



Lottie Stewart

Biodiversity Development Assessment Report

Final Report

Prepared for Wesley Mission

9 March 2026

Biosis offices

New South Wales

Albury

Phone: (02) 6069 9200

Email: albury@biosis.com.au

Gosford

Phone: (02) 9101 8700

Email: gosford@biosis.com.au

Newcastle

Phone: (02) 4911 4040

Email: newcastle@biosis.com.au

Sydney

Phone: (02) 9101 8700

Email: sydney@biosis.com.au

Western Sydney

Phone: (02) 9101 8700

Email: sydney@biosis.com.au

Wollongong

Phone: (02) 4201 1090

Email: wollongong@biosis.com.au

Victoria

Ballarat

Phone: (03) 5304 4250

Email: ballarat@biosis.com.au

Melbourne

Phone: (03) 8686 4800

Email: melbourne@biosis.com.au

Wangaratta

Phone: (03) 5718 6900

Email: wangaratta@biosis.com.au



Document information

Report to:	Sinclair Brook on behalf of Wesley Mission
Prepared by:	Todd Horton Tara Lillicot
Accredited Assessor:	Jake Schwebel (BAAS25013)
Biosis project no.:	42890
File name:	42890.Lottie.Stewart.BDAR.DFT01.20260309
Citation:	Biosis 2026. Lottie Stewart. Report for Sinclair Brook. Authors: Horton T, Lillicot T, Biosis Pty Ltd., Sydney, NSW. Project no. 42890

Document control

Version	Internal reviewer	Date issued
Draft version 01	Jake Schwebel	24/02/2026
Final version 01	Jake Schwebel	09/03/2026

Acknowledgements

Biosis acknowledges the contribution of the following people and organisations in undertaking this study:

- Sinclair Brook: Oliver McGeachie.
- Australian Commonwealth Department of Climate Change, Energy, the Environment and Water for access to the Protected Matters Search Tool of the Australian Government.
- NSW Department of Climate Change, Energy, the Environment and Water for access to the BioNet Atlas of NSW Wildlife.
- BirdLife Australia for access to the New Atlas of Australian Birds 1998-2013.
- NSW Department of Primary Industries for access to indicative mapping of freshwater threatened species and fish populations.

Biosis staff involved in this project were:

- Tara Lillicot (assistance in the field)
- Henri Liswoyo (mapping)
- Callan Wharfe (BAM Calculator quality assurance)
- Brendon True (quality assurance)
- Jake Schwebel (BAM accredited assessor and quality assurance)

Biosis acknowledges the Aboriginal and Torres Strait Islander peoples as Traditional Custodians of the land on which we live and work.

We pay our respects to the Traditional Custodians and Elders past and present and honour their connection to Country and ongoing contribution to society.

© Biosis Pty Ltd

This document is subject to copyright and may only be used for the purposes in respect of which it was commissioned and in accordance with the Terms of Engagement of the commission. Unauthorised use of this document in any form whatsoever is prohibited.

Disclaimer:

Biosis Pty Ltd has completed this assessment in accordance with the relevant federal, state and local legislation and current industry best practice. The company accepts no liability for any damages or loss incurred as a result of reliance placed upon the report content or for any purpose other than that for which it was intended.

Contents

Contents.....	ii
Definitions.....	vi
Summary	viii
Certification and declarations.....	ix
Stage 1 – Biodiversity assessment	1
1 Introduction	2
1.1 Project site.....	3
1.2 Purpose of this assessment	3
1.3 The development site, development footprint, subject land and assessment area	3
1.4 Sources of information.....	4
1.5 Legislative requirements.....	5
2 Landscape context	7
2.1 Subject land description.....	7
2.1.1 Historical context.....	7
2.1.2 Native vegetation cover	10
2.1.3 IBRA Bioregions and subregions	10
2.1.4 NSW (Mitchell) Landscape.....	11
2.1.5 Rivers and streams	11
2.1.6 Wetlands	11
2.1.7 Hydrology	11
2.1.8 Geological features of significance	11
2.1.9 Areas of outstanding biodiversity value	12
2.1.10 Mapped Important Areas	12
2.1.11 Connectivity.....	12
2.1.12 Additional landscape features	12
3 Native vegetation.....	16
3.1 Native vegetation and habitat assessment	16
3.1.1 Native vegetation extent	16
3.1.2 Review of existing information	16
3.1.3 Field investigation of biodiversity values	16
3.1.4 Local data.....	17
3.2 Vegetation results.....	18
3.2.1 Non-native vegetation	18
3.2.2 Plant community types.....	20
3.2.3 Threatened ecological communities	22
3.2.4 Planted native vegetation	22
3.3 Vegetation integrity assessment.....	25
3.3.1 Vegetation zones and patch size class	25
3.3.2 Vegetation integrity	25
3.3.3 Vegetation integrity score	26

4	Threatened species	31
4.1	Ecosystem credit species	31
4.2	Species credit species	32
4.2.1	Threatened species survey details	34
4.2.2	Local data	41
4.2.3	Threatened species summary and polygons	41
	Stage 2 — Impact assessment (Biodiversity Values)	42
5	Avoid and minimise impacts	43
5.1	Actions to avoid/minimise project impacts	43
6	Impacts that are unable to be avoided	47
6.1	Direct impacts	47
6.1.1	Loss of hollow bearing trees	47
6.2	Indirect impacts	47
6.3	Prescribed impacts	52
6.3.1	Human-made structures and non-native vegetation	55
6.4	Impacts considered uncertain	55
6.5	Impacts to Groundwater Dependent Ecosystems (GDE)	55
7	Mitigation and management of impacts	59
7.1	Adaptive management strategy	59
8	Serious and irreversible impacts	63
8.1	TECs and threatened species	63
8.2	Serious and irreversible impacts	63
9	Impact summary	65
9.1	Identification of impacts requiring offset	65
9.1.1	Impacts to native vegetation (ecosystem credits)	65
9.1.2	Impacts to threatened species and their habitat	65
9.2	Identification of impacts not requiring offset	66
10	Biodiversity credit report	68
11	Assessment against biodiversity legislation	69
11.1	<i>Environment Protection and Biodiversity Conservation Act 1999</i>	69
11.2	<i>Biodiversity Conservation Act 2016</i>	70
11.3	<i>Environmental Planning and Assessment Act 1979/Environmental Planning and Assessment Regulation 2021</i>	70
11.3.1	State Environmental Planning Policies	70
11.4	Other Environmental Planning Instruments	71
11.4.1	Parramatta Local Environmental Plan 2023	71
11.4.2	Parramatta Development Control Plan 2023	72
11.5	<i>Local Land Services Act 2013 and Local Land Services Amendment Act 2016</i>	72
11.6	<i>Water Management Act 2000</i>	72
11.7	<i>Fisheries Management Act 1994</i>	72

11.8	Biosecurity Act 2015	73
References		74
Appendices		78
Appendix 1	Survey methods	79
Appendix 1.1	Nomenclature	79
Appendix 1.2	Permits and licences	79
Appendix 1.3	Limitations	79
Appendix 2	BAM Candidate species assessment	80
Appendix 3	Flora	121
Appendix 3.1	BAM plot field data	121
Appendix 3.2	BAM plot data sheets	125
Appendix 4	Fauna	138
Appendix 5	Serious and Irreversible Impact	139
Appendix 5.1	Blue Gum High Forest in the Sydney Basin Bioregion	139
Appendix 6	Microbat Assessment Report	145
Tables		
Table 1	Exotic vegetation	18
Table 2	PCT 3136 – Blue Gum High Forest	20
Table 3	Summary of BC Act TECs within the subject land	22
Table 4	Planted native vegetation	22
Table 5	Planted native vegetation - streamlined assessment	23
Table 6	Vegetation zones within the subject land	25
Table 7	BAM plots completed within the subject land	26
Table 8	Vegetation zone integrity scores	26
Table 9	Ecosystem credit species (predicted species) with potential to occur	31
Table 11	Summary of excluded species credit species	32
Table 12	Candidate flora species credit species	33
Table 13	Candidate fauna species credit species	34
Table 14	Weather observations during targeted flora and fauna surveys (Sydney Olympic Park, NSW*)	34
Table 15	Targeted flora survey personnel and relevant experience	35
Table 16	Summary of targeted flora survey method and results	35
Table 17	Habitat features with potential to support threatened species credit species	36
Table 18	Targeted microbat survey personnel and relevant experience	37
Table 19	Bat call analysis results	38
Table 20	Summary of direct impacts to vegetation	47
Table 21	Assessment of indirect impacts	48
Table 22	Identification of prescribed impacts	53
Table 23	Measures to mitigate and manage impacts	60
Table 24	Assessment of the proposed development against the EPBC Act	69

Table 25	Priority weeds within the subject land.....	73
----------	---	----

Appendix tables

Table A 1	Threatened flora species assessment	80
Table A 2	Threatened fauna species assessment	97
Table A 3	BAM plot floristics.....	121
Table A 4	BAM plot summary.....	123
Table A 5	Fauna species recorded in the subject land	138
Table A 6	Assessment of SAIL for Blue Gum High Forest in the Sydney Basin Bioregion	139

Figures

Figure 1	Subject land	6
Figure 2	Site map	13
Figure 3	Location map.....	14
Figure 4	Native vegetation extent.....	15
Figure 5	Vegetation within the subject land.....	27
Figure 6	Vegetation zones and plot locations	28
Figure 7	Patch size locations	29
Figure 8	TECs within the subject land	30
Figure 9	Targeted species mapping	40
Figure 10	Final development footprint	45
Figure 11	Alternative options and avoidance.....	46
Figure 12	Estimated zones of indirect impact for the proposal	57
Figure 13	Prescribed impacts	58
Figure 14	Serious and irreversible impacts	64
Figure 15	Impacts requiring offsets, not requiring offset, not requiring assessment.....	67

Definitions

Assessment Area	All land within 1500 m of a site based development
BAM	NSW Biodiversity Assessment Method 2020
BAM-C	BAM Calculator
BC Act	<i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	<i>Biosecurity Act 2015</i>
BOS	Biodiversity Offsets Scheme
BV Map	NSW Biodiversity Values Map and Threshold Tool (NSW DCCEEW 2026a)
CBD	Central Business District
CEEC	Critically Endangered Ecological Community
CEMP	Construction Environmental Management Plan
Cth DCCEEW	Australian Commonwealth Department of Climate Change, Energy, the Environment and Water
DBH	Diameter at Breast Height
DCP	Development Control Plan
Development footprint	The area of land that is directly impacted by the proposal
Development site	The broader area in which the subject land is located.
DoIW	Directory of Important Wetlands
DP	Deposited Plan
DPI	NSW Department of Primary Industries
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a development
Ecosystem credit species	Threatened species whose occurrence can generally be predicted by vegetation surrogates and/or landscape features, or that have a low probability of detection using targeted surveys. A targeted survey is not required to identify or confirm the presence of ecosystem credit species.
EEC	Endangered Ecological Community
EIS	Environmental Impact Statement
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
FM Act	<i>Fisheries Management Act 1994</i>
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation of Australia
KFH	Key Fish Habitat

LEP	Local Environmental Plan
LGA	Local Government Area
LLS	Local Land Services
Locality	Area located within 5 km radius from the subject land
LPI	NSW Land and Property Information
MNES	Matters of National Environmental Significance protected by a provision of Part 3 of the <i>EPBC Act</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
PCT	Plant Community Type
SAAM	Small Area Assessment Module
SAII	Serious and Irreversible Impact
SALIS	NSW Soil and Land Information System
SEARs	Secretary's Environmental Assessment Requirements
SEPP	NSW State Environmental Planning Policy
SIS	Species Impact Statement
Species credits	A class of biodiversity credits required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates
Species credit species	Threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence or components of their habitat. A targeted survey or an expert report is required to confirm the presence of these species on the subject land. Alternatively, the proponent may elect to assume the species is present for development/clearing projects only.
SSD	State Significant Development
Subject land	The areas within or the combined areas of the development site, and any indirect and prescribed impacts.
TEC	Threatened Ecological Community
TBDC	Threatened Biodiversity Data Collection
TPZ	Tree Protection Zone
WM Act	<i>Water Management Act 2000</i>
WHS	Work Health and Safety

Summary

Biosis Pty Ltd was commissioned by Sinclair Brook on behalf of Wesley Mission (the Applicant) to undertake a biodiversity assessment of 40 Stewart Street, Ermington, NSW (Figure 1).

The purpose of this assessment is to apply the NSW Biodiversity Assessment Method (BAM) (DPIE 2020a) to the assess biodiversity impacts of the proposed redevelopment of the former Lottie Stewart Hospital, for the purpose of a seniors housing development at 40 Stewart Street, Ermington. The assessment will be undertaken in accordance with Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). This Biodiversity Development Assessment Report (BDAR), will be submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf of the Applicant, as part of an Environmental Impact Statement (EIS) to support a State Significant Development (SSD) application. As the removal of native vegetation is less than or equal to 1 hectare, the Streamlined Assessment: Small Area, or small area assessment module (SAAM), has been applied to the assessment in line with Appendix C of the BAM (DPIE 2020a).

As entrance to the NSW Biodiversity Offset Scheme (BO) is mandatory for SSD applications, a BDAR is required to be prepared for the project by an Accredited Assessor in accordance with the BAM (DPIE 2020a) and the BC Act. This BDAR has been prepared by Jake Schwebel, an Accredited Assessor (BAAS25013), to accompany the SSDA. This BDAR describes the outcome of the development assessment case (00062591/00062592) conducted consistent with the BAM.

Field investigation, undertaken in accordance with the BAM, recorded 0.9 hectares of native vegetation within the subject land, which included one Threatened Ecological Community (TEC), *Blue Gum High Forest in the Sydney Basin Bioregion* which is listed as a Critically Endangered Ecological Community (CEEC) under the NSW *Biodiversity Conservation Act* (BC Act). This CEEC is also listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act), however, the vegetation did not meet the federal listing condition requirements of this CEEC, and further assessment under the EPBC Act was not required.

Avoidance of native vegetation, threatened ecological communities and threatened species habitat have been undertaken to restrict impacts to 0.02 hectares of *Blue Gum High Forest in the Sydney Basin Bioregion*. Consideration has been given to avoiding and minimising impacts to biodiversity where possible during the assessment and preliminary/detailed design. Mitigation and management measures will be put in place to adequately address impacts associated with the proposal, both direct, indirect and prescribed.

No threatened species, or high-quality habitats, were recorded within the subject land, and the vegetation integrity (VI) score of the vegetation to be impacted was calculated as 8.6. As such, in accordance with Section 10 of the BAM, offsets are not required to be secured for the proposed development.

Blue Gum High Forest in the Sydney Basin Bioregion (CEEC, BC Act) is considered to meet the principles for Serious and Irreversible Impacts (SAIL) and may be impacted by the development. Therefore, assessment of SAIL was undertaken in accordance with Section 9 of the BAM.

The project is not considered likely to result in a significant impact to species or communities listed under the EPBC Act, and as such a referral to the Minister of the Environment and Water is not required.

Certification and declarations

I certify that this report has been prepared based on the requirements of, and information provided under the Biodiversity Assessment Method (DPIE 2020a) and s6.15 of the *Biodiversity Conservation Act 2016*.

In preparing this assessment I have acted in accordance with the Accredited BAM Assessor Code of Conduct.

I declare that I have considered the circumstances and there is no actual, perceived or potential conflict of interest

Signature:

J. Schwabel

Date:

09/03/2026

**BAM Assessor Accreditation
Number:**

BAAS25013

Stage 1 – Biodiversity assessment

1 Introduction

Biosis Pty Ltd was commissioned by Sinclair Brook on behalf of Wesley Mission (the Applicant) to undertake a biodiversity assessment of 40 Stewart Street, Ermington, NSW Figure 1.

The purpose of this assessment is to apply the NSW Biodiversity Assessment Method (BAM) (DPIE 2020a) to the proposed development, and provide Wesley Mission with a Biodiversity Development Assessment Report (BDAR). Under State Significant Development Declaration Order (No 11) 2025, dated 23 July 2025, the following development is declared to be State Significant Development:

- (j) *Development specified in EOI application 255387 dated 10 April 2025 including development for the purpose of retention of heritage items and seniors housing and provision of affordable housing at 40 Stewart Street, Ermington being Lot A/DP29480, Lot D/DP29480, Lot F/DP29480, Lot 2/DP574056.*

As entrance to the Biodiversity Offsets Scheme (BOS) is mandatory for SSD applications, a BDAR is required to be prepared for the project by an Accredited Assessor in accordance with the BAM (DPIE 2020a) and the BC Act. The BDAR will be submitted to the Department of Planning, Housing and Infrastructure (DPHI) on behalf of the Applicant, as part of an Environmental Impact Statement (EIS) to support a State Significant Development (SSD) application in accordance with Section 4.12(8) of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The BDAR will assess biodiversity impacts of the proposed redevelopment of the former Lottie Stewart Hospital, for the purpose of a seniors housing development at 40 Stewart Street, Ermington.

As the removal of native vegetation is less than or equal to 1 hectare, the Streamlined Assessment: Small Area, or small area assessment module (SAAM), has been applied to the assessment in line with Appendix C of the BAM (DPIE 2020a).

Specifically, the proposed redevelopment includes the following:

- Site preparation and early works, including demolition of existing structures.
- Torrens title lot amalgamation of the existing four (4) lots to create one (1) lot.
- Retention of the heritage building, part of the hospital building and other character elements.
- Construction and adaptive reuse of existing buildings for 6 x independent living unit buildings and a range of low-rise detached villas and duplex villas, delivering 218 seniors living units.
- Adaptive reuse of the heritage item (Tebbutt Lodge) including conservation works and curtilage improvements with sympathetic new additions to facilitate the provision of communal facilities, communal and private outdoor open space, and wellness facilities.
- Removal of existing hardscape areas, retention of significant higher value soft landscaping, new landscaping (including tree removal) and public domain works.
- Augmentation of physical infrastructure and utilities, as required.

For a detailed description of the proposed development, refer to the Environmental Impact Statement (EIS) prepared by Beam Planning (Beam Planning 2026), and the Architectural Drawings prepared by Integrated Design Group (Integrated Design group 2026).

1.1 Project site

The site is located at 40 Stewart Street, Ermington within the City of Parramatta Local Government Area (LGA). It is legally identified as Lot A, D and F in DP29480 and Lot 2 in DP574056 and covers approximately 4.6 hectares.

The site has a frontage of approximately 220 metres along Stewart Street, with three (3) separate points for vehicular access. The site is currently occupied by the former Lottie Stewart Hospital, which was then operated as a residential care facility, but ceased operation in 2012. The site is primarily vacant and heavily underutilised (Figure 1).

1.2 Purpose of this assessment

This BDAR is one of a number of technical documents that informs the project's EIS. The purpose of this report is to apply the BAM (DPIE 2020a) to the proposed development, and assess the potential impacts on biodiversity. Specifically, the BDAR will:

- Address the BAM (DPIE 2020a) and the BOS.
- Identify how the proponent has avoided and minimised impacts to biodiversity.
- Identify any potential impact that could be characterised as serious and irreversible.
- Describe the offset obligations required to compensate for any unavoidable biodiversity impacts resulting from the proposed development.
- Consider and assess the proposal in accordance with other relevant legislation such as the Commonwealth EPBC Act.

Preparation of this BDAR has been overseen by Jake Schwebel, an Accredited Assessor (BAAS25013), to accompany the SSDA. This BDAR describes the outcome of the development assessment case (00062591) conducted consistent with the BAM.

1.3 The development site, development footprint, subject land and assessment area

The terms subject land, development footprint and assessment area are used throughout this BDAR. These are shown on Figure 1, and are defined below:

The development site is defined as encompassing Lots A DP29480, D DP29480, F DP29480 and Lot 2 DP574056. The development site is located at 40 Stewart Street, Ermington approximately 15 km northwest of the Sydney Central Business District (CBD). The development site is wholly located in the Parramatta City Council Local Government Area (LGA) and the Greater Sydney Local Land Services (LLS) region and is zoned as SP2 – Infrastructure under the *Parramatta Local Environmental Plan 2023* (LEP).

The development footprint comprises the area of development, including all direct impacts from the development, including demolition of existing infrastructure, vegetation removal, construction and laydown areas and is approximately 2.7 ha.

The subject land is defined as the extent of the development site, which is subject to direct impacts, as well as a 20 m buffer to account for indirect and prescribed impacts. The subject land is approximately 6.6 ha.

- The assessment area includes the subject land and the area of land within the 1500 m buffer zone surrounding the subject land.

1.4 Sources of information

Sources of information used in the assessment included relevant databases, spatial data, literature and previous site reports. In order to provide a context for the assessment area, records of flora and fauna from within 5 kilometres (the locality) were collated from the following databases and datasets were reviewed:

- Australian Commonwealth Department of Climate Change, Energy, the Environment and Water (Cth DCCEEW) Protected Matters Search Tool for matters protected by the EPBC Act.
- NSW BioNet - the database for the Atlas of NSW Wildlife, NSW Department of Climate Change, Energy, the Environment and Water, for species, populations and ecological communities listed under the BC Act.
- NSW BAM Calculator (BAM-C).
- Biodiversity values map (NSW DCCEEW 2026a).
- BAM Important Areas maps (NSW DCCEEW 2026b).
- PlantNET (The Royal Botanic Gardens and Domain Trust).
- BirdLife Australia, the New Atlas of Australian Birds 1998-2015.

Other sources of biodiversity information relevant to the assessment area were sourced from:

- The NSW Plant Community Types (PCTs), as held within the BioNet Vegetation Classification database (NSW DCCEEW 2026c).
- Relevant vegetation mapping, such as the NSW State Vegetation Type Map (SVTM C2.0M2.2) (NSW DCCEEW 2025).

Basemap data was obtained from NSW Land and property information (LPI) 1:25,000 digital topographic databases, with cadastral data obtained from LPI digital cadastral database.

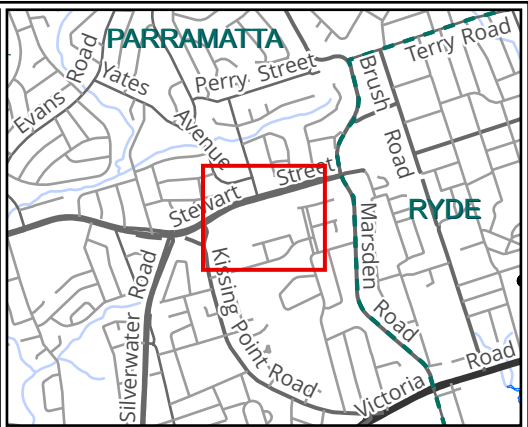
The following spatial datasets were utilised during the development of this report:

- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.
- Interim Biogeographic Regionalisation of Australia (IBRA) Version 7.
- Directory of Important Wetlands (DoIW) (Cth DCCEEW 2019).
- NSW Soil and Land Information System (SALIS).
- Mapping has been produced using a Geographic Information System (GIS). The following maps and data have been provided:
 - Digital mapping with aerial photography showing 1:1000 or finer.
 - Site map as described in subsection 3.1.1 of the BAM (DPIE 2020a).
 - Location map as described in subsection 3.1.2 of the BAM (DPIE 2020a).
 - Landscape map with features including 1,500 metre buffer, as described in section 3.1.3 of the BAM (DPIE 2020a).

1.5 Legislative requirements

The project has been assessed against relevant biodiversity legislation and government policy, including:

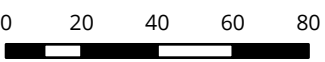
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act).
- *Biodiversity Conservation Act 2016* (BC Act).
- *Water Management Act 2000* (WM Act).
- *Fisheries Management Act 1994* (FM Act).
- *Biosecurity Act 2015* (Biosecurity Act).
- State Environmental Planning Policy (Biodiversity and Conservation) 2021 (Biodiversity and Conservation SEPP).
- State Environmental Planning Policy (Resilience and Hazards) 2021 (Resilience and Hazards SEPP).
- *Parramatta Development Control Plan 2023* (Parramatta DCP).
- *Parramatta Local Environmental Plan 2023* (Parramatta LEP).



Legend

-  Subject land
-  Development site
-  Development footprint

Figure 1 Subject land



Metres
Scale: 1:2,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026,
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F1_SubjectLand

2 Landscape context

This chapter describes the landscape and site context of the subject land, describing the landscape features present within the subject land (Figure 2) and within a 1500 metre buffer (Figure 3), as required by the BAM (DPIE 2020a).

2.1 Subject land description

The development site is located at 40 Stewart Street, Ermington approximately 15 km northwest of the Sydney CBD. Historically the subject land was utilised as a hospital and more recently an aged care facility with the site currently largely vacant with minimal use. The subject land is present within a medium to high density residential area with surrounding land uses including residential housing, small business, and public recreation and conservation areas.

Vegetation within the subject land is highly modified due to historical clearing of remnant vegetation and the construction of human-made infrastructure. Vegetation within the subject land consists primarily of managed turfed areas and landscaped gardens. The subject land contains vacant buildings which may provide artificial habitat for threatened microbat species. No waterways or other abiotic natural habitat features such as caves, rock outcrops or hollows are present within the subject land.

The subject land occurs within the Glenorie soil landscape. The Glenorie soil landscape is characterised by undulating to rolling hills underlain by shallow to moderately deep shale derived soils. The soil landscape typically supports open wet sclerophyll forests. Vegetation characteristic of this soil landscape includes various tall canopy tree species such as Sydney Blue Gum *Eucalyptus saligna*, Blackbutt *Eucalyptus pilularis*, Grey Ironbark *Eucalyptus paniculata*, White Stringybark *Eucalyptus globoidea*, Rough-barked Apple *Angophora floribunda* and Turpentine *Syncarpia glomulifera* over a midstorey of mesic species such as Sweet Pittosporum *Pittosporum undulatum*, and Coffee Bush *Breynia oblongifolia*.

2.1.1 Historical context

Review of historical aerial imagery provides critical context for interpreting the biodiversity values of the subject land. Imagery from 1943 to 2026 indicates that the subject land has been subject to various land use changes over the past 83 years. The land use has evolved over time as illustrated in Photo 1 to Photo 5 below, which have been exported from the NSW *Historical Imagery Viewer* (NSW Spatial Services 2025). Historical imagery shows the subject land has gone from largely cleared areas of agricultural land devoid of remnant vegetation in the 1940s to the construction of the current infrastructure and urban landscaping.

Given this disturbance history, any vegetation present on the subject land is expected to be the result of recent colonisation by exotic or disturbance-tolerant native species or is the product of intentional landscaping. As such, the subject land does not support any remnant native vegetation. This historical context is a key consideration when assessing the potential for the subject land to support habitat for threatened species.



Photo 1 **Subject land 1943**



Photo 2 **Subject land 1955**



Photo 3 **Subject land 1970**



Photo 4 **Subject land 1986**



Photo 5 **Subject land 2005**

2.1.2 Native vegetation cover

Vegetation within the assessment area (within the 1500 metre buffer area) was assessed using aerial photographic interpretation, field survey results and existing vegetation mapping. Native vegetation communities within the subject land are discussed further in section 3.2 of this report.

The total area of the 1500 metre buffer around the subject land is 867 hectares, with the area of native vegetation mapped within the buffer being 93.6 hectares (Figure 4). This is a native vegetation cover of approximately 11% (>10 - 30% class as defined in Section 3.2.3 of the BAM (DPIE 2020a) and this value was entered into the BAM calculator.

The assessment area includes approximately 773 hectares of cleared land.

2.1.3 IBRA Bioregions and subregions

The assessment area occurs within the Sydney Basin IBRA bioregion and the Cumberland IBRA subregion. The Sydney Basin Bioregion lies on the central east coast of NSW and covers an area of approximately 3,624,008 hectares. It occupies about 4.53% of NSW and is one of two bioregions contained wholly within the state. The bioregion extends from just north of Batemans Bay to Nelson Bay on the central coast, and almost as far west as Mudgee. The bioregion is bordered to the north by the North Coast and Brigalow Belt South bioregions, to the south by the South East Corner Bioregion and to the west by the South Eastern Highlands and South Western Slopes bioregions. The Sydney Basin Bioregion is one of the most species diverse in Australia. This is a result of the variety of rock types, topography and climates in the bioregion (OEH 2016).

The Cumberland subregion covers a 275,693 hectare area containing the Cumberland Plain, a broad shale basin in Western Sydney. The biodiversity of the Cumberland subregion is distinct from that of the surrounding areas of sandstone dominated vegetation. Instead, the shale soils of the Cumberland Plain provide a relatively flat and fertile land, much of which has been developed or cleared for agriculture. Approximately 13% of native vegetation that comprised the Cumberland Plain remains as intact bushland (OEH 2015). The Cumberland subregion includes the land west of the Sydney city area through to the Blue Mountains escarpment, including many of the suburbs of Western Sydney, such as North Richmond and Glossodia in the north through to Bargo and Yanderra in the south.

2.1.4 NSW (Mitchell) Landscape

The development site occurs within the Pennant Hills Ridges Mitchell Landscape. The landscape is characterised by gently rolling to moderately steep hills developed on horizontally bedded Triassic shales and siltstones. Elevation ranges from 10 to 90 metres, with local relief of up to 60 metres. Narrow ridge crests support deep red texture-contrast soils, while slopes carry red, brown, and yellow texture-contrast soils that become slightly more poorly drained along drainage lines. Vegetation is predominantly tall open forest dominated by Sydney Blue Gum, Turpentine, Blackbutt, White Stringybark, Grey Ironbark, Forest Oak *Allocasuarina torulosa*, and Rough-barked Apple. Sheltered, moist gully heads support rainforest elements including Sweet Pittosporum, Cheese Tree *Glochidion ferdinandi*, Sandpaper Fig *Ficus coronata*, and Black Wattle *Callicoma serratifolia* (DECC NSW 2002).

2.1.5 Rivers and streams

The development site is located within the Greater Sydney LLS Region and the Sydney Harbour and Parramatta River Catchment area. The closest river-mouth is the Parramatta River located approximately two kilometres to the south of the development site.

No waterways occur within the subject land. The closest waterway is the Iona Creek, a first Strahler order stream, located approximately 350 metres north of the subject land (Figure 3). There is no Key Fish Habitat (KFH) as mapped by the NSW Department of Primary Industries (DPI) present within the subject land, with the closest mapped KFH located at Subiaco Creek approximately 1.3 kilometres southwest of the subject land (DPI 2025).

2.1.6 Wetlands

No wetlands occur within the subject land.

2.1.7 Hydrology

The site is not mapped as having Groundwater Vulnerability (DPIE 2014).

2.1.8 Geological features of significance

There were no recorded karst, caves, crevices, cliffs or other areas of geological significance within the subject land.

2.1.9 Areas of outstanding biodiversity value

There are no areas of outstanding biodiversity or biodiversity values mapped within the subject land or assessment area (NSW DCCEEW 2024).

2.1.10 Mapped Important Areas

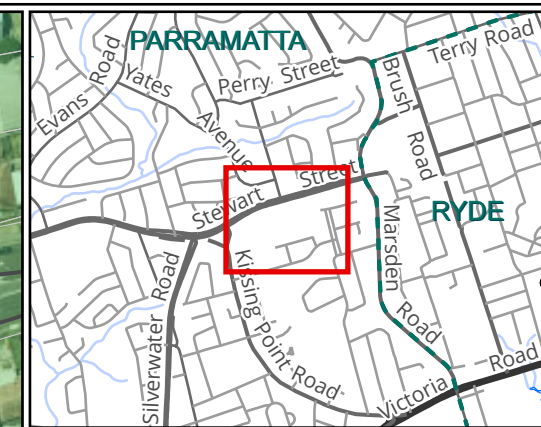
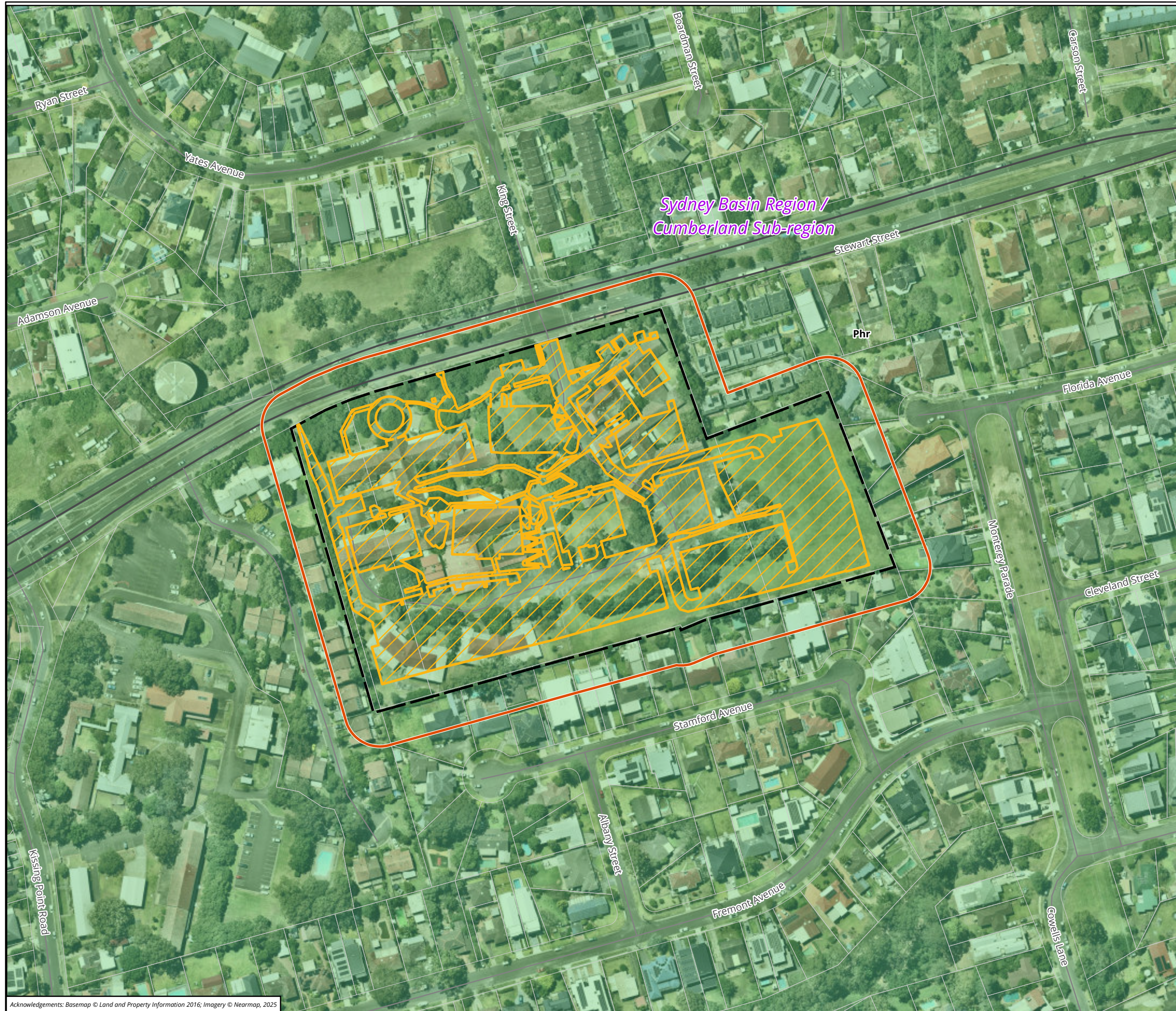
The subject land is not within a mapped Important Area (NSW DCCEEW 2026b).

2.1.11 Connectivity

Due to historical clearing, vegetation within the subject land is limited and consists mainly of scattered patches of planted exotic and native trees and shrubs. Human-made infrastructure is currently present within the subject land further fragmenting the natural habitats limiting connectivity for species requiring large areas of continuous cover. Scattered vegetation within the subject land and surrounding area may provide a connectivity for highly mobile species such as birds and bats which may utilise the scattered vegetation as a stopping over point when travelling between areas of higher quality vegetation.

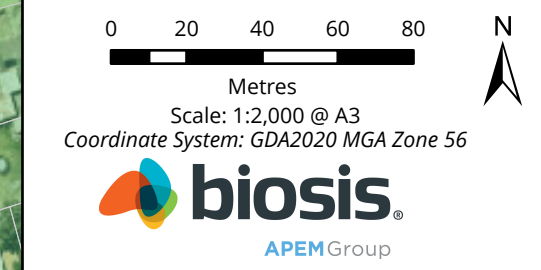
2.1.12 Additional landscape features

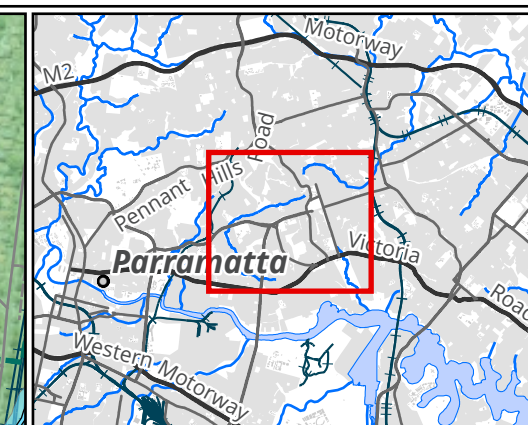
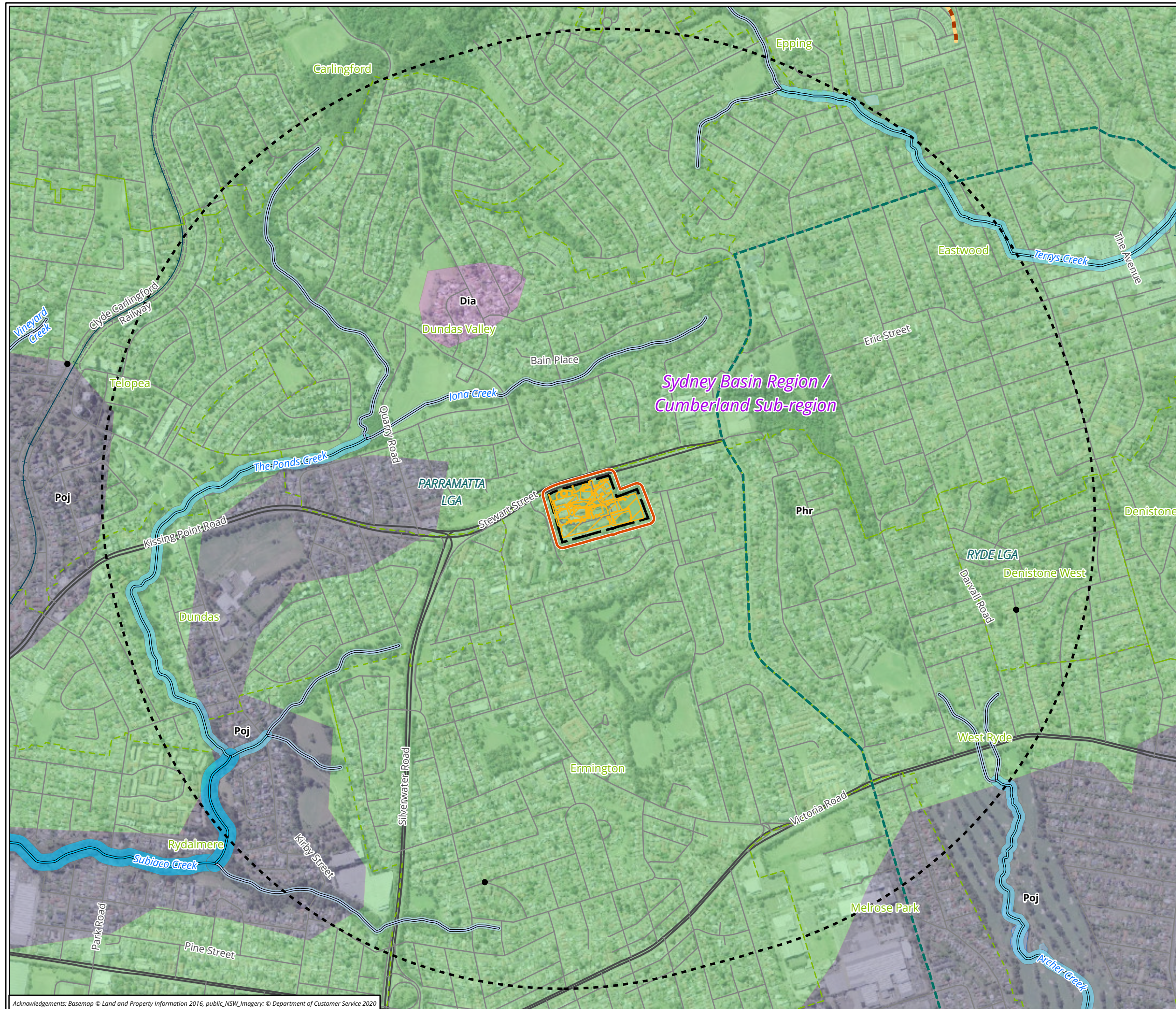
No additional landscape features were identified within the subject land.



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Lot
 - IBRA Region/Sub-region
- Mitchell landscapes**
- Phr, Pennant Hills Ridges

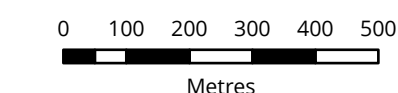
Figure 2 Site map





- Legend**
- Subject land
 - Development site
 - Development footprint
 - Assessment area
 - IBRA Region/Sub-region
 - Local Government Area
 - Excavation face
- Strahler stream order / buffers**
- 1
 - 2
 - 3
- Mitchell landscapes**
- Dia, Sydney Basin Diatremes
 - Phr, Pennant Hills Ridges
 - Poj, Port Jackson Basin

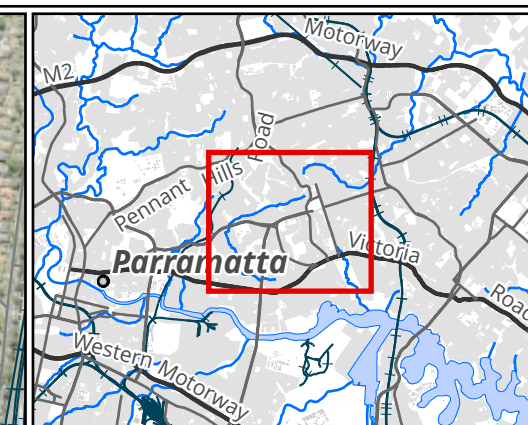
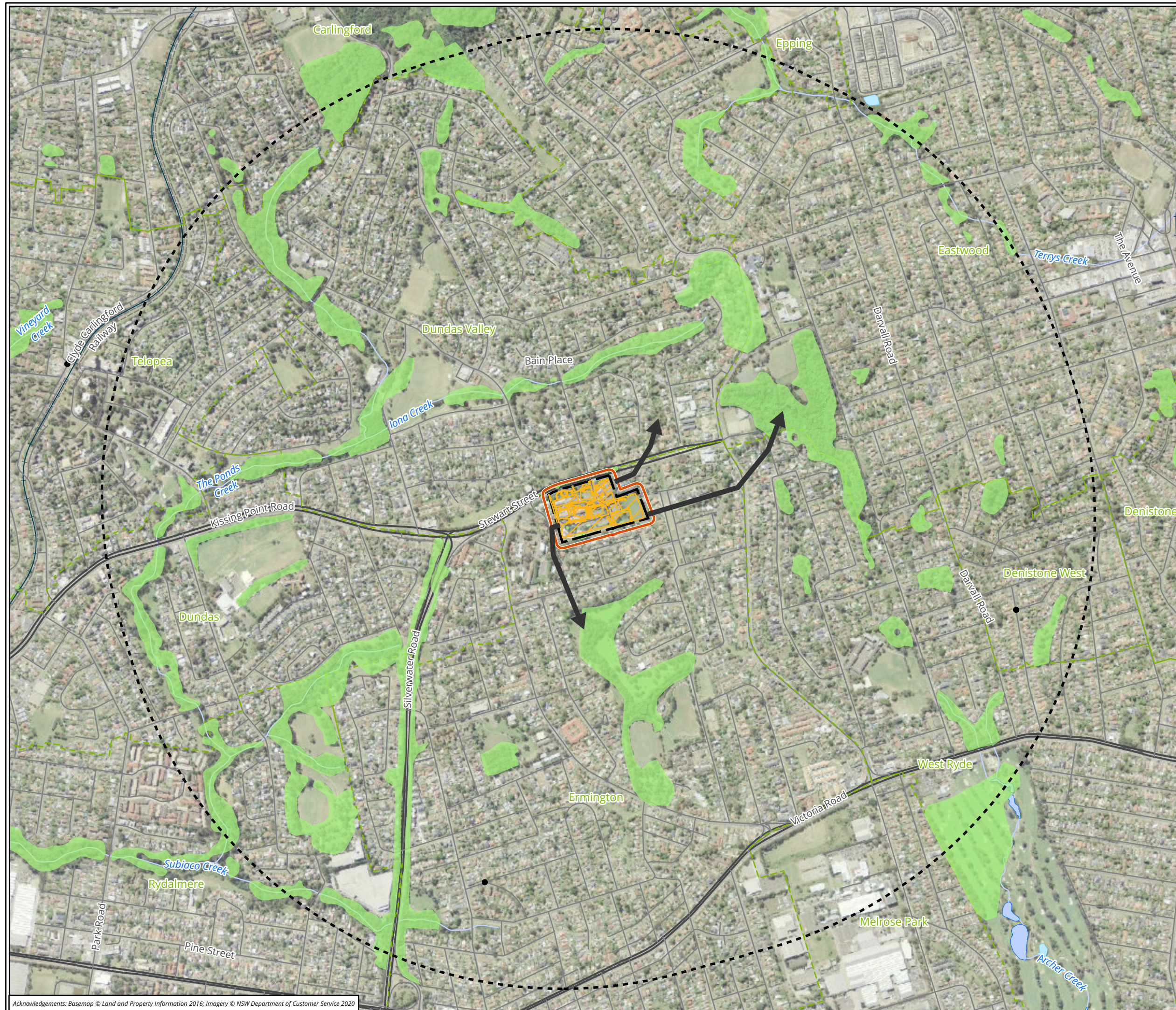
Figure 3 Location map



Scale: 1:12,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



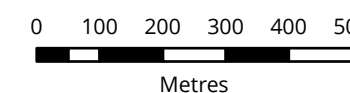
Matter: 42890, Date: 10 February 2026
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F3_Location



Legend

- Subject land
- Development site
- Development footprint
- Assessment area
- Native vegetation
- Habitat connectivity

Figure 4 Native vegetation extent



Scale: 1:12,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 11 February 2026
Prepared for: TOH, Prepared by HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F4_NativeVeg

3 Native vegetation

The subject land supports native vegetation with varying levels of disturbance, being largely limited to scattered patches of planted native vegetation. Exotic vegetation, including planted gardens and turfed areas, is also present throughout the subject land and contains the highest cover. Areas of higher quality native vegetation are present along the southern boundary of the subject land and contain planted trees consistent with a naturally occurring PCT.

3.1 Native vegetation and habitat assessment

3.1.1 Native vegetation extent

The extent of native vegetation, threatened ecological communities, and vegetation integrity within the subject land was determined using the results of site investigations, and Section 4 of the BAM (DPIE 2020a).

Figure 5 provides a map of the native vegetation extent recorded within the development site and development footprint, as assessed during field investigations undertaken in September 2025. The figure includes all areas of native vegetation (native ground cover and areas with canopy) within the subject land. Areas not shown as native vegetation cover within Figure 5, are considered cleared / non-native vegetation, and are addressed further below.

3.1.2 Review of existing information

Existing information regarding native vegetation was reviewed to inform field investigations including:

- *NSW State Vegetation Type Map (SVTM) (C2.0.M2.2) (NSW DCCEEW 2025).*
- *The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 VIS_ID 4489 (OEH 2016).*
- Database searches.

Based on the results of the background review and the requirements of the BAM with respect to this BDAR, appropriate surveys were designed for the subject land and development footprint.

3.1.3 Field investigation of biodiversity values

A systematic biodiversity assessment was conducted 26 September 2025 under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Fauna survey was conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028).

Assessment in accordance with the BAM was overseen by Jake Schwebel (Accredited Assessor BAAS25013).

The development site was surveyed in accordance with the BAM (DPIE 2020a), which involved:

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database (NSW DCCEEW 2026c), with reference to information provided in the *NSW State Vegetation Type Map* (NSW DCCEEW 2025).

- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020a), considering varying condition states and avoidance of ecotones, areas of disturbance, and edges.
- The identification of native and exotic plant species, according to the Flora of NSW (Harden 2002, 1993, 2000, 2002) with reference to recent taxonomic changes.
- Targeted searches for plant species of conservation significance according to *'Surveying Threatened Plants and Their Habitats'* (DPIE 2020b).
- Incidental observations using the "random meander" method (Cropper 1993).
- Identification of previous and current factors threatening the ecological function and survival of native vegetation within and adjacent to the development site.
- An assessment of the natural resilience of the vegetation of the site.
- Identifying and mapping fauna habitats (e.g., hollow-bearing trees, rock outcropping etc.), assessing their condition and value to threatened fauna species, and considering threatened species' habitat constraints.
- Observations of animal activity and searches for indirect evidence of fauna (such as scats, nests, burrows, hollows, tracks, scratches and diggings).
- Targeted surveys for threatened fauna species.

The conservation significance of plant species and plant communities was determined according to:

- BC Act for significance within NSW.
- EPBC Act for significance within Australia.

Detailed field mapping and collection of GPS point locations were conducted using hand-held (uncorrected) tablet units (Samsung Galaxy Tab X) running the ArcGIS Field Maps application, using the inbuilt GPS, and aerial photo interpretation. Spatial locations are therefore considered to have an accuracy of generally ± 5 metres.

Areas of native vegetation for which a PCT could validly be assigned were identified and delineated in the field, and their condition determined and assigned. Identification of PCTs within the subject land was confirmed with reference to the community profile descriptors (and diagnostic species tests) held within the *NSW State Vegetation Type Map* (NSW DCCEEW 2025) and NSW BioNet Vegetation Classification database (NSW DCCEEW 2026c). These PCTs are shown on Figure 5 and described in section 3.2 below. Locations of floristic plots surveyed are shown on Figure 6.

Further details of targeted survey for threatened flora and fauna species are provided in Section 4.2.1 below.

3.1.4 Local data

Under Section 1.4.2 of the BAM (DPIE 2020a), an assessor may use local appropriate data from relevant published sources or appropriate local reference site to develop a benchmark for a PCT. The assessor may also use more appropriate local data (instead of data from the Threatened Biodiversity Data Collection [TBDC]) when assessing the habitat suitability for threatened species, as detailed in Section 5 of the BAM. No local data has been used for either the benchmarking of PCTs or the threatened species assessment.

3.2 Vegetation results

3.2.1 Non-native vegetation

A significant area of the subject land (3.2 hectares) is mapped as exotic vegetation, comprising of planted exotic canopy and shrub species within ornamental gardens and turfed exotic grasslands have been classified as non-native vegetation.

Areas not shown as native vegetation cover within Figure 5, and which do not provide habitat for threatened species, are not included for further assessment in accordance with Section 5.1.1.5 of the BAM (DPIE 2020a). A description of non-native vegetation areas within the subject land is provided in Table 1 below.

Table 1 Exotic vegetation

Exotic vegetation	
Extent within subject land	3.2 ha
Description	This vegetation type was represented by areas of turfed exotic grass and planted exotic midstorey and canopy species. A large proportion of canopy trees with the subject land were considered exotic and included species such as Canary Island Date Palm <i>Phoenix canariensis</i>, African Olive <i>Olea europaea</i> subsp. <i>cuspidata</i>, Large-leaved Privet <i>Ligustrum lucidum</i>, Chinese Elm <i>Ulmus parvifolia</i> and Camphor Laurel <i>Cinnamomum camphora</i>. These canopy species were over a midstorey containing invasive species with a high rate of dispersal such as Mickey Mouse Plant <i>Ochna serrulata</i>. Ground cover species were abundant with large areas consisting of exotic turf primarily dominated by Kikuyu <i>Cenchrus clandestinus</i>. Other common exotic groundcover species included Panic Veldtgrass <i>Ehrharta erecta</i>, Buffalo Grass <i>Stenotaphrum secundatum</i>, Briza subaristata, Paspalum <i>Paspalum dilatatum</i>, Winter Grass <i>Poa annua</i>, Dandelion <i>Taraxacum officinale</i>, Agapanthus <i>Agapanthus africanus</i>, Burr Medic <i>Medicago polymorpha</i>, White Clover <i>Trifolium repens</i>, Red-flowered Mallow <i>Modiola caroliniana</i>, Lamb's Tongue <i>Plantago lanceolata</i>, Purpletop <i>Verbena bonariensis</i> and Scarlet Pimpernel <i>Lysimachia arvensis</i>.
Survey effort	Two BAM plots (B03) and (B04) were collected over the course of the field assessment (Figure 6).

Exotic vegetation

Photo



Photo 6 Planted exotic vegetation within the subject land



Photo 7 Exotic grassland vegetation within the subject land

3.2.2 Plant community types

Vegetation present within the subject land was limited to one PCT, identified as PCT 3136 – *Blue Gum High Forest*. Although vegetation attributed to this PCTs is planted, Appendix D of the BAM requires that any planted native vegetation be assigned a PCT where it is reasonable to do so. Table 2 below provides a detailed description of this PCT. The mapped occurrence of PCT's are shown in Figure 5.

Table 2 PCT 3136 – Blue Gum High Forest

PCT 3136: Blue Gum High Forest	
Common name	Blue Gum High Forest
Vegetation formation	Wet Sclerophyll Forests (Shrubby sub-formation)
Vegetation class	North Coast Wet Sclerophyll Forests
Extent within subject land	0.26 ha
Condition	This community at the subject land was recorded in a planted condition state with native species limited to canopy species.
Description	The community present within the study area was limited to scattered individuals or small groups of planted canopy species consistent with PCT 3136. Dominant canopy species present included Sydney Blue Gum, Turpentine, and Blackbutt. The midstory was absent from this community with ground cover species consisting primarily of exotic species. Where present, native species included Twinning Glycine <i>Glycine clandestina</i>, Kidney Weed <i>Dichondra repens</i>, and Slender Flat-sedge <i>Cyperus gracilis</i>. Dominant exotic ground cover species included Kikuyu, Panic Veldtgrass, Buffalo Grass, <i>Briza subaristata</i>, Winter Grass, Prairie Grass <i>Bromus catharticus</i>, Dandelion, Agapanthus, White Clover, Red-flowered Mallow and Lamb's Tongue.
Survey effort	One BAM plot (B02) was collected over the course of the field assessment (Figure 6).
Justification of PCT	PCT 3136 within the subject land meets the PCT description (NSW DCCEEW 2026c) via the following: • Soil - occurs on the Glenorie soil landscape consisting of shales and siltstones. • Structure and dominant species – A tall sclerophyll forest dominated by Sydney Blue Gum, Blackbutt and Turpentine. • IBRA region and subregion – Sydney Basin region and Cumberland subregion. Two PCTs within the locality are associated with the species assemblage present within the study area. This includes: • PCT 3136 Blue Gum High Forest • PCT 3262 Sydney Turpentine Ironbark Forest These two PCTs often occur in a similar geographic locality and landscape position, and can contain a similar species assemblage, therefore it can be difficult to separate these PCTs with a high level of confidence when canopy trees are the primary aspect that remain. However, in this case, PCT 3136 has been assigned due to a higher abundance of Sydney Blue Gum and Blackbutt, of which are more closely aligned with PCT 3136.
TEC Status	PCT 3136 is associated with three TECs: • <i>Blue Gum High Forest of the Sydney Basin Bioregion</i> (CEEC, EPBC Act). • <i>Blue Gum High Forest in the Sydney Basin Bioregion</i> (CEEC, BC Act). • <i>Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion</i> (CEEC, BC Act). NSW BC Act: All condition patches were determined to meet the criteria for <i>Blue Gum High Forest</i> in

PCT 3136: Blue Gum High Forest

the Sydney Basin Bioregion (CEEC, BC Act).

Justification: All patches of 3136 within the subject land were considered consistent with the TEC *Blue Gum High Forest in the Sydney Basin Bioregion* (CEEC, BC Act) as it is present within its known distribution within the Parramatta LGA, on the correct soil profile and contains species listed in paragraph 2 of the scientific determination (NSW Threatened Species Scientific Committee 2011). PCT 3136 within the subject land was not deemed consistent with the TEC *Hygrocybeae Community of Lane Cove Bushland Park in the Sydney Basin Bioregion* (CEEC, BC Act) as the community did not include any species in the tribe *Hygrocybeae*, is not present with the correct landscape position which includes gullies derived from sandstone soils with a dense canopy cover and is not located within the Lane Cove area (NSW Scientific Committee 2014).

Commonwealth EPBC Act: No areas of PCT 3136 within the subject land were deemed to meet the condition thresholds outlined in the Listing Advice for the EPBC Act listed CEEC.

Justification: No areas of PCT 3136 were considered consistent with the TEC as the patch size is <1 ha, contains <10 percent canopy cover and does not occur in a patch of native vegetation >5 ha in size (Threatened Species Scientific Committee 2005). Additionally, all areas of PCT 3136 within the subject land are limited to single isolated trees or strands of trees lacking an intact native understorey or midstorey and therefore are not consider consistent with the TEC (Threatened Species Scientific Committee 2005).

State and Commonwealth TECs are mapped on Figure 8.

Estimate of percent cleared value of PCT (BioNet)

99% (NSW DCCEEW 2026c).

Photo



Photo 8 PCT 3136 - Blue Gum High Forest within the subject land

3.2.3 Threatened ecological communities

Vegetation within the subject land was found to represent one Threatened Ecological Community (TEC) listed under the NSW BC Act as outlined in Table 3 below and illustrated on Figure 8. A review of historical aerial imagery indicates that the majority of vegetation attributable to Blue Gum High Forest is of planted origin. However, as it comprises species characteristic of the TEC, it has been reasonably assigned as such. Justification for the associated PCT/TEC classification is provided in Section 3.2.2, Table 2.

Table 3 Summary of BC Act TECs within the subject land

BC Act TEC	Listing status	Development footprint (Ha)
Blue Gum High Forest	Critically Endangered	0.02

3.2.4 Planted native vegetation

Where only part of the subject land contains planted native vegetation, the streamlined assessment module provided in Appendix D of the BAM may be used to assess that part of the development, activity, clearing or biodiversity certification proposal. A description of planted native vegetation is provided in Table 4 below.

Table 4 Planted native vegetation

Exotic vegetation	
Extent within subject land	0.6 ha
Description	This vegetation type was represented by areas of planted native canopy species over a ground cover of exotic species. Native canopy species present included Yellow Bloodwood <i>Corymbia eximia</i>, Spotted Gum <i>Corymbia maculata</i>, Swamp oak <i>Casuarina glauca</i> and Broad-leaved Paperbark <i>Melaleuca quinquenervia</i>. Ground cover species were abundant with large areas consisting of exotic turf species dominated primarily by Kikuyu. Other common exotic ground cover species included Panic Veldtgrass, Buffalo Grass, <i>Briza subaristata</i>, Paspalum, Winter Grass, Dandelion, Agapanthus, Burr Medic, White Clover, Red-flowered Mallow, Lamb's Tongue, Purpletop, and Scarlet Pimpernel.
Survey effort	One BAM plot (B01) was collected over the course of the field assessment (Figure 6).

Exotic vegetation

Photo



Photo 9 Planted native vegetation within the subject land

Assessment of the planted native vegetation within the subject land in accordance with Appendix D of the BAM is provided in Table 5 below.

Table 5 Planted native vegetation - streamlined assessment

Decision Key		Assessment
1. Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?		Partially. Some planted native vegetation contains a mosaic of species that can be reasonably assigned to PCT 3136. These areas have been assigned a PCT. Additional patches to the above cannot be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal - Go to question 2.
2. Is the planted native vegetation:	a. planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and	No.
	b. the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?	No – Go to 3.

Decision Key	Assessment
3. Is the planted/translocated native vegetation individuals of a threatened species or other native species planted/translocated for the purpose of providing threatened species habitat under one of the following: a. a species recovery project b. Saving our Species project c. other types of government funded restoration project d. condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. legal obligation as part of a condition or ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or g. approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW Water Management Act 2000)?	No – Go to 4.
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration without a legal obligation to secure or provide for management of the native vegetation?	No – Go to 5.
5. Is the native vegetation (including individuals of a threatened flora species) planted for functional, aesthetic, horticultural or plantation forestry purposes? This includes examples such as: windbreaks in agricultural landscapes, roadside plantings (including street trees, median strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or Teatree farms?	Yes – The vegetation was likely planted for aesthetic and functional reasons. The vegetation must be assessed in accordance with Section D.2 of the BAM (DPIE 2020a) - Assessment of planted native vegetation for threatened species habitat (the use of Chapters 4 and 5 of the BAM are not required to be applied).
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?	N/A.

In accordance with Section D.2 (of Appendix D of the BAM), the assessor must assess the suitability of the planted native vegetation for use by threatened species and record any incidental sightings or evidence (e.g. scats, stick nests) of threatened species credit species using, inhabiting or being part of the planted native vegetation.

Section 8.4 of the BAM must be applied to mitigate and manage impacts on these species if there is evidence that threatened species are using the planted native vegetation as habitat. Species credits are not required to offset the proposed impacts.

The planted native vegetation within the subject land did not contain any habitat for threatened species such as stick nests and hollows. No threatened species, or evidence of their presence was detected during surveys. The planted native vegetation within the subject land may be utilised on occasion as part of foraging and

dispersal movements by mobile ecosystem credit species listed in section 4.1 of this report. Actions to avoid and minimise impacts to the threatened species, as well as retained vegetation and general fauna within the subject land are outlined in Section 5 of this BDAR.

3.3 Vegetation integrity assessment

3.3.1 Vegetation zones and patch size class

PCTs within the subject land were assessed and stratified, based on broad condition state, into various vegetation zones. This resulted in one vegetation zone identified within the subject land. Table 6 describes each of the zones and provides details on the numbers of BAM floristic plots undertaken in each zone. Please note that exotic vegetation is not considered a vegetation zone in accordance with the BAM, and planted vegetation is being assessed under the planted vegetation module (section 3.2.4) and therefore, these vegetation types have been excluded from the table below and are not included within the BAM-C.

Patch size classes for each vegetation zone present within the subject land was assessed as per Section 4.3.2 of the BAM (DPIE 2020a) using a select process in ArcGIS. All native vegetation with a gap of less than 100 metres from the next area of native vegetation (or ≤ 30 metres for non-woody ecosystems), is considered a single patch, with a patch able to extend onto adjoining land.

Native vegetation within the subject land was mapped sequentially and it was found to form part of a small patch of connecting vegetation with an area of approximately <5 hectares (Figure 7). The connected vegetation comprises largely of scattered vegetation within ornamental gardens.

Patch size classes for each vegetation zone assessed under the BAM are outlined in Table 6 below.

Table 6 Vegetation zones within the subject land

Vegetation zone	Plant Community Type	Condition	BAM plots completed	Area (ha)	Max. patch size development footprint
3136_Planted	PCT 3136 Blue Gum High Forest	Planted	1	0.26	< 5 ha

3.3.2 Vegetation integrity

Vegetation integrity, or condition, was assessed using data obtained from undertaking BAM plots within the vegetation zones, as per Section 4.3.4 of the BAM (DPIE 2020a). Plot data was collected via:

- A 20 metre x 50 metre quadrat and 50 metre transect for assessment of site attributes and function.
- A 20 metre x 20 metre quadrat, nested within the larger quadrat for full floristic survey to determine composition and structure of the PCT.

The minimum number of BAM plots per vegetation zone was determined using Table 3 of the BAM (DPIE 2020a). In total, four BAM plots have been completed for the vegetation zones present within the subject land, with one of these completed within the native vegetation zone (B02), and a further three BAM plots were completed in areas of non-native or planted native vegetation that did not comprise a PCT (B01, B03 and B04). Details are provided in Table 7 and plot locations are shown on Figure 6.

Table 7 BAM plots completed within the subject land

BAM plot reference	Vegetation zone
42890_B01	Planted natives
42890_B02	3136_Planted
42890_B03	Exotic vegetation
42890_B04	Exotic vegetation

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database (NSW DCCEEW 2026c). A list of flora species was compiled for each BAM plot completed and is included in Appendix 3. Records of all flora species will be submitted to NSW DCCEEW for incorporation into the Atlas of NSW Wildlife.

3.3.3 Vegetation integrity score

Plot data was entered into the BAM calculator to determine vegetation integrity score. Plot data is presented in Appendix 3, with vegetation integrity scores for each vegetation zones provided in Table 8.

Table 8 Vegetation zone integrity scores

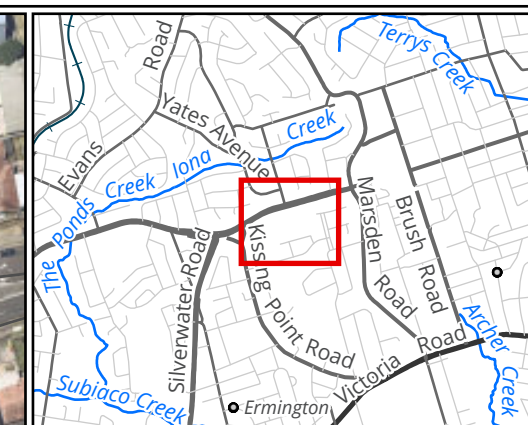
Vegetation zone	Composition score	Structure score	Function score	VI score*	Hollow-bearing trees present
3136_Planted	4.8	8.5	15.8	8.6	No

*Benchmark (pristine) condition vegetation would receive a VI score of 100.

As outlined in Section 9.2.1 of the BAM (DPIE 2020a), an offset is required for impacts on native vegetation where the vegetation integrity score is:

- ≥ 15 where the PCT is representative of an endangered or critically endangered ecological community.
- ≥ 17 where the PCT is associated with threatened species habitat (as represented by ecosystem credits) or is representative of a vulnerable ecological community.
- ≥ 20 where the PCT is not representative of a TEC or associated with threatened species habitat.

As such, ecosystem credit offsets are not required for vegetation zone 3136_Planted due to its VI score of 8.6, which is below the offsetting threshold of 15 for CEECs.



Legend

- Subject land
- Development site
- Development footprint
- Cleared

Vegetation communities - Biosis

- 3136 - Blue Gum High Forest (Planted)
- Planted natives
- Exotic

Figure 5 Vegetation within the subject land

0 20 40 60 80

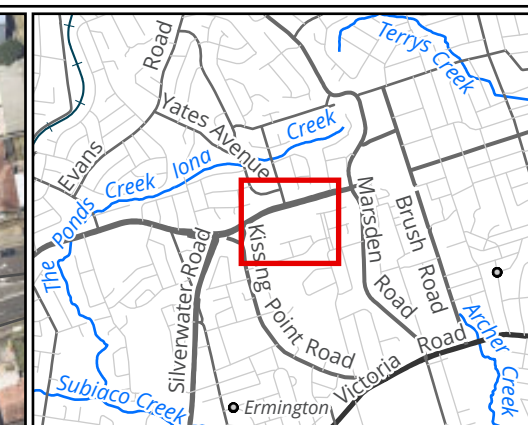
Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026
Prepared for TOH, Prepared by HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_FS_BiosisVeg



Legend

- Subject land
- Development site
- Development footprint
- BAM plot

Vegetation zones - Biosis

- 3136_Planted
- Planted natives
- Exotic

Figure 6 Vegetation zones and plot locations

0 20 40 60 80

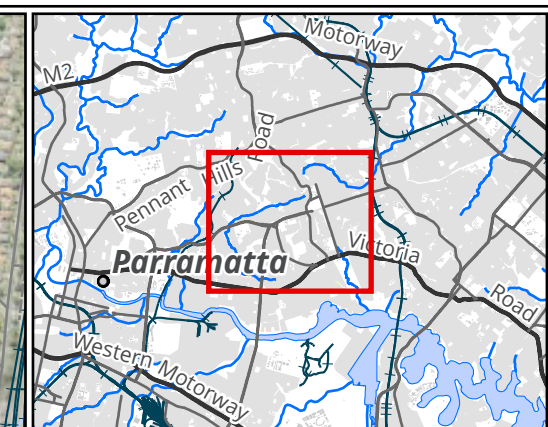
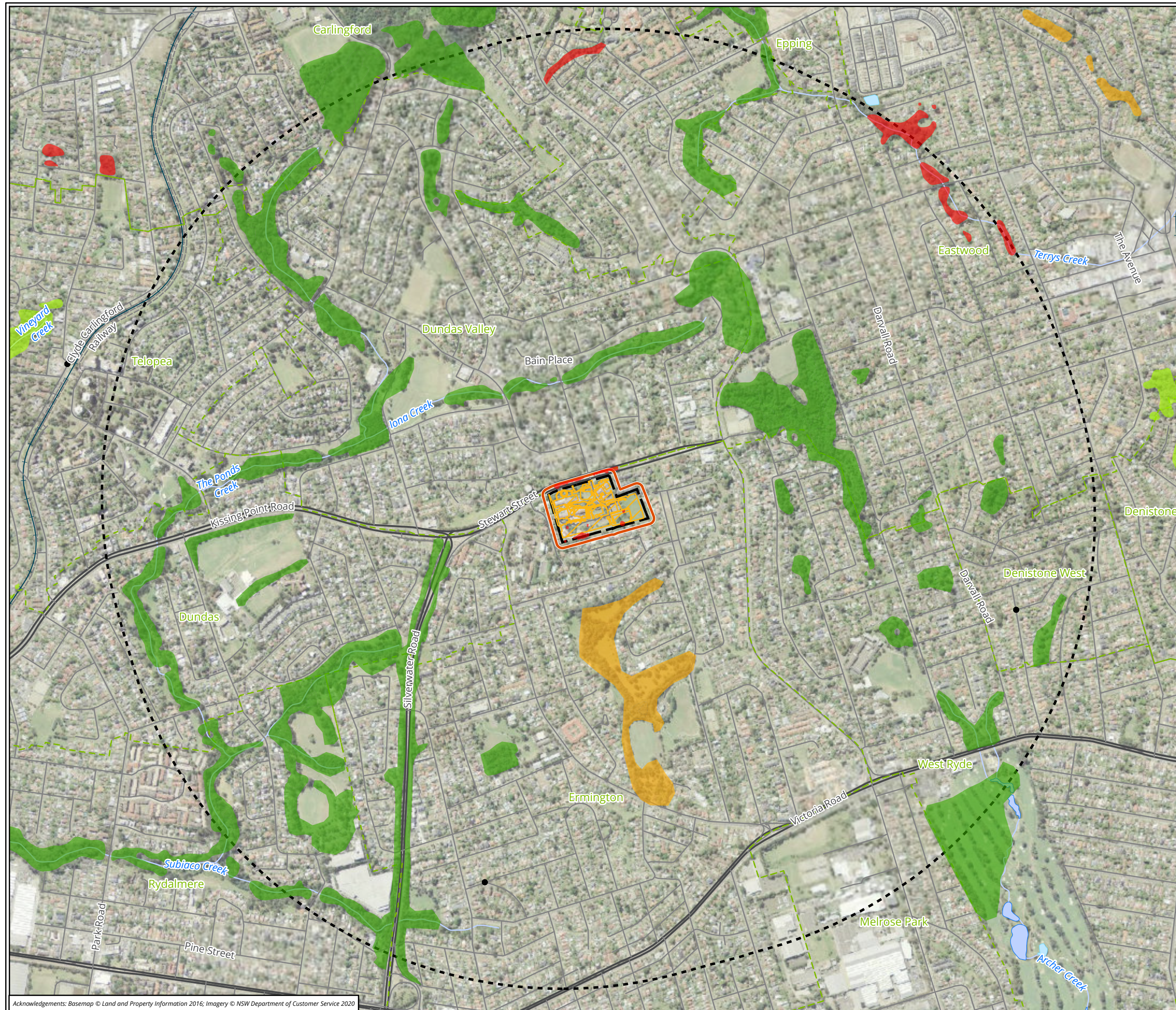
Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F6_VegZones



Legend

- Subject land
- Development site
- Development footprint
- Assessment area

Patch size

- <5 ha
- 5 ha - <25 ha
- 25 ha - <100 ha
- ≥100 ha

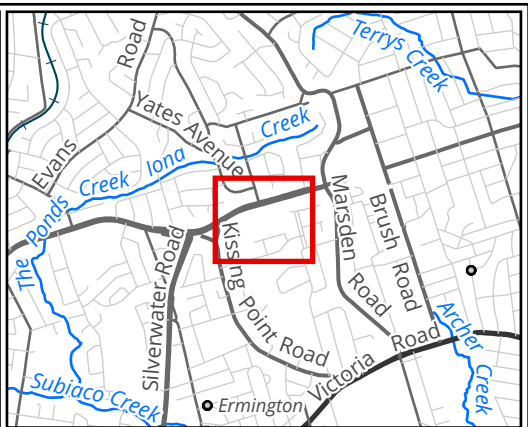
Figure 7 Patch size

0 100 200 300 400 500
Metres

Scale: 1:12,000 @ A3
Coordinate System: GDA2020 MGA Zone 56

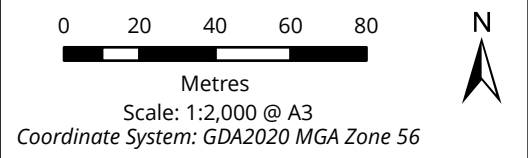
biosis
APEM Group

Matter: 42890,
Date: 11 February 2026,
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR



- Legend**
- Subject land
 - Development site
 - Development footprint
- Threatened ecological communities - Biosis**
- Blue Gum High Forest in the Sydney Basin Bioregion (CEEC, BC Act)

Figure 8 Threatened ecological communities within the subject land



Matter: 42890, Date: 24 February 2026
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F8_TECs

4 Threatened species

4.1 Ecosystem credit species

A list of predicted species (ecosystem credit species) expected to occur within the subject land was generated as per Section 5 of the BAM (DPIE 2020a). Impacts to these species require assessment, however targeted survey is not required as these species are assumed to occur, based on the occurrence of the PCTs, habitat constraints, native vegetation cover in the landscape and calculated patch sizes. These species are identified as ecosystem credit species in the TBDC. Table 9 lists the ecosystem credit species. No ecosystem species have been excluded for this assessment.

These species were considered when prescribing management and mitigation measures for the project, and a number have been specifically considered as part of the assessment under the Commonwealth EPBC Act.

Table 9 Ecosystem credit species (predicted species) with potential to occur

Species name	Common name
<i>Anthochaera phrygia</i>	Regent Honeyeater
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo
<i>Chthonicola sagittata</i>	Speckled Warbler
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (eastern subspecies)
<i>Daphoenositta chrysoptera</i>	Varied Sittella
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork
<i>Glossopsitta pusilla</i>	Little Lorikeet
<i>Grantiella pusilla</i>	Painted Honeyeater
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle
<i>Hirundapus caudacutus</i>	White-throated Needletail
<i>Ixobrychus flavicollis</i>	Black Bittern
<i>Lathamus discolor</i>	Swift Parrot
<i>Lophoictinia isura</i>	Square-tailed Kite
<i>Melanodryas cucullata cucullata</i>	South-eastern Hooded Robin
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat
<i>Miniopterus australis</i>	Little Bent-winged Bat
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat
<i>Petroica phoenicea</i>	Flame Robin
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox
<i>Ptilinopus superbus</i>	Superb Fruit-Dove

Species name	Common name
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat
<i>Varanus rosenbergi</i>	Rosenberg's Goanna

4.2 Species credit species

Species credit species are threatened species for which vegetation surrogates and/or landscape features cannot reliably predict the likelihood of their occurrence, or components of their habitat. These candidate species are identified as species credit species in the TBDC. A targeted survey or an expert report is required to confirm the presence of these species on the subject land, or alternatively the species can be assumed to be present (DPIE 2020a).

Appendix 2 provides the lists of species credit species predicted to occur within the subject land based on the IBRA subregion within which the project occurs, the native vegetation cover present within the 1500 metre buffer area, the PCTs present within subject land, and patch sizes listed in Table 6.

The SAAM, as outlined in Appendix C of the BAM (DPIE 2020), provides a streamlined process for assessing the biodiversity values of small area developments, their potential impacts, and the associated offset requirements. The BAM specifies that the SAAM can only be applied where clearing does not exceed the thresholds in Appendix C of the BAM. As the proposed impacts fall within these thresholds and the subject land does not contain core koala habitat, application of the SAAM is appropriate in this instance.

Given that this BDAR is utilising the SAAM module in line with Appendix C of the BAM (DPIE 2020), only species credit species that are at risk of a SAIL are required to be considered. Candidate species credit species that are not at risk of an SAIL and that are not incidentally recorded on the subject land do not require further assessment when applying the SAAM module.

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM (DPIE 2020a) and species with geographical restrictions, or habitat constraints not present, were not required to be assessed. A total of two predicted species credit species have been excluded from occurring within the subject land based on a lack of suitable habitat. The subject land has experienced substantial modification since it was mostly cleared prior to the 1940s for agricultural land, to the construction of the Lottie Stewart Hospital infrastructure which is currently present on site. Vegetation within the development footprint lacks complex structure and is limited to low quality native vegetation or planted native and exotic ornamental gardens. The subject land also lacks many habitat features commonly utilised by threatened species such as hollows, caves and waterways. The lack of structural diversity, native understory, and habitat features creates conditions unsuitable for most threatened species.

Species credit species that have been excluded from the current assessment are detailed below in Table 10.

Table 10 Summary of excluded species credit species

Species name	Common name	Exclusion rationale
Birds		
<i>Anthochaera phrygia</i>	Regent Honeyeater	Habitat constraints (important area mapping)
<i>Lathamus discolor</i>	Swift Parrot	Habitat constraints (important area mapping)

A detailed assessment of potential for occurrence, further justification for exclusion, and potential for impact, for all species credit species predicted to occur within the subject land is provided in Appendix 2. Species credit species considered to potentially occur within the subject land, are considered 'candidate species credit species'.

All candidate species credit species considered as part of this assessment, and their associated method of assessment, are listed in Table 11 (flora species) and Table 12 (fauna species).

Threatened flora

Habitats for threatened flora species within the subject land is largely considered degraded due to the high degree of historical and current land management. Open areas are typically dominated by exotic turf grasses and herbaceous exotics. Habitats supported by the PCT 3136 vegetation were also considered to be of a lower condition due to a lack of patch size and diversity, however these small, isolated patches supported locally native canopy species and were therefore considered to be of higher quality than other vegetation within the subject land.

No naturally occurring threatened flora species were recorded within the subject land during field investigations or considered likely to occur due to the urban nature and level of disturbance within the subject land. Magenta Lilly Pilly *Syzygium paniculatum*, which is listed as a threatened species under the EPBC Act and BC Act, was recorded in a mixed planting within the subject land during field investigations, however the natural distribution of this species occurs as a narrow coastal strip from Upper Lansdowne to Conjola in areas of subtropical and littoral rainforest, which is not present within the subject land. Therefore, the species' presence within the subject land is attributed to landscaping works only and is not considered further within this report.

Table 11 provides a list of candidate flora species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below and shown on Figure 9.

Table 11 Candidate flora species credit species

Species name	Common name	Survey period	Method of assessment
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	September - November	Targeted survey
<i>Rhodamnia rubescens</i>	Scrub Turpentine	All year	Targeted survey

Threatened fauna

Fauna habitat assessment was undertaken to determine whether the vegetation to be impacted by the proposed development contained microhabitats suitable to support the candidate fauna species credit species, as outlined in Appendix 2.

Similar to threatened flora, habitats for threatened fauna species within the subject land are largely considered degraded due to the high degree of prior disturbance. As such, much of the vegetated areas within the development footprint are comprised of exotic grasses and planted native vegetation including planted PCT 3136.

The main areas of potential fauna habitat within the development site were represented by areas of planted PCT 3136 across the centre and southern boundary of the subject land. No hollow-bearing trees are recorded

within the subject land and human-made infrastructure was not deemed suitable to provide habitat due to the lack of entry points.

Table 12 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period and the relevant method of assessment. Further detail of the targeted surveys undertaken are provided below and shown on Figure 9.

Table 12 Candidate fauna species credit species

Species name	Common name	Survey period	Method of assessment
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	November – January	Targeted survey
<i>Miniopterus australis</i>	Little Bent-winged Bat	December – February	Targeted survey
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	December – February	Targeted survey

4.2.1 Threatened species survey details

Targeted threatened species surveys of the subject land were undertaken from 18 December 2025 to 6 January 2026. Weather observations for each survey date are shown in Table 13.

Table 13 Weather observations during targeted flora and fauna surveys (Sydney Olympic Park, NSW*)

Survey undertaken	Survey date	Temperature (°C)		Rain (mm)
		Min.	Max.	
Habitat assessment and Targeted flora surveys	26/09/2025	12.4	28.6	0
Ultrasonic detector setup	18/12/2025	17.5	37.2	0
Ultrasonic detector collection	6/01/2026	18.5	29.3	0

*Information from the Australia Government Bureau of Meteorology website.

Details of surveys undertaken as part of the current assessment are provided below.

Threatened flora

Targeted surveys for threatened flora species were undertaken on 26 September 2025. Weather observations for this survey date are shown above in Table 13.

Justification of survey method and effort

Survey guidelines followed included:

- Section 5 of the BAM to determine the potential for threatened species identified under the BAM as 'ecosystem credit species' and 'species credit species' to occur (DPIE 2020a).
- *Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities* (DEC 2004).
- *Surveying threatened plants and their habitats NSW survey guide for the Biodiversity Assessment Method* (DPIE 2020b).

Threatened flora surveys were undertaken in areas of vegetation suitable for threatened species being limited to patches of PCT 3136. The surveys did not include planted landscaped gardens or areas of exotic

vegetation. The survey effort was considered adequate for the area of potential habitat within the subject land and development footprint. Targeted flora survey effort is depicted in Figure 9.

Timing of survey

Flora surveys were conducted in accordance with the seasonal requirements detailed in the TBDC survey notes.

Survey personnel and relevant experience

Targeted flora surveys were undertaken by the Biosis ecologist listed in Table 14.

Table 14 Targeted flora survey personnel and relevant experience

Staff member	Role	Relevant experience
Jake Schwebel	Senior Botanist	Over 4 years' experience in ecological consulting. Experience includes vegetation mapping, habitat assessments for threatened species and targeted flora surveys in NSW, with particular focus on surveys within the Sydney and western Sydney regions.

Results

Table 15 provides a summary of the results of the targeted flora surveys completed.

Table 15 Summary of targeted flora survey method and results

Species name	Common name	Survey method	Survey results	Species Polygon (ha) or count
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	5-10 m wide parallel field traverses in suitable habitat (all PCT 3136)	Not recorded during surveys	Not required
<i>Rhodamnia rubescens</i>	Scrub Turpentine	5-10 m wide parallel field traverses in suitable habitat (all PCT 3136)	Not recorded during surveys	Not required

Fauna habitat assessments

Fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all fauna species outlined in Table 12 and Appendix 2. Habitat assessments focussed on the presence of the following features within the subject land:

- Habitat trees including large and/or hollow-bearing trees, stick nests, availability of flowering shrubs and canopy/understorey feed tree species.
- Gaps and entry ways into human made infrastructure that could provide habitat for microbat species.
- Soil type and presence of cliffs, overhangs and other rocky areas.
- Condition and type of native vegetation and the presence of exotic species.
- Presence and condition of pools and waterways.
- Quantity of ground litter and woody debris.
- Searches for indirect evidence of fauna (i.e. feathers, tracks and scats).

- General degradation of the site as a result of past and current disturbances such as vegetation clearing and industrial land management practices.
- Topography and landscape morphology.
- Presence of flying-fox camps.

Several habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 16.

Table 16 Habitat features with potential to support threatened species credit species

Habitat feature	Presence within the development footprint
Hollow-bearing trees	Due to the degraded nature of the subject land, no hollow-bearing trees are present within the subject land. As such, the subject land is unlikely to support threatened hollow-dwelling species.
Feed tree species	One species, Tallowwood <i>Eucalyptus microcorys</i> , identified as a Koala use tree within the Central Coast Koala management area was detected during the assessment. Trees and shrubs providing food resources for smaller mammals such as Eastern Pygmy-possum <i>Cercartetus nanus</i> and Squirrel Glider <i>Petaurus norfolcensis</i> were also recorded, but in a low abundance and were well spaced throughout the development footprint.
Human-made infrastructure	A number of vacant and decommissioned structures are present in the subject land in a dilapidated state. Vacant buildings can potentially contain habitat for microbat species.
Caves and rocky overhangs	There are no caves or rocky overhangs within the subject land. No other suitable roosting habitat for cave-roosting bats (such as culverts, mine shafts etc.) were recorded.
Rocky outcrops and sandstone crevices	There are no rocky outcrops or sandstone crevices within the subject land.
Major and minor watercourses and waterbodies (i.e. dams)	There are no waterbodies within the subject land. The closest waterway is Iona Creek, which exists as a first Strahler order stream approximately 350 metres to the north of the subject land. No impacts to this waterway are expected.
Woody debris and leaf litter	Woody debris and leaf litter was limited across the subject land due to the sparse native vegetation and the highly managed nature of the subject land.

Field capture of detailed fauna habitat information allowed for confirmation of the presence or absence of habitat features and microhabitats for a range of candidate threatened species across surveyed portions of the development footprint. Fauna habitat assessments were captured using ArcGIS polygons attributed with specific habitat criteria that allowed for planning of further targeted survey for select species, or the exclusion of the potential for occurrence of various candidate species from the subject land.

Microbats

Survey method and effort

Diurnal microbat habitat searches were undertaken across the site on the 26 of September. Two ecologists searched for signs of microbat activity around the exterior of the buildings, including:

- Audible sounds of bat calls.
- Bat scats/guano.
- Roosting bats concealed within structures, such as in holes and cracks in walls.
- Discolouring or staining from urine.

- Animal odours.

Following microbat habitat searches, a passive ultrasonic survey was undertaken to both characterise the suite of microbats using the site, as well as provide insights into whether bats may be roosting within nearby infrastructure. Four Titley Ranger ultrasonic bat detectors fitted with omnidirectional microphones were deployed at four locations within the subject land. Detectors were placed on mature trees in close proximity to existing infrastructure to capture the calls of any bats that could be leaving and returning to a roost if present in the site. Data was collected over 19 nights from 18/12/2025 to 6/01/2026, providing a total of 76 trap nights. Calls were recorded from dusk until dawn using default settings for trigger, sensitivity, sampling rate and minimum / maximum frequency. Each time a bat flies past the detector, its call is recorded as a digital file (defined here as a 'pass') that is saved directly onto a memory card in the detector unit. Units were set on trigger mode to record at night. Files were recorded in full spectrum format (.wav) and viewed using Anabat insight. Refer to Appendix 6 for a detailed microbat assessment report which provides a complete breakdown of the survey methodology used.

Detector locations are shown on Figure 9.

Justification of survey method and effort

Survey was undertaken with reference to the following guidelines:

- *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE 2021).
- *Survey guidelines for Australia's threatened bats* (DEWHA 2010).

Timing of survey

Bat detectors were deployed between 18 December 2025 and 6 January 2026, in line with the requirements of the guidelines mentioned above and the TBDC (NSW DCCEEW 2026d).

Survey personnel and relevant experience

Microbat survey and analysis was undertaken by the Biosis ecologists outlined in Table 17.

Table 17 Targeted microbat survey personnel and relevant experience

Staff member	Role	Relevant experience
Emma Heath	Zoologist – call analysis	Emma has over two years of experience using ultrasonic call detection and analysis for impact assessments on microbats in NSW. Emma has completed a number of training courses with regard to ultrasonic call recording and analysis.
Felicity Williams	Senior Zoologist (Bat Ecology) – call analysis quality assurance	Felicity has over eight years' experience using ultrasonic call detection and analysis for impact assessments on microbats in both Victoria and NSW. Felicity has completed a number of training courses with regard to ultrasonic call recording and analysis.
Tara Lillicot	Ecologist – Habitat assessor	Over three years of experience undertaking ecological surveys in NSW.
Natasha Zahra	Ecologist – detector deployment	Over two years of experience undertaking ecological surveys in NSW.

Results

The human-made structures (buildings) present at the site provide limited opportunities for roosting by microbats and were inspected for the presence of, or signs of use by microbats. The buildings are in relatively good condition, with minimal access points or suitable microclimates for roosting.

No evidence of bat scats / guano or urine staining were observed during the external inspections of buildings undertaken, and no audible sounds of bat calls 'squeaking' were heard. The structures are considered unlikely to provide suitable breeding habitat for candidate species Large-eared Pied Bat, Large Bent-winged Bat or Little Bent-winged Bat.

Due to variability in the quality of calls and difficulty in distinguishing some species, a conservative approach was taken when analysing calls and assigning an identification. Seven species were positively identified (Almost Certain or Probable) of the 22 species that are known to occur within 20 kilometres of the study area (AusBats 2025). Up to eight additional species may also have been recorded, however reliable identification to species level was not possible due to similarity of call characteristics between species. Seven species known or predicted to occur in the locality were not detected in the survey. The identification of each call was assigned a confidence rating (Duffy et al. 2000) as summarised in Table 18 below. This table provides a summary of the results of the microbat call analysis completed, and includes species known to occur within the locality.

Table 18 Bat call analysis results

Species name	Common name	EPBC Act status	BC Act status	Identification
<i>Austronomus australis</i>	White-striped Free-tailed Bat			C
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			C
<i>Miniopterus australis</i>	Little Bent-winged Bat		VU	C
<i>Miniopterus orianae oceanensis</i>	Large (Eastern) Bent-winged Bat		VU	C
<i>Vespadelus darlingtoni</i>	Large Forest Bat			C
<i>Scotorepens orion</i>	South-eastern Broad-nosed Bat			PR
<i>Vespadelus regulus</i>	Southern Forest Bat			PR
<i>Chalinolobus morio</i>	Chocolate Wattled Bat			SG
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat			SG
<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat			SG
<i>Ozimops ridei</i>	Ride's Free-tailed Bat			SG
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat		VU	SG
<i>Vespadelus pumilus</i>	Eastern Forest Bat			SG
<i>Vespadelus troughtoni</i>	Eastern Cave Bat		VU	SG
<i>Vespadelus vulturnus</i>	Little Forest Bat			SG
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	EN	EN	X
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle		VU	X
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat		VU	X
<i>Myotis macropus</i>	Southern Myotis		VU	X

Species name	Common name	EPBC Act status	BC Act status	Identification
<i>Phoniscus papuensis</i>	Golden-tipped Bat		VU	X
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat			X
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheathtail-bat		VU	X

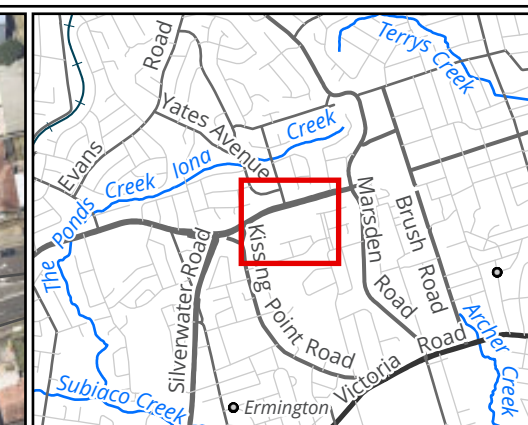
*C = almost certain; PR = Probable, SG = Species group; X = not recorded, VU = Vulnerable, EN = Endangered

Threatened candidate species

Large-eared Pied Bat was not recorded during the ultrasonic surveys, and no suitable habitat was identified. Inspections of the buildings present found no evidence of roosting microbats. This species can be discounted from occurring within the subject land.

Although a small number of calls were recorded for Little Bent-winged Bat and Large Bent-winged Bat, no suitable breeding habitat is present within the subject land, and no signs of roosting bats were recorded. Large Bent-winged Bat was identified from only a small number of sequences, well after dusk. Given the low activity of this species over the 72 detector nights, it is unlikely to be roosting within the site, and detections are most likely to represent individuals foraging or commuting through the area. Similarly, there was only a single call for the Little Bent-winged Bat, 3:42 AM on 2 January 2026. If roosting within or near the site, higher activity for each species would be expected and trends in timing (increased detections around sunrise or sunset) would be expected. Coupled with the lack of suitable habitat present in or near the subject land, this species is highly unlikely to be utilising the buildings in the subject land for roosting and/or breeding. These species may occasionally commute over the site or forage in or near the site however, given the limited number of sequences and absence of feeding buzzes, it is unlikely that the subject land represents important habitat for either species.

Breeding habitat for these species can be discounted from occurring within the subject land and so candidate microbat species are no considered further. Refer to the microbat assessment report in Appendix 6 for more details on the results of this assessment.



Legend

- Subject land
- Development site
- Development footprint
- Bat detector
- Flora survey track
- Fauna habitat assessment survey track

Threatened fauna records - BioNet

- Haliaeetus leucogaster* - White-bellied Sea-Eagle
- Pteropus poliocephalus* - Grey-headed Flying-fox

Vegetation zones - Biosis

- 3136_Planted
- Planted natives
- Exotic

Figure 9 Targeted flora/ fauna species

0 20 40 60 80
Metres
Scale: 1:2,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026
Prepared for TOH, Prepared by HL, Last edited by hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F9_TargetedSpecies

4.2.2 Local data

No additional local data has been used for threatened species assessment.

4.2.3 Threatened species summary and polygons

No candidate flora or fauna species were recorded within the subject land during the assessment, and as such, no species polygons have been produced. The site is heavily influenced by its urban context, with significant disturbance from surrounding infrastructure, residential development, and other anthropogenic activities. These factors have resulted in a habitat that is generally unsuitable for the establishment or persistence of threatened species.

Stage 2 — Impact assessment (Biodiversity Values)

5 Avoid and minimise impacts

This section demonstrates the efforts to avoid and minimise impacts on biodiversity values (including prescribed impacts) associated with the proposal location in accordance with BAM, including an analysis of alternatives:

- 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.
- Efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.
- Site constraints that have been considered in determining the location and design of the proposed development.

5.1 Actions to avoid/minimise project impacts

The principal means to reduce impacts on biodiversity values within the development site is to avoid and/or minimise the removal of native vegetation and fauna habitat. Impacts associated with the clearing of native vegetation and/or threatened species habitat can be said to be largely avoided and minimised by:

- Development site selection.
- The proposed development within areas that lacks significant biodiversity values.
- In areas where native vegetation and potential threatened species habitat is impacted, it is predominantly within sections that have low vegetation integrity scores (<10) and primarily disturbs areas of exotic vegetation.
- Avoids direct impacts to several large trees (DBH) associated with a PCT.
- Minimises impacts to high biodiversity values including the higher condition vegetation.

The final development footprint displays all direct impacts to biodiversity values and is provided in Figure 10 and areas of avoidance within the development site to biodiversity values is provided in Figure 11. Further detail in the approaches utilised in the project to avoid and minimise impacts to biodiversity values is provided below.

Site selection

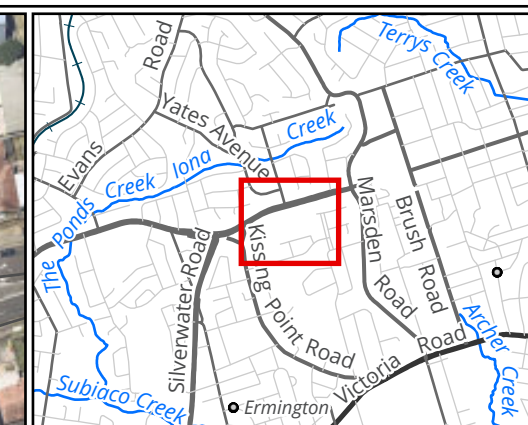
Site selection is a significant first step at the commencement of a project to avoid and minimise impacts to high biodiversity values and ensure the development site is suitable for development. From the beginning of the development, site attainment and design process, the proponent has exercised their due diligence by selecting a development site based on its existing degraded state and in consideration of its prior use. The

development site has been historically used for agricultural purposes and in modern times used as an urban hospital. The surrounding landscape has also been heavily developed and subject to heavy vegetation clearing since European settlement and primarily consists of urban residential development and businesses. Site selection consideration ensures that the proposed development aligns with the existing land uses of the local setting, and avoids encroachment on previously unimpacted, high-quality natural habitats. The development site has been previously cleared of all high-quality remnant vegetation and predominantly consists of cleared grasslands and urban landscaped gardens making it suitable for future development.

Development footprint design

The development footprint was designed with regard to the biodiversity values recorded within the development site. Communications were undertaken with the proponent to avoid and minimise impacts to high quality vegetation. Preference was given to the avoidance of vegetation associated with PCT 3136 which is associated with the TEC *Blue Gum High Forest in the Sydney Basin Bioregion* (CEEC, BC Act). Vegetation within the community has historically been planted however is consistent with PCT 3136. Therefore, communications were undertaken to avoid the highest quality patches of this community which were proposed for removal. This included the preference for retention of groups of large, mature trees, containing at least some native understorey over scattered and young native individual canopy trees and exotic vegetation. This allowed for the additional retention of approximately 0.07 hectares of the 0.1 hectares of PCT 3136 present within the development site. Areas of avoid and minimisation are shown on Figure 11.

Where avoidance measures were considered, and trees selected for retention, the design prioritised the retention of clusters of trees and canopy corridors, rather than isolated individual trees. This approach ensures greater areas of landscape connectivity is maintained, allowing mobile fauna species, to move freely across the site post-development. By concentrating on closely spaced patches of canopy, rather than scattering individual trees, the design preserves functional movement pathways, reduces the risk of habitat fragmentation, and supports the long-term viability of the species within the development area



Legend

- Subject land
- Development site
- Development footprint

Impact

- Remove
- Retain

Vegetation zones - Biosis

- 3136_Planted
- Planted natives
- Exotic

Threatened ecological communities - Biosis

- Blue Gum High Forest in the Sydney Basin Bioregion (CEEC, BC Act)

Figure 10 Final development footprint

0 20 40 60 80

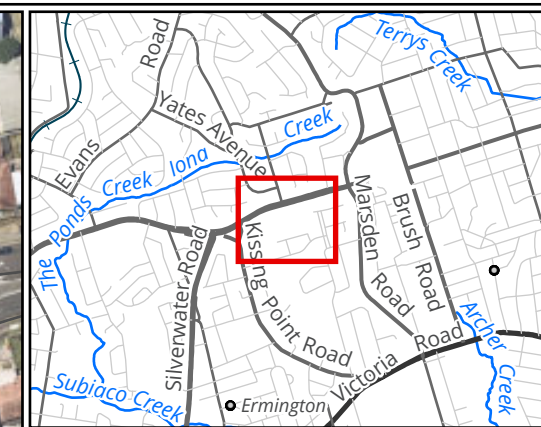
Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56

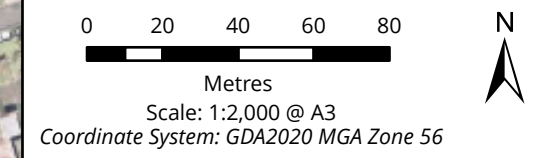


Matter: 42890, Date: 24 February 2026
Prepared for TOH, Prepared by HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F10_FinalDevFootprint



- Legend**
- Subject land
 - Development site
 - Development footprint
- Avoidance**
- Avoided BC Act CEEC - Blue Gum
 - High Forest in the Sydney Basin Bioregion
 - Avoided planted native vegetation

Figure 11 Alternate options and avoidance



6 Impacts that are unable to be avoided

Assessment of direct and indirect impacts unable to be avoided has been undertaken in accordance with the BAM (DPIE 2020a). The following direct and indirect impacts are unable to be avoided in progressing the proposed development.

6.1 Direct impacts

Direct impacts include vegetation clearing calculated from the area of proposed lot boundaries, roads and easements for service infrastructure.

Direct impacts arising from the project include:

- Removal of 0.02 ha of PCT 3136 in a planted condition associated with the TEC *Blue Gum High Forest in the Sydney Basin Bioregion* (CEEC, BC Act).
- Removal of 0.2 ha of planted native vegetation.
- Removal of 1.5 ha of exotic vegetation.

These impacts will be permanent and will occur from the outset of the development. Mitigation measures outlined in Section 5.1 above will help to minimise the potential impacts to biodiversity values that remain present within the subject land.

A summary of native PCTs directly impacted is demonstrated in Table 19.

Table 19 Summary of direct impacts to vegetation

Zone	PCT	TEC	Area within subject land (ha)	Area impacted (ha)	VI Score
3136_Low	PCT 3136	Yes	0.26	0.02	8.6

6.1.1 Loss of hollow bearing trees

No hollow-bearing trees were identified within the subject land during field investigations.

6.2 Indirect impacts

Potential indirect impacts arising from the project are outlined and addressed in Table 20 and shown in Figure 12.

Table 20 Assessment of indirect impacts

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase	Likelihood and consequences
Inadvertent impacts on adjacent habitat or vegetation	PCT 3136	Up to 0.07 ha of indirect impacts to native vegetation, comprising low condition PCT 3136.	Ongoing	Medium-term	Construction / Operation	Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a Construction Environmental Management Plan (CEMP) detailing best practice environmental protection measures, sediment control, and strict water quality practices and stormwater controls.
Reduced viability of adjacent habitat due to edge effects	PCT 3136	Up to 0.07 ha of indirect impacts to native vegetation, comprising low condition PCT 3136.	Ongoing	Medium-term	Construction / Operation	Adjacent habitats are currently subject to a high degree of edge effects due to prior clearing and surrounding existing residential and recreational land use. Since vegetation within the subject land is highly fragmented, and little vegetation is to be removed from the subject land, an increase to edge effects is not expected to occur to any remnant vegetation surrounding the subject land as a result of the proposed development. This is primarily due to the already fragmented state of these small vegetation patches. The removal of vegetation from the development footprint will result in minimal new interfaces for the remaining vegetation patches from which edge effects may occur.
Reduced viability of adjacent habitat due to noise, dust or light spill	PCT 3136	Up to 0.07 ha of indirect impacts to native vegetation, comprising low condition PCT 3136.	Ongoing	Medium-term	Construction / Operation	It is predicted that the adjacent habitat will be subject to minor indirect impacts by noise, dust and light spill, during construction and operation of the future development of the subject land. However, this will be managed via best practices outlined through a CEMP. The subject land also already occurs as a residential area, and light and noise pollution is most likely moderate. This will likely not substantially increase due to the proposed future development.
Transport of weeds and pathogens from the	PCT 3136	Up to 0.07 ha of indirect impacts to native vegetation,	Ongoing	Medium-term	Construction / Operation	Weeds occurring within the subject land are common with those occurring within adjacent vegetation to be retained. Increased transport of pathogens and weeds is unlikely to

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase	Likelihood and consequences
site to adjacent vegetation		comprising low condition PCT 3136.				occur but will be managed by biosecurity measures outlined in a CEMP.
Increased risk of starvation, exposure and loss of shade or shelter	PCT 3136	Up to 0.07 ha of indirect impacts to native vegetation, comprising low condition PCT 3136.	Ongoing	Medium-term	Construction / Operation	The habitat present in the subject land is considered marginal for most fauna species given the disturbed condition. The proposed future development will not result in an increased risk of starvation, exposure and loss of shade or shelter to native species due to the small total area of vegetation being removed, and the sub-optimal proportion of the habitats available within the subject land, compared to that within the rest of the broader locality.
Loss of breeding habitats	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No specialist breeding habitat will be impacted by the proposed site preparation works. Retained vegetation in adjacent lots and across the broader locality provides higher quality habitat and will not be reduced by the proposed works.
Trampling of threatened flora species	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No threatened flora species were found, or are considered likely to occur, within the subject land, and thus trampling of threatened flora species is unlikely.
Inhibition of nitrogen fixation and increased soil salinity	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Any future excavations or soil disturbance resulting from the future development of the subject land would be largely restricted to areas having undergone significant previous disturbance through vehicular traffic and construction works. As such it is not considered likely that the future development of the subject land would result in substantial changes to the level of nitrogen fixation or soil salinity in the locality.
Fertiliser drift	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Widespread fertiliser use is not expected as part of the proposed project except within initiation of proposed newly landscaped areas, and as such, works are not expected to significantly contribute to fertiliser drift into surrounding areas, as landscaped areas are designed to be low maintenance long-term.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase	Likelihood and consequences
Rubbish dumping	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Standard environmental controls for the development would ensure potential impacts are minimised. Works would follow an approved Waste Management Plan.
Wood collection	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Future development proposed within the subject land is unlikely to increase access to any retained vegetation, beyond current access capacity. Based on the future residential use of the subject land, future landholders are not expected to be likely to undertake wood collection within the retained vegetation to a level that it will have a detrimental effect. Unauthorised access and collection of wood is expected to be minimal.
Removal and disturbance of rocks, including bush rock	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The subject land does not support bush rock.
Increase in predators	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The subject land already occurs within a highly urbanised setting where pets, such as dogs and cats, are common. The subject land is already largely cleared. The remaining vegetation clearance proposed by the development, and proposed land use, is unlikely to increase predatory species populations.
Increase in pest animal populations	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The proposal occurs in a highly urbanised area, with pests such as Rats <i>Rattus rattus</i> and European Rabbit <i>Oryctolagus cuniculus</i> being extremely common. The proposal will not result in an increase in available habitat for these species and is unlikely to lead to an increase in pest animal populations. Suitable waste disposal implemented during, and post construction will further reduce the resources available for pest species.
Changed fire regimes	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	The proposal occurs in a highly urbanised area. Appropriate asset protection zones and fire mitigation systems will be implemented for the future development, and the proposal will not result in an increased risk of fire.

Indirect impact	Impacted entities	Extent	Frequency	Duration	Project phase	Likelihood and consequences
Disturbance to specialist breeding and foraging habitat, e.g. Beach nesting for shorebirds	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	No specialist breeding or foraging habitat exists within the subject land.
Fragmentation of movement corridors	Not applicable	Not applicable	Not applicable	Not applicable	Not applicable	Movement corridors are somewhat limited in availability across the locality due to substantial development within the locality, which has the potential to disrupt the flow of genetic material. The proposed development would result in the removal of 0.24 ha of low-quality native vegetation; however, much of this vegetation occurs in an already fragmented state. Impacts to native vegetation would not fragment any existing habitat corridors or create a barrier to dispersal of species across the landscape.

6.3 Prescribed impacts

Identification and assessment of prescribed biodiversity impacts are outlined and addressed in Table 21, and the section below, and shown in Figure 13.

Table 21 Identification of prescribed impacts

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
Karst, caves, crevices, cliffs, rocks and other geological features of significance	No karst, caves, crevices, or cliffs exist within the subject land.	Threatened microbat species may utilise karst, caves, cliffs and rocks within the broader landscape, however, no threatened microbats which are reliant on these habitat features were recorded within the subject land during targeted surveys.	These features provide habitat for threatened microbats who utilise caves/karsts/crevices as roosting and breeding habitat. No such habitat was detected within the subject land during this assessment.
Occurrences of human-made structures and non-native vegetation	The subject land currently contains a number of buildings (enclosed structures with four walls and a roof. A majority of these will be demolished to allow for landscaping and the construction of the new senior living development. Non-native vegetation, comprising mostly exotic grasslands, is also present within the subject land.	Threatened microbat species may utilise man-made structures. Non-native vegetation within the subject land is not considered to support any threatened species.	Human-made structures can provide potential for roosting habitat for threatened microbat species. No such habitat was detected during this assessment. No threatened microbats were recorded within the subject land during targeted surveys and active monitoring surveys. Therefore, no important habitat features are expected to be impacted by the proposed works. More detail is provided in section 6.3.1 below.
Corridors or other areas of connectivity linking habitat for threatened entities	The removal of 0.24 ha of native vegetation is expected to have little impact on the connectivity of threatened species habitat. The subject land is currently highly fragmented and subject to previous disturbance associated with past and current land uses.	Threatened gastropods, birds, microbats and mammals may also utilise vegetation corridors for movement or foraging. These species have not been detected within the subject land.	Vegetated corridors providing connectivity between patches, are not present within the subject land. Thus, the project is not likely to result in the isolation or fragmentation in habitat connectivity for any threatened or non-threatened fauna species.
Water bodies or any hydrological processes that sustain threatened entities	No waterbodies exist within the subject land.	Waterbodies may provide suitable breeding and sheltering habitat for threatened amphibians and may also provide suitable foraging habitat for microbats and waterbirds. No threatened species which are reliant on waterways were identified within the subject land during targeted surveys.	These features provide habitat for threatened microbats, birds and amphibians who utilise waterways for foraging, sheltering, and breeding habitat. No such habitat was detected within the subject land during this assessment.

Prescribed impact	Description of relevant habitat features associated with prescribed impacts	Threatened species likely to utilise habitat features associated with prescribed impact	Importance of habitat feature to impacted species
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	Given the subject land is already largely cleared of native vegetation and includes existing driveways, it is unlikely that many species are utilising the subject land for dispersal. However, it is possible that such species as birds, microbats, or amphibians are traversing the subject land on occasion. Given the existing land use of the subject land, it is unlikely that the amount of vehicle traffic within the development site is likely to increase as a result of the site preparation works or any future proposed land uses.	Threatened amphibian, bird or microbat species, may have potential to traverse through the subject land on occasion. However, these species have not been detected within the subject land.	Threatened entities that are likely to use the subject land are moderately to highly mobile species and are largely capable of moving out of the way of moving vehicles. Vehicle strikes are not considered to represent a higher risk to any threatened entities above that which currently exists within the subject land.

6.3.1 Human-made structures and non-native vegetation

Nature

Removal of structures as part of the proposed development will cause the loss of potential, but suspected currently unoccupied, roosting habitat for microbats. Roosting habitat is of poor quality as the buildings within the subject land lack cracks, crevices, or similar sheltered interior spaces which are accessible from the outside. The two threatened microbat recorded, Large Bent-winged Bat and Little Bent-winged Bat, are unlikely to be utilising the human-made structures within the subject land. Large (Eastern) Bent-winged Bat was identified from only a small number of sequences, well after dusk. Given the low activity of this species over the 72 detector nights, it is unlikely to be roosting within the site, and detections are most likely to represent individuals foraging or commuting through the area. Similarly, there was only a single call for the Little Bent-winged Bat, 3:42 AM on 2 January 2026. If roosting within or near the site, higher activity for each species would be expected and trends in timing (increased detections around sunrise or sunset) would be expected. Coupled with the lack of suitable habitat present in or near the subject land, this species is highly unlikely to be utilising the buildings in the subject land for roosting and/or breeding.

Non-native vegetation is largely in the form of exotic grasslands and scattered canopy trees and shrubs. A portion of this vegetation would be cleared from the subject land for the proposed work. This vegetation does not contain hollows or stick nests and is unlikely to provide suitable habitat for native flora and fauna, except for occasional dispersal habitat.

Extent

A number of buildings are anticipated to be removed within the subject land. These buildings will be replaced by a senior living residential development. This proposed development may produce an increased risk of avian-building collisions within the locality, due to the increased size and height of proposed buildings, as well as increased light pollution causing disorientation.

In addition to the buildings, up to 1.5 hectares of exotic vegetation will be removed from the subject land, which comprises almost primarily exotic turf and ornamental gardens.

Duration

Construction and operation.

Consequences

Detailed in Table 21.

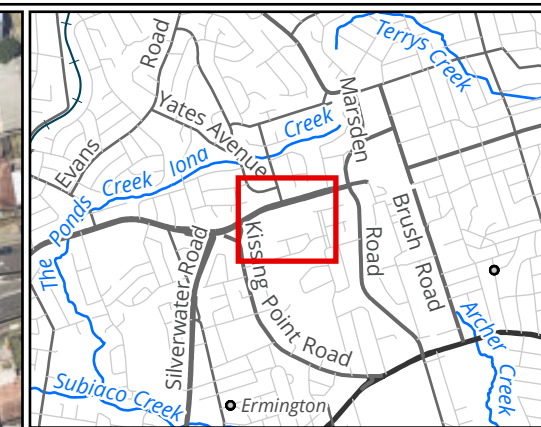
6.4 Impacts considered uncertain

There are no impacts considered uncertain.

6.5 Impacts to Groundwater Dependent Ecosystems (GDE)

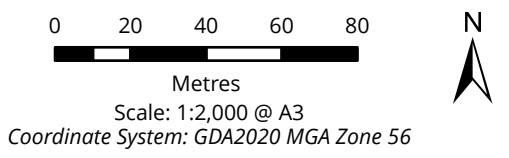
Assessment of the potential for the subject land to support groundwater dependant ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems

Atlas (BOM 2019). There is no aquatic, terrestrial or subterranean GDEs mapped within the development site. The subject land is not mapped as supporting GDEs associated with an aquifer in Appendix 8 of the Risk Assessment Guidelines for Groundwater Dependent Ecosystems (DPI 2012).

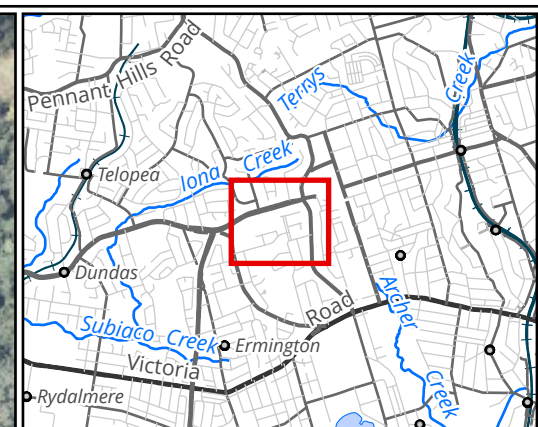


- Legend**
- Subject land
 - Development site
 - Development footprint
- Impact**
- Indirect impacts to native vegetation

Figure 12 Estimated zones of indirect impacts



Matter: 42890, Date: 24 February 2026
Prepared for TOH, Prepared by HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F12_IndirectImpacts



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Building
 - Habitat connectivity

Figure 13 Prescribed impacts

0 20 40 60 80 100 120
Metres
Scale: 1:3,000 @ A3
Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F13_PrescribedImpact

7 Mitigation and management of impacts

Identification of measures to mitigate or manage impacts has been undertaken in accordance with the BAM (DPIE 2020a), including considerations such as:

- Techniques, timing, frequency and responsibility.
- Identification of measures for which there is risk of failure.
- Evaluation of the risk and consequence of any residual impacts.
- Documentation of any adaptive management strategy proposed.

Identification of measures for mitigating impacts related to:

- Displacement of resident fauna.
- Indirect impacts on native vegetation and habitat.
- Mitigating prescribed biodiversity impacts.
- Details of the adaptive management strategy proposed to monitor and respond to impacts on biodiversity values that are uncertain.

Table 22 provides a summary of the mitigation measures that should be employed for managing project impacts to biodiversity.

7.1 Adaptive management strategy

Construction and operational management plans will all contain an adaptive management component. Adaptive management strategies will be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and are key to the successful implementation of crucial objectives yet also allow flexibility to changing dynamics and ongoing feedback and results. This includes measures to monitor predicted and uncertain impacts which will trigger adaptive management actions and allow for effective and quick responses.

Table 22 Measures to mitigate and manage impacts

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
<i>Displacement of resident fauna</i>	It is unlikely that any fauna species are residing within the development site, with native vegetation likely only used as foraging habitat. The removal of vegetation/habitat will be managed under a CEMP which will mitigate risk of impact to environmental controls during project construction.	No direct impact to resident fauna during vegetation removal.	Prior to habitat removal	Construction contractor
<i>Protection of biodiversity during construction</i>	A CEMP should be implemented that may include the following sub-plans or protocols: • Vegetation management plan (VMP) that includes retention of native vegetation within landscaping. • Vegetation clearance protocol. • Fauna injury protocol. • Weed Management Plan.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks.	Construction contractor
<i>Indirect impacts on native vegetation and habitat</i>	Appropriate stormwater and erosion controls will be implemented on site to avoid impacts to nearby waterways.	No further degradation to retained vegetation and habitats.	Ongoing/throughout earthworks	Construction contractor
	Control priority weeds through bush regeneration practices such as manual removal or pesticide. Ensure spread of weeds into and outside of subject land through the movement of people and equipment is minimised.	No further degradation to retained vegetation and habitats.	Ongoing/throughout construction.	Construction contractor
	Where appropriate, native vegetation cleared from the subject land should be mulched for re-use on the site, to stabilise bare ground.	No further degradation to retained vegetation and habitats.	Ongoing/throughout construction	Construction contractor

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Installation of appropriate exclusion fencing around trees and vegetation to be retained to clearly delineate the clearing limits in the subject land: - The radius of the Nominal Root Zone (NRZ) is calculated for each tree by multiplying its diameter at breast height by 12, in accordance with the Standards Australia Committee (2025). - An NRZ should not be less than 2 m, or greater than 15 m, except where crown protection is required (Council of Australian Standards 2025). - This would include appropriate signage such as 'No Go Zone' or 'Environmental Protection Area'. - Identify the location of any 'No Go Zones' in site inductions and a CEMP. - Where the use of exclusion fencing is not appropriate, other methods of tree protection must be employed in accordance with <i>AS4970-2025 Protection of Trees on Development Sites</i> (Council of Australian Standards 2025).	No further degradation to retained vegetation and habitats.	Before and throughout construction.	Construction contractor.
	All material stockpiles, vehicle parking and machinery storage will be located within cleared areas or areas proposed for clearing, and not in areas of native vegetation that are to be retained.	No further degradation to retained vegetation and habitats.	Ongoing/throughout construction.	Construction contractor.
	Removal or substantial pruning of trees to be supported by an Arboriculture Report prepared by an arborist with a minimum AQF level 5.	No further degradation to retained vegetation and habitats.	Ongoing/throughout construction.	Arborist and construction contractor.

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Implement hygiene measures to prevent the spread of weeds and pathogens into the site, or from the site into the surrounding locality.	No further spread of weeds or pathogens as a result of construction works.	Ongoing/throughout construction.	Construction contractor.
Mitigating prescribed biodiversity impacts	Construction works should be restricted to daylight hours.	Reduce impacts to nocturnal species.	Ongoing/throughout construction	Construction contractor
	Implementation and signage of reduced speed limits on access roads associated with the project.	Mitigate risk to common disturbance-tolerant mobile fauna species.	Ongoing/throughout construction	Construction contractor
	Implementation of temporary stormwater controls during construction to ensure that discharges to the drainage channels are consistent with existing conditions.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor
	Sediment and erosion control measures should be implemented (e.g., silt fences, sediment traps). These should conform to relevant guidelines, should be maintained throughout the construction period and should be carefully removed following the completion of works.	Mitigate risk of impact to waterways during project construction.	Prior to construction works commencing	Construction contractor
Adaptive management strategies proposed to monitor and respond to impacts on biodiversity values that are uncertain	Implementation of an appropriate CEMP during works.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks	Construction contractor

8 Serious and irreversible impacts

8.1 TECs and threatened species

This section outlines the impact summary for the project which has identified and assessed impacts on TECs and threatened species that are at risk of a SAI including:

- Addressing all criteria for each TEC listed as at risk of an SAI present on the subject land.
- Addressing all criteria for each threatened species at risk of an SAI present on the subject land.
- 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.
- Identification of impacts not requiring offset.
- Identification of areas not requiring offset.

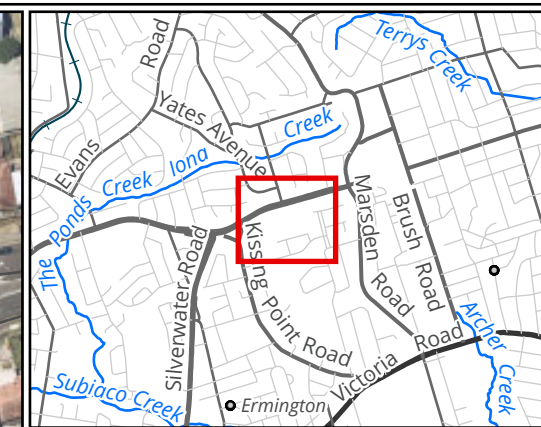
Figure 14 shows the location of SAI listed entities within the subject land.

8.2 Serious and irreversible impacts

In accordance with Clause 6.7 of the BC Regulation an impact is to be regarded as serious and irreversible if it is likely to contribute significantly to the risk of a threatened species or ecological community becoming extinct because:

- (a) Principle 1: It will cause a further decline of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- (b) Principle 2: It will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
- (c) Principle 3: It is an impact on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.
- (d) Principle 4: The impacted species or ecological community is unlikely to respond to measures to improve its habitat and vegetation integrity and therefore its members are not replaceable.

The TEC *Blue Gum High Forest in the Sydney Basin Bioregion* (CEEC, BC Act) within the subject is anticipated to be impacted by the proposed project. *Blue Gum High Forest in the Sydney Basin Bioregion* is listed as a SAI entity under Principles 1, 2 and 3. As this community is considered to be at risk of a potential SAI, a detailed SAI assessments has been undertaken and is provided in Appendix 5.



Legend

- Subject land
- Development site
- Development footprint

SAIL Entities

PCT 3136 – Blue Gum High Forest - Blue Gum High Forest in the Sydney Basin Bioregion (CEEC, BC Act)

Figure 14 Serious and irreversible impacts (SAIL)

0 20 40 60 80

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56



Matter: 42890, Date: 24 February 2026
Prepared for: TOH, Prepared by: HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F14_SAIL

9 Impact summary

This section outlines the impact summary for the project which has identified and assessed impacts on TECs and threatened species including:

- Identification of impacts requiring offset.
- Identification of impacts not requiring offset.
- Identification of areas not requiring offset.

Figure 15 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

9.1 Identification of impacts requiring offset

9.1.1 Impacts to native vegetation (ecosystem credits)

As outlined in Section 9.2.1 of the BAM, the assessor 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:

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

The subject land is highly modified and therefore any vegetation present is in a low condition state. Vegetation within the subject land includes planted condition PCT 3136 as well as exotic and native urban plantings containing negligible biodiversity value. Vegetation integrity was assessed for PCT 3136 using the BAM calculator and was determined to have a VI score of 8.6 which is therefore less than the 15 required for a CEEC to require ecosystem credit offsets. As such, there are no impacts to native terrestrial vegetation that would trigger the requirement for ecosystem credit offsets under the BAM.

9.1.2 Impacts to threatened species and their habitat

No threatened flora or fauna species were recorded within the subject land, and/or habitat suitable for threatened species is absent. A habitat assessment was undertaken with no important microhabitats such as hollow-bearing trees, rock outcrops, or aquatic environments present.

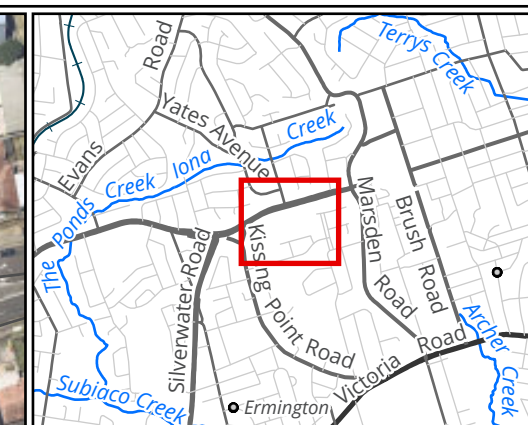
The human-made structures (buildings) present within the subject land provide limited opportunities for roosting by microbats and were inspected for the presence of, or signs of use by microbats. The buildings are in relatively good condition, with minimal access points or suitable microclimates for roosting. No evidence of bat scats / guano or urine staining were observed during the external inspections of buildings undertaken, and no audible sounds of bat calls 'squeaking' were heard. Therefore, the structures are considered unlikely to provide suitable breeding habitat for candidate species Large-eared Pied Bat, Large Bent-winged Bat or Little Bent-winged Bat. As such, there are no impacts to threatened species that would trigger the requirement for species credit offsets under the BAM.

9.2 Identification of impacts not requiring offset

Following efforts to avoid and minimise impacts, the residual terrestrial impact of the project is limited to the removal of highly modified urban/exotic vegetation and a small area of planted low condition trees associated with PCT 3136 within the subject land. Given these circumstances, the residual impacts do not meet the threshold for ecosystem credit requirements under the BAM. Specifically:

- Impacts to PCT 3136 within the subject land which are <15 VI score required for offsets.
- No habitat for threatened species will be impacted.
- All potential indirect and prescribed impacts to surrounding native vegetation or ecological receptors are negligible and effectively managed through standard construction controls.

In summary, the project results in no residual terrestrial impacts of ecological significance. Accordingly, no biodiversity offsets are required in accordance with the BAM no net loss standard. The project's avoidance and minimisation measures, combined with the highly modified nature of the subject land, ensure that biodiversity values are maintained and protected.



Legend

- Subject land
- Development site
- Development footprint

Offsets

- Areas not requiring assessment
- Impacts not requiring offset

Vegetation zones - Biosis

- 3136_Planted
- Planted natives
- Exotic

Threatened ecological communities - Biosis

- Blue Gum High Forest in the Sydney Basin Bioregion (CEEC, BC Act)

Figure 15 Impacts requiring offsets, not requiring offset, not requiring assessment

0 20 40 60 80

Metres

Scale: 1:2,000 @ A3

Coordinate System: GDA2020 MGA Zone 56



APEM Group

Matter: 42890, Date: 24 February 2026
Prepared for TOH, Prepared by HL, Last edited by: hliswoyo
Location: P:\42800s\42890\Mapping\42890_Ermington_BDAR.aprx
Layout: 42890_F15_Offsets

10 Biodiversity credit report

Offsetting through the transfer and retirement of biodiversity credits or paying into the Biodiversity Conservation Trust (BCT) Offset Fund, is not required for the current assessment, as no residual terrestrial impacts have been identified. A biodiversity credit report is provided on the following pages to formally demonstrate that no offset obligation is generated for this project.

11 Assessment against biodiversity legislation

11.1 Environment Protection and Biodiversity Conservation Act 1999

The EPBC Act is the Australian Government's key piece of environmental legislation. The EPBC Act applies to developments and associated activities that have the potential to significantly impact on MNES protected under the Act. Under the EPBC Act, activities that have potential to result in significant impacts on MNES must be referred to the Commonwealth Minister for the Environment and Water for assessment.

An assessment of the impacts of the proposed development on MNES, against heads of consideration outlined in Commonwealth of Australia (2013) was prepared to determine whether referral of the proposed development to the Commonwealth Minister for the Environment is required. MNES relevant to the proposed development are summarised in Table 23.

Table 23 Assessment of the proposed development against the EPBC Act

Matter of NES	Project specifics	Potential for significant impact
Threatened species	No threatened entities listed under the EPBC Act were recorded or assumed to be present within the subject land. For further details refer to section 4 and Appendix 2 of this report.	The project is unlikely to result in significant impacts to any threatened species.
Threatened ecological communities	PCT 3136 is associated with an EPBC Act listed TEC. However, as discussed in section 3.2.2 of this report, PCT 3136 within the subject land does not meet the condition thresholds of the EPBC Act listed TEC. Therefore, no TECs listed under the EPBC Act are proposed to be impacted by the current proposal.	The project is unlikely to result in significant impacts to any TECs.
Migratory species	Migratory species are considered unlikely to occur within the subject land given its location within an urbanised setting and lack of suitable habitat features.	The project is unlikely to result in significant impacts to any migratory species.
National Heritage Places	There are no National Heritage Places within the subject land.	The project is unlikely to result in significant impacts to any National heritage Places.
Wetlands of international importance (Ramsar sites)	There are no wetlands of international importance within or in close proximity to the subject land.	The project is unlikely to result in significant impacts to any Ramsar sites.

11.2 Biodiversity Conservation Act 2016

The BC Act is the key piece of legislation providing for the protection and conservation of biodiversity in NSW through the listing of threatened species and communities and key threatening processes (KTPs). Impacts to threatened species and communities are assessed under Section 7.3 of the BC Act.

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 6.1.

The BOS has been triggered under the EP&A Act and BC Act as the project is considered SSD. This BDAR has been prepared for the proposed development accordingly.

11.3 Environmental Planning and Assessment Act 1979/Environmental Planning and Assessment Regulation 2021

The EP&A Act was enacted to encourage the proper consideration and management of impacts of proposed development or land-use changes on the environment (both natural and built) and the community. The EP&A Act is administered by NSW DCCEE.

The EP&A Act provides the overarching structure for planning in NSW and is supported by other statutory environmental planning instruments. Sections of the EP&A Act of primary relevance to the natural environment are outlined further below.

Section 1.7 of the EP&A Act requires proponents and consent authorities to consider if a development will have a significant effect on threatened species, populations or communities listed under the BC Act and FM Act.

Where a development will result in a significant effect to a threatened species, population or community a Species Impact Statement (SIS) or preparation of a BOS application is required. This BDAR has been prepared for the development accordingly.

Threatened species and communities listed under the BC Act relevant to the subject land are provided in Section 4 and Appendix 2. A summary of impacts to threatened species, populations and communities present or assumed present within the subject land is provided in Section 6.1.

11.3.1 State Environmental Planning Policies

State Environmental Planning Policy (Biodiversity and Conservation) 2021

Chapter 2: Vegetation in non-rural areas

This chapter aims to protect the biodiversity values of trees and other vegetation in non-rural areas of NSW and to preserve the amenity of non-rural areas through the preservation of trees and other vegetation by ensuring that the BOS will apply to all clearing of native vegetation that exceeds the offset thresholds in urban areas and environmental conservation zones that does not require development consent.

As the proposal requires development consent, the provisions of this chapter under the SEPP do not apply.

Chapter 3: Koala Habitat Protection 2020

This chapter applies to land zoned RU1, RU2 or RU3, except within the Greater Sydney and Central Coast areas. The subject land occurs on land zoned SP2 Infrastructure, therefore this chapter does not apply.

Chapter 4: Koala Habitat Protection 2021

Chapter 4 Koala Habitat Protection aims to encourage the conservation and management of areas of natural vegetation that provide habitat for koalas to support a permanent free-living population over their present range and reverse the current trend of koala population decline.

The subject land is located within the Parramatta LGA, which is not listed under Schedule 2, Chapter 4 of the Biodiversity and Conservation SEPP, and therefore no further consideration is required.

State Environmental Planning Policy (Resilience and Hazards) 2021

Chapter 2: Coastal Management

The *State Environmental Planning Policy (Resilience and Hazards) 2021* (Resilience and Hazards SEPP) aims to promote a co-ordinated approach to land use planning in the coastal zone of NSW in a manner consistent with the objects of the *Coastal Management Act 2016* (CM Act). The SEPP, including Chapter 2 Coastal Management, has replaced the now repealed:

- SEPP No. 14 Coastal Wetlands.
- SEPP No. 26 Littoral Rainforests.
- SEPP No. 71 Coastal Protection.
- SEPP Coastal Management

The CM Act and Resilience and Hazards SEPP provide maps for Coastal Wetlands and associated Proximity Area, Coastal Environment Area and Coastal Use Area. Development consent cannot be granted within these areas unless the Consent Authority is satisfied that the proposed development will not significantly impact on areas mapped as Coastal Wetlands, Coastal Wetlands Proximity Area, Coastal Environment Area, or Coastal Use Area.

The subject land is not located within a 'coastal zone' as defined by clause 6 of this policy, including Coastal Wetlands and Coastal Wetlands Proximity Area. Therefore, the CM Act and Resilience and Hazards SEPP do not apply to this project.

11.4 Other Environmental Planning Instruments

11.4.1 Parramatta Local Environmental Plan 2023

Land use controls

The subject land is zoned SP2 Infrastructure under the Parramatta LEP. The relevant objectives of the SP2 zoning are:

- To provide for infrastructure and related uses.

- To prevent development that is not compatible with or that may detract from the provision of infrastructure.

The proposed activities within the subject land are considered permitted with consent under the current zoning for the Parramatta LEP. Therefore, the proposed development is considered consistent with the relevant provisions of the LEP.

11.4.2 Parramatta Development Control Plan 2023

Development Control Plans (DCPs) do not apply to SSDs as stated under section 2.10 of the Planning SEPP. Therefore, further consideration of the Parramatta DCP is not required.

11.5 Local Land Services Act 2013 and Local Land Services Amendment Act 2016

The proposed development is located on land zoned as 'excluded lands' on the Native Vegetation Regulatory Map and is not subject to native vegetation land management requirements prescribed under the LLS Act.

11.6 Water Management Act 2000

The WM Act provides for the sustainable and integrated management of the state's water. The WM Act is supported by a series of interpretation guidelines which provide design considerations and overarching management measures for works on waterfront land. These considerations and management measures should be considered when planning and undertaking the proposed works. To which the following guidelines are relevant:

- *Guidelines for watercourse crossings on waterfront land* (DPE 2022a).
- *Guidelines for outlet structures on waterfront land* (DPE 2022b).
- *Guidelines for laying pipes and cables in watercourses on waterfront land* (DPE 2022c).
- *Guidelines for instream works on waterfront land* (DPE 2022d).

Under the WM Act an approval is required to undertake controlled activities on waterfront land, unless that activity is otherwise exempt under Section 91E of the WM Act, Section 4.41 of the EP&A Act, or Part 2 of the Water Management Regulation 2018. Waterfront land is defined within the Act as the bed of any river, lake or estuary and any land within 40 metres of the river banks, lake shore or estuary mean high water mark.

As no works are proposed on waterfront land, and the proposed development is considered SSD, meaning it is therefore exempt from the requirement to obtain a Controlled Activity Approval under Section 4.41 of the EP&A Act, the project requires no further assessment under the WM Act.

11.7 Fisheries Management Act 1994

The FM Act provides for the protection and conservation of aquatic species and their habitat throughout NSW. Impacts to threatened species, populations and communities, and critical habitats listed under the FM Act must be assessed through an Assessment of Significance process.

No predicted habitat for threatened aquatic species is mapped on the DPI spatial data portal within the subject land. No records of threatened aquatic species have been recorded within 10 kilometres of the

subject land on the BioNet Atlas of NSW, however, two species were predicted by the Protected Matters Search Tool (PMST).

As there are no mapped key fish habitat or waterways within the subject land, or records within 10 kilometres, the project is unlikely to result in impacts to fish passage. As such, no further consideration of the FM Act is required.

11.8 Biosecurity Act 2015

The Biosecurity Act provides for the identification, classification and control of priority weeds with the purpose of determining if a biosecurity risk is likely to occur. A biosecurity risk is defined as the risk of a biosecurity impact occurring, which for weeds includes the introduction, presence, spread or increase of a pest into or within NSW or any part of the State. A pest plant has the potential to; harm or reduce biodiversity or out-compete other organisms for resources, including food, water, nutrients, habitat and sunlight.

The General Biosecurity Duty as outlined in the Biosecurity Act states:

All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.

Three priority weeds for the Greater Sydney LLS Region have been recorded in the subject land and are listed in Table 24, along with their associated Duty.

Table 24 Priority weeds within the subject land

Scientific name	Common name	Relevant biosecurity duty
<i>Anredera cordifolia</i>	Madeira Vine	General Biosecurity Duty
<i>Lantana camara</i>	Lantana	General Biosecurity Duty
<i>Olea europaea subsp. cuspidata</i>	African Olive	General Biosecurity Duty Whole of region: Land managers should mitigate the risk of the plant being introduced to their land.

References

AusBats 2025. *Australian Bat Society's BatMap viewer, Australasian Bat Society*, <https://www.ausbats.org.au/batmap.html>.

Australian National Botanic Gardens & Australian National Herbarium 2007. *Australian Plant Name Index - APNI, Botanical Databases*, accessed 8 March 2024, <https://www.anbg.gov.au/apni/>.

Beam Planning 2026. 'Lottie Stewart Environmental Impact Statement',.

Bland L, Keith D, Miller R, Murray N, & Rodriguez J 2016. 'Scientific Foundations for an IUCN Red List of Ecosystems Categories and Criteria Version 1.0', *International Union for Conservation of Nature Gland, Switzerland*.: ix-94.

BOM 2019. *GDE Atlas Home: Water Information: Bureau of Meteorology, Bureau of Meteorology: Climate Data Online*, accessed 9 July 2019, <http://www.bom.gov.au/water/groundwater/gde/>.

CoA 2013. *Matters of National Environmental Significance Significant impact guidelines 1.1 - Environment Protection and Biodiversity Conservation Act 1999*, Commonwealth of Australia, Department of the Environment. Canberra, ACT, <https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance>.

Council of Australian Standards 2025. 'AS 4970-2025 Protection of Trees on Development Sites', Standards Australia. Sydney, NSW. <https://www.standards.org.au/standards-catalogue/standard-details?designation=as-4970-2025>.

Cropper S 1993. *Management of Endangered Plants*, CSIRO Publications Victoria, Melbourne, VIC.

Cth DCCEEW 2019. *Directory of Important Wetlands in Australia, Australian Commonwealth Department of Climate Change, Energy, the Environment and Water*, accessed 26 February 2024, <https://www.dcceew.gov.au/water/wetlands/australian-wetlands-database/directory-important-wetlands>.

DEC 2004. *Threatened Biodiversity Survey and Assessment Guidelines for Developments and Activities (Working Draft)*, New South Wales Department of Environment and Conservation, Hurstville, NSW.

DECC NSW 2002. *NSW ecosystems study: background and methodology. NSW (Mitchell) Landscapes version 2*, Department of Environment and Climate Change NSW. Author: Mitchell P for National Parks and Wildlife Service, Hurstville, NSW. <https://www.environment.nsw.gov.au/resources/conservation/EcosystemsMethodology.pdf>.

DECC NSW 2008. *Best practice guidelines for Blue Gum High Forest*, <https://nswdpe.intersearch.com.au/nswdpejspui/retrieve/40bacbcc-c3a7-44e6-8a72-14b049d8ffc2>.

DEWHA 2010. *Survey Guidelines for Australia's Threatened Bats: Guidelines for detecting bats listed as threatened under Environment Protection and Biodiversity Conservation Act 1999*, Department of the Environment Water Heritage and the Arts.

DPE 2022a. 'Controlled activities - Guidelines for watercourse crossings on waterfront land', NSW Department of Planning and Environment.

https://water.dpie.nsw.gov.au/_data/assets/pdf_file/0010/386209/licensing_approvals_controlled_activities_watercourse_crossings.pdf.

DPE 2022b. 'Controlled Activities - Guidelines for Outlet Structures on Waterfront Land', NSW Department of Planning and Environment.

https://water.dpie.nsw.gov.au/_data/assets/pdf_file/0007/386206/licensing_approvals_controlled_activities_outlet_structures.pdf.

DPE 2022c. 'Controlled Activities - Guidelines for Laying Pipes and Cables in Watercourses on Waterfront Land', NSW Department of Planning and Environment, Parramatta, NSW.

https://water.dpie.nsw.gov.au/_data/assets/pdf_file/0006/386205/licensing_approvals_controlled_activities_laying_pipes_cables.pdf.

DPE 2022d. 'Controlled Activities - Guidelines for Instream Works on Waterfront Land', Department of Planning and Environment, Parramatta, NSW.

https://water.dpie.nsw.gov.au/_data/assets/pdf_file/0005/386204/licensing_approvals_controlled_activities_instream_works.pdf.

DPI 2012. *Risk assessment guidelines for groundwater dependent ecosystems*, New South Wales Government Department of Primary Industries.

DPI 2025. 'Key Fish Habitat', <https://www.dpi.nsw.gov.au/fishing/habitat/publications/pubs/key-fish-habitat-maps>.

DPIE 2014. 'Environmental Planning Instrument - Groundwater Vulnerability. ePlanning Spatial Viewer.', Department of Planning, Industry & Environment, NSW.

<https://www.planningportal.nsw.gov.au/spatialviewer/>.

DPIE 2019. *Guidance to assist a decision-maker to determine a serious and irreversible impact*.

DPIE 2020a. *Biodiversity Assessment Method (BAM)*, NSW Department of Planning, Industry and the Environment, <https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020>.

DPIE 2020b. 'Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method', accessed 11 June 2020, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/surveying-threatened-plants-and-habitats-nsw-survey-guide-biodiversity-assessment-method-200146.pdf>.

DPIE 2021. *'Species credit' threatened bats and their habitats - NSW survey guide for the Biodiversity Assessment Method*, Department of Planning, Industry and Environment, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/speciescreditthreatenedbatsandtheirhabitatsnswguideforbiodiversityassessmentmethod200573.pdf>.

DSEWPac 2009. *Census of Australian Vertebrates*, Australian Government Department of Sustainability Environment, Water, Population and Communities, Canberra, ACT.

Duffy AM, Lumsden LF, Caddle CR, Chick RR, & Newell GR 2000. 'The efficacy of Anabat ultrasonic detectors and harp traps for surveying microchiropterans in south-eastern Australia', *Acta Chiropterologica*, 2, 2: 127-44.

Harden GJ 1993. *Flora of New South Wales*, NSW University Press, Kensington, NSW.

Harden GJ 2000. *Flora of New South Wales*, Revised Edition, NSW University Press, Kensington, NSW.

Harden GJ 2002. *Flora of New South Wales*, NSW University Press, Kensington, NSW.

Integrated Design group 2026. *Lottie Stewart Architectural Plans*,.

Lewis 2001. *Regeneration of remnant Blue Gum High Forest vegetation following cessation of mowing*, <https://www.botanicgardens.org.au/sites/default/files/2023-06/Volume-7%282%29-2001-Cun7Lew173-182.pdf>.

NSW DCCEEW 2024. *Register of Declared Areas of Outstanding Biodiversity Value, Areas of outstanding Biodiversity*, <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/areas-of-outstanding-biodiversity-value/area-of-outstanding-biodiversity-value-register>.

NSW DCCEEW 2025. 'NSW State Vegetation Type Map (SVTM C2.0M2.2)', <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map>.

NSW DCCEEW 2026a. *Biodiversity Values Map NSW, Biodiversity Values Map and Threshold*, <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>.

NSW DCCEEW 2026b. *BAM - Important Areas mapping portal, NSW Government*, accessed 24 July 2024, https://webmap.environment.nsw.gov.au/Html5Viewer291/index.html?viewer=BAM_ImportantAreas.

NSW DCCEEW 2026c. *NSW BioNet Vegetation Classification database, BioNet, New South Wales Department of Climate Change, Energy, the Environment and Water*, accessed 18 March 2025, <https://vegetation.bionet.nsw.gov.au/>.

NSW DCCEEW 2026d. *NSW BioNet Threatened Biodiversity Profile Data Collection, NSW Department of Climate Change, Energy, the Environment and Water*, <https://threatenedspecies.bionet.nsw.gov.au/>.

NSW NPWS 2002. *Interpretation Guidelines for the Native Vegetation Maps of the Cumberland Plain, Western Sydney*, NSW National Parks and Wildlife Service, Hurstville, accessed 8 January 2020, <https://www.environment.nsw.gov.au/resources/nature/cumbPlainMappingInterpguidelines.pdf>.

NSW Scientific Committee 2014. *Hygrocybeae community of Lane Cove Bushland Park in the Sydney Basin Bioregion - critically endangered ecological community*,.

NSW Spatial Services 2025. *Historical Imagery, NSW Government*, <https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb>.

NSW Threatened Species Scientific Committee 2011. 'Blue Gum High Forest in the Sydney Basin Bioregion - Determination to make a minor amendment to Part 2 of Schedule 1A of the Threatened Species Conservation Act', <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2011-2012/blue-gum-high-forest-in-the-sydney-basin-bioregion-minor-amendment-determination>.

NSW TSSC 2018. 'Guidelines for interpreting listing criteria for species, populations and ecological communities under the NSW Biodiversity Conservation Act 2016', NSW Threatened Species Scientific Committee. <https://www.environment.nsw.gov.au/resources/threatenedspecies/1AGuidelines20180302.pdf>.

OEH 2015. 'Biodiversity Investment Opportunities Map: Mapping Priority Investment Areas for the Cumberland Subregion', New South Wales Government Office of Environment and Heritage.

OEH 2016. 'The Native Vegetation of the Sydney Metropolitan Area - Version 3.1 VIS_ID 4489', <https://datasets.seed.nsw.gov.au/dataset/the-native-vegetation-of-the-sydney-metropolitan-area-oeh-2016-vis-id-4489>.

Threatened Species Scientific Committee 2005. 'Commonwealth Conservation Advice - Blue Gum High Forest of the Sydney Basin Bioregion', <http://www.environment.gov.au/biodiversity/threatened/conservation-advice/blue-gum-high-forest-sydney-region>.

Appendices

Appendix 1 Survey methods

Appendix 1.1 Nomenclature

The flora taxonomy (classification) used in this report follows the most recent Flora of NSW (Harden 2002, Harden 1993, Harden 2000, Harden 2002). All doubtful species names were verified with the online Australian Plant Name Index (Australian National Botanic Gardens & Australian National Herbarium 2007). Flora species, including threatened species and introduced flora species, are referred to by both their common and then scientific names when first mentioned. Subsequent references to flora species cite the common names only, unless there is no common name, for which scientific name will be used. Common names, where available, have been included in threatened species tables and the complete flora list in Appendix 3.

Names of vertebrates follow the Census of Australian Vertebrates (CAVs) maintained by the Cth DCCEEW (DSEWPaC 2009). In the body of this report vertebrates are referred to by both their common and scientific names when first mentioned. Subsequent references to these species cite the common name only.

Appendix 1.2 Permits and licences

The biodiversity assessment was conducted under the terms of Biosis' Scientific Licence issued by NSW DCCEEW under the BC Act (SL100758, expiry date 30 June 2026). Wildlife surveys were conducted under the Secretary's Animal Care & Ethics Committee Approval (TRIM 17.892, expiry date 31 January 2028). The BAM Assessment and quality review of the BDAR was carried out by Accredited Assessor Jake Schwebel (BAAS25013).

Appendix 1.3 Limitations

Field surveys were undertaken in accordance with the BAM (DPIE 2020a). Ecological surveys provide a sampling of flora and fauna at a given time and season. Factors influencing detectability of species during survey include species dormancy, seasonal conditions, ephemeral status of waterbodies, and migration and breeding behaviours of some fauna. In many cases, these factors do not present a significant limitation to assessing the overall biodiversity values of a site.

The field survey was conducted in Spring (September) under good weather conditions. In addition, threatened species surveys for each relevant species was surveyed during the periods specified in BioNet and the TBDC.

Surveys undertaken, combined with habitat assessments and desktop analysis are considered sufficient to reach the conclusions herein regarding this and all other species' likelihood of occurrence within the subject land.

Database searches, and associated conclusions on the likelihood of species to occur within the assessment area, are reliant upon external data sources and information managed by third parties.

Appendix 2 BAM Candidate species assessment

Table A 1 Threatened flora species assessment

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Acacia bynoeana</i> Bynoe's Wattle	VU	EN	Species	Semi prostrate shrub growing in central eastern NSW spanning from the Hunter District, west to the Blue Mountains and south to the Southern Highlands. Grows in a variety of communities including; Southern Tableland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands and Sydney Coastal Heaths. Prefers open, slightly disturbed sites on sandy soils.	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Acacia pubescens</i> Downy Wattle	VU	VU	Species	A spreading shrub primarily confined to the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers at Barden Ridge, Oakdale and Mountain Lagoon. Grows in Cooks/River Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and Cumberland Plain Woodland, usually within roadside and bushland remnants. Grows on shale, sandstone,	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (10) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				alluvium and gravelly soils, often including ironstone.					
<i>Allocasuarina glareicola</i>	EN	EN	Species	Small, depauperate shrub restricted to a few populations in the Richmond district with an outlier population at Voyager Point in Liverpool. Grows in Castlereagh Woodlands, Cumberland Dry Sclerophyll Forest, Sydney Hinterland Dry Sclerophyll Forest, Sydney Sand Flats Dry Sclerophyll Forests. Grows in lateritic soil.	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Asterolasia elegans</i>	EN	EN	Species	Tall, thin shrub found growing north of Sydney in the Baulkham Hills, Hawkesbury and Hornsby districts. Could also occur in the Goulburn area. Grows in wet sclerophyll forest on moist hillsides in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and North Coast Wet Sclerophyll Forests. Grows on Hawkesbury sandstone.	Low	No	Sep-Oct	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Caladenia tessellata</i> Thick Lip Spider Orchid	VU	VU	Species	Small orchid recorded from the Wyong, Ulladulla and Braidwood regions with the Kiama and Queanbeyan populations believed to be extinct. Found in a wide variety of communities including Central Gorge Dry Sclerophyll	Low	No	Sep-Oct	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Forests, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Woodlands and Subalpine Woodlands. Grows on clay loam or sandy soils.					detected incidentally within the subject land.
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	VU	VU	Species	Orchid with a distribution spanning from Gibraltar Range National Park southwards to the coastal area near Orbost in Victoria. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Coastal Heath Swamps, New England Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows in sandy soils.	Low	No	Nov-Jan	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Darwinia biflora</i>	VU	VU	Species	Erect shrub distributed in the Kuring-gai, Hornsby, Baulkham Hills and Ryde local government areas. Grows on edges of weathered shale capped ridges in the vicinity of an intergrade with Hawkesbury sandstone in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows in shale-sandstone transitional soils.	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Epacris sparsa</i> Sparse Heath	EN	VU	Species	Small, erect shrub restricted to the Grose River within the Hawkesbury and Blue Mountains Local Government Areas. Grows on	Low	No	May-June	Low	Not a BAM candidate species. No records exist within 5 km of the

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				south-west facing slopes at the base of cliffs, on rock faces and ledges or amongst rocks adjacent to the Grose River in Eastern Riverine Forests. Associated with <i>Tristanopsis laurina</i> , <i>Leptospermum trinervium</i> , <i>Allocasuarina littoralis</i> and <i>Grevillea sericea</i> in dry scrub vegetation and with <i>Callicoma serratifolia</i> , <i>Backhousia myrtifolia</i> , <i>Austromyrtus tenuifolia</i> , <i>Dracophyllum secundum</i> and <i>Todea barbara</i> in wet, sheltered sites. Grows in small pockets of damp, clay soils.					subject land. This species was not detected incidentally within the subject land.
<i>Eucalyptus camfieldii</i> Heart-leaved Stringybark	VU	VU	Species	Mallee tree restricted to a narrow band stretching from Raymond Terrace to the north and Waterfall in the south. Grows in scattered, localised distributions including sites at Norah Head, Terrey Hills, North Head, Menai, Mt Colah, Peats Ridge and Elvina Bay Trail. Grows in scattered stands near the boundaries of tall coastal heath and low open woodland in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Eastern Riverine Forests, Sydney Coastal Heaths and Wallum Sand	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Heaths. Grows in sandy soils on Hawkesbury sandstone.					
<i>Gaudium deanei</i>	VU	VU	Species	Occurs in woodlands on lower hill slopes or near creeks. Generally on sandy alluvial soil or sand over sandstone. Occurs in Riparian Scrub - e.g. <i>Tristaniaopsis laurina</i> , <i>Baechea myrtifolia</i> ; Woodland - e.g. <i>Eucalyptus haemstoma</i> ; and Open Forest - e.g. <i>Angophora costata</i> , <i>Leptospermum trinervium</i> , <i>Banksia ericifolia</i> .	Low	No	Oct-Nov	Low	Not a BAM candidate species. A small number of records (3) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Genoplesium baueri</i> Bauer's Midge Orchid	EN	EN	Species	Terrestrial orchid with 13 populations totalling 200 plants distributed between Ulladulla and Port Stephens. Grows on moss gardens in a variety of communities including Sydney Coastal Dry sclerophyll Forests, Sydney Coastal Heaths, Sydney Montane Heaths, Southern Lowland Wet Sclerophyll Forests and Sydney Hinterland Dry Sclerophyll Forests. Grows on sandstone substrates	Low	No	Feb-Mar	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Grevillea beadleana</i> Beadle's Grevillea	EN	EN	Species	Spreading shrub restricted to four separate areas in north-east NSW; The Torrington area west of Tenterfield, Oxley Wild Rivers National Park, Guy Fawkes River National Park and Shannon Creek	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (1) exist within 5 km of the subject land. This

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				located south-west of Grafton. Grows on sheer scarps and slopes in a variety of communities including New England Dry Sclerophyll Forests, Northern Tableland Dry Sclerophyll Forests, Northern Montane Heaths and Northern Gorge Dry Sclerophyll Forests. Grows on granite substrates at high elevations and sandstone at low elevations.					species was not detected incidentally within the subject land.
<i>Haloragodendron lucasii</i>	EN	EN	Species	Erect shrub restricted to a very narrow distribution on the north shore of Sydney. Grows on sheltered aspects and gentle slopes below cliff lines adjacent to creeks in Sydney Coastal Dry Sclerophyll Forests, Sydney Montane Dry Sclerophyll Forests, Eastern Riverine Forests, Sydney Coastal Heaths and Sydney Montane Heaths. Grows on sandstone substrates in moist, loamy soil containing high levels of phosphorous.	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Hibbertia spanantha</i> Julian's hibbertia	CE	CE	Species	Decumbent shrublet restricted to three populations within northern Sydney. Grows in Dry Sclerophyll Forests on light clay in shale sandstone soil transition zones.	Low	No	Oct-Nov	Low	Not a BAM candidate species. A small number of records (1) exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
<i>Isotoma fluviatilis subs p. fluviatilis</i> Swamp Isotome	EX	-	Species	Prostrate herb restricted to two adjacent sites growing on a single private property at Erskine Park in the Penrith Local Government Area. Grows in damp places on the Cumberland Plain in Coastal Freshwater Lagoons of the Sydney Basin Bioregion, Cumberland Plain Woodlands, Swamp Oak Floodplain Swamp Forests, and Eastern Riverine Forests.	Low	No	Sep-Nov	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Kunzea rupestris</i>	VU	VU	Species	Clonal shrub restricted to 20 populations growing throughout the Maroota - Sackville - Glenorie area with one outlier at Ku-ring-gai Chase National Park. Grows in shallow depressions on rock platforms and outcrops in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates.	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Lasiopetalum joyceae</i>	VU	VU	Species	Erect, medium sized shrub restricted to 34 sites within the Hornsby Plateau from Berrilee to Duffys Forest. Grows on lateritic or shale influenced ridgetops in	Low	No	Sep-Nov	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates.					species was not detected incidentally within the subject land.
<i>Leucopogon exolasius</i> Woronora Beard-heath	VU	VU	Species	Erect shrub confined to the upper Georges River area and Heathcote National Park. Grows in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Sydney Montane Dry Sclerophyll Forests, Eastern Riverine Forests, and Sydney Coastal Heaths. Grows on sandstone substrates.	Low	No	Aug-Sep	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Melaleuca biconvexa</i> Biconvex Paperbark	VU	VU	Species	Large shrub or small tree confined to NSW with scattered, widely dispersed populations around the Jervis Bay area in the south and the Gosford-Wyong area to the north. Grows in damp places, often near streams or low lying areas on low slopes or sheltered aspects in a variety of communities including Hunter-Macleay Dry Sclerophyll Forests, Coastal Swamp Forests, Coastal Floodplain Wetlands, Coastal Freshwater Lagoon and North Coast Wet Sclerophyll Forests. Grows in alluvial soils.	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Melaleuca deanei</i> Deane's Paperbark	VU	VU	Species	Medium sized shrub found growing in two distinct populations in the Ku-ring-gai/Berowra and Holsworthy/Wedderburn areas along with a few outliers at Springwood and in the Wollemi National Park, Yalwal and the Central Coast regions. Grows in ridgetop woodland in a variety of communities including Sydney Coastal Dry Sclerophyll Forests, South East Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths. Grows on sandstone substrates in alluvial soils.	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (4) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Micromyrtus blakelyi</i>	VU	VU	Species	Low spreading shrub restricted to the Hawkesbury River with a distribution which extends from the north of Maroota down to Cowan in the south. Grows in cracks and depressions of sandstone rock platforms in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates in shallow, sandy soils.	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Persicaria elatior</i> Tall Knotweed	VU	VU	Species	Erect herb found growing in south-eastern NSW at Moutn Dromedary, Moruya State Forest near Turlinjah, Upper Avon River catchment north of Robertson, Bermagui and Picton Lakes. Also grows in northern NSW around Raymond Terrace near Newcastle and Cherry Tree and Gibberagee State Forests in the Grafton area. Grows in damp places usually on the margins of waterbodies and in swamp forests in a variety of communities including Coastal Floodplain Wetlands, Coastal Swamp Forests, Eastern Riverine Forests, Coastal Freshwater Lagoons and Coastal Heath Swamps.	Low	No	Dec-May	Low	Not a BAM candidate species. A small number of records (1) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Persoonia hirsuta</i> Hairy Geebung	EN	EN	Species	Spreading, hairy shrub with a scattered distribution throughout Sydney from Singleton to the north, the east coast of Bargo to the south and the Blue Mountains to the west. Grows at elevations between 350 - 600 metres in a variety of communities including Southern Tableland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Western Slopes Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Heaths and Southern Escarpment Wet Sclerophyll Forests. Grows in sandy soils on sandstone substrates.					
<i>Pimelea curviflora</i> var. <i>curviflora</i>	VU	VU	Species	Small to medium sized shrub restricted to the coastal areas of Sydney between northern Sydney and Maroota with an outlying population at Croom Reserve near Albion Park in the Illawarra region. Grows on ridgetops and upper slopes amongst grasses and sedges in a variety of communities including Cumberland Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Northern Hinterland Wet Sclerophyll Forests. Can be inconspicuous amongst grasses and sedges although easier to find in October to May when flowering. Grows on sandstone substrates in shale/lateritic soils and shale/sandstone transition soils.	Low	No	Oct-Mar	Low	Not a BAM candidate species. A small number of records (3) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Pimelea spicata</i> Spiked Rice-flower	EN	EN	Species	Small erect or spreading shrub with populations occurring in two disjunct areas, one occurring on the Cumberland Plain from Marayong and Prospect Reservoir south to	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Narellan and Douglas Park, and the other occurring in the Illawarra from Landsdowne to Shellharbour and north Kiama. Grows in Maritime Grasslands and Coastal Valley Grassy Woodlands including Cumberland Plain Woodlands and Moist Shale Woodlands within the Cumberland Basin and in Coast Banksia Open Woodland Coastal Grasslands in the Illawarra region. Grows on well structured clay soils.					species was not detected incidentally within the subject land.
<i>Pomaderris brunnea</i> Brown Pomaderris	VU	EN	Species	Medium sized shrub with a distribution limited to the area around the Colo, Nepean and Hawkesbury Rivers including the Bargo area and near Camden. Grows on floodplains and creeklines in a variety of communities including Sydney Hinterland Dry Sclerophyll Forests, Central Gorge Dry Sclerophyll Forests, Coastal Floodplain Wetlands, Coastal Valley Grasslands and North Coast Wet Sclerophyll Forests. Grows in clay and alluvial soils.	Low	No	Aug-Oct	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Prostanthera marifolia</i>	CE	CE	Species	Small erect straggly shrub restricted to a single population fragmented	Low	No	Year-round	Low	Not a BAM candidate species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Seaforth Mintbush				by urbanisation into three sites located in the northern Sydney suburb of Saeforth. Found growing on ridge tops in association with Silvertop-ash Eucalyptus sieberi and Red Bloodwood Corymbia gummifera within or in close proximity to Duffys Forest and in Sydney Coastal Dry Sclerophyll Forests. Grows in deeply weathered clay associated with ironstone nodules and scattered shale lenses.					A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Pterostylis saxicola</i> Sydney Plains Greenhood	EN	EN	Species	Deciduous terrestrial orchid restricted to a few small populations located in Western Sydney between Freemans Reach in the north and Picton in the south including Georges River National Park. Found growing near streams in depression on sandstone rock shelves above cliff lines faces, moist, sheltered ridges and creek banks on mossy rocks in Temperate Montane Grasslands, Northern Warm Temperate Rainforests, Southern Warm Temperate Rainforests and Southern Tableland Wet Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.	Low	No	October	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Rhizanthella slateri</i> Eastern Australian Underground Orchid	EN	VU	Species	Terrestrial orchid with a distribution spanning from south-east NSW to south-east Queensland. Recorded in ten populations in NSW including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wisemans Ferry Area, Agnes Banks and near Nowra. A cryptic species which grows beneath the soil surface with flowers being the only part of the plant to occur aboveground in Sydney Sand Flats Dry Sclerophyll Forests, Eastern Riverine Forests, Northern Warm Temperate Rainforests, North Coast Wet Sclerophyll Forests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows in deep loam soils.	Low	Yes	Sep-Nov	Low	A BAM candidate species which has an association with PCT 3136. No records occur within 5 km of the subject land. This species was not detected during targeted flora transect surveys.
<i>Rhodamnia rubescens</i> Scrub Turpentine	CE	CE	Species	Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils. It is mainly coastal and occurs north from Batemans Bay, to areas inland of Bundaberg in Queensland and occasionally extends inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. This species is characterised as	Low	Yes	Year-round	Low	A BAM candidate species which has an association with PCT 3136. A small number of records (8) occur within 5 km of the subject land. This species was not detected during targeted

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				highly to extremely susceptible to infection by Myrtle Rust and affects all plant parts.					flora transect surveys.
<i>Rhodomirtus psidioides</i> Native Guava	CE	CE	Species	Shrub or small tree which typically grows to 12 metres high. Populations are typically restricted to coastal regions of low elevation between Sydney and Maryborough, Queensland. Often found in littoral, warm temperate and subtropical rainforests and wet sclerophyll forests near creeks and drainage lines. This species is known to be particularly susceptible to myrtle rust.	Low	No	Year-round	Low	Not a BAM candidate species. No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Syzygium paniculatum</i> Magenta Lilly Pilly	VU	VU	Species	Small to medium sized rainforest tree restricted to a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest. Found growing on stabilized dunes near the sea in South Coast Sands Dry Sclerophyll Forests, Coastal Swamp Forests, Coastal Headland Heaths, Littoral Rainforests, Northern Hinterland Wet Sclerophyll Forests and Southern Lowland Wet Sclerophyll Forests. Grows on grey sandy, gravelly, silty or clay soils over sandstone substrates.	Recorded - Attributed to landscape plantings only	No	Apr-June	Low	Not a BAM candidate species. A small number of records (8) occur within 5 km of the subject land. Although this species was observed within the subject land, it occurs as a planted specimen within a mixed landscape comprising exotic species in a highly modified habitat.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									Historical imagery shown in section 2.1.1 of this report indicates that remnant vegetation within the subject land has been previously cleared and therefore, no vegetation within the subject land is considered remnant. Magenta Lilly Pilly is restricted to a narrow coastal strip along eastern New South Wales, typically occurring in littoral rainforest or riverside gallery rainforest communities. These vegetation communities are not present within the subject land.
<i>Thesium australe</i>	VU	VU	Species	Small, straggling herb with a distribution comprising of small	Low	No	Nov-Feb	Low	Not a BAM candidate species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Austral Toadflax				populations scattered along the coast of eastern NSW including the Northern and Southern Tablelands, Tasmania, Queensland and eastern Asia. A root parasite found growing on damp sites in grassland, grassy woodlands and coastal headlands often in association with Kangaroo Grass Themeda triandra in a variety of communities including New England Dry Sclerophyll Forests, Western Slopes Grasslands, Northern Tableland Wet Sclerophyll Forests, Brigalow Clay Plain Woodlands, Subalpine Woodlands and Maritime Grasslands.					No records exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Triplarina imbricata</i> Creek Triplarina	EN	EN	Species	Tall upright shrub restricted to a few locations in the ranges south-west of Glenreagh and near Tabulam in north-east NSW. Found growing in damp places and along watercourses often in association with Water Gum Tristaniopsis laurina or Baeckea omissa along the coast and adjacent ranges in North Coast Dry Sclerophyll Forests, Northern Tableland Dry Sclerophyll Forests, Eastern Riverine Forests, Montane Bogs and Fens, Montane Lakes and Northern Montane Heaths.	Low	No	Year-round	Low	Not a BAM candidate species. A small number of records (4) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Table A 2 Threatened fauna species assessment

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Birds									
<i>Anthochaera phrygia</i> Regent Honeyeater	CE	CE	Dual	Regent Honeyeaters are semi-nomadic, occurring in temperate eucalypt woodlands and open forests. Most records are from box-ironbark eucalypt forest associations and wet lowland coastal forests. Nectar and fruit from mistletoes are also eaten. This species usually nest in tall mature eucalypts and sheoaks.	Low	No	No survey required	Low	The species has been excluded as a candidate as the subject land does not occur within areas mapped as 'Important Habitat' for the species. This species was not detected incidentally within the subject land.
<i>Arenaria interpres</i> Ruddy Turnstone	VU	VU	N/A	Inhabits tidal reefs, sandy beaches mudflats and exposed or shallow seaweed beds.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (10) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Artamus cyanopterus</i> Dusky Woodswallow	-	VU	Ecosystem	Primarily inhabits dry, open eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of eucalypt saplings, acacias and other shrubs, and ground-cover of grasses or sedges and fallen woody debris. It has also been recorded in shrublands, heathlands and very occasionally in moist forest or rainforest. Also found in farmland, usually at the edges of forest or woodland.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (12) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Botaurus poiciloptilus</i> Australasian Bittern	EN	EN	Ecosystem	The Australasian Bittern is distributed across south-eastern Australia. Often found in terrestrial and estuarine wetlands, generally where there is permanent water with tall, dense vegetation including Typha spp. and Eleocharis spp.. Typically this bird forages at night on frogs, fish and invertebrates, and remains inconspicuous during the day. The breeding season extends from October to January with nests being built amongst dense vegetation on a flattened platform of reeds.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (23) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Calidris acuminata</i> Sharp-tailed Sandpiper	VU	VU	N/A	This species is a migratory visitor to Australia, and spends its breeding season in Siberia. In the non-breeding season, the Sharp-tailed Sandpiper is known to occur mostly in the south-east of Australia, but has been found on coastlines all throughout the country.	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (1336) exist within 5 km of the subject land, however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.
<i>Calidris canutus</i> Red Knot	EN	VU	Dual	Typically located within intertidal mudflats, sandflats and sandy beaches of sheltered coasts. Occasionally found on sandy open beaches or shallow pools, or in saline wetlands close to the coast.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (17) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Calidris ferruginea</i> Curlew Sandpiper	CE	CE	Dual	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (437) exist within 5 km of the subject land, however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.
<i>Calidris tenuirostris</i> Great Knot	VU	VU	Dual	Mainly found on intertidal mudflats, sandflats and sandy beaches. Rarely found on inland lakes and swamps, instead preferring sheltered coastal habitats. In hot conditions, the Great Knot often roosts on damp substrates to keep cool.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	EN	EN	Dual	In summer, occupies tall montane forests and woodlands, particularly in heavily timbered and mature wet sclerophyll forests. Also occur in subalpine Snow Gum woodland and occasionally in temperate or regenerating forest. In winter, occurs at lower altitudes in drier, more open eucalypt forests and woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (5) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Calyptrorhynchus lathamii</i> South-Eastern Glossy Black-Cockatoo	VU	VU	Dual	Inhabits forest with low nutrients, characteristically with key Allocasuarina species. Tends to prefer drier forest types. Often confined to remnant patches in hills and gullies. Breed in hollows stumps or limbs, either living or dead.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Charadrius leschenaultii</i> Greater Sand-plover	VU	VU	Dual	Entirely coastal in NSW, foraging on intertidal sand and mudflats in estuaries and roosting during high tide on sandy beaches or rocky shores. Individuals have been recorded on inshore reefs, rock platforms, small rocky islands and sand cays on coral reefs, within Australia. Occasional sightings have also occurred on near-coast saltlakes, brackish swamps, shallow freshwater wetlands and grassed paddocks.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Charadrius mongolus</i> Lesser Sand-plover	EN	VU	Dual	In Australia, the species is known to favour coastal environs including beaches, mudflats and mangroves. Within NSW, individuals have been observed on intertidal sand and mudflats in estuaries or roosting on sandy beaches or rocky shores at high tide.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Chthonicola sagittata</i> Speckled Warbler	-	VU	Ecosystem	Chthonicola sagittata occurs on the hills and tablelands of the Great Dividing Range. Found in eucalypt and cypress woodlands with a grassy understorey, often on ridges or gullies. The species nests on the ground in grass tussocks,	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				dense litter and fallen branches. They forage on the ground for arthropods and seeds.					detected incidentally within the subject land.
<i>Climacteris picumnus victoriae</i> Brown Treecreeper (eastern subspecies)	VU	VU	Ecosystem	Lives in eucalypt woodlands, especially areas of relatively flat open woodland typically lacking a dense shrub layer, with short grass or bare ground and with fallen logs or dead trees present.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Daphoenositta chrysoptera</i> Varied Sittella	-	VU	Ecosystem	The Varied Sittella is a sedentary species which inhabits a wide variety of dry eucalypt forests and woodlands, usually with either shrubby understorey or grassy ground cover or both, in all climatic zones of Australia. Usually inhabit areas with rough-barked trees, such as stringybarks or ironbarks, but also in mallee and acacia woodlands, paperbarks or mature Eucalypts. The Varied Sittella feeds on arthropods gleaned from bark, small branches and twigs. It builds a cup-shaped nest of plant fibres and cobweb in an upright tree fork high in the living tree canopy, and often re-uses the same fork or tree in successive years.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Dasyornis brachypterus</i> Eastern Bristlebird	EN	EN	Species	Found in coastal woodlands, dense scrub and heathlands, particularly where it borders taller woodlands.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
<i>Diomedea antipodensis</i> Antipodean Albatross	VU	VU	N/A	A marine pelagic species endemic to New Zealand, which is known to forage off the coast of New South Wales. This species is known to feed on cephalopods, fish and crustaceans.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Diomedea exulans</i> Wandering Albatross	VU	EN	Marine	A marine, pelagic and aerial species. Versatile feeders in pelagic and shelf waters. Breed on subantarctic and antarctic islands.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Diomedea gibsoni</i> Gibson's Albatross	VU	VU	Marine	A marine pelagic species which breeds on the Auckland islands, New Zealand.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Diomedea sanfordi</i> Northern Royal Albatross	EN	-	Marine	The Northern Royal Albatross ranges widely over the Southern Ocean, with individuals seen in Australian waters off south-eastern Australia. The Northern Royal Albatross feeds regularly in Tasmanian and South Australian waters, and less frequently in NSW waters.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
<i>Ephippiorhynchus asiaticus</i> Black-necked Stork	-	EN	Ecosystem	Found in swamps, mangroves and mudflats. Can also occur in dry floodplains and irrigated lands and occasionally forages in open grassy woodland. Nests in live or dead trees usually near water.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Erythroriorchis radiatus</i> Red Goshawk	EN	EN	Species	Occur in forest and woodland habitat near permanent water. In NSW prefer Melaleuca swamp forest and open eucalypt woodland. Require greater than 20 m tall trees for nesting.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Gallinago hardwickii</i> Latham's Snipe	VU	VU	N/A	Typically found on wet soft ground or shallow water with good cover of tussocks. Often found in wet paddocks, seepage areas below dams.	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (1868) exist within 5 km of the subject land, however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.
<i>Glossopsitta pusilla</i>	-	VU	Ecosystem	Distributed in forests and woodlands from the coast to the western slopes of the Great Dividing	Low	No	No survey required	Low	Not a BAM candidate species. A moderate

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Little Lorikeet				Range in NSW, extending westwards to the vicinity of Albury, Parkes, Dubbo and Narrabri. Mostly occur in dry, open eucalypt forests and woodlands. They feed primarily on nectar and pollen in the tree canopy. Nest hollows are located at heights of between 2 m and 15 m, mostly in living, smooth-barked eucalypts. Most breeding records come from the western slopes.					number of records (14) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Grantiella picta</i> Painted Honeyeater	VU	VU	Ecosystem	Found mainly in dry open woodlands and forests, where it is strongly associated with mistletoe. Often found on plains with scattered eucalypts and remnant trees on farmlands.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	-	VU	Dual	A migratory species that is generally sedentary in Australia, although immature individuals and some adults are dispersive. Found in terrestrial and coastal wetlands; favouring deep freshwater swamps, lakes and reservoirs; shallow coastal lagoons and saltmarshes. It hunts over open terrestrial habitats. Feeds on birds, reptiles, fish, mammals, crustaceans and carrion. Roosts and makes nest in trees.	Low	No	No survey required	Low	Not a BAM candidate species. A large number of records (509) exist within 5 km of the subject land, however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.
<i>Hirundapus caudacutus</i> White-throated Needletail	VU	VU	Ecosystem	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges. This species roosts in trees in forests and woodlands and feeds on insects. The White-throated	Low	No	No survey required	Low	Not a BAM candidate species. A moderate number of records (77) exist within 5 km of the subject land. This

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Needletail breeds in forests and sparse hills in Asia.					species was not detected incidentally within the subject land.
<i>Ixobrychus flavicollis</i> Black Bittern	-	VU	Ecosystem	The Black Bittern is found along the coastal plains within NSW, although individuals have rarely being recorded south of Sydney or inland. It inhabits terrestrial and estuarine wetlands such as flooded grasslands, forests, woodlands, rainforests and mangroves with permanent water and dense waterside vegetation. The Black Bittern typically roosts on the ground or in trees during the day and forages at night on frogs, reptiles, fish and invertebrates. The breeding season extends from December to March. Nests are constructed of reeds and sticks in branches overhanging the water.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Lathamus discolor</i> Swift Parrot	CE	EN	Dual	The Swift Parrot occurs in woodlands and forests of NSW from May to August, where it feeds on eucalypt nectar, pollen and associated insects. The Swift Parrot is dependent on flowering resources across a wide range of habitats in its wintering grounds in NSW. Favoured feed trees include winter flowering species such as Swamp Mahogany <i>Eucalyptus robusta</i> , Spotted Gum <i>Corymbia maculata</i> , Red Bloodwood <i>C. gummifera</i> , Mugga Ironbark <i>E. sideroxylon</i> , and White Box <i>E. albens</i> . Commonly used lerp infested trees include Grey Box <i>E. microcarpa</i> , Grey Box <i>E. moluccana</i> and Blackbutt <i>E. pilularis</i> . This species is migratory, breeding in Tasmania and also	Low	No	No survey required	Low	The species has been excluded as a candidate as the subject land does not occur within areas mapped as 'Important Habitat' for the species. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				nomadic, moving about in response to changing food availability.					
<i>Limosa lapponica baueri</i> Bar-tailed Godwit	VU	EN	Dual	The Bar-tailed Godwit (northern Siberian) occurs mainly in coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. It has also been recorded in coastal sewage farms and saltworks, saltlakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats.	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (744) exist within 5 km of the subject land, however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.
<i>Limosa limosa</i> Black-tailed Godwit	EN	EN	Dual	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 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. The species has been recorded within the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (24) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Lophoictinia isura</i>	-	VU	Dual	Typically inhabits coastal forested and wooded lands of tropical and temperate Australia. In NSW	Low	No	No survey required	Low	Not a BAM candidate species. No records of

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Square-tailed Kite				it is often associated with ridge and gully forests dominated by Eucalyptus longifolia, Corymbia maculata, E. elata, or E. smithii. Individuals appear to occupy large hunting ranges of more than 100 km ² . They require large living trees for breeding, particularly near water with surrounding woodland /forest close by for foraging habitat. Nest sites are generally located along or near watercourses, in a tree fork or on large horizontal limbs.					the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Macronectes giganteus</i> Southern Giant Petrel	EN	EN	Marine	The Southern Giant-Petrel is a marine species found throughout the Antarctic to subtropical waters occasionally venturing to inshore waters.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Macronectes halli</i> Northern Giant-Petrel	VU	VU	Marine	Marine, pelagic species found mainly in subantarctic waters.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Melanodryas cucullata cucullata</i> South-eastern Hooded Robin,	EN	EN	Ecosystem	This species lives in a wide range of temperate woodland habitats, and a range of woodlands and shrublands in semi-arid areas.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Hooded Robin (south-eastern)									detected incidentally within the subject land.
<i>Neophema chrysostoma</i> Blue-winged Parrot	VU	VU	Ecosystem	The Blue-winged Parrot is a small parrot found in Tasmania and southeast mainland Australia. Some populations are known to migrate to Tasmania from the mainland during summer months. The species feeds predominantly on the ground, and occurs in savannah woodlands and grasslands.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Numenius madagascariensis</i> Eastern Curlew	CE	CE	Dual	Occurs in sheltered coasts, especially estuaries, embayments, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats often with beds of seagrass.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (29) exist within 5 km of the subject land.
<i>Petroica phoenicea</i> Flame Robin	-	VU	Ecosystem	Flame Robins are found in a broad coastal band from southern Queensland to just west of the South Australian border. The preferred habitat in summer includes moist eucalyptus forests and open woodlands, in winter prefers open woodlands and farmlands. It is considered migratory. Diet consists mainly of invertebrates.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Pluvialis squatarola</i> Grey Plover	VU	VU	N/A	Almost entirely coastal, but occasionally recorded on inland wetlands. Mainly on marine shores, inlets, estuaries and lagoons where there are nearby large tidal mudflats or sandflats for feeding and sandy beaches for roosting.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (7) exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
<i>Ptilinopus superb</i> Superb Fruit-Dove	-	VU	Ecosystem	The Superb Fruit Dove ranges from northern NSW to as far south as Moruya. It is found in rainforests, closed forests (including mesophyll vine forests) and sometimes in eucalypt and acacia woodlands with fruit-bearing trees. It forages in the canopy of fruiting trees such as figs and palms.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (4) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Pycnoptilus floccosus</i> Pilotbird	VU	VU	Ecosystem	The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris. [ALA 2022]	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Rostratula australis</i> Australian Painted Snipe	EN	EN	Ecosystem	Usually found in shallow inland wetlands including farm dams, lakes, rice crops, swamps and waterlogged grassland. They prefer freshwater wetlands, but have been recorded in brackish waters. Forages on mud-flats and in shallow water. Feeds on worms, molluscs, insects and some plant-matter.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Stagonopleura guttata</i> Diamond Firetail	VU	VU	Ecosystem	The Diamond Firetail is widely distributed, found in a range of habitat types including open eucalypt forest, mallee and acacia scrubs. Often occur in vegetation along watercourses. Feeds exclusively	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				on the ground on ripe grass and herb seeds, green leaves and insects.					detected incidentally within the subject land.
<i>Sternula albifrons</i> Little Tern	-	EN	Dual	The Little Tern favours sheltered coasts, harbours, bays, lakes, inlets, estuaries, coastal lagoons and ocean beaches especially with sand-spits and sand islets. It forages over shallow waters close inshore or over sandbars and reefs.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (4) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Sternula nereis nereis</i> Fairy Tern	VU	-	Species	The Fairy Tern nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. This species will also frequent embayments, estuarine habitats, wetlands and mainland coastlines.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Thalassarche bulleri</i> Buller's Albatross	VU	-	Marine	A marine pelagic species which breeds in New Zealand, and regularly visits Australian waters. When in Australia, Buller's Albatross can be seen over inshore, offshore and pelagic waters.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Thalassarche cauta</i> Shy Albatross	EN	EN	Marine	The Shy Albatross is a marine pelagic species inhabiting sub-antarctic and subtropical waters, spending the majority of their time at sea. Occasionally it is observed in continental shelf waters in bays and harbours.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
<i>Thalassarche impavida</i> Campbell Albatross	VU	-	Marine	Inhabits Antarctic, subantarctic and subtropical waters. Although the Campbell Albatross does not breed in Australia, it can be found in Australian waters, typically in the winter months.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Thalassarche melanophris</i> Black-browed Albatross	VU	VU	Marine	Inhabits Antarctic, subantarctic and subtropical waters. Although generally pelagic the species also occurs on the continental shelf and can be seen from land.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Thalassarche salvini</i> Salvin's Albatross	VU	-	Marine	Salvin's Albatross is a non-breeding visitor to Australian waters. This species predominantly feeds on cephalopods and fish found along continental shelves.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Tringa nebularia</i> Common Greenshank	EN	EN	N/A	Widely distributed throughout a range of inland wetlands and sheltered coastal habitats. Occurs in habitats with varying salinity.	Low	No	No survey required	Low	Not a BAM candidate species. A moderate number of records (95) exist within 5 km of the subject land, however,

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									no suitable habitat exists within the subject land.
<i>Xenus cinereus</i> Terek Sandpiper	VU	VU	Dual	Mainly found on saline intertidal mudflats in sheltered estuaries, embayments, harbours and lagoons.	Low	No	No survey required	Low	Not a BAM candidate species. One record of the species exists within 5 km of the subject land. This species was not detected incidentally within the subject land.
Mammals									
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	EN	EN	Species	Occurs from the Queensland border to Ulladulla, with largest numbers from the sandstone escarpment country in the Sydney Basin and Hunter Valley. Primarily found in dry sclerophyll forests and woodlands, but also found in rainforest fringes and subalpine woodlands. Forages on small, flying insects below the forest canopy. Roosts in colonies of between three and 80 in caves, Fairy Martin nests and mines, and beneath rock overhangs, but usually less than 10 individuals. Likely that it hibernates during the cooler months. The only known existing maternity roost is in a sandstone cave near Coonabarabran.	Low	Yes	Targeted surveys undertaken in December 2025 and January 2026.	Low	A BAM candidate species which has an association with PCT 3136. A small number of records (5) exist within 5 km of the subject land, however, the species was not detected during targeted surveys via ultrasonic detector deployment.
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	EN	VU	Ecosystem	Occurs along the east coast of Australia and the Great Dividing Range. Uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				areas. Habitat requirements include suitable den sites, including hollow logs, rock crevices and caves, an abundance of food and an area of intact vegetation in which to forage. Seventy per cent of the diet is medium-sized mammals, and also feeds on invertebrates, reptiles and birds. Individuals require large areas of relatively intact vegetation through which to forage. The home range of a female is between 180 and 1000 ha, while males have larger home ranges of between 2000 and 5000 ha. Breeding occurs from May to August.					detected incidentally within the subject land.
<i>Falsistrellus tasmaniensis</i> Eastern False Pipistrelle	-	VU	Ecosystem	Distribution extending east of the Great Dividing Range throughout the coastal regions of NSW, from the Queensland border to the Victorian border. Prefers wet high-altitude sclerophyll and coastal mallee habitat, preferring wet forests with a dense understorey but being found in open forests at lower altitudes. Apparently hibernates in winter. Roosts in tree hollows and sometimes in buildings in colonies of between 3 and 80 individuals. Often change roosts every night. Forages for beetles, bugs and moths below or near the canopy in forests with an open structure, or along trails. Has a large foraging range, up to 136 ha. Records show movements of up to 12 km between roosting and foraging sites.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (8) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Isoodon obesulus obesulus</i>	EN	EN	Species	This species prefers sandy soils with scrubby vegetation and/or areas with low ground cover	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
Southern Brown Bandicoot (eastern)				that are burn from time to time. A mosaic of post fire vegetation is important for this species.					5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Micronomus norfolkensis</i> Eastern Coastal Free-tailed Bat	-	VU	Ecosystem	Distribution extends east of the Great Dividing Range from southern Queensland to south of Sydney. Most records are from dry eucalypt forests and woodland. Individuals tend to forage in natural and artificial openings in forests, although it has also been caught foraging low over a rocky river within rainforest and wet sclerophyll forest habitats. The species generally roosts in hollow spouts of large mature eucalypts (including paddock trees), although individuals have been recorded roosting in the roof of a hut, in wall cavities, and under metal caps of telegraph poles. Foraging generally occurs within a few kilometres of roosting sites.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (8) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Miniopterus australis</i> Little Bent-winged Bat	-	VU	Dual	Occurs from Northern Queensland to the Hawkesbury River near Sydney. Roost sites encompass a range of structures including caves, tunnels and stormwater drains. Young are raised by the females in large maternity colonies in caves in summer. Shows a preference for well timbered areas including rainforest, wet and dry sclerophyll forests, Melaleuca swamps and coastal forests. The Little Bentwing bat forages for small insects (such as moths, wasps and ants) beneath the canopy of densely vegetated habitats.	Low	Yes	Targeted surveys undertaken in December 2025 and January 2026.	Low	A BAM candidate species which has an association with PCT 3136. A moderate number of records (77) exist within 5 km of the subject land. This species was detected during surveys however no suitable roosting habitat is present on site. Refer to section 4.2.1 of this report for

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									more detail. Therefore, no further consideration required.
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat	-	VU	Dual	Occurs from Victoria to Queensland, on both sides of the Great Dividing Range. Forms large maternity roosts (up to 100,000 individuals) in caves and mines in spring and summer. Individuals may fly several hundred kilometres to their wintering sites, where they roost in caves, culverts, buildings, and bridges. They occur in a broad range of habitats including rainforest, wet and dry sclerophyll forest, paperbark forest and open grasslands. Has a fast, direct flight and forages for flying insects (particularly moths) above the tree canopy and along waterways.	Low	Yes	Targeted surveys undertaken in December 2025 and January 2026.	Low	A BAM candidate species which has an association with PCT 3136. A high number of records (285) exist within 5 km of the subject land. This species was detected during surveys however no suitable roosting habitat is present on site. Refer to section 4.2.1 of this report for more detail. Therefore, no further consideration required.
<i>Notamacropus parma</i> Parma Wallaby	VU	VU	Species	Occurs in wet and dry sclerophyll forest with a thick, shrubby understorey associated with grassy patches. They may also occur in rainforest but prefer the wet sclerophyll forest (Strahan, 1995 134 /id). This species feed on grasses and herbs (Strahan, 1995 134 /id).	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Petauroides volans</i> Greater Glider	EN	EN	Species	The distribution of the Greater Glider includes the ranges and coastal plain of eastern Australia, where it inhabits a variety of eucalypt forests and woodlands. Presence and density of Greater	Low	No	No survey required	Low	Not a BAM candidate species. One record of the species exists within 5 km of the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				Gliders is related to soil fertility, eucalypt tree species, disturbance history and density of suitable tree hollows. Feeds exclusively on eucalypt leaves, buds, flowers and mistletoe.					This species was not detected incidentally within the subject land.
<i>Petaurus australis</i> Yellow-bellied Glider	VU	VU	Ecosystem	Restricted to tall native forests in regions of high rainfall along the coast of NSW. Preferred habitats are productive, tall open sclerophyll forests where mature trees provide shelter and nesting hollows. Critical elements of habitat include sap-site trees, winter flowering eucalypts, mature trees suitable for den sites and a mosaic of different forest types.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Phascolarctos cinereus</i> Koala	EN	EN	Species	In NSW the Koala mainly occurs on the central and north coasts with some populations in the western region. Koalas feed almost exclusively on eucalypt foliage, and their preferences vary regionally. Primary feed trees include Eucalyptus robusta, E. tereticornis, E. punctata, E. haemostoma and E. signata. They are solitary with varying home ranges.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (2) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Pseudomys novaehollandiae</i> New Holland Mouse	VU	VU	Ecosystem	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Across the species' range the New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey, and vegetated sand dunes. The home range of the New Holland Mouse can range from 0.44 ha to 1.4 ha. The New Holland Mouse is a social animal, living predominantly in burrows shared with other	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				individuals. The species is nocturnal and omnivorous, feeding on seeds, insects, leaves, flowers and fungi, and is therefore likely to play an important role in seed dispersal and fungal spore dispersal. It is likely that the species spends considerable time foraging above-ground for food, predisposing it to predation by native predators and introduced species. Breeding typically occurs between August and January, but can extend into autumn.					
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox	VU	VU	Dual	Occurs along the NSW coast, extending further inland in the north. This species is a canopy-feeding frugivore and nectarivore of rainforests, open forests, woodlands, melaleuca swamps and banksia woodlands. Roosts in large colonies, commonly in dense riparian vegetation.	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (484) exist within 5 km of the subject land. No breeding camps have been recorded within the subject land. This species was not detected incidentally within the subject land.
<i>Saccolaimus flaviventris</i> Yellow-bellied Sheathtail-bat	-	VU	Ecosystem	Found throughout NSW in habitats including wet and dry sclerophyll forest, open woodland, acacia shrubland, mallee, grasslands and desert. They roost in tree hollows in colonies and have also been observed roosting in animal burrows, abandoned Sugar Glider nests, cracks in dry clay, hanging from buildings and under slabs of rock. Forages for insects above the canopy in forests.			No survey required	Low	Not a BAM candidate species. A small number of records (14) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
<i>Scoteanax rueppellii</i> Greater Broad-nosed Bat	-	VU	Ecosystem	Occurs along the Great Dividing Range and in coastal areas. Occurs in woodland and rainforest, preferring open habitats or openings in wetter forests. Often hunts along creeks or river corridors. Preys upon beetles and other large, flying insects, other bats and spiders. Roosts in hollow tree trunks and branches.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
Amphibians									
<i>Heleioporus australiacus</i> Giant Burrowing Frog	VU	VU	Species	Prefers hanging swamps on sandstone shelves adjacent to perennial non-flooding creeks. Can also occur within shale outcrops within sandstone formations. Known from wet and dry forests and montane woodland in the southern part range. Individuals can be found around sandy creek banks or foraging along ridge-tops during or directly after heavy rain. Males often call from burrows located in sandy banks next to water. Spends the majority of its time in non-breeding habitat 20-250m from breeding sites.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Litoria aurea</i> Green and Golden Bell Frog	VU	EN	Species	Most existing locations for the species occur as small, coastal, or near coastal populations, with records occurring between south of Grafton and northern VIC. The species is found in marshes, dams and stream sides, particularly those containing bullrushes or spikerushes. Preferred habitat contains water bodies that are unshaded, are free of predatory fish, have a grassy area nearby and have diurnal sheltering sites nearby such as vegetation or rocks, although the species	Low	No	No survey required	Low	Not a BAM candidate species. A high number of records (17,319) exist within 5 km of the subject land; however, no suitable habitat exists within the subject land. This species was not detected incidentally within the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
				has also been recorded from highly disturbed areas including disused industrial sites, brick pits, landfill areas and cleared land. Breeding usually occurs in summer. Tadpoles, which take approximately 10-12 weeks to develop, feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.					
<i>Mixophyes balbus</i> Stuttering Frog	VU	EN	Species	This species is usually associated with mountain streams, wet mountain forests and rainforests. It rarely moves very far from the banks of permanent forest streams, although it will forage on nearby forest floors. Eggs are deposited in leaf litter on the banks of streams and are washed into the water during heavy rains.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
Reptiles									Low
<i>Hoplocephalus bungaroides</i> Broad-headed Snake	EN	EN	Dual	Mainly occurs in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with vegetation types ranging from woodland to heath. Within these habitats they generally use rock crevices and exfoliating rock during the cooler months and tree hollows during summer.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
<i>Varanus rosenbergi</i> Rosenberg's Goanna	-	VU	Ecosystem	This species is a Hawkesbury/Narrabeen sandstone outcrop specialist. Occurs in coastal heaths, humid woodlands and both wet and dry sclerophyll forests. Termite mounds are a critical habitat component.	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Conclusion and rationale
	EPBC	BC							
									detected incidentally within the subject land.
Fish									
<i>Macquaria australasica</i> Macquarie perch	EN	-	N/A	Macquarie Perch are found in the Murray-Darling Basin (particularly upstream reaches) of the Lachlan, Murrumbidgee and Murray rivers, and parts of south-eastern coastal NSW, including the Hawkesbury and Shoalhaven catchments. Macquarie perch are found in both river and lake habitats, especially the upper reaches of rivers and their tributaries	Low	No	No survey required	Low	Not a BAM candidate species. No records of the species exist within 5 km of the subject land. This species was not detected incidentally within the subject land.
Gastropods									
<i>Pommerhelix duralensis</i> Dural Woodland Snail	EN	EN	Species	The species is a shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris. It favours sheltering under rocks or inside curled-up bark. It does not burrow nor climb. The species has also been observed resting in exposed areas, such as on exposed rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris.	Low	No	No survey required	Low	Not a BAM candidate species. A small number of records (34) exist within 5 km of the subject land. This species was not detected incidentally within the subject land.

Appendix 3 Flora

Appendix 3.1 BAM plot field data

Table A 3 BAM plot floristics

Family	Scientific name	Common name	42890_B01		42890_B02		42890_B03		42890_B04	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Native species										
Campanulaceae	<i>Lobelia purpurascens</i>	Whiteroot			0.1	10				
Casuarinaceae	<i>Casuarina glauca</i>	Swamp Oak	15	6						
Clusiaceae	<i>Hypericum gramineum</i>	Small St John's Wort			0.1	10				
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	0.5	20			0.1	10	0.1	10
Cyperaceae	<i>Cyperus gracilis</i>	Slender Flat-sedge	0.1	10	0.1	10	0.1	10		
Fabaceae (Faboideae)	<i>Glycine clandestina</i>	Twining glycine			0.1	1				
Myrtaceae	<i>Eucalyptus saligna</i>	Sydney Blue Gum			10	1				
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood			10	1				
Myrtaceae	<i>Corymbia eximia</i>	Yellow Bloodwood	10	5						
Oxalidaceae	<i>Oxalis perennans</i>	-					0.1	10	0.1	10
Poaceae	<i>Cynodon dactylon</i>	Common Couch	2	100			30	3000		
Poaceae	<i>Oplismenus hirtellus</i>	-					0.1	10		
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass	35	3000						
Introduced species										
Alliaceae	<i>Agapanthus africanus</i>	Lily of the Nile	0.2	1	0.1	2	5	30		
Poaceae	<i>Avena barbata</i>	Bearded Oats			1	100				
Poaceae	<i>Briza subaristata</i>	None			0.3	30	0.1	10	0.1	10
Poaceae	<i>Bromus catharticus</i>	Praire Grass	1	100	0.3	80				

Family	Scientific name	Common name	42890_B01		42890_B02		42890_B03		42890_B04	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Brassicaceae	<i>Cardamine hirsuta</i>	Common Bittercress	0.1	10			0.1	10		
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu Grass	20	2000	85		10	1000	90	
Lauraceae	<i>Cinnamomum camphora</i>	Camphor Laurel					5	10		
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane			0.1	10	0.1	10		
Poaceae	<i>Digitaria sanguinalis</i>	Crab Grass							0.1	10
Poaceae	<i>Ehrharta erecta</i>	Panic Veldtgrass	5	500	0.2	30	15	300		
Euphorbiaceae	<i>Euphorbia peplus</i>	Petty Spurge			0.1	10	0.1	10	0.1	10
Fumariaceae	<i>Fumaria muralis</i> subsp. <i>muralis</i>	Wall Fumitory			0.1	2				
Asteraceae	<i>Galinsoga parviflora</i>	Potato Weed			0.1	10				
Rubiaceae	<i>Galium aparine</i>	Goosegrass			0.1	10				
Asteraceae	<i>Gamochaeta calviceps</i>	Cudweed	0.2	20			0.1	10		
Asteraceae	<i>Lactuca serriola</i>	Prickly Lettuce	0.1	10						
Brassicaceae	<i>Lepidium africanum</i>	Common Peppercress	0.1	10						
Oleaceae	<i>Ligustrum lucidum</i>	Large-leaved Privet			0.1	2	0.1	10		
Fabaceae (Faboideae)	<i>Lotus angustissimus</i>	Slender Birds-foot Trefoil	0.3	20	0.1	10			0.1	1
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel	0.1	10					0.1	10
Fabaceae (Faboideae)	<i>Medicago polymorpha</i>	Burr Medic					0.3	10		
Malvaceae	<i>Modiola caroliniana</i>	Red-flowered Mallow	0.1	10	0.1	30	0.1	10	0.1	10
Ochnaceae	<i>Ochna serrulata</i>	Mickey Mouse Plant					0.1	1		
Oleaceae	<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive					0.1	10		
Poaceae	<i>Paspalum dilatatum</i>	Paspalum			0.5	30			0.1	10
Arecaceae	<i>Phoenix canariensis</i>	Canary Island Date Palm					5	3		
Malaceae	<i>Photinia spp.</i>	None					3	5		
Plantaginaceae	<i>Plantago lanceolata</i>	Lamb's Tongues	0.3	20	0.1	10			1	100

Family	Scientific name	Common name	42890_B01		42890_B02		42890_B03		42890_B04	
			Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.	Cvr%	Abund.
Poaceae	Poa annua	Winter Grass	15	1000	0.5	30	20	2000	2	200
Polygonaceae	Rumex crispus	Curled Dock					0.1	3000	0.1	10
Asteraceae	Soliva sessilis	Bindyi	0.5	70			0.5	10		
Asteraceae	Sonchus oleraceus	Common Sowthistle	0.3	10	0.1	1				
Lamiaceae	Stachys arvensis	Stagger Weed			0.1	2				
Poaceae	Stenotaphrum secundatum	Buffalo Grass			1	100			0.1	10
Asteraceae	Taraxacum officinale	Dandelion	0.1	10	0.3	30	0.1	10	1	100
Fabaceae (Faboideae)	Trifolium repens	White Clover							0.2	20
Ulmaceae	Ulmus parvifolia	Chinese Elm					1	2		
Verbenaceae	Verbena bonariensis	Purpletop			0.1	2			0.1	10
Fabaceae (Faboideae)	Vicia sativa	Common vetch			0.1	1				

Table A 4 BAM plot summary

Plot ID	PCT	Area (Ha)	Patch size	Condition	Zone	Easting	Northing	Bearing	Comp. Tree	Comp. Shrub	Comp. Grass	Comp. Forbs	Comp. Ferns	Comp. Other	Struc. Tree	Struc. Shrub	Struc. Grass	Struc. Forbs	Struc. Ferns	Struc. Other
42890_B01	0			Other	56	320497	6258474	240	2	0	3	1	0	0	25.0	0.0	37.1	0.5	0.0	0.0
42890_B02	3136			Other	56	320553	6258435	240	2	0	1	2	0	1	20.0	0.0	0.1	0.2	0.0	0.1
42890_B03	0			Other	56	320397	6258560	60	0	0	3	2	0	0	0.0	0.0	30.2	0.2	0.0	0.0
42890_B04	0			Other	56	320586	6258509	120	0	0	0	2	0	0	0.0	0.0	0.0	0.2	0.0	0.0

Plot ID	PCT	Area (Ha)	Patch size	Condition	Zone	Easting	Northing	Bearing	Fun. Large Trees	Fun. Hollow Trees	Fun. Litter Cover	Fun. Len. Fallen Logs	Fun. Tree Stem 5to9	Fun. Tree Stem 10to19	Fun. Tree Stem 20to29	Fun. Tree Stem 30to49	Fun. Tree 50to79	Fun. Tree Regeneration	Fun. High Threat Exotic
42890_B01	0			Other	56	320497	6258474	240	1	0	2.6	0	0	1	1	10	0	0	25.0
42890_B02	3136			Other	56	320553	6258435	240	0	0	6	0	0	0	0	0	1	0	87.1
42890_B03	0			Other	56	320397	6258560	60	0	0	0	0	0	0	0	0	0	0	35.3
42890_B04	0			Other	56	320586	6258509	120	0	0	0.2	0	0	0	0	0	0	0	90.3

Appendix 3.2 BAM plot data sheets

BAM Plot Data Sheet				Site Sheet no:1 of 2	
		Survey Name	Veg Zone ID	Recorders	
Date	26/09/2025	Lotties	Other	TL	
Zone 56	Datum GDA94	Plot ID 42890_B01	Plot dimensions	50x20	Orientation of middle 240
Easting 320497	Northing 6258474	IBRA region Sydney Basin	Photo #		
Plant Community Type		0		EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	2	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	3	50 - 79 cm	0
	Forbs	1	30 - 49 cm	10
	Ferns	0	20 - 29cm	1
	Other	0	10 - 19 cm	1
Sum of Cover of native vascular plans by growth form group	Trees	25	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	37.1	Length of logs (m)	0
	Forbs	0.5	No. trees with hollows	0
	Ferns	0		
	Other	0		
High Threat Weed cover		25		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	10	2	0	1	0
Average of the 5 subplots	2.6				

Notes	
-------	--

Physiography + site features that may help in determining PCT and Management Zone					
Landform Pattern		Slope	SE	Soil Surface Texture	Silty clay
Soil Colour	Pale brown	Site Drainage	Good	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3		
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	3		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		

Weediness	1		
Other			

400 m2 plot:Sheet		Survey	Plot ID	Recorders
2 of 2		Name		
Date	26/09/2025	Lotties	42890_B01	TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Agapanthus africanus	E	0.2	1	
	Bromus catharticus	E	1	100	
	Cardamine hirsuta	E	0.1	10	
TG	Casuarina glauca	N	15	6	
	Cenchrus clandestinus	HTE	20	2000	
TG	Corymbia eximia	N	10	5	
GG	Cynodon dactylon	N	2	100	
GG	Cyperus gracilis	N	0.1	10	
FG	Dichondra repens	N	0.5	20	
	Ehrharta erecta	HTE	5	500	
	Gamochaeta calviceps	E	0.2	20	
	Lactuca serriola	E	0.1	10	
	Lepidium africanum	E	0.1	10	
	Lotus angustissimus	E	0.3	20	
	Lysimachia arvensis	E	0.1	10	
GG	Microlaena stipoides	N	35	3000	
	Modiola caroliniana	E	0.1	10	
	Plantago lanceolata	E	0.3	20	
	Poa annua	E	15	1000	
	Soliva sessilis	E	0.5	70	
	Sonchus oleraceus	E	0.3	10	
	Taraxacum officinale	E	0.1	10	

BAM Plot Data Sheet				Site Sheet no:1 of 2			
		Survey Name		Veg Zone ID	Recorders		
Date	26/09/2025	Lotties		Other	TL		
Zone 56	Datum GDA94	Plot ID	42890_B02	Plot dimensions	50x20	Orientation of middle	240
Easting 320553	Northing 6258435	IBRA region	Sydney Basin	Photo #			
Plant Community Type		3136			EEC: Blue gum high forest		Confidence H

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	2	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	1
	Grasses etc.	1	50 - 79 cm	1
	Forbs	2	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	1	10 - 19 cm	0
Sum of Cover of native vascular plans by growth form group	Trees	20	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	0.1	Length of logs (m)	0
	Forbs	0.2	No. trees with hollows	0
	Ferns	0		
	Other	0.1		
High Threat Weed cover		87.1		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	0	30	0	0	0
Average of the 5 subplots	6				

Notes	
-------	--

Physiography + site features that may help in determining PCT and Management Zone					
Landform Pattern		Slope	0	Soil Surface Texture	Silly clay
Soil Colour	Pale brown	Site Drainage	Moderate	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3		
Cultivation (inc. pasture)	1		
Soil erosion	0		
Firewood/CWD removal	3		
Grazing (identify native/livestock	0		
Fire damage	0		

Storm damage	0		
Weediness	2		
Other			

400 m2 plot:Sheet		Survey	Plot ID	Recorders
2 of 2		Name		
Date	26/09/2025	Lotties	42890_B02	TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Agapanthus africanus	E	0.1	2	
	Avena barbata	E	1	100	
	Briza subaristata	HTE	0.3	30	
	Bromus catharticus	E	0.3	80	
	Cenchrus clandestinus	HTE	85	6000	
	Conyza bonariensis	E	0.1	10	
GG	Cyperus gracilis	N	0.1	10	
	Ehrharta erecta	HTE	0.2	30	
TG	Eucalyptus microcorys	N	10	1	
TG	Eucalyptus saligna	N	10	1	
	Euphorbia peplus	E	0.1	10	
	Fumaria muralis subsp. muralis	E	0.1	2	
	Galinsoga parviflora	E	0.1	10	
	Galium aparine	E	0.1	10	
OG	Glycine clandestina	N	0.1	1	
FG	Hypericum gramineum	N	0.1	10	
	Ligustrum lucidum	HTE	0.1	2	
FG	Lobelia purpurascens	N	0.1	10	
	Lotus angustissimus	E	0.1	10	
	Modiola caroliniana	E	0.1	30	
	Paspalum dilatatum	HTE	0.5	30	
	Plantago lanceolata	E	0.1	10	
	Poa annua	E	0.5	30	
	Sonchus oleraceus	E	0.1	1	
	Stachys arvensis	E	0.1	2	
	Stenotaphrum secundatum	HTE	1	100	
	Taraxacum officinale	E	0.3	30	
	Verbena bonariensis	E	0.1	2	
	Vicia sativa	E	0.1	1	

BAM Plot Data Sheet				Site Sheet no:1 of 2	
		Survey Name	Veg Zone ID	Recorders	
Date	26/09/2025	Lotties	Other	TL	
Zone 56	Datum GDA94	Plot ID 42890_B03	Plot dimensions	50x20	Orientation of middle 60
Easting 320397	Northing 6258560	IBRA region Sydney Basin	Photo #		
Plant Community Type		0		EEC: None	Confidence H

BAM Attribute (400m2 plot)		Sum values	BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0	DBH	# Tree Stems Count
	Shrubs	0	80+ cm	0
	Grasses etc.	3	50 - 79 cm	0
	Forbs	2	30 - 49 cm	0
	Ferns	0	20 - 29cm	0
	Other	0	10 - 19 cm	0
Sum of Cover of native vascular plans by growth form group	Trees	0	5 - 9 cm	0
	Shrubs	0	< 5 cm	0
	Grasses etc.	30.2	Length of logs (m)	0
	Forbs	0.2	No. trees with hollows	0
	Ferns	0		
	Other	0		
High Threat Weed cover		35.3		

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	1	80	50	80	0
Average of the 5 subplots	0				

Notes	
-------	--

Physiography + site features that may help in determining PCT and Management Zone					
Landform Pattern		Slope	0	Soil Surface Texture	Silry clay
Soil Colour	Pale brown	Site Drainage	Moderate	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3		
Cultivation (inc. pasture)	3		
Soil erosion	0		
Firewood/CWD removal	0		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		

Weediness	2		
Other			

400 m2 plot:Sheet		Survey	Plot ID	Recorders
2 of 2		Name		
Date	26/09/2025	Lotties	42890_B03	TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Agapanthus africanus	E	5	30	
	Briza subaristata	HTE	0.1	10	
	Cardamine hirsuta	E	0.1	10	
	Cenchrus clandestinus	HTE	10	1000	
	Cinnamomum camphora	HTE	5	10	
	Conyza bonariensis	E	0.1	10	
GG	Cynodon dactylon	N	30	3000	
GG	Cyperus gracilis	N	0.1	10	
FG	Dichondra repens	N	0.1	10	
	Ehrharta erecta	HTE	15	300	
	Euphorbia peplus	E	0.1	10	
	Gamochaeta calviceps	E	0.1	10	
	Ligustrum lucidum	HTE	0.1	10	
	Medicago polymorpha	E	0.3	10	
	Modiola caroliniana	E	0.1	10	
	Ochna serrulata	HTE	0.1	1	
	Olea europaea subsp. cuspidata	E	0.1	10	
GG	Oplismenus hirtellus	N	0.1	10	
FG	Oxalis perennans	N	0.1	10	
	Phoenix canariensis	HTE	5	3	
	Photinia spp.	E	3	5	
	Poa annua	E	20	2000	
	Rumex crispus	E	0.1	3000	
	Soliva sessilis	E	0.5	10	
	Taraxacum officinale	E	0.1	10	
	Ulmus parvifolia	E	1	2	

BAM Plot Data Sheet				Site Sheet no:1 of 2		
		Survey Name		Veg Zone ID	Recorders	
Date	26/09/2025	Lotties		Other	TL	
Zone 56	Datum GDA94	Plot ID	42890_B04	Plot dimensions	50x20	Orientation of middle 120
Easting 320586	Northing 6258509	IBRA region	Sydney Basin	Photo #		
Plant Community Type		0			EEC: None	Confidence L

BAM Attribute (400m2 plot)		Sum values		BAM Attribute (1000m2 plot)	
Count of Native Richness	Trees	0		DBH	# Tree Stems Count
	Shrubs	0		80+ cm	0
	Grasses etc.	0		50 - 79 cm	0
	Forbs	2		30 - 49 cm	0
	Ferns	0		20 - 29cm	0
	Other	0		10 - 19 cm	0
Sum of Cover of native vascular plans by growth form group	Trees	0		5 - 9 cm	0
	Shrubs	0		< 5 cm	0
	Grasses etc.	0		Length of logs (m)	0
	Forbs	0.2		No. trees with hollows	0
	Ferns	0			
	Other	0			
High Threat Weed cover		90.3			

BAM Attribute (1 x 1m plots)	Litter cover (%)				
Subplot score (% in each)	0	0	1	0	0
Average of the 5 subplots	0.2				

Notes	
-------	--

Physiography + site features that may help in determining PCT and Management Zone					
Landform Pattern		Slope	15degrees	Soil Surface Texture	Silty clay
Soil Colour	Pale brown	Site Drainage	Good	Distance to nearest water	

Plot Disturbance	Severity code	Age code	Observational evidence
Clearing inc. logging)	3		
Cultivation (inc. pasture)	0		
Soil erosion	0		
Firewood/CWD removal	0		
Grazing (identify native/livestock	0		
Fire damage	0		
Storm damage	0		

Weediness	1		
Other			

400 m2 plot:Sheet

2 of 2

Date

26/09/2025

**Survey
Name**

Lotties

Plot ID

42890_B04

Recorders

TL

GF Code	Genus species	N,E or HTE	Cover	Abund	Stratum
	Briza subaristata	HTE	0.1	10	
	Cenchrus clandestinus	HTE	90	6000	
FG	Dichondra repens	N	0.1	10	
	Digitaria sanguinalis	E	0.1	10	
	Euphorbia peplus	E	0.1	10	
	Lotus angustissimus	E	0.1	1	
	Lysimachia arvensis	E	0.1	10	
	Modiola caroliniana	E	0.1	10	
FG	Oxalis perennans	N	0.1	10	
	Paspalum dilatatum	HTE	0.1	10	
	Plantago lanceolata	E	1	100	
	Poa annua	E	2	200	
	Rumex crispus	E	0.1	10	
	Stenotaphrum secundatum	HTE	0.1	10	
	Taraxacum officinale	E	1	100	
	Trifolium repens	E	0.2	20	
	Verbena bonariensis	E	0.1	10	

Appendix 4 Fauna

Table A 5 Fauna species recorded in the subject land

Common name	Scientific name
Birds	
Australian King-Parrot	<i>Alisterus scapularis</i>
Australian Raven	<i>Corvus coronoides</i>
Australian White Ibis	<i>Threskiornis moluccus</i>
Galah	<i>Eolophus roseicapilla</i>
Laughing Kookaburra	<i>Dacelo novaeguineae</i>
Little Corella	<i>Cacatua sanguinea</i>
Masked Lapwing	<i>Vanellus miles</i>
Noisy Miner	<i>Manorina melanocephala</i>
Pied Butcherbird	<i>Cracticus nigrogularis</i>
Rainbow Lorikeet	<i>Trichoglossus haematodus</i>
Microbats	
White-striped Free-tailed Bat	<i>Austronomus australis</i>
Gould's Wattled Bat	<i>Chalinolobus gouldii</i>
Little Bent-winged Bat	<i>Miniopterus australis</i>
Large (Eastern) Bent-winged Bat	<i>Miniopterus orianae oceanensis</i>
South-eastern Broad-nosed Bat	<i>Scotorepens orion</i>
Large Forest Bat	<i>Vespadelus darlingtoni</i>
Southern Forest Bat	<i>Vespadelus regulus</i>
Reptiles	
Eastern Water-skink	<i>Eulamprus quoyii</i>

Appendix 5 Serious and Irreversible Impact

Appendix 5.1 Blue Gum High Forest in the Sydney Basin Bioregion

Blue Gum High Forest in the Sydney Basin Bioregion (Blue Gum High Forest) (PCT 3136) is listed under the NSW BC Act as a CEEC. The community is also listed in the BioNet TBDC as an entity at risk of SAIL based on the following principles as defined in clause 6.7 of the NSW Biodiversity Conservation Regulation (DPIE 2019):

- Principle 1: The impact will cause a further decline of a species or ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- Principle 2: The impact will further reduce the population size of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very small population size.
- Principle 3: The impact is made on the habitat of the species or ecological community that is currently observed, estimated, inferred or reasonably suspected to have a very limited geographic distribution.

Given the absence of definitive impact thresholds stated for the community, the potential for a SAIL will be determined by the consent authority, guided by the additional assessment provided below.

Table A 6 Assessment of SAIL for Blue Gum High Forest in the Sydney Basin Bioregion

Information required (BAM section 9.1.1)	Response
1. Impacts to the CEEC and the action and measures taken to avoid the direct and indirect impact on the CEEC at risk of an SAIL.	The project will impact of approximately ha of PCT 3136 that meets the BC Act listing requirements for the Blue Gum High Forest CEEC. Areas of impact to the CEEC are limited to areas in a planted condition state (VI score of 8.6). These areas occur as planted gardens with a mosaic of species that are associated with the Blue Gum High Forest CEEC. Impacts will be limited to the removal of 0.02 ha of Blue Gum High Forest. A majority of the Blue Gum High Forest recorded on site will be avoided from direct impacts. While these areas will not be directly impacted by the proposed works, they may be subject to indirect impacts as a result of sediment run-off, weed exposure, etc. Appropriate sediment and weed control protocols will be implemented during the construction of the project. Measures undertaken by the proponent to avoid and minimise impacts to the CEEC (PCT 3136) are provided in section 5 of this BDAR. Specifically, substantial efforts have been made to ensure that impacts to Blue Gum High Forest have been avoided and minimised throughout the design phase of the project. The project has been designed to avoid direct impacts in the southern portion of the site where larger patches of Blue Gum High Forest occur. This has involved significant design considerations, effectively reducing the available land within the project area for development and the capacity of the project.
2a. Evidence of reduction in geographic distribution, as the current total geographic extent of the TEC in NSW and the estimated reduction in geographic extent of the TEC	Species and ecological communities that have undergone large reductions or are likely to undergo large reductions in the future are considered to be at greater risk of extinction than those that have undergone or are likely to undergo smaller reductions (NSW TSSC 2018). To be considered under this principle, the ecological community should have been observed, estimated, inferred, or reasonably suspected to have undergone, or be proposed to undergo, a very large reduction in distribution, being a $\geq 80\%$ reduction

Information required (BAM section 9.1.1)	Response
since 1970 (not including impacts of the project). TBDC or other sources. (SAII Principle 1)	where the reduction is over a 50-year period (i.e. since 1970), either in the past, future, or any part of the past, present and future (DPIE 2019). The distribution of Blue Gum High Forest CEEC is restricted to the Sydney Basin IBRA. Prior to the European settlement the Blue Gum High Forest ecological community had a naturally restricted distribution due soil and rainfall requirements with an estimated area of occupancy of approximately 3720 ha (NSW NPWS 2002) . Blue Gum high forest has been recorded within the following LGAs Lane Cove, Willoughby, Ku-ring-gai, Hornsby, Hills Shire (formerly Baulkham Hills), Ryde and Parramatta covering an area of less than 200 ha. However due to degradation of this community it is known federally to contain an area of occupancy which is limited to the Ku-ring gai, Hornsby and Hill Shire (Formerly Baulkham Hills) LGAs, totalling 140 ha of remnant Blue Gum High Forest (Threatened Species Scientific Committee 2005). This demonstrates an approximately 96.2 % reduction in the area of occupancy of the community (Threatened Species Scientific Committee 2005). Based on the available information the CEEC meets the thresholds for consideration under SAII Principle 1.
2b. Extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes. (SAII Principle 2)	Reduction in ecological function relates to the IUCN principle of “very small population size” which for ecological communities means communities have very high levels of either environmental degradation or disruption of biotic processes, and interactions have an increased risk of failure to sustain their characteristic native species assemblages (Bland et al. 2016). Ecological communities that are considered to have a very large degree of environmental degradation or disruption of biotic processes or interactions are those with: • ≥90% extent and severity where the disruption or impacts are measured since 1970. • ≥80% extent and severity where the disruption or impacts are over a 50-year period, either in the past, future, or any part of the past, present and future (as per (Bland et al. 2016). (DPIE 2019). i. change in community structure, ii. change in species composition and iii. disruption of ecological processes Blue Gum High Forest has been subject to a large reduction and degradation since European settlement with its current extent expected to be <5% of its original size (NSW Threatened Species Scientific Committee 2011). During early settlement the tall Blue Gums were felled for timber up until the late 1800's, with the land then being used for orchards and agriculture, before being replaced by modern day housing and business infrastructure (DECC NSW 2008). The final determination for Blue Gum High Forest notes that changes in community structure due to removal of large trees, underscrubbing, frequent burning and mowing have contributed to a large reduction in the overall ecological functioning by reducing understorey complexity and decreasing tree-dependant fauna habitat (NSW Threatened Species Scientific Committee 2011). Given this level of disturbance, overall flora species diversity and abundance within individual patches has been greatly reduced with only a small number of sites such as Dalrymple-Hay Nature Reserve and Browns Forest containing large areas of Blue Gum High forest in high condition (DECC NSW 2008, NSW Threatened Species Scientific Committee 2011).

Information required (BAM section 9.1.1)	Response
	iv. invasion and establishment of exotic species, v. degradation of habitat, and vi. fragmentation of habitat. Invasion of remnant woodland by exotic species poses a major threat to Blue Gum High Forest, with very large numbers of weed species invading intact patches of this community. These species degrade the community through smothering of indigenous plants, reducing both reproduction and survival, and by inhibiting the emergence and establishment of new seedlings (NSW Threatened Species Scientific Committee 2011). These exotic weed species are rapidly changing the structure and composition of Blue Gum High Forest remnants with native species being replaced by exotic woody, and grass species (NSW Threatened Species Scientific Committee 2011). Fragmentation has also resulted in a very large reduction in the extent and ecological function of Blue Gum High Forest, with the remaining areas of the community being severely fragmented with all remaining areas of the community surrounded by urban development. The largest remaining patch of this community is 20 ha with additional remaining areas of this community being limited to smaller patches and scattered trees which lack much of the historical connectivity of this community due to urban development resulting in a lack of corridors (NSW Threatened Species Scientific Committee 2011). Based on the available information the CEEC meets the thresholds for consideration under SAI Principle 2.
2c. Evidence of restricted geographic distribution, based on the TEC's geographic range in NSW. (SAII Principle 3)	The geographic distribution of ecological communities is defined by the area of occupancy, (sensu Bland et al. 2016). Ecological communities with a very limited geographic distribution have an area of occupancy of less than or equal to two 10 x 10 km grid cells (200 km²) or an extent of occurrence of ≤1,000 km², (sensu Bland et al. 2016), and one of the following: • An observed or inferred continuing decline in: – A measure of spatial extent appropriate to the ecological community. – A measure of environmental quality appropriate to characteristic biota of the ecological community. – A measure of disruption to biotic interactions appropriate to the characteristic biota of the ecological community. • Observed or inferred threatening processes that are likely to cause continuing declines in geographic distribution, environmental quality or biotic interactions within the next 20 years. • An ecological community that exists at one location (DPIE 2019). i. extent of occurrence and ii. area of occurrence No Extent of Occurrence (EOO) or Area of Occurrence (AOO) has been formally recorded for the Blue Gum High Forest under the BC Act. However, the community is known to be restricted to a small area in the northern suburbs of the Sydney Basin within the LGAs of Lane Cove, Willoughby, Ku-ring-gai, Hornsby, Hills Shire (formerly Baulkham Hills), Ryde and Parramatta covering an area of less than 200 ha (NSW Threatened Species Scientific Committee 2011). Blue Gum High Forest has been defined federally as having a current area of occupancy of approximately 140 ha (Threatened Species Scientific Committee 2005). An attempt has been made using GIS to calculate an estimated EOO and AOO by using patches mapped as PCT 3136 under the NSW State Vegetation Type Map (NSW DCCEEW 2025). As discussed in section 3.2.2, Table 2 of this report, PCT 3136

Information required (BAM section 9.1.1)	Response
	is associated with the <i>Blue Gum High Forest in the Sydney Basin</i> TEC. Using the associated PCT, the following estimates were calculated: Extent of occurrence: 73,142 ha Area of occurrence: 36,800 ha iii. Number of threat-defined locations There is no specific threat defined locations listed in the TBDC for the community. However, whilst the community is represented within conservation reserves, much of the remaining area occurs on private land or public easements, putting it at risk from small-scale clearing associated with housing, industrial development and transport infrastructure. Due to the community being restricted to small areas within highly urbanised environments it is likely to be subject various key threatening process including, but not limited to clearing of native vegetation, invasion of exotic species, Anthropogenic climate change, infection by plant diseases and removal of dead wood. Based on the available information the CEEC meets the thresholds for consideration under SAI Principle 3.
2d. Evidence that the TEC is unlikely to respond to management. (SAI Principle 4)	This principle encompasses two components, firstly whether there are any particular traits of the community which limits its' response to management, and secondly whether there are any key threatening processes affecting the community which cannot be effectively managed (DPIE 2019). Conservation management of this community in areas subjected to historical clearing and agricultural grazing have been shown to result in regeneration when impacts have been removed (Lewis 2001). However, several management measures are detailed within the TBDC for this community. These include: • Community and land-holder liaison/ awareness and/or education. • Habitat management: Fire. • Habitat management: Ongoing EIA - Advice to consent and planning authorities. • Habitat management: Promote regeneration by avoiding unnecessary mowing • Habitat management: Protect habitat by controlling run-off entering the site if it would change water, nutrient or sediment levels or cause erosion. • Habitat management: Weed Control. • Habitat Rehabilitation/Restoration and/or Regeneration. Generally those entities which are listed as unlikely to respond to management (and thus are irreplaceable) tend to include species where the ability to control key threats is negligible and known reproductive characteristics that severely limit their ability to increase the existing population (DPIE 2019). Ecological communities as a whole do not typically align well with these criteria. Given the response to management practices of Blue Gum High Forest has been demonstrated to respond to management conditions and therefore it does not meet SAI Principle 4.
3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a TEC, the assessor must record this in the BDAR or BCAR.	The TBDC does not state that data is 'unknown' or 'data deficient' for this community.

Information required (BAM section 9.1.1)	Response
4a. The impact on the geographic extent of the TEC, by estimating the total area of the TEC to be impacted by the project.	As discussed above, the current extent of Blue Gum High Forest within NSW is estimated to be less than 200 ha (NSW Threatened Species Scientific Committee 2011). As previously mentioned, federally it is estimated the area of occupancy of this community is 140 ha (Threatened Species Scientific Committee 2005). Direct impacts The project will result in the direct removal of approximately 0.02 ha of the CEEC in a planted condition state (VI score of 8.6) In total, this constitutes <0.01% of the current estimated geographic extent (140 ha) of the community. Patches to be impacted are limited to vegetation present in landscaped gardens which primarily are limited single canopy trees within a mosaic of species that cannot be reasonably assigned to a locally occurring PCT. These areas lacked structural features typically present for the CEEC and were devoid of a lower or mid stratum. Indirect impacts Indirect impacts to Blue Gum High Forest associated with factors such as increased edge effects, fragmentation, altered fire regimes, and transport of weeds and pathogens are not expected to be substantial or significant, largely due to the already degraded and edge effected nature of the TEC within the development site These have been addressed further in section 6.2 of this report.
4b. The extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the TEC.	i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500m of the development footprint or equivalent area for other types of projects. Blue Gum High Forest present in the wider landscape surrounding the project area primarily occurs in a fragmented state due to urbanisation with the closest intact patch mapped at Brush Farm approximately 450m east of the subject land. These adjacent areas contain remnant vegetation associated with the Blue Gum High Forest CEEC. GIS was used to determine the range and average size of mapped occurrences of Blue Gum High Forest within a 500 m buffer of the development footprint (NSW DCCEEW 2025). The results of which are provided below both for those patches intersected by the development footprint (i.e., subject to vegetation removal) and those patches not intersected by the development footprint (i.e. not directly impact by the project). Mapped areas within 500m not directly impacted: Size range: 0.004 ha to 7.8 ha Average size: 0.8 ha Total no. mapped polygons: 12 Mapped areas within 500m directly impacted: Size range: 0.006 ha to 0.08 ha Average size: 0.025 ha Total no. mapped polygons: 5 ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and estimated maximum dispersal distance for native flora species characteristic of the TEC, and other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development.

Information required (BAM section 9.1.1)	Response
	GIS was used to undertake a nearest neighbour analysis of mapped occurrences of Blue Gum High Forest prior to and post vegetation disturbance to determine the distance between impacted areas of the CEEC before and after the proposed vegetating removal. The average distance between mapped occurrences of Blue Gum High Forest within a 500 m buffer of the development footprint, include: • 41 m before development • 50 m after development. Based on the above there will be an average increase of 9 m separation between retained patches of Blue Gum High Forest within 500 m of the development footprint. Native flora species characteristic of the TEC includes a range trees, shrubs, grasses, forbs and other groundcover species, the majority of which are dispersed via wind or animal vectors, with some species primary method of dispersal likely to be via non-flying insects such as ants. The increase in average separation distance by 9 m for mapped Blue Gum High Forest within 500 m of the development footprint is not expected to result in a significant or substantial impediment to the dispersal of native species between retained patches, in an already highly fragmented landscape. Furthermore, the project will not result in the creation of barrier to movement and revegetation work will help promote connectivity. It is noted in EPBC Act conservation advice documents that allowances can be made for “breaks” of up to 30 metres between areas of MNES habitat, and that such breaks, which may be the result of watercourses, tracks, paths, roads, etc., do not significantly alter the overall functionality of the ecological community, or habitat. As such, breaks in connectivity caused by the project are not considered to be substantial in nature. iii. describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone. Within the development footprint and greater subject land, the CEEC occurs in a planted condition state. The proposed works will result in the removal of 0.02 ha of the CEEC, occurring as planted gardens with a mosaic of species that are not associated with the Blue Gum High Forest. The composition, structure and function scores, in addition to the VI score, is listed below: • Composition condition score: 4.8 • Structure condition score: 8.5 • Function condition score: 15.8 • VI score: 8.6

Appendix 6 Microbat Assessment Report

40 Stewart St, Ermington

Microbat assessment report

Prepared for Sinclair Brook

23 February 2026

Contents

Contents.....	i
Introduction	1
1.1 Scope of assessment	1
2 Methods	2
2.1 Alignment with the BAM	2
2.1.1 Threatened species list.....	2
2.1.2 Ultrasonic survey method and effort summary	2
2.1.3 Justification of survey method and effort.....	3
2.1.4 Timing of survey.....	3
2.1.5 Weather details during survey.....	3
2.1.6 Limitations and assumptions.....	4
2.2 Habitat assessment.....	9
2.3 Call identification	9
2.4 Reference library.....	9
2.5 Qualifications	10
2.6 Quality assurance	10
3 Results	11
3.1 Habitat assessment.....	11
3.2 Passive acoustic detection.....	11
3.2.1 Data collection	11
3.2.2 Species identification	11
3.2.3 Bat activity	12
3.2.4 Threatened species	13
3.3 Alignment with the BAM	13
3.3.1 Ecosystem credit species	13
3.3.2 Species credit species	14
3.3.3 Matters of National Environmental Significance	14
4 Conclusion and recommendations	15
References.....	16
Appendices	17
Appendix 1 Example time versus frequency graphs for species identification.....	18
Appendix 2 Examples of buildings inspected.....	27

Tables

Table 1	Candidate fauna species credit species.....	2
Table 2	EPBC Act listed fauna species	2
Table 3	Weather observations during targeted flora and fauna surveys (Sydney Olympic Park, NSW, BOM weather station 66212).....	4
Table 4	Detector deployment details	6
Table 5	Call identification confidence ratings.....	9
Table 6	Bat call analysis species identification	12
Table 7	Bat call activity.....	13

Introduction

1.1 Scope of assessment

The objective of this microbat assessment report is to establish with a high level of confidence, the likely presence of a species-credit bat species (or breeding habitat) on the subject land. Specifically, the aims are to:

- Describe the microbat fauna within the study area.
- Document in detail the methods used for survey, data collection and analysis.
- Identify potential roosting habitat for threatened microbats within the subject land and likely occupation by threatened microbats.
- Identify potential constraints and mitigation measures for the project in relation to threatened microbat species.
- Provide recommendations for the project relevant to microbats.

2 Methods

2.1 Alignment with the BAM

2.1.1 Threatened species list

A list of predicted threatened microbat species expected to occur within the subject land was generated as per Section 5 of the *NSW Biodiversity Assessment Method (BAM)* (DPIE 2020).

Table 1 provides a list of candidate fauna species credit species considered in this assessment, each species' required survey period and the relevant method of assessment.

Table 1 Candidate fauna species credit species

Species name	Common name	Type	Survey period	Method of assessment
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Breeding or foraging habitat	Mid November – end of January	Harp trapping Acoustic detection Roost searches
<i>Miniopterus australis</i>	Little Bent-winged Bat	Breeding habitat only	December-February	Harp trapping
<i>Miniopterus orianae oceanensis</i>	Large (Eastern) Bent-winged Bat	Breeding habitat only	December-February	Harp trapping

Microbat species allocated to the ecosystem credit class, that do not require targeted survey include:

- Eastern False Pipistrelle *Falsistrellus tasmaniensis*
- Eastern Coastal Free-tailed Bat *Micronomus norfolkensis*
- Little Bent-winged Bat *Miniopterus australis* (Foraging habitat only)
- Eastern Bent-winged Bat *Miniopterus orianae oceanensis* (Foraging habitat only)
- Yellow-bellied Sheath-tail-bat *Saccolaimus flaviventris*
- Greater Broad-nosed Bat *Scoteanax rueppellii*

Table 2 provides a list of *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) listed species considered candidate species.

Table 2 EPBC Act listed fauna species considered under the BAM.

Species name	Common name	Credit class
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Species

2.1.2 Ultrasonic survey method and effort summary

Four Titley Ranger ultrasonic bat detectors were deployed at four sites within the study area 17 December 2025. Detectors were fitted with omnidirectional microphones and set to record from dusk until dawn using

default settings for trigger, sensitivity, sampling rate and minimum/maximum frequency. Each time a bat flies past the detector, its call is recorded as a digital file (defined here as a 'pass') that is saved directly onto a memory card in the detector unit. Units were set on trigger mode to record at night. Files were recorded in full spectrum format (.wav) and viewed using Anabat insight.

Files not containing bat calls ('noise') were filtered out using a standard "allbats" filter in Anabat Insight. These were labelled as 'trash' and not included in further analysis. A call (pass) was defined as a sequence of five or more consecutive pulses of similar frequency and shape. Passes containing less than five pulses were also removed from the analysis ('not enough pulses') and not included as valid bat calls for activity analysis. A custom decision tree was used to group calls into frequency bands based on characteristic frequency (Fc) for species identification and activity analysis. "Noise" files and "not enough pulses" files were only reviewed where there was minimal data recorded from a site and unit functioning was being checked or additional checks were in place to find any expected species not recorded.

Calls were identified by visually comparing the spectrogram and call characteristics (e.g., characteristic frequency and call shape) with reference calls and descriptions from available reference materials (Reinhold et al. 2001, Pennay et al. 2004).

The purpose of call analysis was to generate a list of species present, with a focus on threatened species. Once a species was positively identified, it was recorded as present. Species identification was not attempted for all files recorded. Where a threatened species was not recorded through the decision tree, additional checks were used to improve confidence that a false negative was not recorded including target frequency filters and manual review.

2.1.3 Justification of survey method and effort

Survey was undertaken with reference to the following guidelines:

- *'Species credit' threatened bats and their habitats: NSW survey guide for the Biodiversity Assessment Method* (DPIE 2021).
- *Survey guidelines for Australia's threatened bats* (DEWHA 2010).

Habitat assessment and call analysis was undertaken by experienced staff.

The content of this report aligns with the minimum standards for the interpretation and reporting of bat call data described by the Australasian Bat Society (Australasian Bat Society 2025). Examples of acoustic recordings for each species identified from the survey are provided in Appendix 2.

2.1.4 Timing of survey

Bat detectors were deployed from 18 December 2025 until 6 January 2026, in line with the requirements of the guidelines mentioned above and the TBDC (NSW DCCEEW 2026).

Habitat assessment was undertaken 26 September 2025, during spring when bats are considered to be active.

2.1.5 Weather details during survey

Weather observations for each ultrasonic survey date are shown in Table 3. Survey was conducted during summer, when bat activity is likely to be high, to maximise the chance of detection of threatened species and in accordance with survey periods for threatened species described in the BAM.

Table 3 Weather observations during targeted flora and fauna surveys (Sydney Olympic Park, NSW, BOM weather station 66212)

Survey undertaken	Survey date	Temperature (°C)		Rain (mm)
		Min.	Max.	
Ultrasonic survey	17/12/2025	16.7	28.2	0
Ultrasonic survey	18/12/2025	17.5	37.2	0
Ultrasonic survey	19/12/2025	19.9	42.7	0
Ultrasonic survey	20/12/2025	22.3	34.7	0
Ultrasonic survey	21/12/2025	23.4	41.9	2.4
Ultrasonic survey	22/12/2025	23.2	32.9	0.4
Ultrasonic survey	23/12/2025	21.3	33.6	2.8
Ultrasonic survey	24/12/2025	16.6	34.6	0
Ultrasonic survey	25/12/2025	18.1	23.5	0
Ultrasonic survey	26/12/2025	14.5	19.0	0
Ultrasonic survey	27/12/2025	14.5	22.6	0
Ultrasonic survey	28/12/2025	15.9	23.6	0
Ultrasonic survey	29/12/2025	13.1	24.2	0
Ultrasonic survey	30/12/2025	12.5	25.7	0
Ultrasonic survey	31/12/2025	15.6	25.1	3.0
Ultrasonic survey	1/01/2026	17.3	20.7	0
Ultrasonic survey	2/01/2026	17.0	23.1	0.6
Ultrasonic survey	3/01/2026	17.7	26.9	1.2
Ultrasonic survey	4/01/2026	18.7	33.8	4.6
Ultrasonic survey	5/01/2026	17.2	28.4	0

Information from the Australia Government Bureau of Meteorology website.

Details of surveys undertaken as part of the current assessment are provided below.

2.1.6 Limitations and assumptions

Ultrasonic sampling is associated with a number of limitations. Detectability of bats relates to the intensity of their calls, their flight characteristics and the structure of the surrounding vegetation, all of which influence the distance over which a bat can be detected. Differences in the probability of detection may result in reduced likelihood of recording and therefore positively identifying some species as present within a site.

Natural and sampling variability in detected bat calls tends to be very high, with night-to-night differences due to minor changes in weather conditions alone being a substantial variable (Law et al. 2015).

A recorded call constitutes a measure of relative bat activity, but does not reflect species abundance. The number of calls provides a comparable index of activity to estimate the foraging selectivity of individual species between sampling sites.

Manual call analysis is also associated with limitations including the sometimes arbitrary selection of useable calls and subjectivity of the observer. Definitions as to which calls are assigned to each species have been provided to improve the consistency at which calls were attributed to a species.

Table 4 Ultrasonic bat detector deployment details

Unit number	Unit type	Date deployed	Number of detector nights	Deployment location	Image
115354	Anabat Ranger	18/12/2025	18	Attached to dead casuarina.	

Unit number	Unit type	Date deployed	Number of detector nights	Deployment location	Image
115261	Anabat Ranger	18/12/2025	18	Attached to mature olive. Microphone facing east.	
115655	Anabat Ranger	18/12/2025	18	Attached to a Tuckerro tree. Faced toward south east building.	No image

Unit number	Unit type	Date deployed	Number of detector nights	Deployment location	Image
115656	Anabat Ranger	18/12/2025	18	Attached to jacaranda. Microphone facing to north building.	
Total			72		

2.2 Habitat assessment

The site contains a total of four standalone buildings (enclosed structures with walls and roof) formerly utilised as a hospital facility, though none of the buildings are currently in use. Human-made structures can provide potential roosting habitat for threatened microbat species. As such, a detailed external inspection of the buildings was undertaken to look for potential roosting sites and entry points for microbats by Zoologist Tara Lillicot, 26 September 2025.

2.3 Call identification

Data was viewed using Anabat Insight (version 2.1.6 licensed), Titley Scientific.

Species identification was first refined by using known species geographic distributions (Churchill 2008, AusBats 2025) to generate a list of species with potential to occur at the site. Species identification was guided by the probability of occurrence at the site based on distribution, database records obtained from NSW BioNet and known habitat values at each detector point and across the site more broadly.

Call identification is further detailed in Section 2.1.2.

Due to variability in the quality of calls and difficulty in distinguishing some species a conservative approach was taken when analysing calls and assigning an identification. The identification of each call was assigned a confidence rating (Duffy et al. 2000) as summarized in Table 5.

Table 5 Call identification confidence ratings

Identification	Description
C – Almost certain	Diagnostic call characteristics present, consistent with descriptions in reference material and/or reference calls.
PR – Probable	Highly likely the call represents nominated species, but call lacks enough detail (e.g. call quality) to be definite or similarities with other species of similar call type or frequency limits identification certainty and/or there is a limited number of sequences to be confident in species presence.
SG – Species Group	Call characteristics (e.g., frequency, shape) are indicative of a number of species and call lacks sufficient detail (e.g. call quality, diagnostic features) that would allow identification to species level.
X – Not Detected	Of the data analysed, no calls were attributable to this species.

2.4 Reference library

No reference calls were collected during the survey. Call identification was assisted by the following resources:

- *Bat calls of NSW* (Pennay et al. 2004) including sample call files downloaded from <https://www.environment.nsw.gov.au/topics/animals-and-plants/surveys-monitoring-and-records/bat-calls-of-nsw>.
- *Key to the bat calls of south-east Queensland and north-east New South Wales* (Reinhold et al. 2001).
- *The ecology of the east-coast free-tailed bat (Mormopterus norfolkensis) in the Hunter region* (McConville 2013).

- Unpublished course materials from the Advanced Bat Call Analysis Workshop (May 2023) – Titley Scientific and Balance! Environmental (Greg Ford and Julie Broken-Brow). Attended by Felicity Williams.
- Unpublished course materials from the Advanced Bat Call Analysis Workshop (March 2025) – Titley Scientific and Balance! Environmental (Greg Ford and Julie Broken-Brow). Attended by Emma Heath.
- Unpublished course materials from the Advanced Bat Call Analysis Workshop (May 2023) – Titley Scientific and Balance! Environmental (Greg Ford and Julie Broken-Brow). Attended by Felicity Williams and Emma Heath.

Species nomenclature used in this report follows NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) BioNet unless otherwise stated.

2.5 Qualifications

Call analysis was undertaken by Felicity Williams. Felicity is experienced in ultrasonic call analysis with over eight years' experience using ultrasonic call detection and analysis for impact assessments on microbats in both Victoria and NSW, representing more than 60 projects and hundreds of thousands of calls reviewed and identified.

Felicity has completed the following ultrasonic call recording and analysis training courses:

- Advanced Bat Call Analysis Workshop (October 2025) – Titley Scientific and Balance! Environmental (Greg Ford and Julie Broken-Brow).
- Advanced Bat Call Analysis Workshop (May 2023) – Titley Scientific and Balance! Environmental (Greg Ford and Julie Broken-Brow).
- Anabat Insight Advanced Skills Workshop (March 2022) – Titley Scientific (Kristen Thompson).
- Micro-workshop: Deployment Techniques for Bat Detectors (March 2022) – Titley Scientific.
- Micro-workshop: Basics of Bat Calls (February 2022) – Titley Scientific.
- Bats of Gluepot Reserve (2011) – Survey techniques and identification (Terry Reardon, Dennis Matthews).
- Anabat system training course (December 2010) – Titley Scientific (Chris Corben).

2.6 Quality assurance

Examples of positive identifications (almost certain or probable) are presented in Appendix 2.

3 Results

3.1 Habitat assessment

The site occurs in an urbanised location, with minimal native vegetation. However, there is foraging habitat for common, urban-adapted microbats and other species may commute over the site to access suitable patches of vegetation. The site is not connected to large tracts of intact native vegetation, with the nearest larger patch occurring approximately 700 metres to the northeast.

Roosting habitat is limited, with no natural cave or cave-like features present such as rocky outcrops or sandstone crevices. No other suitable roosting habitat for cave-roosting bats (culverts, mine shafts etc) were recorded. There were no hollow-bearing trees recorded.

The human-made structures (buildings) present at the site provide limited opportunities for roosting by microbats and were inspected for the presence of, or signs of use by microbats.. The buildings are in relatively good condition, with minimal access points or suitable microclimates for roosting.

No evidence of bat scats / guano or urine staining were observed during the external inspections of buildings undertaken, and no audible sounds of bat calls 'squeaking' were heard.

The structures are considered unlikely to provide suitable breeding habitat for candidate species Large-eared Pied Bat, Large Bent-winged Bat or Little Bent-winged Bat.

Example images of the buildings subject to inspection are provided in Appendix 2.

3.2 Passive acoustic detection

3.2.1 Data collection

Four units recorded for 18 nights each, resulting in a total of 72 detector nights. A total of 27,240 files were recorded. Of these, 17,533 files (64.4%) were discarded by the allbats filter and not used for further analysis. In addition 4,049 files contained less than five pulses and were not considered valid bat calls or subject to manual review. There was a significant proportion of trash files recorded, largely a result of insect activity creating false triggers on the units. Given the site is in a highly urbanised location, false triggers due to unidentified noise is expected.

A large number of other non-bat files were also manually removed (650). Data from 20 December contained a large volume of files (2,153 files) on unit 115656 that appeared to be mostly false triggers from insect noise in the 28-32 kHz frequency band. This data was not reviewed manually in its entirety to determine if any bat calls were within, and was excluded as probable noise.

This resulted in a total of 4,763 bat calls from the recording period. A total of 1,117 (23.5% of valid bat call files) were manually reviewed.

3.2.2 Species identification

Seven species were positively identified (Almost Certain or Probable) of the 22 species that are known to occur within 20 kilometres of the study area (AusBats 2025). Up to eight additional species may also have been recorded however reliable identification to species level was not possible due to similarity of call

characteristics between species. Seven species known or predicted to occur in the locality were not detected in the survey.

Table 6 provides a list of all species known or predicted to occur in the study area, their conservation status, and confirmation of identification following call analysis.

Table 6 Bat call analysis species identification (C=Confident, PR = Probable, SG = Species Group, X = Not recorded, VU = Vulnerable, EN = Endangered).

Species name	Common name	EPBC Act status	BC Act status	Identification
<i>Austronomus australis</i>	White-striped Free-tailed Bat			C
<i>Chalinolobus gouldii</i>	Gould's Wattled Bat			C
<i>Miniopterus australis</i>	Little Bent-winged Bat		VU	C
<i>Miniopterus orianae oceanensis</i>	Large (Eastern) Bent-winged Bat		VU	C
<i>Vespadelus darlingtoni</i>	Large Forest Bat			C
<i>Scotorepens orion</i>	South-eastern Broad-nosed Bat			PR
<i>Vespadelus regulus</i>	Southern Forest Bat			PR
<i>Chalinolobus morio</i>	Chocolate Wattled Bat			SG
<i>Nyctophilus geoffroyi</i>	Lesser Long-eared Bat			SG
<i>Nyctophilus gouldi</i>	Gould's Long-eared Bat			SG
<i>Ozimops ridei</i>	Ride's Free-tailed Bat			SG
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat		VU	SG
<i>Vespadelus pumilus</i>	Eastern Forest Bat			SG
<i>Vespadelus troughtoni</i>	Eastern Cave Bat		VU	SG
<i>Vespadelus vulturnus</i>	Little Forest Bat			SG
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	EN	EN	X
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle		VU	X
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat		VU	X
<i>Myotis macropus</i>	Southern Myotis		VU	X
<i>Phoniscus papuensis</i>	Golden-tipped Bat		VU	X
<i>Rhinolophus megaphyllus</i>	Eastern Horseshoe Bat			X
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat		VU	X

3.2.3 Bat activity

Bat activity was moderate at the site with approximately 4,763 confirmed sequences recorded over the 72 detector nights (Table 7). The earliest call recorded was 8:22 PM, which occurred thirteen minutes after local sunset time of 8:09 PM. The most commonly recorded call was Gould's Wattled Bat, a common and urban-adapted species.

Table 7 Bat call activity

Detector ID	Maximum bat activity (bat passes per night)	Average bat activity (mean bat passes per night)	Relative bat activity level (Low, Moderate, High, Very High)
115261	279	87.5	Moderate
115354	270	36.8	Moderate
115655	439	118.7	High
115656 [^]	125	31.7	Low

[^] Data from the night of 20 December 2025 was excluded from these calculations due to a large volume of insect noise at unit 115656 on this night which were not manually reviewed to find bat calls that may have been within this data. Removal of this night prevented a skew in the results.

3.2.4 Threatened species

Threatened species identified to species level (probable or almost certain) included:

- Little Bent-winged Bat *Miniopterus australis* (Vulnerable, BC Act).
- Large (Eastern) Bent-winged Bat *Miniopterus orianae oceanensis* (Vulnerable, BC Act).

Reliable identification to species level of a further three species was not possible due to similarity of call characteristics between species. These species were identified as part of a species group and identification to species level cannot be confirmed from the ultrasonic analysis:

- Greater Broad-nosed Bat *Scoteanax rueppellii* (Vulnerable, BC Act).
- Eastern Cave Bat *Vespadelus troughtoni* (Vulnerable, BC Act).

Large (Eastern) Bent-winged Bat was identified from only a small number of sequences, well after dusk. Given the low activity of this species over the 72 detector nights, it is unlikely to be roosting within the site, and detections are most likely to represent individuals foraging or commuting through the area. Similarly, there was only a single call for the Little Bent-winged Bat, 3:42 AM on 2 January 2026. If roosting within or near the site, higher activity for each species would be expected and trends in timing (increased detections around sunrise or sunset) would be expected. Coupled with the lack of suitable habitat present in or near the subject land, this species is highly unlikely to be utilising the buildings in the subject land for roosting and/or breeding.

Call activity for *Vespadelus* species overall was relatively low. Eastern Cave Bat has been included in a species complex for calls around the 50-53 kHz frequency as their calls cannot reliably be separated from the more common Little Forest Bat. However, given the low number of *Vespadelus* calls recorded, and the absence of suitable cave or cave-like roosting habitat required by this species, it is considered highly unlikely to be present.

3.3 Alignment with the BAM

3.3.1 Ecosystem credit species

Four species can be discounted from occurring within the subject land, and removed from the list of predicted species as they were not recorded at the site during survey:

- Eastern False Pipistrelle

- Eastern Coastal Free-tailed Bat
- Golden-tipped Bat
- Yellow-bellied Sheathtail-bat

The following ecosystem credit species are assumed present (identified as part of a species group) in and/or adjacent to the subject land:

- Greater Broad-nosed Bat *Scoteanax rueppellii* (Vulnerable, BC Act).
- Little Bent-winged Bat *Miniopterus australis* (Vulnerable, BC Act) (foraging habitat only).
- Large (Eastern) Bent-winged Bat *Miniopterus orianae oceanensis* (Vulnerable, BC Act) (foraging habitat only).

3.3.2 Species credit species

Large-eared Pied Bat was not recorded during the ultrasonic surveys, and no suitable habitat was identified. Inspections of the buildings present found no evidence of roosting microbats. This species can be discounted from occurring within the subject land.

Although a small number of calls were recorded for Little Bent-winged Bat and Large Bent-winged Bat, no suitable breeding habitat is present within the subject land and no signs of roosting bats were recorded. These species may occasionally commute over the site or forage in or near the site however, given the limited number of sequences and absence of feeding buzzes, it is unlikely that the subject land represents important habitat for either species.

Breeding habitat for these species can be discounted from occurring within the subject land.

3.3.3 Matters of National Environmental Significance

No Matters of National Environmental Significance (MNES) were recorded.

4 Conclusion and recommendations

The following threatened species were confirmed present (almost certain or probable identification) or assumed present (identified as part of a species group) in and/or adjacent to the subject land:

- Little Bent-winged Bat *Miniopterus australis* (foraging habitat only).
- Eastern Bent-winged Bat *Miniopterus orianae oceanensis* (foraging habitat only).
- Greater Broad-nosed Bat *Scoteanax rueppellii*.

The following candidate species were not recorded in the subject land.

- Large-eared Pied Bat *Chalinolobus dwyeri*.
- Little Bent-winged Bat *Miniopterus australis* (breeding habitat).
- Eastern Bent-winged Bat *Miniopterus orianae oceanensis* (breeding habitat).

No MNES were recorded or assumed present at the site.

The proposal is highly unlikely to result in impacts the threatened microbats.

References

AusBats 2025. *Australian Bat Society's BatMap viewer*, Australasian Bat Society, <https://www.ausbats.org.au/batmap.html>.

Australasian Bat Society 2025. *Australasian Bat Society*, Australasian Bat Society, accessed 30 June 2025, <http://www.ausbats.org.au/>.

Churchill S 2008. *Australian Bats*, 2nd edn, Allen & Unwin, Sydney, NSW.

DEWHA 2010. *Survey Guidelines for Australia's Threatened Bats: Guidelines for detecting bats listed as threatened under Environment Protection and Biodiversity Conservation Act 1999*, Department of the Environment Water Heritage and the Arts.

DPIE 2020. *Biodiversity Assessment Method (BAM)*, NSW Department of Planning, Industry and the Environment, <https://www.environment.nsw.gov.au/research-and-publications/publications-search/biodiversity-assessment-method-2020>.

DPIE 2021. *'Species credit' threatened bats and their habitats – NSW survey guide for the Biodiversity Assessment Method*, Department of Planning, Industry and Environment, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Threatened-species/speciescreditthreatenedbatsandtheirhabitatsnswguideforbiodiversityassessmentmethod200573.pdf>.

Duffy AM, Lumsden LF, Caddle CR, Chick RR, & Newell GR 2000. 'The efficacy of Anabat ultrasonic detectors and harp traps for surveying microchiropterans in south-eastern Australia', *Acta Chiropterologica*, 2, 2: 127–144.

Law B, Gonsalves L, Tap P, Penman T, & Chide M 2015. 'Optimizing ultrasonic sampling effort for monitoring forest bats', *Austral Ecology*, 40, 8: 886–897.

McConville A 2013., *The ecology of the east-coast free-tailed bat (Mormopterus norfolkensis) in the Hunter region*, Doctor of Philosophy (PhD), The University of Newcastle, Australia, Newcastle, Australia.

Pennay M, Law B, & Reinhold L 2004. 'Bat calls of New South Wales', <https://www.environment.nsw.gov.au/resources/nature/batcallsnsw.pdf>.

Reinhold L, Law B, Ford G, & Pennay M 2001. *Key to the bat calls of south-east Queensland and north-east New South Wales*, Queensland Department of Natural Resources and Mines, State Forests of New South Wales, University of Southern Queensland, and New South Wales National Parks and Wildlife Service, https://www.researchgate.net/publication/303821240_Key_to_the_bat_calls_of_south-east_Queensland_and_north-east_New_South_Wales.

Appendices

Appendix 1 Example time versus frequency graphs for species identification

All time versus frequency graphs are shown in F7 (10 milliseconds), compressed mode, unless otherwise stated. Sequences are shown in both full spectrum and zero crossing formats, on a scale of 10–90 kilohertz. The oscillogram is also shown above each sequence to indicate amplitude.

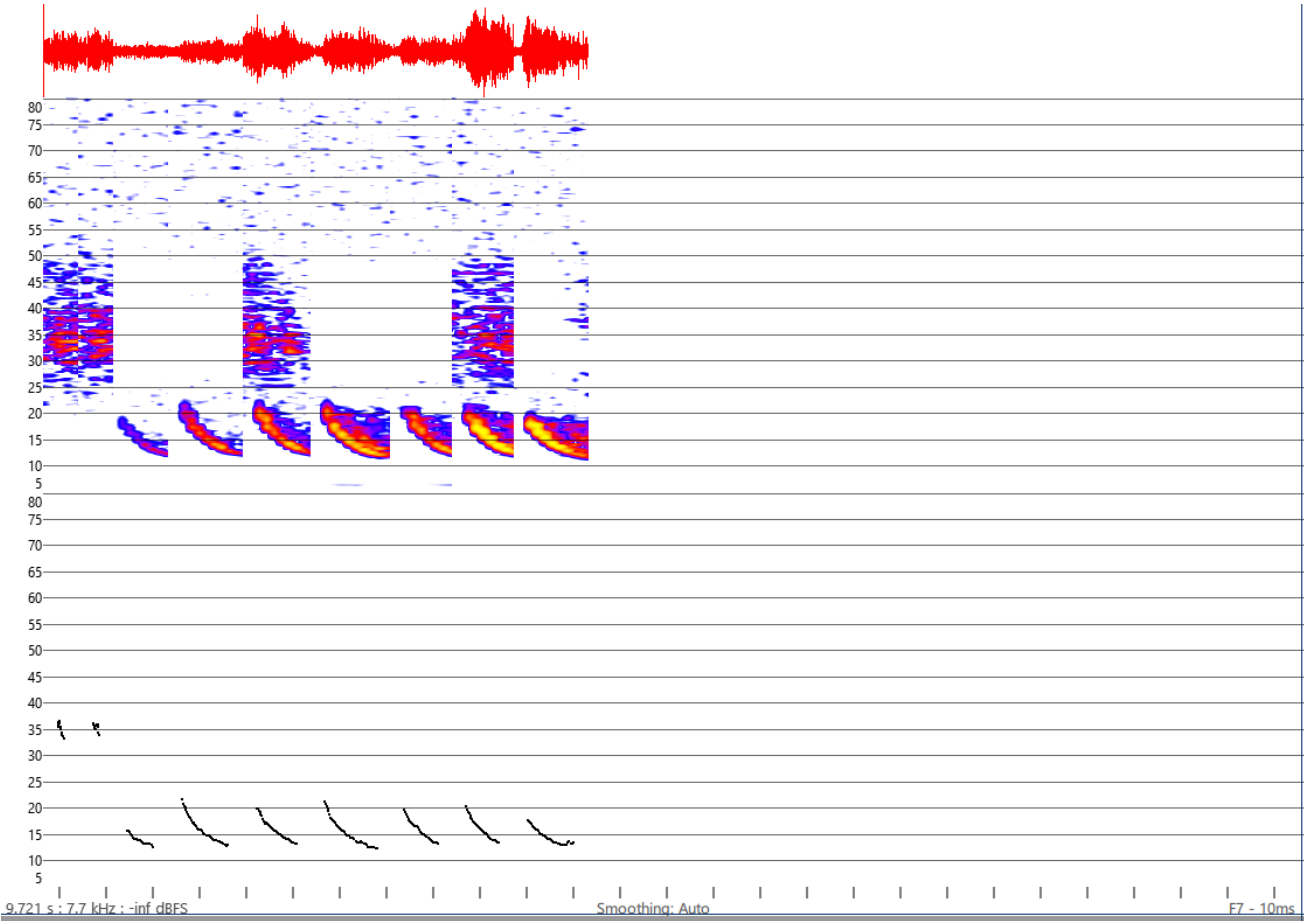


Plate 1 **White-striped Free-tailed Bat *Austronomus australis***

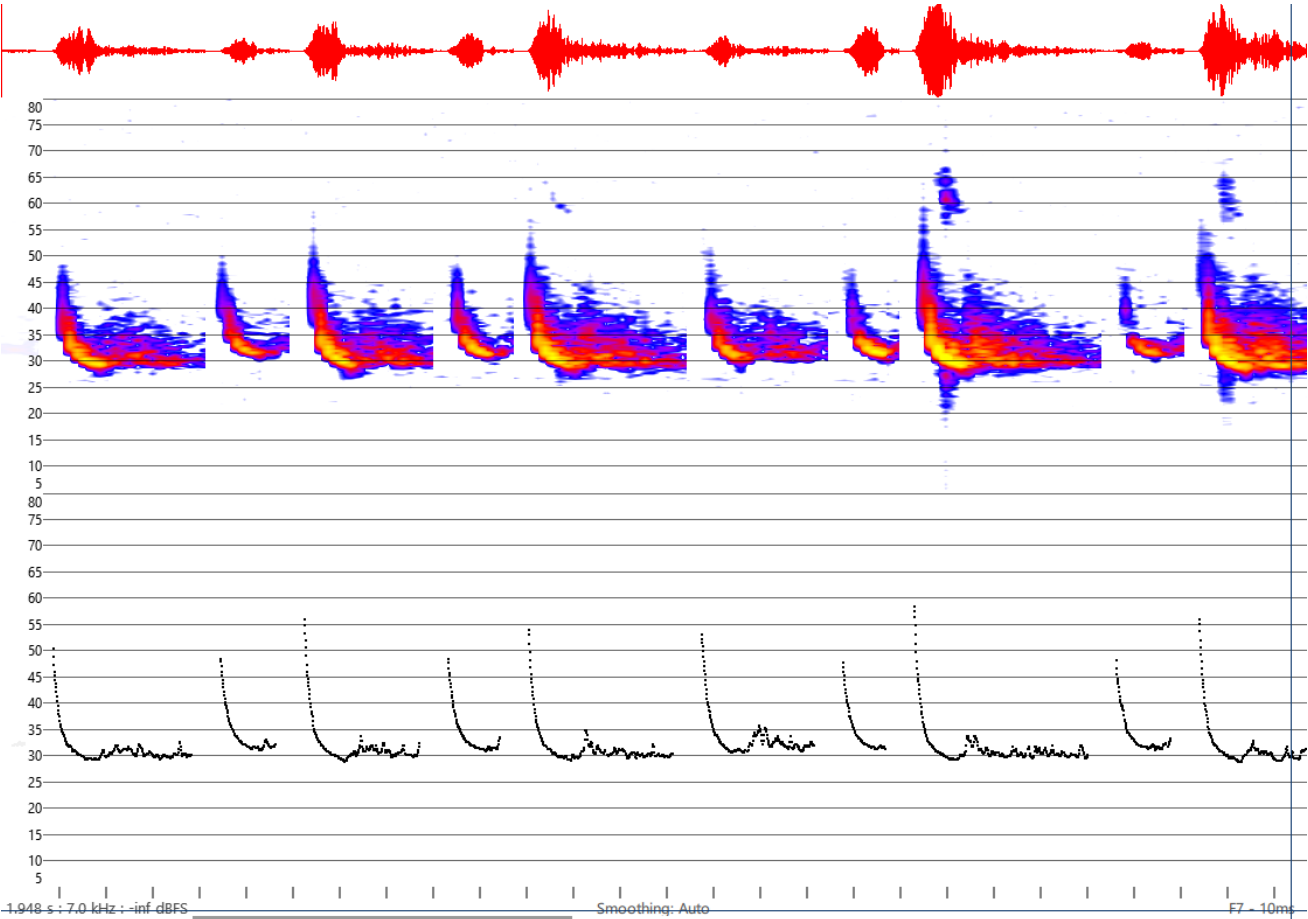


Plate 2 Gould's Wattled Bat *Chalinolobus gouldii*

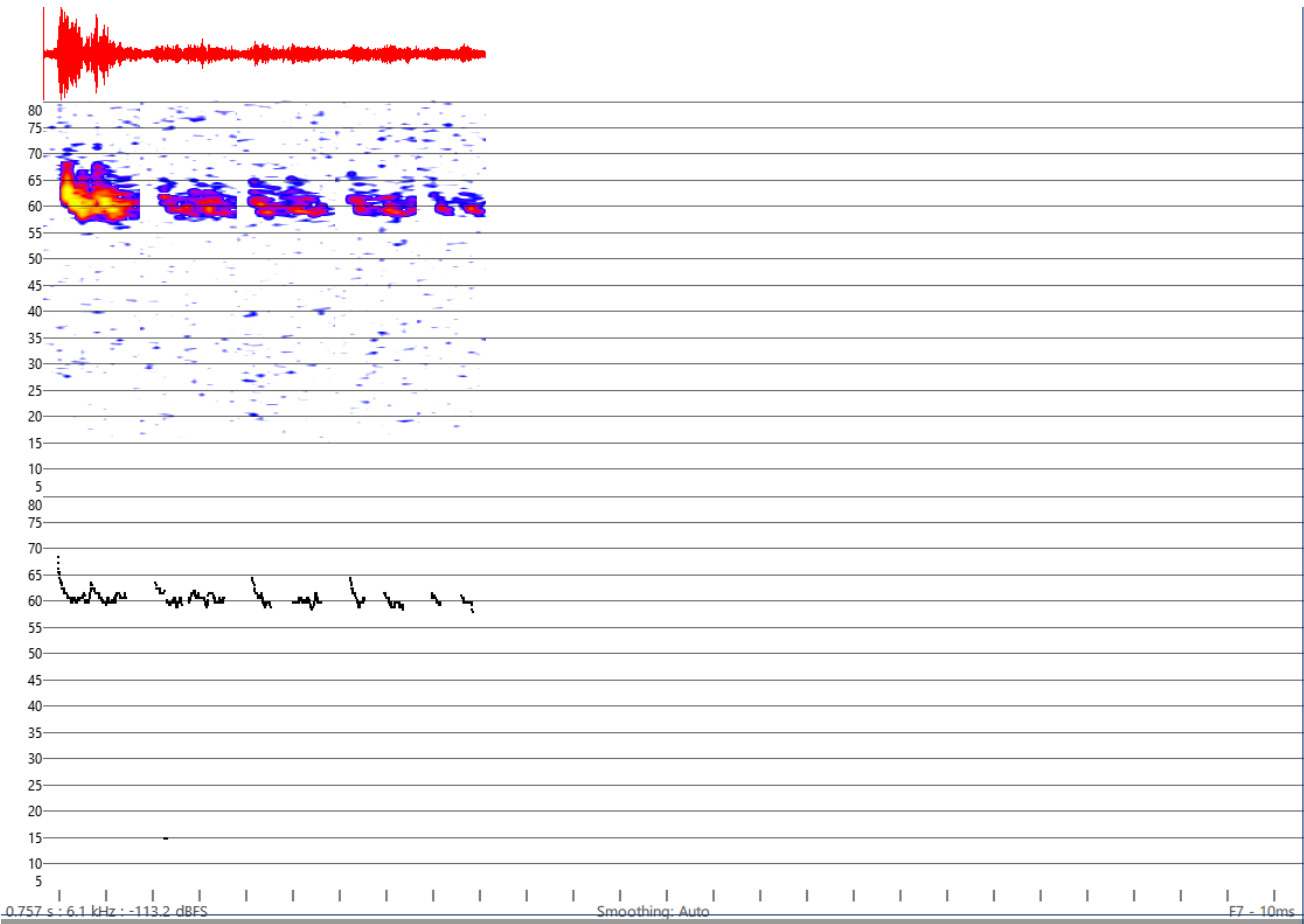


Plate 3 Little Bent-winged Bat *Miniopterus australis*

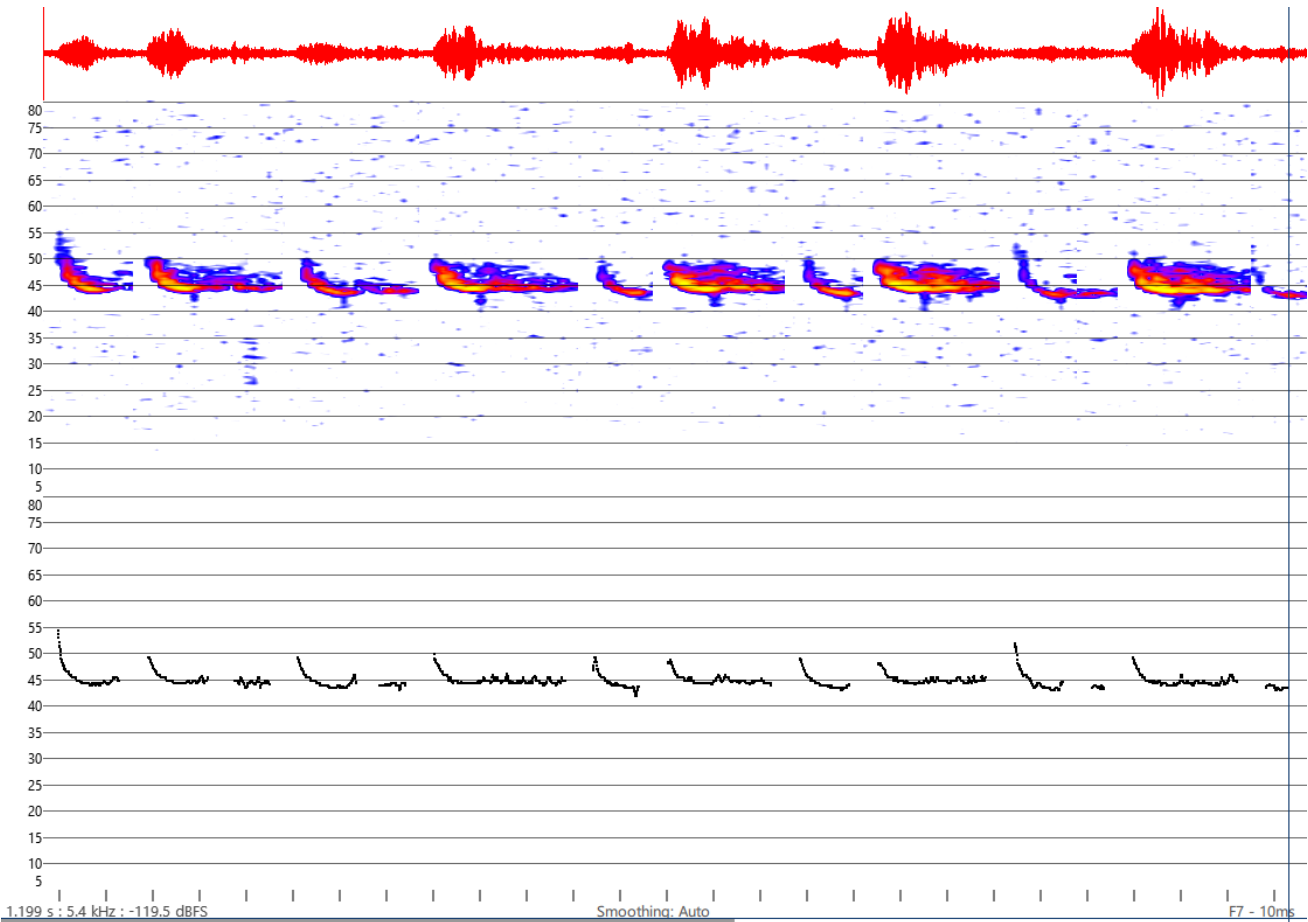


Plate 4 Eastern Bent-winged Bat *Miniopterus orianae oceanensis*

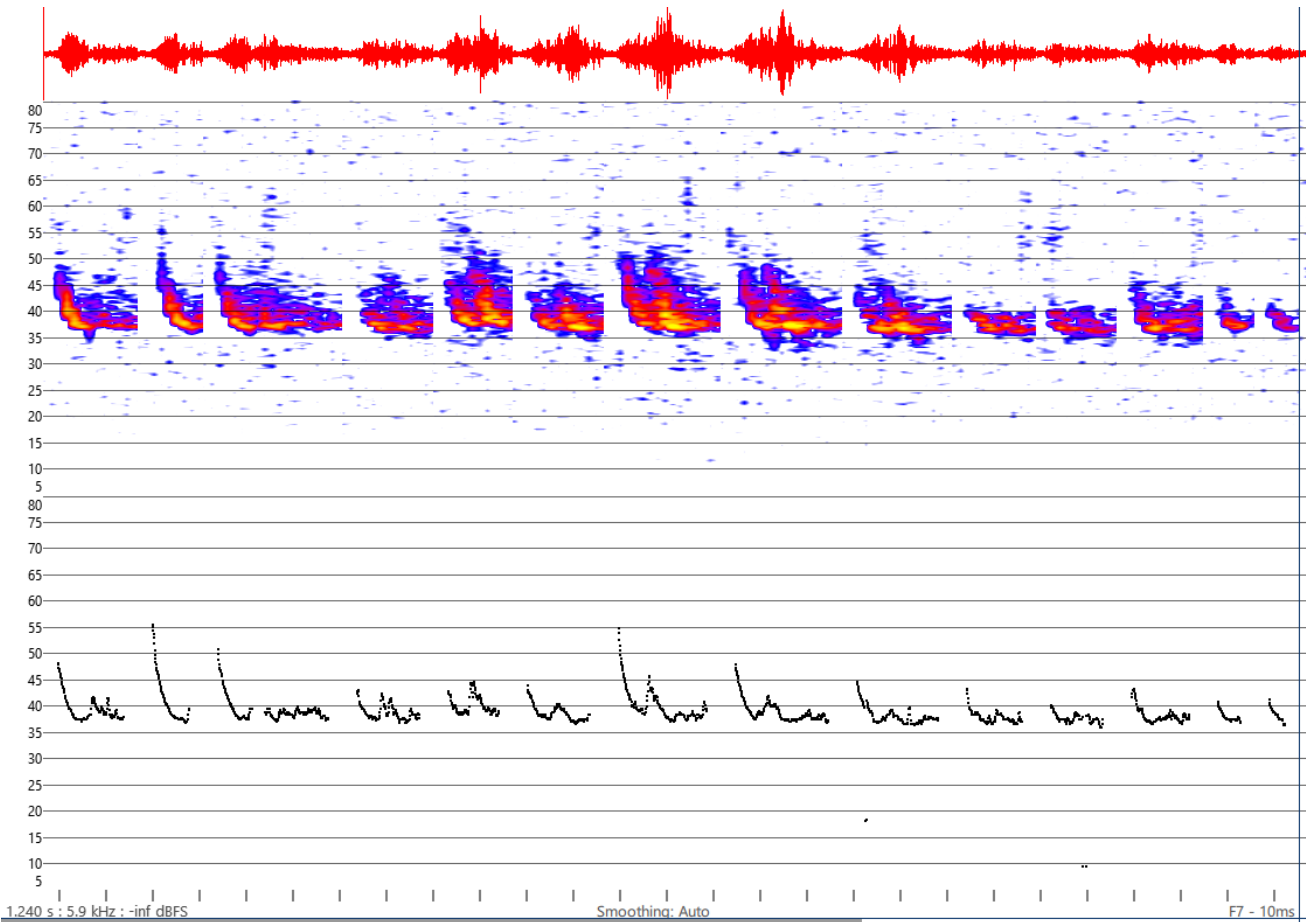


Plate 5 **Eastern Broad-nosed Bat *Scotorepens orion***

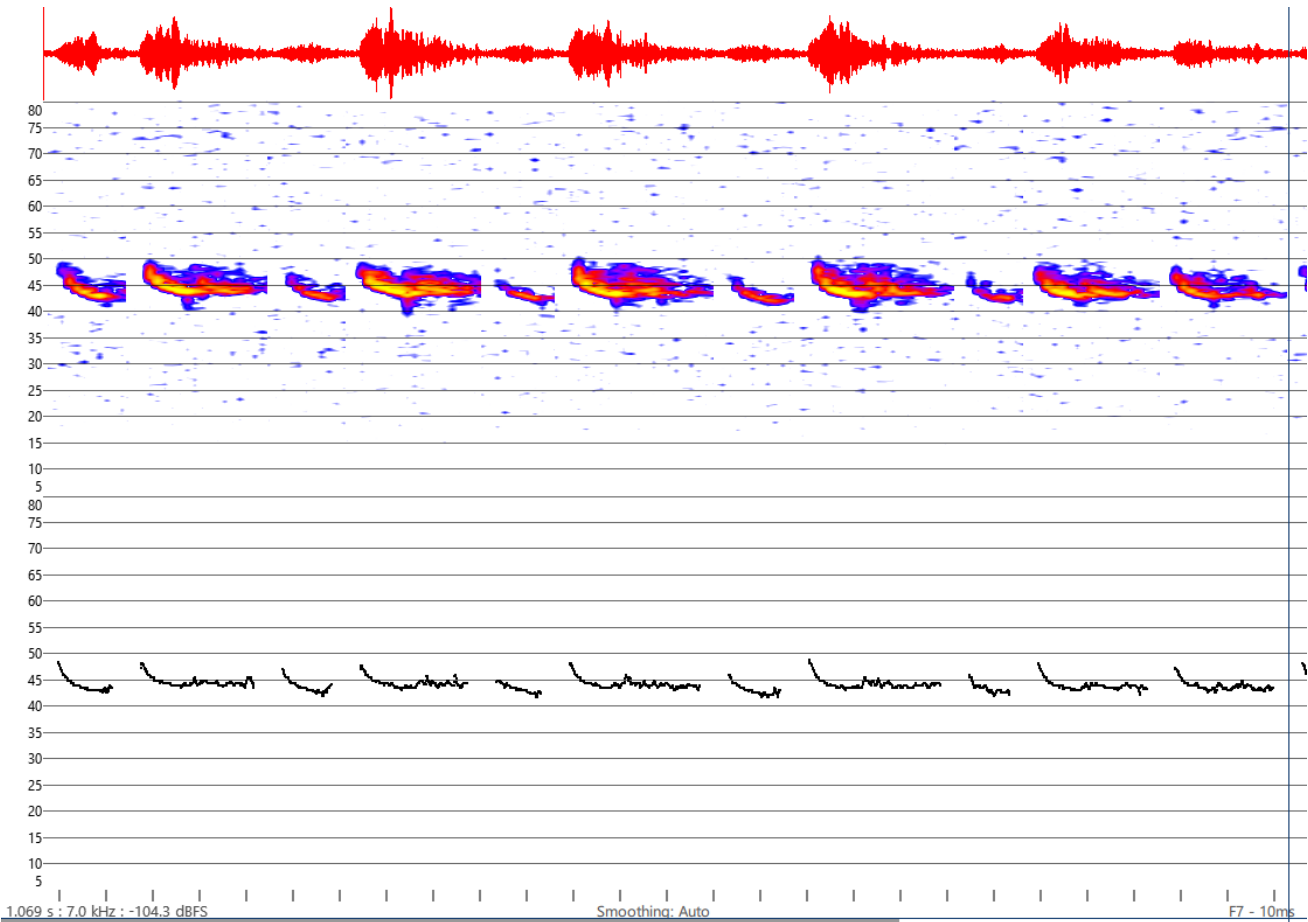


Plate 6 **Large Forest Bat *Vespadelus darlingtoni***

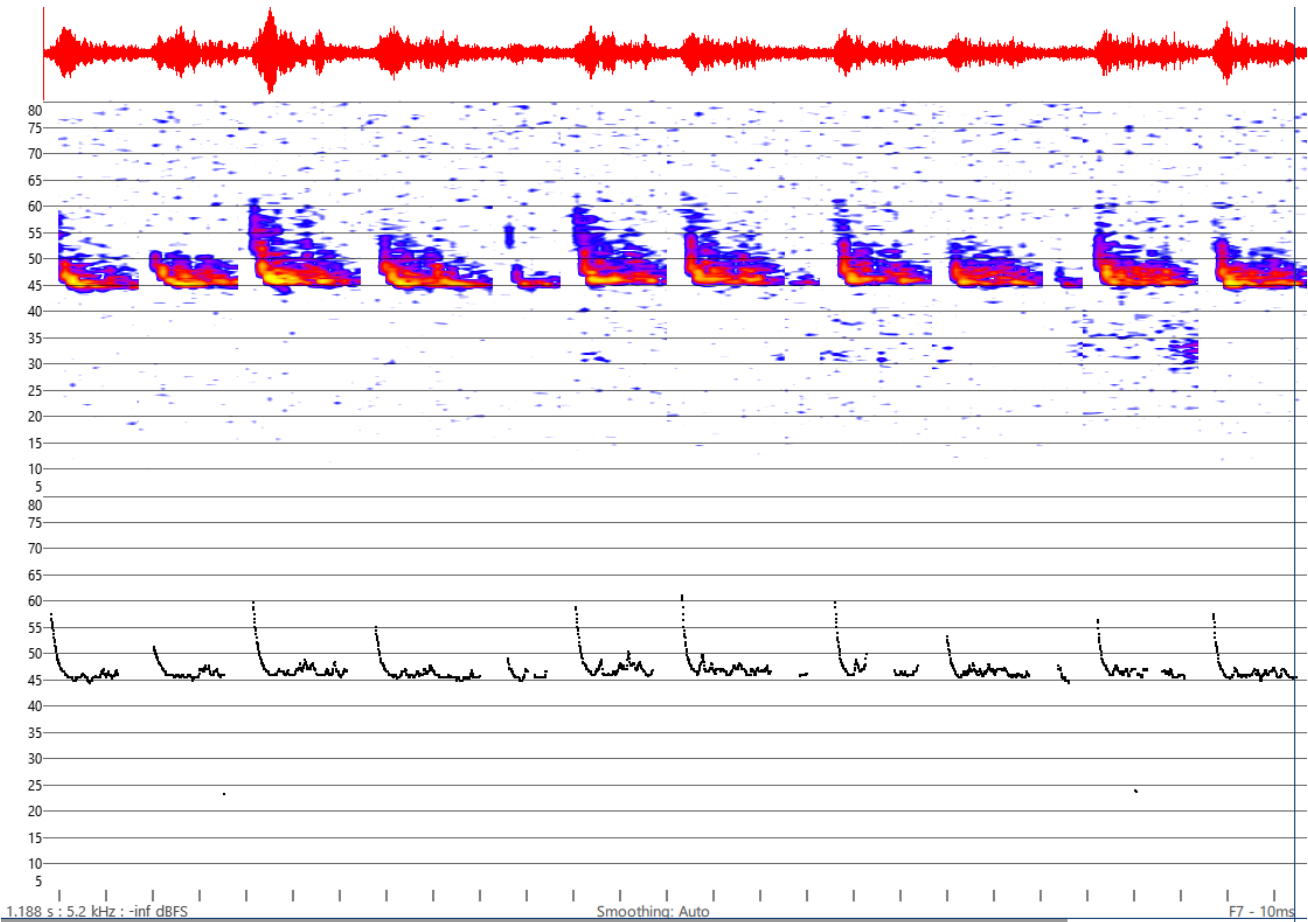


Plate 7 **Southern Forest Bat *Vespadelus regulus***

Appendix 2 Examples of buildings inspected





