

BaptistCare Macquarie Park:
157 Balaclava Road, Macquarie Park
Biodiversity Development Assessment
Report

17 April 2025

BAPTISTCARE MACQUARIE PARK CONCEPT MASTER PLAN

Biodiversity Development Assessment Report
(BDAR)

**Amendment to State Significant Development
Application (SSDA)**

Prepared for BaptistCare

17 April 2025

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Contents

Glossary.....	1
Certification and Declarations.....	3
Summary	4
Stage 1 – Biodiversity assessment	6
1 Introduction	7
1.1.1 Relevant SEAR to this report.....	9
1.2 Summary of relevant matters raised	10
1.3 Project description.....	16
1.4 Purpose of this assessment	16
1.5 The subject land, development footprint and assessment area	16
1.6 Sources of information	17
1.7 Legislative requirements.....	18
2 Landscape Context.....	20
2.1 Subject land description	20
2.1.1 Native vegetation cover	20
2.1.2 Bioregions	20
2.1.3 Rivers and streams	21
2.1.4 Wetlands	21
2.1.5 Connectivity	21
2.1.6 Geological features	21
2.1.7 Areas of outstanding biodiversity value.....	21
2.1.8 NSW (Mitchell) Landscape	21
2.1.9 Additional landscape features.....	22
1.1.1 Hydrology.....	22
3 Native vegetation.....	25
3.1 Native vegetation and habitat assessment.....	25
3.1.1 Native vegetation extent	25
3.1.2 Review of existing information.....	25
3.1.3 Field investigation of biodiversity values	25
3.1.4 Local data	26
3.1.5 Non-native vegetation.....	26
3.1.6 Plant community types	28
3.1.7 Threatened ecological communities.....	32
3.1.8 Planted native vegetation.....	32
3.2 Vegetation integrity assessment	35
3.2.1 Vegetation zones and patch size class	35
3.2.2 Vegetation integrity.....	35
3.2.3 Vegetation integrity score	36

3.2.4	Scattered trees.....	37
4	Threatened species	43
4.1	Ecosystem credit species	43
4.2	Species credit species	44
4.2.1	Threatened species survey details	47
4.2.2	Incidental flora and fauna surveys	47
4.2.3	Local data	49
4.2.4	Expert reports	49
4.2.5	Threatened species summary and polygons.....	49
	Stage 2 – Impact assessment (biodiversity values)	51
5	Avoid and minimise impacts	52
5.1	Actions to avoid/minimise project impacts.....	52
6	Impacts that are unable to be avoided	57
6.1	Direct impacts.....	57
6.1.1	Loss of hollow bearing trees.....	57
6.2	Indirect impacts.....	58
6.3	Prescribed impacts	60
6.4	Impacts considered uncertain	62
6.5	Impacts to Groundwater Dependent Ecosystems (GDE).....	62
6.6	Aquatic habitat impacts relating Fisheries Management Act matters.....	62
6.7	Impacts to Matters of National Environmental Significance (MNES)	62
7	Mitigation and management of impacts	64
7.1	Adaptive management strategy	67
8	Impact summary	68
8.1	TECs and threatened species.....	68
8.2	Serious and irreversible impacts	70
8.3	Identification of impacts requiring offset	73
8.3.1	Impacts to native vegetation (ecosystem credits).....	73
8.3.2	Impacts to threatened species and their habitat.....	73
8.4	Identification of impacts not requiring offset.....	74
8.5	Identification of areas not requiring assessment.....	74
9	Biodiversity credit report.....	76
	References.....	80
	Appendices	83
Appendix 1	Survey methods.....	84
Appendix 2	BAM Candidate species assessment.....	85
Appendix 3	BAM Plot data	140

Appendix 4	Fauna	145
Appendix 5	SAIL	146
	Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion	146
Appendix 6	Significant Impact Criteria assessments.....	151
	Large-eared Pied Bat <i>Chalinolobus dwyeri</i>	151
Appendix 7	BDAR requirements compliance	155

Tables

Table 1	Response to SEARs	9
Table 2	Response to Submission.....	10
Table 3	Planted exotic vegetation	27
Table 4	PCT 3262	29
Table 5	Planted native vegetation	31
Table 6	Summary of BC Act TECs within the subject land.....	32
Table 7	Planted native vegetation - streamlined assessment	33
Table 8	Vegetation zones within the subject land.....	35
Table 9	BAM plots completed within the subject land	36
Table 10	Vegetation zone integrity scores.....	36
Table 11	Ecosystem credit species (predicted species) with potential to occur.....	43
Table 12	Habitat features with potential to support threatened species credit species.....	45
Table 13	Threatened species polygons within the development footprint	49
Table 14	Avoidance and minimisation of impact	53
Table 15	Summary of direct impacts to vegetation	57
Table 16	Summary of direct impacts species credit habitat or individuals	57
Table 17	Avoidance and minimisation of impact	58
Table 18	Assessment of prescribed impacts.....	60
Table 19	Assessment of the proposed development against the EPBC Act	63
Table 20	Measures to mitigate and manage impacts.....	64
Table 21	Offsets required (ecosystem credits)	73
Table 22	Offsets required (species credits)	73
Table 23	Sydney Turpentine - Ironbark Forest SAIL assessment	146
Table 24	SIC assessment for Large-eared Pied Bat – Endangered species.....	151
Table 25	Assessment of the minimum reporting requirements for a BDAR in relation to the proposal	155

Figures

Figure 1	Subject land	19
Figure 2	Site map	23
Figure 3	Location map	24
Figure 4	Native vegetation extent.....	38

Figure 5	Vegetation within the subject land	39
Figure 6	Vegetation zones and plot locations	40
Figure 7	Patch Size locations	41
Figure 8	TECs within the subject land.....	42
Figure 9	Target species mapping	48
Figure 10	Threatened species polygons.....	50
Figure 11	Final development footprint.....	55
Figure 12	Alternative options and avoidance	56
Figure 13	Estimated areas of indirect impacts	69
Figure 14	Prescribed impacts	71
Figure 15	Serious and irreversible impacts	72
Figure 16	Impacts requiring offsets, not requiring offset, not requiring assessment.....	75

Glossary

Assessment Area	All land within 500m of a linear development and 1500m of a broader development site
BAM	NSW Biodiversity Assessment Method
BAM-C	BAM Calculator
BC Act	NSW <i>Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
Biosecurity Act	NSW <i>Biosecurity Act 2015</i>
BOS	Biodiversity Offsets Scheme
CEMP	Construction Environmental Management Plan
DA	Development Application
DBH	Diameter at Breast Height
DCDB	Digital cadastral database
DAWE	Commonwealth Department of Agriculture, Water and Environment
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
DPIE	NSW Department Planning Industry and Environment
DPI	NSW Department of Primary Industries
DTDB	Digital topographic databases
Ecosystem credit species	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
EES	NSW Environment, Energy and Science Group
EP&A Act	NSW <i>Environmental Planning and Assessment Act 1979</i>
EPBC Act	Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i>
GDE	Groundwater Dependent Ecosystem
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation of Australia
LEP	Local Environmental Plan
LGA	Local Government Area

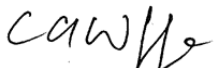
Locality	Area located within 10 kilometres radius from the subject land
LPI	NSW Land and Property Information
MNES	Matters of National Environmental Significance protected by a provision of Part 3 of the EPBC Act
EES	NSW Environment, Energy and Science Group
PCT	Plant Community Type
SAIL	Serious and 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 credit species	A class of biodiversity credits created or required for the impact on threatened species that cannot be reliably predicted to use an area of land based on habitat surrogates
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	NSW <i>Water Management Act 2000</i>

Certification and Declarations

I certify that this report has been prepared on the basis of the requirements of, and information provided under, the Biodiversity Assessment Method (DPIE 2020) 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: 

Date: 17/04/2025

BAM Assessor Accreditation Number: BAAS18138

Summary

Ethos Urban on behalf of BaptistCare proposes to redevelop land proposed for the Macquarie Park Place Strategy (the project), at 157 Balaclava Road, Macquarie Park New South Wales (hereafter referred to as the development site) (Figure 1). The project will include redevelopment of the existing aged care/retirement living facility, to an open space neighbourhood. This report has been provided as part of the submission for an amendment to the State Significant Development (SSD) Application.

The Concept Masterplan includes the design of a mixed-use precinct comprised of seniors housing, co-living housing, residential accommodation, commercial premises, centre-based child care facility, health services facility, , as well as the development of associated road and intersection upgrades, pedestrian connections, and recreation areas.

The project is considered an SSD and will be assessed under Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). As the project falls under a SSD, the Biodiversity Offsets Scheme (BOS) is triggered, and an assessment is required in accordance with the NSW Biodiversity Assessment Method (BAM), NSW *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). This BDAR has been prepared by Biosis' experienced ecological consultants and has been reviewed and certified by Accredited Assessors Callan Wharfe (BAAS18138), and Rebecca Goodwin (BAAS17067), to accompany the Development Application (DA). This BDAR describes the outcome of the development assessment case (35184) conducted consistent with the NSW BAM and BOS.

The classification of Plant Community Types (PCTs) has recently undergone a major revision by the Department of Planning, Housing and Infrastructure (DPHI). All eastern NSW PCTs, including the coast and tablelands, have been revised and classified into new PCTs, which were released in BioNet on 24 June 2022 and included in the BAM-C on 14 April 2023. Although this application was lodged prior to the revision of PCTs and subsequent updates to the BAM-C, the transitional arrangements outlined by NSW DPE have since ended and as such, the project is required to use the revised PCTs.

Vegetation within the subject land comprises 1.76 hectares of planted native vegetation, 1.05 hectares of planted exotic vegetation and 0.08 hectares of PCT 3262 in a low condition which is consistent with the threatened ecological community (TEC) *Sydney Turpentine-ironbark Forest in the Sydney Basin Bioregion* listed as a Critically Endangered Ecological Community (CEEC) under the *Biodiversity Conservation Act 2016* (BC Act) (hereby referred to at the Sydney Turpentine-ironbark Forest CEEC).

The proposed development will result in the direct removal of 0.03 hectares of native vegetation consistent with PCT 3262 in a low condition, 0.60 hectares of planted native vegetation which is not consistent with a PCT, and 0.98 hectares of planted exotic vegetation. The impacts to PCT 3262 will equate to the removal of 0.03% of the native vegetation within the assessment area (1,500 metre buffer zone in accordance with the BAM).

Avoidance of remnant native vegetation has been undertaken where possible to restrict impacts to 0.03 hectares of PCT 3262 in a low condition. The portion of this PCT that will be removed under the proposal occurs in a modified conditional state and is not consistent with the Sydney Turpentine-ironbark Forest CEEC. Two isolated canopy trees in low condition vegetation toward the eastern side of the subject land, which are consistent with the CEEC, will be retained under the current design, and as such, all direct impacts to the Sydney Turpentine-ironbark Forest CEEC have been avoided. In addition, the development site contains 0.08 hectares of habitat for Large-eared Pied Bat *Chalinolobus dwyeri*.

Consideration has been given to avoiding and minimising impacts to biodiversity where possible during the assessment and preliminary design, including the removal of the proposed school from the Concept Masterplan. As a result, bulk earthworks will be predominantly restricted to planted native vegetation and areas dominated

by exotic species. A small portion of PCT 3262 will be removed under the proposal, although this vegetation is not consistent with a TEC and is not likely to support habitat for threatened species. Mitigation and management measures will be put in place to adequately address impacts associated with the proposal, including direct, indirect and prescribed impacts.

Although one CEEC was recorded within the subject land, it will not be directly impacted by the current proposal. The vegetation integrity (VI) score of the vegetation to be impacted was calculated as 34.6 for PCT 3262 low condition. As such, in accordance with Section 10 of the BAM, offsets are required to be secured for the removal of 0.03 hectares of PCT 3262 in a low condition (one credit). In addition, the native vegetation to be removed represents foraging habitat for Large-eared Pied Bat and must also be offset under the BAM (one credit) for two credits total.

Indirect impacts predicted to occur as a result of the proposal, will be avoided through the mitigation measures provided in Section 8 of this BDAR including implementation of a Construction Environmental Management Plan (CEMP). Therefore, offsets for indirect impacts are not anticipated to be required for the project.

An assessment against Serious and Irreversible Impacts (SAII) has been prepared for Sydney Turpentine-ironbark Forest CEEC (Appendix 5), in accordance with *Guidance to assist a decision-maker to determine a serious and irreversible impact* (DPIE 2019). This assessment concluded that the project will not likely contribute significantly to the risk of extinction to the Sydney Turpentine-ironbark Forest CEEC regarding Clause 6.7 of the BC Regulation. 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 Energy is not required.

Stage 1 – Biodiversity assessment

1 Introduction

This BDAR is prepared on behalf of BaptistCare and submitted to the Department of Planning, Housing and Infrastructure (DPHI) in support of an amendment to the State Significant Development Application (SSDA) (SSD-46561712) for a Concept Masterplan for the site principally located at 157 Balaclava Road, Macquarie Park. (Lot 60 in DP1107965 and part of Lot 2000 in DP1305792).

Since original lodgement, the masterplan has been revised to address DPHI preliminary assessment, agency advice and submissions, including that made by City of Ryde Council (CoRC). Key amendments to the scheme include:

- Relocation of land uses, including removal of the proposed school, to respond to environmental concerns.
- Reconfiguration of the scheme to be centred around open space and informed by Connection to Country, including resurfacing the creek and creating a new circa 1 hectare park.
- Redistribution of GFA to achieve additional open space and improved ground plane connectivity and amenity. The proposed massing has been refined with podium and tower form and increased variation in height.
- Clarifying the publicly accessible land through provision of passive recreation areas, pocket parks and a central plaza for utilisation by residents, visitors and workers.
- Realignment of the internal road network, including a new connection to Herring Road. and deletion of the left-out movement onto Epping Road, to improve vehicular connections and to establish an appropriate road hierarchy that prioritises pedestrian and cyclist movement.
- Incorporation of Connecting with Country design principles and establishing a precinct scale landscape and urban design response to acknowledge ecology and the deep Indigenous history of the area.

Specifically, consent is sought under section 4.22 “Concept Development Applications” of the *Environmental Planning and Assessment Act 1979* (EP&A Act) for the following:

- A mixed use precinct comprising six development lots (refer Figure 1.1), each with a maximum GFA and contributing to a maximum site-wide GFA, with the following land uses:
 - Seniors housing;
 - Co-living housing;
 - Residential accommodation;
 - Commercial premises;
 - Centre-based child care facility;
 - Health services facility;
 - Roads; and
 - Recreation area.
- A minimum GFA for each non-residential use, co-living housing, seniors housing and affordable housing.
- Planning envelope for each lot, including a maximum height and basement extent in plan (not depth).

- Public domain concept arrangement, including parks, roads, and pedestrian connections.
- Identification of trees to be retained and removed.
- Identification of existing structures to be demolished.
- A two-stage occupation of lots (prior to and following establishing the New Road 3 connection).

This application does not seek consent for physical works on site. Future works including tree removal, remediation, demolition or construction of public domain, infrastructure and buildings will be sought under future development applications (notwithstanding identification of trees and existing structures to be removed in the concept plans).

For a detailed project description refer to the Amendment Report prepared by Ethos Urban. This report is to be read in conjunction with the Concept Masterplan SSDA documentation prepared by BVN and Arterra.

The Concept Masterplan is supported by a Reference Scheme prepared by BVN which indicatively illustrates a possible arrangement of future detailed development within each lot. All parts of the reference scheme, including location of uses, apartment blocking, basement design, loading dock arrangement and detailed GFA breakdown of uses are subject to future detailed development applications.

The Concept masterplan is supported by a Development Design Guidelines prepared by the project team that provides additional parameters and design-based objectives to guide future development. The Guidelines ensure that future detailed development applications achieve the intended outcomes and urban design, sustainability and technical commitments set by the project.

The purpose of this assessment was to apply the BAM (NSW DCCEW 2024a) to the proposed development, and provide Ethos Urban with a BDAR. The BDAR is to be submitted to DPE as part of a SSDA, under Part 4 of the EP&A Act, for the proposed development.



Figure 1.1 Concept masterplan

1.1.1 Relevant SEAR to this report

This BDAR also responds to the Industry Specific Secretary's Environmental Assessment Requirements (SEARs) issued by DPE on 17 August 2022. An outline of the SEARs relevant to this biodiversity assessment, and how they have been responded to, is summarised in Table 1 below.

Table 1 Response to SEARs

Issue and Assessment Requirements	Response	Evidence
7. Biodiversity		
7.1 - Assess any biodiversity impacts associated with the development in accordance with the Biodiversity Conservation Act 2016 and the Biodiversity Assessment Method 2020, including the preparation of a Biodiversity Development Assessment Report (BDAR), unless a waiver is granted, or the site is on biodiversity certified land.	A BDAR is required for impacts to native vegetation within the subject land. Site investigations to inform the original BDAR remain current, with minor adjustments to reflect the proposal.	This BDAR.
7.2 - If the development is on biodiversity certified land, provide information to identify the site (using associated mapping) and demonstrate the proposed development is consistent with the relevant biodiversity measure conferred by the biodiversity certification.	The subject land does not occur on biodiversity certified land.	N/A
11.3 - The EIS must assess the impact of the development on hydrology, including: • Water balance including quantity, quality and source. • Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas. • Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems. • Impacts to natural processes and functions within rivers, wetlands,	Impacts to hydrology as a result of the development are not expected to occur.	Section 1.1.1 of this BDAR.

Issue and Assessment Requirements	Response	Evidence
estuaries and floodplains that affect river system and landscape health such as nutrient flow, aquatic connectivity and access to habitat for spawning and refuge (e.g. river benches). - Changes to environmental water availability, both regulated/licensed and unregulated/rules-based sources of such water. - Identification of any proposed monitoring of hydrological attributes.		

1.2 Summary of relevant matters raised

This BDAR has been prepared in response to the DPHI preliminary assessment, agency advice and submissions and received following original exhibition of SSD-46561712. For a combined response to all comments received refer to the Amendment Report prepared by Ethos Urban. Biosis responses to comments received are displayed below in Table 2.

Table 2 Response to Submission

Source	Agency reference	Item Description	Response
CoRC	173	The BDAR does not include a checklist indicating compliance with BAM reporting requirements. This checklist should be provided, demonstrating compliance with BAM reporting.	A BAM reporting compliance checklist has been included in Appendix 7.
CoRC	174	Further information is required to justify the explanation of how PCTs were determined, particularly PCT 1281.	It should be noted that all eastern NSW PCTs, including the coast and tablelands, have been revised and classified into new PCTs. PCT 1281 has now been updated to PCT 3262 in accordance with these updates. Additional justification for PCT and vegetation community selection has been provided in 3.1.6 and Section 3.1.8. PCTs are determined, and assigned to vegetation in the subject land, based on the information provided in Table 1, as well as the experience of our field staff and senior botanists.
CoRC	175	A single species credit has been assumed present without ample justification as to how this was	Foraging habitat for Large-eared Pied Bat includes associated PCTs within 2km of potential

Source	Agency reference	Item Description	Response
		determined. Further information is required to whether this species is likely to be present, and if so, what habitat features are likely to be lost from this proposal. The table provided for this species credit, Table 11, lists a PCT, which is not identified anywhere else within the BDAR as being present onsite.	roosting habitat. Potential roosting habitat was considered to be present along Lane Cove River, which occurs within 2 kilometres of the subject land. Due to the presence of vegetation communities associated with this species (PCT 3262) within the subject land, this species is considered likely to be present as part of foraging movements and has been assumed present. Additional justification for inclusion as a candidate species and assuming presence for this species has been provided in Section 4.2 and Section 4.2.5.
CoRC	176	There is no information regarding placement of plots for planted native vegetation. In particular, the absence of native species within the plot data, which are known to occur within the Sydney Basin Bioregion, should be addressed.	Plots are positioned in areas that provide an accurate representation of the vegetation composition within each vegetation zone. Floristic data is recorded for an area that is 20 x 20 metres in size and aims to reflect the overall condition of a vegetation zone. Please see updated figure with plot locations accurately located within their respective vegetation zone. Plot data is provided in Appendix 3.
CoRC	177	Discussion of the placement of Plot 1 for the remnant native vegetation is insufficient. The placement of the Plot within Figure 6 of the BDAR appears to be outside of the vegetation zone.	Please see updated figure with updated vegetation mapping and accurate plot placement within their respective vegetation zone. Plot data is provided in Appendix 3.
CoRC	178	Further explanation on the PCT filtering process is required.	Further explanation for the PCT filtering process has been provided Section 3.1.6. PCTs are determined, and assigned to vegetation in the subject land, based on the information provided in Section 3.1.6, as well as the experience of our field staff and senior botanists.
CoRC	179	Review of data input within the BAM-C to accurately portray the PCT selected should be undertaken and clarified in the BDAR.	PCTs are assigned to the vegetation in the subject land as per the justification provided in Table 1, and the PCT is then added in the BAM-C. The PCT is then assigned vegetation zones, and plot data provided in Appendix 3 is uploaded to the associated vegetation zones in the BAM-C. Explanation of data input into the BAM-C is provided in Section 3.2.3 and plot data is provided in Appendix 3.
CoRC	180	Review of foraging habitat suitability for <i>Chalinolobus dwyeri</i> should be undertaken and addressing in the BDAR	As per previous comment. Additional information has been provided in Section 4.2 and Section 4.2.5 to justify the presence of suitable foraging habitat.

Source	Agency reference	Item Description	Response
EHG	275	The EIS notes no physical works are proposed as part of this Concept Masterplan and that the demolition of existing buildings and associated tree removal on site will be subject to a separate planning approval (page 50). It is unclear if the BDAR for the Concept Masterplan also applies to SSD-46561716 (stage 1 Vertical Village). The Response to Submissions (RtS) should clarify this as the Executive Summary to the BDAR indicates it has been provided as part of the submission for both SSD-46561712 (Concept Masterplan) and SSD-46561716 (stage 1 Vertical Village). However, it also states “a separate BDAR (Biosis 2022) has been prepared to accompany the SSD Application for the Stage 1 Vertical Village (SSD- 46561716)”.	The project will be delivered via a staged SSD planning pathway; this application seeks approval for a Concept Masterplan. Future detailed SSDAs will be submitted to DPHI to seek approval for physical works of each development lot (please note that SSD-46561716 has not been lodged). This BDAR assesses the impact of the broader Concept Masterplan including demolition of existing buildings and associated tree and vegetation removal.
EHG	276	As the EIS indicates SSD-46561716 includes staged demolition of the area known as Willandra Village (retirement village) and Coinda Court (residential care facility) clarification is required as to whether a further BDAR is to be submitted to assess the impacts of SSD-46561716 including the demolition of the existing buildings.	As per above comment -
EHG	277	Human-made structures may provide habitat for threatened species, particularly microbats. Table 16 in the BDAR states “threatened species that can use human made structures as habitat with potential to occur in the subject land include Eastern Bent-winged Bat and Little Bent-winged Bat” but it indicates “... there are no human made structures in the subject land that would be suitable for these bats to use as roosting habitat”. There are no details on any microbat surveys that have been undertaken of the buildings, and as such, EHG considers not enough information has been provided in the BDAR to conclude that microbat habitats do not occur and roost on site in the human-made structures.	Targeted surveys were not undertaken for microbat species as suitable breeding habitat was considered absent from the subject land. The site is highly degraded and occurs in a highly urbanised setting, with limited foraging resources present. Eastern Bent-winged Bat and Little Bent-winged Bat were considered in the assessment on the basis that they are known to roost in man made structures, and have multiple records within the locality. However, given the urban setting, the lack of foraging habitat and lack of availability of suitable roost locations within the existing structures in the subject land, habitat was considered absent for these species. No individuals were recorded during incidental surveys. Additional justification has been provided in Table 16, Section 6.3 of the BDAR.
EHG	278	The EIS indicates traces of the remnant threatened ecological community Sydney Turpentine Ironbark Forest (STIF) occurs on site including two trees in the north-eastern portion of the site (section 2.2.2). It indicates these two	The trees/shrubs mentioned in EHG comments (see item number 279) have now been adopted and mapped into the native PCT/TEC. In regard to the remainder of planted native vegetation - Although the additional tree species to be

Source	Agency reference	Item Description	Response
		trees which are consistent with PCT 1281 are to be removed (page 55). The BDAR indicates PCT 1281 exists on the site as two isolated canopy trees and these trees are Sydney Turpentine and Red Mahogany (Table 1). The Tree Impact Assessment Schedule in the AIAR appears to indicate these two trees are Tree 70 and Tree 71 respectively.	removed are native to the area, they exist as a combination of planted street trees and landscaped gardens and do not meet the definition of a PCT with a VI score of 13.3. Planted native vegetation has been assessed under the planted native vegetation streamlined assessment module in accordance with Section 2.2 of the BAM. Although this vegetation contained a number of native or non-indigenous canopy species, the vegetation could not be reasonably assigned to a PCT. This was mainly due to the dominance of Lemon-scented Gum, which is endemic to temperate and tropical parts of northeastern Australia but has since been naturalised in NSW, where it is commonly planted. It is unlikely that the remainder of endemic canopy species are remnant stock, as historic aerial imagery indicates that the majority of the subject land was previously cleared. The vegetation now occurs as managed gardens in a landscaped setting and was mostly comprised of trees planted around the boundary of the site. In addition, the composition and dominant species within the 'planted native vegetation' were not considered to be consistent with these TECs. The development footprint has been updated as part of the updated concept design and impacts to the CEEC have now been avoided. This has been updated throughout the BDAR and within Section 5.
EHG	279	According to the AIAR other endemic trees are recommended for removal from the site include: • Tree 18 – 1 x Blueberry Ash • Tree 19 – 1 x Blueberry Ash • Tree 40 – 1 x Angophora costata • Tree 75 – 3 x Angophora costata • Tree 76 – 1 x Sydney Blue Gum • Tree 100 – 1 x E. tereticornis • Tree 159 – 3 x Sydney Blue Gum • Tree 196 – 1 x Parramatta wattle • Tree 326 – 1 x Blueberry Ash • Tree 330 – 1 x Grey Gum	As per response to item number 278.
EHG	280	These trees are proposed for removal because they are either within the footprint of works or	As per response to item number 278.

Source	Agency reference	Item Description	Response
		they are to be retained for Stage 1 only then removed as part of the Masterplan. The above species are component species of either STIF and/or Blue Gum High Forest (BGHF) which can occur in the area, and there is no discussion in the BDAR to explain why they are not considered to be remnant or regenerated from remnant stock.	
EHG	281	STIF is listed as a Critically Endangered Ecological Community (CEEC) under the Biodiversity Conservation Act 2016 (BC Act) as the NSW Threatened Species Scientific Committee has determined it is facing an extremely high risk of extinction in Australia in the immediate future. STIF is also listed as an ecological community that meets the principles and criteria for serious and irreversible impact (SAIL)	As per response to item number 278.
EHG	282	The EIS states “the proposed building envelope has been designed to have minimal impact on biodiversity, ecology and the environment” (page 58) although it is proposing to remove remnant STIF CEEC trees which has an SAIL listing.	As per response to item number 278.
EHG	283	The BC Act has legislated requirements to avoid and mitigate impacts to threatened entities. The BDAR indicates “options to avoid impacts to CEEC Sydney Turpentine Ironbark Forest were highly limited due to project design and earthworks requirements, the small size of the vegetation and its location within the development footprint”. The BDAR also notes the AIAR “found that part of the community only had a moderate retention value”. However, according to the AIAR moderate retention value trees are “in good to reasonable condition and should be retained where possible and feasible to do so. They may also be lesser trees, but part of an important grouping of trees and therefore warrant retention based on the group’s value”.	As per response to item number 278.
EHG	284	The BDAR states “alternatives were considered where this vegetation was retained however, they were unable to be progressed due to engineering constraints associated with the geology of the site. As the site has a significant drop in level to the south-east, future development allowing retention of the CEEC	As per response to item number 278.

Source	Agency reference	Item Description	Response
		would have needed to allow for an amended level for this part of the site. This would result in a build up of nonpermeable surfaces in close proximity that would have unacceptable consequences to future flood risk" (page 128).	
EHG	287	Evidence of the pre-clearing surveys and inspections for fauna and any relocation of fauna must be provided to the satisfaction of the Secretary of Planning.	Noted – To be completed prior to commencement of works.
EHG	295	The BDAR includes a mitigation measure that "where appropriate native vegetation cleared from the study area should be mulched for re-use on the site" (Table 18, page 51). Rather than mulching native trees approved for removal, EHG recommends the SSD salvages and reuses these native trees including tree trunks (greater than approximately 25-30cm in diameter and 2-3m in length) and root balls and these are placed in the landscape areas and riparian corridor that are to be planted with local native species to enhance habitat. The diameter of the log (greater than 25-30 cm in diameter) is important because it impacts thermal qualities and longevity of the material.	Text has been updated in Table 18 to reflect the salvage of tree material for reuse.
EHG	297	EHG recommends the following condition of consent is included: The Applicant must reuse any of the native trees that are to be removed as part of this project, including tree trunks (greater than 25-30 centimetres in diameter and 2-3 metres in length), root balls and logs on the ground to enhance habitat.	Text has been updated in Table 18 to reflect the salvage of tree material for reuse.
EHG	298	If removed native trees are not able to be entirely re-used by the project, the proponent should consult with local community restoration/rehabilitation groups, Landcare groups, and relevant public authorities, local CoRCs, and Greater Sydney Local Land Services prior to removing any native trees to determine if the removed trees can be reused in habitat enhancement and rehabilitation work. This detail including consultation with the community groups and their responses must be documented.	Noted – To be completed post approval.

1.3 Project description

The subject land is located approximately 18 kilometres north-west of the Sydney Central Business District (CBD), covers approximately 6.4 hectares and is defined as the extent of Lot 60 DP1107965. The site is located near the corner of Herring Road and Epping Road within the City of Ryde Local Government Area (LGA). It is directly south of Macquarie University and in close proximity to Macquarie Shopping Centre. The surrounding area is characterised by a mix of commercial and education uses, as well as student accommodation and residential dwellings.

The site comprises a significant land holding with street frontages to Balaclava Road and Epping Road. It currently accommodates several low-medium density buildings that are connected via internal footpaths and lower order road networks.

The proposed redevelopment is located within the MU1 zoned land located at 157 Balaclava Road, Macquarie Park (Lot 60 DP1107965) (Figure 1). The redevelopment will include the design and construction of a mixed-use precinct comprised of seniors housing, co-living housing, residential accommodation, , commercial premises, centre-based child care facility, health services facility, as well as the development of associated road and intersection upgrades, pedestrian connections, and recreation areas (Figure 1).

Biosis was previously engaged by Ethos Urban to undertake an initial site assessment to determine the ecological constraints of the study area.

The project triggers the NSW BOS as the project falls under an SSD. The BC Act requires that the BAM be applied to all proposals that trigger the BOS, and that a BDAR is required to be submitted to the approval authority.

1.4 Purpose of this assessment

This BDAR will:

- Address the BAM (DPIE 2020) 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.

All biodiversity assessments have been undertaken in accordance with the BAM, and this BDAR has been reviewed and certified by Accredited Assessor Callan Wharfe (BAAS18138). This BDAR describes the outcome of the development assessment case (35184) conducted consistent with the BAM.

1.5 The subject land, development footprint and assessment area

The terms subject land, development site, development footprint and assessment area are used throughout this BDAR and are defined as follows and illustrated on Figure 1.

- The development site is defined as the total area of Lot 60 DP1107965 and is approximately 6.4 ha in size. The lot is located 1 km south of the M2 Motorway, bounded by Hornsby and Ku-ring-gai in the north, Willoughby and Lane Cove in the east, and Parramatta in the west, approximately 18 km north-west of the Sydney Central Business District (CBD). The land is located in the City of Ryde Local

Government Area (LGA) and the Greater Sydney Local Land Services (LLS) Region and is zoned as B4 under the *Ryde Local Environmental Plan 2014* (LEP).

- The subject land is 8.07 hectares in size and is defined as the area within the development site, plus a 30 m buffer around the northeastern and southeastern boundary of the development site to assess any potential indirect and prescribed impacts.
- The development footprint comprises 6.13 ha in area and is defined as the area directly impacted by the proposed works.
- The assessment area includes the subject land and the area of land within the 1500 m buffer zone surrounding the subject land and is approximately 898.7 ha in area.

1.6 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:

- Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) Protected Matters Search Tool for matters protected by the EPBC Act (Cth DCCEEW 2024).
- 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 DCCEEW 2024b).
- NSW BAM Calculator.
- Biodiversity values map (NSW DCCEEW 2024c).
- Native vegetation regulatory map (NSW DCCEEW 2024d).
- BAM Important Areas maps (NSW DCCEEW 2024e).
- PlantNET (The Royal Botanic Gardens and Domain Trust) (RBGDT 2022).
- 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 2024a).
- Relevant vegetation mapping, such as the *NSW State Vegetation Type Map (SVTM C2.0M2.0)* (NSW DCCEEW 2024g).

The following reports were also reviewed and relied on to provide additional information:

- *BaptistCare Macquarie Park Redevelopment - Ecological Constraints Assessment* (Eco-logical 2019).
- *Macquarie Park – Master Plan Scoping Report* (Ethos Urban 2022).
- *BaptistCare – Macquarie Park Place Strategy* (Place Partners 2021).
- *Macquarie Park Master Plan and Concept Design, Request for Proposal – Ecology and Biodiversity Advice* (Ethos Urban 2012).

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.

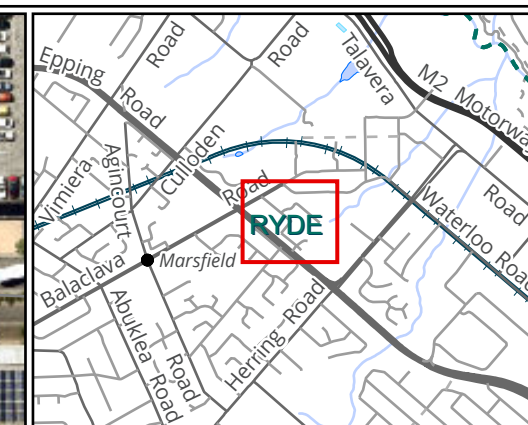
The following spatial datasets were utilised during the development of this report:

- Catchment Boundaries of New South Wales dataset.
- Mitchell Landscapes Version 3.0.
- Interim Biogeographic Regionalisation of Australia (IBRA) Version 7.
- Spatial data associated with *NSW State Vegetation Type Map (SVTM C2.0M2.0)* (NSW DCCEEW 2024g).
- 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.
 - Location map as described in subsection 3.1.2 of the BAM.
 - Landscape map with features including 1500 m buffer, as described in section 3.1.3 of the BAM.

1.7 Legislative requirements

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

- *Environment Protection and Biodiversity Conservation Act 1999.*
- *Environmental Planning and Assessment Act 1979.*
- *Biodiversity Conservation Act 2016.*
- *Fisheries Management Act 1994.*



Legend

-  Subject land
-  Development site
-  Development footprint

Figure 1 Subject land

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56


APM Group

Matter: 37762, Date: 05 March 2025,
Drawn by: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_BDAR_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 and within a 1500 metre buffer, as required by the BAM (NSW DCCEEW 2024a). Figure 3 shows the location of the subject land and landscape features within the 1500 metre buffer.

2.1 Subject land description

The subject land is located 1 kilometre south of the M2 Motorway bounded by Hornsby and Ku-ring-gai in the north, Willoughby and Lane Cove in the east, and Parramatta in the west, approximately 18 kilometres north-west of the Sydney CBD. Current land use is listed as B4 Mixed Use under the Ryde LEP.

The subject land is approximately 6.4 hectares, containing patches of native vegetation surrounded by urban residential area.

The subject land is within the Glenorie 1:100k soil landscape (Hazelton and Tille 1990). The Glenorie landscape is characterised by undulating to rolling low hills on Wianamatta Group shales. The soil is shallow to moderately deep Yellow Podzolic Soils and Gleyed Podzolic Soils along drainage lines. Vegetation consists of almost completely cleared tall open-forest (wet sclerophyll forest). Common canopy species for the area include remnant Sydney blue gum *Eucalyptus saligna* and Blackbutt *Eucalyptus pilularis*. Other species include Turpentine *Syncarpia glomulifera*, Grey Ironbark *Eucalyptus paniculata*, White Stringybark *Eucalyptus globoidea* and Rough-barked Apple *Angophora floribunda*. Common understory species include Pittosporum *Pittosporum undulatum* and coffee bush *Breynia oblongifolia* (Benson 1980). Most original vegetation has been extensively cleared, except for larger trees in many residential areas.

2.1.1 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.

The total area of the assessment area is 898.7 hectares, with the area of native vegetation mapped within the assessment area being 118.4 hectares. This is a native vegetation cover of 13.2 % (>10 -30 % class as defined in Section 3.2.3 of the BAM) and this value was entered into the BAM calculator.

Cleared areas within the assessment area include 657.3 hectares.

2.1.2 Bioregions

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 per cent 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).

2.1.3 Rivers and streams

The development site is located within the Greater Sydney LLS Region and the Port Jackson/Georges River catchment. The closest river-mouth is the Lane Cove River (a fourth-order watercourse) located approximately 1.39 kilometres to the north of the development site. Tributaries occurring in proximity to the subject land include an unnamed first-order creek running north-east from the eastern corner of the site, a first-order stream Mars Creek, located approximately 300 metres to the north-west of the subject land and a second-order stream, Shrimpton's Creek, approximately 600 metres east of the subject land.

There are no Key Fish Habitats as mapped by the NSW Department of Primary Industries (DPI) within the subject land (DPI 2013) however, Key Fish Habitat is mapped north-east of the subject land associated with the Lane Cove River.

2.1.4 Wetlands

No local wetlands were identified within the subject land or development footprint. The closest waterbodies of significance include Lane Cove River approximately 3.6 kilometres to the south east and Parramatta River, approximately 4.7 kilometres south of the development site, both listed as important wetlands (NSW DCCEEW 2010) (Environment Australia 2001).

2.1.5 Connectivity

The subject land does not form part of any recognised biodiversity corridors, flyways or significant habitat connectivity features.

Vegetation in the subject land is comprised of PCT 3262 and planted native vegetation located along roadsides and dispersed around buildings as part of more formal landscaped areas. Habitat fragmentation occurs across the subject land and surrounding area, however limited connectivity is preserved through bushland extending north towards riparian vegetation associated with Lane Cove River (Figure 4). These connectivity features provide breeding, foraging and dispersal resources for terrestrial and arboreal mammals, flying mammals, and avifauna in the locality.

2.1.6 Geological features

There were no recorded karst, caves, crevices, cliffs or other areas of geological significance within the development site or within the assessment area.

2.1.7 Areas of outstanding biodiversity value

There are no areas of outstanding biodiversity (NSW DCCEEW 2024f) or biodiversity values (NSW DCCEEW 2024c) mapped within the development site.

2.1.8 NSW (Mitchell) Landscape

The development site occurs within the Pittwater Mitchell Landscape (Department of Environment & Climate Change NSW 2002). This landscape is characterised by a deep elongated harbour with steep cliffed margins on horizontal Triassic quartz sandstone. The landscape includes small pocket beaches and more extensive Quaternary estuary fill of muddy sand at the head of most tributary streams, a general elevation of 0 to 80 metres and a local relief 10 to 50 metres (Department of Environment & Climate Change NSW 2002)

Common vegetation communities found in this landscape are woodlands and open forest of Sydney Peppermint *Eucalyptus piperita*, Smooth-barked Apple *Angophora costata*, Red Bloodwood *Corymbia gummifera* and Blackbutt *Eucalyptus pilularis*. Sheltered gullies contain some Turpentine *Syncarpia glomulifera*,

Coachwood *Ceratopetalum apetalum* and Water Gum *Tristania laurina*. Estuarine sands were originally dominated by saltmarsh but have been taken over by Grey Mangrove *Avicennia marina* in the past century (Department of Environment & Climate Change NSW 2002).

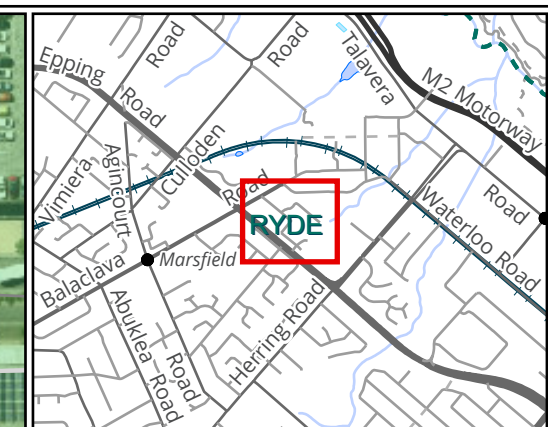
2.1.9 Additional landscape features

The subject land and 1,500 metre assessment area do not contain any soil hazard features or other additional features that are required to be assessed.

1.1.1 Hydrology

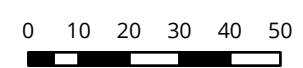
Assessment of the potential for the subject land to support groundwater dependent ecosystems (GDEs) was undertaken using the Australian Government's Bureau of Meteorology Groundwater Dependant Ecosystems Atlas (BOM 2019) and GDE High Ecological Value Aquatic Ecosystems (HEVAE) Spatial Portal (OEH & DPI Fisheries 2020). The subject land is not mapped as having GDE's according to BOM (2019) or DPI Fisheries (2020).

The subject land is not mapped as having Groundwater Vulnerability (LEP).



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Lot
 - IBRA Region/Sub-region
- Strahler stream order / buffers**
- 1
- Mitchell landscapes**
- Phr, Pennant Hills Ridges

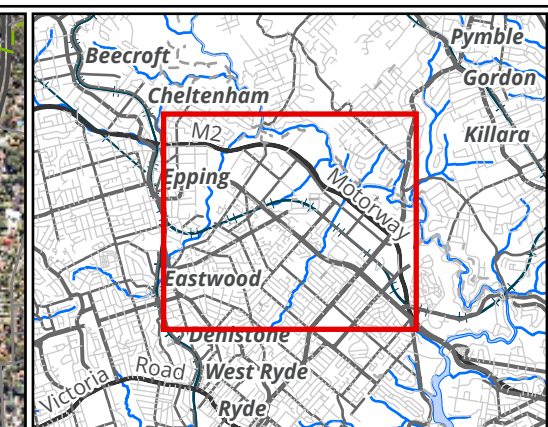
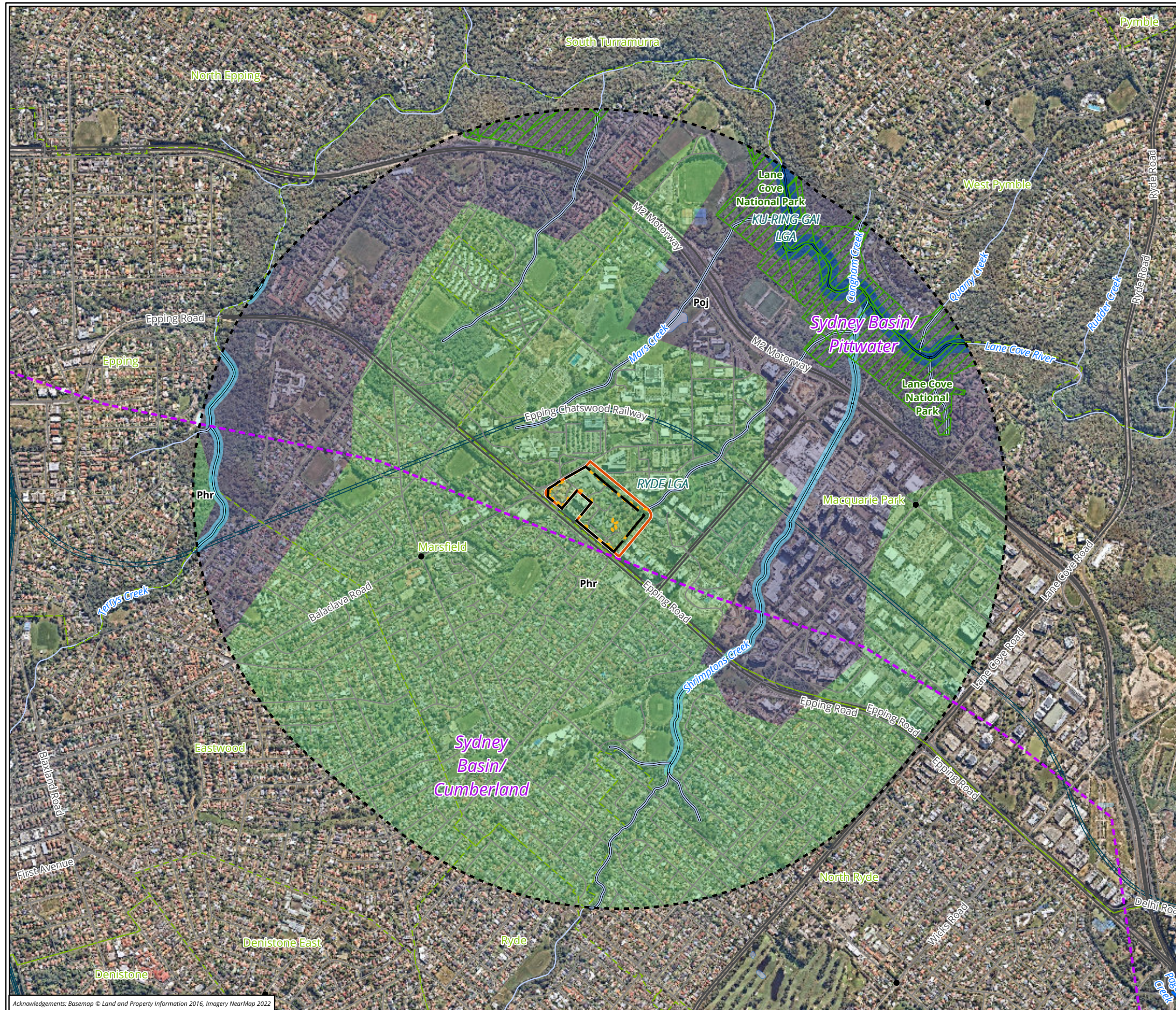
Figure 2 Site map



Metres
 Scale: 1:1,500 @ A3
 Coordinate System:
 GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
 GIS: AM, Checked by: SNA, Last edited by: aabid
 Location: P:
 V40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
 Layout: 37762_F2_Site



- Legend**
- Subject land
 - Development site
 - Development footprint
 - Assessment area
 - IBRA Region/Sub-region
 - National Park/Reserve
- Strahler stream order / buffers**
- 1
 - 2
 - 3
- Mitchell landscapes**
- Phr, Pennant Hills Ridges
 - Poj, Port Jackson Basin

Figure 3 Location map

0 100 200 300 400 500
Metres
Scale: 1:15,000 @ A3
Coordinate System:
GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F3_Location

3 Native vegetation

The development site supports 0.08 hectares of PCT 3262 with high levels of disturbance and 0.86 hectares of planted native vegetation. The PCT in the development site occurs in a low condition, with much of the vegetation occurring in a modified state. The single patch of remnant native vegetation containing canopy species within the development site is small, highly isolated, and subject to high levels of modification as a result of historical ground disturbance.

3.1 Native vegetation and habitat assessment

3.1.1 Native vegetation extent

The extent of native vegetation, TECs and vegetation integrity within the subject land was determined using the results of site investigations undertaken as part of the current assessment, previous studies undertaken at the site (EcoLogical Australia 2020) and Section 4 of the BAM (DPIE 2020). Figure 4 provides a map of the native vegetation extent recorded within the assessment areas, development site and subject land, as assessed during field investigations undertaken in August 2022, and via desktop assessments. 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 4, include cleared areas, buildings, and other infrastructure and are addressed further below.

3.1.2 Review of existing information

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

- The *NSW State Vegetation Type Map (SVTM C2.0M2.0)* (NSW DCCEEW 2024g).
- Database searches outlined in section 1.6.
- *BaptistCare Macquarie Park Redevelopment – Ecological Constraints Assessment* (EcoLogical Australia 2020).
- *Scoping Report Macquarie Park – Master Plan* (Ethos Urban 2022).
- *BaptistCare – Macquarie Park Place Strategy* (Place Partners 2021).

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

An initial site assessment was undertaken on the 28 April 2022, additional systematic biodiversity assessment was conducted 8 August 2022 under the terms of Biosis' Scientific Licence issued by the EES under the *National Parks and Wildlife Act 1974* (SL100758, expiry date 30 June 2026). Fauna survey was conducted under approval CSB 17/892 from the NSW Animal Care and Ethics Committee (expiry date 31 January 2028).

Assessment in accordance with the BAM was overseen by Accredited Assessor Callan Wharfe (BAAS18138).

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

- The identification and mapping of PCTs according to the structural definitions held in the BioNet Vegetation Classification database, with reference to information provided in *The Native Vegetation of the Sydney Metropolitan Area* (OEH 2016).
- Undertaking floristic plots within each vegetation zone in accordance with Section 4 of the BAM (DPIE 2020), 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 1992, 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 (DPE 2023).
- 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).

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 (SVTM C2.0M2.0)* (NSW DCCEEW 2024g) and NSW BioNet Vegetation Classification database (NSW DCCEEW 2024a). 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 below.

3.1.4 Local data

No local data has been used for native vegetation assessment.

3.1.5 Non-native vegetation

The majority of the vegetation within the subject land consists of planted native and planted exotic vegetation associated with landscaped gardens. Planted exotic vegetation did not contain species native to NSW and was comprised of vegetation associated with formal gardens (vegetable gardens, rose gardens etc) and

landscaping (Figure 5). Planted native vegetation could not be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal, due to the species composition present (Table 5).

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 2020). Non-native vegetation which does provide habitat for threatened species is required to be assessed.

Non-native vegetation and planted native vegetation have been assessed for threatened species. Habitat resources are limited within the study area due to the disturbed, isolated and urbanised nature of the habitat, which limits its suitability for threatened fauna. Highly mobile fauna including birds and bats may exploit available resources on a seasonal or transient basis as part of a broad foraging range, but the available habitat is considered unlikely to support resident threatened fauna species.

A detailed description of the planted exotic vegetation recorded in the subject land is provided below in Table 3 and is shown on Figure 5.

Table 3 Planted exotic vegetation

Planted exotic vegetation	
Name	Planted exotic vegetation
Extent within subject land	1.05 ha
Description	This vegetation type is characterised by planted exotic/urban species present in scattered locations throughout the subject land. This vegetation type is predominantly devoid of any native vegetation and exists as scattered exotic trees and landscaped gardens. Dominant canopy trees present include Chinese Tallow <i>Triadica sebifera</i>, Jacaranda <i>Jacaranda mimosifolia</i>, Southern Magnolia <i>Magnolia grandiflora</i>, Sweetgum <i>Liquidambar styraciflua</i> and numerous pines <i>Pinus species</i>. Areas of landscaped gardens predominantly contain Deptford Pink <i>Dianthus armeria</i>, Camellia <i>Camellia japonica</i>, Blue Lilyturf <i>Liriope muscar</i>, Aloe <i>Aloe vera</i>, Gardenia <i>Gardenia jasminoides</i>, Snowflake <i>Leucojum aestivum</i>, Laurustine <i>Viburnum tinus</i>, Lily of the Nile <i>Agapanthus africanus</i>, Japanese Sacred Bamboo <i>Nandina domestica</i>, Coastal Rosemary <i>Westringia fruticosa</i>, Ginger Lily <i>Hedychium gardnerianum</i>, Sweet Violet <i>Viola odorata</i>, Madagascar Periwinkle <i>Catharanthus roseus</i> and Rosemary Grevillea <i>Grevillea rosmarinifolia</i>.
Survey effort	One BAM plot/transect (see Table 9 and Figure 6).
TEC Status	This vegetation type is not consistent with any NSW or Commonwealth listed TEC.

Planted exotic vegetation

Picture



Photo 1 Planted exotic vegetation within the subject land

3.1.6 Plant community types

The classification of Plant Community Types (PCTs) has recently undergone a major revision by the Department of Planning and Environment (DPE). All eastern NSW PCTs, including the coast and tablelands, have been revised and classified into new PCTs, which were released in BioNet on 24 June 2022 and included in the BAM-C on 14 April 2023. Although this project was lodged prior to the revision of PCTs and subsequent updates to the BAM-C, the transitional arrangements outlined by NSW DPE have since ended and as such, the projects are still required to use the revised PCTs.

The following PCTs were assessed as present within the subject land:

- PCT 3262 *Sydney Turpentine Ironbark Forest* (Table 4).

Additional vegetation communities were recorded within the subject land, but could not reasonably be assigned to a PCT. These include:

- Planted native vegetation (Table 5).

Table 4 and Table 5 provide detailed descriptions of the vegetation communities and planted vegetation recorded within the subject land. Vegetation communities recorded within the subject land are shown on Figure 5.

Table 4 PCT 3262

PCT 3262 Sydney Turpentine Ironbark Forest	
Common name	<i>Sydney Turpentine Ironbark Forest</i>
Vegetation formation	Wet Sclerophyll Forest (Grassy sub-formation)
Vegetation class	Northern Hinterland Wet Sclerophyll Forest
Extent within subject land	0.08 ha
Condition	This community was recorded in a low condition state in the subject land.
Description	PCT 3262 typically exists as a tall to very tall open forest characterised by a midstory of sclerophyllous shrubs and small trees over a ground cover of grasses and forbs. The upper strata is typically dominated by Sydney Turpentine <i>Syncarpia glomulifera</i>, with species such as Blackbutt <i>Eucalyptus pilularis</i>, Sydney Red Gum <i>Angophora costata</i>, and Grey Gum <i>Eucalyptus punctata</i> sometimes localised and co-dominant. Red Mahogany <i>Eucalyptus resinifera</i>, Grey Ironbark <i>Eucalyptus paniculata</i> and White Stringybark <i>Eucalyptus globoidea</i> may also be present. The mid strata is layered, with a sparse cover of small trees including species of Eucalyptus, Parramatta Wattle <i>Acacia parramattensis</i> and Forest Oak <i>Allocasuarina torulosa</i>, rarely with Black She-oak <i>Allocasuarina littoralis</i>. The lower strata typically contains midstory species such as Sweet Pittosporum <i>Pittosporum undulatum</i> and Prickly Beard-heath <i>Leucopogon juniperinus</i>, commonly with Coffee Bush <i>Breynia oblongifolia</i>, Elderberry <i>Panax Polyscias sambucifolia</i>, Rice Flower <i>Ozothamnus diosmifolius</i> and Large Mock-olive <i>Notelaea longifolia</i>. The ground layer includes a diverse cover of grasses that very frequently includes Weeping Grass <i>Microlaena stipoides</i> and Wiry Panic <i>Entolasia stricta</i>, commonly with Blady Grass <i>Imperata cylindrica</i>, Bordered Panic Grass <i>Entolasia marginata</i> and Kangaroo Grass <i>Themeda triandra</i>. Small forbs such as White Root <i>Lobelia purpurascens</i> are also common, along with Spiny-headed Mat-rush <i>Lomandra longifolia</i>. Within the subject land, much of the low condition vegetation existed in a modified state, comprised of several planted native species. One small, isolated patch within the eastern portion of the subject land was comprised of two isolated canopy trees, Sydney Turpentine and Red Mahogany, with an understory dominated by planted exotic species. The midstory was comprised of planted native species such as Silky Oak <i>Grevillea robusta</i>, Lilly Pilly <i>Acmena smithii</i> and Illawarra Flame Tree <i>Brachychiton acerifolius</i>, over a predominantly exotic groundcover including species such as Lily of the Nile <i>Agapanthus africanus</i>, Japanese Sacred Bamboo <i>Nandina domestica</i>, Coastal Rosemary <i>Westringia fruticosa</i>, Ginger Lily <i>Hedychium gardnerianum</i>, Panic Veldtgrass <i>Ehrharta erecta</i> and Sweet Violet <i>Viola odorata</i>.
Survey effort	One BAM plot/transect (see Table 9 and Figure 6).
Justification of PCT	• The subject land is within the Sydney Basin IBRA bioregion and Pittwater sub-bioregion. • The canopy species identified are consistent with species characteristic of this PCT. • Occurrence as small remnants in urban environments within shale dominated landscapes of the Sydney Metropolitan area. • The BioNet PCT Identification tool identified PCT 3262 in the results based on the location, landscape position and species recorded at the subject land.

PCT 3262 Sydney Turpentine Ironbark Forest	
	Vegetation mapping (NSW State Vegetation Type Map (SVTM C2.0M2.0) (NSW DCCEEW 2024g)) suggests the presence of this PCT within the landscape surrounding the subject land.
TEC Status	NSW BC Act: Approximately 0.03 ha of this PCT in a low condition meets the requirements of the Critically Endangered Ecological Community (CEEC) <i>Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion</i>. This vegetation was considered to meet the criteria to represent this CEEC on the basis of: - The subject land occurs within the correct bioregion and sub-bioregion. - The vegetation contains diagnostic canopy species, including Sydney Turpentine and Red Mahogany. - The community occurs within shale-dominated landscapes. This CEEC was present in the study area in two forms, including remnant vegetation, and planted vegetation. Remnant vegetation (as identified on Figure 5) was represented by two isolated canopy trees, including one Sydney Turpentine and one Red Mahogany, over an understory of predominantly exotic planted species. The vegetation was present in a low condition and contained limited diagnostic species. However, it was reasonably assigned PCT 3262 and considered to meet the criteria of the CEEC due to the presence of Turpentine within the subject land. In addition, the contiguous vegetation outside the subject land was broadly assessed and determined likely to represent the Sydney Turpentine-Ironbark Forest CEEC. As this vegetation was considered to be the same vegetation community as that within the subject land, it was determined that the isolated canopy species within the subject land were likely an isolated remnant of the larger patch of the CEEC. Areas of planted vegetation are also considered consistent with the TEC as they include diagnostic species and occur in the correct locality. Commonwealth EPBC Act: The vegetation within the subject land does not meet the commonwealth listing criteria for the CEEC, <i>Turpentine-Ironbark Forest of the Sydney Basin Bioregion</i>, listed under the EPBC Act, as the PCT is highly degraded and does not meet the minimum patch size requirement of 1 ha. Further information on TECs is provided in Section 3.1.7 below.
Estimate of percent cleared value of PCT (BioNet)	90 % (NSW DCCEEW 2024a).

PCT 3262 Sydney Turpentine Ironbark Forest

Picture

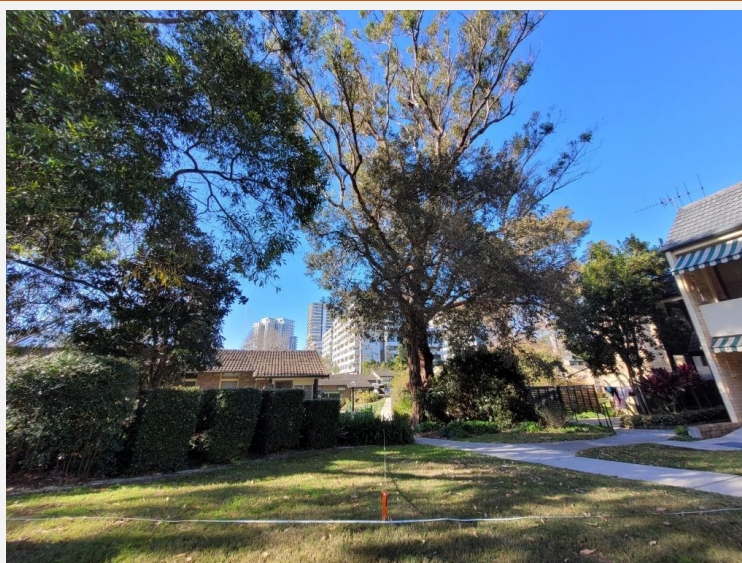


Photo 2 PCT 3262 within the subject land

Table 5 Planted native vegetation

Planted native vegetation	
Name	Planted native vegetation
Extent within subject land	1.76 ha
Description	Planted native vegetation across the subject land could not be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal, due to the species assemblage present and dominant species throughout. The planted native vegetation occurs as managed gardens in a landscape setting, characterised by a dominance of the non-indigenous Lemon Scented Gum <i>Corymbia citriodora</i> with a sub-dominance of a mix of trees and understory species including Tallowwood <i>Eucalyptus microcorys</i>, River Oak <i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>, Black Tea-tree <i>Melaleuca bracteata</i>, Coastal Rosemary <i>Westringia fruticosa</i> and Crimson Bottlebrush <i>Callistemon citrinus</i>, which do not occur together in nature and are not a naturally occurring assemblage. Planted native vegetation occurred predominantly around the boundary of the subject land, with scattered occurrences throughout the cleared areas and existing buildings. The planted native vegetation also included occasional Spotted Gum <i>Corymbia maculata</i>, Smooth-barked Apple <i>Angophora costata</i> Swamp Mahogany <i>Eucalyptus robusta</i>, Weeping Bottlebrush <i>Callistemon viminalis</i> and Crimson Bottlebrush <i>Callistemon citrinus</i>. The groundcover was largely absent and included areas of mulch. Where a groundcover was present, it was dominated by exotic weed and planted urban species such as; Bindyi <i>Soliva sessilis</i>, Panic Veldtgrass <i>Ehrharta erecta</i>, Paddys Lucerne <i>Sida rhombifolia</i>, Common Chickweed <i>Stellaria media</i>, Catsear <i>Hypochaeris radicata</i>, Sky Flower <i>Duranta erecta</i>, Myrtle-leaf Milkwort <i>Polygala myrtifolia</i> and Cobblers Pegs <i>Bidens pilosa</i>. Other small areas of planted native vegetation occurred over landscaped lawns comprised of Buffalo Grass <i>Bouteloua dactyloides</i>.
Survey effort	Two BAM plots/transects (see Table 9 and Figure 6).

Planted native vegetation	
TEC Status	This vegetation type is not consistent with any NSW or Commonwealth listed TEC.
Picture	 Photo 3 Planted native vegetation within the subject land

3.1.7 Threatened ecological communities

Vegetation within the subject land was found to represent one TEC listed under the NSW BC Act, as outlined in Table 6 and below, and illustrated on Figure 8.

Table 6 Summary of BC Act TECs within the subject land

BC Act TEC	Listing status	Area (Ha)
<i>Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion</i>	Critically Endangered	0.08 ha

3.1.8 Planted native vegetation

Planted native vegetation, as described in Section 2.2 of the BAM, includes native vegetation planted as street trees and other roadside plantings, windbreaks, landscaping in parks and gardens, and revegetation for environmental rehabilitation. 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.

Approximately 1.76 hectares of vegetation within the subject land met the definition of 'planted native vegetation', as it was comprised of planted street trees and landscaped gardens and could not be reasonably assigned to a PCT. This vegetation was assessed under the planted native vegetation streamlined assessment module in accordance with Section 2.2 of the BAM.

Although this vegetation contained a number of native or non-indigenous canopy species, including Swamp Mahogany, Tallowwood, River Oak, Lemon-scented Gum, and Spotted Gum, the vegetation could not be reasonably assigned to a PCT. This was mainly due to the dominance of Lemon-scented Gum, which is endemic to temperate and tropical parts of northeastern Australia but has since been naturalised in NSW, where it is commonly planted. It is unlikely that the remainder of endemic canopy species are remnant stock,

as historic aerial imagery indicates that the majority of the subject land was previously cleared of vegetation, likely due to land use practices at the time (NSW Spatial Services 2024). The vegetation now occurs as managed gardens in a landscaped setting and was mostly comprised of trees planted around the boundary of the site.

Assessment of the planted native vegetation within the subject land in accordance with Appendix D of the BAM is provided in Table 7 below.

Table 7 Planted native vegetation - streamlined assessment

Decision Key		
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?		No. The planted native vegetation 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
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:		No – Go to 4
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)		

Decision Key	
• 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)?	
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 D2- 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)?	No

In accordance with Section D2 (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 has been assessed for habitat use by threatened species. The planted native vegetation is considered likely to be utilised by one threatened species, as part of foraging movements of the Large-eared Pied Bat. The planted native vegetation may also 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 Large-eared Pied Bat and ecosystem species, as well as retained vegetation and general fauna within the subject land are outlined in section 5 of this BDAR.

3.2 Vegetation integrity assessment

3.2.1 Vegetation zones and patch size class

PCTs within the subject land were assessed and stratified, based on broad condition state, into vegetation zones in accordance with Section 4.3 of the BAM. This resulted in one vegetation zone identified within the development footprint. Table 8 provides details on the number of BAM floristic plots undertaken in the zone. Survey effort undertaken within the planted native vegetation and planted exotic vegetation are also provided.

Patch size classes for each vegetation zone present within the subject land were assessed as per Section 4.3.2 of the BAM (DPIE 2020) 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 very small patch of connecting vegetation with an area of less than five hectares. The connected vegetation comprises a small linear strip of riparian vegetation along a waterway to the north east of the subject land. This vegetation is separated by buildings and roads from larger patches of native vegetation within Lane Cove National Park further to the north east.

Patch size classes for each vegetation zone are also outlined in Table 8 below.

Table 8 Vegetation zones within the subject land

Vegetation zone	Plant Community Type	Condition	BAM plots completed	Area in development footprint (ha)	Max. patch size development footprint
3262_Low	PCT 3262 <i>Sydney Turpentine Ironbark Forest</i>	Low	1	0.03	5 ha
Planted native vegetation	N/A – planted natives not occurring in a natural distribution or assemblage	Planted	2	0.60	N/A
Planted exotic vegetation	N/A – exotic vegetation	Planted	1	0.98	N/A

3.2.2 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 2020). Plot data was collected via:

- A 20 m x 50 m quadrat and 50 m transect for assessment of site attributes and function.
- A 20 m x 20 m 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 2020). A total of four BAM plots have been completed within the vegetation zones present in the development footprint, details are provided in Table 9 and Figure 6.

Table 9 BAM plots completed within the subject land

BAM plot reference	Vegetation zone
37762_P1	3262_Low
37762_P2	Planted exotic vegetation
37762_P3	Planted native vegetation
37762_P4	Planted native vegetation

Assessment of vegetation integrity was undertaken using standard benchmark data as outlined in the BAM and held in the BioNet Vegetation Classification database. 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 EES for incorporation into the Atlas of NSW Wildlife.

3.2.3 Vegetation integrity score

Plot data for the PCTs recorded in the subject land was entered into the BAM calculator to determine vegetation integrity score. Although vegetation assigned 'planted native vegetation' has been assessed using the streamlined assessment module provided in Appendix D of the BAM, plot data was entered into the BAM calculator for the purposes of calculating a VI score. Plot data was entered in the BAM calculator under PCT 3262 as all vegetation zones must be assigned a PCT in the BAM calculator. However, 'planted native vegetation' is not representative of a PCT.

Plot data is presented in Appendix 3, with vegetation integrity scores for each vegetation zone provided in Table 10.

Table 10 Vegetation zone integrity scores

Vegetation zone	Composition score	Structure score	Function score	Vegetation integrity score*	IBRA subregion
3262_Low	19.9	32.5	64.3	34.6	Pittwater
Planted native vegetation	8.2	6.9	40.9	13.3	Pittwater

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

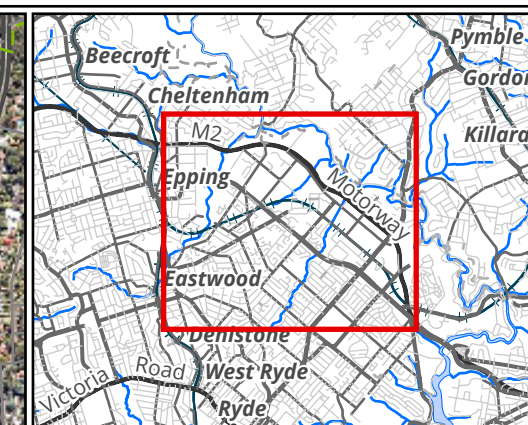
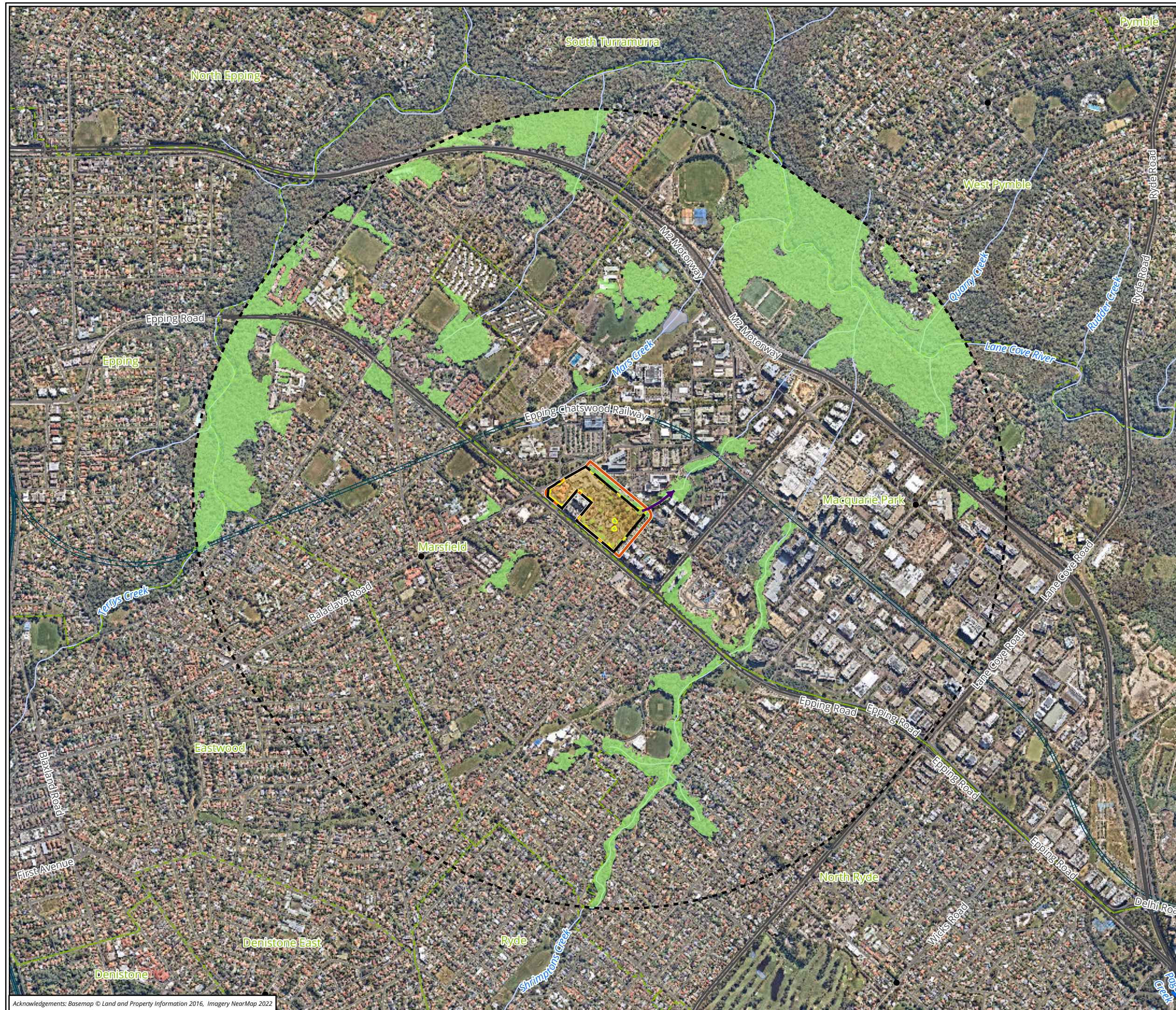
As outlined in Section 9.2.1 of the BAM, an offset is required for impacts on native vegetation where the vegetation integrity score is:

- ≥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 only required for the vegetation zone 3262_Low as it has a VI score of 34.6.

3.2.4 Scattered trees

No scattered/paddock trees were present within the subject land and therefore were not entered into the scattered tree calculator. Any proposed clearing of native vegetation that does not meet the definition of scattered trees was assessed with Section 4 of the BAM (DPIE 2020).



Legend

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

Figure 4 Native vegetation extent

0 100 200 300 400 500

Metres

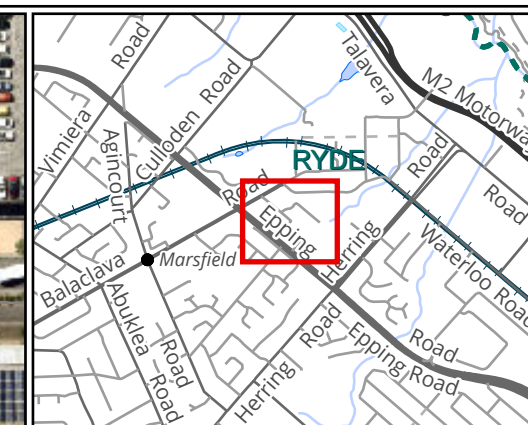
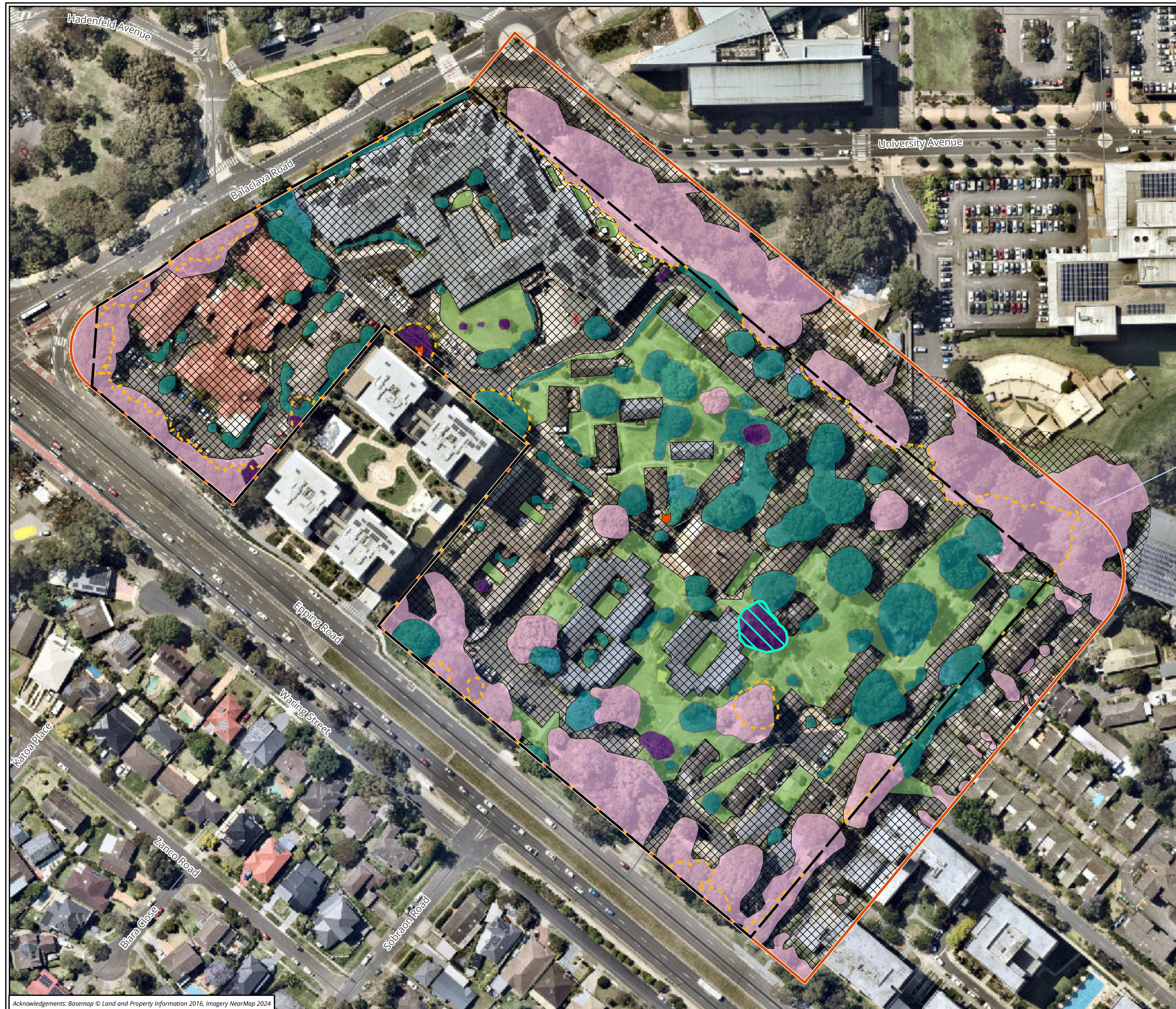
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Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F4_NativeVeg



Legend

- Subject land
- Development site
- Development footprint
- Hollow-bearing tree
- Cleared

Vegetation communities - Biosis

- 3262 - Sydney Turpentine Ironbark Forest, Low
- Planted native
- Urban Native/Exotic
- Remnant vegetation
- Grassed area

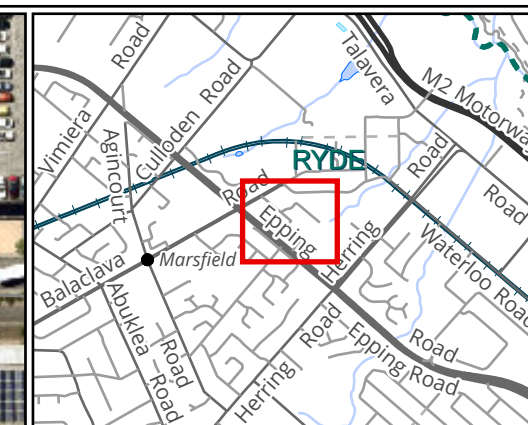
Figure 5 Vegetation within the subject land

0 10 20 30 40 50
Metres

Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_FS_BiosisVeg



Legend

- Subject land
- Development site
- Development footprint
- Remnant vegetation
- ◆ BAM plot

Vegetation zones

- 3262_Low
- Planted native

Figure 6 Vegetation zones and plot locations

0 10 20 30 40 50

Metres

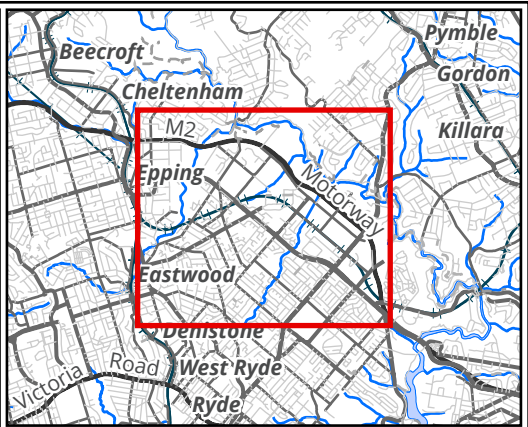
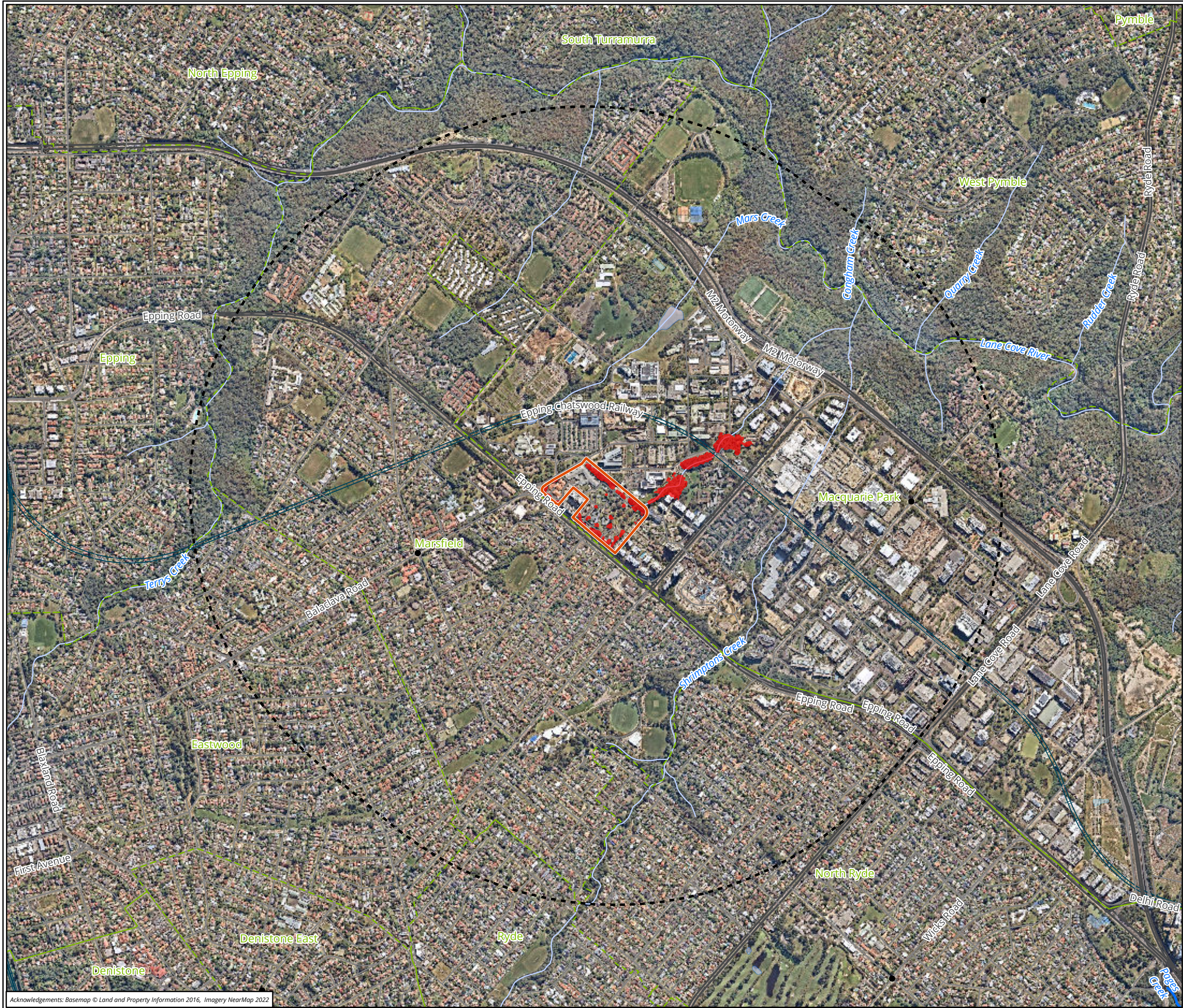
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Coordinate System:

GDA2020 MGA Zone 56



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 GIS: AM, Checked by: SNA, Last edited by: aabid
 Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
 Layout: 37762_F6_VegZones



Legend

Subject land

Assessment area

Patch size

<5ha (1281 Low, Planted native)

Figure 7 Patch size

0 100 200 300 400 500

Metres

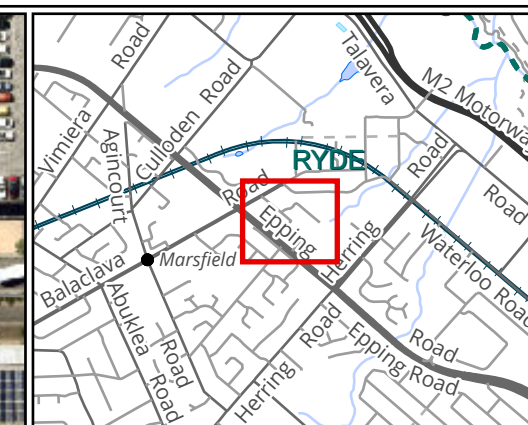
Scale: 1:15,000 @ A3

Coordinate System:
GDA2020 MGA Zone 56

biosis

APEM Group

Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F7_PatchSize



Legend

- Subject land
- Development site
- Development footprint

TECs - BC Act

- Sydney Turpentine-Ironbark
- Forest in the Sydney Basin Bioregion

Figure 8 Threatened ecological communities within the subject land

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762,
Date: 05 March 2025,
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.mxd

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. 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 PCT, habitat constraints, native vegetation cover in the landscape and calculated patch sizes. These species are identified as ecosystem credit species in the Threatened Biodiversity Data Collection (TBDC). Table 11 lists the ecosystem credit species that could not be discounted, based on geographical restrictions or a lack of suitable habitat, from using the subject land on occasion.

These species were considered when prescribing management and mitigation measures for the project.

Table 11 Ecosystem credit species (predicted species) with potential to occur

Species name	Common name	Sensitivity to gain
<i>Anthochaera phrygia</i>	Regent Honeyeater	High
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	Moderate
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	Moderate
<i>Calyptorhynchus lathami</i>	South-eastern Glossy Black-Cockatoo	High
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper	High
<i>Daphoenositta chrysoptera</i>	Varied Sittella	Moderate
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	High
<i>Glossopsitta pusilla</i>	Little Lorikeet	High
<i>Hieraaetus morphnoides</i>	Little Eagle	Moderate
<i>Hirundapus caudacutus</i>	White-throated Needletail	High
<i>Ixobrychus flavicollis</i>	Black Bittern	Moderate
<i>Lathamus discolour</i>	Swift Parrot	Moderate
<i>Lophoictinia isura</i>	Square-tailed Kite	Moderate
<i>Melithreptus gularis gularis</i>	Black-chinned Honeyeater (eastern subspecies)	Moderate
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	High
<i>Miniopterus australis</i>	Little Bent-winged Bat	High
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	High
<i>Pandion cristatus</i>	Eastern Osprey	Moderate
<i>Petroica phoenicea</i>	Flame Robin	Moderate
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	High
<i>Saccolaimus flaviventris</i>	Yellow-bellied Sheath-tail-bat	High

Species name	Common name	Sensitivity to gain
<i>Stagonopleura guttata</i>	Diamond Firetail	Moderate

One ecosystem credit species was discounted from occurring within the study area:

- Rosenberg's Goanna *Varanus rosenbergi*

The subject land occurs within a highly urbanised landscape and does not contain suitable microhabitat such as termite mounds, rock outcropping or crevices, sandy soil and dense or heathy vegetation, and any habitat connectivity to areas containing these habitat features. Therefore, the subject land was not considered suitable for use by this ecosystem credit species.

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. Species credit species are identified in the TBDC.

The potential for a species to occur within the subject land was assessed in accordance with Section 5.2 of the BAM. Species with geographical restrictions, or habitat constraints not present within the subject land, were not required to be assessed. A total of 38 predicted species credit species have been excluded from occurring within the subject land based on a lack of suitable habitat, substantial degradation of existing potential habitat, geographical constraints and lack of required microhabitat features.

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 assessment area, the PCT present within subject land, and patch sizes (listed in Table 8). A detailed assessment of potential for occurrence, and potential for impact, for all species credit species predicted to occur within the subject land is provided in Appendix 2.

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 2020). One species credit species, Large-eared Pied Bat, was considered to potentially occur within the subject land and has been assumed present.

No additional species credit species that were not predicted by the BAM Calculator (BAM-C) or BioNet to occur within the subject land were added to the assessment as candidate species credit species. The habitat is considered unlikely to support any further threatened species due to its disturbed and highly modified condition.

Threatened flora

Habitats for threatened flora species within the subject land are largely considered degraded due to the high degree of management and nearby vehicular traffic. Open areas are typically dominated by exotic vegetation whether it be grassed areas or planted exotic vegetation. This comprises the habitats associated with all of the PCT 3262, planted native vegetation and planted exotic vegetation within the subject land. Native vegetation occurs as an isolated and edge effected patch and therefore, no candidate flora species credit species were considered to have potential to occur, and targeted survey was not required. Incidental searches undertaken did not record any naturally occurring threatened species. A full assessment of the predicted flora species credit species is provided in Appendix 2.

One threatened flora species, Magenta Lilly Pilly *Syzygium paniculatum* was recorded within the subject land. This species occurs as a rainforest tree and is commonly used in landscaping. Within the subject land, the Magenta Lilly Pilly recorded is a planted individual adjacent to the road. The subject land does not provide

suitable natural habitat for this species and would not naturally occur within the location, as such impacts to the individual do not require further consideration or offsetting.

Threatened fauna

Fauna habitat assessment was undertaken to determine the presence of microhabitats and other critical habitat components (habitat constraints) suitable for all predicted fauna species outlined in Appendix 2. Habitat assessments focused 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.
- 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.

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.

Habitat within the subject land is highly modified due to past disturbance. Vegetation consists of planted urban native vegetation, exotic vegetation, and two remnant trees consistent with PCT 3262. Due to the disturbed and fragmented nature of the habitat available within the subject land, most threatened species listed in Appendix 2 could be readily discounted as likely to occur.

Habitat features with potential to support threatened species credit species were identified during these habitat assessments. These features have been summarised in Table 12.

Table 12 Habitat features with potential to support threatened species credit species

Habitat feature	Presence within the development footprint
Hollow-bearing trees	One small hollow (less than 5cm diameter), potentially suitable for use by insectivorous bats was observed within an exotic planted tree. It is unlikely that this would be suitable for threatened fauna due to its size and isolated location. As the site is greater than 200 metres from the nearest suitable waterway or waterbody, it is unlikely that this hollow would be suitable for roosting or breeding by Southern Myotis.
Feed tree species	Native and exotic tree species within the subject land may provide suitable foraging resources for mobile species known to occur in urban environments such as Grey-headed Flying-fox and Little Lorikeet. The subject land was largely lacking in trees and shrubs providing food resources for smaller mammals, however Casuarina species may provide foraging resources for Glossy-black Cockatoo on

Habitat feature	Presence within the development footprint
	occasion.
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 waterways are Mars Creek, approximately 300 m to the north-west of the subject land, and a mapped unnamed first-order creek that is positioned north-east of the subject land and extends northeast toward Lane Cove River.
Woody debris and leaf litter	No woody debris and limited leaf litter occur within the subject land. Small patches associated with garden beds and planted native vegetation occurred however, due to historical ground disturbance and the highly modified nature of the vegetation present, woody debris and leaf litter are considered unsuitable for providing habitat for threatened species such as the Dural Land Snail.

Field capture of detailed fauna habitat information allowed for confirmation of presence/absence of habitat features and microhabitats for a range of candidate threatened species across surveyed portions of the development footprint and impact assessment area. Fauna habitat assessments were captured using ArcGIS points and polygons attributed with specific habitat criteria that allowed for the exclusion of the potential for occurrence of various candidate species from the subject land.

Vegetation in the subject land may provide marginal foraging habitat for highly mobile threatened native fauna species such as the Grey-headed Flying-fox, Little Lorikeet and microbats such as the Eastern Bent-winged Bat and Little Bent-winged Bat which may forage on insects occurring above or within the site but are not reliant on terrestrial features.

No threatened biota were encountered during the site visit. Fauna observed within the subject land included generalist avifauna known to utilise the urban matrix.

The subject land does not contain suitable breeding habitat for any threatened fauna. No large stick nests were observed, and the subject land does not contain any waterbodies or waterways suitable for supporting threatened frogs or migratory waders. One small hollow was observed in an exotic planted tree within the impact area but due to its size and isolated location, this hollow is considered unlikely to be utilised by threatened fauna. Although Southern Myotis is known to roost in tree hollows, the distance of the subject land from suitable foraging habitat for this species (greater than 200 metres from the nearest waterbody or waterway with pools or stretches big enough to constitute suitable habitat), makes it unlikely to be suitable for this species as roosting or breeding habitat. No hollow-bearing trees occur within the subject land that would be suitable breeding habitat for threatened birds and mammals.

Turpentine, planted Spotted Gum, Bangalay and Red Mahogany are listed as Koala use trees in the Central Coast koala management area, in accordance with the SEPP (Biodiversity and Conservation) 2021. While these species may provide foraging habitat for Koala, the habitat in the subject land is considered degraded for this species given the habitat occurs as predominantly planted vegetation, the position of the subject land in the broader landscape and the high level of potential threats provided by the highly urbanised environment.

One candidate fauna species credit species, Large-eared Pied Bat, was considered likely to occur within the subject land. Large-eared Pied Bat is a dual credit species, requiring consideration for both foraging and breeding habitat. No breeding habitat for this species (i.e., rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings) occurs within the subject land, or within 200 metres of the development footprint, and as such there is no potential for a Serious and Irreversible Impact (SAII) to the species. Foraging habitat for this species includes associated PCTs (i.e., 3262) within 2 kilometres of potential roosting habitat. Due to the presence of potential breeding habitat along Lane Cove River, which occurs within 2 kilometres of the subject land, Large-eared Pied Bat is considered likely to be present as part of foraging movements only and has been assumed present on this basis.

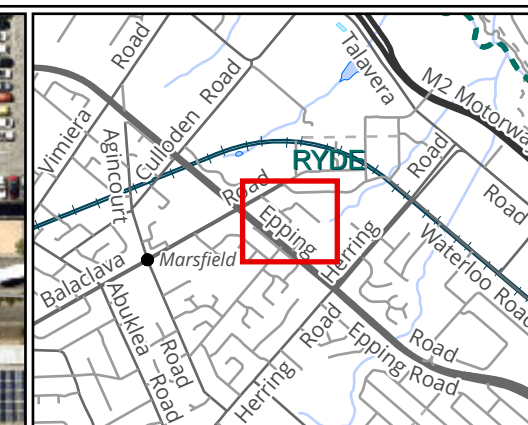
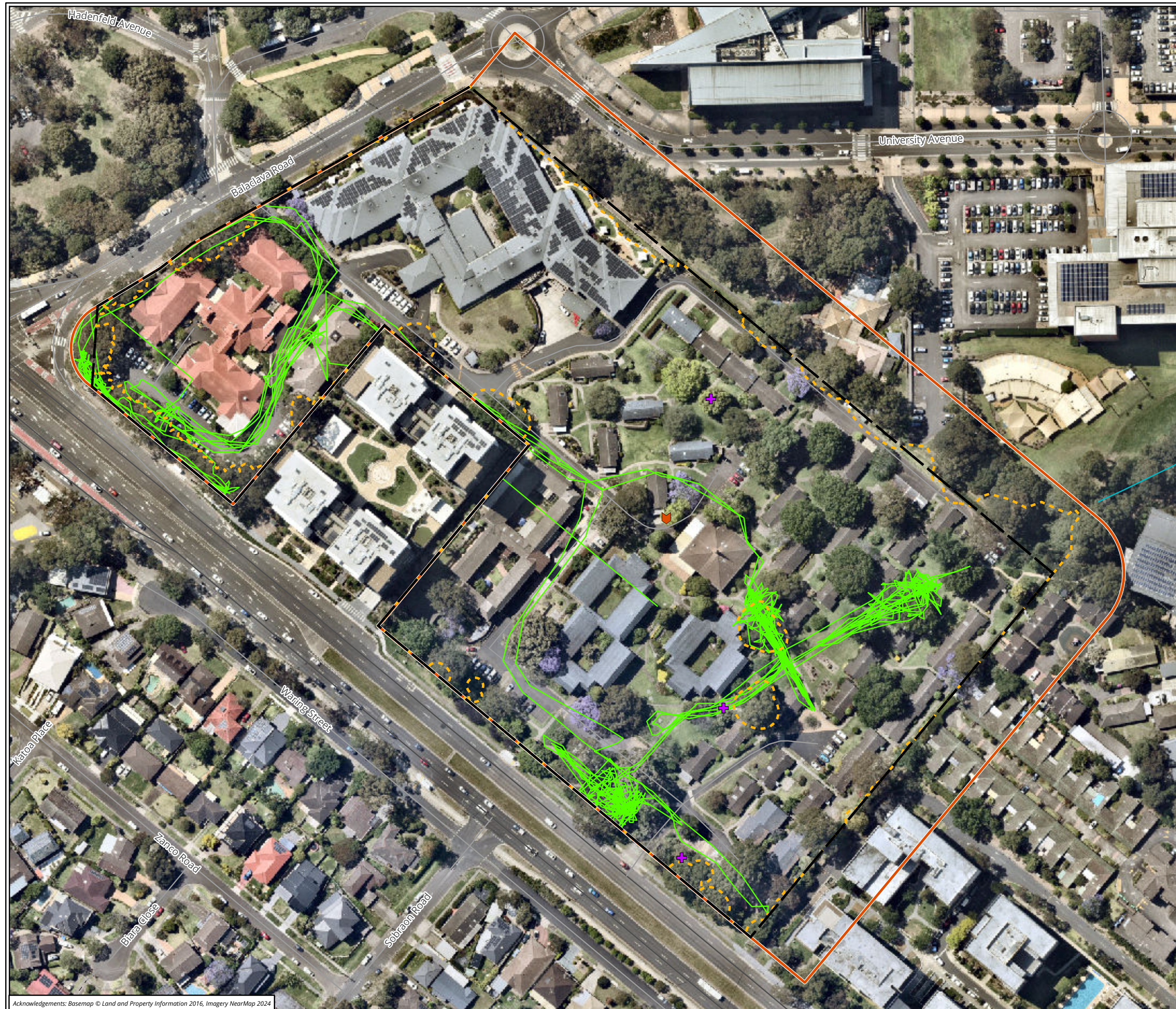
No additional candidate fauna species credit species required further assessment.

4.2.1 Threatened species survey details

No targeted surveys were undertaken for threatened fauna species.

4.2.2 Incidental flora and fauna surveys

No threatened species were recorded during incidental surveys undertaken as part of the current assessment. Incidental non-threatened flora and fauna recorded during the current assessment are included in Appendix 3 and Appendix 4.



Legend

- Subject land
- Development site
- Development footprint
- + Hollow-bearing tree
- Targeted flora survey

Threatened flora

- + *Syzygium paniculatum* -
Magenta Lilly Pilly

Figure 9 Targeted surveys

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
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 Layout: 37762_F9_TargetedSurveys

4.2.3 Local data

No local data has been used for threatened species assessment.

4.2.4 Expert reports

Sections 5.2 and 5.3 of the BAM outlines that an expert report may be obtained instead of undertaking a species survey for a project, where the expert report is prepared by a person who, in the opinion of the Environment Agency Head, possesses specialised knowledge based on training, study or experience to provide an expert opinion in relation to the biodiversity values to which an expert report relates (DPIE 2020).

No expert reports were utilised for the current assessment.

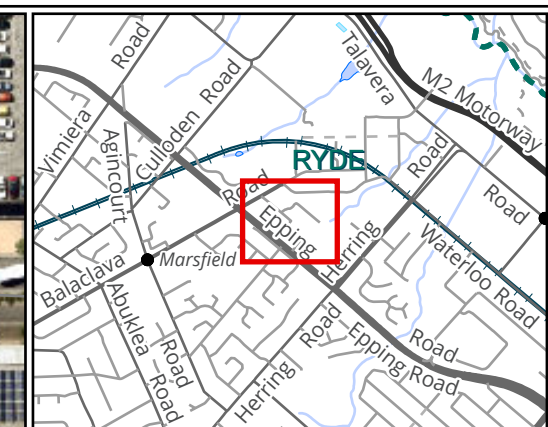
4.2.5 Threatened species summary and polygons

Habitat for one threatened species will be impacted by the project.

Table 13 provides details of threatened species impacted by the project and outlines the attributes that comprise the threatened species polygons. The presence of threatened species impacted by the project is illustrated on Figure 10.

Table 13 Threatened species polygons within the development footprint

Threatened species	Impact (ha / No. indiv.)	Unit of measure	Biodiversity risk weighting	Polygon attributes
Fauna				
Large-eared Pied Bat <i>Chalinolobus dwyerii</i>	0.03 ha	Area	3	The species polygon includes all PCTs associated with this species in the subject land (i.e., 3262), within 2 km of potential roosting habitat (i.e., rocky areas containing caves, or overhangs or crevices, cliffs or escarpments, or old mines, tunnels, culverts, derelict concrete buildings). Therefore, the species polygon includes all PCT 3262 in the subject land that represents supporting habitat suitable for the species' foraging activities.



- Legend**
- Subject land
 - Development site
 - Development footprint
 - BAM plot
- Threatened species polygons**
- Large-eared Pied Bat

Figure 10 Threatened species polygons

0 10 20 30 40 50
Metres
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 56

biosis
APEM Group

Matter: 37762, Date: 05 March 2025
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Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F10_ThrSpPoly

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.
- Identification of site constraints that have been considered in determining the location and design of the proposal.

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. Additional recommendations include measures to mitigate residual impacts after all measures to avoid and minimise impacts have been considered in **Table 14**.

Figure 11 shows the final development footprint, while Figure 12 shows an alternative footprint considered to avoid or minimise impacts on biodiversity values.

Opportunities to avoid impacts throughout the duration of the project have been limited due to the small, isolated nature of the biodiversity values present within the subject land. However, the final development footprint has been designed in consideration of the ecological constraints recorded in the development site, namely the Sydney Turpentine Ironbark Forest CEEC. The concept design has been updated to retain native vegetation throughout the subject land, as well as the restoration of a watercourse. This restoration will involve uncovering and regenerating the creek, which is currently confined underground. By bringing the watercourse back to a natural state, the project will provide a continuous habitat connection through the northern portion of the site. Although some tree removal within the park area is necessary to facilitate these works, this approach enhances ecological connectivity and supports long-term biodiversity outcomes. In addition, an alternative scheme known as the 'Height Compliant Scheme' was considered as part of the design process. This scheme proposed buildings within the park, which would have resulted in additional vegetation loss and a greater impact on biodiversity values. Following an assessment of these potential impacts, the current proposal was developed as an improvement, as it reduces the extent of vegetation clearance and better preserves biodiversity values by avoiding further encroachment into vegetated areas. Other biodiversity impacts will be minimised through standard construction and environmental management mitigation measures (such as pre-clearance inspections).

The avoidance and minimisation measures described above have restricted impacts to the removal of 0.03 hectares of low condition PCT 3262, 0.60 hectares of planted native vegetation and 0.98 hectares of planted exotic vegetation within the development footprint, none of which are consistent with the CEEC. Mitigation and management measures will also be put in place to adequately address impacts associated with the proposal, including direct, indirect and prescribed impacts.

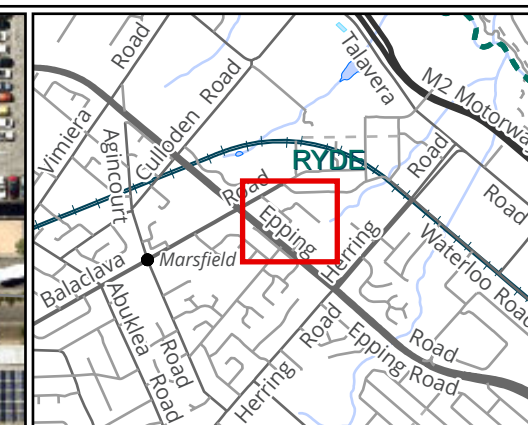
Specific actions and design iterations undertaken to avoid and minimise impacts to biodiversity values within and adjacent to the subject land are provided below:

- Retention of two remnant mature canopy trees, Sydney Turpentine and Red Mahogany, within the subject land which are consistent with the Sydney Turpentine Ironbark Forest CEEC. Remnant areas of this CEEC was represented by these trees only, and direct impacts to these trees have been avoided.
- Removal of the school from the concept design and repositioning of other structures to reduce impacts to vegetation in the eastern portion of the subject land.
- Restoration of a watercourse within the subject land that had previously been piped, which holds cultural and ecological significance in the Macquarie Park area. Although some tree removal within the park area is necessary to facilitate these works, this approach enhances ecological connectivity and supports long-term biodiversity outcomes. The restoration and rehabilitation of the waterway has the potential to provide habitat for locally occurring flora and fauna and will establish higher connectivity between remnant vegetation and vegetation outside of the subject land.
- Consideration of an alternative scheme known as the 'Height Compliant Scheme,' which included buildings within the park and would have resulted in additional vegetation loss. The final development footprint was selected as an improvement, as it reduces impacts on biodiversity values by avoiding further encroachment into vegetated areas and minimising vegetation clearance.

Table 14 Avoidance and minimisation of impact

Avoidance and minimisation components	Action	Outcome	Timing	Responsibility
<i>Modes or technologies that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed mode or technology.</i>	Removal of trees containing habitat features (Figure 5) undertaken by two-stage removal, including supervision by an ecologist.	Avoid impacts to fauna during clearing.	Prior to clearing of vegetation	Proponent and project ecologist
<i>Routes that would avoid or minimise impacts on biodiversity values and justification for selecting the proposed route.</i>	• Updates to concept design to avoid remnant mature trees consistent with the Sydney Turpentine Ironbark Forest CEEC. • Avoids areas containing native vegetation (PCT 3262) along the proposed waterway within the eastern portion of the subject land.	Reduction in removal of planted native vegetation.	Prior to work commencement	Proponent
<i>Alternative locations that would avoid or minimise</i>	Given the significant landholding, alternate sites	The project has been sited to be	Planning stages	Proponent

Avoidance and minimisation components	Action	Outcome	Timing	Responsibility
impacts on biodiversity values and justification for selecting the proposed location	were not considered appropriate for the proposal objectives. Redevelopment of the existing BaptistCare site was preferred.	undertaken in an already highly urbanised environment, within close proximity to existing infrastructure and urban amenities.		
Describe efforts to avoid and minimise impacts (including prescribed impacts) to biodiversity values through proposal design.	- Avoidance of areas of intact vegetation through siting the development within an existing developed area. Avoiding removal of native vegetation consistent with the CEEC and reducing overall impacts to native vegetation. - The development footprint would have resulted in impacts to 1.77 hectares of native vegetation, including 0.03 hectares of the CEEC prior to the avoidance measures described above. - In efforts to avoid and minimise impacts, the final development design was restricted to removal of 0.65 hectares of native vegetation (including planted natives), none of which is consistent with the Sydney Turpentine Ironbark Forest CEEC.	Retention of mature trees where possible which provide higher quality potential resources for highly mobile common fauna in the wider locality. Retention of the Sydney Turpentine Ironbark Forest CEEC.	Planning phase, following ecological constraints assessment, prior to work commencement	Proponent
Identification of any other site constraints that the proponent has considered in determining the location and design of the proposal.	Siting of the earthworks and building footprints around engineering constraints associated with the geology of the site.	Removal of 0.03 hectares of PCT 3262 in low condition.	Prior to work commencement.	Proponent



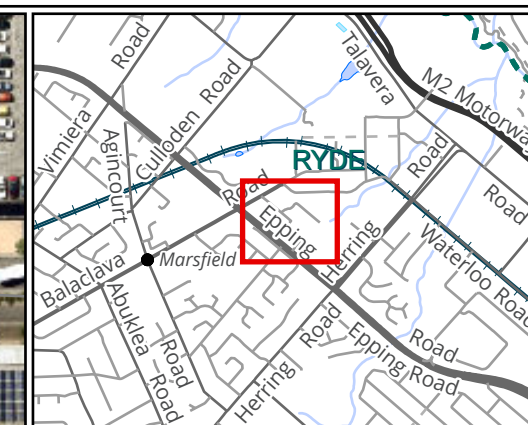
- Legend**
- Subject land
 - Development site
 - Development footprint
 - Remnant vegetation
 - Hollow-bearing tree
 - Proposed development
- Vegetation zones**
- 3262_Low
 - Planted native
- TECs - BC Act**
- Sydney Turpentine-Ironbark
 - Forest in the Sydney Basin Bioregion
- Threatened flora**
- Syzygium paniculatum* - Magenta Lilly Pilly

Figure 11 Final development footprint

0 10 20 30 40 50
Metres
Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F11_FinalDevFootprint



Legend

- Subject land
- ◀ Hollow-bearing tree
- Alternative footprint
- Area of avoidance - trees to be retained

Threatened flora

- + *Syzygium paniculatum* - Magenta Lilly Pilly

Figure 12 Alternate options and avoidance

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
 GIS: AM, Checked by: SNA, Last edited by: aabid
 Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
 Layout: 37762_F12_OptionsAvoidance

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 (DPE 2023). 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 building footprints, roads and easements for service infrastructure.

Direct impacts arising from the project include:

- Removal of 0.03 ha of PCT 3262 in a low condition.
- Removal of 0.60 ha of planted native vegetation.
- Removal of 0.97 ha of planted exotic vegetation.
- Removal of 0.65 ha of potential foraging habitat for threatened and non-threatened fauna.
- Removal of 0.03 hectares of potential foraging habitat for Large-eared Pied Bat.

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 PCTs/zones directly impacted is demonstrated in Table 15. A summary of the direct impacts to species credit habitat or individuals is demonstrated in Table 16.

Table 15 Summary of direct impacts to vegetation

Zone	PCT	TEC	Area within subject land (ha)	Area impacted (ha)	VI Score
3262_Low	3262	CEEC - Sydney Turpentine-Ironbark Forest	0.08	0.03	34.6
Planted native vegetation	N/A	N/A	1.76	0.60	13.3

Table 16 Summary of direct impacts species credit habitat or individuals

Species	Sensitivity	Area (ha) or count
Large-eared Pied Bat	Very high sensitivity to Potential Gain	0.03

6.1.1 Loss of hollow bearing trees

One exotic, hollow-bearing tree would be removed. This tree does not provide potential roosting habitat for threatened fauna.

6.2 Indirect impacts

Potential indirect impacts arising from the project are outlined and addressed in Table 17.

Table 17 Avoidance and minimisation of impact

Indirect impact	Assessment / likelihood of occurrence
Inadvertent impacts on adjacent habitat or vegetation	Impacts to adjacent vegetation during construction and operational phase can be prevented or minimised through appropriate exclusion fencing, implementation of a CEMP detailing best practice environmental protection measures, strict water quality practices and stormwater controls, and by ensuring any lighting is directed towards the developed area, rather than towards the adjacent retained habitats.
Reduced viability of adjacent habitat due to edge effects	Adjacent habitats are currently subject to a high degree of edge effects due to prior clearing and surrounding existing urban land use. Since little (1.61 ha) vegetation is to be removed from the subject land, an increase to edge effects is not expected to occur to the remnant vegetation surrounding the subject land, as a result of the proposed development.
Reduced viability of adjacent habitat due to noise, dust or light spill	It is predicted that the adjacent habitat will be impacted in a small way 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 in 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 site to adjacent vegetation	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 occur but will be managed by biosecurity measures outlined in the CEMP.
Increased risk of starvation, exposure and loss of shade or shelter	The habitat present in the subject land is considered marginal for most fauna species given the disturbed condition, however, may provide potential foraging habitat for species which occur in urban environments. 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 which is a very small proportion of commensurate habitats available in the immediate vicinity.
Loss of breeding habitats	No specialist breeding habitat will be impacted by the proposed future development.
Trampling of threatened flora species	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	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 urbanisation and development of the current site. 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.

Indirect impact	Assessment / likelihood of occurrence
Fertiliser drift	The proposal would not contribute to fertilizer drift into surrounding areas with future practices. No fertilizer is proposed to be used.
Rubbish dumping	Standard environmental controls for the development would ensure potential impacts are minimised. Works would follow an approved Waste Management Plan.
Wood collection	Future development proposed within the subject land is unlikely to increase access to any retained vegetation, beyond current access capacity.
Removal and disturbance of rocks, including bush rock	The subject land does not support bush rock.
Increase in predators	The subject land already occurs within an urbanised setting with pets, such as dogs and horses, common. The subject land is already largely cleared of remnant vegetation and highly modified with planted species. The remaining vegetation clearance proposed by the development, and proposed land use, is unlikely to increase predatory species populations.
Increase in pest animal populations	The proposal occurs in an urbanised area with pets such as cats <i>Felis catus</i> and dogs <i>Canis lupis familiaris</i> currently occurring within the locality as well as pest animals such as Rats <i>Rattus rattus</i> and European Rabbit <i>Oryctolagus cuniculus</i>. 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	The proposal occurs in an 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, or alter current regimes.
Disturbance to specialist breeding and foraging habitat, e.g. Beach nesting for shorebirds	There are no mapped Important Areas within the region. The proposal would not result in any disturbance to specialist breeding or foraging habitat.
Fragmentation of movement corridors	Movement corridors are currently restricted in width and availability through the locality. The project will result in the removal of 0.65 ha of native and planted native vegetation. Vegetation within the locality occurs as patchy fragments which are loosely connected along parks, roads and riparian corridors. Vegetation within the subject land occurs at the edge of a patch, less than 5 hectares in area. The removal of vegetation along the road reserve (east of the subject land) may fragment movement corridors from the north and south, however extensive remnant vegetation exists to the east of Gimberts Road and vegetation to the west of the subject land will remain intact and not be fragmented. The restoration of the waterway and riparian vegetation within the subject land also has the potential to improve connectivity with the vegetation in the eastern portion of the subject land and the vegetation to the northeast of the subject land.

6.3 Prescribed impacts

Assessment of prescribed biodiversity impacts are outlined and addressed in Table 18 below and shown in Figure 14.

Table 18 Assessment of prescribed impacts

Prescribed impact	Assessment / likelihood of occurrence
Karst, caves, crevices, cliffs, rocks and other geological features of significance	The development will not impact on threatened species or ecological communities associated with karst, caves, crevices or cliffs. Lane Cove National Park approximately 1.6 km north of the subject land contains areas of sandstone outcropping which may provide cliffs, overhangs and crevices suitable for use by threatened species.
Occurrences of human-made structures and non-native vegetation	Several human-made structures occur within the subject land and will be impacted by the proposed development. However, no threatened species or communities associated with human-made structures, or that may use human-made structures, will likely be impacted by the proposed works. Threatened species that can these structures as habitat with potential to occur in the subject land include Eastern Bent-winged Bat and Little Bent-winged Bat. However, the human made structures within the subject land were not considered suitable roosting habitat for these species given the highly urbanised environment. Maternity roosts require specific temperate and humidity conditions, and often include large numbers. In addition, the vegetation in the subject land is not considered suitable foraging habitat for these species. It is more likely that they species would forage in large patches of higher quality vegetation that are well timbered and dense. Some bat species may roost in the wall and roof cavities of buildings. However, buildings on site were in good repair and habitat assessment did not detect any areas which may provide access to roof and wall cavities. No microbats were recorded in the subject land during field investigations between May and October 2020. A total of 0.03 ha of PCT 3262, 0.60 ha of planted native vegetation and 0.97 ha of exotic planted vegetation within the subject land will be directly impacted by the development. Due to the lack of microhabitat and modified structure of the vegetation present, non-native vegetation is unlikely to be used as breeding habitat by any threatened species. Planted vegetation provides potential foraging resources for highly mobile, urban-adapted native fauna such as the Grey-headed Flying-fox.
Corridors or other areas of connectivity linking habitat for threatened entities	The removal of 0.65 ha of native vegetation is expected to have little impact on the connectivity of threatened species habitat. The subject land is highly fragmented and subject to previous disturbance associated with past and current land uses. Threatened species such as Grey-headed Flying-fox that may utilise the study area on occasion are highly mobile and capable of exploiting resources across a broad home range and are unlikely to be impacted by removal of the vegetation within the subject land given there is higher quality vegetation within the locality that is readily accessible for this species.
Water bodies or any hydrological processes that sustain threatened entities	There are no waterways or dams that sustain threatened entities within the subject land.

Prescribed impact	Assessment / likelihood of occurrence
Protected animals that may use the proposed wind farm development site as a flyway or migration route	There are no wind turbines involved in this project.
Where the proposed development may result in vehicle strike on threatened fauna or on animals that are part of a threatened ecological community	The risk of increased vehicle strike due to the proposal is low and would generally be limited to vehicle movements to and from the construction site, which would occur on existing busy roads. Vehicle strike associated with the development is unlikely to affect any threatened fauna.

6.4 Impacts considered uncertain

There are no impacts considered uncertain for the current assessment.

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). 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). The subject land is not mapped as having Groundwater Vulnerability (LEP 2014).

6.6 Aquatic habitat impacts relating Fisheries Management Act matters

There are no aquatic habitat impacts relating to the *Fisheries Management Act 1994*.

6.7 Impacts to Matters of National Environmental Significance (MNES)

An assessment of the impacts of the proposed development on Matters of National Environmental Significance (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 19.

Table 19 Assessment of the proposed development against the EPBC Act

Matter of NES	Project specifics	Potential for significant impact
Threatened species	No threatened species predicated to occur within the subject land and listed under the EPBC Act are considered likely to be impacted by the removal of the two trees which form PCT 3262 or planted vegetation within the subject land.	The removal of two trees, and 0.60 ha of planted native vegetation which may, on occasion provide foraging resources is not considered likely to impact the Grey-headed Flying-fox and a Significant Impact Criteria assessment is not considered necessary.
Threatened ecological communities	There are no TECs within the subject land that are listed under the EPBC Act. Sydney Turpentine – Ironbark Forest did not meet the size threshold for listing under the EPBC Act.	No potential for impact.
Migratory species	Migratory species are considered unlikely to occur within the subject land given its location in the landscape and lack of suitable habitat features.	No potential for impact.
National Heritage Places	There are no National Heritage Places within the subject land.	No potential for impact.
Wetlands of international importance (Ramsar sites)	There are no wetlands of international importance within or in close proximity to the subject land.	No potential for impact.

7 Mitigation and management of impacts

Identification of measures to mitigate or manage impacts has been undertaken in accordance with the BAM (DPIE 2020), 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 20 Measures to mitigate and manage impacts

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
Impacts to native vegetation and habitat	Where possible, design building envelope to retain canopy species.	One tree containing hollows retained for use by local fauna. Reduction in the removal of native vegetation.	Final lot layout and building design. Prior to vegetation removal.	Proponent
Displacement of resident fauna	A CEMP should be implemented that would include the following sub-plans or protocols: • Vegetation clearance protocol. • Hollow-bearing tree removal specification. • Fauna injury protocol.	Mitigate risk of impact to environmental controls during project construction.	Ongoing/throughout earthworks.	Construction contractor
	Any hollow-bearing trees marked for removal should be removed according to a vegetation clearance protocol to ensure no injury or loss of fauna, including:	No direct impact to resident fauna during vegetation removal.	Immediately prior to vegetation removal.	Qualified ecologist and construction contractor

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	Inspection of hollow-bearing trees by a qualified ecologist immediately prior to removal.			
	All vegetation is to be inspected immediately prior to removal by construction contractors to confirm absence of foraging fauna. If fauna is observed, unexpected threatened species find procedure, as detailed in a CEMP, to be implemented.	No direct impact to resident fauna during vegetation removal.	Immediately prior to vegetation removal.	Construction contractor
Indirect impacts on native vegetation and habitat	Install appropriate stormwater and erosion controls on site.	No further degradation to retained vegetation and habitats.	Ongoing/throughout earthworks.	Construction contractor
	Where appropriate, native vegetation cleared from the subject land should be re-used. The following is recommended: - Salvage tree trunks, tree hollows and root balls for reuse as habitat features. - Native tree material should be placed in proposed restored riparian corridor and landscape areas to enhance habitat. If native trees cannot be reused onsite, consultation with local community groups is encouraged to ensure habitat features and native tree material can be reused.	Stabilisation of bare ground	Ongoing/Throughout construction.	Construction contractor
	Installation of appropriate exclusion fencing around trees and vegetation to be retained in the study area: The radius of the tree protection zone (TPZ) is	No further degradation to retained vegetation and habitats.	Before and throughout construction.	Construction contractor

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
	calculated for each tree by an AQF Level 5 registered arborist, in accordance with the Standards Australia Committee (2009). 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 Construction Environmental Management Plan.			
Indirect impacts to resident fauna and adjacent habitat	Reduction of impacts resulting from external lighting is recommended, and can be adapted from Part 4 (good lighting design principles) of the Dark Sky Planning Guideline (DPE 2016), including: - Installing light fitting shields with an opaque cover, mounted horizontally across the top of the lighting module. These shielding attachments allow only the downward projection of light. - Direct lights downwards and avoid shining directly onto the public amenities, which have the potential to reflect light skywards. Utilise low beam angles that are close to vertical where possible to minimise light glare.	No indirect impact to fauna in retained vegetation and habitats.	Ongoing.	Construction contractor.
Adaptive management strategies proposed to monitor and respond to impacts	Implementation of an appropriate CEMP during works.	Mitigate risk of impact to environmental controls during project	Ongoing/throughout earthworks.	Construction contractor

Measures to mitigate and manage impacts	Action	Outcome	Timing	Responsibility
<i>on biodiversity values that are uncertain</i>		construction.		

7.1 Adaptive management strategy

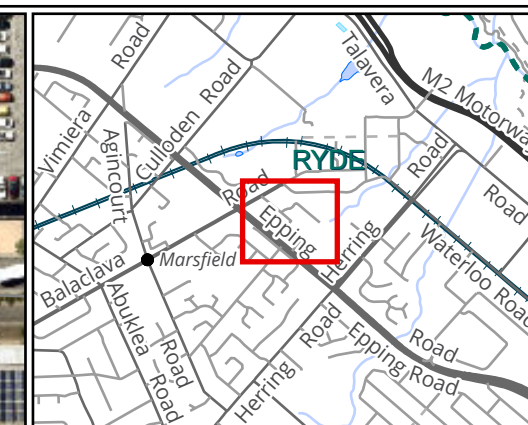
Construction and operational management plans will all contain an adaptive management component. Adaptive management strategies will be receptive to any new and relevant data that may arise through ongoing assessment and monitoring and are key to the successful implementation of crucial objectives yet 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.

8 Impact summary

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.



Legend

- Subject land
- Development site
- Development footprint
- Indirect impacts

Figure 13 Estimated zones of indirect impact for the proposal

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
 GIS: AM, Checked by: SNA, Last edited by: aabid
 Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
 Layout: 37762_F13_IndirectImpacts

Figure 15 shows the extent of TECs at risk of an SAI within the subject land.

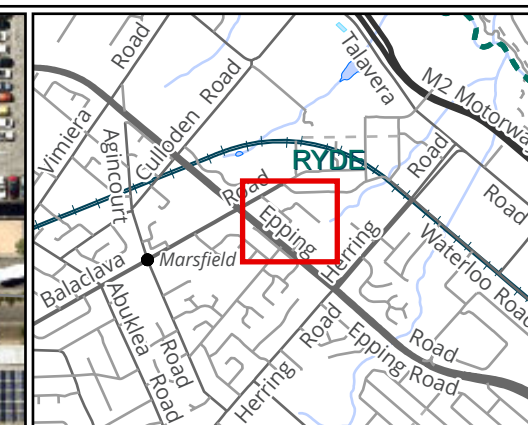
Figure 16 shows the location of impacts requiring offset, impacts not requiring offset and areas not requiring assessment.

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.*

One TEC, Sydney Turpentine-Ironbark Forest (BC Act) is considered to meet the above principles and will be impacted by the development. A detailed SAI assessment is provided in Appendix 5).



Legend

- Subject land
- Development site
- Development footprint
- Prescribed impacts

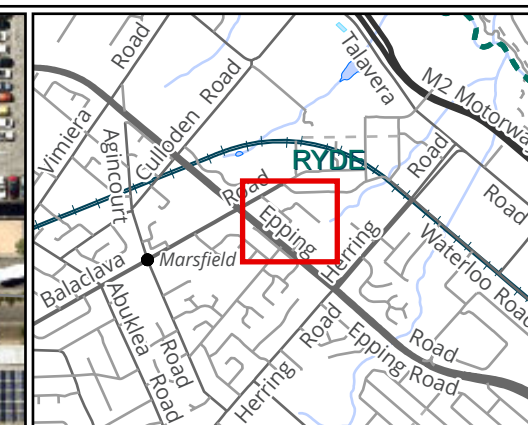
Figure 14 Prescribed impacts

0 10 20 30 40 50
Metres

Scale: 1:1,500 @ A3
Coordinate System:
GDA2020 MGA Zone 56



Matter: 37762, Date: 05 March 2025
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.aprx
Layout: 37762_F14_PrescribedImpacts



Legend

- Subject land
- Development site
- Development footprint

SAIL entities

- 3262 - Sydney Turpentine Ironbark Forest, 37762

Figure 15 Serious and Irreversible Impacts

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762,
Date: 05 March 2025,
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.mxd

8.3 Identification of impacts requiring offset

8.3.1 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.

On this basis, offsets are required for vegetation zone 3262_Low as it has a vegetation integrity score greater than 15.

Offsets are not required for planted native vegetation as it has been assessed under the planted native vegetation streamlined assessment module (see Section 3.1.8) and there is no evidence that threatened species are using the planted native vegetation as habitat. The planted native vegetation does not represent a PCT, TEC or threatened species habitat and has a VI score of less than 20. Although this vegetation zone does not require offsets, the impacts and associated credits are provided in Table 21.

The offset requirement for the proposal was calculated using the BAM Calculator. Table 21 provides a summary of the ecosystem credit offsets required for impacts from proposed development at the subject land.

Table 21 Offsets required (ecosystem credits)

Vegetation zone	Area (ha)	Impact	VI score	Offset required	TEC	HBTs	Credit requirement
3262_Low	0.03	Clearance	34.6	Yes	Yes	No	1
Planted native vegetation	0.60	Clearance	13.3	No	No	No	0

8.3.2 Impacts to threatened species and their habitat

As outlined in Section 9.2.2 of the BAM an offset is also required for the impacts of the proposals on the habitat of threatened species assessed for ecosystem credits and associated with a PCT in a vegetation zone with a vegetation integrity score of ≥ 17 .

The offset requirement for the proposal was calculated using the BAM Calculator. Table 22 provides a summary of the species credit offsets required for impacts from proposed development at the subject land.

Table 22 Offsets required (species credits)

Vegetation zone	Species	Habitat condition (VI score) loss	Area (ha)	Biodiversity risk weighting	Credit requirement
3262_Low	Large-eared Pied Bat	-34.6	0.03	3	1

Species polygons for the Large-eared Pied Bat impacted by the project are illustrated in Figure 16 below.

8.4 Identification of impacts not requiring offset

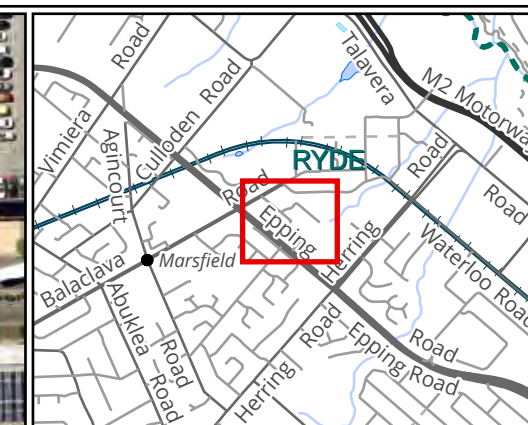
Following assessment, the following impacts do not require offsetting in accordance with BAM:

- Removal of 0.60 ha of planted native vegetation.
- Removal of 0.98 ha of planted exotic vegetation.

8.5 Identification of areas not requiring assessment

Following assessment, the following areas do not require assessment in accordance with BAM:

- Existing cleared areas containing buildings, roads and infrastructure.



Legend

- Development site
- Development footprint
- Subject land

Impacts

- Impacts requiring offset
- Areas not requiring assessment
- Impacts not requiring offset
- No direct impact expected

Threatened species polygons

- Large-eared Pied Bat

TECs - BC Act

- Sydney Turpentine-Ironbark
- Forest in the Sydney Basin Bioregion

Vegetation communities - Biosis

- 3262 - Sydney Turpentine Ironbark Forest, Low
- Planted native
- Urban Native/Exotic

Figure 16 Impacts requiring offsets, not requiring offset, not requiring assessment

0 10 20 30 40 50

Metres

Scale: 1:1,500 @ A3

Coordinate System:

GDA2020 MGA Zone 56



Matter: 37762,
Date: 07 March 2025,
GIS: AM, Checked by: SNA, Last edited by: aabid
Location: P:\40700s\40712\Mapping\40712_MacquariePark_BDARUpdates.mxd

9 Biodiversity credit report

Offsetting through the transfer and retirement of biodiversity credits, or paying into the BCT Offset Fund, is required for the current assessment for impacts to one vegetation zone at the subject land. A biodiversity credit report is provided on the following pages.

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00035184/BAAS18138/22/00035185	Macquarie Park Precinct	28/10/2024
Assessor Name	Report Created	BAM Data version *
Callan Wharfe	17/04/2025	Current classification (live - default) (80)
Assessor Number	BAM Case Status	Date Finalised
BAAS18138	Finalised	17/04/2025
Assessment Revision		Assessment Type
5		Major Projects

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

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

Zone	Vegetation zone name	TEC name	Current Vegetation integrity score	Change in Vegetation integrity (loss / gain)	Area (ha)	Sensitivity to loss (Justification)	Species sensitivity to gain class	BC Act Listing status	EPBC Act listing status	Biodiversity risk weighting	Potential SAI	Ecosystem credits

BAM Credit Summary Report

Sydney Turpentine Ironbark Forest											
1	3262_Low	Not a TEC	33.6	33.6	0.03	PCT Cleared - 96%	High Sensitivity to Gain			2.50	1
										Subtotal	1
										Total	1

Species credits for threatened species

Vegetation zone name	Habitat condition (Vegetation Integrity)	Change in habitat condition	Area (ha)/Count (no. individuals)	Sensitivity to loss (Justification)	Sensitivity to gain (Justification)	BC Act Listing status	EPBC Act listing status	Potential SAIL	Species credits
<i>Chalinolobus dwyeri</i> / Large-eared Pied Bat (Fauna)									
3262_Low	33.6	33.6	0.03	Biodiversity Conservation Act listing status	Species dependent on habitat attributes	Endangered	Endangered	True	1
Subtotal									1

References

- 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/>.
- 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/>.
- Council of Australian Standards 2009. 'AS 4970-2009 Protection of Trees on Development Sites', Standards Australia. Sydney, NSW. <https://www.tcaa.com.au/wp-content/uploads/2018/11/AS-4970-2009-Protection-of-trees-on-development-sites.pdf>.
- Cropper S 1993. *Management of Endangered Plants*, CSIRO Publications Victoria, Melbourne, Victoria.
- Cth DCCEEW 2024. *Protected Matters Search Tool, Australian Commonwealth Government Department of Climate Change, Energy, the Environment and Water*, <https://www.environment.gov.au/epbc/protected-matters-search-tool>.
- DCCEEW 2023. *Conservation Advice for Chalinolobus dwyeri (large-eared pied bat)*,.
- DECC NSW 2008. 'Best practice guidelines Sydney Turpentine - Ironbark Forest', Department of Environment and Climate Change NSW. Sydney, NSW.
- Department of Environment & Climate Change NSW 2002. *NSW ecosystems study: background and methodology*, Author: Mitchell P, NSW National Parks and Wildlife Service, Hurstville, NSW. <https://www.environment.nsw.gov.au/resources/conservation/EcosystemsMethodology.pdf>.
- DERM 2011. 'National recovery plan for the Large-eared Pied Bat *Chalinolobus dwyeri*', Department of Environment and Resource Management, Brisbane, QLD. <https://www.dcceew.gov.au/environment/biodiversity/threatened/recovery-plans/national-recovery-plan-large-eared-pied-bat-chalinolobus-dwyeri>.
- DoE 2013. *Matters of National Environmental Significance Significant impact guidelines 1.1 - Environment Protection and Biodiversity Conservation Act 1999*, Department of the Environment, Canberra, ACT, accessed 14 February 2024, <https://www.dcceew.gov.au/environment/epbc/publications/significant-impact-guidelines-11-matters-national-environmental-significance>.
- DPE 2023. *NSW BioNet Threatened Biodiversity Profile Data Collection [Superseeded]*, NSW Government Office of Environment and Heritage, accessed 13 January 2023, <https://threatenedspecies.bionet.nsw.gov.au/>.
- DPI 2012. *Risk assessment guidelines for groundwater dependent ecosystems*, New South Wales Government Department of Primary Industries.
- DPI 2013. *Policy and Guidelines for Fish Habitat Conservation and Management (2013 Update)*, NSW Department of Primary Industries, https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0005/634694/Policy-and-guidelines-for-fish-habitat.pdf.

- DPIE 2019. *Guidance to assist a decision-maker to determine a serious and irreversible impact*,.
- 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>.
- DSEWPac 2009. *Census of Australian Vertebrates*, Australian Government Department of Sustainability Environment, Water, Population and Communities, Canberra, ACT.
- EcoLogical Australia 2020. *BaptistCare Macquarie Park Redevelopment - Ecological Constraints Assessment*, Report prepared for BaptistCare. Authors: Lawrie.M, EcoLogical Australia, NSW.
- Environment Australia 2001. 'A Directory of Important Wetlands in Australia, Third Edition',.
- Ethos Urban 2022. *Scoping Report. Macquarie Park - Master Plan*,.
- Ethos Urban 2024. 'BaptistCare Macquarie Park Masterplan – City of Ryde Council Update',.
- Harden GJ (ed.) 1992. *Flora of New South Wales*, NSW University Press, Kensington, NSW.
- 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.
- Holz P, Hufschmid J, Boardman W, Cassey P, Firestone S, Lumsden L, Prowse T, Reardon T, & Stevenson M 2019. 'Does the fungus causing white-nose syndrome pose a significant risk to Australian bats?', *Wildlife Research*, 46, 8: 657–68.
- IUCN SSC 2020. 'IUCN SSC Bat Specialist Group (BSG) Recommended Strategy for Researchers to Reduce the Risk of Transmission of SARS-CoV-2 from Humans to Bats', https://www.iucnbsg.org/uploads/6/5/0/9/6509077/map_recommendations_for_researchers_v_1.0_final.pdf.
- NSW DCCEEW 2010. 'NSW Wetlands Map', <https://datasets.seed.nsw.gov.au/dataset/nsw-wetlands047c7>.
- NSW DCCEEW 2024a. *NSW BioNet Vegetation Classification database, BioNet, New South Wales Department of Climate Change, Energy, the Environment and Water*, accessed 4 March 2024, <https://vegetation.bionet.nsw.gov.au/>.
- NSW DCCEEW 2024b. *BioNet the website for the Atlas of NSW Wildlife, BioNet, New South Wales Department of Climate Change, Energy, the Environment and Water*, <https://atlas.bionet.nsw.gov.au/>.
- NSW DCCEEW 2024c. *Biodiversity Values Map NSW, Biodiversity Values Map and Threshold*, <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=BOSETMap>.
- NSW DCCEEW 2024d. 'Transitional Native Vegetation Regulatory Map viewer', <https://www.lmbc.nsw.gov.au/Maps/index.html?viewer=NVRMap>.
- NSW DCCEEW 2024e. *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 2024f. *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 2024g. 'NSW State Vegetation Type Map (SVTM C2.0M2.1)', <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet/state-vegetation-type-map>.

NSW Spatial Services 2024. *Historical Imagery, NSW Government*, accessed 30 July 2024, <https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html?id=f7c215b873864d44bccddda8075238cb>.

NSW Threatened Species Scientific Committee 2019. 'Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion - critically endangered ecological community listing', <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Scientific-Committee/Determinations/2019/sydney-turpentine-ironbark-forest-final-determination-CEEC.pdf>.

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>.

OEH 2017. *Biodiversity Assessment Method (BAM)*, New South Wales Office of Environment and Heritage, <https://www.environment.nsw.gov.au/-/media/OEH/Corporate-Site/Documents/Animals-and-plants/Biodiversity/biodiversity-assessment-method-170206.pdf>.

Place Partners 2021. *BaptistCare - Macquarie Park Place Strategy*,.

RBGDT 2022. *PlantNET - The Plant Information Network System of the Royal Botanic Gardens and Domain Trust (Version 2)*, New South Wales Office of Environment and Heritage, Sydney, NSW. <http://plantnet.rbgsyd.nsw.gov.au>.

TSSC 2012. 'Commonwealth Listing Advice on *Chalinolobus dwyeri* (Large-eared Pied Bat)', Department of Sustainability, Environment, Water, Population and Communities. Canberra, ACT. <http://www.environment.gov.au/biodiversity/threatened/species/pubs/183-conservation-advice-15112023.pdf>.

Turbill C & Welbergen J 2020. 'Anticipating white-nose syndrome in the Southern Hemisphere: Widespread conditions favourable to *Pseudogymnoascus destructans* pose a serious risk to Australia's bat fauna', *Austral Ecology*, 45, 1: 89–96.

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 1992, Harden 1993, Harden 2000, Harden 2002). All doubtful species names were verified with the on-line 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 maintained by the DAWE (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 flora and fauna assessment was conducted under the terms of Biosis' Scientific Licence issued by EES (SL100758, expiry date 31 May 2023). The BAM Assessment and quality review of the BDAR was carried out by Accredited Assessor Callan Wharfe (BAAS 18138).

Appendix 1.3 Limitations

Field surveys were undertaken in accordance with the BAM. 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 winter during clear weather, this was considered a suitable time to determine the presence of most threatened species given the degraded habitat provided by the subject land.

Surveys undertaken, combined with habitat assessments and desktop analysis are considered sufficient to reach the conclusions herein in regards to 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	Candidate species rationale
	EPBC	BC							
<i>Acacia bynoeana</i> Bynoe's Wattle	V	E	Yes	Bynoe's Wattle is a semi-prostrate shrub growing up to 1 m tall with shiny stiff narrow phyllodes (1.5-5 cm long, 1-3 mm wide) and single flower heads. This species occurs in central; eastern NSW from the Hunter District to the Southern Highlands and west to the Blue Mountains. It occurs in heath or dry sclerophyll forest on sandy soils and prefers open or disturbed sites. Bynoe's Wattle is associated with Red Bloodwood <i>Corymbia gummifera</i> , Scribbly Gum, Parramatta Red Gum, Saw Banksia <i>Banksia serrata</i> and Narrow-leaved Apple. Associated PCTs relevant to the subject land include 724, 725, 849, 883, 1083 and 1181 in the Cumberland and	Low	Yes	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development and planting of exotic and native species. Site surveys for this species were undertaken within the development footprint between May and October 2020 during the approved survey period for the species. No individuals of this species was detected. Based on the habitat and absence of this species within the development footprint; <i>Acacia bynoeana</i> does not require any further

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Wollemi IBRA subregions. The survey period is year round.					consideration.
<i>Allocasuarina glareicola</i>	E	E	Yes	<i>Allocasuarina glareicola</i> is an erect, depauperate shrub growing between 1-2 m tall with ascending branchlets up to 20 cm and cones 10-13 mm long and 7-8 mm wide (DPE 2023). This species is restricted to the Richmond district with outliers at Voyager Point in Liverpool. It grows in Castlereagh Woodland on lateritic soils. This species is associated with PCTs 724, 725 and 883 in the Cumberland IBRA subregion (DPE 2023). The survey period is year round.	Low	Yes	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development and planting of exotic and native species. Site surveys for this species were undertaken within the development footprint between May and October 2020 during the approved survey period for the species. No individuals of this species was detected. Based on the habitat and absence of this species within the development footprint; <i>Allocasuarina glareicola</i> does not require any further consideration.
<i>Acacia prominens</i> Gosford Wattle Hurstville and Kogarah	--	E2	Yes	Occurs at a few sites along the railway line at Penshurst, at Carss Bush Park, Carss Park and there is an unconfirmed siting at	Negligible	No	No	No	The subject land is not within the endangered population geographic distribution.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
Local Government Areas				Oatley Park, Oatley. This population is disjunct from other populations (Hunter Valley to Gosford region) and at the southern limit of the range of the species.					
<i>Acacia pubescens</i> Downy Wattle	V	V	Yes	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, alluvium and gravely soils, often including ironstone.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development and planting of exotic and native species. Site surveys for this species were undertaken within the development footprint between May and October 2020 during the approved survey period for the species. No individuals of this species were detected.
<i>Acacia terminalis</i> subsp. <i>terminalis</i> MS Sunshine wattle	E	--	No	Sunshine Wattle is found in open coastal eucalypt woodland or forest, usually in sandy soil on creek banks, hill-slopes or in shallow soil in rock crevices and sandstone platforms on cliffs.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development and planting

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
									of exotic and native species. Site surveys for this species were undertaken within the development footprint between May and October 2020 during the approved survey period for the species. No individuals of this species were detected.
<i>Allocasuarina glareicola</i>	E	E	No	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	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Asterolasia elegans</i>	E	E	No	Tall, thin shrub found growing north of Sydney in the Baulkham Hills, Hawkesbury and Hornsby districts. Could also occur in the	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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.					clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Caladenia tessellata</i> Thick Lip Spider Orchid	V	E	Yes	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 Forests, Cumberland Dry Sclerophyll Forests, Coastal Floodplain Woodlands and Subalpine Woodlands. Grows on clay loam or sandy soils.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Callistemon linearifolius</i> Netted Bottle Brush	-	V	Yes	Shrub to 4 metres tall recorded from the Georges River to Hawkesbury River in the Sydney area, and north to the Nelson	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Bay area of NSW. It grows in dry sclerophyll forest on the coast and adjacent ranges.					clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Cryptostylis hunteriana</i> Leafless Tongue Orchid	V	V	No	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	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development and planting of exotic and native species. Site surveys for this species were undertaken within the development footprint between May and October 2020 during the approved survey period for the species. No individuals of this species were detected.
<i>Camarophyllopsis kearneyi</i>	--	E	Yes	Small agaric fungus restricted to Lane Cove Bushland Park. Grows	Low	No	No	No	The subject land is outside the known distribution of

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				in Sydney Coastal Dry Sclerophyll Forests.					the species. The subject is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Darwinia biflora</i>	V	V	No	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	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

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	EPBC	BC							
<i>Darwinia peduncularis</i>	-	V	Yes	A broadly spreading shrub which occurs as local disjunct populations in coastal NSW with a couple of isolated populations in the Blue Mountains. Usually grows on or near rocky outcrops on sandy, well drained, low nutrient soil over sandstone.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no rocky areas were recorded within the subject land, which is a habitat constraint for this species. No individuals of this species were detected during site surveys between May and October 2020.
<i>Deyeuxia appressa</i>	E	E	No	Erect, perennial grass, endemic to NSW. Restricted to two records, one in 1930 at Herne Bay south of Bankstown and the other in 1941 from Killara near Hornsby. Grows on wet ground in Sydney Coastal Dry Sclerophyll Forests and Eastern Riverine Forests.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
									In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Epacris purpurascens</i> var. <i>purpurascens</i>	--	V	Yes	Erect shrub distributed from Gosford in the north, Silverdale to the west, Narrabeen in the east and Avon Dam in the south. Grows in scrubs and swamps in a variety of communities including Cumberland Dry, Sydney Hinterland Dry, Northern Hinterland Wet, and Southern Tableland Wet Sclerophyll Forests, Eastern Riverine Forests, and Coastal Valley Grassy Woodlands. Grows in soils with a strong shale influence on sandstone substrates.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Epacris sparsa</i> Sparse Heath	V	V	No	Small, erect shrub restricted to the Grose River within the Hawkesbury and Blue Mountains Local Government Areas. Grows on 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.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native

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				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.					species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Eucalyptus camfieldii</i> Camfield's Stringybark	V	V	No	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 Heaths. Grows in	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, the species is conspicuous and no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				sandy soils on Hawkesbury sandstone.					
<i>Genoplesium baueri</i> Bauer's Midge Orchid	E	E	No	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	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Grevillea parviflora</i> subsp. <i>parviflora</i> Small-flower Grevillea	V	V	Yes	Low spreading to erect shrub sporadically distributed throughout the Sydney Basin, most notably in the Picton, Appin and Bargo regions, in the Cessnock - Kurri Kurri area and isolated populations from Putty to Wyong and Lake Macquarie. Grows in Shale Sandstone Transition Forest, Kurri Sand Swamp Woodland, Coymbia maculata - Angophora costata	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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				Open Forest in the Dooralong Area, Sydney Sandstone Ridgetop Woodland at Wedderburn and Cooks River/Castlereagh Ironbark Forest at Kemps Creek. Grows in sandy or light clay soils including tertiary alluviums over thin shales and lateritic ironstone gravels.					during site surveys between May and October 2020.
<i>Grevillea parviflora</i> subsp. <i>supplicans</i>	--	E	Yes	Low shrub restricted to a few locations in the Arcadia and Maroota-Marramarra Creek area including Marramarra National Park in Hornsby and Baulkham Hills Local Government Area. Grows in periodically disturbed areas in Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Northern Hinterland Wet Sclerophyll Forests. Grows on sandstone substrates in skeletal sandy soils, also shows a preference for yellow clays with impeded drainage.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

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<i>Haloragodendron lucasii</i>	E	E	Yes	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	No	No	Habitat within the subject land is not suitable, the subject land does not contain any creeks and is degraded due to past clearing and development and ongoing land management. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Hibbertia puberula</i>	--	E	Yes	Shrublets with yellow flowers single, or rarely in a cluster of up to 6. Known from Wollemi National Park south to Morton National Park and the south coast near Nowra. Early records of this species are from the Hawkesbury River area and Frenchs Forest in northern Sydney, South Coogee in eastern Sydney, the Hacking River area in southern Sydney, and the Blue Mountains. The species favours low heath on sandy soils or	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				rarely in clay, with or without rocks underneath.					
<i>Hibbertia spanantha</i> Julian's Hibbertia	C	C	Yes	Grows in forest with canopy species including <i>Eucalyptus pilularis</i> , <i>E. resinifera</i> , <i>Corymbia gummifera</i> and <i>Angophora costata</i> . The understorey is open with species of Poaceae, Orchidaceae, Fabaceae and Liliaceae. The soil is identified as a light clay occurring on a shale sandstone soil transition.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Hibbertia superans</i>	--	E	Yes	Occurs from Baulkham Hills to South Maroota in the northern outskirts of Sydney, where there are currently 16 known sites, and at one locality at Mount Boss, inland from Kempsey. No populations are known from a formal conservation reserve. Flowering time is July to December. The species occurs on sandstone ridgetops often near the shale/sandstone	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				boundary.					during site surveys between May and October 2020.
<i>Hygrocybe anomala</i> var. <i>ianthinomarginata</i>	--	V	Yes	Known from the type locality, Lane Cove Bushland Park, Lane Cove and from other locations in the Sydney regional including Royal National Park, Chatswood, Castle Hill and the Blue Mountains (Springwood). Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.
<i>Hygrocybe austropratensis</i>	--	E	Yes	Known from type locality, Lane Cove Bushland Park, Lane Cove and other locations in the Sydney region including Royal National Park, Chatswood, Northbridge and the Blue Mountains (Mount Wilson, Hazelbrook, Springwood). Occurs in gallery warm temperate forests dominated by Lilly Pilly	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				<i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .					
<i>Hygrocybe aurantipes</i>	--	V	Yes	Known from type locality, Lane Cove Bushland Park, Lane Cove, and other locations in the Sydney region including Royal National Park, Chatswood, Northbridge and the Blue Mountains (Mount Wilson, Hazelbrook, Springwood). Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.
<i>Hygrocybe collucera</i>	--	E	Yes	Originally know from type locality at Lane Cove Bushland Park, Lane Cove however may also occur elsewhere in the region. Other possible locations include Chatswood, Royal National Park Wolli Creek and the Blue Mountains (Blackheath, Blaxland,	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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				Hazelbrook, Mt Wilson, Lawson). Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .					
<i>Hygrocybe griseoramosa</i>	--	E	Yes	Originally know from type locality at Lane Cove Bushland Park, Lane Cove however may also occur elsewhere in the region. Other possible locations include Chatswood, Royal National Park Wolli Creek and the Blue Mountains (Blackheath, Blaxland, Hazelbrook, Mt Wilson, Lawson). Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.
<i>Hygrocybe lanecovens</i>	--	E	Yes	Originally know from type locality at Lane Cove Bushland Park,	Low	No	No	No	Habitat within the subject land is not suitable for this

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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				Lane Cove however may also occur elsewhere in the region. Other possible locations include Chatswood, Royal National Park Wolli Creek and the Blue Mountains (Blackheath, Blaxland, Hazelbrook, Mt Wilson, Lawson). Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .					species. Habitat is degraded due to past clearing and development and ongoing land management.
<i>Hygrocybe reesiae</i>	--	V	Yes	Known from type locality, Lane Cove Bushland Park, Lane Cove and other locations in the Sydney region including Royal National Park, Chatswood, Castle Hill, Northbridge, Marsfield, East Linfield and the Blue Mountains (Mount Wilson, Hazelbrook). Also found in Tasmania. Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion</i>	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.

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				<i>ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .					
<i>Hygrocybe rubronivea</i>	--	V	Yes	Known in a few locations including in Lane Cove Bushland Park and the Blue Mountains in NSW and in areas of south-east Queensland. However little information exists for populations outside Lane Cove Bushland Park. Occurs in gallery warm temperate forests dominated by Lilly Pilly <i>Acmena smithii</i> , Grey Myrtle <i>Backhousia myrtifolia</i> , Cheese Tree <i>Glochidion ferdinandi</i> and Sweet Pittosporum <i>Pittosporum undulatum</i> .	Low	No	No	No	Habitat within the subject land is not suitable for this species. Habitat is degraded due to past clearing and development and ongoing land management.
<i>Hypsela sessiliflora</i>	EX	--	No	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	Negligible	No	No	No	Known distribution of extinct population is outside the subject land. The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Floodplain Swamp Forests, and Eastern Riverine Forests.					planting of exotic and native species.
<i>Isotoma fluviatilis</i> subsp. <i>fluviatilis</i>	EX	--	No	Known to grow in damp places, on the Cumberland Plain, including freshwater wetland, grassland/alluvial woodland and an alluvial woodland/shale plains woodland (Cumberland Plain Woodland) ecotone. May be an early successional species that benefits from some disturbance. Possibly out competed when overgrown by some species such as <i>Cyndon dactylon</i> .	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Lasiopetalum joyceae</i>	V	V	Yes	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 Sydney Coastal Dry Sclerophyll Forests, Sydney Hinterland Dry Sclerophyll Forests and Sydney Coastal Heaths. Grows on sandstone substrates.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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									this species were detected during site surveys between May and October 2020.
<i>Leptospermum deanei</i>	V	V	No	Medium sized shrub confined to the Hornsby, Warringah, Ku-ring-gai and Ryde Local Government Areas. Grows on forested or woodland slopes or near creeks in Sydney Coastal Dry Sclerophyll Forests, Eastern Riverine Forests, and Sydney Coastal Heaths. Grows on sandy alluvial soil or sand soils over sandstone substrates.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Melaleuca biconvexa</i> Biconvex Paperbark	V	V	No	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	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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				Forests, Coastal Swamp Forests, Coastal Floodplain Wetlands, Coastal Freshwater Lagoon and North Coast Wet Sclerophyll Forests. Grows in alluvial soils.					this species were detected during site surveys between May and October 2020.
<i>Melaleuca deanei</i> Deane's Paperbark	V	V	No	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	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Persicaria elatior</i> Tall Knotweed	V	V	No	Erect herb found growing in south-eastern NSW at Moutn Dromedary, Moruya State Forest near Turlinjah, Upper Avon River	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous

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				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.					clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Persoonia hirsuta</i> Hairy Geebung	E	E	Yes	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	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
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				Slopes Dry Sclerophyll Forests, Coastal Valley Grassy Woodlands, Sydney Coastal Heaths and Southern Escarpment Wet Sclerophyll Forests. Grows in sandy soils on sandstone substrates.					during site surveys between May and October 2020.
<i>Pimelea curviflora</i> var. <i>curviflora</i>	V	V	Yes	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	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				substrates in shale/lateritic soils and shale/sandstone transition soils.					
<i>Pimelea spicata</i> Spiked Rice-flower	E	E	No	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 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.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Prostanthera marifolia</i> Seaforth Mintbush	C	C	No	Small erect straggly shrub restricted to a single population fragmented by urbanisation into three sites located in the northern Sydney suburb of	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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.					development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Pterostylis saxicola</i> Sydney Plains Greenhood	E	E	No	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	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Sclerophyll Forests. Grows in small pockets of shallow shale or shale/sandstone transition soils over sandstone substrates.					
<i>Rhizanthella slateri</i> Eastern Australian Underground Orchid	E	V	Yes	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	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Rhodamnia rubescens</i>	C	C	Yes	Found in littoral, warm temperate and subtropical	Low	No	No	No	The subject land is degraded due to ongoing

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
Scrub Turpentine				rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.					maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Rhodomyrtus psidioides</i> Native Guava	C	C	Yes	Pioneer species found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest often near creeks and drainage lines.	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Syzygium paniculatum</i>	V	E	Yes	Small to medium sized rainforest tree restricted to a narrow, linear	Low	No	No	No	The subject land is degraded due to ongoing

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
Magenta Lily Pilly				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.					maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.
<i>Tetratheca glandulosa</i>	--	V	Yes	Small, spreading shrub with 150 populations confined to the Baulkham Hills, Gosford, Hawkesbury, Ku-ring-gai, Pittwater, Ryde and Wyong Local Government Areas. Found growing in a variety of communities including Sydney Sandstone Ridgetop Woodland, Sydney Coastal Dry Sclerophyll Forests, Eastern Riverine Forests, Coastal Valley Grassy Woodlands, Sydney Montane Heaths and North Coast Wet	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Sclerophyll Forests. Grows in the shallow, yellow clay/sandy loams that are typical of shale/sandstone transition soils where shale caps occur over sandstone substrates such as the Lucas Heights, GyMEA, Lambert and Faulconbridge soil landscapes.					
<i>Thesium australe</i> Austral Toadflax	V	V	No	Small, straggling herb with a distribution comprising of small 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 <i>Themeda triandra</i> in a variety of communities including New England Dry Sclerophyll Forests, Western Slopes Grasslands, Northern Tableland Wet Sclerophyll Forests, Brigalow Clay Plain Woodlands, Subalpine	Low	No	No	No	The subject land is degraded due to ongoing maintenance and landscaping, previous clearing including development of buildings, roads and paths, landscaping and garden planting of exotic and native species. In addition, no individuals of this species were detected during site surveys between May and October 2020.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				Woodlands and Maritime Grasslands.					
<i>Wahlenbergia multicaulis</i> Tangell's Bluebell in the LGA of Auburn, Bankstown, Baulkham Hills, Canterbury, Hornsby, Parramatta and Strathfield	--	E2	Yes	There are 13 known sites, two of which are in northern Sydney (Thornleigh and Mt Ku-Ring-Gai) with the remainder in western Sydney (Rookwood, Chullora, Bass Hill, Bankstown, Georges Hall, Campsie, South Granville and Greenacre). There are likely to be more sites than those listed here. In Hornsby LGA it occurs in or adjacent to sandstone gully forest. In Western Sydney it is found in remnants of Cooks River/ Castlereagh Ironbark Forest.	Negligible	No	No	No	The subject land is not within the geographic region of the endangered population.

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	Candidate species rationale
	EPBC	BC							
<i>Anthochaera phrygia</i> Regent Honeyeater (Breeding)	C	C	Yes	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.	Negligible	No	No	No	Subject land is not included on the Important Areas map for the species. The species is considered vagrant for the assessment area.
<i>Botaurus poliocephalus</i> Australasian Bittern	E	E	No	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 <i>Typha</i> spp. and <i>Eleocharis</i> 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	No	Habitat for this species is not present in the subject land, as it does not contain terrestrial or estuarine wetlands. This species is not associated with the PCTs present in the subject land.
<i>Burhinus grallarius</i>	--	E	Yes	The Bush Stone-curlew is found	Low	No	No	No	The subject land does not

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
Bush-stone Curlew				throughout Australia except for the central southern coast and inland, the far south-east corner, and Tasmania. Only in northern Australia is it still common however and in the south-east it is either rare or extinct throughout its former range.					contain suitable habitat, habitat is degraded. This species depends on vegetation with an open understorey and suitable fallen debris for cover and foraging (such as dead timber and logs).
<i>Calidris canutus</i> Red Knot	E	--	No	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	No	Habitat for this species is not present in the subject land.
<i>Calidris ferruginea</i> Curlew Sandpiper	C	E	No	Inhabits sheltered intertidal mudflats. Also non-tidal swamps, lagoons and lakes near the coast. Infrequently recorded inland.	Negligible	No	No	No	Habitat for this species is not present in the subject land.
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo	E	V	Yes	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	Low	No	No	No	Old growth forests and woodland habitats preferred by the species are not present in the subject land. No suitable hollows are available in the subject land. May occasionally utilise the subject land as part of foraging movements.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				woodlands, particularly in box-ironbark assemblages, or in dry forest in coastal areas. It requires tree hollows in which to breed.					
<i>Callocephalon fimbriatum</i> Gang-gang Cockatoo population in the Hornsby and Ku-ring-gai LGA	--	E2	Yes	This endangered population is found in the Ku-ring-gai and Hornsby local government areas. The population is believed to be largely confined to an area bounded by Thornleigh and Wahroonga in the north, Epping and North Epping in the south, Beecroft and Cheltenham in the west and Turramurra/South Turramurra to the east. It is known to inhabit areas of Lane Cove National Park, Pennant Hills Park and other forested gullies in the area.	N/A	No	No	N/A	The subject land is located in the City of Ryde LGA therefore this population is not applicable to the subject land.
<i>Calyptrorhynchus lathamii</i> Glossy Black-Cockatoo (Breeding)	--	V	Yes	Inhabits forest with low nutrients, characteristically with key Allocasuarina species (Forest She-oak <i>Allocasuarina torulosa</i>). 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	No	The subject land does not contain suitable habitat for breeding in the form of large hollow-bearing trees. The subject land does not contain preferred feed tree species and contains only marginal foraging resources in the form of River Oak <i>Casuarina cunninghamiana</i>

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
<i>Cercartetus nanus</i> Eastern Pygmy-possum	--	V	Yes	The Eastern Pygmy-possum is found in south-eastern Australia, from southern Queensland to eastern South Australia and in Tasmania. In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Found in a broad range of habitats from rainforest through sclerophyll (including Box-Ironbark) forest and woodland to heath, but in most areas woodlands and heath appear to be preferred, except in north-eastern NSW where they are most frequently encountered in rainforest. They may occupy small patches of vegetation in fragmented landscapes and although the species prefers habitat with a rich shrub understory, they are known to occur in grassy woodlands and the presence of Eucalypts alone is sufficient to support populations in low densities.	Low	No	No	No	The subject land does not contain suitable habitat in the form of woodland with hollow-bearing trees. The vegetation of the subject land occurs in a highly modified state and also lacks complex microhabitats suitable as alternative shelter structures such as rock outcrops/crevices and dense shrubs.
<i>Chalinolobus dwyeri</i> Large-eared Pied Bat	V	V	Yes	Occurs from the Queensland border to Ulladulla, with largest	Low	No	No	No	The subject land has low topographic relief and there

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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.					are no rocky areas containing caves within 2 km of the subject land, therefore it is not considered to contain breeding habitat for this species. Forages below the forest canopy in close proximity to roosts therefore the subject land is unlikely to represent suitable foraging habitat.
<i>Charadrius leschenaultia</i> Greater Sand-plover	V	V	No	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,	Negligible	No	No	No	Habitat for this species is not present in the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				shallow freshwater wetlands and grassed paddocks.					
<i>Dasyornis brachypterus</i> Eastern Bristlebird	E	E	No	The distribution of the Eastern Bristlebird has contracted to three disjunct areas of south-eastern Australia. There are three main populations: Northern - southern Queensland/ northern NSW, Central - Barren Ground NR, Budderoo NR, Woronora Plateau, Jervis Bay NP, Booderee NP and Beecroft Peninsula and Southern - Nadgee NR and Croajingalong NP in the vicinity of the NSW/Victorian border. The estimated population size is less than 2000 individuals occupying a total area of about 120 sq km. There are now only four populations in the southern Queensland/ northern NSW area with a total of 35 birds, compared to 15 years ago when 14 populations and 154 birds were recorded.	Low	No	No	No	Suitable habitat does not occur within the subject land. Species has a highly restricted distribution that does not overlap with the subject land.
<i>Dasyurus maculatus</i> Spotted-tailed Quoll	E	V	No	Occurs along the east coast of Australia and the Great Dividing Range. Uses a range of habitats including sclerophyll forests and woodlands, coastal heathlands	Low	No	No	No	Suitable habitat does not occur within the study area. The subject land is within a highly urbanised environment. The species

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				and rainforests. Occasional sightings have been made in open country, grazing lands, rocky outcrops and other treeless 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.					requires large tracts of native vegetation for foraging.
<i>Falco hypoleucos</i> Grey Falcon	V	E	No	Found over open country and wooded lands of tropical and temperate Australia. Mainly found on sandy and stony plains of inland drainage systems with lightly timbered acacia scrub.	Negligible	No	No	No	Suitable habitat does not occur within the study area, the species rarely occurs east of the great dividing range. No stick nests potentially used by raptors were observed in the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
<i>Grantiella picta</i> Painted Honeyeater	V	V	No	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	No	Subject land is highly degraded and does not contain suitable habitat to support this species.
<i>Haliaeetus leucogaster</i> White-bellied Sea-Eagle	-	V	Yes	In New South Wales it is widespread along the east coast, and along all major inland rivers and waterways. Habitat consists of large areas of open water including larger rivers, swamps, lakes, and ocean, but it may also occupy terrestrial habitat. Breeding habitat consists of mature tall open forest, open forest, tall woodland, and swamp sclerophyll forest close to foraging habitat.	Low	No	No	No	The subject land is highly degraded with only two isolated native tree species recorded during field investigations. Habitat features important for this species were largely absent from the subject land.
<i>Heleioporus australiacus</i> Giant Burrowing Frog	V	V	Yes	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	Negligible	No	No	No	The subject land does not provide habitat suitable for this species. Habitat required includes ephemeral and semi-permanent to permanent waterways within native vegetation. This species is not known to occur within previously disturbed areas.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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.					
<i>Hieraaetus morphnoides</i> Little Eagle	--	V	Yes	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or <i>Acacia</i> woodlands and riparian woodlands of interior NSW are also used.	Low	No	No	No	This species nests in tall living trees within a remnant patch of open eucalypt forest. The subject land does not contain suitable habitat and no nests or evidence of breeding were observed. May occasionally utilise the subject land for foraging as part of a broad foraging range.
<i>Hirundapus caudacutus</i> White-throated Needletail	V	--	No	An aerial species found in feeding concentrations over cities, hilltops and timbered ranges. Breeds in Asia.	Low	No	No	No	Exclusively aerial species unlikely to be affected by the nature and scale of the proposal.
<i>Hoplocephalus bungaroides</i> Broad-headed Snake (Breeding)	V	E	Yes	Mainly occurs in association with communities occurring on Triassic sandstone within the Sydney Basin. Typically found among exposed sandstone outcrops with	Negligible	No	No	No	No habitat for this species occurs in the subject land. Habitat in the subject land is considered degraded for this species due to past clearing

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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.					and development.
<i>Isoodon obesulus</i> <i>obesulus</i> Southern Brown Bandicoot (Eastern)	E	E	No	This species prefers sandy soils with scrubby vegetation and/or areas with low ground cover that are burn from time to time. A mosaic of post fire vegetation is important for this species.	Low	No	No	No	No habitat for this species occurs in the subject land. Habitat in the subject land is considered degraded for this species due to past clearing and development.
<i>Lathamus discolor</i> Swift Parrot (Breeding)	C	E	Yes	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	Low	No	No	No	The subject land is not included on the Important Areas map for the species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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 nomadic, moving about in response to changing food availability.					
<i>Litoria aurea</i> Green and Golden Bell Frog	V	E	Yes	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 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	Negligible	No	No	No	No suitable waterbodies present within the subject land to support this species for breeding or foraging.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				develop , feed on algae and other vegetative matter. Adults eat insects as well as other frogs, including juveniles of their own species.					
<i>Litoria brevipalmata</i> Green-thighed Frog	--	V	Yes	Isolated localities along the coast and ranges from just north of Wollongong to south-east Queensland. Green-thighed Frogs occur in a range of habitats from rainforest and moist eucalypt forest to dry eucalypt forest and heath, typically in areas where surface water gathers after rain. It prefers wetter forests in the south of its range, but extends into drier forests in northern NSW and southern Queensland.	Negligible			No	No suitable habitat to support this species within the subject land.
<i>Lophoictinia isura</i> Square-tailed Kite (Breeding)	--	V	Yes	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. It is a summer breeding	Low	No	No	No	No suitable habitat within the subject land for breeding (timbered watercourse). No evidence of old stick nests were observed in the subject land which may be used by raptors.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				migrant to the south-east, including the NSW south coast, arriving in September and leaving by March. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.					
<i>Macquaria australasica</i> Macquarie Perch	E	--	No	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	Negligible	No	No	No	No suitable habitat occurs in the subject land.
<i>Miniopterus australis</i> Little Bent-winged Bat (Breeding)	--	V	Yes	East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW. Moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas.	Negligible	No	No	No	The subject land does not contain habitat features suitable for roosting or breeding (i.e. culverts, caves, mines or tunnels).

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
<i>Miniopterus orianae oceanensis</i> Large Bent-winged Bat (Breeding)	--	V	Yes	Eastern Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but also use derelict mines, storm-water tunnels, buildings and other man-made structures.	Negligible	No	No	No	The subject land, and land within 200 metres of the development footprint does not contain habitat features suitable for roosting or breeding (i.e. culverts, caves, mines or tunnels).
<i>Mixophyes balbus</i> Stuttering Frog	V	E	No	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.	Negligible	No	No	No	The subject land does not contain suitable streams or forest habitat to support this species.
<i>Myotis macropus</i> Southern Myotis	--	V	Yes	The Southern Myotis is found in the coastal band from the north-west of Australia, across the top-end and south to western Victoria. It is rarely found more than 100 km inland, except along major rivers. Generally roost in groups of 10 - 15 close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	Low	No	No	No	Subject land lacks suitable waterbodies with pools / stretches 3 metres or wider and does not occur within 200 metres of such waterbodies. It is unlikely that the hollow recorded in an exotic tree at the site would be suitable for roosting.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
<i>Nettapus coromandelianus</i> Cotton Pygmy-Goose	-	E	Yes	The Cotton Pygmy-Goose is a small surface-feeding duck, previously found from north Queensland to the Hunter River in NSW. It occupies freshwater lakes, lagoons, swamps and dams, particularly those vegetated with waterlilies and other floating and submerged aquatic vegetation. It uses tall standing dead trees with hollows located close to water for roosting and breeding.	Low	No	No	No	Subject land lacks suitable waterbodies with floating and submergent vegetation, which is a habitat constraint for this species.
<i>Ninox connivens</i> Barking Owl	--	V	Yes	Generally found in open forests, woodlands, swamp woodlands, farmlands and dense scrub. Can also be found in the foothills and timber along watercourses in otherwise open country. Territories are typically 2000 ha in NSW habitats. Hunts small arboreal mammals or birds and terrestrial mammals when tree hollows are absent.	Low	No	No	No	Subject land is degraded due to urban development and lacks habitat features suitable to support this species.
<i>Ninox strenua</i> Powerful Owl (Breeding)	--	V	Yes	The Powerful Owl is endemic to eastern and south-eastern Australia, mainly on the coastal side of the Great Dividing Range from Mackay to south-western Victoria. In NSW, it is widely	Moderate	No	No	No	This species requires living or dead trees with hollows greater than 20 cm diameter for breeding habitat. No suitable breeding habitat is present within the subject

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains suggesting occupancy prior to land clearing. Now at low densities throughout most of its eastern range, rare along the Murray River and former inland populations may never recover. Recent increases in population density across Sydney and some other semi-urban areas do not seem to be solely due to increased awareness of this flagship species. The Powerful Owl inhabits a range of vegetation types, from woodland and open sclerophyll forest to tall open wet forest and rainforest.					land. The species may utilise the subject land on an occasional basis for foraging as part of a broad home range.
<i>Numenius madagascariensis</i> Eastern Curlew	C	--	No	Occurs in sheltered coasts, especially estuaries, embayments, harbours, inlets and coastal lagoons with large intertidal mudflats or sandflats often with beds of seagrass.	Negligible	No	No	No	Habitat for this species is not present in the subject land.
<i>Pandion cristatus</i> Eastern Osprey	-	V	Yes	The Eastern Osprey is a large, water-dependent bird of prey	Negligible	No	No	No	Habitat for this species is not present in the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				with a global distribution. They are found across the Australian coastline inhabiting rocky shores, islands and reefs. They favour mouths of rivers, lagoons or lakes and feed over open water.					
<i>Perameles nasuta</i> – endangered population Long-nosed Bandicoot	-	E	Yes	In NSW it is generally restricted to coastal heaths and forests east of the Great Dividing Range, with an annual rainfall exceeding 760 mm. Inhabits coastal heaths and dry and wet sclerophyll forests. Dense understorey with occasional open areas is an essential part of habitat, and may consist of grass-trees, sedges, ferns or heath, or of low shrubs of tea-trees or melaleucas. Occurs in vegetation on sandy loam soil.	Negligible	No	No	No	This species distribution is restricted to North Head in the Manly LGA. In addition, habitat within the subject land was considered degraded.
<i>Petauroides volans</i> Greater Glider	E	--	Yes	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 Gliders is related to soil fertility, eucalypt tree species, disturbance history and density of suitable tree hollows. Feeds exclusively on	Low	No	No	No	The disturbed and urbanised nature of the subject land is unsuitable for supporting this species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				eucalypt leaves, buds, flowers and mistletoe.					
<i>Petaurus norfolcensis</i> Squirrel Glider	-	V	Yes	Occurs in eastern Australia extending from north eastern Queensland through eastern NSW and down through northern and central Victoria. In NSW, occurs on the coast in a range of habitats including low scrubby eucalypt woodlands and banksia thickets to tall, wet eucalypt forests bordering on rainforest.	Low	No	No	No	Habitat in the subject land is considered degraded. This species requires hollow-abundant vegetation for refuge and breeding, which does not occur in the subject land.
<i>Petaurus norfolcensis</i> Squirrel Glider Barrenjoey Peninsula	-	V	Yes	The endangered population is within the Pittwater Local Government Area on the Barrenjoey Peninsula, north of Bushrangers Hill.	Low	No	No	No	The subject land is not within the geographic range for this endangered population.
<i>Petrogale penicillata</i> Brush-tailed Rock-wallaby	V	E	No	Occurs along the Great Dividing Range south to the Shoalhaven, and also occurs in the Warrumbungles and Mt Kaputar. Habitats range from rainforest to open woodland. It is found in areas with numerous ledges, caves and crevices particularly with northern aspects. The species forages on grasses and forbs.	Negligible	No	No	No	Natural rocky escarpments, outcrops and cliffs, which are key habitat areas for this species, are absent from the subject land, which does not contain suitable habitat to support this species.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
<i>Phascolarctos cinereus</i> Koala	E	E	Yes	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 <i>Eucalyptus robusta</i> , <i>E. tereticornis</i> , <i>E. punctata</i> , <i>E. haemostoma</i> and <i>E. signata</i> . They are solitary with varying home ranges.	Low	No	No	No	Planted native vegetation and the two remnant trees comprising PCT 3262 within the subject area is considered degraded for the Koala. The vegetation within the subject land is influenced by past disturbance and is highly modified in an urban context. The subject land is within a highly developed, urbanised locality which contains a high level of threat from vehicle strike for the species and constitutes a significant barrier from larger patches of more suitable vegetation. It is unlikely that the subject land could be used by individuals due to the poor quality and connectivity of the remnant vegetation present.
<i>Polytelis swainsonii</i> Superb Parrot	V	V	No	Found mainly in open, tall riparian River Red Gum forest or woodland. Often found in farmland including grazing land with patches of remnant vegetation. Forages primarily in grassy box woodland, feeding in	Negligible	No	No	No	The subject land does not contain suitable habitat for this species in the form of grassy woodland or riparian woodlands.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				trees and understorey shrubs and on the ground and their diet consists mainly of grass seeds and herbaceous plants.					
<i>Pommerhelix duralensis</i> Dural Land Snail	E	E	Yes	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.	Negligible	No	No	No	This species requires forested habitats with native ground cover and woody debris, which does not occur in the subject land. The subject land is considered too degraded to support this species.
<i>Pseudomys novaehollandiae</i> New Holland Mouse	V	--	No	The New Holland Mouse currently has a disjunct, fragmented distribution across Tasmania,	Negligible	No	No	No	The subject land does not contain suitable habitat for this species in the form of

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				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 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.					sandy substrate, heathland understorey and vegetated sand dunes.
<i>Pseudophryne australis</i> Red-crowned	-	V	Yes	The Red-crowned Toadlet is a small frog confined to the Sydney Basin, from Pokolbin in the north,	Negligible	No	No	No	The habitat features important for this species were absent from the subject

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
Toadlet				Nowra in the south, and west to Mt Victoria in the Blue Mountains. Occurs in open forests, mostly on Hawkesbury and Narrabeen Sandstones and inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings. It shelters under rocks and amongst masses of dense vegetation or thick piles of leaf litter.					land. Habitat was considered degraded due to significant urban development within the subject land and surrounding landscape.
<i>Pteropus poliocephalus</i> Grey-headed Flying-fox (Breeding)	V	V	Yes	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.	Negligible	No	No	No	No camps (communal breeding / roosting sites) occur within the subject land or immediate vicinity. The subject land therefore does not support breeding habitat. The species may forage occasionally on nectar resources within the subject land as part of a broad home range, however planted native vegetation in the subject land is considered to provide only marginal habitat in the context of the wider locality and the resources available within remnant vegetation of Lane Cove

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
									National Park and along riparian corridors.
<i>Pycnoptilus floccosus</i> Pilotbird	V	--	No	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.	Negligible	No	No	No	Suitable habitat for this species in the form of temperate wet forests with dense understorey does not occur in the subject land.
<i>Rostratula australis</i> Australian Painted Snipe	E	E	No	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.	Negligible	No	No	No	The subject land does not contain any suitable shallow inland wetlands to support this species.
<i>Sternula nereis nereis</i> Fairy Tern	V	--	No	The Fairy Tern nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. This species will also	Negligible	No	No	No	Habitat for this species is not present in the subject land.

Species	Status		BAM predicted SCS	Habitat Description	Potential occurrence in subject land	BAM Candidate species	Survey required/ undertaken	Potential for impact	Candidate species rationale
	EPBC	BC							
				frequent embayments, estuarine habitats, wetlands and mainland coastlines.					
<i>Tyto novaehollandiae</i> Masked Owl	--	V	Yes	The Masked Owl is found in range of wooded habitats that provide tall or dense mature trees with hollows suitable for nesting and roosting. It is mostly seen in open forests and woodlands adjacent to cleared lands. Prey includes hollow-dependent arboreal marsupials and terrestrial mammals.	Negligible	No	No	No	This species breeds in moist eucalypt forests and woodlands, and relies on medium sized hollows. The subject land does not contain suitable habitats to support this species.

Appendix 3 BAM Plot data

Appendix 3.1 BAM plot field data

Table A. 3 Flora species recorded in the subject land from BAM plots

Family	Scientific name	Common name	37762_P1		37762_P2		37762_P3		37762_P4	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Native species										
Amaranthaceae	<i>Alternanthera</i> sp. A	None							0.1	4
Amaryllidaceae	<i>Crinum</i> spp.	None			0.1	2				
Campanulaceae	<i>Lobelia purpurascens</i>	whiteroot			0.1	10	0.1	10		
Casuarinaceae	<i>Casuarina cunninghamiana</i> subsp. <i>cunninghamiana</i>	River Oak							15	20
Commelinaceae	<i>Commelina cyanea</i>	Native Wandering Jew							0.3	50
Convolvulaceae	<i>Dichondra repens</i>	Kidney Weed	0.1	3	0.1	5				
Cyperaceae	<i>Cyperus gracilis</i>	Slender Flat-sedge	0.1	1	0.1	5			0.1	5
Fabaceae (Mimosoideae)	<i>Acacia melanoxylon</i>	Blackwood	5	1						
Lamiaceae	<i>Westringia fruticosa</i>	Coastal Rosemary	0.1	2					3	20
Lamiaceae	<i>Salvia</i> spp.	None			0.1	5				
Lamiaceae	<i>Teucrium</i> spp.	None			0.1	1				
Lomandraceae	<i>Lomandra longifolia</i>	Spiny-headed Mat-rush							0.2	10
Malvaceae	<i>Brachychiton acerifolius</i>	Illawarra Flame Tree	0.5	1						
Myrtaceae	<i>Melaleuca bracteata</i>	Black Tea-tree					3	2		
Myrtaceae	<i>Leptospermum laevigatum</i>	Coast Teatree					0.3	1		
Myrtaceae	<i>Callistemon citrinus</i>	Crimson Bottlebrush					0.2	3	3	30
Mvrtaceae	<i>Acmena smithii</i>	Lilly Pilly	2	5						

Family	Scientific name	Common name	37762_P1		37762_P2		37762_P3		37762_P4	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Myrtaceae	<i>Eucalyptus resinifera</i>	Red Mahogany	10	1						
Myrtaceae	<i>Eucalyptus robusta</i>	Swamp Mahogany					5	2		
Myrtaceae	<i>Eucalyptus microcorys</i>	Tallowwood					10	1		
Myrtaceae	<i>Syncarpia glomulifera</i>	Turpentine	20	1						
Myrtaceae	<i>Callistemon viminalis</i>	Weeping Bottlebrush					0.5	2		
Oxalidaceae	<i>Oxalis perennans</i>	None	0.1	10	0.1	10				
Plantaginaceae	<i>Veronica</i> spp.	None			0.1	1				
Poaceae	<i>Imperata cylindrica</i>	Blady Grass							1	100
Poaceae	<i>Cynodon dactylon</i>	Common Couch	2	200	55	1000				
Poaceae	<i>Oplismenus hirtellus</i>	None			0.1	10				
Poaceae	<i>Microlaena stipoides</i>	Weeping Grass			0.1	5	0.1	5		
Polypodiaceae	<i>Platycerium superbum</i>	Staghorn	0.5	3						
Proteaceae	<i>Grevillea rosmarinifolia</i>	Rosemary Grevillea	0.1	2						
Proteaceae	<i>Grevillea robusta</i>	Silky Oak	0.5	1					0.1	1
Introduced species										
Caprifoliaceae	<i>Abelia x grandiflora</i>	None							0.1	1
Alliaceae	<i>Agapanthus africanus</i>	Lily of the Nile	1	40						
Myrtaceae	<i>Agonis flexuosa</i>	None					1	2		
Asphodelaceae	<i>Aloe vera</i>	None			0.1	1				
Apocynaceae	<i>Araujia sericifera</i>	Moth Vine					0.1	1		
Asparagaceae	<i>Asparagus aethiopicus</i>	Asparagus Fern	0.1	3						
Begoniaceae	<i>Begonia</i> spp.	None	0.1	2						
Asteraceae	<i>Bidens pilosa</i>	Cobbler's Pegs							0.1	10
Poaceae	<i>Bouteloua dactyloides</i>	Buffalo Grass			5	500	5	500		
Crassulaceae	<i>Bryophyllum delagoense</i>	Mother of millions			0.1	1				
Theaceae	<i>Camellia japonica</i>	Camellia			1	5				

Family	Scientific name	Common name	37762_P1		37762_P2		37762_P3		37762_P4	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Brassicaceae	<i>Cardamine hirsuta</i>	Common Bittercress			0.1	20				
Apocynaceae	<i>Catharanthus roseus</i>	Madagascar Periwinkle	0.1	2						
Poaceae	<i>Cenchrus clandestinus</i>	Kikuyu Grass			0.2	20				
Poaceae	<i>Cenchrus setaceus</i>	Fountain Grass	0.1	3					0.1	10
Caryophyllaceae	<i>Cerastium glomeratum</i>	Mouse-ear Chickweed			0.1	2				
Rutaceae	<i>Coleonema pulchellum</i>	None							0.1	2
Asteraceae	<i>Conyza bonariensis</i>	Flaxleaf Fleabane	0.1	1						
Myrtaceae	<i>Corymbia citriodora</i>	Lemon-scented Gum					15	2	20	30
Crassulaceae	<i>Crassula ovata</i>	Jade Plant	0.1	1						
Caryophyllaceae	<i>Dianthus armeria</i>	Deptford Pink			0.1	1				
Verbenaceae	<i>Duranta erecta</i>	Sky Flower			0.1	1	1	3		
Poaceae	<i>Ehrharta erecta</i>	Panic Veldtgrass	0.1	20	0.3	30	0.2	50	0.5	200
Orchidaceae	<i>Epidendrum radicans</i> x <i>secundum</i> hybrid complex	Crucifix Orchid	0.5	2						
Euphorbiaceae	<i>Euphorbia peplus</i>	Petty Spurge	0.2	50						
Rubiaceae	<i>Gardenia jasminoides</i>	None			0.1	2				
Proteaceae	<i>Grevillea banksii</i>	None	0.2	1						
Zingiberaceae	<i>Hedychium gardnerianum</i>	Ginger Lily	0.1	9						
Asteraceae	<i>Hypochaeris radicata</i>	Catsear			0.1	5	0.1	3	0.1	20
Crassulaceae	<i>Kalanchoe</i> spp.	None			0.1	1				
Sapindaceae	<i>Koelreuteria paniculata</i>	None					5	2		
Amaryllidaceae	<i>Leucojum aestivum</i>	Snowflake			0.1	1				
Hamamelidaceae	<i>Liquidambar styraciflua</i>	Sweetgum			25	4				
Liliaceae	<i>Liriope muscari</i>	big blue lilyturf			0.1	1				
Primulaceae	<i>Lysimachia arvensis</i>	Scarlet Pimpernel							0.1	5
Magnoliaceae	<i>Magnolia grandiflora</i>	Southern Magnolia			1	5				
Fabaceae (Faboideae)	<i>Medicago polymorpha</i>	Burr Medic							0.1	2

Family	Scientific name	Common name	37762_P1		37762_P2		37762_P3		37762_P4	
			Cvr%	Abund	Cvr%	Abund	Cvr%	Abund	Cvr%	Abund
Nandinaceae	<i>Nandina domestica</i>	Japanese Sacred Bamboo	0.2	10			0.5	5	0.1	2
Apocynaceae	<i>Nerium oleander</i>	Oleander					0.1	1		
Oxalidaceae	<i>Oxalis debilis</i> var. <i>corymbosa</i>	None					0.1	10		
Poaceae	<i>Paspalum dilatatum</i>	Paspalum			0.1	10				
Apiaceae	<i>Petroselinum crispum</i>	Parsley	0.1	4						
Polygalaceae	<i>Polygala myrtifolia</i>	None	0.1	4			0.1	1		
Malaceae	<i>Pyrus communis</i>	Common Pear			0.3	1				
Ericaceae	<i>Rhododendron</i> spp.	Rhododendron, Azalea	0.1	2	0.1	1				
Araliaceae	<i>Schefflera arboricola</i>	None					0.5	1		
Malvaceae	<i>Sida rhombifolia</i>	Paddy's Lucerne					0.1	10	0.1	2
Asteraceae	<i>Soliva sessilis</i>	Bindyi			0.2	80	0.1	4		
Asteraceae	<i>Sonchus oleraceus</i>	Common Sowthistle	0.1	1	0.1	10	0.1	1	0.2	50
Caryophyllaceae	<i>Stellaria media</i>	Common Chickweed					0.1	20		
Poaceae	<i>Stenotaphrum secundatum</i>	Buffalo Grass	3	300						
Strelitziaceae	<i>Strelitzia reginae</i>	None	0.2	4					0.1	5
Asteraceae	<i>Taraxacum officinale</i>	Dandelion							0.1	10
Apocynaceae	<i>Trachelospermum jasminoides</i>	None			0.1	1				
Plantaginaceae	<i>Veronica persica</i>	Creeping Speedwell			0.1	10				
Adoxaceae	<i>Viburnum tinus</i>	None	0.1	2			1	1		
Violaceae	<i>Viola odorata</i>	Sweet Violet	0.5	50	0.1	1				
Agavaceae	<i>Yucca aloifolia</i>	Spanish Bayonet							0.2	5

Appendix 3.2 BAM plot data sheets

Table 4 BAM plot quadrat 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	Stuc. Ferns	Stuc. Other
37762_P1	3262	0.03	5	Low	56	325165	6260775	134	6	2	2	2	1	0	38.0	0.2	2.1	0.2	0.5	0.0
37762_P2	n/a		n/a	Low	56	325240	6260780	226	0	0	4	7	0	0	0.0	0.0	55.3	0.7	0.0	0.0
37762_P3	n/a		n/a	Other	56	325112	6260688	307	3	3	1	1	0	0	15.5	3.5	0.1	0.1	0.0	0.0
37762_P4	n/a		n/a	Other	56	324878	6260869	124	2	2	3	2	0	0	15.1	6.0	1.3	0.4	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 Regen	Fun. High Threat Exotic	
37762_P1	3262	0.03	5	Low	56	325165.5	6260775	134	1	0	1.8	0	1	1	1	1	0	1	4.0	
37762_P2	n/a		n/a	Low	56	325239.6	6260780	226	0	0	1.4	0	1	1	0	0	2	1	4.0	
37762_P3	n/a		n/a	Other	56	325111.8	6260688	307	0	0	21	0	1	1	1	1	1	1	3.0	
37762_P4	n/a		n/a	Other	56	324877.7	6260869	124	0	0	54	0	1	1	1	1	0	1	1.0	

Appendix 4 Fauna

Table A. 5 Fauna species recorded at the subject land

Common name	Scientific name
Birds	
Australian Raven	<i>Corvus coronoides</i>
Willie Wagtail	<i>Microeca fascians</i>
Galah	<i>Eolophus roseicapilla</i>
Red Wattlebird	<i>Anthochaera carunculata</i>
Australian Magpie	<i>Cracticus tibicen</i>
Magpie-lark	<i>Grallina cyanoleuca</i>
Rainbow Lorikeet	<i>Trichoglossus moluccanus</i>

Appendix 5 SAI

Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion

Sydney Turpentine - Ironbark Forest is an open-forest association occurring on moderately wet sites, with an annual rainfall of 800 – 1,100 millimetres per year, growing on clay soils derived from Wianamatta shale. It is listed under the BC Act as a CEEC. The CEEC is listed in the BioNet Threatened Biodiversity Data Collection (TBDC) as an entity potentially subject to Serious and Irreversible Impact (SAII) in NSW. The CEEC is considered an entity at risk of SAI based on the following principles (DPIE 2019b):

- Principle 1: an ecological community that is currently observed, estimated, inferred or reasonably suspected to be in a rapid rate of decline.
- Principle 2: an ecological community that is observed, inferred or reasonably suspected to be severely degraded or disturbed.

Given the absence of definitive impact thresholds stated for the community, the potential for a SAI will be determined by the consent authority, guided by the additional assessment provided below in Table 23.

Table 23 Sydney Turpentine - Ironbark Forest SAI assessment

Information required (BAM Section 9.1.1)	Response
1. Impacts to the EEC and the action and measures taken to avoid the direct and indirect impact on the EEC at risk of an SAI.	Impacts to the Sydney Turpentine – Ironbark Forest under the proposal will be restricted to indirect impacts only. The CEEC was present in a low condition state in the subject land, existing as two isolated canopy trees with an understory dominated by planted exotic species. As part of the avoidance and minimisation measures considered throughout the project design, direct impacts to the Sydney Turpentine Ironbark Forest have been avoided. The canopy trees representing this community will now be retained under the current design. Indirect impacts will be managed using the measures outlined in Section 7 of this BDAR.
2a. evidence of reduction in geographic distribution, as the current total geographic extent of the EEC in NSW and the estimated reduction in geographic extent of the EEC since 1970 (not including impacts of the proposal). TBDC or other sources. (SAII Principle 1)	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 Threatened Species Scientific Committee 2018). To be considered under this principle, the ecological community should have been observed, estimated, inferred, or reasonably suspected to have undergone, or be projected to undergo, a very large reduction in distribution, being: • ≥80% reduction 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) Sydney Turpentine – Ironbark Forest is a transitional community that once linked the Cumberland Plain Woodland in drier areas with Blue Gum High Forest on adjacent higher-rainfall areas of the Sydney region (DECC NSW 2008). Sydney Turpentine – Ironbark Forest has undergone extensive clearing for farming and agriculture since European settlement, followed by

Information required (BAM Section 9.1.1)	Response
	urban development as Sydney expanded. Although the pre-European extent is uncertain, it is estimated at between 23,000 ha and 30,339 ha. It is considered likely that the reduction in extent exceeds 90% and subsequently less than 10% of the original community remains, approximately 2,940 ha comprised of highly restricted remnants (TSSC 2019).
2b. extent of reduction in ecological function for the EEC using evidence that describes the degree of environmental degradation or disruption to biotic processes. (SAll 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 and, ii. change in species composition Since European settlement the community has been largely cleared and thinned across the original extent to make space for urban development and agriculture. Remnants of the community have been subjected to a range of anthropogenic disturbances including logging, grazing by domesticated livestock and burning, which has affected the structure and composition of remnants (TSSC 2019). Removal of large, old trees has resulted in smaller trees occurring in higher density and increased fire frequencies have led to declines in the populations of fire-sensitive species that has resulted in structural simplification of some remnants. Other remnants, where fire has been excluded over the long-term and nutrient and moisture availability have increased, are conversely characterised by higher density and cover of mesic species, and a larger and more diverse population of exotic species as well as fewer understorey species. iii. disruption of ecological processes, iv. invasion and establishment of exotic species, v. degradation of habitat, and vi fragmentation of habitat The BC Act Final Determination for the community states that there has been very extensive clearing and major fragmentation and isolation of remnants of Sydney Turpentine – Ironbark Forest. Remnants are typically small and fragmented and are susceptible to continuing attrition through clearing for routine land management practices due to their proximity to rural land or urban interfaces, and clearing for asset protection zones and urban development. Continuing threats to the community also include changes in fire frequency, invasion by exotic species, influx of nutrients contained in stormwater runoff, dumped garden refuse and animal droppings.

Information required (BAM Section 9.1.1)	Response
	Historic clearing and disturbance of this community has resulted in degradation of habitat within the region by reducing the available areas of intact native vegetation. Removal of vegetation includes follow-on effects such as lowering potential hollow recruitment through high-frequency fire regimes, leading to reduced resources for fauna species. Habitat across the distribution of Sydney Turpentine - Ironbark Forest is highly fragmented due to land clearing and rural / urban development. Whilst there is no guidance as to the proportion of this degradation has occurred in the last 50 years (i.e. since 1970), the EEC is noted in the TBDC as being subject to Principle 2, inferring that it has occurred in recent times.
2c. evidence of restricted geographic distribution, based on the EEC's geographic range in NSW. (SAIL Principle 3)	The geographical 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 ≤1000 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 exists at one location. Remnants of Sydney Turpentine – Ironbark Forest occur in Sydney across locations in Baulkham Hills, Hornsby, Ku-ring-gai, Parramatta, Ryde, Sutherland and Hurstville local government areas. Using IUCN criteria, the extent of occurrence (EOO) of Sydney Turpentine – Ironbark Forest is 4,479 km², while the estimated area of occupancy (AOO) is twelve 10 x 10 km grid cells (1,200 km²) (NSW Threatened Species Scientific Committee 2019). The EEC therefore does not meet the first criteria listed above, for having a restricted geographic distribution, and does not meet SAIL Principle 3.
2d. evidence that the EEC is unlikely to respond to management. (SAIL Principle 4)	There is currently no evidence to suggest that Sydney Turpentine - Ironbark Forest is unlikely to respond to management. Those entities 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. Ecological communities as a whole do not align well with these criteria, and specifically Sydney Turpentine - Ironbark Forest does not exhibit either of these traits, thus it does not meet SAIL Principle 4.
3. Where the TBDC indicates data is 'unknown' or 'data deficient' for a EEC, the assessor must record this in the	Not applicable.

Information required (BAM Section 9.1.1)	Response
BDAR or BCAR.	
4a. the impact on the geographic extent of the EEC, by estimating the total area of the EEC to be impacted by the proposal.	As discussed above, approximately 2,940 ha of Sydney Turpentine – Ironbark Forest is estimated to remain. The CEEC is known to occur in Sydney across locations in Baulkham Hills, Hornsby, Ku-ring-gai, Parramatta, Ryde, Sutherland and Hurstville local government areas. The proposed development will no longer result in direct impacts to this CEEC, however, approximately 0.03 ha of the CEEC is present within the subject land and may be subject to indirect impacts. The CEEC is comprised of two individual trees with a highly modified understory consisting largely of exotic planted vegetation and occurs in a highly fragmented landscape. Indirect impacts will be managed using the measures outlined in Section 7 of this BDAR. As such, the proposed works are unlikely to result in impacts to the geographic extent of the CEEC.
4b. the extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes of the EEC.	i. estimating the size of any remaining, but now isolated, areas of the EEC; including areas of the EEC within 500m of the development footprint or equivalent area for other types of proposals. According to existing vegetation mapping there are several patches of Sydney Turpentine - Ironbark Forest remaining within 500 m of the subject land, combining to approximately 47 ha or 1.6% of the total CEEC remaining. These patches consist of one patch of the CEEC to the north of the subject land, and several other small patches north-east and south-east of the subject land. None of these patches are connected to the remnant trees identified within the subject land however, the proximity of several small patches nearby may contribute to the genetic transfer of flora species between patches. The patches of the CEEC surrounding the subject land will not be impacted by the proposed development. Although the Sydney Turpentine - Ironbark Forest CEEC is present within the subject land, it will not be directly impacted by the proposed works. Indirect impacts will be managed using the measures outlined in Section 7 of this BDAR. Therefore, it is unlikely that the proposed works would contribute to significant disruption of biotic processes of the CEEC. ii. describing the impacts on connectivity and fragmentation of the remaining areas of EEC measured by: • distance between isolated areas of the EEC, 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 EEC, and • other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the EEC as a result of the development The center of the closest mapped remnant patch of Sydney-Turpentine Ironbark Forest to the subject land is approximately 280 m north-east of the subject land. Another patch occurs approximately 400 m to the south-east.

Information required (BAM Section 9.1.1)	Response
	The three patches are not connected by remnant vegetation and are isolated from each other by road and building infrastructure in between. The proposed development will no longer result in direct impacts to this CEEC, however, approximately 0.03 ha of the CEEC is present within the subject land and may be subject to indirect impacts. The CEEC is comprised of two individual trees with a highly modified understory consisting largely of exotic planted vegetation and occurs in a highly fragmented landscape. Provided indirect impacts are managed using the measures outlined in Section 7 of this BDAR, it is unlikely that the proposed works would affect the distance between retained patches. Remnant vegetation to the north-east is connected to two other patches within 50 m. It is also closer to the patch in the south-east (290 m) than the patch within the subject land. Native flora species with wind-borne genetic material, pollinated by larger flying insects and those species dispersed via bird dropping are expected to remain connected, commensurate to the current level of connectivity, after the proposed development. However, the long-term viability of remaining patches may be low due to ongoing disturbances. The proposed construction is unlikely to result in changes to surface water drainage patterns. Any potential sediment or erosion impacts will be managed appropriately through a CEMP. iii. describing the condition of the EEC 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. The community in the subject land was limited to two isolated canopy trees including Sydney Turpentine and Red Mahogany. The lower strata were subject to significant levels of modification and consisted mostly of planted exotic species within manicured gardens. The proposed works will not alter the community structure and composition within the subject land as the CEEC will no longer be removed under the proposal. Approximately 0.03 ha of the CEEC is present within the subject land and may be subject to indirect impacts, however, the patch is already fragmented by existing infrastructure and residential development, and the long-term viability of the remnant patch is unlikely to be high. In addition, indirect impacts will be managed to avoid any additional impacts to remnant vegetation. The CEEC occurs in a low condition state within the subject land: • Composition condition score: 19.9 • Structure condition score: 32.5 • Function condition score: 64.3 • Presence of hollow-bearing trees: None • VI score: 34.6

Appendix 6 Significant Impact Criteria assessments

Large-eared Pied Bat *Chalinolobus dwyeri*

The Large-eared Pied Bat is listed as Endangered under the EPBC Act. It is a small to medium-sized bat with long, prominent ears and glossy black fur. The distribution of the species is poorly known however, records occur from Rockhampton in Queensland through to Ulladulla in southern NSW. It is generally rare with a very patchy distribution in NSW. The species is known to form small colonies (DERM 2011) and it has been suggested that Large-eared Pied Bat does not occur continuously within its range, likely due to the lack of available roosts that may have resulted in colonies or populations becoming isolated from each other.

The species is found mainly in areas with extensive cliffs and caves. Sandstone cliffs and fertile wooded valley habitat, particularly box gum woodlands or river/rainforest corridors which are used for foraging, within close proximity of each other is thought to be critical habitat for the species (TSSC 2012). The species roosts in caves (near their entrances), crevices in cliffs, old mine workings and in the disused, bottle-shaped mud nests of the Fairy Martin *Petrochelidon ariel*, frequenting low to mid-elevation dry open forest and woodland close to these features. Females have been recorded raising young in maternity roosts (c. 20-40 females) from November through to January in roof domes in sandstone caves and overhangs. They remain loyal to the same cave over many years. The species is also found in well-timbered areas containing gullies (DERM 2011).

Occurrence in the subject land

No rocky areas occur within the subject land; however, the subject land occurs within 2 kilometres of rocky areas which represent potential roosting and breeding habitat for cave-dependant microbat species such as the Large-eared Pied Bat. In addition, this species is associated with PCT 3262, which is present within the subject land. Therefore, PCT 3262 within the subject land represents potential foraging habitat for Large-eared Pied Bat.

Targeted survey was not undertaken for this species, but it has been assumed present based on the presence of suitable foraging habitat within 2 kilometres of potential roosting/breeding habitat. Due to the presence of these habitat values, an assessment for determining whether the proposed works are likely to have a significant impact on the species against Significant Impact Criteria (DoE 2013) has been undertaken below.

Table 24 SIC assessment for Large-eared Pied Bat – Endangered species

SIC assessment for critically endangered or endangered species
Lead to a long-term decrease in the size of a population. The proposed works will result in the clearing of up to 0.03 ha of PCT 3262, which represents potential foraging resources for the Large-eared Pied Bat. While the proposal will result in the removal of potential foraging habitat, the total area of habitat being removed is small and is largely degraded, comprised mostly of very few isolated trees over an exotic groundcover. The subject land occurs in a highly urbanised environment, where much of the vegetation has been modified over time due to landscaping, planting of street trees and garden maintenance. In addition, larger stands of relatively dense vegetation occur north of the subject land along Lane Cover River, which likely also supports suitable breeding habitat. It is more likely that this species would utilise the vegetation around the river, where canopy cover is dense, and habitat is of higher quality. Given the expansive cover of native vegetation across the broader landscape, removal of 0.03 ha of vegetation would constitute a very small proportion of foraging habitat available to the Large-eared Pied Bat. Although the proposed works will result in removal of habitat for this species, it is unlikely that it will lead to a long-term

SIC assessment for critically endangered or endangered species

decrease in the size of the Large-eared Pied Bat population, given the low quality of habitat to be removed and the scale of the impact in the context of available habitat in the region.

Reduce the area of occupancy of the species.

The proposed works will result in the removal of 0.03 ha of foraging habitat for this species, and the total area of occupancy for Large-eared Pied Bat is estimated to be between 3092 km² and less than 500 km² (DCCEEW 2023). Therefore, the proposed works will result in a reduction in the overall area of occupancy by less than 0.001%, as a worst-case scenario. Although there is a minor reduction in the overall habitat available to this species, given the scale of impact and quality of vegetation to be removed, impacts to the species or a population are negligible.

Fragment an existing population into two or more populations.

The proposal will result in the removal of 0.03 ha of potential foraging habitat for this species, however, will not impact any areas of potential roosting/breeding habitat. The vegetation to be removed within the subject land occurs in a highly urbanised area, in close proximity to roads and associated infrastructure, where the area has undergone extensive clearing and modification due to past and current land use. As a result, vegetation is already highly fragmented with remnant patches comprised of modified gardens and planted trees, subject to moderate to high disturbance. Marginal habitat connectivity is predominantly located along the Sydney Turpentine Ironbark Forest to the north of the subject land, which is proposed for restoration along the riparian corridor as part of the concept design. While the proposed clearing may cause some minor fragmentation with the development footprint, it is unlikely that it will cause a substantial break in a canopy such that would have a detrimental impact on the Large-eared Pied Bat. The species is highly mobile, and individuals can move freely through areas of unsuitable and marginal habitat to seek out favourable habitat patches. As a result, it is unlikely that the proposal will fragment a population into two or more populations.

Adversely affect habitat critical to the survival of a species.

No Critical Habitat as defined under section 207A of the EPBC Act has been identified or included in the Register of Critical Habitat for the Large-eared Pied Bat. However, the *National Recovery Plan for the Large-eared Pied Bat* defines habitat critical to its survival as maternity roosts and sandstone cliffs in close proximity to fertile wooded valley habitat (DERM 2011). The species is typically found in well-timbered areas containing gullies, and likely forages below the canopy. There are no identified sandstone cliffs, caves and other rocky habitat suitable for roosting within the development footprint, although such habitats are likely to occur along the Lane Cover River north of the subject land. In addition, the vegetation representing potential foraging habitat for this species within the subject land is highly fragmented and exists in a degraded state, with high levels of disturbance. As such, it is unlikely that the small area of vegetation proposed for removal, which is largely modified and comprised of planted species, represents habitat critical to the survival of the species.

Disrupt the breeding cycle of a population.

Little is known about the breeding patterns and biology of the Large-eared Pied Bat. Nursery colonies are thought to be established in September, with females giving birth in early December. The number of known breeding sites is limited, and the structure of maternity roosts is highly specific. Up to 100 individuals may be present in a roost at any one time, representing a substantial portion of a local population (DERM 2011). Destruction of roost sites is therefore likely to be the primary mechanism for disruption of the breeding cycle for this species. Suitable roosting habitat for this species in the form of sandstone caves, cliffs, rocky areas or man-made cave-like structures are absent from the development footprint and subject land. Due to the lack of roosting habitat, no maternity colonies are likely to be present. Therefore, the proposed subdivision will not result in direct or indirect impacts to roosting habitat for the Large-eared Pied Bat and is therefore considered unlikely to disrupt the breeding cycle of the species.

SIC assessment for critically endangered or endangered species

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

The proposed works will result in the removal of 0.03 ha of potential foraging habitat for Large-eared Pied Bat, in the form of PCT 3262. This vegetation is unlikely to represent preferred foraging habitat for this species due to the absence of known nearby roosting sites and the abundance of dense vegetation across the broader landscape.

The vegetation within the subject land is highly fragmented due to past and current land use practices, and predominantly exists as landscaped gardens, modified remnant vegetation and planted street trees in an urban environment. Although the proposed works will remove a very small portion of potential foraging habitat for this species, it is unlikely to modify or substantially reduce the availability of habitat given the scale of impacts and the low condition of vegetation within the subject land. Subsequent impacts to habitat quality are likely to be negligible.

As such, the proposed works are unlikely to modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.

Result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat.

The proposed works are unlikely to exacerbate the current level of invasive species threat operating within the development site to the point that they become harmful to the large-eared Pied Bat.

It is expected that the majority of the vegetation and associated habitat within the subject land is subject to low levels of invasive species as a result of past and current land use. The proposed works occur in an already fragmented landscape, where works will not 'open up' habitat that was previously inaccessible to invasive species. The subject land already occurs in an urban environment with high levels of disturbance and modification, and as such, the proposed works are unlikely to exacerbate the current level of invasive species threat operating within the area.

Introduce disease that may cause the species to decline.

The IUCN Species Survival Commission released a statement on 19 June 2020 stating that there is a credible risk of human-to-bat transmission of SARS-Cov-2, a virus currently circulating the globe and causing a pandemic of the illness Covid-19 (IUCN SSC 2020). However, introduction of this disease to Large-eared Pied Bats within the study area as a result of the proposed works is unlikely for the following reasons:

- No contact or sharing of closed areas between humans and bats is expected as a result of the proposed works.
- No roosting habitat is present within the subject land, therefore, there will be no need for any human activity within maternity caves or areas with roosting microbats. However, if it is necessary to enter these habitats (i.e., for a preclearance inspection by a suitably qualified Ecologist), the recommendations provided by the IUCN will be followed, including the wearing of a face mask by the ecologist, and avoidance of handling of any microbats.

The transmission of SARS-Cov-2 is considered unlikely as a result of the proposed works.

An emerging threat to Australian bats, particularly cave-roosting species, is the fungal disease white-nose syndrome. To date, there have been no cases of white-nose syndrome recorded in Australia. However, a recent risk assessment considers it 'likely' that the pathogen causing the disease (*Pseudogymnoascus destructans*) will come into contact with Australian bats in the coming decade (Holz et al. 2019). Cave-roosting bats are particularly at risk, leaving them more susceptible to developing white-nose syndrome in the event it enters Australia (Turbill & Welbergen 2020).

Given that there are no cases of this disease in Australia and that the subject land does not contain any roosting habitat, it is unlikely that the proposed works will contribute to any increased risk in the introduction of white-nose syndrome.

Interfere with the recovery of the species.

The National Recovery Plan for Large-eared Pied Bat outlines the following recovery objectives:

- Identify priority roost and maternity sites for protection.
- Implement conservation and management strategies for priority sites.
- Educate the community and industry to understand and participate in the conservation of the Large-eared Pied Bat.

SIC assessment for critically endangered or endangered species

- Research the Large-eared Pied Bat to augment biological and ecological data to enable conservation management.
- Determine the meta-population dynamics throughout the distribution of the Large-eared Pied Bat.

No roosting habitat occurs within the subject land and the proposed works will result in the removal of potential foraging habitat in a low condition, only. The habitat within the subject land is considered to be largely degraded, and larger patches of higher quality vegetation with dense canopy cover is located across the broader landscape. As such, it is unlikely that removal of 0.03 hectares of low quality foraging habitat will interfere with the recovery of Large-eared Pied Bat.

Conclusion.

Based on the assessment provided above, it is concluded the Large-eared Pied Bat is unlikely to be significantly impacted by the project. This conclusion was made on the basis that:

- The proposed works will not lead to a long-term decrease in the size of the population of the Large-eared Pied Bat.
- The proposed works will not reduce the area of occupancy of the species such that it is likely to decline.
- The proposed works will not cause further fragmentation of an existing population or habitat.
- The proposed works will not adversely affect habitat critical to the survival of the species (i.e. breeding or roosting habitat) or disrupt the breeding cycle of a population.
- Given the surrounding suitable habitat, the proposed works will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
- The proposed works will not result in invasive species or disease becoming established and should not further exacerbate current invasive species threat.

A Commonwealth referral is not recommended for impacts to this species.

Appendix 7 BDAR requirements compliance

Table 25 Assessment of the minimum reporting requirements for a BDAR in relation to the proposal

Information	Compliance	Comments
Introduction		
Brief description of the proposal.	Compliant	Brief description of proposal outlined in section 1 and summary.
Identification of subject land boundary, including: - Operational footprint. - Construction footprint indicating clearing associated with temporary/ancillary construction facilities and infrastructure.	Compliant	Brief description of the terms used throughout the assessment are provided in section 1.3.
General description of the subject land.	Compliant.	Description of subject land, including geological features, connectivity, and soil landscape, provided in section 2.1.
Sources of information used in the assessment, including reports and spatial data.	Compliant.	Addressed in section 1.4.
Landscape context		
General description of subject land topographic and hydrological setting, geology and soils.	Compliant.	General descriptions provided in sections 2.1.6, 2.1.8 and 2.1.10.
Percent native vegetation cover in the assessment area (as described in BAM Section 3.2).	Compliant.	Addressed in section 2.1.1.
IBRA bioregions and subregions (as described in BAM Subsection 3.1.3(2.)).	Compliant.	Addressed in section 2.1.2.
Rivers and streams classified according to stream order (as described in BAM Subsection 3.1.3(3.) and Appendix E).	Compliant.	Addressed in section 2.1.3.
Wetlands within, adjacent to and downstream of the site (as described in BAM Subsection 3.1.3(3.)).	Compliant.	Addressed in section 2.1.4.
Connectivity of different areas of habitat (as described in BAM Subsection 3.1.3(5-6.)).	Compliant.	Addressed in section 2.1.5.

Information	Compliance	Comments
Karst, caves, crevices, cliffs, rocks and other geological features of significance and for vegetation clearing proposals, soil hazard features (as described in BAM Subsections 3.1.3(7.) and 3.1.3(12.).	Compliant.	Addressed in section 2.1.6.
Areas of outstanding biodiversity value occurring on the subject land and assessment area (as described in BAM Subsection 3.1.3(8–9.)).	Compliant.	Addressed in section 2.1.7.
Any additional landscape features identified in any SEARs for the proposal.	-	N/A
NSW (Mitchell) landscape on which the subject land occurs.	Compliant.	Addressed in section 2.1.8.
Native vegetation		
Identify native vegetation extent within the subject land, including cleared areas and evidence to support differences between mapped vegetation extent and aerial imagery (as described in BAM Section 4.1(1–3.) and Subsection 4.1.1).	Compliant.	Addressed in section 3.1.1.
Provide justification for all parts of the subject land that do not contain native vegetation (as described in BAM Subsection 4.1.2).	Compliant.	Areas of exotic planted vegetation described in section 3.1.5.
Review of existing information on native vegetation including references to previous vegetation maps of the subject land and assessment area (described in BAM Section 4.1(3.) and Subsection 4.1.1).	Compliant.	Addressed in section 3.1.2.
Describe the systematic field-based floristic vegetation survey undertaken in accordance with BAM Section 4.2.	Compliant.	General field-based methodology provided in section 3.1.3 and BAM floristic plots discussed in section 3.2.

Information	Compliance	Comments
Where relevant, describe the use of more appropriate local data, provide reasons that support the use of more appropriate local data and include the written confirmation from the decision-maker that they support the use of more appropriate local data (as described in BAM Subsection 1.4.2 and Appendix A).	Compliant.	Local data not used in this assessment.
For each PCT within the subject land, describe: - Vegetation class. - Extent (ha) within subject land. - Evidence used to identify a PCT including any analyses undertaken, references/sources, existing vegetation maps (BAM Section 4.2(1-3.)). - Plant species relied upon for identification of the PCT and relative abundance of each species. - If relevant, TEC status including evidence used to determine vegetation is the TEC (BAM Subsection 4.2.2(1-2.)). - Estimate of percent cleared value of PCT (BAM Subsection 4.2.1(5.)).	Compliant.	- Addressed in section 3.1.6. - Plot data used to determine PCTs and entered into the BAM calculator is provided in Appendix 3.
Describe the vegetation integrity assessment of the subject land, including: - Identification and mapping of vegetation zones (as described in BAM Subsection 4.3.1). - Assessment of patch size (as described in BAM Subsection 4.3.2). - Survey effort (i.e. number of vegetation integrity survey plots) as described in BAM Subsection 4.3.4(1-2.). - Use of relevant benchmark data from BioNet Vegetation Classification (as described in BAM Subsection 4.3.3(5.)).	Compliant.	Addressed in section 3.1.

Information	Compliance	Comments
Where use of more appropriate local benchmark data is proposed (as described in BAM Subsection 1.4.2, BAM Subsection 4.3.3(5.) and BAM Appendix A): - Identify the PCT or vegetation class for which local benchmark data will be applied. - Identify published sources of local benchmark data (if benchmarks obtained from published sources). - Describe methods of local benchmark data collection (if reference plots used to determine local benchmark data). - Provide justification for use of local data rather than BioNet Vegetation Classification benchmark values. - Provide written confirmation from the decision-maker that they support the use of local benchmark data.	Compliant.	No local benchmark data was used in this assessment.
Table of current vegetation integrity scores for each vegetation zone within the site and including: - Composition condition score - Structure condition score - Function condition score - Presence of hollow bearing trees	Compliant.	Vegetation integrity scores for all vegetation zones entered in the BAM calculator is provided in section 3.2.3.
Table of patch size areas (as described in BAM Subsection 4.3.2).	Compliant.	Addressed in section 3.2.1.
Threatened species		
Identify ecosystem credit species likely to occur on the subject land, including: - List of ecosystem credit species derived from the BAM-C (as described in BAM Subsection 5.1.1 and Section 5.2(1.)). - Justification and supporting evidence for exclusion of any ecosystem credit species based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2). - Justification for addition of any ecosystem credit species to the list.	Compliant.	Addressed in section 4.1.

Information	Compliance	Comments
Identify species credit species likely to occur on the subject land, including: • List of species credit species derived from the BAM-C (as described in BAM Subsection 5.1.1). • Justification and supporting evidence for exclusions based on geographic limitations, habitat constraints or vagrancy (as described in BAM Subsections 5.2.1 and 5.2.2). • Justification and supporting evidence for exclusions based on degraded habitat constraints and/or microhabitats on which the species depends (as described in BAM Subsection 5.2.2). • Justification for addition of any species credit species to the list.	Compliant.	• A list of species credit species likely to occur within the subject land is not included as only one candidate species credit species was identified as part of this assessment. • All other species ruled out based on justification provided in section 4.2. • No additional species added.
From the list of candidate species credit species, identify: • Species assumed present within the subject land (if relevant) (as described in BAM Subsection 5.2.4(2.a.)). • Species present within the subject land on the basis of being identified on an important habitat map for a species (as described in BAM Subsection 5.2.4(2.d.)). • Species for which targeted surveys are to be completed to determine species presence (Subsection 5.2.4(2.b.)). • Species for which an expert report is to be used to determine species presence (Subsection 5.2.4(2.c.)).	Compliant.	• Addressed in section 4.2. • Only one candidate species was identified during the assessment. ◦ Species was assumed present; targeted surveys not undertaken.
Present the outcomes of species credit species assessments from: • Threatened species survey (as described in BAM Section 5.2.4). • Expert reports (if relevant) including justification for presence of the species and information used to make this determination (as described in BAM Section 5.2.4 and 5.3, Box 3).	Compliant.	• The species was assumed present; targeted surveys not undertaken. • Expert reports were not used for this assessment.

Information	Compliance	Comments
Where survey has been undertaken include detailed information on: • Survey method and effort, (as described in BAM Section 5.3). • Justification of survey method and effort (e.g. citation of peer-reviewed literature) if approach differs from the Department's taxa-specific survey guides or where no relevant guideline has been published. • Timing of survey in relation to requirements in the TBDC or the Department's taxa-specific survey guides. Where survey was undertaken outside these guides include justification for the timing of surveys. • Survey personnel and relevant experience. • Describe any limitations to surveys and how these were addressed/overcome.	-	• N/A - Species was assumed present; targeted survey not undertaken.
Where an expert report has been used in place of survey (as described in BAM Section 5.3, Box 3), include: • Justification of the use of an expert report. • Identify the expert, provide evidence of their expert credentials and Departmental approval of expert status. • All requirements of Box 3 have been addressed in the expert report.	Compliant.	• Addressed in section 4.2.4.
Where use of local data is proposed (BAM Subsection 1.4.2): • Identify relevant species. • Identify data to be amended. • Identify source of information for local data, e.g. published literature, additional survey data, etc. • Justify use of local data in preference to VIS Classification or TBDC data. • Provide written confirmation from the decision-maker that they support the use of local data.	Compliant.	• Addressed in section 4.2.3.

Information	Compliance	Comments
Species polygon completed for species credit species present within the subject land (assumed present or determined on the basis of survey, expert report or important habitat map) ensuring that: • The unit of measure for each species is documented. • For species assessed by area: – The polygon includes the extent of suitable habitat for the target species within the subject land (as described in BAM Subsection 5.2.5). – A description of, and evidence-based justification for, the habitat constraints, features or microhabitats used to map the species polygon including reference to information in the TBDC for that species and any buffers applied. • For species assessed by counts of individuals: – The number of individual plants present on the subject land (as described in BAM Subsection 5.2.5(3.)). – The method used to derive this number (i.e. threatened species survey or expert report) and evidence-based justification for the approach taken. – The polygon includes all individuals located on the subject land with a buffer of 30 m around the individuals or groups of individuals on the subject land.	Compliant.	• Species polygon completed for one candidate species credit species that was assumed present as part of this assessment. • Addressed in section 4.2.5.
Identify the biodiversity risk weighting for each species credit species identified as present within the subject land (as described in BAM Section 5.4).	Compliant.	• Biodiversity risk weighting provided in sections 4.2.5 and 8.3.
Table showing ecosystem credit species in accordance with BAM Section 5.1.1, and identifying: • The ecosystem credit species removed from the list. • The sensitivity to gain class of each species.	Compliant.	• Addressed in section 4.1.

Information	Compliance	Comments
Table detailing species credit species in accordance with BAM section 5.2 and identifying: • The species credit species removed from the list of species because the species is considered vagrant, out of geographic range or the habitat or micro habitat features are not present. • The candidate species credit species not recorded on the subject land as determined by targeted survey, expert report or important habitat map.	Compliant.	• All species credit species, except for Large-eared Pied Bat, were excluded as candidate species based on habitat constraints, absence of micro habitat features, geographic range or degraded habitat. • Species was assumed present; no targeted survey undertaken. • Complete list of BAM candidate species and justification for exclusion is provided in Appendix 2.
Table detailing species credit species recorded or assumed as present within the subject land, habitat constraints or microhabitats associated with the species, counts of individuals (flora)/extent of suitable habitat (flora and fauna) (as described in BAM Subsection 5.2.6) and biodiversity risk weighting (BAM Section 5.4).	Compliant.	• Addressed in section 4.2.