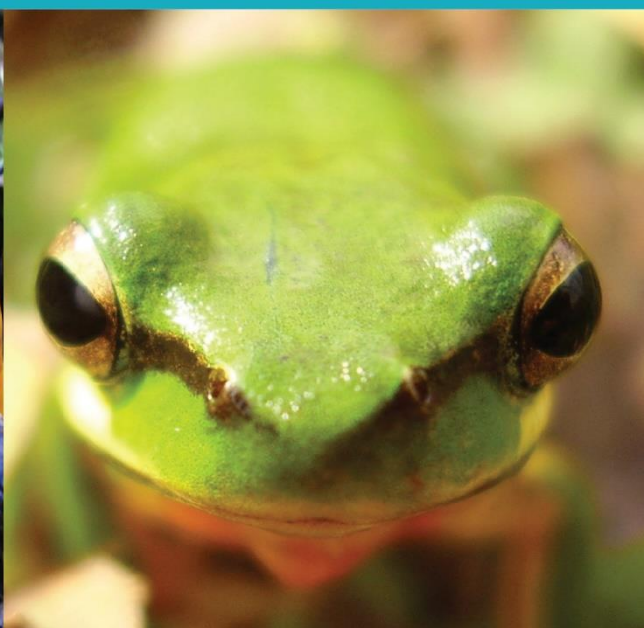




TRAVERS BUSHFIRE & ECOLOGY

A TBE ENVIRONMENTAL COMPANY



BIODIVERSITY ASSESSMENT REPORT

Proposed Development

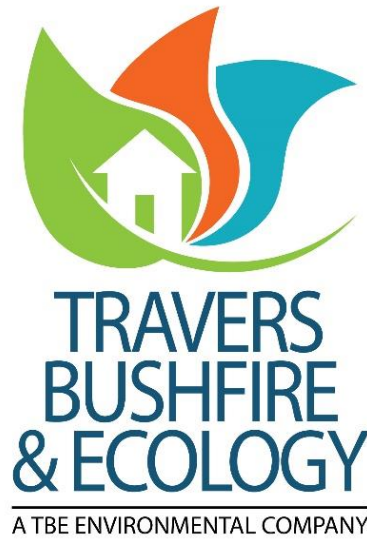
Lot 1, DP1017259

88 Newton Road,

Wetherill Park

23 May 2024

(REF: 23CENT02)



BIODIVERSITY ASSESSMENT REPORT

Proposed Residential Development

Lot 1 DP 1017259, 88 Newton Road, Wetherill Park

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Date:	23 May 2024
File:	23CENT02



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The mapping is indicative of available space and location of features which may prove critical in assessing the viability of the proposed works. Mapping has been produced on a map base with an inherent level of inaccuracy, the location of all mapped features is to be confirmed by a registered surveyor.

EXECUTIVE SUMMARY

Travers bushfire & ecology (TBE) has completed a biodiversity assessment report (BAR) relation to the proposal within Lot 1 DP 1017259; 88 Newton Road, Wetherill Park (identified as 94 Newton Road, Wetherill Park on the NSW Planning Portal) within the Fairfield local government area (LGA).

In respect of matters required to be considered under the *EP&A Act* and relating to the species / provisions of the *BC Act*, three (3) threatened fauna species Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle, no threatened flora species, and no threatened ecological communities (TECs) were recorded within the development footprint.

In respect of matters required to be considered under the *EPBC Act*, no threatened fauna species no protected migratory bird species, no threatened flora species and no threatened ecological communities listed under this Act were recorded within the development footprint.

In respect of matters relative to the *FM Act*, no suitable habitat for threatened marine or aquatic species was observed within the development footprint.

We can confirm that there is only 1 remnant native tree on the property with the rest of the vegetation on site being planted. No threatened flora species were noted during the site inspection and were considered unlikely to occur due to past and ongoing impacts including historical clearing, development and frequent landscaping maintenance. Additionally, the site is also isolated from any remnant patches of vegetation. No parts of the site are mapped as containing biodiversity values and impacts upon remnant native vegetation would not exceed 1 tree or 0.04 ha which is under the threshold for clearing based on the minimum lot size.

The site also lacks any significant habitat features, particularly those that would house roosting or breeding habitat for any microbat species considered as potential SAI entities. The lack of connective values to and from the site, limited roosting availability means that the habitat on site for many threatened fauna species would more likely be limited to foraging values only.

The loss of breeding habitat is far more significant as this could lead to a significant impact in accordance with part a of the test of significance shown below. Breeding habitat directly relates to the effect on the life cycle of a species. The buildings were considered that they may provide potential roosting and or breeding habitat and as such, a detailed search of the buildings was undertaken, involving inspecting internal and external roof structures to identify roosting bats and the buildings roosting habitat potential.

Additionally, searches were conducted for signs of guano both recent and historical, indicative of roosting activity. No microbats or piles of guano were observed within any structure.

Following the inspection, the buildings on site were confirmed to be in frequent active use, did not offer any opportunity for refuge, inclusive of roosting or maternity roosting habitat due to the exposed infrastructure, provided no opportunity to gain entrance into enclosed roof spaces combined with no hollow-bearing trees identified within the study site, leading to the conclusion that none of the buildings on the premises offer potential or are serving as maternity or over-wintering roosting sites. Therefore, it is considered that the development footprint provides only foraging habitat for the Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle.

Given the high mobility of these species, and the Large Bent-winged Bat's known dependence on caves and Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle dependence on tree hollows, it is therefore concluded that the proposed development will not likely significantly impact on a local population of Eastern Coastal Free-tailed Bat or Eastern False Pipistrelle.

A detailed test of significance has been applied to the recorded Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle within Appendix 1 in accordance with Section 7.2 of the *BC Act*. The test of significance for threatened entities has concluded a non-significant impact. that the proposed development will not likely have a significant impact on any threatened species, populations or TECs. Therefore, (a) a Species Impact Statement is not required for the proposal and (b) biodiversity offsetting is not required.

LIST OF ABBREVIATIONS

APZ	asset protection zone
BAM	Biodiversity Assessment Method (2020)
BAR	Biodiversity Assessment Report
<i>BC Act</i>	<i>Biodiversity Conservation Act (2016)</i>
<i>BC Reg</i>	<i>Biodiversity Conservation Regulation (2017)</i>
BCAR	Biodiversity Certification Assessment Report
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BPA	bushfire protection assessment
BSSAR	Biodiversity Stewardship Site Assessment Report
CEEC	Critically endangered ecological community
<i>CM Act</i>	<i>Coastal Management Act 2016</i>
DAWE	Department of Agriculture, Water and the Environment (superseded by DCCEEW, July 2022)
DCCEEW	Commonwealth Department of Climate Change, Environment, Energy and Water
DCP	development control plan
DEC	NSW Department of Environment and Conservation (superseded by DECC from April 2007)
DECC	NSW Department of Environment and Climate Change (superseded by DECCW from October 2009)
DECCW	NSW Department of Environment, Climate Change and Water (superseded by OEH from April 2011)
DEWHA	Commonwealth Department of Environment, Water, Heritage & the Arts (superseded by SEWPAC)
DOEE	Commonwealth Department of Environment & Energy (superseded by DAWE)
DPE	NSW Department of Planning and Environment
DPIE	NSW Department of Planning, Industry and Environment (superseded by DPE July 2019)
EEC	endangered ecological community
EPA	Environment Protection Authority
<i>EP&A Act</i>	<i>Environmental Planning and Assessment Act (1979)</i>
<i>EPBC Act</i>	<i>Environment Protection and Biodiversity Conservation Act (1999)</i>
<i>FM Act</i>	<i>Fisheries Management Act</i>
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	local environmental plan
LGA	local government area
<i>LLS Act</i>	<i>Local Land Services Act (2013)</i>
NES	national environmental significance
<i>NPW Act</i>	<i>National Parks and Wildlife Act (1974)</i>
NRAR	Natural Resources Access Regulator (NSW)
NSW DPI	NSW Department of Industry and Investment
OEH	Office of Environment and Heritage (superseded by DPIE from August 2019)
PCT	plant community type
PFC	projected foliage cover
RFS	NSW Rural Fire Service
ROTAP	rare or threatened Australian plants
SAII	Serious And Irreversible Impacts
SEPP	State Environmental Planning Policy
SEWPAC	Commonwealth Dept. of Sustainability, Environment, Water, Population & Communities (superseded by DOEE)
SIS	species impact statement
SULE	safe useful life expectancy
TEC	threatened ecological community
TPZ	tree preservation zone
<i>TSC Act</i>	<i>Threatened Species Conservation Act (1995)</i> – superseded by the <i>Biodiversity Conservation Act (2016)</i>
VMP	vegetation management plan

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1. INTRODUCTION

Travers bushfire & ecology (TBE) has been engaged to undertake a biodiversity assessment report for proposal within Lot 1 DP 1017259, at 88 Newton Road, Wetherill Park (identified as 94 Newton Road, Wetherill Park on the NSW Planning Portal) within the Fairfield City Council local government area (LGA). The extent of this entire lot is shown in Figure 1-1 and will hereafter be referred to as the ‘study area’.

The proposal shall be assessed under the *Biodiversity Conservation Act 2016 (BC Act)*.



Figure 1-1 – Study area

(Source: Six Maps 2023)

1.1 Purpose

Biodiversity assessment required for a local development, assessed under Part 4 of the *Environmental Planning and Assessment Act 1979 (EP&A Act)* that triggers the Biodiversity Offsets Scheme Threshold or is likely to significantly affect threatened species based on the test of significance in section 7.3 of the *BC Act*.

The Biodiversity Offsets Scheme (BOS) applies to local development (assessed under Part 4 of the *EP&A Act*) 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 *BC Act*) 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 community.

The BOS includes three (3) elements to the threshold test – an area trigger, a Biodiversity Values Land Map trigger and the Test of Significance. If impacts exceed at least one of these triggers, the Biodiversity Offset Scheme applies to the proposed clearing

1.1.1 Terminology

Throughout this report the terms development footprint and study area are used. It is important to have a thorough understanding of these terms as they apply to the assessment.

Development footprint means the area directly affected by the proposal. It has the same meaning as “subject land” defined below.

Study area is the portion of land that encompasses all surveys undertaken and is usually all land contained within the designated property boundary. The study area extends as far as is necessary to assess all important biodiversity values known and likely to occur within the subject land and includes the development footprint and any additional areas which are likely to be affected by the proposal, either directly or indirectly.

Direct impacts are those that directly affect the habitat and individuals. They include, but are not limited to, death through clearing, predation, trampling, poisoning of the animal/plant itself and the removal of suitable habitat. When applying each factor, consideration must be given to all of the likely direct impacts of the proposed activity or development.

Indirect impacts occur when project-related activities affect species, populations or ecological communities in a manner other than direct loss. Indirect impacts can include loss of individuals through starvation, exposure, predation by domestic and/or feral animals, loss of breeding opportunities, loss of shade/shelter, deleterious hydrological changes, increased soil salinity, erosion, inhibition of nitrogen fixation, weed invasion, fertiliser drift, or increased human activity within or directly adjacent to sensitive habitat areas. As with direct impacts, consideration must be given, when applying each factor, to all of the likely indirect impacts of the proposed activity or development.

1.2 Site description

1.2.1 Site overview

Table 1-1 provides an overview the planning, cadastral and topographical details of the study area.

Table 1-1 – Site features

Street address	88 Newton Road, Wetherill Park (identified as 94 Newton Road, Wetherill Park on the NSW Planning Portal)
Legal description	Lot 1 in Deposited Plan DP1017259
Land configuration	The site has an area of approximately 5.19 ha. It is located within the Wetherill Park Industrial Area and close to the junction of Newton Road and Victoria Street. The site is located between an existing drainage

	channel, Newton Road and other industrial land and has an irregular shaped allotment. It is broadly flat, with a minor fall in levels from south to north and west to east.
Area	5.19 ha
Local government area	Fairfield City Council
Zoning	E4 – General Industrial
Grid reference MGA-56	304781E 6252681S
Elevation	Approximately 44–53 m AHD
Topography	It is broadly flat, with a minor fall in levels from south to north and west to east
Catchment and drainage	The site is effectively flat but is tiered such that there is a smaller southern tier that drops down to the main area in the north. The site drains to the north and east into constructed stormwater gullies identified as “riparian zones” as shown in Figure 1-9 which flow north east to Prospect Creek then ultimately to Prospect reservoir in the north.
Existing land use	<p>In its existing state, the site contains two large buildings and is used by Weir Minerals Group as their Sydney Distribution Centre. ITW Proline (hardware manufacturer) also occupy part of the site. The existing built form comprises a large warehouse as well as single storey office building to the east. The warehouse is located towards the centre of the site and incorporates a high bay area and lower bay area.</p> <p>Areas of landscaped open space are located immediately east and west of the main warehouse building. Trees and other vegetative screening are located along the southern, eastern and western boundaries of the site and around the internal vehicular access routes and car park.</p>

1.2.2 Landscape features

Table 1-2 examines the landscape features of the proposed development site in accordance with the BAM.

Table 1-2 – Landscape features

Patch size	<1 ha
IBRA bioregions and subregions	Sydney Basin bioregion – Cumberland subregion
NSW landscape region and area (ha)	Cumberland Plain
Connectivity features	There is very poor connectivity to the development footprint. There is existing industrial development on the northern and southern sides, and by small lots consisting of areas of cleared grassy pasture with sparsely scattered planted and few remnant trees. to the east and west which are bound by additional existing industrial.
Geology and soils	<p>Geology: Wianamatta Group—Ashfield Shale consisting of laminite and dark grey siltstone, Bringelly Shale.</p> <p>Soils: shallow to moderately deep (>100 cm) hard setting mottled texture contrast soils, Red and Brown Podzolic Soils on crests grading to Yellow Podzolic Soils on lower slopes and in drainage lines.</p>

1.2.3 Zoning

The site is currently zoned E4 under the Fairfield Local Environmental Plan 2013 (Figure 1-2) which is for general industrial use.



Figure 1-2 – Zoning

(Source: Planning Portal, 2024)

1.2.4 Proposed development

Demolition of existing buildings and structures, construction and operational use of a single storey warehouse and distribution centre with ancillary office space and amenities, on-site parking, landscaping and access, and other associated works including bulk earthworks, site preparation works and site clearance, as well as augmentation and construction of servicing utilities.

Figure 1-1 shows the location of the study area and Figure 1-3 shows the proposed works.

Demolition of existing buildings and structures and construction of a multi-storey warehouse or distribution centre as described in the table below:

Descriptor	Site Details
Land Use	<i>Warehouse or distribution centre with Ancillary offices</i>
Total Gross Floor Area	30,250m²
Warehouse Gross Floor Area	28,850m ²
Ancillary Office Gross Floor Area	1,400m² (1,300m² office and 100m² ancillary office)
Maximum Building Height	14.6 metres (excluding roof plant)
Car Parking	213 spaces provided
Access	Heavy Vehicles will enter the site via a dedicated entry in the southeastern corner of the site. A Heavy Vehicle exit is proposed in the northeastern corner of the site. A single entry / exit driveway for cars is proposed off Newton Road. The driveway will be sufficiently distanced from the heavy vehicle exit to the north.
Operations	24 hours per day, seven days per week
Ancillary Uses	Office space and loading docks

Further site Details

Descriptor	Site Details
Land Configuration	The site has an area of approximately 5.19 ha. It is located within the Wetherill Park Industrial Area and close to the junction of Newton Road and Victoria Street. The site is located between an existing drainage channel, Newton Road and other industrial land and has an irregular shaped allotment. It is broadly flat, with a minor fall in levels from south to north and west to east.
Existing Development	In its existing state, the site contains two large buildings and is used by Weir Minerals Group as their Sydney Distribution Centre. ITW Proline (hardware manufacturer) also occupy part of the site. The existing built form comprises a large warehouse as well as single storey office building to the east. The warehouse is located towards the centre of the site and incorporates a high bay area and lower bay area. Areas of landscaped open space are located immediately east and west of the main warehouse building. Trees and other vegetative screening are located along the southern, eastern and western boundaries of the site and around the internal vehicular access routes and car park.
Existing Site Access	Access to the site for heavy vehicles is provided from its southern boundary along Newton Road. Access for light vehicles is provided from the eastern boundary of the site along Newton Road. A car parking area is provided in the eastern part of the site.
Local Context	The area surrounding the site is predominately characterised by industrial uses, including large and small-medium format warehouse and distribution centres and other industrial-related activities.
Regional Context	The site is located approximately 30km west of the Sydney CBD and 10km west of Parramatta. The site forms part of the Wetherill Park Industrial Area. The site is bounded by Newton Road and is close to its junction with Victoria Street. Part of Victoria Street to the north of the site is an identified Regional Road. The site is a short distance east of the M7 Motorway and benefits from connectivity to the M4 Motorway to the north.



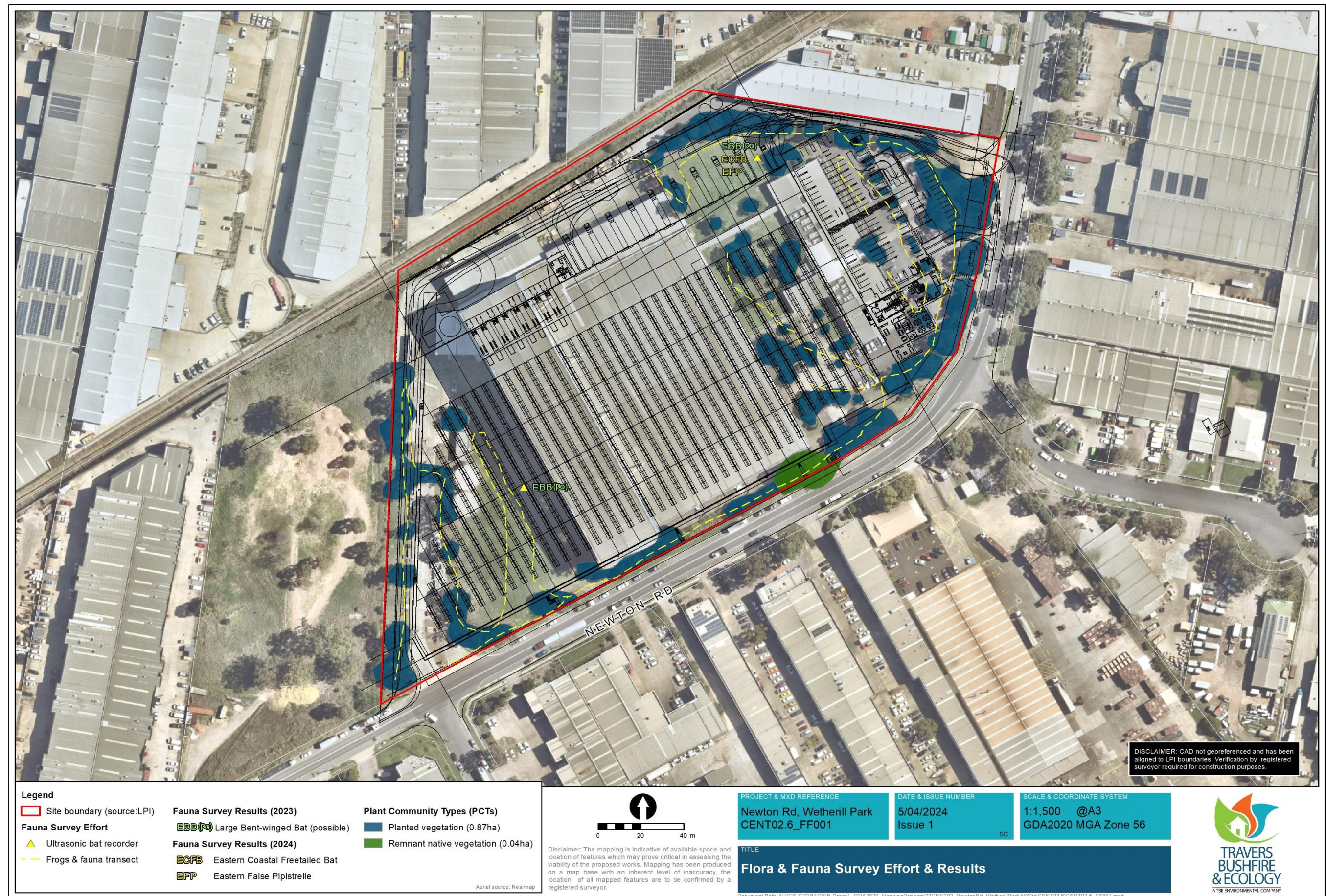


Figure 1-4 – Flora & fauna survey effort & results

1.3 Existing vegetation mapping

A preliminary review of the 2023 Department of Planning and Environment (DPE) interactive vegetation mapping tool and the State Vegetation Type Map (SVTM) which produces a regional-scale map that depicts the distribution of each Plant Community Type and Vegetation Class and Vegetation Formation, across all tenures in NSW was undertaken. This mapping identifies that the vegetation present within the study site as non-native vegetation. The results of these investigations are shown below in Figure 1-5.



Figure 1-5 – Native vegetation mapping (DPE 2022)

1.4 Historical clearing

Aerial imagery shows that the entire site was previously cleared with the exception of one remnant *E. tereticornis* tree and therefore devoid of vegetation prior to 1960. All currently existing vegetation apart from the remnant *E. tereticornis* tree is therefore derived following this date. Previous and current aerial imagery is provided below.



Figure 1-6 – Aerial imagery of the site dated 1965



Figure 1-7 – Current aerial imagery of the site dated May 2023

1.5 Connectivity

The vegetation within the development footprint is highly fragmented from areas of contiguous bushland by existing industrial and commercial infrastructure. The nearest area of contiguous natural vegetation occurs to the north of the study site bordering Prospect Reservoir. Given that the vegetation within the study site is already fragmented within the local landscape, it is therefore concluded that the study area provides no local or regionally important connective values. The study area's contribution to local connectivity is shown in yellow below in Figure 1-8.



Figure 1-8 – Local connectivity (yellow line)

1.6 Existing riparian zone

The subject land contains areas identified as “Riparian area” on the Riparian Lands and Watercourses Map under the 2013 Fairfield LEP as shown below in Figure 1-9.



Figure 1-9 – Mapped riparian zone (in blue) under the 2013 Fairfield LEP (blue) and site outline (red)

A review of the adjoining lands has identified that the existing watercourse has been artificially channelised, within a drainage corridor of approximately 12m. On this basis we assume that a development proposal can emulate the same building setbacks as the adjoining lots. Whilst this artificial drainage corridor is also considered a 1st order stream within the water management, controlled activities (Figure 1-10) may still apply unless an exemption is applicable to the site. An exemption may apply under the LEP and other relevant planning instrument relevant to this site. The hydrology report prepared by Cost in Roe consulting states that this channel does not require riparian considerations under the *Water Management Act*.

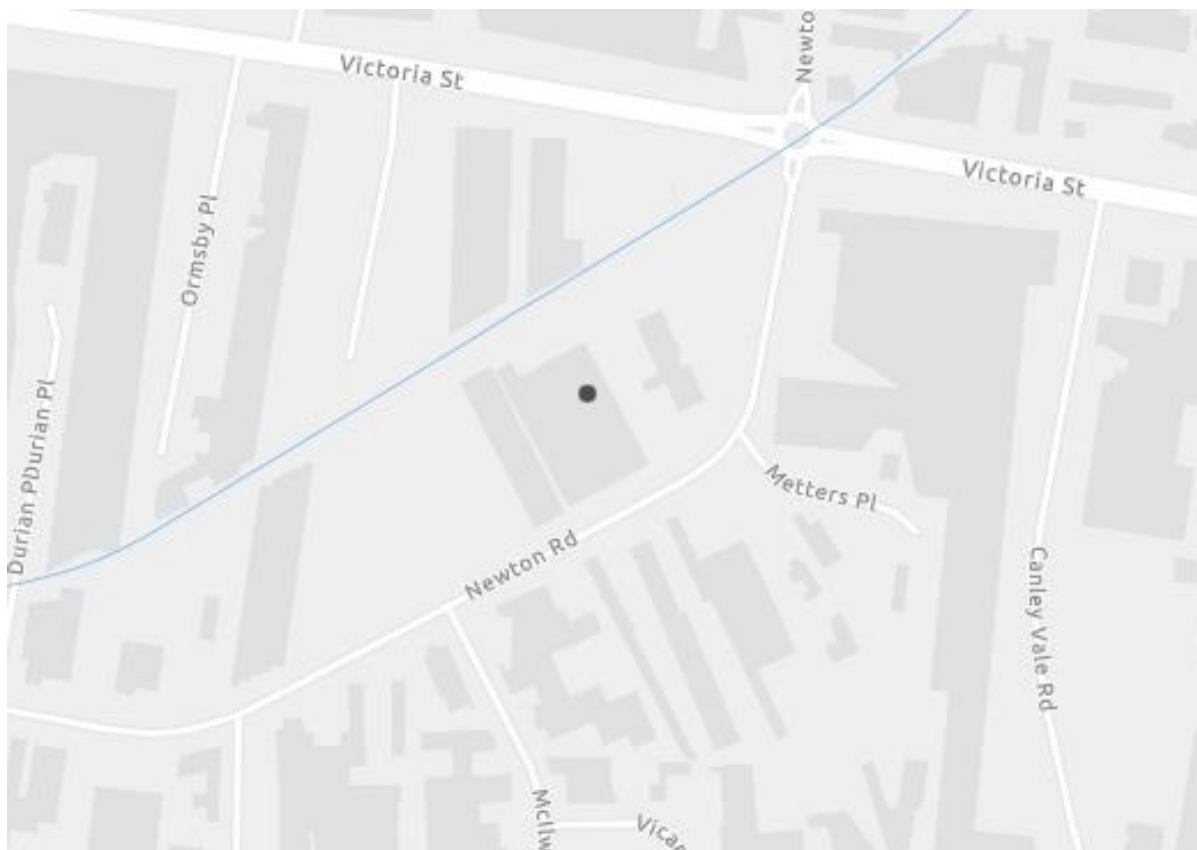


Figure 1-10 – Hydroline spatial data map

2. FLORA

2.1 Survey

A botanical survey was undertaken on 16 May 2023 over a time frame of approximately 3 hrs. Searches were undertaken across the site for suitable habitat for threatened flora.

Site inspection on 16 May 2023 found the following vegetation within the development footprint:

Grassland

This occupies a large proportion of the site, and is dominated by exotic grasses and forbs including *Bidens pilosa*, *Capsella bursa-pastoris*, *Chenopodium album*, *Conyza bonariensis*, *Conyza sumatrensis*, *Cyperus eragrostis*, *Ehrharta erecta*, *Gazania linearis*, *Genista linifolia*, *Lolium perenne*, *Malva sylvestris*, *Malva parviflora*, *Medicago polymorpha*, *Nothoscordum borbonicum*, *Cenchrus clandestinus*, *Plantago lanceolata*, *Poa annua*, *Portulaca oleracea*, *Scandix pecten-veneris*, *Senna pendula* and *Sonchus oleraceus*. Few native ground cover species are present including *Dianella caerulea* and *Lomandra longifolia*.

Planted vegetation

This vegetation occurs within the landscaped areas across the study site. It is comprised of a mix of exotic and native species. Exotic species include *Fraxinus angustifolia*, *Lagerstroemia indica*, *Ligustrum sinense*, *Olea europaea subsp. cuspidata*, *Schinus molle* and *Viburnum sp.*

Native species include *Acacia sp.*, *Corymbia maculata*, *Corymbia citrodora*, *Corymbia molucana*, *Eucalyptus fibrosa*, *Eucalyptus polyanthemos*, *Eucalyptus punctata*, *Eucalyptus saligna*, *Eucalyptus tereticornis*, *Melaleuca bracteata*, *Melaleuca quinquenervia*, *Melaleuca styphelioides*, *Callistemon viminalis*, *Pittosporum undulatum*, *Hakea laurina x petiolaris*, *Westringia fruticosa* and *Acmena smithii*.

Remnant vegetation

Remnant vegetation is represented by a singular *E. tereticornis* tree as shown in photo 6.

It was concluded that the vegetation present, with the exception of a singular large *Eucalyptus tereticornis* near the site boundary abutting the road on the south side of the property has been planted. The majority of trees and shrubs are native but do not conform to any listed plant community type, PCT. Given the lack of native vegetation, the isolation of site to other pockets of native vegetation, and history of the local area which has been used for industrial development, the likelihood of threatened flora is very low.

Acacia pubescens is a wattle species, threatened under the *BC Act*, that occurs regularly nearby and can withstand some degree of disturbance. There were no stand-alone specimens sighted or any located within the garden beds.



Photo 1 – Grassland and planted native vegetation in the west of the development footprint, looking west



Photo 2 – Occasional non-native and exotic shrubs within grassland vegetation in the central portion of the development footprint



Photo 3 – Grassland in the central portion of the development footprint, looking west



Photo 4 – Planted native vegetation within the north eastern portion of the site



Photo 5 – Planted native vegetation within the southern boundary



Photo 6 – Remnant tree within the southern boundary

3. FAUNA

3.1 Survey / habitat assessment

A fauna habitat assessment was undertaken during the botanical survey to identify the habitat types available, the quality and any specific or important features. A habitat tree assessment was undertaken at this time.

The fauna assessment is based on desktop analysis, threatened species records (DPE 2023) and habitat attributes identified during the flora survey. Particular note was taken to search for the following potential threatened fauna species habitat:

- Hollow-bearing trees present.
- Opportunistic bird call and activity survey
- Terrestrial shelters, burrows and/or hollows
- Connectivity potential to and from the site
- Presence of drainages for frog species habitat
- Potential microbat roosting habitat within buildings

Given the potential for roosting habitat within extant buildings on site the following microbat survey methods were undertaken:

- Ultrasonic Microbat recording (x2 passive recording stations) 2023
- Additional Microbat recording (x1 passive recording stations) 2024
- Site inspections of buildings to identify roosting bats using active Anabat walkabout - 2024

3.2 Fauna survey limitations

Initial Microbat survey was undertaken during late Autumn when activity is typically low. Two detectors were left out for 8 consecutive nights to overcome this limitation.

Microbat activity was noted to be irregular and lacked species diversity. It was however recognised that both activity and species diversity, possibly including other threatened species may occur in warmer month's conditions.

To ameliorate these survey limitations, additional ultrasonic recorders were deployed during the appropriate survey period (Nov-Jan) on the 8th – 25th of January for a total of 17 trap nights determine if any threatened Microbats known to utilise buildings occurred within the study site.

3.3 Microbat survey results

2023 survey:

A possible Large Bent-winged Bat was recorded foraging at both passive ultrasonic recording devices within the study area during 2023 survey. Due to this species having a frequency overlap with several non-threatened bat species the detection of this species could not be confirmed. A summary of this species is provided below:

‘Potential breeding habitat’ as defined by The BAM Bat Guide for these species includes “caves, tunnels, mines or other structures known or suspected to be used”. While the study site contains structures these are currently not known or suspected to be used as maternity roosts for Threatened Microbats. While caves are the primary roosting habitat, this species also use derelict mines, storm-water tunnels, buildings and other man-made structures.

The recording locations are shown on Figure 1.4 and results of the Microbat survey are provided in Appendix 3

2024 survey:

Two threatened microbat species, the Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) and Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) were identified during survey. A summary of these species is provided below.

The Eastern False Pipistrelle inhabits warm to cool temperate moist and dry open forests (Strahan 1995) with a preference for wet high-altitude forests and being less common on ridge-tops where fertility is low (Law, Herr & Phillips, 2008). It is one of the larger and less common forest bats, with wing morphology indicating it to be a highly mobile species with a large foraging range with recordings up to 12km from roosting sites (Herr, Law & Phillips, 2008) and home ranges up to 136ha (Churchill, 2008). Flight is not very manoeuvrable and as such foraging takes places in open structures or along trails in forest environs. It hunts beetles but also moths and bugs. The Eastern False Pipistrelle roosts mainly in tree hollows, occasionally utilising caves and abandoned buildings (Parnaby 1992; Phillips et al. 1985). Roosts in trees are generally in hollow trunks of eucalypt trees in colonies of 3 to 80 (Churchill 2008). Cave roosting is recorded at Jenolan, NSW, with occasional roosts also recorded in old wooden structures (Churchill, 2008). Colonies are usually entirely male or female for reasons currently unknown.

The Eastern Coastal Free-tailed Bat forages above the canopy of open forests and woodlands and in clearings at forest edges, feeding on small insects (Allison, Hoyer & Law 2008). This species is thought to roost predominantly in tree hollows but also under loose bark and occasionally in houses and outbuildings (Allison, Hoyer & Law 2008). Until recent findings of a roost within mangroves, all known natural roosts had occurred within hollow spouts of large mature eucalypts. The species is often found close to dams and waterholes. The Eastern Coastal Free-tailed Bat species will utilise paddock trees and isolated remnant vegetation when in proximity to larger forest remnants (Allison, Hoyer & Law 2008).

On May 14, 2024, *Travers bushfire & ecology* conducted a thorough examination of all the buildings proposed for demolition. The inspection involved inspecting internal and external roof structures to identify roosting bats and the buildings roosting habitat potential. Additionally, searches were conducted for signs of guano both recent and historical, indicative of roosting activity. No microbats or piles of guano were observed within any structure, leading to the conclusion that none of the buildings on the premises are serving as roosting sites. Photos provided below.

As the buildings on site are in frequent use, do not offer any opportunity for refuge due to the exposed infrastructure, provide no opportunity to gain entrance into roof spaces combined with no hollow-bearing trees identified within the study site, it is considered that the development footprint provides only foraging habitat for the Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle. This is also based on the low number of calls of these species recorded during survey and no bat species were identified during building inspections. Given the high mobility of these species, and the Large Bent-winged Bat's known dependence on caves and Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle dependence on tree hollows, it is therefore concluded that the proposed

development will not likely significantly impact on a local population of Eastern Coastal Free-tailed Bat or Eastern False Pipistrelle.

Microbat survey results are provided in Appendix 3 and survey locations and results are provided in Figure 1-4..

Building 1 – Warehouse



Photo 1 – Exterior of warehouse. Open structure with minimal enclosed spaces



Photo 2 – Interior of warehouse (Open roofline)



Photo 3 – Interior of warehouse (Open roofline)



Photo 4 – Interior of warehouse (Open roofline)

Building 2 – Office block



Photo 5 – Exterior of office block with detail of limited entry points

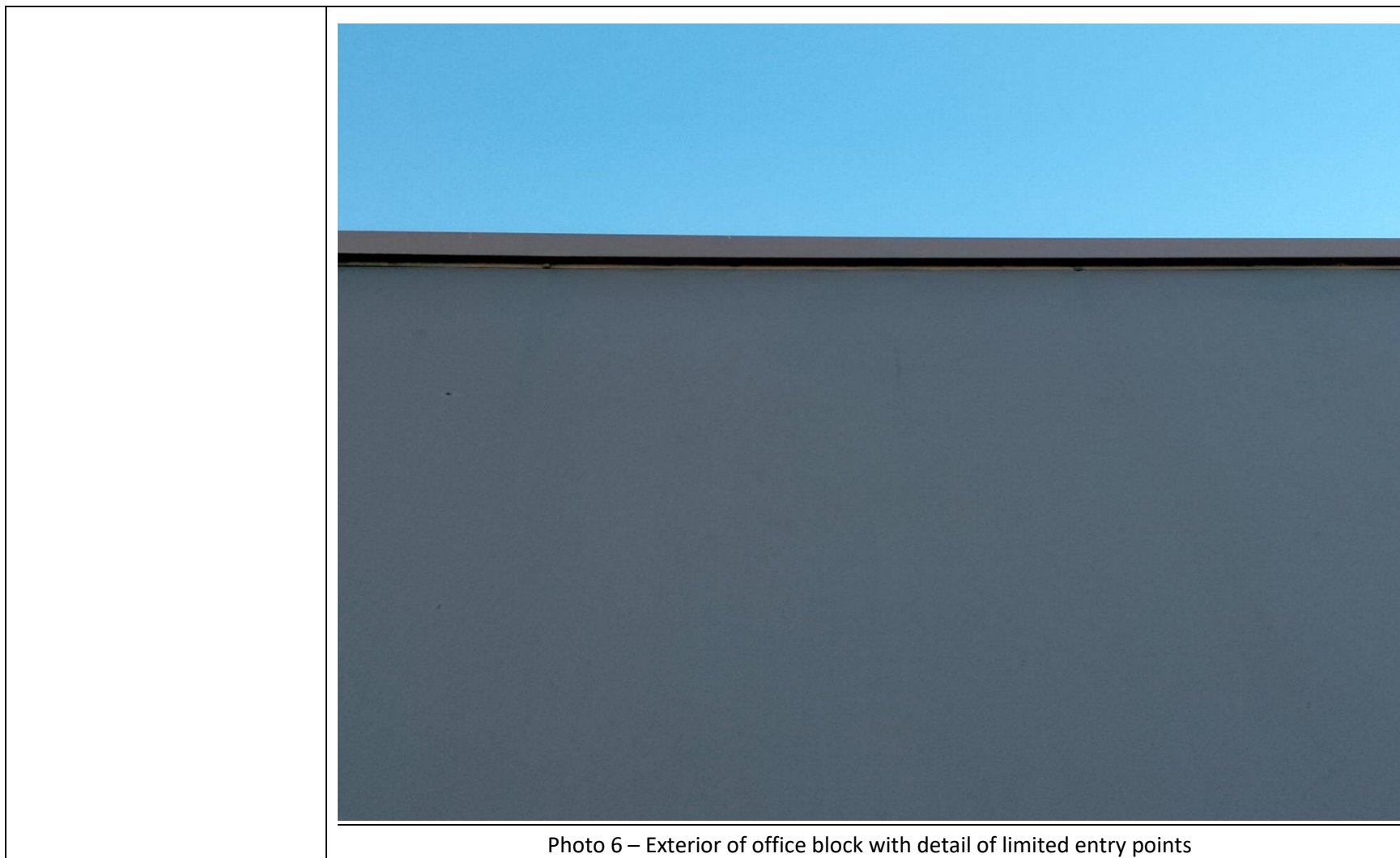


Photo 6 – Exterior of office block with detail of limited entry points



Photo 7 – Exterior of office block with detail of limited entry points



Photo 8 – Exterior of office block with detail of intact eaves and limited entry points



Photo 9 – Detail of walkway showing no enclosed spaces

4. IMPACTS ON BIODIVERSITY VALUES

Figure 4-1 shows that Biodiversity Values Land is mapped to the north-west of the proposed development area within Lot 1 DP 1017259. This mapped area is currently occupied by the existing facility, with sparsely scattered vegetation existing adjacent to the roadside and no other habitat features are present. There is no Biodiversity Values Land mapped within the subject site.

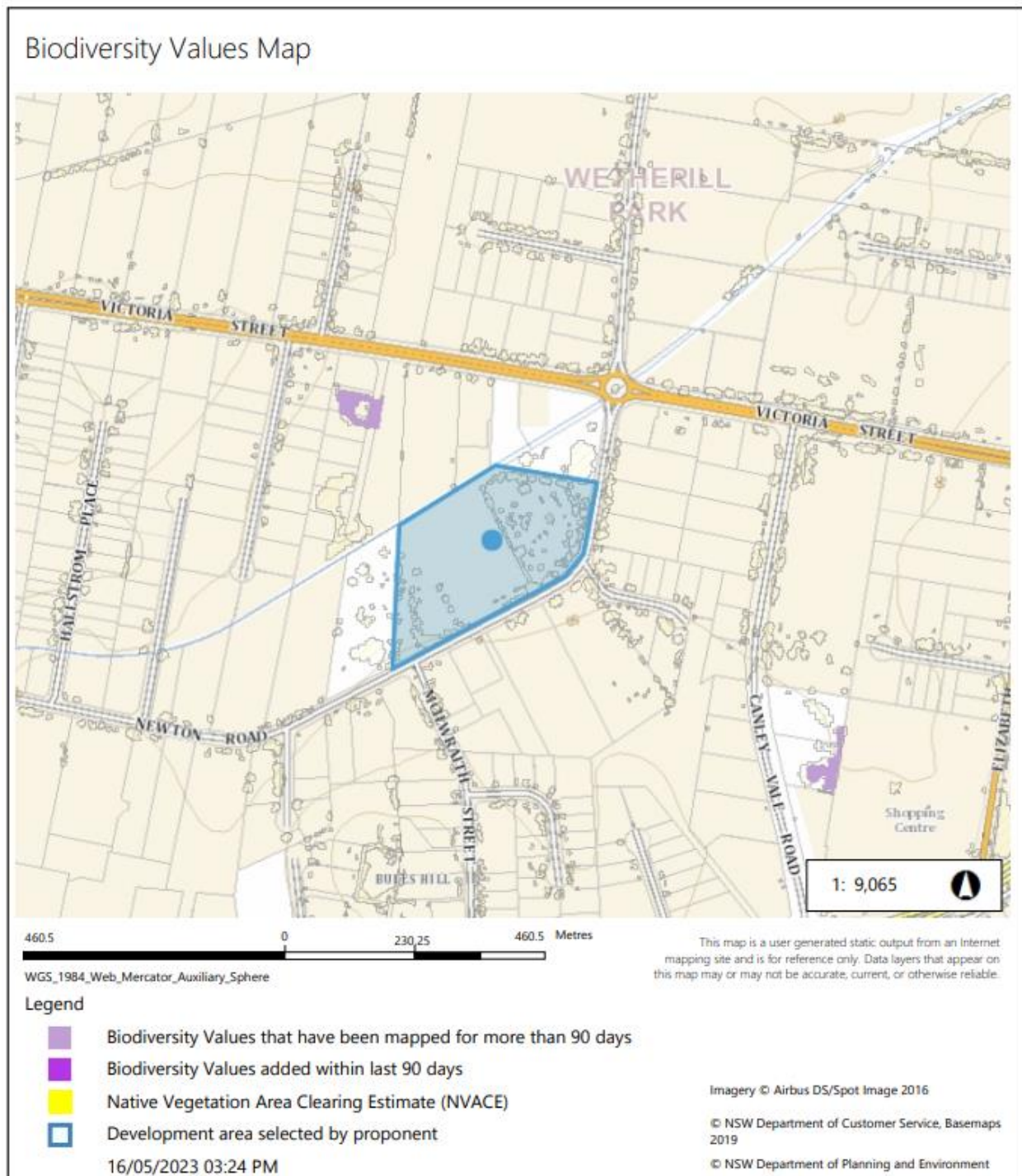


Figure 4-1 – Biodiversity values map

4.1 Minimising impacts

The proposal may minimise long-term impacts on local native fauna by the following suggestions:

- Engage a fauna ecologist / project ecologist during the proposed clearing works to ensure that if any nesting materials are found, or animals are found using the vegetation, they can be appropriately relocated.
- Use of some native species (trees and shrubs) in future landscaping post development as a foraging resource for local fauna.
- Follow the 'Blue Book' by Landcom, 2004 to ensure sediment and erosion control measures are enforced before clearing.

5. CONCLUSIONS AND RECOMMENDATIONS

TBE has completed a biodiversity assessment report (BAR) for the proposal within Lot 1 DP 1017259; 74-94 Newton Road, Wetherill Park within the local government area (LGA).

There is only one (1) remnant tree on site, located along the interface with Newton Road. The proposed warehouse could potentially retain the tree, subject to an arborist review to ascertain tree protection zones and structural root zones, health and safety. However, the assessment has assumed this remnant tree will be removed to facilitate the development.

In summary, this assessment has found:

- Biodiversity Values Land are not mapped within the subject site, and therefore the proposed development will not impact any areas containing Biodiversity Values.
- The planted vegetation is not representative of any threatened ecological community. The likelihood of threatened flora on site is considered very low given prior impacts and land use.
- Microbat survey has concluded that the structures on the site do not currently contain roosting habitat or maternity roosting habitat for any bats, however consideration to demolition processes are further described below.
- The site does not contribute any connectivity values within the landscape.
- A detailed test of significance has been applied to the recorded Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle within Appendix 1 in accordance with Section 7.2 of the *BC Act*. The test of significance for threatened entities has concluded a non-significant impact.

The following recommendations are proposed

- TBE recommend that an arborist report and pre-clearance survey be undertaken prior to the removal of vegetation to identify any trees being utilised by native fauna.
- Prior to commencement of any excavation or demolition work, the site must be surveyed for wildlife by a suitably qualified and licensed ecologist from an environmental consultancy on site. The survey should include both day and night surveys to ensure that nocturnal wildlife that may be using the site are detected, particular survey effort should be focused on potential roosting microbat species.
- If wildlife such as possums, bats, lizards or birds/nests are found on site the following appropriate steps should be taken to move them to safety:
- There must be no attempt to harm or remove the wildlife or bird nests. All native birds, reptiles, amphibians and mammals are protected in New South Wales by the *Biodiversity Conservation Act 2016*. Removal of these animals or nests from site can only be undertaken by a trained wildlife carer.
- TBE recommend that the landscaping on site utilises some native tree and shrub species for future utilisation by native fauna.

Based on this assessment, it is concluded that the proposal will not cause a significant impact on biodiversity values including non-significant impacts on threatened species and their habitat.

6. BIBLIOGRAPHY

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Water Management Act 2000.

Appendix 1. BC ACT 2016 - SECTION 7.3 TEST OF SIGNIFICANCE

Flora and fauna survey and habitat assessments of the study area have resulted in the identification of suitable habitat for the following threatened biodiversity that was recorded present or considered otherwise with varying potential to occur. The potential for any direct or indirect impacts on the following recorded species has been considered within the test of significance.

Common name	BC Act	Potential to occur	Potential habitat impact
Eastern Coastal Free-tailed Bat	V	recorded	Direct – on potential foraging and unlikely roosting
Eastern False Pipistrelle	V	low	Direct – on potential foraging and unlikely roosting
Large Bent-winged Bat	V	unlikely	Direct – on potential foraging and unlikely roosting

As outlined in Section 7.2 of the *BC Act* development or an activity is *likely to significantly affect threatened species* if:

- (a) It is likely to significantly affect threatened species or ecological communities, or their habitats, according to the test in Section 7.3, or
- (b) The development exceeds the threshold if the BOS applies to the impacts of the development on biodiversity values, or
- (c) It is carried out in a declared area of outstanding biodiversity value.

With respect to (a) above and outlined in Section 7.3 of the *BC Act*, the following *test of significance* is a set of five main considerations, with sub-considerations for determining whether proposed development or activity likely to significantly affect threatened species or ecological communities, or their habitats.

(a) In the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction,

With consideration to the relative direct and indirect impacts on all threatened species with varying potential to occur, it is considered that the proposal is unlikely to disrupt the life cycle for any of these listed species such that a viable local population would be placed at risk of extinction. Species recorded present during survey or with high potential to occur and requiring further discussion given potential impacts are further discussed in detail below.

Summary of threatened species recorded

Large Bent-winged Bat (possible recording)

'Potential breeding habitat' as defined by The BAM Bat Guide for these species includes "caves, tunnels, mines or other structures known or suspected to be used." While the study site contains structures these are currently not known or suspected to be used as maternity roosts for Threatened Microbats. While caves are the primary roosting habitat, this species also use derelict mines, storm-water tunnels, buildings and other man-made structures.

The Large Bent-winged Bat was recorded with possible certainty foraging at both passive ultrasonic recording devices within the study area during 2023 survey. Additional target survey was undertaken during the breeding period in 2024 for Large Bent-winged Bat and no calls from this species were identified and it is therefore considered that the study site does not provide any potential breeding habitat for this species.

There are several human-made structures on site including a warehouse and an office block. On May 14, 2024, *Travers Bushfire & Ecology* conducted a thorough examination of all the buildings proposed for demolition. The inspection involved inspecting internal and external roof structures to identify roosting bats and the buildings roosting habitat potential. Additionally, searches were conducted for signs of guano both recent and historical, indicative of roosting activity. No microbats or piles of guano were observed within any structure, leading to the conclusion that none of the buildings on the premises are serving as overwintering roosting sites or as breeding habitat.

The study area is surrounded by industrial development providing potential roosting and foraging habitat only

The recording locations are shown on Figure 1-4 and results of the microbat survey are provided in Appendix 4.

Eastern False Pipistrelle & Eastern Coastal Free-tailed Bat

The Eastern False Pipistrelle inhabits warm to cool temperate moist and dry open forests (Strahan 1995) with a preference for wet high-altitude forests and being less common on ridge-tops where fertility is low (Law, Herr & Phillips, 2008). It is one of the larger and less common forest bats, with wing morphology indicating it to be a highly mobile species with a large foraging range with recordings up to 12km from roosting sites (Herr, Law & Phillips, 2008) and home ranges up to 136 ha (Churchill, 2008). Flight is not very manoeuvrable and as such foraging takes places in open structures or along trails in forest environs. It hunts beetles but also moths and bugs. The Eastern False Pipistrelle roosts mainly in tree hollows, occasionally utilising caves and abandoned buildings (Parnaby 1992; Phillips et al. 1985). Roosts in trees are generally in hollow trunks of eucalypt trees in colonies of 3 to 80 (Churchill 2008). Cave roosting is recorded at Jenolan, NSW, with occasional roosts also recorded in old wooden structures (Churchill, 2008). Colonies are usually entirely male or female for reasons currently unknown.

The Eastern Coastal Free-tailed Bat forages above the canopy of open forests and woodlands and in clearings at forest edges, feeding on small insects (Allison, Hoyer & Law 2008). This species is thought to roost predominantly in tree hollows but also under loose bark and occasionally in houses and outbuildings (Allison, Hoyer & Law 2008). Until recent findings of a roost within mangroves, all known natural roosts had occurred within hollow spouts of large mature eucalypts. The species is often found close to dams and waterholes. The Eastern Coastal Free-tailed Bat species will utilise paddock trees and isolated remnant vegetation when in proximity to larger forest remnants (Allison, Hoyer & Law 2008).

As the buildings on site are in frequent use, do not offer any opportunity for refuge due to the exposed infrastructure, provide no opportunity to gain entrance into roof spaces combined with no hollow-bearing trees identified within the study site, it is considered that the development footprint provides only foraging habitat for Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle. This is also based on the low number of calls of these species recorded during survey. Given the high mobility of these species, and their known dependence on tree hollows, it is therefore concluded that the proposed development will not likely significantly impact on a local population of Eastern Coastal Free-tailed Bat or Eastern False Pipistrelle.

Microbat survey results are provided in Appendix 4 and survey locations and results are provided in Figure 1-4.

Considering the absence of suitable maternity roost habitat, the unlikelihood of the frequently used buildings being used as over-winter roosts, insignificant impact on foraging habitat, the proposed development is considered unlikely to have an adverse effect on the life cycle of Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle such that viable local populations of these species will be placed at risk of extinction.

(b) In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:

- i. Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
- ii. Is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

No endangered ecological community or critically endangered ecological community was identified during survey undertaken within the study site.

(c) In relation to the habitat of threatened species or ecological community:

It is considered that the development footprint provides only potential foraging habitat for the recorded Large Bent-wing Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle. Given that the availability of open foraging space will remain unchanged post-construction, no adverse outcomes for the existing microbat population are expected.

i. The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

The development footprint has an area of approximately 5.19 ha, which comprises approximately 0.87 ha of native planted vegetation and 0.04 ha of remnant native vegetation in the form of a singular *E. tereticornis* tree. The planning proposal also requires the removal of buildings which may be considered potential habitat.

ii. Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

The site is isolated on all aspects from any areas of native vegetation or habitat by existing roads and buildings. Likewise, the site does not contribute any connectivity values within the landscape. Figure 1-8 shows local connectivity relative to the study area.

The entire site was previously cleared with the exception of one remnant *E. tereticornis* tree and therefore devoid of vegetation prior to 1960. All currently existing vegetation apart from the remnant *E. tereticornis* tree is therefore derived following this date.

Therefore, it is considered that known habitat for a threatened species, population or ecological community within the local area and region is unlikely to become isolated or fragmented as a result of the proposal.

iii. The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality

In respect to threatened fauna species recorded or with potential to occur the proposed area of impact is not likely of high quality, of any breeding importance or central to the home range requirements of any species such that behaviour or ecology of these species will be significantly altered in any way.

The Large Bent-winged Bat was recorded with possible certainty foraging at both passive ultrasonic recording devices within the study area during 2023 survey. Additional target survey was undertaken during the breeding period in 2024 for Large Bent-winged Bat and no calls from this species were identified and it is therefore considered that the study site does not provide any potential breeding habitat for this species.

Additional survey results did however identify two (2) threatened Microbat species including the Eastern False Pipistrelle and Eastern Coastal Free-tailed Bat. These species have a strong association with roosts in hollow-bearing trees however they have been observed to utilise old wooden structures, abandoned buildings and occasionally houses and outbuildings (Allison, Hoyer & Law 2008).

As the buildings on site are in frequent active use, did not offer any opportunity for refuge, inclusive of roosting or maternity roosting habitat due to the exposed infrastructure, provided no opportunity to gain entrance into enclosed roof spaces combined with no hollow-bearing trees identified within the study site, leading to the conclusion that none of the buildings on the premises offer potential or are serving as maternity or over-wintering roosting sites. Therefore, it is considered that the development footprint provides only foraging habitat for the Large Bent-winged Bat, Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle.

Given the high mobility of these species, and the Large Bent-winged Bat's known dependence on caves and Eastern Coastal Free-tailed Bat and Eastern False Pipistrelle dependence on tree hollows, it is therefore concluded that the proposed development will not likely significantly impact on a local population of Eastern Coastal Free-tailed Bat or Eastern False Pipistrelle.

The recording locations are shown on Figure 1.4 and results of the Microbat survey are provided in Appendix 4.

(d) Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

A key threatening process is defined as a process that threatens, or could threaten, the survival or evolutionary development of species, populations or ecological communities.

The current list of key threatening processes, and whether the proposed activity is recognised as a threatening process, is shown below.

Table A1.1 – Key threatening processes (Appendix 1)

Listed key threatening process	Development a threatening process?		
	Likely	Possible	Unlikely
Aggressive exclusion of birds by Noisy Miners (<i>Manorina melanoccephala</i>)			✓
Alteration of habitat following subsidence due to longwall mining			✓
Alteration to the natural flow regimes of rivers and streams and their floodplains and wetlands			✓
Anthropogenic Climate Change	✓		
Bushrock removal			✓
Clearing of native vegetation			✓
Competition and habitat degradation by feral goats			✓
Competition and grazing by the feral European Rabbit (<i>Oryctolagus cuniculus</i>)			✓
Competition from feral honeybees			✓

Listed key threatening process	Development process?	a	threatening
Death or injury to marine species following capture in shark control programs on ocean beaches			✓
Entanglement in, or ingestion of anthropogenic debris in marine and estuarine environments			✓
Forest Eucalypt dieback associated with over-abundant psyllids and bell miners			✓
High frequency fire resulting in the disruption of life-cycle processes in plants and animals and loss of vegetation structure and composition			✓
Herbivory and environmental degradation caused by feral deer			✓
Importation of red imported fire ants into NSW			✓
Infection by <i>Psittacine circoviral</i> (beak and feather) disease affecting endangered psittacine species and populations			✓
Infection of frogs by amphibian chytrid causing the disease chytridiomycosis			✓
Introduction and establishment of Exotic Rust Fungi of the order Pucciniales pathogenic on plants of the family Myrtaceae			✓
Infection of native plants by <i>Phytophthora cinnamomi</i>			✓
Introduction of the large earth bumblebee (<i>Bombus terrestris</i>)			✓
Invasion and establishment of exotic vines and scramblers			✓
Invasion and establishment of Scotch Broom (<i>Cytisus scoparius</i>)			✓
Invasion and establishment of the Cane Toad (<i>Bufo marinus</i>)			✓
Invasion, establishment and spread of <i>Lantana camara</i>			✓
Invasion of native plant communities by bitou bush & boneseed <i>Chrysanthemoides monilifera</i>			✓
Invasion of native plant communities by exotic perennial grasses	✓		
Invasion of native plant communities by African Olive (<i>Olea europaea</i> subsp. <i>cuspidata</i>)			✓
Invasion of the Yellow Crazy Ant (<i>Anoplolepis gracilipes</i>)			✓
Loss of Hollow-bearing trees			✓
Loss and degradation of native plant and animal habitat by invasion of escaped garden plants, including aquatic plants			✓
Loss and/or degradation of sites used for hill-topping by butterflies			✓
Predation and hybridisation by feral dogs (<i>Canis lupus familiaris</i>)			✓
Predation by the European Red Fox (<i>Vulpes vulpes</i>)			✓
Predation by the Feral Cat (<i>Felis catus</i>)			✓
Predation by <i>Gambusia holbrooki</i> Girard, 1859 (plague minnow or mosquito fish)			✓
Predation by the Ship Rat (<i>Rattus rattus</i>) on Lord Howe Island			✓
Predation, habitat degradation, competition & disease transmission from Feral pigs (<i>Sus scrofa</i>)			✓
Removal of dead wood and dead trees			✓

The above key threatening processes have been considered in reference to the proposal. It was considered that the proposal may contribute to a small degree to a number these processes as described below. It was not considered that the proposal will have a large or significant impact on any of the following key threatening processes. Some mitigation measures have been listed under each process to minimise or reduce such impacts upon those processes.

Summary of “likely” or “possible” Key Threatening Processes

This section identifies what mitigation measures can be implemented to address threatening processes.

Anthropogenic Climate Change

The proposal will require the removal of a small amount of vegetation which will result in a negative or positive contribution to climate change. Vegetation is considered to act as a sink for a range of greenhouse gases but in particular Carbon Dioxide. The maintenance of native vegetation cover is a key strategy to combat the contributing impacts of the proposed action on Climate Change. Increased risk of bushfire, flooding and storms are to be considered as part of the proposed action. Vegetation also acts as a heat sink, and provides important shade, particularly in urban areas. This issue requires total systems management including consideration of energy use throughout the lifecycle of the proposed action including all aspects of the actions processes, materials supply and production. Whilst almost insignificant in size, the proposal is part of the accumulative effect and thus should be considered as contributing to this threatening process.

Invasion of native plant communities by exotic perennial grasses

The proposal could potentially be a class of development recognised as a threatening process due to the presence of exotic perennial grasses within the allotment such as *Ehrharta erecta* (Panic Veldtgrass), *Lolium perenne* *Cenchrus clandestinus* and *Poa annua*. These species may result in possible incursions of exotic perennial grasses if exotic lawn is utilised as part of the landscaping and allowed to spread into adjoining bushlands. It is therefore recommended that native ground covers be utilised as part of the future landscaping works and weed control is applied to reduce spread and establishment of exotic perennial grasses into remnant native vegetation.

Appendix 2. STAFF QUALIFICATIONS

Team member (role)	Accreditations and qualifications	Experience	Employment history	Skills and expertise
Lindsay Holmes (Manager of Ecology)	<ul style="list-style-type: none"> Biodiversity Assessment Method (BAM) Assessor (BAAS17032) Bachelor of Science – Biology, James Cook University, Qld Bush Regeneration II Certificate, Ourimbah TAFE NSW WorkCover OHS Construction Induction Senior First Aid Certificate BioBanking Assessor (No. 199) 	Lindsay has 24 years of experience as a flora ecologist and bushland regeneration supervisor and has expertise in botanical survey, ecological analysis, maintain and improve analysis, biometric analysis and geo-plotting of ecological data.	<ul style="list-style-type: none"> 2007-Current: Senior Botanist, Travers bushfire & ecology 2006-2007: Ecologist, Conacher Travers Pty Ltd 1999-2006: Field Operations Manager, Microclimate 	<ul style="list-style-type: none"> Highly experienced in botanical survey and ecological analysis Vegetation management planning Flora and fauna assessment Species impact statement Threatened species, ecological communities and endangered population surveys and analysis Preparation of BioBanking and Biodiversity Development Assessment Reports Riparian, bushland and wetland restoration Habitat tree analysis and assessment Noxious weed identification and control SULE assessment
Michael Sheather-Reid (Managing Director)	<ul style="list-style-type: none"> Bachelor of Natural Resources (Hons), University of New England BioBanking Assessor Engineering Assistant – CAD Drafting MUSIC Modelling – Stormwater quality and quantity modelling (RMIT) Bush Regeneration II Certificate, Ryde TAFE NSW WorkCover OHS Construction Induction Chemical Handling Certificate, Ryde TAFE 	Michael has a wealth of experience in environmental consulting and on ground management of bushland, wetland and riparian habitats having undertaken environmental assessment, ecological consultancy and restoration in both the private and public sectors for over 25 years.	<ul style="list-style-type: none"> 2007- Current: Senior Ecologist, Travers bushfire & ecology 2004 -2007: Senior Ecologist, Conacher Travers Pty Ltd 2002-2004: Project Manager, Urban Bushland Management Projects Pty Ltd 1999-2002: Project Manager Sustainable Vegetation Management Pty Ltd 1995-1999: Managing Director Sheather-Reid & Associates Pty Ltd 1996-1997: NSW Landcare Liaison Officer, Australian Conservation Foundation 1992-1995: Environmental Officer, Dept. Land & Water Conservation 1990-1992: Scientific Officer Dept. of Water Resources 	<ul style="list-style-type: none"> Ecological assessment Rezoning studies Biodiversity offset planning Restoration management and coordination Biotic and soil translocation Watercourse assessment Project ecologist services EPBC Act referrals Controlled Activity Approvals Vegetation management plans

Team member (role)	Accreditations and qualifications	Experience	Employment history	Skills and expertise
Sandy Cardow (GIS officer)	<ul style="list-style-type: none"> Bachelor of Science (Biological Sciences) (Macquarie University) 	Sandy has over twenty years of experience in Spatial Information (Geographic Information Systems (GIS)), which includes preparation of mapping in local government roles and has completed a Bachelor of Science (Biological Sciences).	<ul style="list-style-type: none"> 2017 – Current: GIS Officer, Travers bushfire & ecology 2014 – 2017: GIS Consultant, Forestry Corp. NSW 2005 – 2011: GIS Analyst, Forests NSW 2002 – 2005: GIS Data Librarian, Forests NSW 2000 – 2002: GIS Operator, Forests NSW 2000 – 2002: GIS Data Import / Export Officer, Forests NSW 1999 2000: GIS Project Officer DECC 1998 – 1999: GIS Support Officer DECC 1998 – 1999: Wildlife Atlas Data Entry Officer DECC 	<ul style="list-style-type: none"> Geographic Information Systems Data management and analysis Spatial databases and database administration GPS Cartography Natural resource management Client liaison
Corrine Edwards (Fauna Ecologist)	<ul style="list-style-type: none"> Bachelor of Environmental Science and Management. (Hons) (University of New South Wales) (2016-2020) 	Corrine has over 10 years' experience in fauna survey techniques, researching ecological interactions and identification of vertebrate fauna within a magnitude of Australian habitats. She is experienced in leading research projects, experimental design, data collection, data analysis and report writing.	<ul style="list-style-type: none"> 2021 – Current: Fauna Ecologist, Travers Bushfire and Ecology 2020 – Recipient of the Marilyn Fox Environmental Science Prize 2019 – 2020: Research scholarship fellow at the Fowlers Gap Research Station 2019 – Research assistant at University of NSW 2015-2016 – Reptile Research Assistant, Adelaide Museum 2014 – 2015 Amphibian Research Assistant, University of Western Australia 2012-14 – Reptile Zookeeper – Australian Reptile Park 	<ul style="list-style-type: none"> Survey techniques for all major vertebrate fauna groups (including threatened species target searches) Fauna identification, morphology and behaviour Fauna field assessment Microhabitat identification Project ecology Experimental design and statistical analysis Scientific report writing

Appendix 3. Flora species list

Table A3-1 – Flora species recorded (Appendix 3)

Family	Scientific name	Common name
TREES		
Mimosaceae	<i>Acacia sp.</i>	Wattle
Myrtaceae	<i>Corymbia maculata</i>	Spotted Gum
Myrtaceae	<i>Corymbia citrodora</i>	Lemon-scented Gum
Myrtaceae	<i>Corymbia moluccana</i>	Grey Box
Myrtaceae	<i>Eucalyptus fibrosa</i>	Broad Leaved Ironbark
Myrtaceae	<i>Eucalyptus polyanthemos</i>	Red Box
Myrtaceae	<i>Eucalyptus punctata</i>	Grey Gum
Myrtaceae	<i>Eucalyptus saligna</i>	Sydney Blue Gum
Myrtaceae	<i>Eucalyptus tereticornis</i>	Forest Red Gum
Oleaceae	<i>Fraxinus angustifolia</i> *	Narrow-leaved Ash
Lythraceae	<i>Lagerstroemia indica</i> *	Crepe Myrtle
Myrtaceae	<i>Melaleuca bracteata</i>	Black Tea-tree
Myrtaceae	<i>Melaleuca quinquenervia</i>	Broad-leaved Paperbark
Myrtaceae	<i>Melaleuca styphelioides</i>	Prickly-leaved Paperbark
Myrtaceae	<i>Melaleuca viminalis</i>	Weeping Bottlebrush
Pittosporaceae	<i>Pittosporum undulatum</i>	Sweet Pittosporum
Platanaceae	<i>Platanus occidentalis</i> *	American sycamore
Anacardiaceae	<i>Schinus molle</i> *	Pepper Tree
Euphorbiaceae	<i>Triadica sebifera</i> *	Chinese Tallow
SHRUBS		
Proteaceae	<i>Hakea laurina x petiolaris</i>	Pin Ball
Oleaceae	<i>Ligustrum sinense</i> *	Small-leaved Privet
Oleaceae	<i>Olea europaea subsp. cuspidata</i> *	African Olive
Anacardiaceae	<i>Schinus molle</i>	Pepper Tree
Myrtaceae	<i>Syzygium smithii</i>	Lilly Pilly
Adoxaceae	<i>Viburnum tinus</i>	
Lamiaceae	<i>Westringia fruticosa</i>	Coastal Rosemary
GROUNDCOVERS		
Asteraceae	<i>Bidens pilosa</i> *	Cobbler's Pegs
Brassicaceae	<i>Capsella bursa-pastoris</i> *	Shepherd's Purse
Amaranthaceae	<i>Chenopodium album</i> *	Lamb's Quarters
Asteraceae	<i>Conyza bonariensis</i> *	Flaxleaf Fleabane
Asteraceae	<i>Conyza sumatrensis</i> *	Fleabane
Cyperaceae	<i>Cyperus eragrostis</i> *	Tall Flatsedge
Asphodelaceae	<i>Dianella caerulea</i>	Blue Flax-lily
Poaceae	<i>Ehrharta erecta</i> *	Panic Veldtgrass

Family	Scientific name	Common name
Asteraceae	<i>Gazania linearis</i> *	African Daisy
Fabaceae	<i>Genista linifolia</i>	Needle-leaved Broom
Poaceae	<i>Lolium perenne</i> *	Perennial Ryegrass
Asparagaceae	<i>Lomandra longifolia</i>	Spiny-head Mat-rush
Malvaceae	<i>Malva sylvestris</i> *	Tall Mallow
Malvaceae	<i>Malva parviflora</i>	Cheeseweed Mallow
Fabaceae	<i>Medicago polymorpha</i> *	Burr Medic
Liliaceae	<i>Nothoscordum borbonicum</i> *	Onion Weed
Poaceae	<i>Pennisetum clandestinum</i> * (<i>Cenchrus clandestinus</i>)	Kikuyu
Plantaginaceae	<i>Plantago lanceolata</i> *	Ribwort
Poaceae	<i>Poa annua</i> *	Winter Grass
Portulacaceae	<i>Portulaca oleracea</i>	Common Purslane
Fabaceae	<i>Senna pendula</i> *	Easter Cassia
Asteraceae	<i>Sonchus oleraceus</i> *	Common Sow-thistle
* denotes exotic species, TS denotes threatened species		

It should be noted that not all garden, cultivar or landscape species have been identified as part of this assessment.

Appendix 4. Microbat survey results

SUMMARY OF RESULTS			
ID Method	Result	Threatened	ID Confidence (probability low to high)
2023 Survey			
Alternating, steep pulses centred around 31 kHz	<i>Chalinolobus gouldii</i>	No	High
Non-alternating, flat pulses around 30 kHz	<i>Ozimops ridei</i>	No	High
Characteristic frequency around 42 kHz	<i>Vespadelus darlingtoni</i>	No	Possible
Characteristic frequency around 45 kHz, droopy down-sweeping tails, and less common doppler affect	<i>Miniopterus orianae oceanensis</i>	Yes	Possible
2024 Survey			
Alternating, steep pulses centred around 31 kHz	<i>Chalinolobus gouldii</i>	No	High
Non-alternating, flat pulses around 30 kHz	<i>Ozimops ridei</i>	No	High
Alternating, flat pulses around 30 kHz	<i>Micronomus norfolkensis</i>	Yes	High
Characteristic frequency around 36 kHz	<i>Falsistrellus tasmaniensis</i>	Yes	High
Steep calls with short duration	<i>Nyctophilus sp.</i>	No	Moderate

2023 RESULTS

The calls of two species and one species complex were identified from the Anabat recorder located at Wetherill Park during 2023 survey. One species complex containing the Large bent-winged Bat (*Miniopterus orianae oceanensis*) was identified.

Figure 1:
Gould's
Wattle Bat
(*Chalinolobus
gouldii*).

This
sequence
was
identified as
C. gouldii call
due to the
alternating
characteristic
frequency
around 31
kHz and long
frequency
sweep.

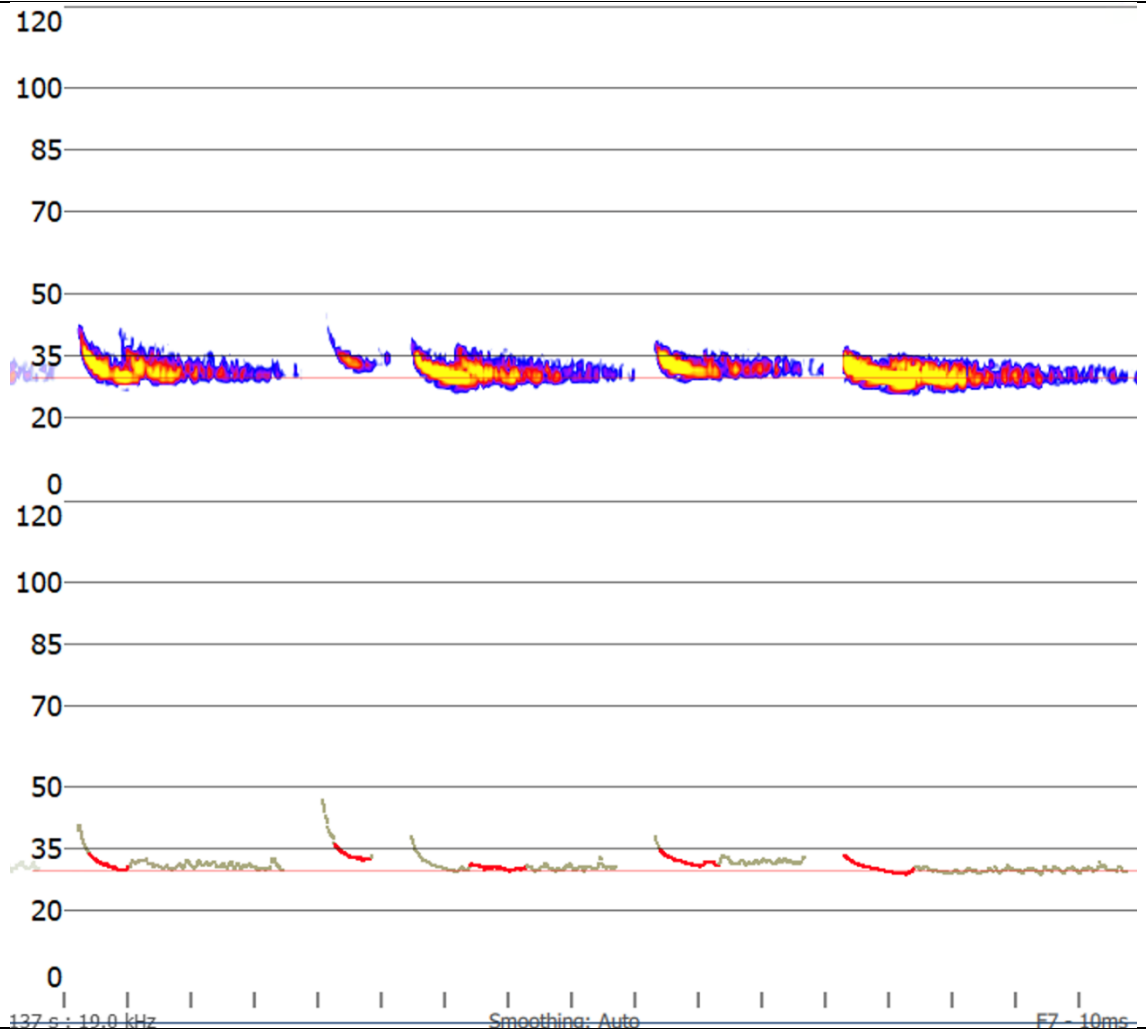


Figure 2:
Ride's
Freetailed Bat
(*Ozimops ridei*)
in compressed
mode.

This sequence
was identified
as *O. ridei* call
due to the flat
calls (i.e., low
bandwidth)
around 30 kHz
and with no
alternating
characteristic
frequency.

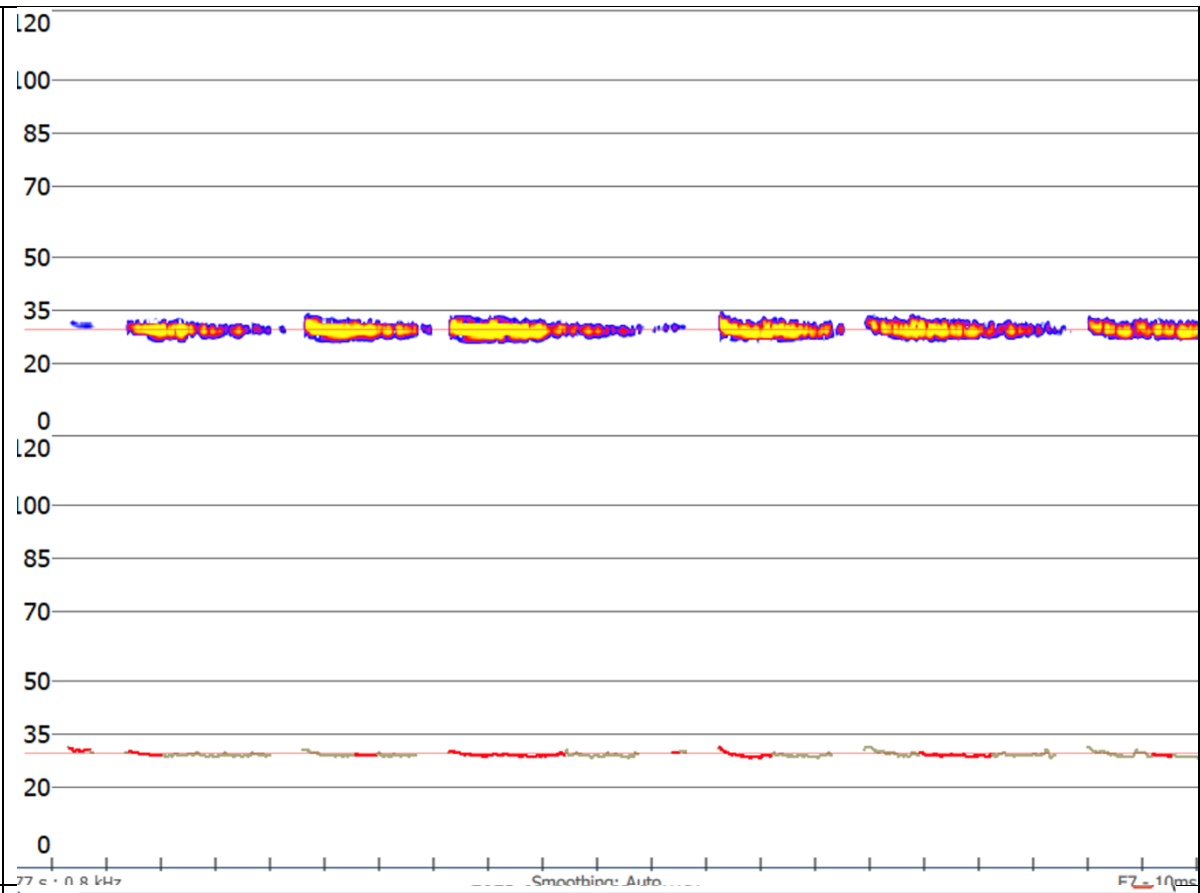
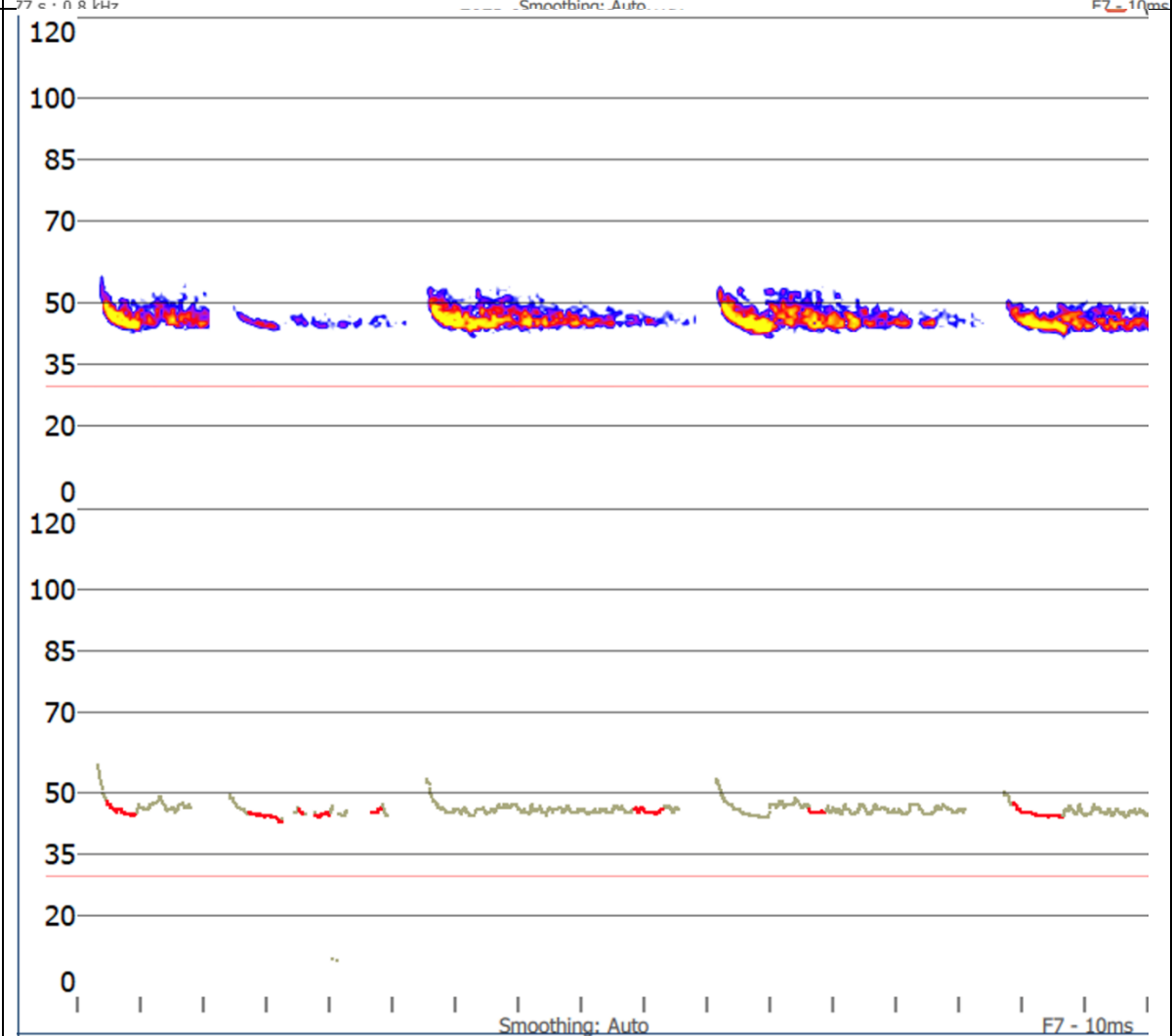


Figure 3:
Possible Large
bent-winged
Bat
(*Miniopterus
orianae
oceanensis*), or
Large Forest
Bat (*Vespadelu
s darlingtoni*)
in compressed
mode.

This sequence
cannot be
identified to
species due to
the frequency
overlap and
lack of feeding
buzzes in
recorded calls.



2024 RESULTS

The calls of five species and one species complex were identified from the Anabat recorder located at Wetherill Park. Two threatened species (*Micronomus norfolkensis* and *Falsistrellus tasmaniensis*) were identified.

Figure 1

Gould's Wattle Bat
(*Chalinolobus gouldii*)
identified with a high level of confidence.

This sequence was identified as a *C. gouldii* call due to the alternating characteristic frequency around 31 kHz and large bandwidth pulses.

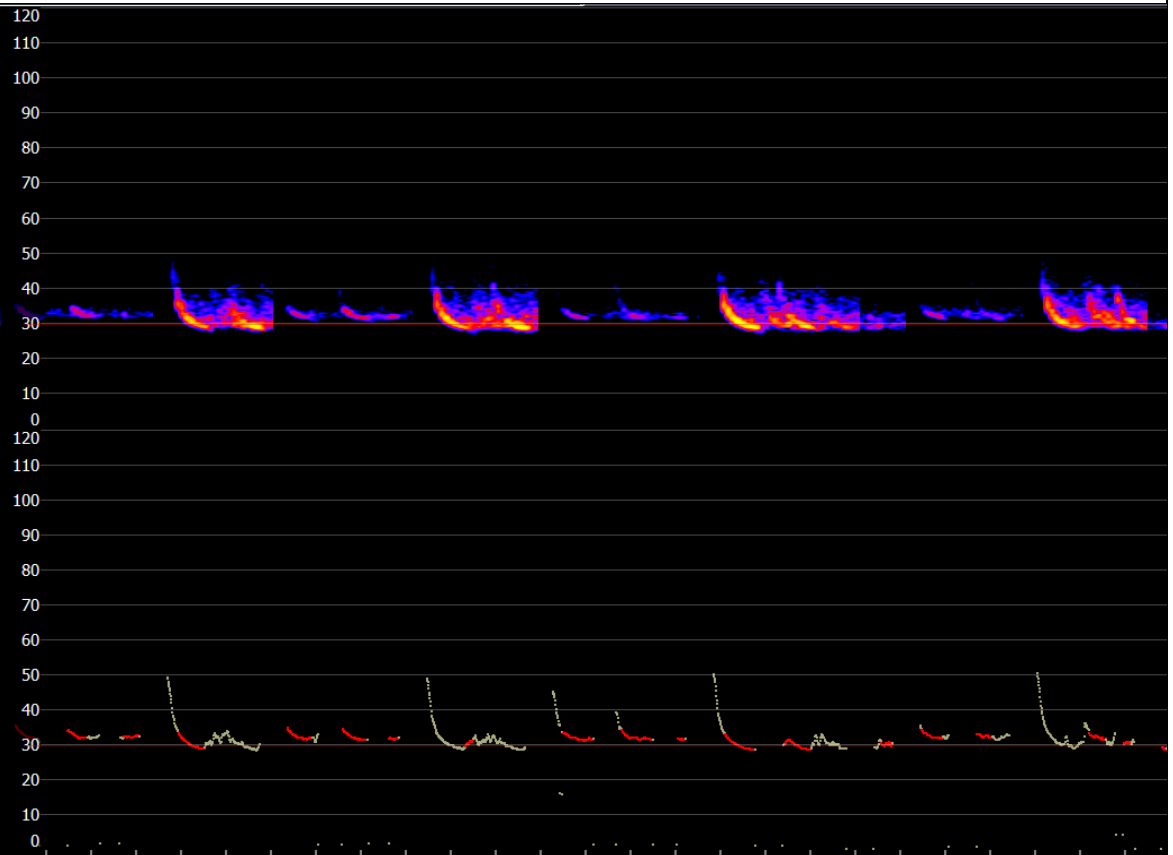


Figure 2

Ride's Free-tailed Bat
(*Ozimops ridei*)
identified with a high level of confidence.

This sequence was identified as an *O. ridei* call due to the non-alternating, relatively flat pulses around 29 kHz.

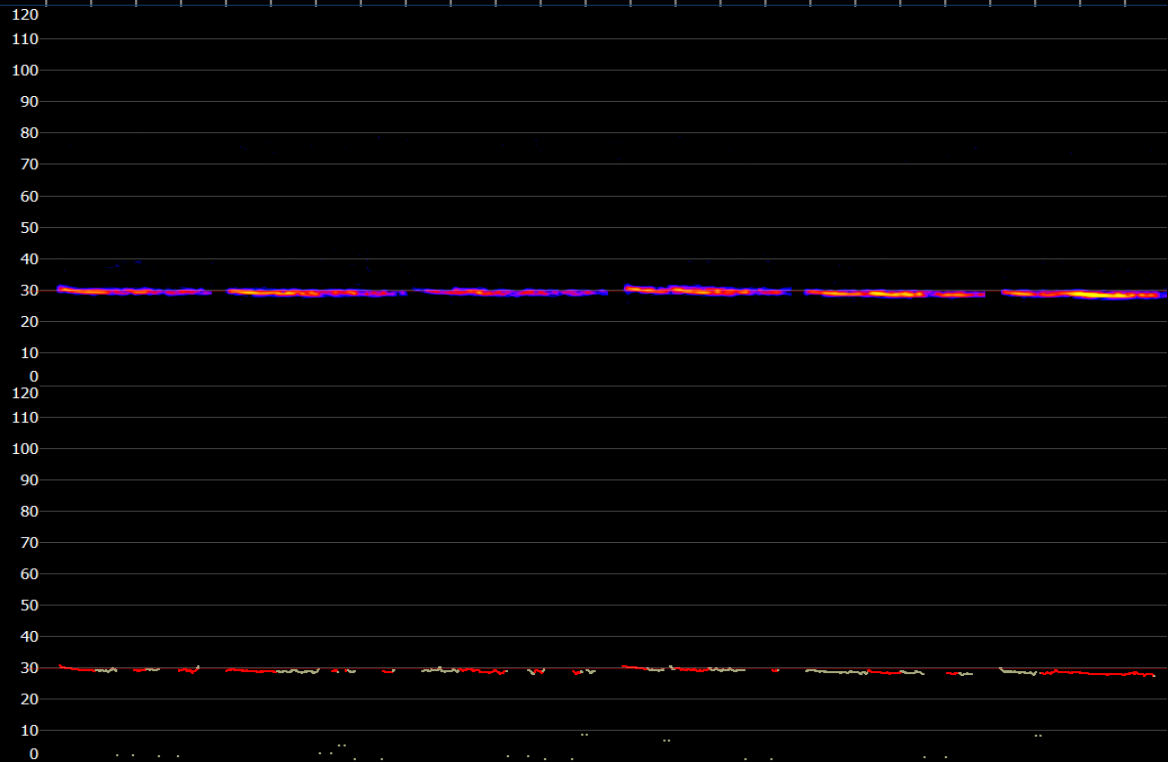


Figure 3

Eastern Coastal Free-tailed Bat (*Micronomus norfolkensis*) identified with a high level of confidence.

This sequence was identified as a *M. norfolkensis* call due to the alternating, relatively flat pulses around 33 kHz.

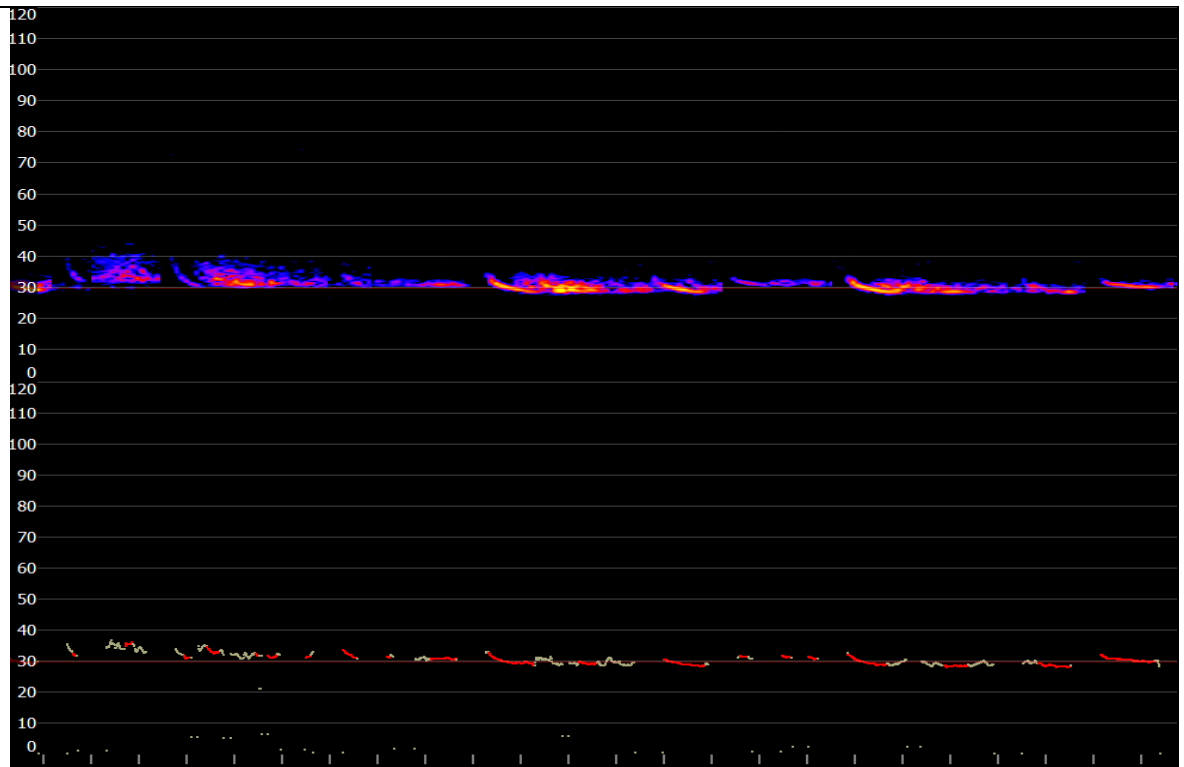


Figure 4

Eastern False Pipistrelle (*Falsistrellus tasmaniensis*) identified with a high level of confidence.

This sequence was identified as a *F. tasmaniensis* call due to curved steep pulse with a down sweeping tail and large-bandwidth pulses around 36 kHz. Able to be separated from *S. orion* due to the lack of up sweeping tail.

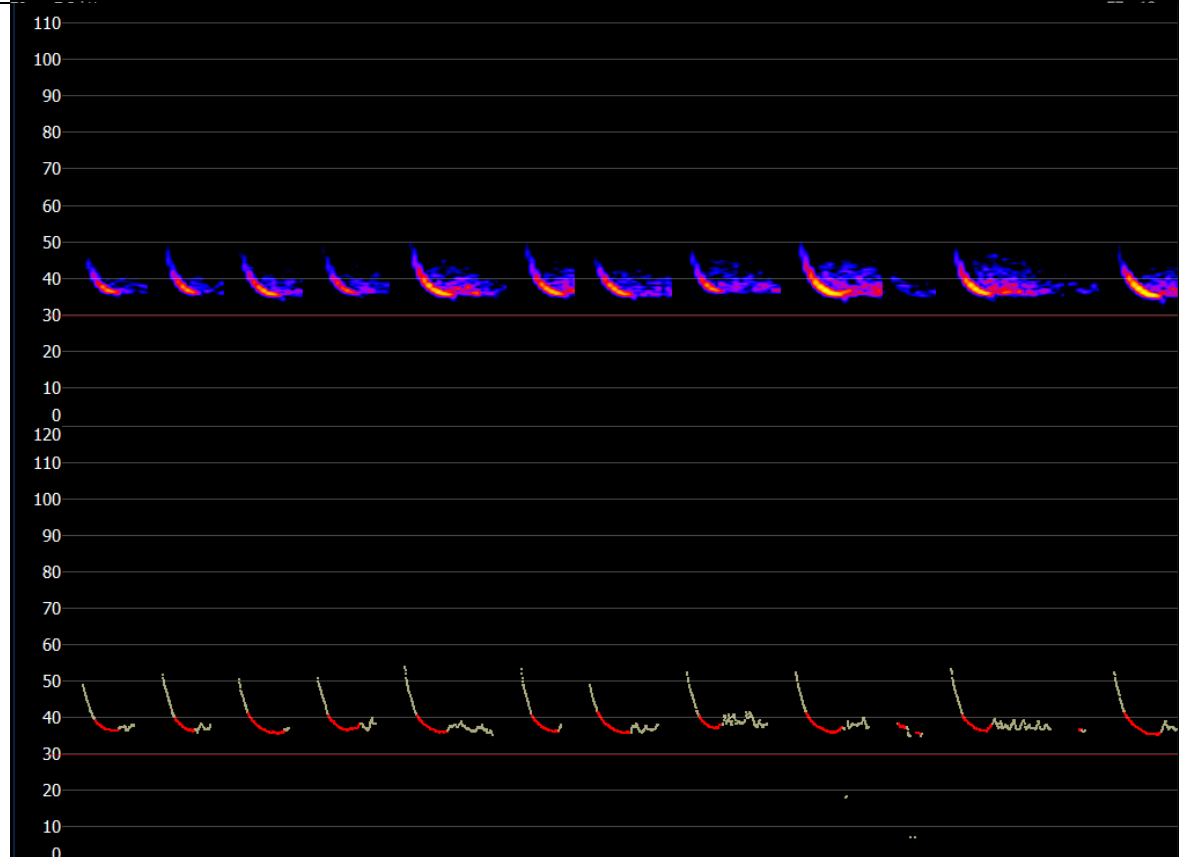
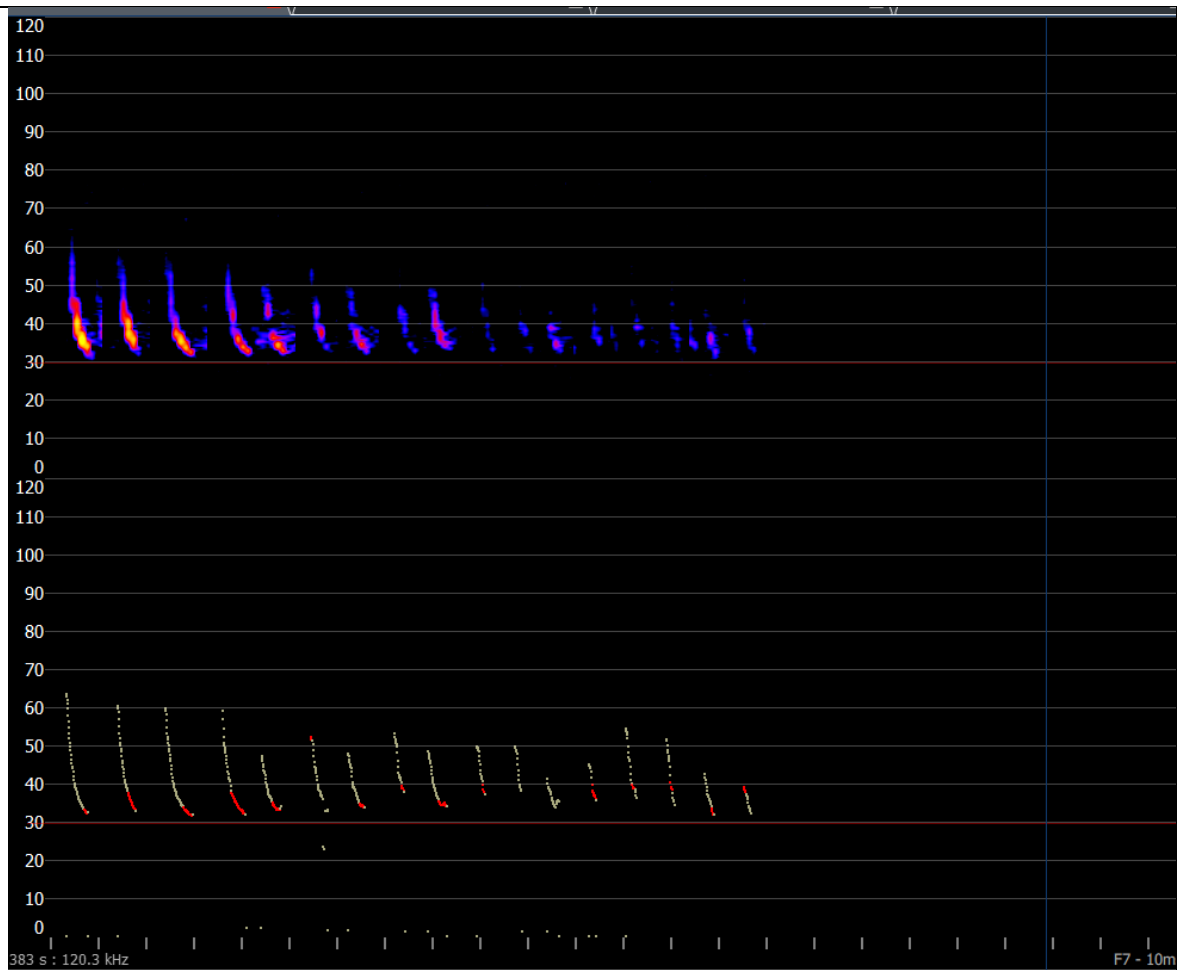


Figure 5
Unidentified
Long-eared Bat
call (*Nyctophilus*
gouldi or
Nyctophilus
geoffroyi)
identified with a
high level of
confidence.

This sequence
was identified
as a *Nyctophilus*
call due to the
high bandwidth,
short duration,
near vertical
pulses around
40 kHz mean
frequency.
Unable to be
separated due
to characteristic
and frequencies
of these species
where sympatric
completely
overlap.



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