6373128	0.45	15			1	1	2
75	<i>Eucalyptus pilularis</i>	406467	6373147	1	25	1	3	2		6
76	<i>Eucalyptus pilularis</i>	406439	6373142	0.7	17				1	1
77	<i>Eucalyptus pilularis</i>	406423	6373149	1	17	3	3		2	8
78	<i>Angophora costata</i>	406418	6373144	0.6	17		2	2		4

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
79	<i>Eucalyptus pilularis</i>	406411	6373124	0.9	22		1		1	2
80	<i>Angophora costata</i>	406444	6373118	0.65	22			1	1	2
81	<i>Eucalyptus pilularis</i>	406404	6373107	0.8	15	1				1
82	<i>Eucalyptus pilularis</i>	406398	6373103	0.4	17	1				1
83	<i>Eucalyptus pilularis</i>	406394	6373108	0.5	18			1		1
84	<i>Angophora costata</i>	406388	6373113	0.7	22			1	1	2
85	<i>Eucalyptus pilularis</i>	406367	6373127	0.5	20	1	2	1		4
86	<i>Eucalyptus pilularis</i>	406356	6373110	0.95	30		2	1		3
87	<i>Eucalyptus pilularis</i>	406339	6373109	0.8	25	1		2	2	5
88	<i>Eucalyptus pilularis</i>	406334	6373095	0.7	25		2		1	3
89	<i>Angophora costata</i>	406337	6373091	0.65	22		1	1		2
90	<i>Angophora costata</i>	406339	6373086	0.45	20				1	1
91	<i>Angophora costata</i>	406338	6373086	0.3	10			1		1
92	<i>Eucalyptus pilularis</i>	406341	6373083	0.6	20		2	2	2	6
93	<i>Angophora costata</i>	406350	6373082	0.4	12		1		2	3
94	<i>Eucalyptus pilularis</i>	406351	6373082	1	22		2	3	2	7
95	<i>Eucalyptus pilularis</i>	406364	6373068	0.75	20	1	3	1		5
96	<i>Eucalyptus pilularis</i>	406366	6373065	1	25		2			2
97	<i>Angophora costata</i>	406365	6373049	0.4	18		1			1
98	<i>Angophora costata</i>	406363	6373038	0.6	20				1	1
99	<i>Eucalyptus pilularis</i>	406372	6373047	0.5	20			2	1	3
100	<i>Angophora costata</i>	406374	6373047	0.3	13			1		1
101	<i>Eucalyptus pilularis</i>	406376	6373044	0.6	20			2	2	4
102	<i>Eucalyptus pilularis</i>	406384	6373050	0.8	25		1	2	1	4
103	<i>Eucalyptus pilularis</i>	406380	6373089	0.6	25		1	1	1	3
104	<i>Eucalyptus pilularis</i>	406378	6373091	0.6	25		1	2		3
105	<i>Angophora costata</i>	406381	6373094	0.45	18			1	1	2
106	Dead Stag	406380	6373103	0.4	15				3	3
107	<i>Eucalyptus pilularis</i>	406397	6373086	0.7	25		1	3		4
108	<i>Eucalyptus pilularis</i>	406380	6373029	0.6	22		1	1		2
109	<i>Eucalyptus pilularis</i>	406361	6372983	0.9	25			2	2	4
110	<i>Eucalyptus pilularis</i>	406354	6372977	0.8	22	1	1	2		4
111	<i>Eucalyptus pilularis</i>	406379	6372923	1	30		3	1		4
112	<i>Eucalyptus pilularis</i>	406373	6372914	0.4	15		1			1
113	<i>Angophora costata</i>	406378	6372909	0.45	16				1	1
114	<i>Eucalyptus pilularis</i>	406394	6372892	1.1	18	1	2			3
115	<i>Eucalyptus pilularis</i>	406400	6372913	0.8	17	2				2
116	<i>Eucalyptus pilularis</i>	406405	6372901	0.4	15			1		1
117	<i>Eucalyptus pilularis</i>	406418	6372912	0.9	20		1	2		3
118	Dead Stag	406420	6372904	0.35	4	1				1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
119	<i>Eucalyptus pilularis</i>	406427	6372917	0.6	20			2		2
120	<i>Eucalyptus pilularis</i>	406432	6372914	0.65	20	1	2	1		4
121	<i>Eucalyptus pilularis</i>	406436	6372917	0.8	22		1		1	2
122	<i>Eucalyptus pilularis</i>	406455	6372915	0.9	25		4	3	1	8
123	<i>Eucalyptus pilularis</i>	406460	6372903	0.7	22			2	2	4
124	<i>Eucalyptus pilularis</i>	406440	6372898	0.5	20			2	1	3
125	<i>Eucalyptus pilularis</i>	406440	6372889	0.5	12		2			2
126	<i>Eucalyptus pilularis</i>	406440	6372886	0.65	20			1	1	2
127	<i>Eucalyptus pilularis</i>	406455	6372874	0.75	22	1		1	2	4
128	<i>Eucalyptus pilularis</i>	406459	6372877	0.4	18		2			2
129	<i>Eucalyptus pilularis</i>	406459	6372862	0.8	22	1	2		1	4
130	<i>Angophora costata</i>	406464	6372873	0.4	10				1	1
131	<i>Eucalyptus pilularis</i>	406465	6372879	0.5	17	1	1	1	1	4
132	<i>Eucalyptus pilularis</i>	406473	6372883	0.4	12			1	1	2
133	<i>Eucalyptus pilularis</i>	406470	6372897	0.6	20			1		1
134	<i>Eucalyptus pilularis</i>	406473	6372901	0.6	20			1		1
135	<i>Eucalyptus pilularis</i>	406470	6372907	0.7	20		3	1	1	5
136	<i>Eucalyptus pilularis</i>	406471	6372920	0.6	20		2		1	3
137	<i>Eucalyptus pilularis</i>	406469	6372936	1	22			1	1	2
138	<i>Eucalyptus pilularis</i>	406485	6372933	0.6	18	2				2
139	<i>Angophora costata</i>	406492	6372920	0.4	12			1		1
140	<i>Eucalyptus pilularis</i>	406494	6372920	0.5	18				1	1
141	<i>Eucalyptus pilularis</i>	406498	6372919	0.5	18			2		2
142	<i>Eucalyptus pilularis</i>	406493	6372909	0.8	18				1	1
143	<i>Eucalyptus pilularis</i>	406493	6372907	0.5	18		1	1	1	3
144	<i>Eucalyptus pilularis</i>	406482	6372913	0.45	20			1		1
145	<i>Eucalyptus pilularis</i>	406483	6372916	0.6	20			2		2
146	<i>Eucalyptus pilularis</i>	406482	6372918	0.6	20				1	1
147	<i>Angophora costata</i>	406408	6372876	0.7	10	1	1			2
148	<i>Eucalyptus pilularis</i>	406413	6372872	0.6	15	1				1
149	<i>Angophora costata</i>	406416	6372867	0.45	16				1	1
150	<i>Eucalyptus pilularis</i>	406426	6372842	0.5	18				1	1
151	<i>Angophora costata</i>	406438	6372820	0.7	18			1	2	3
152	<i>Eucalyptus pilularis</i>	406467	6372850	1.2, 0.9	25	1	2	3		6
153	<i>Eucalyptus pilularis</i>	406464	6372836	0.65	25			3	3	6
154	<i>Eucalyptus pilularis</i>	406471	6372836	1	25			2	3	5
155	<i>Eucalyptus pilularis</i>	406486	6372859	0.7	25				1	1
156	<i>Angophora costata</i>	406490	6372859	0.4	17				1	1
157	<i>Angophora costata</i>	406499	6372857	0.75	16	1				1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
158	<i>Angophora costata</i>	406495	6372863	0.8	18	1		1		2
159	<i>Eucalyptus pilularis</i>	406478	6372872	0.5	20			1		1
160	<i>Eucalyptus pilularis</i>	406479	6372874	0.5	22	1	1			2
161	<i>Dead Stag</i>	406478	6372875	0.3	7	2				2
162	<i>Eucalyptus pilularis</i>	406476	6372870	0.65	20			2	1	3
163	<i>Eucalyptus pilularis</i>	406478	6372863	0.5	18	1				1
164	<i>Angophora costata</i>	406483	6372866	0.4	18				1	1
165	<i>Eucalyptus pilularis</i>	406476	6372867	0.45	18			1		1
166	<i>Eucalyptus pilularis</i>	406471	6372869	0.5	20			1		1
167	<i>Eucalyptus pilularis</i>	406488	6372881	0.55	20			1	1	2
168	<i>Eucalyptus pilularis</i>	406510	6372876	0.65	20		1	1	1	3
169	<i>Eucalyptus pilularis</i>	406510	6372888	0.9	18	1				1
170	<i>Eucalyptus pilularis</i>	406517	6372850	0.7	16			1	1	2
171	<i>Angophora costata</i>	406539	6372857	0.7	20	3			3	6
172	<i>Angophora costata</i>	406531	6372860	0.7	18			1	1	2
173	<i>Angophora costata</i>	406522	6372858	0.4	17				1	1
174	<i>Eucalyptus pilularis</i>	406523	6372873	0.45	17				2	2
175	<i>Eucalyptus pilularis</i>	406522	6372876	0.55	20			1		1
176	<i>Eucalyptus pilularis</i>	406524	6372881	0.5	18		1			1
177	<i>Dead Stag</i>	406531	6372885	0.5	6	1				1
178	<i>Eucalyptus pilularis</i>	406536	6372872	0.65	20	1	1			2
179	<i>Angophora costata</i>	406443	6372817	0.5	18			3		3
180	<i>Angophora costata</i>	406460	6372822	0.4	18				2	2
181	<i>Eucalyptus pilularis</i>	406475	6372829	1.2	20	1		1		2
182	<i>Eucalyptus pilularis</i>	406490	6372837	0.7	20		1	1	2	4
183	<i>Angophora costata</i>	406496	6372837	0.65	16	1		1		2
184	<i>Angophora costata</i>	406509	6372848	0.5	18		1	1	1	3
185	<i>Eucalyptus pilularis</i>	406512	6372847	0.55	20			3		3
186	<i>Eucalyptus pilularis</i>	406535	6372860	0.9	16	2		1		3
187	<i>Eucalyptus pilularis</i>	406549	6372870	0.8	20				1	1
188	<i>Eucalyptus pilularis</i>	406543	6372879	1	18	1	2	1		4
189	<i>Eucalyptus pilularis</i>	406541	6372887	0.9	20	1	2	1		4
190	<i>Eucalyptus pilularis</i>	406534	6372890	0.6	20					0
191	<i>Angophora costata</i>	406528	6372887	0.45	18		1	2	1	4
192	<i>Angophora costata</i>	406525	6372887	0.5	18				3	3
193	<i>Angophora costata</i>	406551	6372888	0.45	16			1		1
194	<i>Eucalyptus pilularis</i>	406554	6372888	0.55	16		3	1		4
195	<i>Angophora costata</i>	406564	6372886	0.5	18			1	1	2
196	<i>Eucalyptus pilularis</i>	406563	6372877	0.7	18				1	1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
197	<i>Melaleuca quinquenervia</i>	406564	6372866	0.65	20		1		1	2
198	<i>Eucalyptus pilularis</i>	406569	6372896	0.65	20	1	1			2
199	<i>Eucalyptus pilularis</i>	406565	6372900	0.5	18			1		1
200	<i>Dead Stag</i>	406562	6372900	0.45	16	1	1	2	1	5
201	<i>Eucalyptus pilularis</i>	406562	6372900	0.6	18		1			1
202	<i>Eucalyptus pilularis</i>	406547	6372901	0.5	16		2	2		4
203	<i>Angophora costata</i>	406547	6372902	0.4	16			1	1	2
204	<i>Angophora costata</i>	406567	6372907	0.15	8				1	1
205	<i>Eucalyptus pilularis</i>	406574	6372904	0.6	18			2	2	4
206	<i>Eucalyptus pilularis</i>	406579	6372902	0.6	18		1			1
207	<i>Angophora costata</i>	406583	6372903	0.45	16			1	1	2
208	<i>Eucalyptus pilularis</i>	406597	6372903	1.1	22	2				2
209	<i>Angophora costata</i>	406611	6372918	0.5	18			2	2	4
210	<i>Eucalyptus pilularis</i>	406612	6372918	0.9	20	1	1	2		4
211	<i>Melaleuca quinquenervia</i>	406626	6372926	0.7	20		1	1	2	4
212	<i>Melaleuca quinquenervia</i>	406632	6372932	0.6	18		1			1
213	<i>Melaleuca quinquenervia</i>	406639	6372933	0.5	18			1		1
214	<i>Eucalyptus pilularis</i>	406643	6372939	0.55	16		2			2
215	<i>Eucalyptus pilularis</i>	406641	6372945	0.55	18		1			1
216	<i>Eucalyptus pilularis</i>	406644	6372951	0.5	14	2		1		3
217	<i>Eucalyptus pilularis</i>	406648	6372963	1.3	20	2	1	1	1	5
218	<i>Angophora costata</i>	406637	6372942	0.45	18				2	2
219	<i>Eucalyptus pilularis</i>	406634	6372941	0.8	20				2	2
220	<i>Eucalyptus pilularis</i>	406620	6372939	1	22		1	1		2
221	<i>Eucalyptus pilularis</i>	406604	6372936	1.1	22	1	4	3		8
222	<i>Eucalyptus pilularis</i>	406597	6372947	0.9	20			2		2
223	<i>Angophora costata</i>	406579	6372938	0.6	20			1		1
224	<i>Eucalyptus pilularis</i>	406581	6372931	0.6	20			2		2
225	<i>Angophora costata</i>	406590	6372926	0.6	16			3	1	4
226	<i>Angophora costata</i>	406603	6372925	0.45	18			2	1	3
227	<i>Eucalyptus pilularis</i>	406585	6372913	0.45	18			3		3
228	<i>Eucalyptus pilularis</i>	406572	6372920	0.5	20	1		1	1	3
229	<i>Eucalyptus pilularis</i>	406560	6372918	0.55	20		2	5	2	9
230	<i>Angophora costata</i>	406558	6372915	0.5	20			1	2	3
231	<i>Dead Stag</i>	406557	6372918	0.5	6	1				1
232	<i>Angophora costata</i>	406553	6372919	0.45	16				1	1
233	<i>Eucalyptus pilularis</i>	406548	6372923	0.6	20			2	1	3

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
234	<i>Angophora costata</i>	406544	6372921	0.5	18			2	1	3
235	<i>Angophora costata</i>	406543	6372920	0.4	12		1		1	2
236	<i>Angophora costata</i>	406540	6372921	0.4	8			2		2
237	<i>Dead Stag</i>	406537	6372934	0.45	10		3	2		5
238	<i>Dead Stag</i>	406533	6372929	0.4	8	1	2			3
239	<i>Angophora costata</i>	406528	6372923	0.45	14			2	1	3
240	<i>Angophora costata</i>	406524	6372908	0.45	14				2	2
241	<i>Eucalyptus pilularis</i>	406518	6372910	0.85	18	2	5		2	9
242	<i>Angophora costata</i>	406516	6372907	0.55	18				3	3
243	<i>Angophora costata</i>	406511	6372911	0.45	18			4	2	6
244	<i>Angophora costata</i>	406509	6372911	0.45	16			1	1	2
245	<i>Eucalyptus pilularis</i>	406505	6372907	0.5	16					0
246	<i>Eucalyptus pilularis</i>	406500	6372901	0.6	20		1	2		3
247	<i>Eucalyptus pilularis</i>	406501	6372891	0.65	20	2	3	2		7
248	<i>Angophora costata</i>	406501	6372935	0.45	18				2	2
249	<i>Angophora costata</i>	406511	6372935	0.5	16			1	1	2
250	<i>Angophora costata</i>	406522	6372926	0.7	18	1		4	2	7
251	<i>Eucalyptus pilularis</i>	406522	6372934	0.9	20		1	1		2
252	<i>Eucalyptus pilularis</i>	406350	6372992	0.7	18		3	3	2	8
253	<i>Angophora costata</i>	406336	6373022	0.5	16		2	3		5
254	<i>Eucalyptus pilularis</i>	406332	6373020	0.45	14	1	1		1	3
255	<i>Angophora costata</i>	406342	6373030	0.7	8	1	1			2
256	<i>Angophora costata</i>	406338	6373042	0.5	14			1	1	2
257	<i>Angophora costata</i>	406306	6373059	0.5	16				1	1
258	<i>Angophora costata</i>	406300	6373064	0.4	14				1	1
259	<i>Angophora costata</i>	406299	6373058	0.5	16				1	1
260	<i>Angophora costata</i>	406290	6373075	0.6	16	1		2		3
261	<i>Angophora costata</i>	406273	6373099	0.3	20			1		1
262	<i>Eucalyptus pilularis</i>	406256	6373115	0.7	22			3	1	4
263	<i>Eucalyptus pilularis</i>	406267	6373117	0.4	16		1			1
264	<i>Eucalyptus pilularis</i>	406246	6373122	0.75	22			1	2	3
265	<i>Eucalyptus pilularis</i>	406235	6373124	0.65	22	3				3
266	<i>Eucalyptus pilularis</i>	406216	6373148	1.1	25		2	3	2	7
267	<i>Eucalyptus pilularis</i>	406243	6373144	0.95	25	2				2
268	<i>Eucalyptus pilularis</i>	406235	6373148	1.2	23	3	1		2	6
269	<i>Angophora costata</i>	406253	6373151	0.4	17				1	1
270	<i>Eucalyptus pilularis</i>	406262	6373149	0.55	16				2	2
271	<i>Eucalyptus pilularis</i>	406270	6373143	0.55	16			1	1	2
272	<i>Eucalyptus pilularis</i>	406268	6373137	0.5	18			1		1
273	<i>Eucalyptus pilularis</i>	406275	6373130	0.5	18				1	1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
274	<i>Eucalyptus pilularis</i>	406281	6373127	0.9	20	0	2	2	1	5
275	<i>Angophora costata</i>	406295	6373126	0.5	15				2	2
276	<i>Eucalyptus pilularis</i>	406291	6373150	0.55	18		1	1	1	3
277	<i>Eucalyptus pilularis</i>	406291	6373161	0.5	20		1			1
278	<i>Eucalyptus pilularis</i>	406294	6373168	0.7	18	2	2		1	5
279	<i>Eucalyptus pilularis</i>	406281	6373167	0.5	18		1			1
280	<i>Eucalyptus pilularis</i>	406270	6373160	0.6	18	1	3	1		5
281	<i>Eucalyptus pilularis</i>	406255	6373187	0.85	14		2			2
282	<i>Dead Stag</i>	406264	6373200	0.35	8		1			1
283	<i>Dead Stag</i>	406270	6373196	0.4	10		3			3
284	<i>Eucalyptus pilularis</i>	406278	6373188	0.5	18				1	1
285	<i>Dead Stag</i>	406286	6373183	0.4	10		2	2	2	6
286	<i>Angophora costata</i>	406301	6373184	0.4	14				2	2
287	<i>Eucalyptus pilularis</i>	406310	6373192	0.85	18	1	2	1	1	5
288	<i>Dead Stag</i>	406308	6373177	0.45	10		1	2	1	4
289	<i>Angophora costata</i>	406313	6373160	0.35	11		2			2
290	<i>Eucalyptus pilularis</i>	406323	6373173	0.45	12		1		2	3
291	<i>Eucalyptus pilularis</i>	406339	6373161	0.5	18				1	1
292	<i>Eucalyptus pilularis</i>	406346	6373167	0.5	17		1	1		2
293	<i>Eucalyptus pilularis</i>	406338	6373174	0.55	18				1	1
294	<i>Dead Stag</i>	406321	6373152	0.5	12	1				1
295	<i>Eucalyptus pilularis</i>	640325	6373145	0.5	16				1	1
296	<i>Eucalyptus pilularis</i>	406329	6373145	0.5	16				1	1
297	<i>Angophora costata</i>	406330	6373139	0.35	14				2	2
298	<i>Eucalyptus pilularis</i>	406332	6373137	0.5	18			1	1	2
299	<i>Eucalyptus pilularis</i>	406336	6373136	0.5	20			1		1
300	<i>Eucalyptus pilularis</i>	406340	6373125	0.5	15	1				1
301	<i>Eucalyptus pilularis</i>	406340	6373135	0.55	22		1	2		3
302	<i>Eucalyptus pilularis</i>	406345	6373140	0.55	18			1	1	2
303	<i>Angophora costata</i>	406344	6373155	0.55	17				1	1
304	<i>Eucalyptus pilularis</i>	406345	6373175	0.8	22				2	2
305	<i>Dead Stag</i>	406368	6373165	1	18	3	0			3
306	<i>Eucalyptus pilularis</i>	406382	6373167	0.65	20		1		2	3
307	<i>Eucalyptus pilularis</i>	406392	6373166	0.75	20				1	1
308	<i>Eucalyptus pilularis</i>	406373	6373190	0.7	20		1		1	2
309	<i>Eucalyptus pilularis</i>	406372	6373188	0.5	15			1		1
310	<i>Eucalyptus pilularis</i>	406352	6373192	0.65	18				1	1
311	<i>Eucalyptus pilularis</i>	406342	6373191	1.1	30	2	3	3	1	9
312	<i>Eucalyptus pilularis</i>	406329	6373199	0.6	20			2	1	3
313	<i>Eucalyptus pilularis</i>	406322	6373198	0.5	17			3		3

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
314	<i>Eucalyptus pilularis</i>	406320	6373194	0.5	18		1		1	2
315	<i>Eucalyptus pilularis</i>	406393	6373209	0.5	18		1	1	1	3
316	<i>Eucalyptus pilularis</i>	406292	6373220	0.7	22			2		2
317	<i>Eucalyptus pilularis</i>	406277	6373214	0.5	20		1	1		2
318	<i>Eucalyptus pilularis</i>	406305	6373219	0.5	17			1		1
319	<i>Eucalyptus pilularis</i>	406310	6373222	0.6	17		1	1	1	3
320	<i>Eucalyptus pilularis</i>	406310	6373237	0.55	18	1	1		2	4
321	<i>Eucalyptus pilularis</i>	406495	6373175	0.55	20				4	4
322	<i>Eucalyptus pilularis</i>	406486	6373174	0.5	18			1	2	3
323	<i>Angophora costata</i>	406481	6373169	0.3	16				1	1
324	<i>Eucalyptus pilularis</i>	406475	6373172	0.65	22			1	2	3
325	<i>Eucalyptus pilularis</i>	406472	6373168	0.5	16			1	1	2
326	<i>Angophora costata</i>	406452	6373158	0.45	18			1	3	4
327	<i>Eucalyptus pilularis</i>	406466	6373188	0.5	20	1		4	1	6
328	<i>Eucalyptus pilularis</i>	406460	6373192	0.55	16		1		3	4
329	<i>Eucalyptus pilularis</i>	40676	6373191	0.55	16		1	1	2	4
330	<i>Angophora costata</i>	406499	6373196	0.5	20		1			1
331	<i>Eucalyptus pilularis</i>	406512	6373193	0.6	22				1	1
332	<i>Eucalyptus pilularis</i>	406536	6373222	0.5	22	2		1		3
333	<i>Eucalyptus pilularis</i>	406534	6373231	0.5	22			2	2	4
334	Dead Stag	406521	6373244	0.75	20	2		3	5	10
335	<i>Angophora costata</i>	406505	6373247	0.85	18	4	2	1	2	9
336	<i>Eucalyptus pilularis</i>	406514	6373231	0.5	20			2		2
337	<i>Eucalyptus pilularis</i>	406507	6373226	0.5	20			1		1
338	<i>Eucalyptus pilularis</i>	406502	6373214	0.55	20			1	3	4
339	<i>Angophora costata</i>	406485	6373215	0.45	17			1		1
340	<i>Eucalyptus pilularis</i>	406472	6373226	0.75	20		1	2	1	4
341	<i>Eucalyptus pilularis</i>	406462	6373208	0.7	18	2	2		2	6
342	<i>Angophora costata</i>	406444	6373208	0.5	20				1	1
343	<i>Eucalyptus pilularis</i>	406434	6373211	0.5	18				1	1
344	<i>Eucalyptus pilularis</i>	406432	6373201	0.55	18				1	1
345	<i>Eucalyptus pilularis</i>	406433	6373177	0.6	18			2		2
346	<i>Angophora costata</i>	406434	6373171	0.35	16				1	1
347	<i>Angophora costata</i>	406402	6373191	0.6	18				1	1
348	<i>Eucalyptus pilularis</i>	406373	6373211	0.6	18				1	1
349	<i>Eucalyptus pilularis</i>	406349	6373226	0.7	20				1	1
350	<i>Eucalyptus pilularis</i>	406332	6373221	0.65	20	1	2	1	1	5
351	<i>Eucalyptus pilularis</i>	406327	6373206	0.55	22				1	1
352	<i>Eucalyptus pilularis</i>	406329	6373242	0.6	20		2	2		4
353	<i>Eucalyptus pilularis</i>	406329	6373232	0.5	18			1		1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
354	<i>Angophora costata</i>	406315	6373239	0.35	15			1		1
355	<i>Eucalyptus pilularis</i>	406214	6373159	0.5	14		1			1
356	<i>Angophora costata</i>	406203	6373158	0.5	16				1	1
357	<i>Eucalyptus pilularis</i>	406195	6373168	0.9	18	1	1	3	2	7
358	<i>Eucalyptus pilularis</i>	406194	6373207	0.7	20			2	2	4
359	<i>Eucalyptus pilularis</i>	406199	6373211	0.6	18		1			1
360	<i>Eucalyptus pilularis</i>	406200	6373224	0.6	20			2	2	4
361	<i>Angophora costata</i>	406200	6373232	0.55	16	1	1			2
362	<i>Eucalyptus pilularis</i>	406206	6373233	0.6	18			1	1	2
363	<i>Eucalyptus pilularis</i>	406207	6373238	0.45	15					0
364	<i>Eucalyptus pilularis</i>	406211	6373244	0.8	18	2	1	2		5
365	<i>Eucalyptus pilularis</i>	406223	6373259	0.85	18			2		2
366	<i>Angophora costata</i>	406209	6373189	0.5	16	1			1	2
367	<i>Eucalyptus pilularis</i>	406210	6373192	0.45	12	1				1
368	<i>Eucalyptus pilularis</i>	406218	6373201	0.5	16				1	1
369	<i>Eucalyptus pilularis</i>	406222	6373203	0.75	18		2	2	2	6
370	<i>Eucalyptus pilularis</i>	406228	6373197	0.5	18		1			1
371	<i>Eucalyptus pilularis</i>	406233	6373201	0.55	20		2	1	1	4
372	Dead Stag	406241	6373205	0.55	9	0	1			1
373	<i>Angophora costata</i>	406242	6373214	0.5	20				2	2
374	<i>Eucalyptus pilularis</i>	406248	6373239	0.85	20	4	2			6
375	<i>Eucalyptus pilularis</i>	406260	6373231	0.7	18		2		1	3
376	<i>Eucalyptus pilularis</i>	406271	6373234	0.6	18		2			2
377	<i>Eucalyptus pilularis</i>	406275	6373236	0.3	12				1	1
378	<i>Eucalyptus pilularis</i>	406274	6373241	0.8	18	1				1
379	<i>Eucalyptus pilularis</i>	406257	6373256	0.6	14	0	1	1	1	3
380	<i>Eucalyptus pilularis</i>	406246	6373258	0.65	18	1	1		1	3
381	<i>Eucalyptus pilularis</i>	406240	6373271	0.55	18		1		1	2
382	Dead Stag	406248	6373270	0.5	10	1	1			2
383	<i>Eucalyptus pilularis</i>	406249	6373263	0.65	22		3	1	1	5
384	<i>Eucalyptus pilularis</i>	406257	6373285	0.55	20				2	2
385	<i>Eucalyptus pilularis</i>	406240	6373301	1.2	25	2	1	1		4
386	<i>Eucalyptus pilularis</i>	406261	6373299	0.5	18			1		1
387	<i>Eucalyptus pilularis</i>	406280	6373307	0.65	22	1	2	1		4
388	<i>Angophora costata</i>	406290	6373304	0.25	8			1	1	2
389	<i>Eucalyptus pilularis</i>	406290	6373301	0.5	22		2	1		3
390	<i>Eucalyptus pilularis</i>	406290	6373290	0.6	22			1	2	3
391	<i>Eucalyptus pilularis</i>	406282	6373280	0.7	25		2	2	2	6
392	<i>Angophora costata</i>	406294	6373281	0.45	20				1	1
393	Dead Stag	406294	6373274	0.4	8	0	1		1	2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
394	<i>Angophora costata</i>	406302	6373277	0.4	14				1	1
395	<i>Angophora costata</i>	406303	6373275	0.45	15				1	1
396	<i>Eucalyptus pilularis</i>	406297	6373265	0.55	16				1	1
397	<i>Eucalyptus pilularis</i>	406288	6373257	0.8	22			1	2	3
398	<i>Eucalyptus pilularis</i>	406307	6373252	0.85	22		0	2		2
399	<i>Angophora costata</i>	406306	6373258	0.3	12			1		1
400	<i>Eucalyptus pilularis</i>	406303	6373249	1.1	22		3	1	2	6
401	<i>Eucalyptus pilularis</i>	406293	6373241	0.4	15			1		1
402	<i>Eucalyptus pilularis</i>	406296	6373232	0.5	20			1	1	2
403	<i>Eucalyptus pilularis</i>	406342	6373249	0.7	22	1	1	1	1	4
404	<i>Eucalyptus pilularis</i>	406326	6373264	1.1	22			3	4	7
405	<i>Eucalyptus pilularis</i>	406327	6373295	0.55	20				1	1
406	<i>Dead Stag</i>	406349	6373301	0.45	6	1				1
407	<i>Eucalyptus pilularis</i>	406335	6373297	0.5	18			2	1	3
408	<i>Eucalyptus pilularis</i>	406332	6373310	0.9	22			1	3	4
409	<i>Eucalyptus pilularis</i>	406313	6373311	0.55	20				3	3
410	<i>Eucalyptus pilularis</i>	406344	6373318	0.8	20	1	2		1	4
411	<i>Eucalyptus pilularis</i>	406356	6373323	0.55	20			2		2
412	<i>Eucalyptus pilularis</i>	406363	6373326	0.6	20	0	0	1		1
413	<i>Eucalyptus pilularis</i>	406408	6373141	0.7	20				1	1
414	<i>Eucalyptus pilularis</i>	406563	6373243	0.9	30	1	1	3	1	6
415	<i>Eucalyptus pilularis</i>	406559	6373263	0.9	28	2	1	3	2	8
416	<i>Eucalyptus pilularis</i>	406601	6373249	1	30	5	3	3	5	16
417	<i>Eucalyptus pilularis</i>	406633	6373296	0.75	25		3	4	2	9
418	<i>Eucalyptus pilularis</i>	406632	6373300	0.55	25		1			1
419	<i>Angophora costata</i>	406634	6373296	0.45	16				1	1
420	<i>Eucalyptus pilularis</i>	406635	6373314	0.8	28	2	3	3	3	11
421	<i>Eucalyptus pilularis</i>	406648	6373345	0.8	28				1	1
422	<i>Eucalyptus pilularis</i>	406662	6373371	0.55	25		1	1	1	3
423	<i>Angophora costata</i>	406571	6373303	0.6	18	2				2
424	<i>Eucalyptus pilularis</i>	406541	6373280	0.8	28			1	1	2
425	<i>Eucalyptus pilularis</i>	406540	6373276	0.6	25			1		1
426	<i>Eucalyptus pilularis</i>	406544	6373270	0.7	25			1	1	2
427	<i>Eucalyptus pilularis</i>	406517	6373269	0.5	18			1	1	2
428	<i>Eucalyptus pilularis</i>	406514	6373275	0.65	20		1		1	2
429	<i>Eucalyptus pilularis</i>	406504	6373264	0.7	25				1	1
430	<i>Eucalyptus pilularis</i>	406503	6373271	0.45	14			1	1	2
431	<i>Eucalyptus pilularis</i>	406491	4373281	1	28	1	3	3	2	9
432	<i>Eucalyptus pilularis</i>	406518	6373289	0.6	20			1	1	2
433	<i>Eucalyptus pilularis</i>	406504	6373296	0.75	20		1	1	1	3

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
434	<i>Angophora costata</i>	406487	6373298	0.5	15	1				1
435	<i>Eucalyptus pilularis</i>	406464	6373296	0.7	20	1		2	1	4
436	<i>Eucalyptus pilularis</i>	406459	6373296	0.5	20				1	1
437	<i>Eucalyptus pilularis</i>	406454	6373293	0.75	20	1	1	1	2	5
438	<i>Eucalyptus pilularis</i>	406481	6373246	0.8	22			2	1	3
439	<i>Eucalyptus pilularis</i>	406476	6373242	0.45	18				2	2
440	<i>Eucalyptus pilularis</i>	406464	6373243	0.6	22		1	1		2
441	<i>Eucalyptus pilularis</i>	406457	6373219	0.55	20				1	1
442	<i>Eucalyptus pilularis</i>	406434	6373227	0.7	22		1	2	2	5
443	<i>Eucalyptus pilularis</i>	406462	6373222	0.55	20		1		2	3
444	<i>Eucalyptus pilularis</i>	406425	6373220	0.5	18			1		1
445	<i>Eucalyptus pilularis</i>	406412	6373211	0.85	26			1	1	2
446	<i>Eucalyptus pilularis</i>	406387	6373206	0.5	18			1		1
447	<i>Eucalyptus pilularis</i>	406393	6373216	0.9	14	1				1
448	<i>Eucalyptus pilularis</i>	406397	6373229	0.65	20	1		2	1	4
449	<i>Eucalyptus pilularis</i>	406407	6373238	0.95	25 leaning		2	2	1	5
450	<i>Eucalyptus pilularis</i>	406423	6373253	0.9	22			1	1	2
451	<i>Eucalyptus pilularis</i>	406436	6373286	0.65	20			1	1	2
452	<i>Eucalyptus pilularis</i>	406464	6373261	0.65	20			1		1
453	<i>Eucalyptus pilularis</i>	406413	6373279	0.65	20		1	3	3	7
454	<i>Eucalyptus pilularis</i>	406404	6373281	0.75	25	2	2	1		5
455	<i>Eucalyptus pilularis</i>	406401	6373281	0.5	18		1			1
456	<i>Eucalyptus pilularis</i>	406387	6373291	0.5	20			1	1	2
457	<i>Eucalyptus pilularis</i>	406383	6373293	0.65	20			1	2	3
458	<i>Eucalyptus pilularis</i>	406377	6373304	2 x 0.7 forks	20		2	1	1	4
459	<i>Eucalyptus pilularis</i>	406395	6373305	0.6	18				1	1
460	<i>Eucalyptus pilularis</i>	406406	6373300	0.55	18			1		1
461	<i>Eucalyptus pilularis</i>	406410	6373292	0.8	25	1		1		2
462	<i>Eucalyptus pilularis</i>	406340	6373272	0.4	14		1			1
463	<i>Eucalyptus pilularis</i>	406343	6373279	0.55	18			1	1	2
464	<i>Eucalyptus pilularis</i>	406350	6373290	0.85	22	1	1		2	4
465	<i>Eucalyptus pilularis</i>	406362	6373296	0.6	15			1	1	2
466	<i>Eucalyptus pilularis</i>	406372	6373329	0.6	18		1			1
467	<i>Eucalyptus pilularis</i>	406391	6373347	0.75	20				2	2
468	<i>Eucalyptus pilularis</i>	406388	6373333	0.45	20			1		1
469	Dead Stag	406401	6373351	0.45	8	1	1			2
470	<i>Eucalyptus pilularis</i>	406417	6373356	0.65	22	1		1	1	3

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
471	<i>Eucalyptus pilularis</i>	406417	6373360	0.45	14 leanin g			1		1
472	<i>Angophora costata</i>	406406	6373340	0.45	20				1	1
473	<i>Angophora costata</i>	406406	6373336	0.3	17			1		1
474	<i>Eucalyptus pilularis</i>	406407	6373341	0.45	16		1	1		2
475	<i>Eucalyptus pilularis</i>	406410	6373328	0.8	20			2	1	3
476	<i>Eucalyptus pilularis</i>	406423	6373333	0.7	22		1		2	3
477	<i>Eucalyptus pilularis</i>	406437	6373339	0.8	20	3	1	3	2	9
478	<i>Eucalyptus pilularis</i>	406441	6373338	0.7	20		2	1	1	4
479	<i>Eucalyptus pilularis</i>	406446	6373333	0.7	22	1	2	1	1	5
480	<i>Eucalyptus pilularis</i>	406439	6373333	0.5	20 leanin g		1	1		2
481	<i>Eucalyptus pilularis</i>	406452	6373316	0.5	18		1	1		2
482	<i>Eucalyptus pilularis</i>	406447	6373315	0.65	22				2	2
483	<i>Eucalyptus pilularis</i>	406427	6373318	0.9	22	4	4			8
484	<i>Eucalyptus pilularis</i>	406429	6373307	1	22 leanin g	2	4	3	2	11
485	<i>Angophora costata</i>	406449	6373302	0.6	18	1				1
486	<i>Eucalyptus pilularis</i>	406465	6373315	1.1	30		3	2	2	7
487	<i>Eucalyptus pilularis</i>	406474	6373313	0.65	22		2	1	2	5
488	<i>Eucalyptus pilularis</i>	406500	6373309	0.55	20		1		1	2
489	<i>Eucalyptus pilularis</i>	406507	6373315	0.55	20		1			1
490	<i>Eucalyptus pilularis</i>	406487	6373346	0.7	30		1	1	2	4
491	<i>Eucalyptus pilularis</i>	406479	6373334	0.5	20				1	1
492	<i>Eucalyptus pilularis</i>	406478	6373328	0.75	20		1		1	2
493	<i>Angophora costata</i>	406473	6373327	0.5	12	1				1
494	<i>Eucalyptus pilularis</i>	406462	6373342	0.55	20				1	1
495	<i>Eucalyptus pilularis</i>	406453	6373360	0.8	20	1	1	1	3	6
496	<i>Eucalyptus pilularis</i>	406449	6373391	0.55	22	1	2		1	4
497	<i>Angophora costata</i>	406440	6373389	0.45	16			1	1	2
498	<i>Angophora costata</i>	406438	6373385	0.5	25				1	1
499	<i>Eucalyptus pilularis</i>	406428	6373398	0.45	16		1	1	2	4
500	<i>Eucalyptus pilularis</i>	406404	6373396	0.75	20		2	1	3	6
501	<i>Eucalyptus pilularis</i>	406501	6373337	0.8	25	2	3	2	1	8
502	<i>Eucalyptus pilularis</i>	406516	6373334	0.9	25		2	3	2	7
503	<i>Eucalyptus pilularis</i>	406523	6373320	0.95	30			1	2	3
504	<i>Eucalyptus pilularis</i>	406534	6373322	0.55	22		1	1		2
505	<i>Eucalyptus pilularis</i>	406544	6373325	0.7	25	1	2	3		6

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
506	<i>Angophora costata</i>	406560	6373332	0.55	16		2		2	4
507	<i>Angophora costata</i>	406554	6373336	0.5	18			1	1	2
508	<i>Eucalyptus pilularis</i>	406559	6373345	0.65	18	1			1	2
509	<i>Eucalyptus pilularis</i>	406563	6373346	0.55	18		2			2
510	<i>Dead Stag</i>	406567	6373350	0.6	12	3	3			6
511	<i>Eucalyptus pilularis</i>	406547	6373347	0.75	22		2	4	2	8
512	<i>Eucalyptus pilularis</i>	406542	6373300	0.6	22	1			1	2
513	<i>Eucalyptus pilularis</i>	406587	6373317	0.65	22		1	1	1	3
514	<i>Angophora costata</i>	406178	6373210	0.5	14	1	1			2
515	<i>Eucalyptus pilularis</i>	406156	6373213	0.75	20	2	1			3
516	<i>Angophora costata</i>	406158	6373220	0.45	16		1	2		3
517	<i>Eucalyptus pilularis</i>	406168	6373232	0.8	25	2	1	2		5
518	<i>Eucalyptus pilularis</i>	406173	6373243	0.65	25	1	1	1	1	4
519	<i>Eucalyptus pilularis</i>	406155	6373243	0.65	25			1	2	3
520	<i>Angophora costata</i>	406155	6373244	0.2	15			1		1
521	<i>Angophora costata</i>	406162	6373255	0.4	8	1				1
522	<i>Angophora costata</i>	406160	6373255	0.55	8	1		1		2
523	<i>Angophora costata</i>	406169	6373256	0.7	18	1				1
524	<i>Eucalyptus pilularis</i>	406170	6373252	0.65	20	1		2		3
525	<i>Eucalyptus pilularis</i>	406125	6373265	0.9	25			1	2	3
526	<i>Angophora costata</i>	406132	6373266	0.45	14	1				1
527	<i>Eucalyptus pilularis</i>	406144	6373280	0.5	18		1		2	3
528	<i>Dead Stag</i>	406140	6373282	0.3	8		1	1		2
529	<i>Eucalyptus pilularis</i>	406142	6373281	0.65	20		1		2	3
530	<i>Eucalyptus pilularis</i>	406143	6373288	0.9	30		3	4	2	9
531	<i>Eucalyptus pilularis</i>	406142	6373287	0.75	25			2		2
532	<i>Angophora costata</i>	406139	6373286	0.3	10			1		1
533	<i>Angophora costata</i>	406125	6373281	0.4	20			1		1
534	<i>Angophora costata</i>	406114	6373285	0.75	18	3				3
535	<i>Angophora costata</i>	406098	6373293	0.5	20		2			2
536	<i>Angophora costata</i>	406097	6373294	0.45	18		1			1
537	<i>Eucalyptus pilularis</i>	406124	6373298	0.75	22	2	2	2		6
538	<i>Eucalyptus pilularis</i>	406125	6373298	0.6	22	3			2	5
539	<i>Eucalyptus pilularis</i>	406127	6373303	0.55	22			1	1	2
540	<i>Eucalyptus pilularis</i>	406131	6373308	0.6	25		1		1	2
541	<i>Eucalyptus pilularis</i>	406152	6373310	0.6	22		2	2	1	5
542	<i>Eucalyptus pilularis</i>	406167	6373303	0.65	22	1	4	4	3	12
543	<i>Eucalyptus pilularis</i>	406172	6373300	0.7	25	1			1	2
544	<i>Eucalyptus pilularis</i>	406172	6373305	0.65	25	1	2	2	1	6
545	<i>Eucalyptus pilularis</i>	406176	6373290	1.1	30	1	1	5	2	9

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
546	<i>Eucalyptus pilularis</i>	406145	6373309	0.55	18	1			1	2
547	<i>Eucalyptus pilularis</i>	406138	6373316	1.1	30	1	4	6	2	13
548	<i>Eucalyptus pilularis</i>	406102	6373316	0.75	25			2	2	4
549	<i>Eucalyptus pilularis</i>	406093	6373340	0.65	25			2	1	3
550	<i>Eucalyptus pilularis</i>	406083	6373379	0.75	30			1		1
551	<i>Eucalyptus pilularis</i>	406088	6373385	0.85	20	1		1		2
552	<i>Angophora costata</i>	406096	6373365	0.6	25			1	2	3
553	<i>Banksia serrata</i>	406138	6373368	0.5	18		2			2
554	<i>Angophora costata</i>	406138	6373369	0.5	20			3	2	5
555	<i>Eucalyptus pilularis</i>	406129	6373381	0.6	22			1		1
556	<i>Eucalyptus pilularis</i>	406128	6373386	0.65	22	1	2	3	3	9
557	<i>Angophora costata</i>	406119	6373393	0.5	20		3			3
558	<i>Eucalyptus pilularis</i>	406100	6373391	1.2	30	4	1	2	3	10
559	Dead Stag	406097	6373396	0.65	12	4	3	2		9
560	<i>Eucalyptus pilularis</i>	406092	6373427	0.65	22				2	2
561	<i>Eucalyptus pilularis</i>	406097	6373427	0.6	22		1	3	2	6
562	<i>Angophora costata</i>	406112	6373436	0.4	18			2		2
563	<i>Eucalyptus pilularis</i>	406108	6373425	0.55	20				2	2
564	<i>Eucalyptus pilularis</i>	406113	6373424	0.9	25				2	2
565	Dead Stag	406130	6373431	0.5	10	2				2
566	<i>Eucalyptus pilularis</i>	406139	6373429	1.2	30			4	3	7
567	<i>Angophora costata</i>	406135	6373422	0.5	16			2		2
568	<i>Angophora costata</i>	406135	6373417	0.45	18			1	1	2
569	<i>Eucalyptus pilularis</i>	406165	6373400	0.8	25		2	2		4
570	<i>Eucalyptus pilularis</i>	406184	6373401	1	30	2	4	3	2	11
571	<i>Eucalyptus pilularis</i>	406184	6373415	0.7	26			2		2
572	<i>Eucalyptus pilularis</i>	406183	6373416	0.5	22		1	1		2
573	<i>Angophora costata</i>	406188	6373433	0.5	25				3	3
574	<i>Angophora costata</i>	406172	6373442	0.6	18		2	1		3
575	<i>Angophora costata</i>	406186	6373437	0.5	20			3	3	6
576	<i>Eucalyptus pilularis</i>	406208	6373439	0.55	20		4	1		5
577	<i>Eucalyptus pilularis</i>	406207	6373433	0.6	22			2	1	3
578	<i>Eucalyptus pilularis</i>	406236	6373427	0.75	22		1	1	1	3
579	<i>Eucalyptus pilularis</i>	406231	6373418	0.6	20	2	3	1		6
580	Dead Stag	406224	6373410	0.5	8	3				3
581	<i>Eucalyptus pilularis</i>	406229	6373413	0.7	22	2	1		1	4
582	<i>Eucalyptus pilularis</i>	406239	6373419	0.5	20	1			1	2
583	<i>Eucalyptus pilularis</i>	406249	6373431	0.8	25	2	3	1		6
584	<i>Eucalyptus pilularis</i>	406235	6373284	0.75	25	1	2	2		5
585	<i>Eucalyptus pilularis</i>	406215	6373284	0.7	25	3	2	1		6

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
586	<i>Eucalyptus pilularis</i>	406215	6373285	0.8	25	4	2	3	1	10
587	<i>Eucalyptus pilularis</i>	406207	6373294	0.85	25			1		1
588	<i>Dead Stag</i>	406189	6373297	0.6	5	1				1
589	<i>Eucalyptus pilularis</i>	406193	6373291	0.65	22	1	1	3	2	7
590	<i>Eucalyptus pilularis</i>	406183	6373269	0.55	22		1	1	1	3
591	<i>Angophora costata</i>	406188	6373267	0.3	16			1		1
592	<i>Eucalyptus pilularis</i>	406190	6373264	0.55	20			1	1	2
593	<i>Eucalyptus pilularis</i>	406199	6373265	0.55	20			1	1	2
594	<i>Eucalyptus pilularis</i>	406201	6373276	0.55	20	1		1	1	3
595	<i>Eucalyptus pilularis</i>	406228	6373318	0.7	22	3	2	1	1	7
596	<i>Eucalyptus pilularis</i>	406232	6373319	0.65	20		1	2	1	4
597	<i>Eucalyptus pilularis</i>	406221	6373318	0.55	22	2	2	4	1	9
598	<i>Eucalyptus pilularis</i>	406217	6373320	0.7	22		1			1
599	<i>Eucalyptus pilularis</i>	406195	6373322	0.65	22		1			1
600	<i>Eucalyptus pilularis</i>	406195	6373323	0.6	22			3		3
601	<i>Banksia serrata</i>	406231	6373310	0.5	7			2		2
602	<i>Dead Stag</i>	406196	6373326	0.25	6			1		1
603	<i>Angophora costata</i>	406189	6373328	0.45	10				2	2
604	<i>Eucalyptus pilularis</i>	406186	6373329	0.6	18				2	2
605	<i>Dead Stag</i>	406183	6373327	0.3	8				2	2
606	<i>Banksia serrata</i>	406182	6373320	0.45	12			1		1
607	<i>Eucalyptus pilularis</i>	406162	6373338	0.7	20			1	1	2
608	<i>Eucalyptus pilularis</i>	406159	6373338	0.6	18		1			1
609	<i>Eucalyptus pilularis</i>	406162	6373347	0.5	18	1				1
610	<i>Eucalyptus pilularis</i>	406128	6373343	0.65	18				2	2
611	<i>Banksia serrata</i>	406108	6373353	0.4	6				1	1
612	<i>Eucalyptus pilularis</i>	406101	6373353	0.5	18			2	2	4
613	<i>Eucalyptus pilularis</i>	406094	6373345	0.5	18				2	2
614	<i>Dead Stag</i>	406092	6373341	0.2	8				1	1
615	<i>Eucalyptus pilularis</i>	406089	6373338	0.55	19				2	2
616	<i>Dead Stag</i>	406103	6373316	0.45	14			1	2	3
617	<i>Angophora costata</i>	406118	6373314	0.4	16			1		1
618	<i>Angophora costata</i>	406117	6373332	0.6	17				2	2
619	<i>Eucalyptus pilularis</i>	406108	6373338	0.55	18				2	2
620	<i>Eucalyptus pilularis</i>	406099	6373343	0.5	18				2	2
621	<i>Eucalyptus pilularis</i>	406143	6373390	0.5	18				2	2
622	<i>Eucalyptus pilularis</i>	406157	6373381	0.5	18				1	1
623	<i>Eucalyptus pilularis</i>	406170	6373365	0.65	18			2	1	3
624	<i>Eucalyptus pilularis</i>	406172	6373350	0.55	18			2	1	3
625	<i>Dead Stag</i>	406172	6373350	0.2	3				1	1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
626	<i>Eucalyptus pilularis</i>	406173	6373353	0.65	19			1	1	2
627	<i>Eucalyptus pilularis</i>	406174	6373354	0.7	20		1	4	2	7
628	<i>Eucalyptus pilularis</i>	406192	6373355	0.75	20	1	1	1	1	4
629	<i>Angophora costata</i>	406201	6373365	0.2	5				2	2
630	<i>Eucalyptus pilularis</i>	406201	6373365	0.7	20		3		1	4
631	<i>Eucalyptus pilularis</i>	406214	6373361	0.55	18	2				2
632	<i>Eucalyptus pilularis</i>	406225	6373372	0.65	18		1		1	2
633	<i>Eucalyptus pilularis</i>	406229	6373377	0.65	18				2	2
634	<i>Eucalyptus pilularis</i>	406235	6373389	0.55	18			1	1	2
635	<i>Eucalyptus pilularis</i>	406258	6373433	0.8	20			1	1	2
636	<i>Angophora costata</i>	406259	6373432	0.4	4		1			1
637	<i>Eucalyptus pilularis</i>	406258	6373433	0.65	18		1	1	1	3
638	<i>Angophora costata</i>	406257	6373421	0.5	16	1				1
639	<i>Angophora costata</i>	406262	6373421	0.75	17	4	1	1		6
640	<i>Eucalyptus pilularis</i>	406267	6373416	0.8	18	2	4		1	7
641	<i>Eucalyptus pilularis</i>	406276	6373393	0.7	18	1	2		1	4
642	<i>Banksia serrata</i>	406278	6373380	0.5	15			1		1
643	<i>Eucalyptus pilularis</i>	406273	6373379	0.8	19			1		1
644	<i>Angophora costata</i>	406269	6373375	0.5	18			1		1
645	<i>Eucalyptus pilularis</i>	406255	6373367	0.6	17	1		1		2
646	<i>Angophora costata</i>	406253	6373365	0.6	17		2	1	1	4
647	<i>Eucalyptus pilularis</i>	406255	6373368	0.7	18			2		2
648	<i>Eucalyptus pilularis</i>	406255	6373373	0.7	18	1	1	1		3
649	<i>Angophora costata</i>	406224	6373352	0.45	18				1	1
650	<i>Eucalyptus pilularis</i>	406227	6373340	0.4	16			1	1	2
651	<i>Eucalyptus pilularis</i>	406231	6373341	0.6	18			2		2
652	<i>Angophora costata</i>	406239	6373357	0.5	16				2	2
653	<i>Eucalyptus pilularis</i>	406243	6373353	0.5	17		1	1		2
654	<i>Eucalyptus pilularis</i>	406247	6373343	0.6	18		1	2		3
655	<i>Eucalyptus pilularis</i>	406250	6373340	0.65	18			3	1	4
656	<i>Eucalyptus pilularis</i>	406295	6373345	0.75	18	1	1	1	1	4
657	<i>Eucalyptus pilularis</i>	406279	6373342	0.6	16	1	1	2		4
658	<i>Eucalyptus pilularis</i>	406279	6373348	0.8	8					0
659	<i>Angophora costata</i>	406266	6373354	0.4	5		1			1
660	<i>Eucalyptus pilularis</i>	406284	6373372	0.55	16		1	1		2
661	<i>Eucalyptus pilularis</i>	406293	6373429	0.7	18			3	2	5
662	<i>Eucalyptus pilularis</i>	406312	6373414	1.1	20	3	2		1	6
663	<i>Angophora costata</i>	406320	6373404	0.5	18			1	2	3
664	<i>Eucalyptus pilularis</i>	406324	6373399	0.8	18			3	1	4
665	<i>Eucalyptus pilularis</i>	406331	6373386	0.85	20		1	1		2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
666	<i>Banksia serrata</i>	406324	6373386	0.4	16				1	1
667	<i>Eucalyptus pilularis</i>	406306	6373385	0.7	18		1	1		2
668	<i>Eucalyptus pilularis</i>	406312	6373371	0.7	20	1	2		1	4
669	<i>Eucalyptus pilularis</i>	406298	6373359	0.65	20	1	2			3
670	<i>Eucalyptus pilularis</i>	406306	6373339	0.55	18		2	2		4
671	<i>Eucalyptus pilularis</i>	406328	6373354	0.9	20	2	2	1		5
672	<i>Eucalyptus pilularis</i>	406333	6373363	0.5	17	1				1
673	<i>Eucalyptus pilularis</i>	406335	6373363	0.65	17	1	1			2
674	<i>Eucalyptus pilularis</i>	406349	6373386	1	20	5	4	2		11
675	<i>Angophora costata</i>	406354	6373389	0.5	18			1	1	2
676	<i>Angophora costata</i>	406384	6373403	0.65	17	2	1		1	4
677	<i>Angophora costata</i>	406402	6373403	0.6	18		1	2		3
678	<i>Eucalyptus pilularis</i>	406381	6373395	0.7	18		1	2	1	4
679	<i>Eucalyptus pilularis</i>	406382	6373394	0.5	18		2		1	3
680	<i>Angophora costata</i>	406383	6373388	0.35	12				2	2
681	<i>Eucalyptus pilularis</i>	406381	6373384	0.7	18		2		3	5
682	<i>Eucalyptus pilularis</i>	406378	6373376	0.55	18				2	2
683	<i>Dead Stag</i>	406374	6373364	0.65	6	3				3
684	<i>Eucalyptus pilularis</i>	406353	6373361	0.6	18			2		2
685	<i>Eucalyptus pilularis</i>	406349	6373362	0.6	18	2	1	1		4
686	<i>Eucalyptus pilularis</i>	406357	6373338	0.65	18		1	2		3
687	<i>Eucalyptus pilularis</i>	406363	6373336	0.6	18		1	3	1	5
688	<i>Angophora costata</i>	406508	6373001	0.45	10			1		1
689	<i>Eucalyptus pilularis</i>	406504	6373001	0.7	20			1		1
690	<i>Eucalyptus pilularis</i>	406504	6373031	0.5	16				1	1
691	<i>Eucalyptus pilularis</i>	406516	6373071	0.8	25			2		2
692	<i>Eucalyptus pilularis</i>	406518	6373081	0.7	18				1	1
693	<i>Eucalyptus pilularis</i>	406520	6373088	0.8	22	1		1		2
694	<i>Eucalyptus pilularis</i>	406509	6373085	0.65	18		2		2	4
695	<i>Eucalyptus pilularis</i>	406514	6373155	0.6	17				1	1
696	<i>Angophora costata</i>	406523	6373159	0.6	10	1				1
697	<i>Angophora costata</i>	406524	6373166	0.7	10			1		1
698	<i>Eucalyptus pilularis</i>	406538	6373176	0.9	20	0	2	3	2	7
699	<i>Eucalyptus pilularis</i>	406542	6373198	1.1	30	7	8	5	7	27
700	<i>Eucalyptus pilularis</i>	406553	6373211	0.8	25			1	1	2
701	<i>Eucalyptus pilularis</i>	406563	6373218	0.8	22				2	2
702	<i>Angophora costata</i>	406594	6373248	0.5	12		1			1
703	<i>Eucalyptus pilularis</i>	406594	6373229	0.6	18			1	1	2
704	<i>Eucalyptus pilularis</i>	406594	6373222	0.7	20			2	1	3
705	<i>Eucalyptus pilularis</i>	406579	6373202	0.6	20				2	2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
706	<i>Eucalyptus pilularis</i>	406575	6373196	0.65	20		1	1	1	3
707	<i>Eucalyptus pilularis</i>	406566	6373191	0.5	18				1	1
708	<i>Eucalyptus pilularis</i>	406570	6373182	0.45	15				1	1
709	<i>Eucalyptus pilularis</i>	406566	6373182	0.6	20				1	1
710	<i>Eucalyptus pilularis</i>	406557	6373177	0.7	20			2	2	4
711	<i>Eucalyptus pilularis</i>	406556	6373171	0.6	18			1	1	2
712	<i>Eucalyptus pilularis</i>	406638	6372998	1	20	2	3	4	5	14
713	<i>Eucalyptus pilularis</i>	406655	6373014	0.6	15				1	1
714	<i>Eucalyptus pilularis</i>	406657	6373013	0.6	18		1	1	1	3
715	<i>Eucalyptus pilularis</i>	406671	6373036	0.7	18	1	3			4
716	<i>Eucalyptus pilularis</i>	406676	6373037	0.8	18		1	1		2
717	<i>Eucalyptus pilularis</i>	406684	6373037	0.9	25		2	1	2	5
718	<i>Melaleuca quinquenervia</i>	406699	6373049	0.4	9				1	1
719	<i>Eucalyptus pilularis</i>	406712	6373061	0.7	18				2	2
720	<i>Eucalyptus pilularis</i>	406716	6373067	0.7	17			1		1
721	<i>Eucalyptus pilularis</i>	406731	6373082	0.6	16			1		1
722	<i>Eucalyptus pilularis</i>	406748	6373114	0.65	20			1	2	3
723	<i>Eucalyptus pilularis</i>	406588	6373346	0.8	20			0	2	2
724	<i>Eucalyptus pilularis</i>	406581	6373354	0.7	20		2	1	1	4
725	<i>Eucalyptus pilularis</i>	406581	6373359	0.6	18			1		1
726	<i>Eucalyptus pilularis</i>	406575	6373356	0.6	17				2	2
727	<i>Eucalyptus pilularis</i>	406568	6373360	0.65	16		1		1	2
728	Dead Stag	406550	6373355	0.45	16		3	3	1	7
729	<i>Eucalyptus pilularis</i>	406535	6373358	0.7	15	2				2
730	<i>Eucalyptus pilularis</i>	406527	6373360	0.6	18				1	1
731	<i>Angophora costata</i>	406541	6373360	0.3	8		1			1
732	Dead Stag	406552	6373363	0.85	8	1				1
733	<i>Eucalyptus pilularis</i>	406544	6373368	0.7	15	1				1
734	<i>Angophora costata</i>	406540	6373377	0.5	18		1		1	2
735	<i>Eucalyptus pilularis</i>	406549	6373391	0.7	16			2	1	3
736	<i>Angophora costata</i>	406547	6373397	0.55	17	1				1
737	<i>Angophora costata</i>	406542	6373392	0.45	16				1	1
738	<i>Angophora costata</i>	406549	6373403	0.45	18				2	2
739	<i>Eucalyptus pilularis</i>	406527	6373386	0.65	20	2		1	1	4
740	<i>Angophora costata</i>	406522	6373381	0.5	17			1		1
741	<i>Eucalyptus pilularis</i>	406521	6373376	0.6	18			1	1	2
742	<i>Eucalyptus pilularis</i>	406520	6373373	0.45	17	1			1	2
743	<i>Angophora costata</i>	406520	6373347	0.75	13	1				1
744	<i>Angophora costata</i>	406516	6373340	0.5	16			2		2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
745	<i>Eucalyptus pilularis</i>	406510	6373348	0.75	17				2	2
746	<i>Angophora costata</i>	406507	6373359	0.5	17		1		1	2
747	<i>Angophora costata</i>	406506	6373370	0.65	13	1	1			2
748	<i>Eucalyptus pilularis</i>	406495	6373366	0.6	18	1	1		1	3
749	<i>Eucalyptus pilularis</i>	406484	6373371	0.85	20			3	2	5
750	<i>Eucalyptus pilularis</i>	406471	6373377	0.45	10		1			1
751	<i>Eucalyptus pilularis</i>	406486	6373381	0.5	16		1			1
752	<i>Eucalyptus pilularis</i>	406493	6373381	0.5	17			1		1
753	<i>Eucalyptus pilularis</i>	406453	6373394	0.9	25		2	2	2	6
754	<i>Eucalyptus pilularis</i>	406476	6373401	2 x 0.7	18		1	1	1	3
755	<i>Angophora costata</i>	406482	6373402	0.5	14			1		1
756	<i>Eucalyptus pilularis</i>	406485	6373400	0.5	17		1		1	2
757	<i>Eucalyptus pilularis</i>	406492	6373401	0.55	15		1			1
758	<i>Eucalyptus pilularis</i>	406506	6373408	0.8	20		1		2	3
759	<i>Eucalyptus pilularis</i>	406524	6373423	1	25					0
760	<i>Dead Stag</i>	406562	6373438	0.45	8	1				1
761	<i>Angophora costata</i>	406588	6373465	0.8	18	1	1	1		3
762	<i>Eucalyptus pilularis</i>	406582	6373483	0.8	20	1	2	2	2	7
763	<i>Angophora costata</i>	406585	6373483	0.85	17	1	2			3
764	<i>Eucalyptus pilularis</i>	406612	6373473	0.7	18		1	1		2
765	<i>Eucalyptus pilularis</i>	406630	6373466	2 x 0.5	20	1		3		4
766	<i>Angophora costata</i>	406629	6373466	0.35	14	1				1
767	<i>Eucalyptus pilularis</i>	406640	6373457	0.8	20	3	3	2	3	11
768	<i>Angophora costata</i>	406641	6373469	0.4	22		1			1
769	<i>Eucalyptus pilularis</i>	406624	6373450	0.7	22	1	1	1		3
770	<i>Eucalyptus pilularis</i>	406377	6373403	0.8	20				2	2
771	<i>Eucalyptus pilularis</i>	406593	6373420	0.55	17				1	1
772	<i>Eucalyptus pilularis</i>	406602	6373414	0.7	16			1	1	2
773	<i>Eucalyptus pilularis</i>	406589	6373382	0.8	22		2	2	2	6
774	<i>Eucalyptus pilularis</i>	406593	6373372	0.6	18		1	3	1	5
775	<i>Eucalyptus pilularis</i>	406600	6373379	0.7	15				2	2
776	<i>Angophora costata</i>	406621	6373385	0.65	18				1	1
777	<i>Angophora costata</i>	406630	6373381	0.5	14				1	1
778	<i>Angophora costata</i>	406635	6373393	0.4	14				1	1
779	<i>Eucalyptus pilularis</i>	406642	6373404	0.8	20	1				1
780	<i>Eucalyptus pilularis</i>	406615	6373408	0.6	18			1		1
781	<i>Eucalyptus pilularis</i>	406644	6373423	0.55	20	1			1	2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
782	<i>Dead Stag</i>	406665	6373414	0.9	8	2				2
783	<i>Eucalyptus pilularis</i>	406658	6373432	0.7	16	1	3		2	6
784	<i>Eucalyptus pilularis</i>	406694	6373429	0.9	17	2		1	1	4
785	<i>Angophora costata</i>	406690	6373445	0.45	12		2			2
786	<i>Dead Stag</i>	406693	6373452	0.5	6		1			1
787	<i>Eucalyptus pilularis</i>	406694	6373452	0.6	16	1	1	1		3
788	<i>Eucalyptus pilularis</i>	406692	6373456	0.45	16				1	1
789	<i>Eucalyptus pilularis</i>	406698	6373464	0.65	20		1			1
790	<i>Eucalyptus pilularis</i>	406705	6373467	0.5	16		1			1
791	<i>Eucalyptus pilularis</i>	406704	6373463	0.8	20		2		3	5
792	<i>Eucalyptus pilularis</i>	406722	6373453	0.8	20	1	3		3	7
793	<i>Eucalyptus pilularis</i>	406715	6373450	0.8	17	2	1		1	4
794	<i>Eucalyptus pilularis</i>	406696	6373475	0.7	18	1	3		1	5
795	<i>Eucalyptus pilularis</i>	406677	6373466	0.6	18		1	1	1	3
796	<i>Eucalyptus pilularis</i>	406663	6373461	0.8	18		1	1	1	3
797	<i>Eucalyptus pilularis</i>	406660	6373452	0.8	22			1	2	3
798	<i>Eucalyptus pilularis</i>	406652	6373462	0.75	17		1	3		4
799	<i>Eucalyptus pilularis</i>	406641	6373477	1	25	3	3	3	2	11
800	<i>Eucalyptus pilularis</i>	406630	6373492	0.9	20			1		1
801	<i>Angophora costata</i>	406672	6373483	0.3	7			1		1
802	<i>Eucalyptus pilularis</i>	406672	6373484	0.5	14				1	1
803	<i>Eucalyptus pilularis</i>	406683	6373513	1	25	3	3	4	4	14
804	<i>Angophora costata</i>	406684	6373527	0.5	17				2	2
805	<i>Eucalyptus pilularis</i>	406681	6373535	0.7	25			2	2	4
806	<i>Eucalyptus pilularis</i>	406670	6373540	1	30			2	2	4
807	<i>Eucalyptus pilularis</i>	406657	6373544	0.55	25			1	1	2
808	<i>Eucalyptus pilularis</i>	406651	6373551	0.6	18	1		1		2
809	<i>Angophora costata</i>	406650	6373546	0.3	12				1	1
810	<i>Eucalyptus pilularis</i>	406652	6373541	0.6	20			1	1	2
811	<i>Eucalyptus pilularis</i>	406654	6373533	0.5	11		1	1		2
812	<i>Eucalyptus pilularis</i>	406659	6373525	0.6	18		1		2	3
813	<i>Eucalyptus pilularis</i>	406654	6373519	0.5	18				1	1
814	<i>Eucalyptus pilularis</i>	406651	6373518	0.6	20		1		1	2
815	<i>Eucalyptus pilularis</i>	406658	6373515	0.8	25			1		1
816	<i>Eucalyptus pilularis</i>	406654	6373512	0.8	30			1	1	2
817	<i>Eucalyptus pilularis</i>	406650	6373528	0.6	18		1		2	3
818	<i>Angophora costata</i>	406641	6373523	0.5	18				1	1
819	<i>Eucalyptus pilularis</i>	406634	6373537	0.75	25				1	1
820	<i>Eucalyptus pilularis</i>	406623	6373538	0.65	18				1	1
821	<i>Eucalyptus pilularis</i>	406613	6373528	0.6	17		1	3	2	6

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
822	<i>Eucalyptus pilularis</i>	406622	6373519	0.75	25		1	2	2	5
823	<i>Eucalyptus pilularis</i>	406609	6373513	0.7	25			1	2	3
824	<i>Eucalyptus pilularis</i>	406603	6373510	0.9	25		2	2	2	6
825	<i>Eucalyptus pilularis</i>	406576	6373488	0.8	20			1	2	3
826	<i>Eucalyptus pilularis</i>	406586	6373520	0.9	25		1	3	2	6
827	<i>Eucalyptus pilularis</i>	406596	6373530	0.8	20		1	2	1	4
828	<i>Eucalyptus pilularis</i>	406594	6373533	0.9	25	1		1	2	4
829	<i>Eucalyptus pilularis</i>	406614	6373548	0.7	25			1		1
830	<i>Eucalyptus pilularis</i>	406610	6373553	0.75	20				2	2
831	<i>Angophora costata</i>	406624	6373567	0.45	18		1			1
832	<i>Angophora costata</i>	406632	6373569	0.6	20				1	1
833	<i>Angophora costata</i>	406641	6373566	0.5	20				1	1
834	<i>Eucalyptus pilularis</i>	406696	6373568	0.8	18			3	3	6
835	<i>Eucalyptus pilularis</i>	406678	6373559	0.55	16				2	2
836	<i>Eucalyptus pilularis</i>	406689	6937491	0.55	17			1		1
837	<i>Eucalyptus pilularis</i>	406860	6373477	0.75	18		4	2	1	7
838	<i>Eucalyptus pilularis</i>	406870	6373508	0.6	20		1	2	1	4
839	<i>Eucalyptus pilularis</i>	406869	6373513	0.65	18	1	1			2
840	<i>Eucalyptus pilularis</i>	406864	6373501	0.6	15	1	1			2
841	<i>Eucalyptus pilularis</i>	406855	6373502	0.8	25		1		1	2
842	<i>Eucalyptus pilularis</i>	406847	6373509	0.7	20		2	2		4
843	<i>Eucalyptus pilularis</i>	406854	6373496	0.8	13	1				1
844	<i>Eucalyptus pilularis</i>	406835	6373465	0.75	25		2	3	1	6
845	<i>Eucalyptus pilularis</i>	406826	6373473	0.5	17	1				1
846	<i>Eucalyptus pilularis</i>	406824	6373478	0.6	17			1	2	3
847	<i>Eucalyptus pilularis</i>	406820	6373490	1.1	30		4	3	2	9
848	<i>Eucalyptus pilularis</i>	406827	6373463	0.7	2		4	2	2	8
849	<i>Eucalyptus pilularis</i>	406807	6373471	0.7	20			1		1
850	<i>Eucalyptus pilularis</i>	406799	6373482	0.4	15				1	1
851	<i>Eucalyptus pilularis</i>	406799	6373494	0.6	17				1	1
852	<i>Eucalyptus pilularis</i>	406801	6373472	0.6	18		2	1		3
853	<i>Angophora costata</i>	406790	6373467	0.55	12			1		1
854	<i>Eucalyptus pilularis</i>	406777	6373470	0.55	18				1	1
855	<i>Eucalyptus pilularis</i>	406791	6373452	0.6	20	1			5	6
856	<i>Eucalyptus pilularis</i>	406756	6373443	0.65	16	1		1		2
857	<i>Eucalyptus pilularis</i>	406761	6373433	0.6	16		1			1
858	<i>Eucalyptus pilularis</i>	406738	6373450	0.5	15				1	1
859	<i>Eucalyptus pilularis</i>	406758	6373482	0.75	22			1	1	2
860	<i>Eucalyptus pilularis</i>	406746	6373483	0.5	17			1		1
861	<i>Eucalyptus pilularis</i>	406754	6373497	0.7	20			2	1	3

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
862	<i>Eucalyptus pilularis</i>	406752	6373505	0.55	18		1	1		2
863	<i>Eucalyptus pilularis</i>	406750	6373516	0.5	18		2	1		3
864	<i>Eucalyptus pilularis</i>	406738	6373518	0.9	25		1	2		3
865	<i>Dead Stag</i>	406746	6373503	0.5	16		2	1		3
866	<i>Dead Stag</i>	406740	6373507	0.5	14	1				1
867	<i>Dead Stag</i>	406736	6373501	0.6	18		1	1		2
868	<i>Dead Stag</i>	460730	6373489	0.8	25			1	1	2
869	<i>Dead Stag</i>	406722	6373479	0.55	15			1	1	2
870	<i>Dead Stag</i>	406723	6373478	0.5	18			1	2	3
871	<i>Dead Stag</i>	406723	6373471	0.5	16				2	2
872	<i>Dead Stag</i>	406696	6373493	0.8	18				1	1
873	<i>Eucalyptus pilularis</i>	406709	6373491	0.45	17		1			1
874	<i>Angophora costata</i>	406710	6373494	0.5	18				1	1
875	<i>Eucalyptus pilularis</i>	406713	6373508	0.5	17			1		1
876	<i>Eucalyptus pilularis</i>	406722	6373516	1	30		2	2		4
877	<i>Eucalyptus pilularis</i>	406777	6373506	0.45	16					0
878	<i>Eucalyptus pilularis</i>	406777	6373496	0.7	22				1	1
879	<i>Eucalyptus pilularis</i>	406784	6373510	0.75	16		3	2		5
880	<i>Eucalyptus pilularis</i>	406800	6373506	0.75	20			2		2
881	<i>Eucalyptus pilularis</i>	406807	6373508	0.85	20	1	2		2	5
882	<i>Eucalyptus pilularis</i>	406819	6373510	0.75	25		1	1	1	3
883	<i>Eucalyptus pilularis</i>	406829	6373535	0.6	17			1	1	2
884	<i>Eucalyptus pilularis</i>	406833	6373536	0.5	20		1		1	2
885	<i>Eucalyptus pilularis</i>	406834	6373538	0.5	16				1	1
886	<i>Eucalyptus pilularis</i>	406853	6373540	0.55	16		1	1	1	3
887	<i>Eucalyptus pilularis</i>	406856	6373535	0.65	17			1	1	2
888	<i>Eucalyptus pilularis</i>	406861	6373532	0.5	17				1	1
889	<i>Angophora costata</i>	406527	6373527	0.6	16			1		1
890	<i>Angophora costata</i>	406571	6373526	0.35	15			1		1
891	<i>Angophora costata</i>	406566	6373522	0.5	16			1		1
892	<i>Angophora costata</i>	406558	6373515	0.5	18				1	1
893	<i>Eucalyptus pilularis</i>	406552	6373506	0.9	22		2	2	2	6
894	<i>Eucalyptus pilularis</i>	406553	6373505	0.65	20			1	1	2
895	<i>Angophora costata</i>	406554	6373492	0.85	27				1	1
896	<i>Eucalyptus pilularis</i>	406538	6373446	0.8	30	2	1	1	2	6
897	<i>Eucalyptus pilularis</i>	406527	6373440	0.7	20	1	1			2
898	<i>Angophora costata</i>	406516	6373434	0.5	17			1	1	2
899	<i>Angophora costata</i>	406529	6373441	0.95	15		1		1	2
900	<i>Eucalyptus pilularis</i>	406511	6373435	0.85	20		2	2	2	6
901	<i>Eucalyptus pilularis</i>	406507	6373436	0.5	15			2		2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
902	<i>Angophora costata</i>	406509	6373446	0.55	17	1			1	2
903	<i>Eucalyptus pilularis</i>	406477	6373415	0.6	16			1	1	2
904	<i>Angophora costata</i>	406516	6373395	0.5	15			1	2	3
905	<i>Angophora costata</i>	406536	6373407	0.4	11			1		1
906	<i>Eucalyptus pilularis</i>	407075	6373445	0.8	20				1	1
907	<i>Dead Stag</i>	407064	6373460	0.5	16		1	3	3	7
908	<i>Eucalyptus pilularis</i>	407019	6373464	0.65	16	2	2	2		6
909	<i>Eucalyptus pilularis</i>	407025	6373457	0.85	20			2	1	3
910	<i>Dead Stag</i>	407028	6373457	0.5	7	1				1
911	<i>Eucalyptus pilularis</i>	407023	6373429	0.75	16	2				2
912	<i>Eucalyptus pilularis</i>	406991	6373406	0.7	20			2	2	4
913	<i>Dead Stag</i>	406984	6373399	0.25	7	1				1
914	<i>Eucalyptus pilularis</i>	406981	6373392	0.75	20		1	2	2	5
915	<i>Eucalyptus pilularis</i>	406972	6373397	0.6	18			2	2	4
916	<i>Eucalyptus pilularis</i>	406965	6373387	0.8	17	4				4
917	<i>Eucalyptus pilularis</i>	406957	6373374	0.65	20				2	2
918	<i>Eucalyptus pilularis</i>	406956	6373374	0.6	10			1		1
919	<i>Angophora costata</i>	406936	6373341	0.9	17	1				1
920	<i>Angophora costata</i>	406931	6373350	0.8	19		1			1
921	<i>Angophora costata</i>	406856	6373273	0.55	16				1	1
922	<i>Eucalyptus pilularis</i>	406844	6373260	0.8	20	1			1	2
923	<i>Eucalyptus pilularis</i>	406833	6373251	0.55	18				1	1
924	<i>Eucalyptus pilularis</i>	406992	6373433	0.9	17	3	1	1		5
925	<i>Eucalyptus pilularis</i>	406998	6373436	0.8	17	1	1			2
926	<i>Eucalyptus pilularis</i>	407194	6373488	0.5	18				2	2
927	<i>Eucalyptus pilularis</i>	407179	6373485	0.8	18		1	1	2	4
928	<i>Eucalyptus pilularis</i>	407161	6373480	0.7	20		1	2		3
929	<i>Eucalyptus pilularis</i>	407158	6373487	0.75	20			2	2	4
930	<i>Eucalyptus pilularis</i>	407145	6373490	0.7	20		2	2	2	6
931	<i>Eucalyptus pilularis</i>	407140	6373489	0.7	16	1			2	3
932	<i>Eucalyptus pilularis</i>	407142	6373480	0.8	25			3	2	5
933	<i>Eucalyptus pilularis</i>	407146	6373479	0.65	20		1	1		2
934	<i>Eucalyptus pilularis</i>	407108	6373492	0.7	20		1	2	2	5
935	<i>Angophora costata</i>	407117	6373498	0.5	15				2	2
936	<i>Eucalyptus pilularis</i>	407097	6373489	0.5	18	1			1	2
937	<i>Eucalyptus pilularis</i>	407090	6373494	0.7	20			1	1	2
938	<i>Eucalyptus pilularis</i>	407080	6373482	0.75	20	1	1		1	3
939	<i>Eucalyptus pilularis</i>	407079	6373479	0.85	25	1	2	3	2	8
940	<i>Eucalyptus pilularis</i>	407073	6373473	0.5	16			1	2	3
941	<i>Angophora costata</i>	407058	6373499	0.5	18			1	1	2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
942	<i>Eucalyptus pilularis</i>	407065	6373487	0.55	17		2	1		3
943	<i>Eucalyptus pilularis</i>	407070	6373465	0.65	20		1		1	2
944	<i>Eucalyptus pilularis</i>	407096	6373464	0.5	17			2	1	3
945	<i>Eucalyptus pilularis</i>	407097	6373468	0.7	20	1		1	1	3
946	<i>Eucalyptus pilularis</i>	407097	6373468	0.7	20			4	4	8
947	<i>Eucalyptus pilularis</i>	406871	6373535	0.95	20	1				1
948	<i>Eucalyptus pilularis</i>	406837	6373541	0.65	10		1	3	2	6
949	<i>Eucalyptus pilularis</i>	406829	6373546	0.65	20			1		1
950	<i>Angophora costata</i>	406826	6373544	0.45	15				2	2
951	<i>Eucalyptus pilularis</i>	406824	6373543	0.5	17		2	3	2	7
952	<i>Eucalyptus pilularis</i>	406803	6373543	0.7	20				2	2
953	<i>Eucalyptus pilularis</i>	406720	6373563	0.7	20		1			1
954	<i>Eucalyptus pilularis</i>	406697	6373547	0.65	20		1	2		3
955	<i>Angophora costata</i>	406695	6373536	0.6	20		1			1
956	<i>Angophora costata</i>	406698	6373530	0.45	17			2	2	4
957	<i>Eucalyptus pilularis</i>	406699	6373529	0.6	18			2	1	3
958	<i>Eucalyptus pilularis</i>	406724	6373527	0.5	18	1				1
959	<i>Dead Stag</i>	406724	6373541	0.5	8	1	3		1	5
960	<i>Eucalyptus pilularis</i>	406747	6373555	0.65	20		1		1	2
961	<i>Angophora costata</i>	406721	6373544	0.45	18			2	1	3
962	<i>Eucalyptus pilularis</i>	406733	6373555	0.5	12				2	2
963	<i>Angophora costata</i>	406747	6373558	0.45	20	2	2	2		6
964	<i>Eucalyptus pilularis</i>	406756	6373556	0.8	20	3	2	1		6
965	<i>Eucalyptus pilularis</i>	406775	6373556	0.85	20	1			1	2
966	<i>Eucalyptus pilularis</i>	406778	6373545	0.65	20	1	1			2
967	<i>Eucalyptus pilularis</i>	406778	6373538	0.65	20		1			1
968	<i>Eucalyptus pilularis</i>	406756	6373545	0.5	18		4	4	2	10
969	<i>Eucalyptus pilularis</i>	406752	6373547	0.9	20			1		1
970	<i>Eucalyptus pilularis</i>	406743	6373543	0.7	20			2		2
971	<i>Eucalyptus pilularis</i>	406742	6373541	0.5	20			1		1
972	<i>Eucalyptus pilularis</i>	406755	6373538	0.5	20		1		2	3
973	<i>Eucalyptus pilularis</i>	406757	6373529	0.5	20				2	2
974	<i>Eucalyptus pilularis</i>	406761	6373519	0.65	20	1	2	1		4
975	<i>Eucalyptus pilularis</i>	406793	6373531	1	20		1	1		2
976	<i>Eucalyptus pilularis</i>	406800	6373535	0.7	20				3	3
977	<i>Eucalyptus pilularis</i>	406893	6373534	0.55	18	1				1
978	<i>Eucalyptus pilularis</i>	406893	6373521	0.5	18		2	2		4
979	<i>Eucalyptus pilularis</i>	406877	6373485	1.1	20			1		1
980	<i>Banksia serrata</i>	406895	6373471	0.4	12			2	1	3
981	<i>Eucalyptus pilularis</i>	406904	6373475	0.5	16			2		2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
982	<i>Eucalyptus pilularis</i>	406914	6373479	0.55	18			1		1
983	<i>Angophora costata</i>	406911	6373489	0.3	10	1		1		2
984	<i>Eucalyptus pilularis</i>	406909	6373498	0.65	17			4	1	5
985	<i>Eucalyptus pilularis</i>	406907	6373498	0.6	16	1				1
986	<i>Eucalyptus pilularis</i>	406909	6373502	1	20				1	1
987	<i>Angophora costata</i>	406901	6373496	0.3	15	1		4	1	6
988	<i>Eucalyptus pilularis</i>	406915	6373504	0.65 + 0.4	20	1	2	2		5
989	<i>Eucalyptus pilularis</i>	406919	6373510	0.7	20	1	1			2
990	<i>Angophora costata</i>	406920	6373511	0.5	18	1		2		3
991	<i>Eucalyptus pilularis</i>	406920	6373512	1	20	1	1			2
992	<i>Eucalyptus pilularis</i>	406937	6373523	0.7	20	1		1		2
993	<i>Eucalyptus pilularis</i>	406946	6373522	0.7	20	3		1		4
994	<i>Eucalyptus pilularis</i>	406949	6373519	0.8	16			1		1
995	<i>Angophora costata</i>	406951	6373514	0.3	6	1				1
996	<i>Eucalyptus pilularis</i>	406953	6373502	0.6	20		1			1
997	<i>Eucalyptus pilularis</i>	406943	6373490	0.55	16			2		2
998	<i>Angophora costata</i>	406939	6373489	0.55	20	1	1	1		3
999	<i>Eucalyptus pilularis</i>	406938	6373488	0.65	20	1				1
1000	<i>Eucalyptus pilularis</i>	406924	6373487	0.65	20			1	2	3
1001	<i>Eucalyptus pilularis</i>	406925	6373482	0.8	20		3	5	2	10
1002	<i>Eucalyptus pilularis</i>	406925	6373477	1.1	20	1				1
1003	<i>Eucalyptus pilularis</i>	406935	6373470	0.4 + 0.5	17		1			1
1004	<i>Eucalyptus pilularis</i>	406936	6373471	0.45	16			2		2
1005	<i>Eucalyptus pilularis</i>	406943	6373471	0.5	16	1	1			2
1006	<i>Dead Stag</i>	406943	6373473	0.45	10	1		1		2
1007	<i>Dead Stag</i>	406943	6373473	0.5	8			1	2	3
1008	<i>Eucalyptus pilularis</i>	406947	6373478	0.6	18	1				1
1009	<i>Angophora costata</i>	406951	6373483	0.45	10			2	1	3
1010	<i>Eucalyptus pilularis</i>	406967	6373514	0.6	20			3		3
1011	<i>Eucalyptus pilularis</i>	406970	6373513	0.7	20			1		1
1012	<i>Eucalyptus pilularis</i>	406973	6373508	0.5	17				2	2
1013	<i>Eucalyptus pilularis</i>	406974	6373502	0.55	20		3	1		4
1014	<i>Eucalyptus pilularis</i>	406974	6373489	0.6	19		1		2	3
1015	<i>Eucalyptus pilularis</i>	406964	6373470	0.55	19		1			1
1016	<i>Angophora costata</i>	406970	6373471	0.65	15		1	1		2
1017	<i>Eucalyptus pilularis</i>	406983	6373479	0.6	20	3	2	4	1	10

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
				0.65 + 0.65						
1018	<i>Eucalyptus pilularis</i>	406991	6373484	0.65	20				2	2
1019	<i>Eucalyptus pilularis</i>	407000	6373489	0.5	18	1	1			2
1020	<i>Eucalyptus pilularis</i>	407003	6373493	0.6	20				1	1
1021	<i>Eucalyptus pilularis</i>	407014	6373484	0.5	18				2	2
1022	<i>Eucalyptus pilularis</i>	407008	6373499	0.5	20			1		1
1023	<i>Eucalyptus pilularis</i>	407003	6373507	0.5	20	1	2	1	1	5
1024	<i>Eucalyptus pilularis</i>	406988	6373512	0.9	20		1	2	1	4
1025	<i>Eucalyptus pilularis</i>	406988	6373506	0.8	20		1	1		2
1026	<i>Eucalyptus pilularis</i>	406999	6373513	0.7	20	1			1	2
1027	<i>Eucalyptus pilularis</i>	407026	6373500	0.7	20				2	2
1028	<i>Eucalyptus pilularis</i>	407008	6373513	0.6	20			1		1
1029	<i>Eucalyptus pilularis</i>	407024	6373508	0.5	15				4	4
1030	<i>Eucalyptus pilularis</i>	407047	6373481	0.6	20				5	5
1031	<i>Eucalyptus pilularis</i>	407033	6373480	0.7	20				3	3
1032	<i>Eucalyptus pilularis</i>	407025	6373492	0.4	18			1	1	2
1033	<i>Eucalyptus pilularis</i>	407020	6373481	0.8	20		1			1
1034	<i>Eucalyptus pilularis</i>	406842	6373236	0.5	16				2	2
1035	<i>Angophora costata</i>	406842	6373233	0.6	18				1	1
1036	<i>Banksia serrata</i>	406842	6373232	0.3	6		1	1		2
1037	<i>Angophora costata</i>	406841	6373227	0.5	6			1		1
1038	<i>Angophora costata</i>	406832	6373222	0.3	14			1	2	3
1039	<i>Angophora costata</i>	406818	6373223	0.6	18	1	1	1		3
1040	<i>Dead Stag</i>	406810	6373220	0.5	8		1	1		2
1041	<i>Dead Stag</i>	406810	6373212	0.5	10				1	1
1042	<i>Angophora costata</i>	406800	6373215	0.5	18			1	2	3
1043	<i>Eucalyptus pilularis</i>	406796	6373212	0.55	18				2	2
1044	<i>Eucalyptus pilularis</i>	406795	6373203	0.7	20				2	2
1045	<i>Angophora costata</i>	406799	6373199	0.35	15		1			1
1046	<i>Dead Stag</i>	406781	6373196	0.4	3			1	2	3
1047	<i>Dead Stag</i>	406770	6373184	0.6	12			5	2	7
1048	<i>Angophora costata</i>	406781	6373170	0.7	20				2	2
1049	<i>Angophora costata</i>	406765	6373167	0.8	20			1	1	2
1050	<i>Angophora costata</i>	406767	6373157	0.5	18			1		1
1051	<i>Eucalyptus pilularis</i>	406741	6373081	0.55	18		2	2	1	5
1052	<i>Angophora costata</i>	406735	6373070	0.55	18		1			1
1053	<i>Eucalyptus pilularis</i>	406679	6373010	0.65	20				3	3
1054	<i>Angophora costata</i>	406671	6373007	0.5	18	1			3	4
1055	<i>Eucalyptus pilularis</i>	406664	6373003	1	18	4	2	1	1	8

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1056	<i>Eucalyptus pilularis</i>	406818	6373194	1.1	20	3	3	1		7
1057	<i>Eucalyptus pilularis</i>	407007	6373407	1	20			2	1	3
1058	<i>Eucalyptus pilularis</i>	407031	6373419	0.7	20			1	1	2
1059	<i>Eucalyptus pilularis</i>	407051	6373515	0.55	20			1	3	4
1060	<i>Eucalyptus pilularis</i>	407056	6373527	1	20		1	4	2	7
1061	<i>Eucalyptus pilularis</i>	407057	6373529	1	20		1	1		2
1062	<i>Eucalyptus pilularis</i>	407091	6373520	0.7	20				1	1
1063	<i>Eucalyptus pilularis</i>	407098	6373520	0.55	20		1	1		2
1064	Dead Stag	407098	6373526	0.45	16			2		2
1065	<i>Eucalyptus pilularis</i>	407091	6373540	0.6	20			1	2	3
1066	<i>Eucalyptus pilularis</i>	407103	6373543	0.45 + 0.5	20			1	1	2
1067	<i>Eucalyptus pilularis</i>	407109	6373539	0.5	18			1		1
1068	<i>Eucalyptus pilularis</i>	407112	6373529	0.4 + 0.4	16				1	1
1069	<i>Eucalyptus pilularis</i>	407118	6373516	0.55	20		3	1		4
1070	<i>Eucalyptus pilularis</i>	407144	6373499	0.65	20				1	1
1071	<i>Eucalyptus pilularis</i>	407164	6373512	0.6	20				1	1
1072	<i>Eucalyptus pilularis</i>	407172	6373524	0.7	20				2	2
1073	<i>Eucalyptus pilularis</i>	407190	6373532	0.8	20			1	1	2
1074	<i>Eucalyptus pilularis</i>	407203	6373533	0.55	20			1		1
1075	<i>Eucalyptus pilularis</i>	407205	6373542	0.45 + 0.45	20				1	1
1076	<i>Eucalyptus pilularis</i>	407193	6373571	0.5	19			1		1
1077	<i>Eucalyptus pilularis</i>	407179	6373578	0.5	20				1	1
1078	<i>Eucalyptus pilularis</i>	407175	6373577	0.6	20			1	2	3
1079	<i>Eucalyptus pilularis</i>	407163	6373554	0.7	20				3	3
1080	<i>Eucalyptus pilularis</i>	407133	6373564	0.6	20			1	2	3
1081	<i>Eucalyptus pilularis</i>	407128	6373551	0.8	22				1	1
1082	<i>Eucalyptus pilularis</i>	407131	6373544	0.5	18				2	2
1083	<i>Angophora costata</i>	407121	6373527	0.6	18			1	1	2
1084	<i>Eucalyptus pilularis</i>	407110	6373565	0.7	20		1	1	1	3
1085	<i>Eucalyptus pilularis</i>	407110	6373575	0.65	20	1	1	4	3	9
1086	<i>Eucalyptus pilularis</i>	407091	6373569	0.65	20		1	2	1	4
1087	<i>Eucalyptus pilularis</i>	407105	6373598	0.8	20	4	1	3	1	9
1088	Dead Stag	407094	6373602	0.85	18				2	2
1089	<i>Eucalyptus pilularis</i>	407089	6373611	0.5	20			1	1	2
1090	<i>Banksia serrata</i>	407087	6373611	0.45	15			1		1
1091	<i>Banksia serrata</i>	407079	6373605	0.45	16	1	1			2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1092	<i>Eucalyptus pilularis</i>	407079	6373596	0.5	12		2	2	1	5
1093	<i>Eucalyptus pilularis</i>	407073	6373595	0.75	20				2	2
1094	<i>Eucalyptus pilularis</i>	407064	6373589	0.5	18		2	3	2	7
1095	<i>Eucalyptus pilularis</i>	407062	6373572	1	22	1	2	2		5
1096	<i>Eucalyptus pilularis</i>	407056	6373564	0.75	20			1	3	4
1097	<i>Eucalyptus pilularis</i>	407069	6373547	0.65	22				3	3
1098	<i>Eucalyptus pilularis</i>	407051	6373597	0.5	20			1	3	4
1099	<i>Eucalyptus pilularis</i>	407066	6373618	1	20				1	1
1100	<i>Eucalyptus pilularis</i>	407071	6373626	0.5	18	1	1	4	2	8
1101	<i>Eucalyptus pilularis</i>	407093	6373642	0.85	20				3	3
1102	<i>Eucalyptus pilularis</i>	407102	6373644	0.7	20			1	2	3
1103	<i>Eucalyptus pilularis</i>	407104	6373644	0.55	20				1	1
1104	<i>Eucalyptus pilularis</i>	407107	6373642	0.5	18			1		1
1105	<i>Eucalyptus pilularis</i>	407106	6373642	0.45	17				2	2
1106	<i>Eucalyptus pilularis</i>	407111	6373637	0.3 + 0.32	10			1		1
1107	<i>Banksia serrata</i>	407110	6373636	0.3	10				1	1
1108	<i>Eucalyptus pilularis</i>	407122	6373626	0.4	18			1	2	3
1109	<i>Eucalyptus pilularis</i>	407122	6373625	0.8	20				1	1
1110	<i>Eucalyptus pilularis</i>	407122	6373621	0.3	10				1	1
1111	<i>Eucalyptus pilularis</i>	407126	6373622	0.5	18			1	1	2
1112	<i>Eucalyptus pilularis</i>	407138	6373627	0.5	18			2	2	4
1113	<i>Eucalyptus pilularis</i>	407156	6373628	1.2	22			1	3	4
1114	<i>Eucalyptus pilularis</i>	407173	6373596	0.5	20				2	2
1115	<i>Eucalyptus pilularis</i>	407161	6373598	0.55	20				1	1
1116	<i>Eucalyptus pilularis</i>	407156	6373589	0.4	18		1	5	2	8
1117	<i>Eucalyptus pilularis</i>	407143	6373595	0.6	20				1	1
1118	<i>Eucalyptus pilularis</i>	407109	6373605	0.6	20				2	2
1119	<i>Eucalyptus pilularis</i>	407121	6373600	0.55	20				2	2
1120	<i>Eucalyptus pilularis</i>	407125	6373597	0.55	20				3	3
1121	<i>Eucalyptus pilularis</i>	407132	6373593	0.5	20				2	2
1122	<i>Eucalyptus pilularis</i>	407174	6373593	0.5	19				2	2
1123	<i>Eucalyptus pilularis</i>	407175	6373597	0.5	20				3	3
1124	<i>Eucalyptus pilularis</i>	407176	6373597	0.45	18		1		3	4
1125	<i>Eucalyptus pilularis</i>	407184	6373596	0.5	18				2	2
1126	<i>Eucalyptus pilularis</i>	407187	6373584	0.5	20				4	4
1127	<i>Eucalyptus pilularis</i>	407193	6373582	0.55	20	1				1
1128	<i>Eucalyptus pilularis</i>	407200	6373587	0.7	18	1	1		1	3
1129	<i>Eucalyptus pilularis</i>	407215	6373606	0.65	18	1	1	5	2	9
1130	<i>Eucalyptus pilularis</i>	407216	6373614	1	18	1				1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1131	<i>Eucalyptus pilularis</i>	407211	6373612	0.5	17			4	4	8
1132	<i>Eucalyptus pilularis</i>	407208	6373609	0.8	19				3	3
1133	<i>Banksia serrata</i>	407195	6373622	0.35	10				2	2
1134	<i>Eucalyptus pilularis</i>	407194	6373625	0.65	19		3	2	2	7
1135	<i>Eucalyptus pilularis</i>	407203	6373625	0.6	18		1	2	1	4
1136	<i>Dead Stag</i>	407207	6373627	0.8	10			1	1	2
1137	<i>Eucalyptus pilularis</i>	407212	6373630	0.5	18	1	1	3	1	6
1138	<i>Eucalyptus pilularis</i>	407209	6373638	0.8	20	1	3	2	2	8
1139	<i>Eucalyptus pilularis</i>	407190	6373644	0.75	20		1	3	2	6
1140	<i>Eucalyptus pilularis</i>	407176	6373635	0.8	20				1	1
1141	<i>Eucalyptus pilularis</i>	407172	6373633	0.45	17		1	1	1	3
1142	<i>Eucalyptus pilularis</i>	407165	6373638	0.65	18		1	2	1	4
1143	<i>Eucalyptus pilularis</i>	407159	6373636	0.65	19		2	6	3	11
1144	<i>Eucalyptus pilularis</i>	407147	6373642	0.7	19			6	2	8
1145	<i>Eucalyptus pilularis</i>	407132	6373653	0.8	19	1		1	2	4
1146	<i>Eucalyptus pilularis</i>	407123	6373666	0.85	19	2		1	1	4
1147	<i>Eucalyptus pilularis</i>	407122	6373669	0.75	18		3	3	1	7
1148	<i>Eucalyptus pilularis</i>	407118	6373668	0.85	19		2	3	2	7
1149	<i>Eucalyptus pilularis</i>	407113	6373669	0.9	19			1	3	4
1150	<i>Eucalyptus pilularis</i>	407105	6373666	0.6	17			2	2	4
1151	<i>Eucalyptus pilularis</i>	407099	6373664	0.55	19				3	3
1152	<i>Dead Stag</i>	407121	6373693	0.35	12			2	1	3
1153	<i>Eucalyptus pilularis</i>	407136	6373689	0.85	19				2	2
1154	<i>Eucalyptus pilularis</i>	407145	6373688	0.5 + 0.4	19				3	3
1155	<i>Eucalyptus pilularis</i>	407142	6373685	0.35	14				1	1
1156	<i>Eucalyptus pilularis</i>	407151	6373698	0.7	18				1	1
1157	<i>Eucalyptus pilularis</i>	407160	6373722	0.4 + 0.6	19				1	1
1158	<i>Eucalyptus pilularis</i>	407184	6373732	0.65	19		2	8	2	12
1159	<i>Dead Stag</i>	407197	6373732	0.75	16				1	1
1160	<i>Eucalyptus pilularis</i>	407156	6373726	0.45	18				2	2
1161	<i>Eucalyptus pilularis</i>	407151	6373728	1	18				1	1
1162	<i>Eucalyptus pilularis</i>	407157	6373737	0.45 + 0.4	18				2	2
1163	<i>Eucalyptus pilularis</i>	407164	6373743	0.4 + 0.3	17				1	1
1164	<i>Eucalyptus pilularis</i>	407166	6373744	0.25 + 0.4	17				2	2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1165	<i>Eucalyptus pilularis</i>	407178	6373746	0.4 + 0.4	18		1	2		3
1166	<i>Eucalyptus pilularis</i>	407187	6373749	0.7	18				2	2
1167	<i>Eucalyptus pilularis</i>	407192	6373746	0.5 + 0.3	18			3	2	5
1168	<i>Eucalyptus pilularis</i>	407194	6373750	0.8	20				1	1
1169	<i>Angophora costata</i>	407195	6373754	0.5	16			1	1	2
1170	<i>Eucalyptus pilularis</i>	407165	6373767	1	20			1		1
1170	<i>Eucalyptus pilularis</i>	407254	6373772	0.8	20		1	2		3
1171	<i>Eucalyptus pilularis</i>	407181	6373781	0.55	19			1		1
1171	<i>Eucalyptus pilularis</i>	407261	6373762	0.9	19		1			1
1172	<i>Eucalyptus robusta</i>									0
1172	<i>Eucalyptus pilularis</i>	407097	6373468	0.7	20			2	2	4
1173	<i>Eucalyptus robusta</i>	407250	6373806	0.35	14				1	1
1173	<i>Eucalyptus pilularis</i>	406871	6373535	0.95	20			2	1	3
1174	<i>Eucalyptus robusta</i>	407253	6373801	0.65	18			2		2
1174	<i>Eucalyptus pilularis</i>	406837	6373541	0.65	10	1				1
1175	<i>Eucalyptus robusta</i>	407260	6373789	0.6	17				2	2
1175	<i>Eucalyptus pilularis</i>	406829	6373546	0.65	20	1	1		1	3
1176	<i>Eucalyptus robusta</i>	407267	6373785	0.5	19	3	2	2	1	8
1176	<i>Angophora costata</i>	406826	6373544	0.45	15		1		1	2
1177	<i>Eucalyptus robusta</i>	407320	6373860	0.45	16	1		1	1	3
1177	<i>Eucalyptus pilularis</i>	406824	6373543	0.5	17			2	1	3
1178	<i>Eucalyptus pilularis</i>	407295	6373815	0.9	19	3		2	2	7
1178	<i>Eucalyptus pilularis</i>	406803	6373543	0.7	20				2	2
1179	<i>Eucalyptus pilularis</i>	407310	6373817	0.85	19		1	1	2	4
1179	<i>Eucalyptus pilularis</i>	406720	6373563	0.7	20	2	2	2		6
1180	<i>Eucalyptus pilularis</i>	407316	6373817	1.3	19		3	3	3	9
1180	<i>Eucalyptus pilularis</i>	406697	6373547	0.65	20	3	2	1		6
1181	<i>Eucalyptus pilularis</i>	407339	6373822	0.7	17			2		2
1181	<i>Angophora costata</i>	406695	6373536	0.6	20	1			1	2
1182	<i>Eucalyptus pilularis</i>	407348	6373819	0.9	19	1		2	2	5
1182	<i>Angophora costata</i>	406698	6373530	0.45	17	1	1			2
1183	<i>Eucalyptus pilularis</i>	407361	6373827	0.55 + 0.5	16				1	1
1183	<i>Eucalyptus pilularis</i>	406699	6373529	0.6	18		1			1
1184	<i>Eucalyptus pilularis</i>	407370	6373833	0.75	18	1				1
1184	<i>Eucalyptus pilularis</i>	406724	6373527	0.5	18		4	4	2	10
1185	<i>Eucalyptus pilularis</i>	407384	6373820	0.6	16	4	2	1		7
1185	<i>Dead Stag</i>	406724	6373541	0.5	8			1		1

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1186	<i>Dead Stag</i>	407396	6373820	0.7	10				1	1
1186	<i>Eucalyptus pilularis</i>	406747	6373555	0.65	20			2		2
1187	<i>Eucalyptus pilularis</i>	407345	6373798	0.9	18	2	2	1	2	7
1187	<i>Angophora costata</i>	406721	6373544	0.45	18			1		1
1188	<i>Eucalyptus pilularis</i>	407346	6373783	0.8	18			2	1	3
1188	<i>Eucalyptus pilularis</i>	406733	6373555	0.5	12		1		2	3
1189	<i>Eucalyptus pilularis</i>	407323	6373755	1.1	19			2	2	4
1189	<i>Angophora costata</i>	406747	6373558	0.45	20				2	2
1190	<i>Eucalyptus pilularis</i>	407327	6373780	0.6	18				2	2
1190	<i>Eucalyptus pilularis</i>	406756	6373556	0.8	20	1	2	1		4
1191	<i>Eucalyptus pilularis</i>	407327	6373786	0.5	17	1	1	2		4
1191	<i>Eucalyptus pilularis</i>	406775	6373556	0.85	20		1	1		2
1192	<i>Eucalyptus pilularis</i>	407326	6373798	0.5	18		3	5	4	12
1192	<i>Eucalyptus pilularis</i>	406778	6373545	0.65	20				3	3
1193	<i>Angophora costata</i>	407329	6373800	0.7	19	1	2		2	5
1193	<i>Eucalyptus pilularis</i>	406778	6373538	0.65	20	1				1
1194	<i>Eucalyptus pilularis</i>	407334	6373805	0.6 +	18			2	2	4
1194	<i>Eucalyptus pilularis</i>	406756	6373545	0.5	18		2	2		4
1195	<i>Eucalyptus pilularis</i>	407353	6373696	0.7	19	1	4	10	5	20
1195	<i>Eucalyptus pilularis</i>	406752	6373547	0.9	20			1		1
1196	<i>Eucalyptus pilularis</i>	407369	6373714	0.65	18	1	1		4	6
1196	<i>Eucalyptus pilularis</i>	406743	6373543	0.7	20			2	1	3
1197	<i>Dead Stag</i>	407278	6373722	0.7	17	2	2			4
1197	<i>Eucalyptus pilularis</i>	406742	6373541	0.5	20			2		2
1198	<i>Angophora costata</i>	407280	6373727	0.5	18	1	3	3	1	8
1198	<i>Eucalyptus pilularis</i>	406755	6373538	0.5	20			1		1
1199	<i>Eucalyptus pilularis</i>	407286	6373736	1	22			2	2	4
1199	<i>Eucalyptus pilularis</i>	406757	6373529	0.5	20	1		1		2
1200	<i>Eucalyptus pilularis</i>	407260	6373721	1	20			4	1	5
1200	<i>Eucalyptus pilularis</i>	406761	6373519	0.65	20			4	1	5
1201	<i>Eucalyptus pilularis</i>	407266	6373692	0.65	18	2	3	2	2	9
1201	<i>Eucalyptus pilularis</i>	406793	6373531	1	20	1				1
1202	<i>Angophora costata</i>	407264	6373693	0.5	17			1	1	2
1202	<i>Eucalyptus pilularis</i>	406800	6373535	0.7	20				1	1
1203	<i>Dead Stag</i>	407251	6373694	0.7	16			1		1
1203	<i>Eucalyptus pilularis</i>	406893	6373534	0.55	18	1		4	1	6
1204	<i>Eucalyptus pilularis</i>	407252	6373709	0.65	18			1	1	2
1204	<i>Eucalyptus pilularis</i>	406893	6373521	0.5	18	1	2	2		5
1205	<i>Eucalyptus pilularis</i>	407257	6373711	0.5	18				1	1
1205	<i>Eucalyptus pilularis</i>	406877	6373485	1.1	20	1	1			2

Tree No	HBT Tree Species	Coordinates GDA94		DBH (M)	Height (M)	Hollow Size Class				Total
		East	North			1	2	3	4	
1206	<i>Eucalyptus pilularis</i>	407260	6373731	0.6	17		2	3	4	9
1206	<i>Banksia serrata</i>	406895	6373471	0.4	12	1		2		3
1207	<i>Eucalyptus pilularis</i>	407256	6373730	0.5	17		1	3	2	6
1207	<i>Eucalyptus pilularis</i>	406904	6373475	0.5	16	1	1			2
1208	<i>Eucalyptus pilularis</i>	407253	6373730	0.85	20			4	2	6
1208	<i>Eucalyptus pilularis</i>	406914	6373479	0.55	18	1		1		2
1209	<i>Eucalyptus pilularis</i>	407252	6373731	0.75	19	2	3	2	2	9
1209	<i>Angophora costata</i>	406911	6373489	0.3	10	3		1		4
1210	<i>Eucalyptus pilularis</i>	407226	6373745	0.9	20			2	2	4
1210	<i>Eucalyptus pilularis</i>	406909	6373498	0.65	17			1		1
1211	<i>Eucalyptus pilularis</i>	407210	6373752	0.8	20				1	1
1211	<i>Eucalyptus pilularis</i>	406907	6373498	0.6	16	1				1
1212	<i>Eucalyptus pilularis</i>	407226	6373771	0.75	20	10	4	1		15
1212	<i>Eucalyptus pilularis</i>	406909	6373502	1	20		1			1
1213	<i>Eucalyptus pilularis</i>	407231	6373772	0.7	20	1	2	3	3	9
1213	<i>Angophora costata</i>	406901	6373496	0.3	15			2		2
1214	<i>Dead Stag</i>	407234	6373772	1.2	18				3	3
1214	<i>Eucalyptus pilularis</i>	406915	6373504	0.65 + 0.4	20	1	1	1		3
1215	<i>Eucalyptus pilularis</i>	407240	6373774	0.85	20				2	2
1215	<i>Eucalyptus pilularis</i>	406919	6373510	0.7	20	1				1
1216	<i>Eucalyptus pilularis</i>	407224	6373792	0.75	19	1	2	1	1	5
1216	<i>Angophora costata</i>	406920	6373511	0.5	18			1	2	3
1217	<i>Eucalyptus pilularis</i>	407221	6373789	0.65	18	2	2	4		8
1217	<i>Eucalyptus pilularis</i>	406920	6373512	1	20		3	5	2	10

Appendix L: Previous Surveys (Wildthing 2020)

Table 38: Targeted threatened flora surveys completed – Wild Thing 2013-2019

Target species	Survey Type	Survey Effort	Dates
<i>Allocasuarina defungens</i> Dwarf Heath Casuarina	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Allocasuarina similis</i> Nabiac Casuarina	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Angophora inopina</i> Charmhaven Apple	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Asperula asthenes</i> Trailing Woodruff	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Callistemon linearifolius</i> Netted Bottle Brush	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Corybas downlingii</i> Red Helmet Orchid	Random meander surveys	4 person hours	28/06/2013
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	18 person hours	04/02/13, 06/02/13, 13/11/14
<i>Cynanchum elegans</i> White-flowered Wax Plant	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Diuris arenaria</i> Tomaree Doubletail	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	46 person hours	13/08/13, 21/08/13, 13/09/13, 25/09/13, 05/09/16, 02/09/19
<i>Diuris praecox</i> Newcastle Doubletail	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	46 person hours	13/08/13, 21/08/13, 13/09/13, 05/09/16, 02/09/19
<i>Eucalyptus camfieldii</i> Camfield's Stringybark	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Eucalyptus glaucina</i> Slaty Red Gum	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Eucalyptus parramattensis</i> subsp. <i>decadens</i> Earp's Gum	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Genoplesium baueri</i> Bauer's Midge Orchid	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	18 person hours	04/02/13, 06/02/13
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flowered Grevillea	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Lindernia alsinoides</i> Noah's False Chickweed	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Maundia triglochoides</i> Maundia	Random meander surveys	4.5 person hours	04/02/13, 06/02/13, 13/11/13
<i>Melaleuca biconvexa</i> Biconvex Paperbark	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13

Target species	Survey Type	Survey Effort	Dates
<i>Melaleuca groveana</i> Grove's Paperbark	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Persicaria elatior</i> Tall Knotweed	Random meander surveys	4.5 person hours	17/04/2015
<i>Phaius australis</i> Lesser Swamp Orchid	Random meander surveys	28 person hours	04/02/13, 06/02/13, 13/11/13
<i>Prostanthera densa</i> Villous Mintbush	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Pterostylis chaetophora</i> Tall Rustyhood	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	28 person hours	10/10/17, 11/10/17, 13/11/17
<i>Rhizanthella slateri</i> Eastern Underground Orchid	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	46 person hours	13/08/13, 21/08/13, 13/09/13, 25/09/13, 05/09/16
<i>Syzygium paniculatum</i> Magenta Lilly Pilly	Random meander surveys	20 person hours	04/02/13, 06/02/13, 13/11/13
<i>Tetralthea juncea</i> Black-eyed Susan	Walking parallel transects across the entire study area, spaced at approximately 15m intervals	46 person hours	13/08/13, 21/08/13, 13/09/13, 25/09/13, 05/09/16
<i>Zannichellia palustris</i>	Random meander surveys	4.5 person hours	17/04/2015

Table 39: Targeted threatened fauna surveys completed – Wild Thing 2013-2019

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
Mammals				
<i>Aepyprymnus rufescens</i>	Rufous Bettong	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Dasyurus maculatus maculatus</i>	Tiger Quoll	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Petaurus australis</i>	Yellow-bellied Glider	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
				05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Petaurus norfolcensis</i>	Squirrel Glider	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Phascogale tapoatafa</i>	Brush-tailed Phascogale	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
				10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Phascolarctos cinereus</i>	Koala	Spotlighting; Mapping Preferred Feed Trees; Habitat tree surveys.	Spotlighting at least 20 hours. Habitat tree survey over nine days.	Spotlighting 1/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Habitat Searches 20/10/15, 03/06/14, 17/04/15, 20/10/16
<i>Planigale maculata</i>	Common Planigale	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
				10/02/15 to 17/04/15 30/04/15 to 04/06/15
<i>Pseudomys gracilicaudatus</i>	Eastern Chestnut Mouse	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Trapping 4 nights in 2013 and 2014 Spotlighting 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15; Remote Cameras 05/07/13 to 12/07/13 12/07/13 to 12/09/13 28/11/14 to 11/12/14 22/01/15 to 28/01/15 10/02/15 to 17/04/15 30/04/15 to 04/06/15
Bats				
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Kerivoula papuensis</i>	Golden-tipped Bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
				21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Miniopterus australis</i>	Little Bentwing-bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Miniopterus schreibersii oceanensis</i>	Large Bentwing-bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Mormopterus norfolkensis</i>	East Coast Freetail-bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Myotis macropus</i>	Southern Myotis	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13,

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
				29/04/14, 07/11/14, 22/01/15
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
<i>Syconycteris australis</i>	Common Blossom-bat	Harp Trapping; Bat Call Survey	10 Harp Trapping Nights; Bat Call Survey 7 Nights	Harp Trapping 21/05/13, 13/11/13, 29/04/14, 27/11/14, 22/01/15; Anabat Surveys 21/05/13, 30/05/13, 03/09/13, 13/11/13, 29/04/14, 07/11/14, 22/01/15
Birds				
<i>Anthochaera phrygia</i>	Regent Honeyeater	Winter surveys targeting flowering trees particularly specimens of Swamp Mahogany.		Bird Surveys 27/05/14, 29/07/15
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Calyptorhynchus lathamii</i>	Glossy Black-Cockatoo	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
<i>Circus assimilis</i>	Spotted Harrier	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Point Surveys over wetland.	Two nights for half hour duration.	Wetland Surveys 03/06/14, 17/04/15
<i>Epthianura albifrons</i>	White-fronted Chat	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Glossopsitta pusilla</i>	Little Lorikeet	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Hieraaetus morphnoides</i>	Little Eagle	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Ixobrychus flavicollis</i>	Black Bittern	Point Surveys over wetland.	Two nights for half hour duration.	Wetland Surveys 03/06/14, 17/04/15
<i>Lathamus discolor</i>	Swift Parrot	Winter surveys targeting flowering trees particularly specimens of Swamp Mahogany.		Bird Surveys 27/05/14, 29/07/15
<i>Limicola falcinellus</i>	Broad-billed Sandpiper	Point Surveys over wetland.	Two nights for half hour duration.	Wetland Surveys 03/06/14, 17/04/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Neophema pulchella</i>	Turquoise Parrot	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Ninox connivens</i>	Barking Owl	Call playback, Listening, Spotlight surveys	12 person hours	Spotlighting and Call playback 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15
<i>Ninox strenua</i>	Powerful Owl	Call playback, Listening, Spotlight surveys	12 person hours	Spotlighting and Call playback 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15
<i>Pandion cristatus</i>	Eastern Osprey	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Petroica boodang</i>	Scarlet Robin	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Petroica phoenicea</i>	Flame Robin	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Pomatostomus temporalis temporalis</i>	Grey-crowned Babbler	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
<i>Rostratula benghalensis australis</i>	Australian Painted Snipe	Point Surveys over wetland.	Two nights for half hour duration.	Wetland Surveys 03/06/14, 17/04/15
<i>Turnix maculosa</i>	Red-backed Button-quail	Point surveys; Incidental Observations	5 person hours	Bird Surveys 18/04/13, 21/05/13, 22/05/13, 04/09/13, 29/04/14, 27/05/14, 27/11/14, 28/11/14, 28/04/15, 29/07/15
<i>Tyto longimembris</i>	Eastern Grass Owl	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Spotlighting and Call playback 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15
<i>Tyto novaehollandiae</i>	Masked Owl	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Spotlighting and Call playback 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15
<i>Tyto tenebricosa</i>	Sooty Owl	Spotlight surveys; Mammal Trapping; Motion sensitive camera.	Trapping 4 nights over two-week periods (2013 & 2014). Spotlighting at least 20 hours. Motion sensitive camera.	Spotlighting and Call playback 21/05/13, 13/11/13, 29/04/14, 12/06/14, 22/01/15, 29/07/15
<i>Xenus cinereus</i>	Terek Sandpiper	Point Surveys over wetland.	Two nights for half hour duration.	Wetland Surveys 03/06/14, 17/04/15
Amphibians				
<i>Crinia tinnula</i>	Wallum Froglet	Targeted nocturnal spotlighting searches wetland areas and vegetation, frog call detection and frog call playback.	Four nights for two hours.	Frog Surveys 13/11/13, 03/06/14, 17/04/15, 28/04/15
<i>Litoria aurea</i>	Green and Golden Bell Frog	Targeted nocturnal spotlighting searches wetland areas and vegetation, frog call detection and frog call playback.	Four nights for two hours.	Frog Surveys 13/11/13, 03/06/14, 17/04/15, 28/04/15
<i>Litoria brevipalmata</i>	Green-thighed Frog	Targeted nocturnal spotlighting searches wetland areas and vegetation, frog	Four nights for two hours.	Frog Surveys 13/11/13, 03/06/14, 17/04/15, 28/04/15

Scientific Name	Common Name	Survey Type	Survey Effort	Dates
		call detection and frog call playback.		
<i>Uperoleia mahonyi</i>	Mahony's Toadlet	Targeted nocturnal spotlighting searches wetland areas and vegetation, frog call detection and frog call playback.	Two nights one for three and one four hours duration following rain.	Frog Surveys 07/11/17, 09/11/17
Insects				
<i>Petalura gigantea</i>	Giant Dragonfly	Random meander surveys around swampy areas; observation for adults; search for diagnostic nymphal skins.	Targeted and incidental surveys.	Targeted Survey 13/11/13

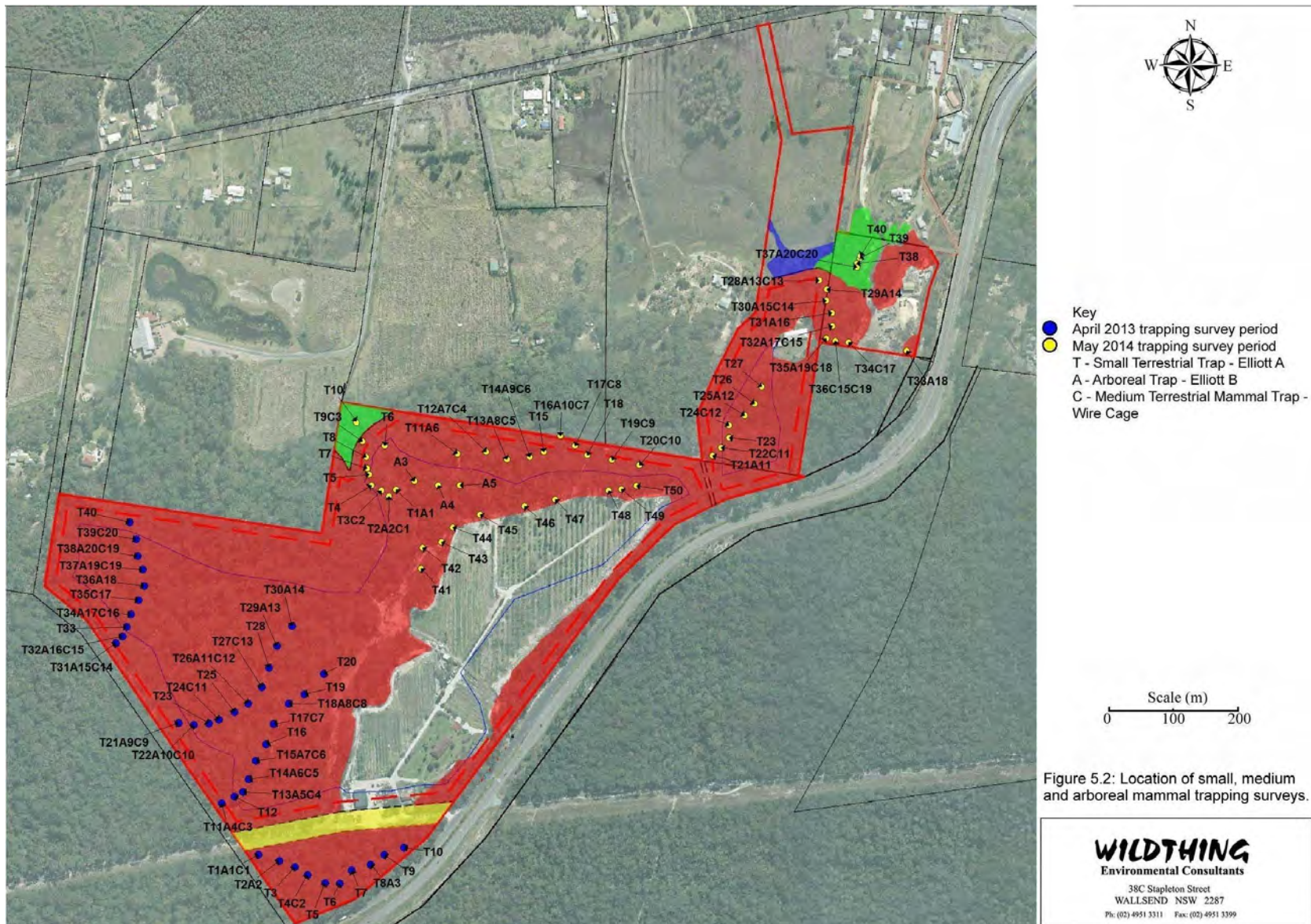
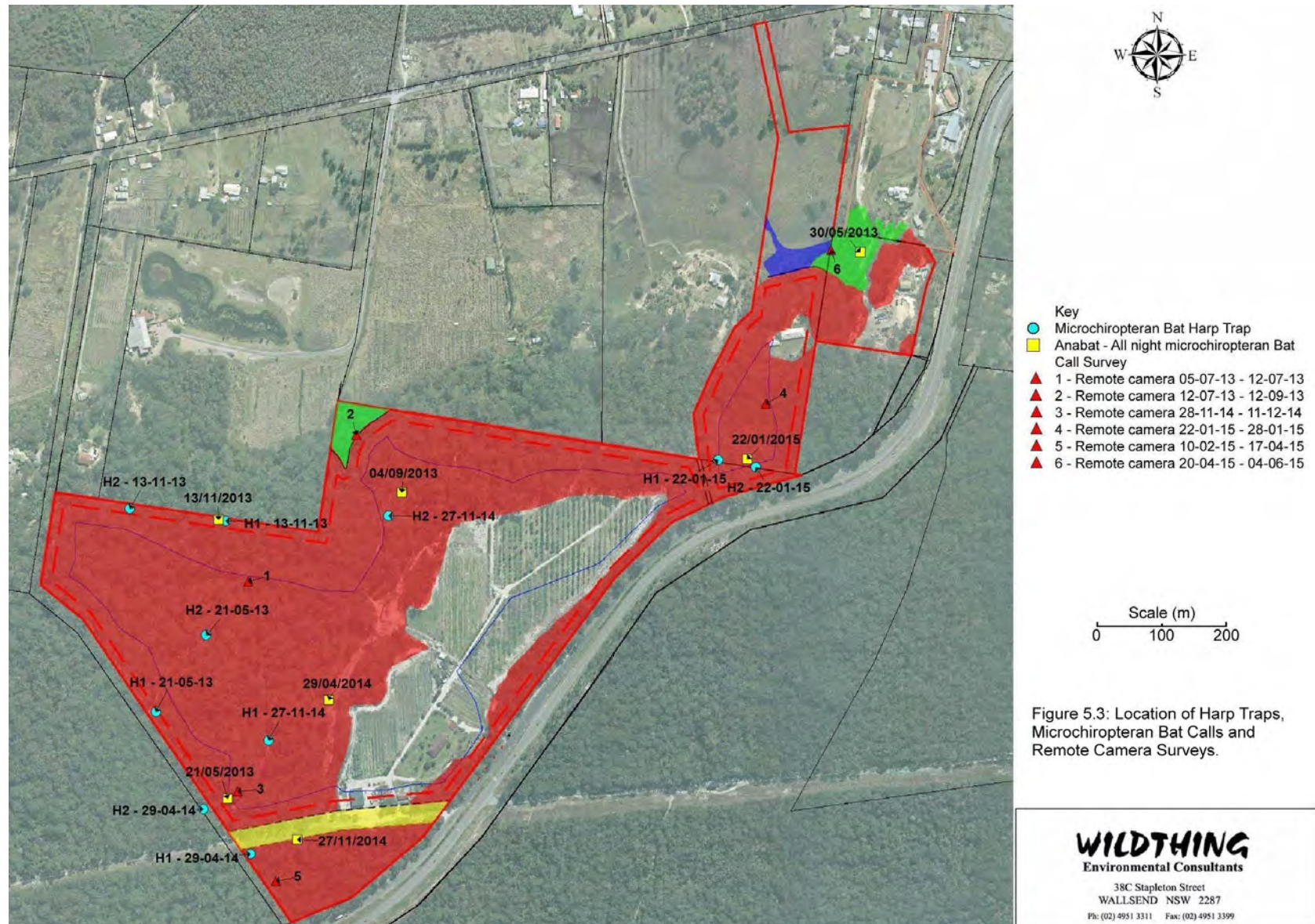
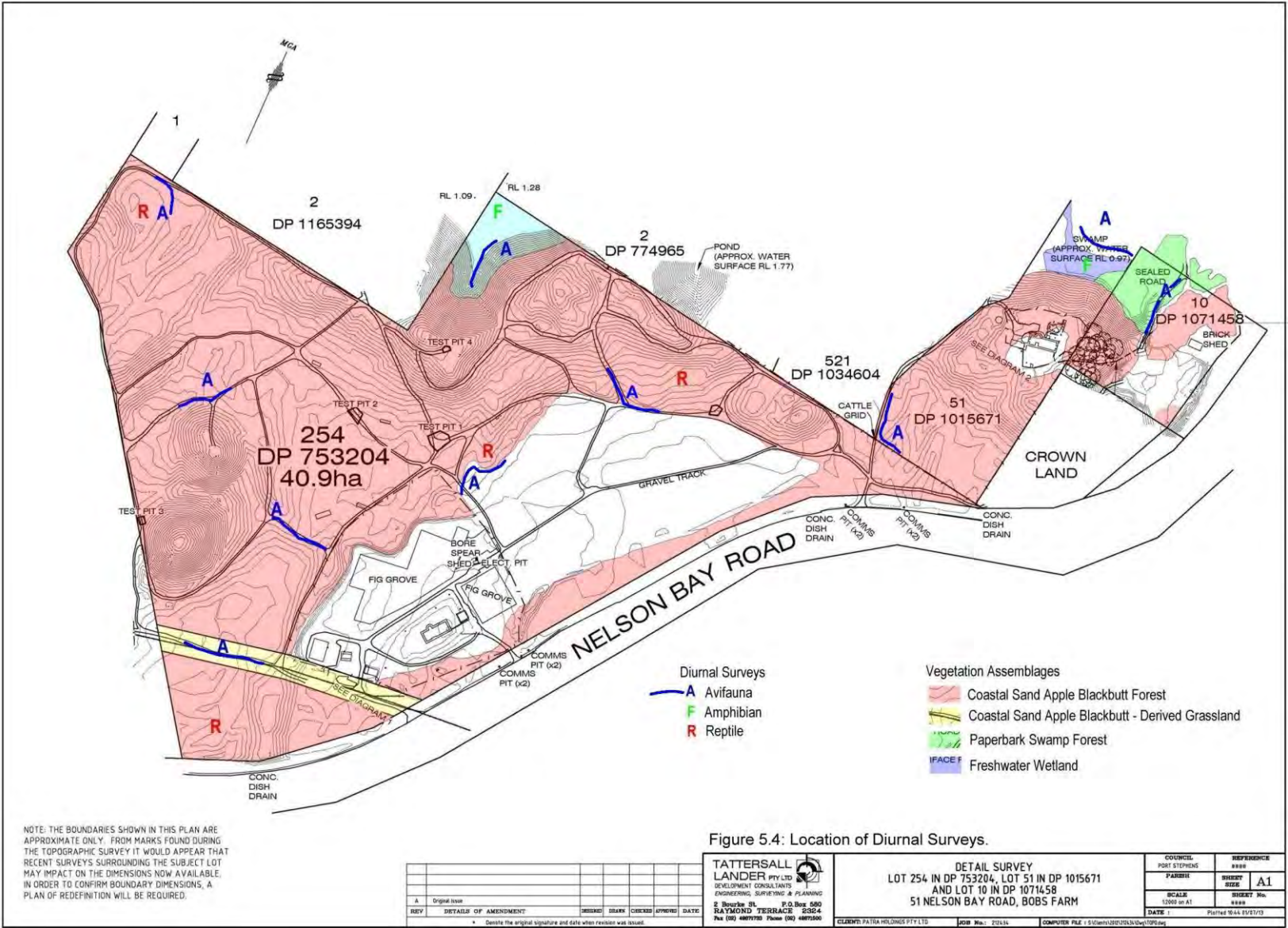
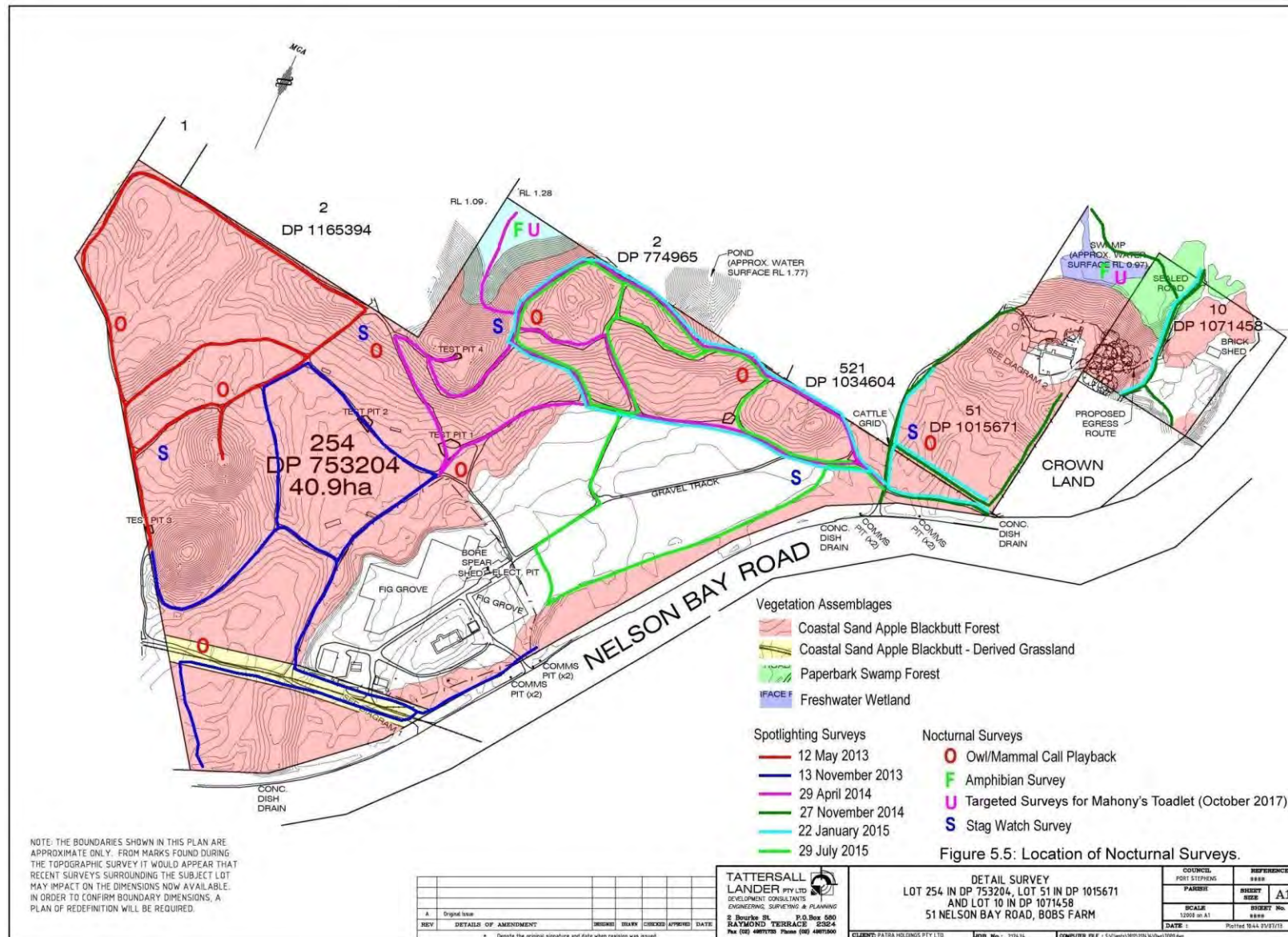


Figure 5.2: Location of small, medium and arboreal mammal trapping surveys.







Appendix M: Port Stephens CKPoM Koala Habitat Assessment

Introduction

The CKPoM was prepared by Port Stephens Council in accordance with SEPP 44 (now the Biodiversity and Conservation SEPP 2021) and activated by the proposed amending clause of the Port Stephens LEP (Appendix 3). This regulation represents an important means by which koala habitat can be protected and effectively managed. The general aims and objectives of the CKPoM include the following:

- i) To ensure that the koala population in the Port Stephens LGA is sustainable over the long-term,*
- ii) To protect koala habitat areas from any development which would compromise habitat quality or integrity,*
- iii) To ensure that any development within or adjacent to koala habitat areas occurs in an environmentally sensitive manner.*
- iv) To ensure that acceptable levels of investigation are undertaken, considered and accepted prior to any development in or adjacent to koala habitat areas.*
- v) To encourage koala habitat rehabilitation and restoration.*
- vi) Maintain interconnection between areas of Preferred and Supplementary Koala Habitat and minimise threats to safe koala movements between such areas.*
- vii) To ensure that development does not further fragment habitat areas either through the removal of habitat or habitat links or through the imposition of significant threats to koalas.*
- viii) To provide guidelines and standards to minimise impacts on koalas during and after development, including any monitoring requirements.*
- ix) To provide readily understandable advice to proponents preparing development applications and for Council officers involved in the assessment of those applications.*

According to the Guidelines for Koala Habitat Assessments in the PSC CKPoM (2002), to satisfy requirements for a development assessed under Part 4 of the EP&A Act, a Koala Habitat Assessment (Appendix 6) must be carried out by a suitably qualified person (a brief CV should be included for each person involved in the assessment), and include the following for steps:

1. Preliminary Assessment
2. Vegetation Mapping
3. Koala Habitat Identification
4. Assessment of Proposal

Assessment

Desktop Assessment

Review of the Koala Habitat Planning Map for the Port Stephens LGA indicates that the Project Area is mapped as 'Supplementary Koala Habitat' (**Figure 33**).

Site Assessment

A site inspection was undertaken to confirm mapping and record occurrence of Koala feed trees (i.e. *Eucalyptus robusta*, *E. parramattensis* and *E. tereticornis*) within the Subject Land. The results of the site inspection revealed that no listed Koala feed trees occur within the Subject Land (**Figure 34**).

A vegetation assessment undertaken identified two (2) native plant communities as occurring within the Subject Land (see BDAR), along with exotic vegetation. The results of the vegetation assessment were then used to defined each vegetation zone based on Community Survey Category, and Field Survey Category, as detailed by Lunney *et al.* (1998) (see results in **Table 18**). The combined Koala habitat map is based on the following classes:

- **Preferred Koala Habitat** – a combination of all field survey Primary, Secondary, and community survey category A/B regardless of whether or not they overlap
- **Supplementary Koala Habitat** – where field survey marginal and community survey category C/D overlap
- **Marginal Koala Habitat** – where field survey Marginal and community survey category E overlap

See existing CKPoM mapping and a site-verified mapping in **Figure 33** and **Figure 34**.

Table 40: Classification of Koala habitat within Subject Land

PCT	Veg Zone	Community Survey Category	Field Survey (KFT* %)	Proposed Koala Habitat Mapping
PCT 3544	1	Tall Open Blackbutt and Syd Red Gum F (Category C)	Marginal <10% KFT	'Supplementary' Koala Habitat
PCT 3544	2	Tall Open Blackbutt and Syd Red Gum F (Category C)	Marginal <10% KFT	'Supplementary' Koala Habitat
PCT 4006	3	Part: Tall Open Blue Gum F/Open Sw Mahogany and Sw Oak F with Paperbark dm (Category D) / Open Flooded Gum and Sw Mahogany F (No KRs)	Marginal <10% KFT	'Supplementary' Koala Habitat
Exotic Vegetation	4	Exotic Trees (Excluded)	None	'Mainly Cleared'
Exotic Grassland	5	Mainly Cleared Land	None	'Mainly Cleared'

*Preferred Koala Feed Trees: *Eucalyptus tereticornis*, *Eucalyptus robusta*, *Eucalyptus parramattensis* (Lunney *et al.* 1998)

Performance Criteria for development (Appendix 5 of CKPoM)

The performance criteria for the proposed development are addressed below:

Minimise the removal or degradation of native vegetation within Preferred Koala Habitat or Habitat Buffers.

No 'Preferred' Koala Habitat is proposed for removal within the Subject Land.

Maximise retention and minimise degradation of native vegetation within Supplementary Koala Habitat and Habitat Linking Areas.

A total of 22.99 ha of Supplementary Koala Habitat will be cleared as part of the proposed development. Through project design and an iterative avoidance process, a total of 8.32 ha of Supplementary Koala Habitat will be avoided by the proposal. Connectivity across the Subject Land is maintained through the avoidance of a 40-50m wide corridor in the north-western corner of the Subject Land. Connectivity through the Subject Land will be further enhanced following extraction as a result of progressive rehabilitation.

Minimise the removal of any individuals of preferred koala food trees, wherever they occur on a development site. In the Port Stephens LGA these tree species are Swamp Mahogany (*Eucalyptus robusta*), Parramatta Red Gum (*Eucalyptus parramattensis*), and Forest Red Gum (*Eucalyptus tereticornis*), and hybrids of any of these species. An additional list of tree species that may be important to koalas based on anecdotal evidence is included in Appendix 8

No Koala feed trees will be removed under the proposed development.

Make provision, where appropriate, for restoration or rehabilitation of areas identified as Koala Habitat including Habitat Buffers and Habitat Linking Areas over Mainly Cleared Land. In instances where Council approves the removal of koala habitat (in accordance with dot points 1-4 of the above waive clause), and where circumstances permit, this is to include measures which result in a "net gain" of koala habitat on the site and/or adjacent land;

Connectivity across the Subject Land is maintained through the avoidance of a 40-50m wide corridor in the north-western corner of the Subject Land. Connectivity through the Subject Land will be further enhanced following extraction as a result of progressive rehabilitation.

As such, the proposal is consistent with this objective.

Make provision for long term management and protection of koala habitat including both existing and restored habitat;

The long-term management of the local koala population during operation and restoration of the impact area will be detailed within a site specific Biodiversity and Rehabilitation Management Plan (BRMP). This includes the requirement for ongoing monitoring.

Not compromise the potential for safe movement of koalas across the site. This should include maximising tree retention generally and minimising the likelihood that the proposal would result in the creation of barriers to koala movement, such as would be imposed by certain types of fencing. The preferred option for minimising restrictions

to safe koala movement is that there be no fencing (of a sort that would preclude koalas) associated with dog free developments within or adjacent to Preferred or Supplementary Koala Habitat, Habitat Buffers or Habitat Linking Areas. Suitable fencing for such areas could include:

- i. fences where the bottom of the fence is a minimum of 200 mm above ground level that would allow koalas to move underneath;
- ii. fences that facilitate easy climbing by koalas; for example, sturdy chain mesh fences, or solid style fences with timber posts on both sides at regular intervals of approximately 20 m;
- iii. open post and rail or post and wire (definitely not barbed wire on the bottom strand).

Connectivity across the Subject Land is maintained through the avoidance of a 40-50m wide corridor in the north-western corner of the Subject Land. Connectivity through the Subject Land will be further enhanced following extraction as a result of progressive rehabilitation.

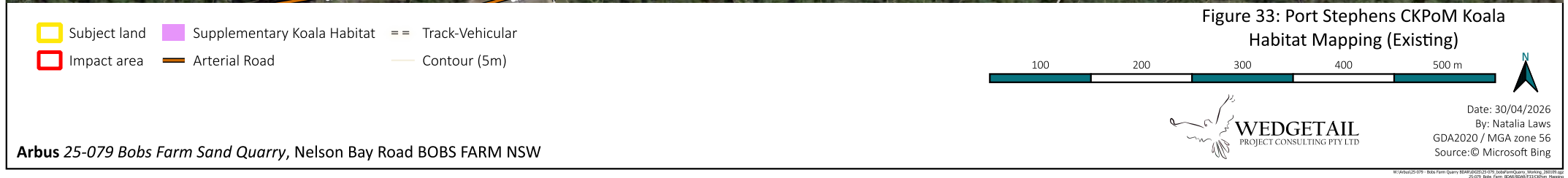
Checklist for development applications

The proposed development contains Preferred (Koala) Habitat, Habitat Buffers and Habitat Linking Areas, and so the following information must be submitted with the development application (see **Table 19**).

Table 41: Checklist of information to accompany development applications.

Information to Accompany Applications (Appendix 4 CKPoM).	Section of report that this has been included
1. An assessment of koala habitat, by a suitably qualified person, in accordance with the attached Guidelines for Koala Habitat Assessment, which appear in Appendix 6.	A list of staff who contributed to this BDAR are included in the Declarations Section with a description of the qualifications and experience for those who conducted specific assessments in relation to Koala Habitat, showing they are suitably qualified to undertake these assessments.
2. Clear details concerning which vegetation is to be cleared or disturbed and that which is to be retained.	See Figure 33 and Figure 34
3. Details of any proposed building envelopes and fire fuel reduction zones and the means by which they are to be enforced.	N/A
4. Proposed measures to restore or rehabilitate koala habitat, including measures which will result in the net gain of koala habitat.	This is addressed in the above performance criteria
5. Proposed measures to allow the safe movement of koalas across the site including road designs and speed mediation measures, fence construction details where fencing is	Safe movement of koalas will be maintained in accordance with the site-specific Biodiversity Rehabilitation Management Plan.

Information to Accompany Applications (Appendix 4 CKPoM).	Section of report that this has been included
proposed, and swimming pool specifications.	
6. Proposed measures to mitigate the impacts on koalas by dogs.	Ongoing monitoring and management of wild dogs is required in accordance with the site-specific Biodiversity Rehabilitation Management Plan to protect all wildlife.
7. Details of any proposed program to monitor koalas and koala habitat, during and following development activity on a site. Monitoring programs would not be required for single lot developments. Rather, they would be expected for subdivisions. The following information must be submitted with applications for development on sites that are adjacent to Preferred or Supplementary Habitat, Habitat Buffers or Habitat Linking Areas.	A qualified fauna ecologist is to inspect vegetation on site prior to clearing and remain present on site through the process of clearing vegetation.
8. Proposed measures to mitigate the impacts by dogs on koalas which occupy adjacent habitat. This must include measures (such as education of dog owners, appropriate signs, or restrictions on dog ownership) that reduce the likelihood of domestic dogs straying into koala habitat.	Signage is required, as part of the on-site offset area, surrounding the quarry site, to notify neighbouring landowners that the area is used for conservation. In addition, pest control monitoring and activities are undertaken, including trapping animals and if they are a domestic animal, returning them to their owners. In these ways, the neighbouring landowners are made aware of the importance of keeping their animals within their properties, and not allowing them onto the on-site offset area, and with these measures outlined within the site-specific Biodiversity Rehabilitation Management Plan, no further mitigation measures are required.
9. Proposed measures to mitigate the impact on koalas of motor vehicles travelling to the site. This must include appropriate traffic control measures on roads which run through or adjacent to nearby koala habitat and which are subject to increased traffic volumes due to the development on the site.	Addressed in the above performance criteria



WEDGETAIL
PROJECT CONSULTING PTY LTD

Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW



- | | | |
|-----------------------|-----------------------|-----------------|
| Subject land | Supplementary Habitat | Arterial Road |
| Impact area | Mainly Cleared | Track-Vehicular |
| Infrastructure / Road | Contour (5m) | |

Figure 34: Port Stephens CKPoM Koala
Habitat Mapping (Verified)



Arbus 25-079 Bobs Farm Sand Quarry, Nelson Bay Road BOBS FARM NSW



Date: 30/04/2026
By: Natalia Laws
GDA2020 / MGA zone 56
Source: © Microsoft Bing

\\1944025-079 - Bobs Farm Quarry - BOBS FARM\2025-079 - Bobs Farm Quarry - Working - 202509-01
25-079_Bobs_Farm_BOBS FARM\25-079_Bobs_Farm_Quarry_Habitat_Mapping_Verified

Appendix N: Koala Detection Dog Surveys



WEDGETAIL
PROJECT CONSULTING



11 May 2026

Darren Williams
Newcastle Sands
398 Cabbage Tree Road
Williamtown, New South Wales (NSW)

Attention: **Darren Williams**
Sent by email to: darren@arbus.com.au

SUBJECT: Bobs Farm Sand Quarry Detection Dog Surveys (Koala)

Dear Darren,

Wedgetail Project Consulting Pty Ltd (Wedgetail) was engaged by Newcastle Sands to undertake Detection Dog Surveys for Koalas (*Phascolarctos cinereus*) at the site of the proposed Bobs Farm Sand Quarry (SSD-65146459), 3631 Nelson Bay Road, Bobs Farm, NSW 2316 (Lot 254/DP753204) ("Subject Land") (**Figure 1**).

The minimum survey effort to detect koala presence on the Subject Land requires the total effort for two (2) standard survey methods to be met, including; one (1) scat detection method, and one (1) non-scat detection method. This letter provides a summary of the Detection Dog surveys (scat detection method) completed in accordance with the Koala (*Phascolarctos cinereus*) Biodiversity Assessment Method survey Guide (DPE 2022) (hereafter referred to as "the guidelines").

Surveys were completed across 22.99 hectares (ha) of native vegetation considered continuous "suitable habitat" in accordance with Section 3.2 of the guidelines (i.e. associated with the Koala in the TBDC with a minimum of one [1] koala use tree as listed in Appendix C of the guideline). Survey effort and results are presented in **Table 1** below.

If you have any further queries, please do not hesitate to contact the undersigned.

Yours Sincerely,

David Martin

David Martin
Senior Ecologist
M: 0425 318 679
dmartin@wedgetail.com.au

Table 1: Detection Dog Survey Summary

Requirement	Summary				
Survey Team					
Detection Dog Handler	Isaac Blundell – 3 years dog handling/training				
Ecologist	Lachlan Millett – Ecologist, 1 year experience				
Detection Dog 1	Shamus – 2-year old Springer Spaniel (see Attachment 3)				
Detection Dog 2	Marley – 2-year old Cocker Spaniel (see Attachment 3)				
Survey Effort					
Suitable Habitat	22.99 ha				
Survey Effort	Required: “three 200 m transects are required for every 5 ha of suitable habitat, spaced ≥100 m apart”. “Where suitable habitat is discontinuous, consider the required survey effort for each area independently” (DPE 2022)	Completed: A total of 14 x 200 m transects are required for a total of 22.99ha of suitable habitat. Total transect length of 2,800 m. This was completed across a total of eight (8) transects separated by 100 m across the Subject Land (see Figure 1)			
Survey Method	Required: “the detection dog handler walks the central transect twice, first in one direction and then the opposite. The detection dog is permitted to roam freely within the 25 m to the side of the transect” (DPE 2022)	Completed: The detection dog handler completed transect surveys in accordance with the Guidelines over 1 day (17 March 2026)			
	Required: “Whilst search times will vary with terrain, vegetation and individual dogs, the detection dog handler should walk the transect at approximately 10 m/min” (DPE 2022)	Completed: Average survey pace was >10m/min across 8 transects.			
Survey Results					
395Koala Detections	Scat	ID	Transect Start/ End Location	Transect Length	Results
		1	406337/6372988	207	
			406541/6372961		
		2	406259/6373101	248	
			406504/6373065		
		3	406184/6373213	388	
			406567/6373155		
		4	406077/6373327	577	Koala detection
			406648/6373243		
		5	406093/6373430	595	Koala detection
			406682/6373343		
		6	406506/6373472	313	
			406815/6373423		
		7	406568/6373563	478	Koala detection



Requirement	Summary			
		407041/6373492		
	8	406987/6373398	395	
		406748/6373096		
Conclusion	Species Present - Koala scat was recorded within the Subject Land during the completion of detection dog surveys.			
Survey Conditions				
Rainfall – “detection dog surveys should not be undertaken within three days of rainfall”.	Surveys were not completed within 3 days of rainfall within the Subject Land (see Attachment 2).			

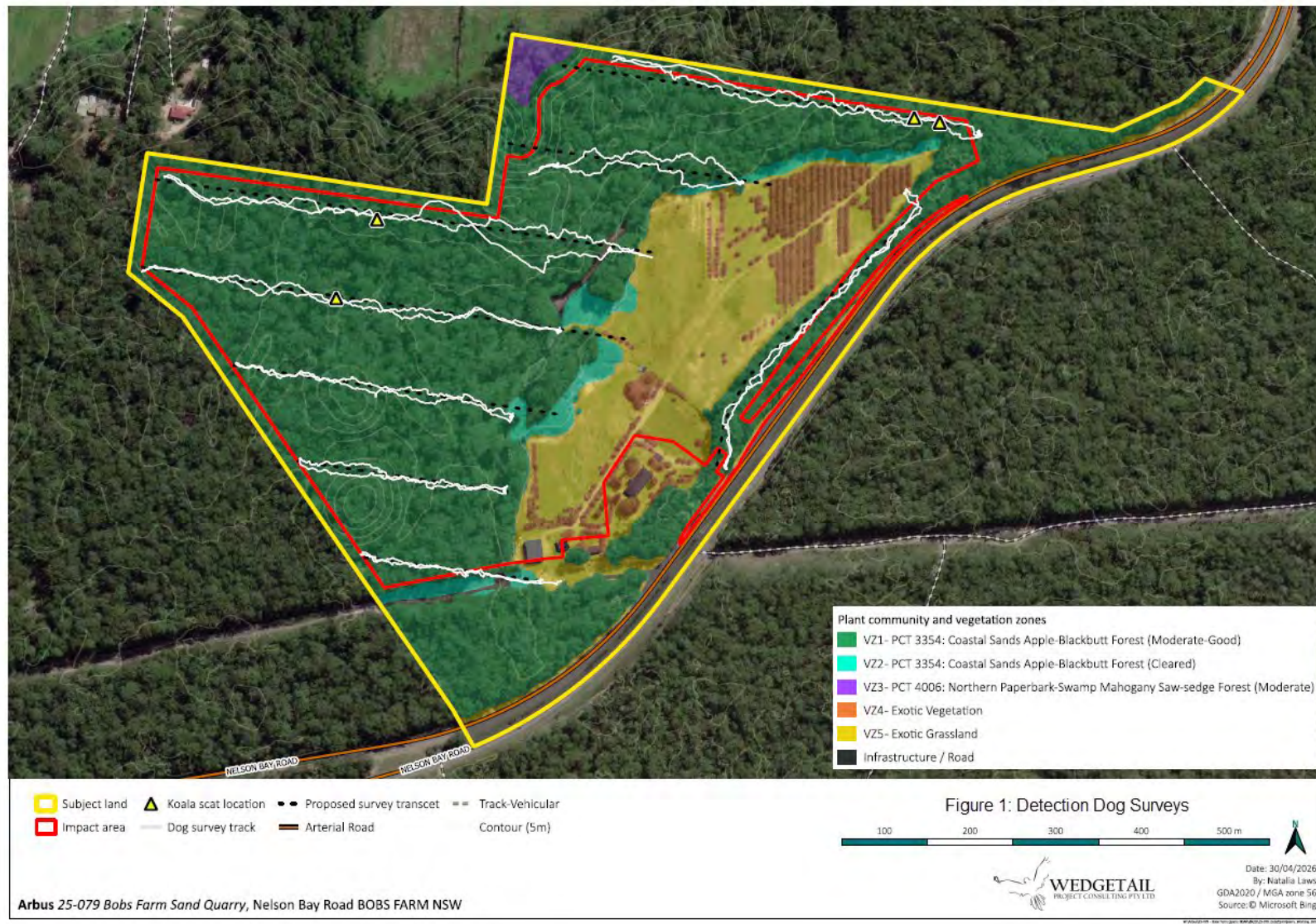


Figure 1: Detection Dog Surveys

ATTACHMENT 1: RESULTS



Koala Detection 1



Koala Detection 2



Koala Detection 3 and 4



Koala Detection 5

ATTACHMENT 2: SURVEY CONDITIONS

Requirements

The survey effort described in the Guidelines assumes suitable conditions for koalas and the relevant method as detailed in Chapter 4 of the Guideline. *“The meteorological conditions on the Subject Land, prior to and at the time of the survey, must be recorded using a portable meteorological station or the closest Bureau of Meteorology station. Document in the BAR:*

- *rainfall (mm) for the 72 h prior to the survey*
- *rainfall (mm) for each day or night of the survey*
- *minimum and maximum temperature (°C) for each day or night of the survey*
- *relative humidity (%) for each day or night of the survey*
- *mean wind speed (km/h), for each day or night of the survey.*

Survey conditions are outlined below.

Results

Table 1: Weather Conditions (BOM Station: Williamtown RAAF - 61078)

Day	Date	Rainfall since 9am (mm)	Minimum temperature (°C)	Maximum temperature (°C)	Relative humidity (%) (9am)	Mean wind speed (km/h) (9am)
Saturday	14/03/2026	1.2	14	25.5	71	13
Sunday	15/03/2026	0	11.5	28.4	73	2
Monday	16/03/2026	0	13.6	30.4	81	6
Tuesday	17/03/2026	0	18.7	34.5	71	9
Wednesday	18/03/2026	0	22.1	26.8	80	11
Thursday	19/03/2026	47.2	20.1	23.4	98	Calm
Friday	20/03/2026	17.4	18.1	27.1	98	11

ATTACHMENT 3: STAFF QUALIFICATIONS

Scientific Licencing and Permits

Wedgetail employees involved in the current study are licensed or approved under the *Biodiversity Conservation Act 2016* (License Number: SL102506, Expiry: 31 May 2026) and the *Animal Research Act 1985* to harm/trap/release protected native fauna and to pick for identification purposes native flora and to undertake fauna surveys.

Staff Qualifications

The following staff were involved in the project:

Name	Qualifications	Title	Contribution
Isaac Blundell	3-Year Mentor Program with Steve Austin	Dog Trainer/Handler	Detection Dog Handler
Lachlan Millett	BEnvSc & Mgt	Ecologist	Koala Scat Identification
Shamus	2-year old Springer Spaniel	Detection Dog	Detection Dog
Marley	2-year old Cocker Spaniel	Detection Dog	Detection Dog
David Martin	Master of Science BEnvSc & Mgt Accredited BAM Assessor	Senior Ecologist	Report Author

Detection Dog Competency

In accordance with the Guidelines *"the detection dog must be trained ethically to detect koala scat. In partnership with their handler, they must have prior field experience surveying for koalas, and the relevant approvals and permits. The detection dog and their handler must be assessed⁶, as a team, within the previous 12 months to demonstrate competency in:*

- *reliable commanding and handling of the detection dog*
- *reliable koala odour recognition and response in accordance with nominated and appropriate indication type (e.g. passive, freeze, dig/scratch, etc.)*
- *reliable non-target disinterest*
- *reliable behaviour that does not harm native fauna. Welfare of the detection dog is a priority and must be monitored throughout the survey. Adequate rest periods, sun protection and drinking water must be provided."*

Recent competency statements are provided for both detection dogs below.

From: Stephen Austin <austins@y7mail.com>
Date: 14 July 2025 at 4:56:27 pm AEST
To: Adam Blundell <ablundell@wedgetail.com.au>
Subject: Certification of Conservation Detector Dog on Koala
Reply-To: Stephen Austin <austins@y7mail.com>

Good afternoon, Adam

Please find certification of Koala Detection Dog as requested.

Name of Handler: Issac Blundell

Name and breed of dog: Marley, Working Line English Cocker Spaniel.
Microchip Number: 9910030030366689

Place of certification: Stanhope Rd Stanhope NSW

Procedure:

The certification was a double blind with 2 drops of Koala scat over a 30-meter square area.
The dog was required to find and hold a passive response when the scat was detected.

Time limit was 5 mins.

The dog found both scat drops in less than 3 mins both with a passive hold and find. The handler controlled the dog at all times, with whistle commands and the dog obeyed all command at all times.

I gave the team [Handler and Dog] a rating of EXCELLENT.

regards
Stever Austin

Steve Austin CPDT-KA
Director. K9 Training and Behaviour
Specialising in K9's for Conservation and all forms of K9 Detection
Mobile: 0419 983 164
Email: austins@y7mail.com
Website: www.steveaustindogtrainer.com
Facebook: [steveaustincanines](https://www.facebook.com/steveaustincanines)

Plate 1: Certificate of competency – Marley

From: Stephen Austin <austins@y7mail.com>
Sent: Sunday, 30 March 2025 4:12 PM
To: Adam Blundell <ablundell@wedgetail.com.au>
Subject: Certification Test; Issac Blundell and K9 Conservation Dog: "Shamus"

Good Afternoon, Adam

I completed the certification test as requested by your company Wedgetail Ecology.

Details are as follows.

Date: Friday 28th April 2025

Search Area: Natural Australian bush, approximately 500 meters by 200 meters.

Target odour, Koala scat

Set time: 1 hour.

Permitted time frame for search: 4 mins.

Type of certification test: Double blind, which where both handler and K9 DO NOT KNOW where the target has been set.

The team [dog and handler] were given the parameters of the search and given 4 mins to find the target odour. The dog searched the area in a quick and efficient manner finding the target in just 1 min and 52 seconds.

The dog gave a clear and very calm response to the Koala scat not disturbing it in any way. Issac handled the dog quietly and with full whistle control at all times.

I also put added pressure on the handler by letting my full class of 10 students watch the certification process.

I am positive this team will be successful in finding Koala scat in any given situation.

Please contact me at any time if you need any more information.

regards
 Steve Austin

Steve Austin CPDT-KA
 Director, K9 Training and Behaviour
Specialising in K9's for Conservation and all forms of K9 Detection
 Mobile: 0419 983 164
 Email: austins@y7mail.com
 Website: www.steveaustindogtrainer.com
 Facebook: [steveaustincanines](https://www.facebook.com/steveaustincanines)

Plate 2: Certificate of competency – Shamus