

A decorative background element on the left side of the page, consisting of a series of concentric, irregular lines that resemble a topographic map or contour lines, rendered in a light grey color.

24 -28 Middle Harbour Road Lindfield Biodiversity Development Assessment Report

MHR Lindfield Investments Pty Ltd c/o Deloitte

DOCUMENT TRACKING

Project Name	24 – 28 Middle Harbour Road Lindfield - Biodiversity Development Assessment Report
Project Number	25SYD - 10751
Project Manager	Belinda Failes
Accredited Assessor Certification	 BAAS18077 S. 6.15(1) of the <i>Biodiversity Conservation Act 2016</i> states that: <i>A biodiversity assessment report cannot be submitted in connection with a relevant application unless the accredited person certifies in the report that the report has been prepared on the basis of the requirements of (and information provided under) the biodiversity assessment method as at a specified date and that date is within 14 days of the date the report is so submitted.</i> This Biodiversity Development Assessment Report has been prepared by Belinda Failes on the basis of the requirements of (and information provided under) the biodiversity assessment method (BAM 2020). No actual, perceived, or potential conflict of interest exists between it or between any one or more of the author's employees, consultants or agents and the project client, or is likely to arise in relation to the report that is submitted for this project.
Prepared by	Belinda Failes and Cornelia Ersson
Reviewed by	Stacey Wilson
Approved by	Stacey Wilson
Status	Final
Version Number	2
Last saved on	8 May 2025

This report should be cited as 'Eco Logical Australia 2025. *24 – 28 Middle Harbour Road Lindfield - Biodiversity Development Assessment Report*. Prepared for MHR Lindfield Investments Pty Ltd c/o Deloitte.'

ACKNOWLEDGEMENTS

This document has been prepared by Eco Logical Australia Pty Ltd.

Disclaimer

This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and MHR Lindfield Investments Pty Ltd c/o Deloitte. The scope of services was defined in consultation with MHR Lindfield Investments Pty Ltd c/o Deloitte, by time and budgetary constraints imposed by MHR Lindfield Investments Pty Ltd c/o Deloitte, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up to date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Use of this report in any form is prohibited.

Template 2.8.1

Executive Summary

Eco Logical Australia (ELA) was engaged by MHR Lindfield Investments Pty Ltd c/o Deloitte to prepare a Biodiversity Development Assessment Report (BDAR) for 24 – 26 Middle Harbour Road Lindfield (herein referred to as the ‘subject land’). This report has been prepared to meet the requirements of the Biodiversity Assessment Method (BAM) 2020, under the NSW *Biodiversity Conservation Act 2016* (BC Act). This BDAR has applied the *Streamlined Assessment Module – Small Areas* in accordance with Appendix C of the BAM. The subject land also contains planted native vegetation which does not conform to a Plant Community Type (PCT) as such the *Streamlined Assessment Module – Planted Native Vegetation* was also applied to the assessment.

The report also satisfies the Planning Secretary’s Environmental Assessment Requirements (SEARs) for the State Significant Development (SSD) 82548708, issued 15 April 2025. A breakdown of the response to SEARs is provided below.

No.	Comments	Response
16	Unless a waiver has been granted, provide a Biodiversity Development Assessment Report (BDAR) that assesses any biodiversity impacts associated with the development in accordance with the Biodiversity Conservation Act 2016 and the Biodiversity Assessment Method 2020. OR 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.	This report has been prepared in accordance with the BC Act and the BAM. The subject land is not located on biodiversity certified lands.

The subject land comprises 24, 26 and 28 Middle Harbour Road, Lindfield in the Ku-ring-gai Council local government area. The subject land contains three occupied dwellings, two pools, an old tennis court and landscaped gardens. Remnant native trees, shrubs and ground cover species are present within the north-western and along the eastern border of the subject land.

The subject land is disturbed from previous land clearing, creation of landscape gardens and modification of the soil profile. The proposed development involves removal of vegetation and construction of infill affordable housing and services.

Field survey was undertaken to validate and map vegetation, undertake the required vegetation integrity plots and assess habitat values. In accordance with the Streamlined Assessment Module – Small Areas, only candidate Serious and Irreversible Impact (SAII) entities require targeted surveys. No candidate species were recorded within the subject land or were considered likely to occur within the subject land.

One Plant Community Type (PCT) is present within the development site, PCT 3262 Sydney Turpentine Ironbark Forest was mapped in low condition due to the presence of weeds. PCT 3262 is associated with a Threatened Ecological Community (TEC) *Sydney Turpentine-Ironbark Forest of the Sydney Basin Bioregion* which is listed as critically endangered under the BC Act and *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as critically endangered. PCT 3262 within the subject land

did not meet the minimum condition thresholds for the listing criteria under the EPBC Act. However, PCT 3262 was considered part of a TEC under the BC Act and is also listed as a Serious and Irreversible Impact (SII) entity.

The subject land, consisting of the following:

- 0.04 ha of PCT 3262 Sydney Turpentine Ironbark Forest
- 0.08 ha of planted native vegetation.
- 0.14 ha of planted exotic vegetation
- 0.13 ha of exotic grass
- The remaining 0.15 ha represented hardstand.

The final development footprint was modified to retain the canopy for vegetation which represents part of PCT 3262. Landscaping works are proposed under the canopy which will result in the removal of a small amount of native ground cover species present and disturbance to the soil profile. These impacts have been included in the impact area and entered into the BAM Calculator as a separate management zone.

Measures to avoid and minimise impacts have been applied to the final development footprint and 0.03 ha of PCT 3262 will be retained within the subject land.

A summary of credit requirements to offset impacts to, PCT 3262 is shown in the table below.

Summary of ecosystem and species credits required to offset residual impacts of the proposed development

PCT ID	PCT Name	Condition	Vegetation Zone	Impact area (ha)	Credits
3262	Sydney Turpentine Ironbark Forest	Low	1	0.02	1

Removal of 0.08 ha of planted native vegetation was assessed against *Appendix D: Streamlined assessment module - planted native vegetation* of the BAM 2020 and does not require offsetting.

One Matter of National Environmental Significance was identified as having potential to be adversely affected by the proposed works. *Pteropus poliocephalus* (grey-headed flying-fox) is listed as Vulnerable under the EPBC Act and it is considered that this species is likely to use some of the development site for seasonal foraging. An assessment of the Commonwealth Significant Impact Criteria was undertaken for the grey-headed flying-fox and concluded that the planning proposal would not result in a significant impact to this species.

Contents

1. Introduction	1
1.1. General description of the Site	1
1.2. Background.....	4
1.3. The Proposal	4
1.4. Planning Framework	5
1.4.1. Zoning and Permissibility:	5
1.4.2. Approval Pathway:.....	5
1.4.3. Terminology	5
1.5. Legislative context	7
1.6. Sources of information used.....	10
2. Streamlined assessment modules	4
2.1. Streamline Assessment Module – Small Areas	4
2.2. Streamlined Assessment Module – Planted Native Vegetation.....	5
3. Landscape features.....	8
4. Native Vegetation.....	11
4.1.1. Literature review	11
4.2. Survey Effort	14
4.3. Plant Community Types present.....	15
4.3.1. Plant Community Type.....	15
4.3.2. Planted native vegetation	16
4.3.3. Exotic vegetation	17
4.3.4. Plant Community Type selection justification	18
4.4. Threatened Ecological Communities	20
4.5. Vegetation integrity assessment.....	21
4.5.1. Vegetation zones	21
4.5.2. Assessing vegetation integrity	24
4.6. Use of local data	24
5. Threatened species.....	28
5.1. Ecosystem credit species	28
5.2. Species credit species	35
5.2.1. Identification of species credit species	35
5.2.2. Assessment of habitat constraints and vagrant species	39
5.2.3. Candidate species requiring further assessment.....	39
5.2.4. Targeted surveys.....	39
5.2.5. Expert reports	39
5.3. Identification of prescribed additional biodiversity impact entities	40

5.3.1. Karst, caves, crevices, cliffs, rocks and other geological features of significance	40
5.3.2. Human-made structures and non-native vegetation	40
5.3.3. Habitat connectivity	41
5.3.4. Water bodies, water quality and hydrological processes	42
5.3.5. Wind farm developments	42
5.3.6. Vehicle strikes	42
6. Avoiding and Minimising Impacts on Biodiversity Values	43
6.1. Locating a project to avoid and minimise impacts on biodiversity values	43
6.1.1. Direct and indirect impacts	43
6.1.2. Locating a project to avoid and minimise impacts on vegetation and habitat	45
6.1.3. Designing a project to avoid and minimise impacts on native vegetation, threatened species, threatened ecological communities and their habitat	46
6.1.4. Locating a project to avoid and minimise prescribed biodiversity impacts	47
6.1.5. Designing a project to avoid and minimise prescribed biodiversity impacts	48
7. Assessment of Impacts	50
7.1. Direct impacts	50
7.2. Change in vegetation integrity	50
7.3. Indirect impacts	52
7.4. Prescribed biodiversity impacts	55
7.5. Mitigating and managing direct and indirect impacts	56
7.1. Mitigating prescribed impacts	62
7.2. Adaptive management strategy	66
8. Impact summary	69
8.1. Serious and Irreversible Impacts (SAIL)	69
8.2. Impacts requiring offsets	74
8.3. Impacts not requiring offsets	74
8.4. Areas not requiring assessment	77
8.5. Credit summary	77
9. Consistency with legislation and policy	81
9.1. <i>Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)</i>	81
9.1.1. <i>Pteropus poliocephalus</i> (grey-headed flying-fox)	82
9.1.2. <i>Biodiversity and Conservation SEPP – Water Catchments (BC Act)</i>	84
9.1.3. <i>Ku-ring-gai LEP 2015 – Terrestrial Biodiversity Map</i>	84
9.1.4. <i>Ku-ring-gai LEP 2015 – Riparian Lands and Watercourse Map</i>	85
9.1.5. <i>Ku-ring-gai Development Control Plan 2022</i>	85
10. Conclusion	88
11. References	90
Appendix A Definitions	92
Appendix B Vegetation Floristic Plot Data	96

Appendix C Vegetation Integrity Plot Data.....	99
Appendix D BOS helpdesk correspondence	101
Appendix E Likelihood of Occurrence Assessment	103
Appendix F Biodiversity credit report.....	142

List of Figures

Figure 1: Land Zoning Applicable to the Site under the KLEP 2015 (Source: NSW Legislation, 2025).....	2
Figure 2: Existing Site Context and Surrounding Area (Source: Near Map, 2025)	3
Figure 3: Existing Site Context Map (Source: SIX Maps, 2025)	3
Figure 4: Final design plans (ground floor).....	1
Figure 5: Location Map.....	1
Figure 6: Site Map and extent of native vegetation	2
Figure 7: Terrestrial Biodiversity Map (Ku-ring-gai LEP 2015)	3
Figure 8: Acid Sulphate Soils	10
Figure 9: 1943 historical aerial imagery (Spatial Services 2025).....	11
Figure 10: 1965 historical aerial imagery (Spatial Services 2025).....	12
Figure 11: 1986 historical aerial imagery (Spatial Services 2025).....	12
Figure 12: Previous vegetation mapping	13
Figure 13: Example of PCT3262 Sydney Turpentine-Ironbark Forest within the subject land	15
Figure 14: Planted native trees within the subject land	17
Figure 15: Exotic vegetation present in formal gardens mapped within the subject land	18
Figure 16: Turpentine-Ironbark Forest of the Sydney Basin Bioregion EPBC Act condition thresholds (DoE 2014).	21
Figure 17: Plant Community Types and native vegetation extent.....	25
Figure 18: Threatened Ecological Communities.....	26
Figure 19: Vegetation Zones, Plots and habitat features.....	27
Figure 20: Previous proposed development footprint which would have removed all the Sydney Turpentine Ironbark Forest on the subject land	44
Figure 21: Final project footprint including construction and operation	67
Figure 22: Indirect impact zones.....	68
Figure 23: Candidate for Serious and Irreversible Impacts - Sydney Turpentine Ironbark Forest.....	73
Figure 24: Impacts not requiring offset.....	75
Figure 25: Impacts requiring offset.....	78
Figure 26: Impacts not requiring offset.....	79
Figure 27: Areas not requiring assessment.....	80

List of Tables

Table 1: Site identification	1
Table 2: Development particulars	4
Table 3: Legislative context	7
Table 4: Area clearing limits for application of the small area development module.....	4

Table 5: Criteria for application of streamlined assessment module – small area in accordance with Appendix C of the BAM 2020	4
Table 6: Decision-making key for planted native vegetation.....	5
Table 7: Landscape features.....	8
Table 8: Full-floristic PCT identification plots.....	14
Table 9: Vegetation integrity plots.....	14
Table 10: Plant Community Types.....	16
Table 11: Potential PCTs.....	19
Table 12: Threatened Ecological Communities.....	21
Table 13: Vegetation zones and vegetation integrity survey plots collected in the subject land and development footprint.....	22
Table 14: Zone 1 PCT 3262 low or degraded Condition.....	23
Table 15: Vegetation integrity scores	24
Table 16: Predicted ecosystem credit species	29
Table 17: Candidate species credit species.....	36
Table 18: Targeted flora survey effort and results.....	39
Table 19: Assessment of prescribed impacts to human-made structures and non-native vegetation ...	40
Table 20: Assessment of prescribed impacts to habitat connectivity	41
Table 21: Locating a project to avoid and minimise impacts on vegetation and habitat.	45
Table 22: Designing a project to avoid and minimise impacts on vegetation and habitat.	46
Table 23: Locating a project to avoid and minimise prescribed biodiversity impacts.....	47
Table 24: Designing a project to avoid and minimise prescribed biodiversity impacts.....	48
Table 25: Direct impacts to native vegetation	50
Table 26: Direct impacts on threatened ecological communities	50
Table 27: Change in vegetation integrity for the management zones.....	51
Table 28: Indirect impacts.....	52
Table 29: Direct impacts on prescribed biodiversity impacts.....	55
Table 30: Measures proposed to mitigate and manage impacts.....	57
Table 31: Mitigation measures for prescribed biodiversity impacts	62
Table 32: Serious and Irreversible Impacts Summary.....	69
Table 33: Determining which Principles apply to serious and irreversible candidate entities (Clause 6.7 of the BC Regulation) – Sydney Turpentine Ironbark Forest	69
Table 34: Evaluation of an impact on a TEC – Sydney Turpentine-Ironbark Forest.....	70
Table 35: Impacts to native vegetation that require offsets	74
Table 36: Impacts to native vegetation that do not require offsets.....	75
Table 37: Ecosystem credits required	77
Table 38: EPBC Act impact assessment for <i>Pteropus poliocephalus</i> (Grey Headed Flying Fox)	82
Table 39: Species matrix (species recorded by plot).....	96
Table 40: Vegetation integrity data (Composition, Structure and function)	99
Table 41: Justification of management zone composition, structure and function scores for future integrity score	99
Table 42: Likelihood of occurrence of threatened ecological communities listed under the EPBC Act	104
Table 43: Likelihood of occurrence of threatened fauna listed under the EPBC Act.....	107
Table 44: Likelihood of occurrence of threatened flora listed under the BC Act and EPBC Act.	132

Abbreviations

Abbreviation	Description
AOBV	Areas of Outstanding Biodiversity Values
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
BOS	Biodiversity Offset Scheme
BV Map	Biodiversity Values Map
Commonwealth DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
CEEC	Critically Endangered Ecological Community
DAWE	Commonwealth Department of Agriculture, Water and the Environment (now Commonwealth DCCEEW)
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment (now NSW DCCEEW)
ELA	Eco Logical Australia Pty Ltd
EP&A Act	<i>NSW Environmental Planning and Assessment Act 1979</i>
EPBC Act	<i>Commonwealth Environment Protection and Biodiversity Conservation Act 1999</i>
FM Act	<i>NSW Fisheries Management Act 1994</i>
ha	Hectares
GIS	Geographic Information System
GPS	Global Positioning System
IBRA	Interim Biogeographic Regionalisation for Australia
LEP	Local Environment Plan
LGA	Local Government Area
LLS	Local Land Service
MNES	Matters of National Environmental Significance
NSW	New South Wales
NSW DCCEEW	New South Wales Department of Climate Change, Energy, the Environment, and Water
NOW	NSW Office of Water
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SAII	Serious and Irreversible Impacts

Abbreviation	Description
SEARs	Secretary’s Environmental Assessment Requirements
SEPP	State Environmental Planning Policy
TEC	Threatened Ecological Community
VI	Vegetation integrity
VIS	Vegetation Information System
WM Act	<i>NSW Water Management Act 2000</i>

1. Introduction

This Biodiversity Development Assessment Report (BDAR) has been prepared by Belinda Failes (BAAS18077), who is an Accredited Person under the *Biodiversity Conservation Act 2016* (BC Act) and with assistance from Cornelia Ersson. This report has been reviewed by Stacey Wilson who is an Accredited Assessor (BAAS22030) under the BC Act. All credit calculations have been undertaken using the BAM Calculator (BAMC) version 80 in case number 00056692.

This BDAR has applied the Streamlined Assessment Modules – Small Areas and Planted Native Vegetation in accordance with Appendix C and D, respectively, of the BAM.

1.1. General description of the Site

The identified portion of land that is the subject of this proposal is described as the parcels outlined in Table 1 below.

Table 1: Site identification

Street Address	Legal Description
24 Middle Harbour Road	Lot 13 DP5374
26 Middle Harbour Road	Lot 1 DP119944 Lot 14 DP5374
28 Middle Harbour Road	Lot 1 DP1192386 Lot 1 DP312386 Lot 16 DP5374 Lot 768 DP752031

The proposed development is subject to the applicable provisions outlined within *the State Environmental Planning Policy (Housing) 2021* (Housing SEPP) and *Ku-ring-gai Local Environmental Plan 2015* (KLEP2015).

The site comprises a total area of approximately 4,757 m². The Site is roughly square in shape and is approximately 65 m wide, with a depth ranging between 70-78 m. The frontage along Middle Harbour Road to the south east is approximately 65 m. The Site is zoned as R2 Low Density Residential under the KLEP2015.

The Site comprises three (3) existing detached residential properties that have a mixture of one (1) and two (2) storeys with separate vehicular access points from Middle Harbour Road. Middle Harbour Road is a two way local road (a single lane in each direction) under the control of the Council with parallel car parking and verges incorporating street trees and footpaths on both sides of the road.

To the south, east, north and west are residential properties similar in scale and design to the residential properties located within the landsite, with the immediate surrounding area also being zoned as R2 Low Density Residential. Further north and west is Lindfield Town Centre, which includes a variety of uses and a higher density of development, including further height, comprising R3 Medium Density Residential, R4 High Density Residential and E1 Local Centre zones. Lindfield railway station is approximately 500 m to the north west of the Site, which offers regular services to the Sydney Central Business District (CBD).

The Site is located approximately 330 m east of the Pacific Highway, which is a major arterial route, providing regular buses servicing the Lindfield Learning Village, Killara, Gordon and Chatswood. The Site is approximately 15 km from the Sydney CBD.

The Site and proposal are subject to the provisions outlined within KLEP2015, whereby the primary Environmental Planning Instrument (EPI) pertaining to zoning (KLEP2015) categorises the Site within the R2 Low Density Residential zone, as displayed in Figure 1 below. The Site and surrounding context are illustrated in Figure 2 and Figure 3 below.

Figure 1: Land Zoning Applicable to the Site under the KLEP 2015 (Source: NSW Legislation, 2025)



Figure 2: Existing Site Context and Surrounding Area (Source: Near Map, 2025)



Figure 3: Existing Site Context Map (Source: SIX Maps, 2025)

1.2. Background

The proposed redevelopment of the Site will deliver essential housing supply, choice, and affordability to meet the needs of Ku-ring-gai's growing population. Strategically positioned near key transport links and services, the Proposal will provide convenient access to jobs while aligning with the locality's strategic goals. By redeveloping and renewing the existing land, the Proposal aims to revitalise the area, enhancing its contribution to the community's long-term growth and sustainability.

1.3. The Proposal

The Proposal comprises the construction and operational use of a nine (9) storey residential flat building (RFB) and ancillary land uses to support the functions intended for the Site. The Proposal will exemplify and showcase a State-of-the-Art and modernised residential development that complements the desired future streetscape character; and builds on the fundamental necessities required to achieve local, regional and state planning/strategic objectives with respect to the shortage of housing opportunities and housing affordability.

Accordingly, consent is sought for the construction of a nine (9) storey RFB, which seeks to include 17% affordable housing as well as a Build-to-Rent component.

The proposal comprises a Residential Flat Building including in-fill affordable housing and Build-to- Rent housing at 24, 26 and 28 Middle Harbour Road, Lindfield. The Proposal is for the purposes of residential development which seeks to provide a range of diverse housing types to meet the needs of the wider community.

Specifically, the proposal seeks consent for the following works:

- Demolition of the existing structures;
- Associated tree removal;
- Associated bulk earthworks involving cut and fill works;
- Construction of a nine (9) storey RFB comprising 94 residential units (of which 20 are affordable units and 32 are Build-to-Rent units) with basement car parking (190 spaces);
- Associated services and infrastructure installation/augmentation; and
- Associated landscaping works.

The proposal includes those works as identified in Table 2 below.

Table 2: Development particulars

Development Particular	Proposal
Site Area	4,757 m ²
Building Type	Residential Flat Building
Gross Floor Area	15,400 m ²
Affordable Housing Gross Floor Area	2,672 m ² (17% of the total)
Floor Space Ratio (FSR)	3.25:1
Building Height	28.8 m
Number of Levels	9

Development Particular	Proposal
Units	94 residential units, 20 affordable housing units, 32 build-to-rent (BTR) units
Car Parking	190 car parking spaces

1.4. Planning Framework

1.4.1. Zoning and Permissibility:

The subject land is zoned R2 Low Density Residential pursuant to the KLEP2015, and the proposed uses are generally permitted with consent. The Proposal falls within the definition of ‘residential flat buildings’, which is permissible with consent under Chapter 5 of the *State Environmental Planning Policy (Housing) 2021* (Housing SEPP), which prevails over the KLEP2015.

1.4.2. Approval Pathway:

The Proposal is classified as State Significant Development (SSD) on the basis that it falls within the requirements of Clause 26A of Schedule 1 of the *State Environmental Planning Policy (Planning Systems) 2021* (Planning Systems SEPP), being:

- (1) Development to which State Environmental Planning Policy (Housing) 2021, Chapter 2, Part 2, *Division 1 applies if—*
 - (a) *the part of the development that is residential development has an estimated development cost of—*
 - (i) *for development on land in the Eastern Harbour City, Central River City or Western Parkland City in the Six Cities Region—more than \$75 million, or*
 - (ii) *for development on other land—more than \$30 million, and*
 - (b) *the development does not involve development prohibited under an environmental planning instrument applying to the land.*

The Proposal provides over 10% affordable housing and has an EDC over the SSD threshold of \$75 million. Consequently, the Proposal is SSD.

1.4.3. Terminology

Definitions of terminology used throughout this report and set out in the Biodiversity Assessment Method (BAM) are presented in Appendix A.

There are several different terminologies used in this report which describes the proposed works. A description of each can be found below:

- The ‘Site’ – this refers to the area subject to the development as defined in the proposal description provided below (refer to Section 1.1) and includes 24, 26 and 28 Middle Harbour Road, Lindfield.
- The ‘development footprint’ – this includes the building footprint, landscaping works and the removal of canopy trees along a small section along the road verge of Middle Harbour Road, which does not have a lot or DP number. The development footprint has been mapped to include the extent of the canopy to be removed for the proposed development (Figure 6).

- The 'Subject Land' – this includes direct and indirect impacts of the proposed development. It includes some additional trees along Middle Harbour Road were assessed during the ecological surveys but will not be removed.

This report includes two base maps, the Location Map (Figure 5) and the Site Map (Figure 6).

1.5. Legislative context

Legislation relevant to the subject land is outlined in Table 3.

Table 3: Legislative context

Name	Relevance to the project	Report Section
Commonwealth		
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Matters of National Environmental Significance (MNES) have been identified on or near the subject land. This report identifies potential impacts to <i>Pteropus poliocephalus</i> , Grey-headed Flying Fox and concludes that the development is not likely to have a significant impact on this species.	Section 9
State		
<i>Environmental Planning and Assessment Act 1979 (EP&A Act)</i>	The EP&A Act is the principal planning legislation for NSW. It provides a framework for the overall environmental planning and assessment of development proposals. The proposed development is to be assessed as a State Significant Development (SSD# 82548708) under Part 4.7 (or 5.1) of the EP&A Act. The SEARs have been issued. This report addresses Biodiversity requirements as follows: Item 16 Biodiversity - Unless a waiver has been granted, provide a Biodiversity Development Assessment Report (BDAR) that assesses any biodiversity impacts associated with the development in accordance with the Biodiversity Conservation Act 2016 and the Biodiversity Assessment Method 2020. OR - 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 is not on biodiversity certified lands, therefore a BDAR is required. This report has been prepared in accordance with the BAM and the BC Act. It is noted that consent will be required under the <i>Roads Act 1993</i> as works will be required to be carried out in the public road reserve.	This report
<i>Biodiversity Conservation Act 2016</i>	Section 7.9(2) requires an SSDA to be accompanied by a Biodiversity Development Assessment Report (BDAR) unless the Planning Agency Head and the Environmental Agency determine that the Proposal is not likely to have any significant impact on biodiversity value. The proposed development will impact upon biodiversity values and therefore requires submission of a BDAR.	This report
<i>Local Land Services Amendment Act 2016</i>	The LLS Act does not apply to the proposed development. The clearing of native vegetation proposed as part of this SSD will be assessed under Part 4.7 of the EP&A Act.	N/A
<i>Fisheries Management Act 1994 (FM Act)</i>	The subject land does not any waterbodies nor contain areas mapped as Key Fish Habitat Under the FM Act. The subsequent development will not involve impacts to Key Fish Habitat, will not involve harm to marine vegetation, dredging, reclamation or obstruction of fish passage. A permit or consultation under the FM Act is not required.	N/A

Name	Relevance to the project	Report Section
<i>Water Management Act 2000 (WM Act)</i>	The excavation of the basement will involve the interference of ground water and as such may require an aquifer interference approval. This will be addressed in the Civil Plans and Geotechnical Report. Consultation with Water NSW and DPHI Water will be undertaken.	Sections 5.3.4, 6.1.5 and 7.4

Environmental Planning Instruments

<i>State Environmental Planning Policy (Resilience and Hazards) 2021</i>	This SEPP came into effect on March 1, 2022, and consolidates a number of SEPPs including the Coastal Management SEPP 2018. This SEPP applies to land in the coastal zone. The subject land is located outside of this zone therefore this SEPP does not apply.	N/A
<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	The Minister for Planning and Public Spaces announced that on 1 March 2022 the commencement of the new Biodiversity and Conservation SEPP. The following chapters are relevant for this project and includes: - Chapter 2 Vegetation in non-rural areas of the SEPP, which applies to development that does not require consent. As the proposed works requires consent under the EP&A Act, Chapter 2 does not apply. - Chapter 4 Koala habitat protection 2021 of the SEPP contains the land use planning and assessment framework for Koala habitat within the Metropolitan Sydney and Central Coast. This SEPP applies to development located within a Local Government Areas (LGAs) specified in the SEPP. The subject land is located in the Ku-ring-gai Local Government Area which is considered land to which the Koala Habitat Protection applies. - Chapter 6 Water catchments of the SEPP apply to land that falls within defined catchments. The subject land is located within the Sydney Harbour Catchment, which is one of the listed catchments, this chapter applies to the development. Development controls under Section 6.6 and 6.7 relating to aquatic ecology apply to the development. Development controls under Section 6.6 and 6.7 relating to aquatic ecology apply to the development.	Section 9
<i>State Environmental Planning Policy (Housing) 2021</i>	Chapter 2, Chapter 3 and Chapter 5 of the Housing SEPP are applicable to the Proposal. Chapter 2 provides development controls for the provision of affordable housing that must be addressed as part of the application. Chapter 3 provides development controls for the provision of Build-to-Rent housing that must be addressed as part of the application. Chapter 5 contains provisions that relate to Transit Oriented Development (TOD) where the Site is identified on the TOD Area map. The EIS will address these matters.	N/A
<i>State Environmental Planning Policy (Transport and Infrastructure) 2021</i>	The State Environmental Planning Policy (Transport and Infrastructure) 2021 (T&I SEPP) will be addressed due to the referral thresholds for residential accommodation contain in Chapter 3. The EIS will address these matters.	N/A
<i>The Ku-ring-gai Local Environment Plan (LEP) 2015</i>	The subject land is zoned R2 - Low Density Residential under The Ku-ring-gai LEP 2015. The aims of R2 Low Density Residential are: - To provide for the housing needs of the community within a low density residential environment. - To enable other land uses that provide facilities or services to meet the day to day needs of residents.	Figure 7 and Section 9.1.3

Name	Relevance to the project	Report Section
	To provide for housing that is compatible with the existing environmental and built character of Ku-ring-gai. The subject land is mapped on the terrestrial biodiversity layer and the Riparian Land overlay (Figure 7). Portions of the subject land are also mapped on the Greenweb Map (Ku-ring-gai Council 2010) as 'Landscape Remnant', 'Support for core biodiversity lands' and 'Biodiversity corridors and buffer' under the Ku-ring-gai LEP 2015. The Ku-ring-gai Development Control Plan 2022 contains provisions for land mapped on the Greenweb Map. See below for further details.	
<i>The Ku-ring-gai Development Control Plan (DCP) 2022</i>	The Ku-ring-gai DCP contains provisions relating to the clearing of native vegetation. Part 18 Biodiversity of the DCP outlines controls for land identified as 'Landscape Remnant', 'Support for core biodiversity lands' and 'Biodiversity corridors and buffer' on the Greenweb map. Chapter 18.4 outlines objectives for development on 'Landscape Remnant' land. These objectives are: 1. To maintain smaller Key Vegetation Communities remnants as 'stepping stones', providing habitat, seedbank and pollination resources (facilitating gene flow) and supporting flora and fauna resilience 2. To maintain and restore smaller remnants of Key Vegetation Communities across a range of topographies 3. To protect trees within Key Vegetation Communities that provide food, shelter or nesting resources for native fauna, or that are of exceptional aesthetic value. Chapter 18.3 outlines objectives for development on 'Support for Core Biodiversity Lands'. These objectives are: 1. To support core areas of vegetation and fauna habitat. 2. To contribute to the protection and recovery of Key Vegetation Communities, threatened species, populations and their habitats. 3. To contribute to the protection, restoration and management of Biodiversity Corridors. 4. To contribute to the protection, restoration and management of vegetation and habitat in riparian lands. 5. To contribute to the net improvement of ecological function. Chapter 18.5 outlines objectives for development on 'Biodiversity Corridors and Buffer areas'. These objectives are: 1. To manage areas providing a buffer to Core and Support for Core Biodiversity Lands. 2. To reduce edge effects and to improve the health, connectivity and function of local ecosystems. 3. To revegetate and restore Biodiversity Corridors, significant vegetation and habitat across the landscape. The controls for land identified as 'Landscape Remnant', 'Support for core biodiversity lands' and 'Biodiversity corridors and buffer' are outlined in Section 9.1.4. Finally, it should be noted that in accordance with advice provided by Ku-ring-gai Council in July 2019.... <i>Council has endorsed (through the Delivery Program 2018-2021 and Operational Plan 2018-2019 24 July 2018) creation of a 'Ku-ring-gai Biodiversity Offset Code of Practice' to inform offsetting for Council works (currently at draft stage). In its current form, this Code goes beyond BC Act and BAM offset scheme requirements, by seeking offsets for vegetation below prescribed thresholds and vegetation integrities. Should this code apply to the future DAs, additional vegetation offsetting may be required.</i>	9.1.4

1.6. Sources of information used

The following data sources were reviewed as part of this report:

- BioNet Vegetation Classification Version 3.1 (NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) 2025a) (accessed April 2025).
- BioNet Atlas / Atlas of NSW Wildlife 5 km database search (NSW *Department of Climate Change, Energy, the Environment and Water* (DCCEEW) 2025b) (accessed April 2025).
- Commonwealth *Environment Protection and Biodiversity Act 1999* (EPBC Act) Protected Matters Search Tool 5 km radius database search (Commonwealth *Department of Climate Change, Energy, the Environment and Water* (DCCEEW) 2025a) (accessed April 2025).
- Threatened Biodiversity Data Collection (TBDC) (accessed April 2025).
- NSW Government ePlanning Spatial Viewer.
- National Flying-Fox Monitoring data (DCCEEW 2025c) (accessed April 2025).
- Biodiversity Assessment Method 2020.
- Biodiversity Assessment Method Calculator (BAMC) version 67
- Additional Geographic Information System (GIS) datasets including soil, topography, geology and drainage.
- NSW Government State Vegetation Type Map (SVTM) (NSW DCCEEW 2025c) (accessed April 2025)
- Department of Planning, Industry and Environment (DPIE) 2016. NSW (Mitchell) Landscapes – version 3.1.
- State of NSW and Department of Planning, Industry and Environment 2021. Soil Landscapes from espade.environment.nsw.gov.au. (NSW DCCEEW 2025d) (accessed April 2025)
- Arboricultural Impact Assessment (Lee Hancock Consulting Arborist 2025)
- Aerial photography (including Google Earth and Historical Imagery) of the study area and surrounds were also used to investigate the extent of vegetation cover and landscape features.

Species searches from the Commonwealth Protected Matters Search Tool (PMST) were performed on 28 April 2025. The result of this search were combined to produce a list of threatened species, populations and communities either previously recorded or considered likely to occur within the study area. The likelihood of occurrences for threatened species, populations and communities in the study area was then determined based on location of database records, the likely presence or absence of suitable habitat in the study area, and knowledge of the species' ecology. This information informed the subsequent field assessment.

After the field inspection had been completed, the likelihood of occurrence of each species, population or communities was re-assessed. This was based on the increase in knowledge about the extent and type of habitats and which species were present within the study area. The likelihood of occurrence for threatened species populations and communities within the study area is present in Appendix D.

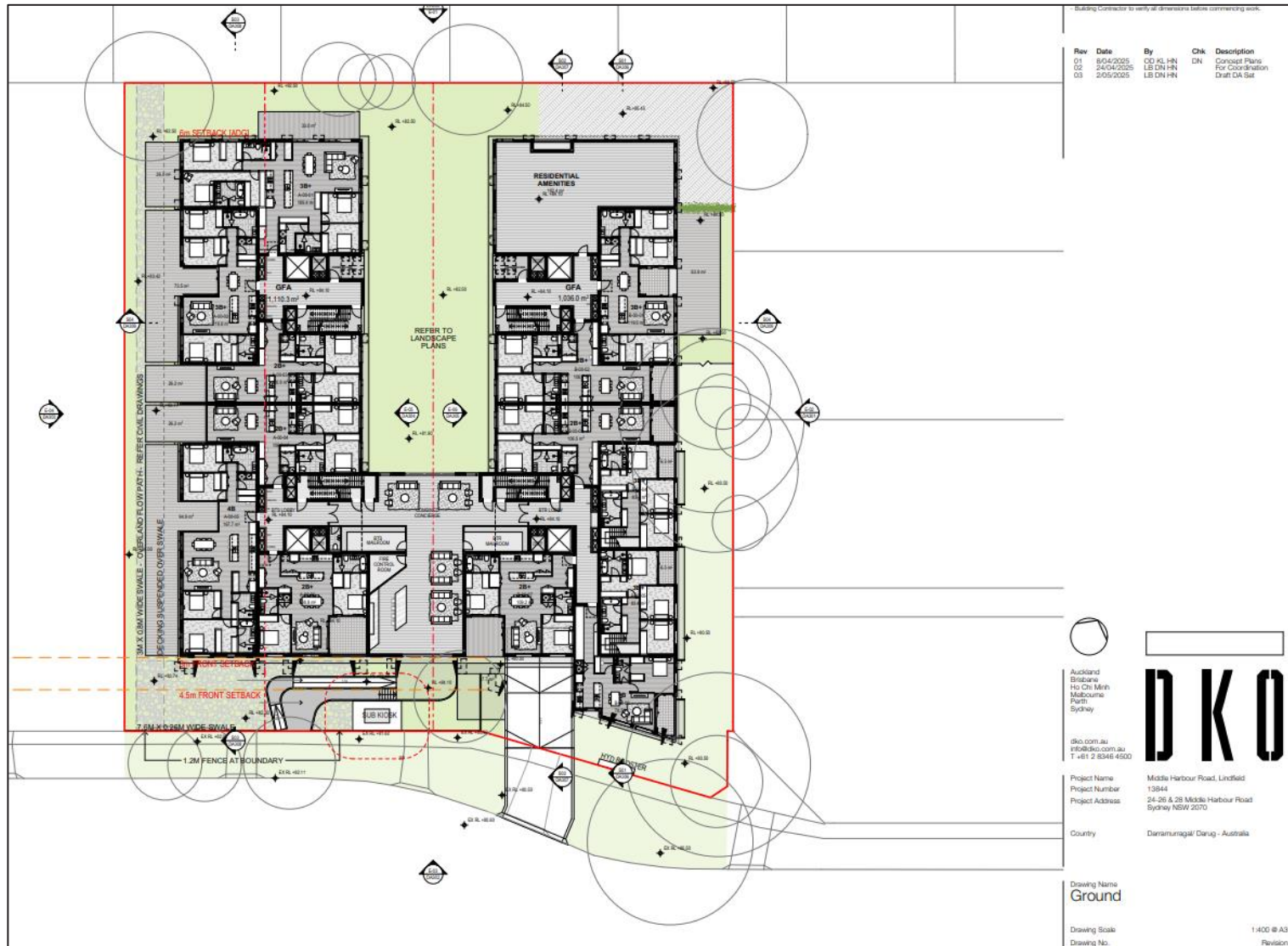


Figure 4: Final design plans (ground floor)

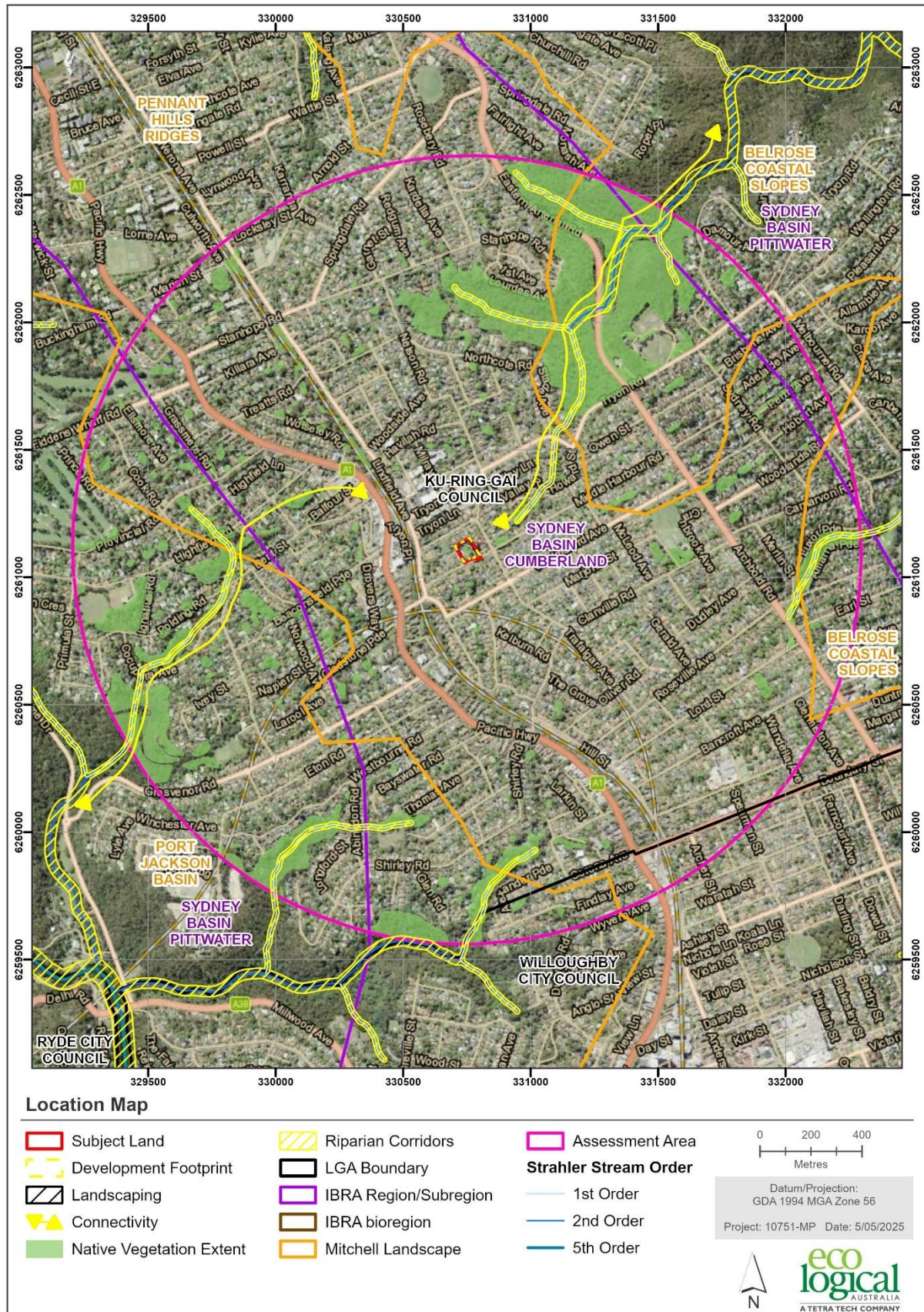


Figure 5: Location Map



Figure 6: Site Map and extent of native vegetation



Figure 7: Terrestrial Biodiversity Map (Ku-ring-gai LEP 2015)

2. Streamlined assessment modules

Two streamlined assessment modules were utilised in this BDAR. These include specific requirements that must be met to assess the impacts on biodiversity values. Both are detailed in the following sections.

Appendix C of the BAM also does not specify that it cannot be used with other modules such as Appendix D Streamlined assessment module – planted native vegetation. The planted native vegetation module therefore been used as set out below.

Section 7.14 (1) of the BC Act requires an application for development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (or a planning proposal in this situation), to be accompanied by a BDAR if the Biodiversity Offset Scheme (BOS) is triggered. Section 2.2 of the BAM sets out the streamlined modules. Appendix C of the BAM 2020 sets out the circumstances in which the small area assessment can be used. Appendix D of the BAM 2020 outlines a streamlined assessment module for assessing planted native vegetation. The streamlined assessment module can be applied where part of the subject land contains planted native vegetation.

2.1. Streamline Assessment Module – Small Areas

Appendix C of the BAM 2020 outlines a streamlined assessment module for assessing small areas. The streamlined assessment module can be applied where the area clearing limits are under a certain threshold, outlined below in Table 4.

The minimum lot size is 790 m². According to Table 2, the maximum area clearing limit for the proposal would be < 1 ha. Therefore, the small area module has been applied for this assessment in accordance with Appendix C of the BAM 2020 (Table 5).

Table 4: Area clearing limits for application of the small area development module

Minimum lot size associated with the property *	Maximum area clearing limit for application of the small area development module
Less than 1 ha	≤1 ha
Less than 40 ha but not less than 1 ha	≤2 ha
Less than 1000 ha but not less than 40 ha	≤3 ha
1000 ha or more	≤5 ha

*shown in the lot size maps made under the relevant local environmental plan (LEP), or actual lot size (where there is no minimum lot size provided for the relevant land under the LEP).

Table 5: Criteria for application of streamlined assessment module – small area in accordance with Appendix C of the BAM 2020

Criteria	Response and justification
The streamlined assessment module for small area developments must only be used according to the maximum area clearing limits* shown in Table 12 of the BAM 2020.	Yes – 0.09 ha The proposed development would clear 0.02 ha of PCT 3262 and 0.08 ha of planted native vegetation which is less than the threshold for clearing.

Criteria	Response and justification
* <i>Maximum area clearing limits are associated with the minimum lot size for a property under the relevant LEP or actual lot size where there is no minimum lot size in the LEP.</i>	
The streamlined assessment module for small area developments may be used to assess the biodiversity values of land that is located within an area on the Biodiversity Values Map, except where the biodiversity value included on the Biodiversity Values Map is core koala habitat.	Yes – the subject land contains land mapped on the Biodiversity Values Map as it contains threatened ecological communities; however, this area is not mapped as core koala habitat.
Can the streamlined assessment module – small area be applied?	Yes

2.2. Streamlined Assessment Module – Planted Native Vegetation

Section 2.2 of the BAM contains a streamlined assessment module for planted native vegetation. The streamlined assessment can be used where the native vegetation was planted for purposes such as street trees and other roadside plantings, windbreaks, landscaping in parks and gardens, and revegetation for environmental rehabilitation.

The streamlined assessment module for planted native vegetation has been applied to part of the subject land where areas of planted native vegetation will be impacted. All other areas of non- planted vegetation impacted within the subject land will be assessed in this BDAR under the Small Area Assessment Module of the BAM 2020.

The planted native vegetation within the subject land has been planted for the purpose of landscape plantings such as within the existing residential gardens. Appendix D of the BAM provides a decision-making key for the assessment of the planted native vegetation. This decision-making key was applied to the sections of planted native vegetation mapped within the subject land. This assessment is displayed in Table 6.

Table 6: Decision-making key for planted native vegetation

Question	Response
A1 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 – Planted native vegetation was located within the existing residential gardens and is disconnected with from remnant vegetation via hard surfaces such as roads. Planted native vegetation did not include species which represent part of a local indigenous PCT.
A2 Is the planted native vegetation: - planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and - the primary objective was to replace or regenerate a plant community type or a threatened plant species population or its habitat?	No – Planted native vegetation does not include representative species which are part of a local PCT. Planted native vegetation includes <i>Lophostemon confertus</i> (brush box), <i>Syzygium paniculatum</i> (magenta lilly pilly), <i>Ficus microcorpa</i> var. <i>hillii</i> (Hill's weeping fig) and <i>Callistemon viminalis</i> (weeping bottlebrush) which are widely cultivated species.
A3 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: species recovery project	No – The native vegetation has not been planted for rehabilitation works and have not been planted or translocated for the purposes listed. - One species, <i>S. paniculatum</i> was recorded as three specimens within the subject land. This species is listed

Question	Response
• <i>Saving our Species</i> project • other types of government funded restoration project • condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat • 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) • ecological rehabilitation to re-establish a PCT or TEC that was, or is carried out under a mine operations plan, or • approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the NSW <i>Water Management Act 2000</i>)?	as vulnerable under the BC Act and EPBC Act. However, according to the NSW Threatened Species Scientific Committee, (NSW TSSC 2024) it is also a widely cultivated species which does not represent part of the listed threatened species. The NSW TSSC notes that the presence of <i>S. paniculatum</i> in suitable habitat should be considered part of the listed threatened species. The habitat for this species in Sydney region includes littoral and subtropical rainforests on sandy soils (DCCEEW 2023). Known populations in the Sydney region include the Balmoral, Pittwater and Lane Cove areas (NSW TSSC 2024). <i>S. paniculatum</i> recorded within the subject land does not represent the threatened entity for the following reasons: • The subject land does not contain littoral or subtropical rainforest vegetation communities. • The soils are associated with Glenorie soil landscapes which are derived from Wianamatta Shale Group and not derived from sandstone. • The subject land is not located within the known distribution of this species. Furthermore, this species is not listed as associated with PCT 3262 which was recorded within the subject land. Therefore, the planted native vegetation within the subject land does not contain species listed as threatened under the BC Act or EPBC Act. This species has not been planted as part of a Saving our Species project, it has not been planted for a previous development approval, or re-establishment of a PCT or TEC and has not been planted as part of a management plan or for legal obligations.
A4 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 – the planted native vegetation forms part of the landscaping of the existing dwellings within the subject land.
A5 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 planted native vegetation has been planted for functional purposes associated with aesthetics for landscaping. • Go to D.2 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)
A6 Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)?	• N/A

Section D.2 of Appendix D of the BAM requires that the planted native vegetation is assessed for threatened species habitat. Opportunistic survey and habitat assessment for threatened flora and fauna

habitat was undertaken as part of the field survey. Following a habitat assessment of this area it was determined that the planted native vegetation is unlikely to provide suitable habitat for threatened flora species.

Three hollow-bearing trees were identified during habitat assessments within vegetation mapped as part of a PCT 3262 and planted native vegetation of which one hollow will be removed for the proposal.

The three hollows were inspected for apparent visual evidence of microbat occupation. Microbat scats and/or markings were not observed around any of the entrances, nor were any microbats observed when inspecting inside the accessible hollows.

No nests, scats, scratches, or any other evidence of fauna were identified within the area of planted native vegetation on site. It was determined that the planted native vegetation does not provide roosting or breeding habitat for threatened fauna species. The planted native vegetation could possibly provide marginal foraging habitat for urban and peri-urban fauna such as common bird species however is unlikely to provide important foraging habitat for threatened fauna species. There will be 0.08 ha of planted native vegetation affected under the proposed development which does not require offset as a result of this streamlined assessment module.

3. Landscape features

The subject land has been highly disturbed due to clearing and ongoing maintenance and the construction of residential houses. The vegetation on-site contains a mix of planted native and exotic vegetation and exotic grassland. The eastern and northern portion of the subject land contains remnant canopy species. The native understorey contains weed species.

The site-based method was applied for this assessment; therefore, the assessment area is the 1,500 m buffer surrounding the outside edge of the boundary of the subject land.

The landscape features considered for this assessment are presented in Table 7, Figure 1 and Figure 2.

Table 7: Landscape features

Landscape feature	Subject Land/Subject land	Assessment area	Data source
IBRA Region(s)	Sydney Basin	Sydney Basin	Interim Biogeographic Regionalisation for Australia (IBRA), Version 7
IBRA subregion(s)	Cumberland	Pittwater and Cumberland	IBRA, Version 7
Rivers and streams	There are no mapped Strahler streams or waterbodies within the subject land. The nearest mapped Strahler stream is approximately 200 m from the subject land. However, the Ku-ring-gai Council mapping indicates that the headwaters to Gordon Creek is located adjacent to the subject land.	The assessment contains Gordon Creek which is a 2 nd Strahler order stream.	NSW LPI Waterway mapping Ku-ring-gai Council online maps
Estuaries and wetlands	The subject land does not contain any mapped important or local wetlands.	The assessment area does not contain any mapped important or local wetlands.	NSW directory of important wetlands
Connectivity of different areas of habitat	Connectivity to limited to canopy trees along road verges and within residential lots, separated by roads and/or fences. At best, canopy vegetation may provide stepping-stone habitat linking vegetation within the subject land to that within the nearby patches of vegetation for highly mobile species such as migratory birds and bat species moving through the landscape.	Approximately 100 m east of the subject land, lies Gordon Creek which contains a narrow patch of riparian vegetation which flows north-east into a large nature reserve and Garigal National Park.	Aerial imagery
Geological features of significance and soil hazard features	The subject land does not contain areas of geological significance (i.e. karst, caves, crevices, cliffs). The entire subject land has been mapped on the Acid Sulphate Soils risk mapping as Class 5 (Figure 8).	The assessment area does not contain areas of geological significance (i.e. karst, caves, crevices, cliffs) and soil hazard features.	Aerial imagery. Field survey

Landscape feature	Subject Land/Subject land	Assessment area	Data source
Areas of Outstanding Biodiversity Value	As there are not AOBV on site, this trigger does not apply.	As there are not AOBV within the assessment area, this trigger does not apply.	Register of Declared Areas of Outstanding Biodiversity Value (DPIE 2022)
NSW (Mitchell) Landscapes	Pennant Hills Ridges	There are three Mitchell Landscapes within the assessment area including Belrose Coastal slopes, Pennant Hills Ridges and Port Jackson Basin.	NSW (Mitchell) Landscapes - version 3.1 (DPIE 2016)
Percent native vegetation extent	(%) There are differences between the mapped vegetation extent and the aerial imagery. The STVM included vegetation in the north-eastern corner of the subject site which have been cleared and does not represent native vegetation. The extent of native vegetation has been amended to remove this mapped area in the north-east. Therefore, the development footprint is approximately 0.50 ha and contains approximately 0.10 ha of native vegetation, including the planted native vegetation.	The assessment area is approximately 748.58 ha and contains approximately 13.02 ha of native vegetation (13.02%).	Calculated using aerial imagery and ArcGIS software
Patch size	The patch size was calculated using available mapping for all patches of intact native vegetation within or adjoining the subject land. The subject land is located as part of narrow linear tracts of vegetation within the landscape. Therefore, the patch size area is >101 ha and the size category of 101 ha was entered into the BAMC.	The vegetation within the subject land has connectivity with Garigal National Park via street trees and riparian corridors to the north-east of the subject land.	Calculated using aerial imagery and ArcGIS software



Figure 8: Acid Sulphate Soils

4. Native Vegetation

4.1.1. Literature review

Prior to field surveys, a review of previous vegetation mapping was conducted. One Plant Community Type (PCT) was mapped in the north-eastern portion of the subject land. PCT 3262 Sydney Turpentine Ironbark Forest was recorded as two small patches by the State Type Vegetation Map (STVM) (Figure 12).

Approximately 70 m north-west of the subject land, another vegetation community was mapped, PCT 3176 Sydney Enriched Sandstone Moist Forest along the headwaters to Gordon Creek (Figure 12).

Aerial photography was reviewed to assist in determining the presence of remnant vegetation and planted native vegetation. The earliest imagery is from 1943 which shows existing dwellings and vegetation along the northern, eastern and south-eastern boundary (Figure 9). The vegetation within the subject land remains along the northern and eastern boundary of the subject land in the 1965 and 1986 historical aerial imagery (Figure 10 and Figure 11).



Figure 9: 1943 historical aerial imagery (Spatial Services 2025)



Figure 10: 1965 historical aerial imagery (Spatial Services 2025)



Figure 11: 1986 historical aerial imagery (Spatial Services 2025)



Figure 12: Previous vegetation mapping

4.2. Survey Effort

Vegetation survey was undertaken within the subject land by Belinda Failes on 8 April 2025 (Figure 18).

One full-floristic vegetation plots were surveyed to identify Plant Community Types (PCTs) and Threatened Ecological Communities (TECs) on the subject land (Table 8). A total of one vegetation integrity survey plot were undertaken on the subject land to assess the composition, structure and function components of each vegetation zone in accordance with the BAM (Table 9). A second vegetation integrity plot was undertaken in the exotic grass to justify the selection of the vegetation mapping. Due to the narrow nature of the vegetation zones, a modified version of the standard 20 x 20 plot in a 50 m transect was conducted for both plots. The vegetation integrity plot was modified to a 10 x 40 m plot and 50 m transect. The full length of the transect could not be conducted due to presence of roads and houses.

All field data collected at full-floristic and vegetation integrity plot are included in Appendix B and Appendix C.

Table 8: Full-floristic PCT identification plots

PCT ID	PCT Name	Number of plots surveyed
3262	Sydney Turpentine Ironbark Forest	1
-	Exotic grassland	1

Table 9: Vegetation integrity plots

Veg Zone	PCT ID	PCT Name	Condition	Area subject (ha)	in land	Plots required	Plots surveyed
1	3262	Sydney Turpentine Ironbark Forest	low condition	0.04	1	1	
2	-	-	Planted native vegetation	0.08	0	0	
	-	-	Exotic	0.27	0	1	
TOTAL				0.39	1	2	

4.3. Plant Community Types present

4.3.1. Plant Community Type

One Plant Community Type (PCT), PCT3262 Sydney Turpentine-Ironbark Forest was identified within the subject land and is presented in Table 10 and Figure 17. This PCT is associated with a threatened ecological community (TEC) under the BC Act and/or EPBC Act (see Section 4.4 Threatened Ecological Communities below).

PCT 3262 was represented by a three mature *Syncarpia glomulifera* (turpentine) along the eastern boundary of the subject land. Very large *Pittosporum undulata* (sweet pittosporum) were also recorded along the eastern boundary and northern boundary. This species is associated with PCT 3262 and contributes to the overall extent of PCT 3262 mapped within the subject land. Given the large size of the *P. undulatum* present and evidence of remnant vegetation within the subject land, these species represent part of PCT 3262.

Occasional native species groundlayer species were also noted within the subject land including, *Microlaena stipoides* var. *stipoides* (weeping grass), *Dichondra repens* (kidney weed) and *Oplismenus aemulus* (basket grass). The large patch lacked a midstorey and has been subject to regular mowing and weed infestation.



Figure 13: Example of PCT3262 Sydney Turpentine-Ironbark Forest within the subject land

Table 10: Plant Community Types

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Area in subject land (ha)	Percent cleared
3262	Sydney Turpentine Ironbark Forest	Northern Hinterland Sclerophyll Forests	Wet Forests (Grassy sub-formation)	0.04 ha	96

4.3.2. Planted native vegetation

The subject land also contained vegetation 0.08 ha of planted native vegetation for landscaping purposes which does not conform to a native PCT. The 0.08 ha of planted vegetation has been assessed against *Appendix D: Streamlined assessment module - planted native vegetation* of BAM 2020. The decision-making process for this module is outlined below in Section 2.2 of this report.

Planted native vegetation includes native canopy species; *Lophostemon confertus* (Brush box), *Syzygium paniculatum* (magenta lily pilly), *Ficus microcorpa* var. *hillii* (Hill's weeping fig) and shrub *Callistemon viminalis* (Weeping Bottlebrush).



Figure 14: Planted native trees within the subject land

4.3.3. Exotic vegetation

Exotic canopy species were scattered throughout the subject land and include several mature specimens including *Liquidambar styraciflua* (liquidambar), *Jacaranda mimosifolia* (Jacaranda), *Ulmus parvifolia* (Chinese weeping elm) and *Livistona chinensis* (Chinese cabbage palm). A tall shrub layer consisted of scattered plantings of *Cupressus* spp., *Murraya paniculata*, *Buddleia* sp., *Gordonia axillaris* and *Lagerstroemia indica* (crepe myrtle).

Weeds were also present including woody weeds *Ligustrum lucidum* (large-leaved privet) and ground cover species *Tradescantia fluminensis* (trad) and *Asparagus aethiopicus* (asparagus fern).

Weeds and exotic species are not considered part of a PCT.



Figure 15: Exotic vegetation present in formal gardens mapped within the subject land

4.3.4. Plant Community Type selection justification

In determining the PCT for the subject land, various attributes were considered in combination to assign vegetation to the best fit PCT. PCT 3262 was determined through analysis of mapped soil landscapes, elevation and the presence of key diagnostic canopy species namely *Syncarpia glomulifera*, *Pittosporum undulatum* and patches of groundcover species, *Microlaena stipoides* var. *stipoides*, *Dichondra repens* and *Oplismenus aemulus*. Reference was made to the PCT descriptions in the BioNet Vegetation Classification and the final scientific determinations for TECs. Possible PCT options are provided in Table 11.

The subject land is mapped on Glenorie Erosional soil landscape, associated with clay soils of the Wianamatta Group Ashfield Shale. The soil landscapes transition east and west of the subject land to Lucas Heights soil landscapes and Gynea soil landscapes in the north. Lucas Heights soil landscape is associated with more a transitional geology between Ashfield Shale and Hawkesbury Sandstone. The transition of soil landscapes is consistent with PCT 3262 Sydney Turpentine Ironbark Forest which occurs on clay soils derived from Wianamatta Shale, or shale layers with Hawksbury Sandstone (Chapman and Murphy 1989).

Table 11: Potential PCTs

Selected PCT ID	PCT Name	Selection criteria	Other PCT options
3262	Sydney Turpentine Ironbark Forest	Soil profile, position in landscape <u>Canopy species</u> <i>Syncarpia glomulifera</i> <u>Midstorey species</u> <i>Pittosporum undulatum</i> <u>Groundcover species</u> <i>Microlaena stipoides</i> var. <i>stipoides</i>, <i>Dichondra repens</i> and <i>Oplismenus aemulus</i>	<u>PCT 3176 Sydney Enriched Sandstone Moist Forest</u> This PCT has been mapped within the assessment area and shares similar floristics with the vegetation mapped within the subject land. According to the VIS, PCT 3176 has a canopy represented by <i>Angophora costata</i>, <i>Syncarpia glomulifera</i> and <i>Eucalyptus pilularis</i>. It also includes <i>Pittosporum undulatum</i>. However, the main distinguishing feature of this PCT is the dominant fern ground layer. The vegetation mapped within the subject land share similar canopy and midstorey species, however, there was an absence of fern species. Additionally, the VIS state that the landscape position of PCT 3176 is associated with sandstone gullies near creeks. The subject land is not located in a sandstone gully. Therefore, the vegetation mapped within the subject land does not represent part of PCT 3176 due to landscape position. <u>PCT 3136 Blue Gum High Forest</u> This PCT has been mapped within the assessment area and shares similar floristics with the vegetation mapped within the subject land. According to the VIS, PCT 3176 has a canopy represented by <i>Eucalyptus saligna</i>, <i>E. pilularis</i> and <i>Syncarpia glomulifera</i> and a tall midstorey of <i>Pittosporum undulatum</i>. The vegetation within the subject land represented similar canopy species, however, it lacked key diagnostic species for PCT 3176 such as <i>E. saligna</i> and <i>E. pilularis</i>. This PCT is generally located at 30-190 m elevation. The subject land is located at 84 m elevation and therefore, within this PCTs topographical range. However, the vegetation within the subject site contained <i>Syncarpia glomulifera</i> which represents PCT 3262 rather than PCT 3136. <u>PCT 3592 Sydney Coastal Enriched Sandstone Forest</u> This PCT has been mapped within the assessment area. It is represented by a sclerophyll midstorey and fern groundcover. PCT 3592 occurs on sandstone soils in sheltered slopes. This PCT shows some similarities in the list of species within the VIS, such as the presence of <i>Pittosporum undulatum</i> and occasionally <i>Syncarpia glomulifera</i>, however, these species are noted in low frequencies in this PCT. Given that the soils in the subject land align with shale and not sandstone soils, the position in the landscape was not located in a sheltered slope and the absence of other species diagnostic of PCT 3592, it was determined that this PCT was not the best-fit PCT for the vegetation within the subject land. <u>PCT 3262 Sydney Turpentine Ironbark Forest</u>

Selected PCT ID	PCT Name	Selection criteria	Other PCT options
			This PCT was selected based on the diagnostic species <i>Syncarpia glomulifera</i> present in the subject site. <i>Pittosporum undulatum</i> and native ground cover species are also represented in this PCT 3262. Based on the soil landscape, elevation and characteristic species represented in the subject land, PCT 3262 was the best-fit PCT.

4.4. Threatened Ecological Communities

The BioNet Vegetation Classification lists PCT 3262 as comprising Sydney Turpentine Ironbark Forest which is listed as critically endangered under the BC Act and critically endangered under the EPBC Act. This PCT was categorised as a moderate condition vegetation zone based on the presence of weeds and regular management and disturbance. The condition of this PCT 3262 conforms to the Sydney Turpentine Ironbark Forest listing under the BC Act. The PCT does not conform to the listing under the EPBC Act. The criteria for listing under the EPBC Act for Sydney Turpentine Ironbark Forest are provided below (DCCEEW 2005):

- The vegetation contains some characteristic components from all structural layers (tree canopy, small tree/shrub midstorey, and understorey). **The vegetation did not contain components of all structural layers.**
- Tree canopy cover is greater than 10% and remnant size is greater than one hectare. These areas have the greatest conservation value, and their high quality and size makes them most resilient to disturbance. **Although the canopy cover is greater than 10%, the remnant size is not > 1 hectare.**
- However, remnants with tree canopy cover less than 10% are also included in the ecological community, if the fragments are greater than one hectare in size and occur in areas of native vegetation in excess of 5 hectares in area. These areas enhance the potential for connectivity and viability of the ecological community. They support native flora and fauna species by facilitating gene flow among remnants and buffering against disturbance. **The vegetation patch was less than 5 ha in size and did not satisfy this criterion.**

Occurrences of the **Turpentine–Ironbark Forest in the Sydney Basin Bioregion** ecological community are considered to be part of the nationally listed ecological community if patches are in good condition.

- Good condition is generally determined as:
 - the vegetation has some characteristic components from all structural layers (tree canopy, small tree/shrub midstorey, and understorey); and
 - the tree canopy cover is greater than 10%; and
 - the patch size is greater than one hectare.
- However, patches with a tree canopy cover of less than 10% are also included in the ecological community, if:
 - the patch of the ecological community is greater than one hectare in size; and
 - it is part of a remnant of native vegetation that is 5 hectares or more in area.

These areas enhance the potential for connectivity and viability of the ecological community. They support native flora and fauna species by facilitating gene flow among remnants and buffering against disturbance.

The nationally listed ecological community excludes patches where either the native midstorey/understorey or native canopy trees are absent. Occurrences of isolated single trees or shrubs characteristic of the ecological community therefore are excluded from the ecological community. Although these degraded occurrences have some value for biodiversity, their structure has been so severely modified, that they fall outside the definition of the ecological community.

Figure 16: Turpentine-Ironbark Forest of the Sydney Basin Bioregion EPBC Act condition thresholds (DoE 2014).

Table 12: Threatened Ecological Communities

PCT ID	BC Act			EPBC Act		
	Listing status	Name	Area in subject land (ha)	Listing status	Name	Area in subject land (ha)
3262	CEEC	Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion	0.04	N/A*	-	-

CEEC – CRITICALLY ENDANGERED ECOLOGICAL COMMUNITY

* NOTE THAT PCT 3262 CEEC DID NOT SATISFY THE REQUIREMENTS FOR LISTING UNDER THE EPBC ACT CRITERIA

4.5. Vegetation integrity assessment

4.5.1. Vegetation zones

One native vegetation zone was identified within the subject land (Figure 19). The other vegetation mapped within the subject land are not consistent with a PCT and have been mapped as *Exotic* and *Planted Native Vegetation* (Figure 17). A total of two vegetation integrity survey plots were collected on the subject land consistent with the BAM (Figure 19). One of the plots was undertaken in exotic grassland as justification. This plot was not required for the BAM C and is provided in Table 13. Descriptions of the vegetation zone is provided in Table 14.

Table 13: Vegetation zones and vegetation integrity survey plots collected in the subject land and development footprint

Vegetation Zone	PCT ID	PCT Name	Condition	Total area in subject land (ha)	Total area in development footprint (ha)	Impact area (ha)	Patch Size	Vegetation Integrity Survey Plots required	Vegetation Integrity Survey Plots collected
1	3262	Sydney Turpentine Ironbark Forest	low	0.04	0.03	0.02	>100	1	1

Table 14: Zone 1 PCT 3262 low or degraded Condition

PCT 3262			
Vegetation formation/class	Wet Sclerophyll Forests (Grassy Sub-formation)		
Conservation status	NSW BC Act Endangered: <i>Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion</i>		
Description	PCT 3262 is found on shale or sheltered shale-sandstone soils in higher rainfall zones of the Sydney Metropolitan area. This community occurred in three small to medium sized patches along the eastern and northern boundary of the subject land. Within the subject land this community was represented by a several mature <i>Syncarpia glomulifera</i> (Turpentine) along the eastern boundary of the subject land. Very large <i>Pittosporum undulata</i> (Sweet Pittosporum) were also recorded along the eastern boundary and northern boundary.		
Characteristic canopy trees	<i>Syncarpia glomulifera</i>		
Characteristic mid-storey	A very tall midstory of <i>Pittosporum undulatum</i> was present within the subject land and represents a characteristic species of this vegetation community.		
Characteristic groundcovers	<i>Dichondra repens</i> , <i>Microlaena stipoides</i> var. <i>stipoides</i> , <i>Oxalis perennans</i>		
Mean native richness	12		
Exotic species / HTW cover	<i>Anredera cordifolia</i>, <i>Aristea ecklonii</i>, <i>Asparagus aethiopicus</i>, <i>Asparagus</i> sp., <i>Celtis sinensis</i>, <i>Cinnamomum camphora</i>, <i>Clivia</i> spp., <i>Conyza bonariensis</i>, <i>Digitaria ciliaris</i>, <i>Ehrharta erecta</i>, <i>Hedra helix</i>, <i>Hedychium gardnerianum</i>, <i>Hypochoeris radicata</i>, <i>Ligustrum lucidum</i>, <i>Ligustrum sinense</i>, <i>Nandina</i> spp., <i>Olea europaea</i> subsp. <i>cuspidate</i>, <i>Phoenix</i> spp., <i>Senna pendula</i> var. <i>glabrata</i>, <i>Stenotaphrum secundatum</i>, <i>Tradescantia fluminensis</i>, <i>Washingtonia</i> spp. HTW cover of 42.4%.		
Condition	Low or degraded condition		
Variation and disturbance	There was a high level of disturbance within the BAM plot and wider subject land. This disturbance was largely due to the high number of exotic species within the subject land and regularly mowing. A linear plot was undertaken to account for the small patch size. The vegetation zone is represented by several mature trees along the fence boundary.		
No. sites sampled	1		
Threatened flora species	No threatened flora species were identified during the field survey		
Fauna habitats	No fauna habitat (hollows, birds nests, crevices and culverts) was observed during the field survey. At best, the native vegetation toward the north of the subject land could be potential marginal foraging habitat for highly mobiles species such <i>Pteropus poliocephalus</i> (grey-headed flying-fox). Two hollows were recorded within this vegetation zone.		
Composition	Structure	Function	Vegetation Integrity Score
14.1	62.8	26.2	28.5

PCT 3262



4.5.2. Assessing vegetation integrity

A vegetation integrity assessment using the BAM Calculator (BAMC) was undertaken and the results are outlined in Table 15.

Table 15: Vegetation integrity scores

Veg Zone	PCT ID	Condition	Direct area (ha)	Composition Condition Score	Structure Condition Score	Function Condition Score	Presence of Hollow bearing trees	Current vegetation integrity score
1	3262	low	0.02	14.1	62.8	26.2	Yes	28.5

4.6. Use of local data

No local data is proposed for this assessment.



Figure 17: Plant Community Types and native vegetation extent

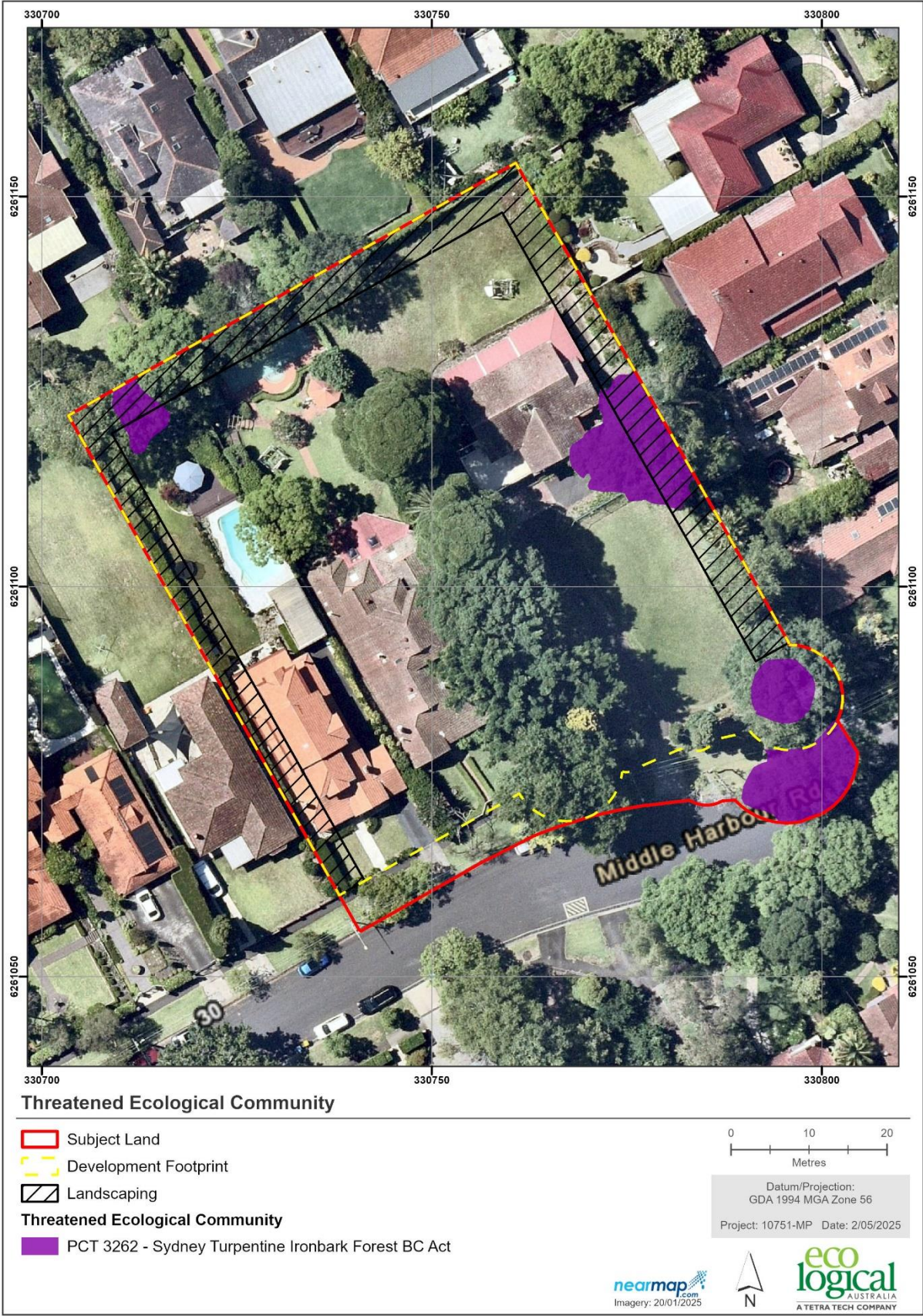


Figure 18: Threatened Ecological Communities



Figure 19: Vegetation Zones, Plots and habitat features

5. Threatened species

5.1. Ecosystem credit species

Ecosystem credit species predicted to occur at the subject land, their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 16.

Ecosystem credit species which have been excluded from the assessment and relevant justification is also included in Table 16.

Table 16: Predicted ecosystem credit species

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Anthochaera phrygia</i>	regent honeyeater (foraging)	-	High	CE	CE	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Artamus cyanopterus</i>	dusky woodswallow	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Callocephalon fimbriatum</i>	gang-gang cockatoo (foraging)	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Calyptorhynchus lathamii</i>	south-easter black-cockatoo (foraging)	Other Presence of Allocasuarina and casuarina species	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Chthonicola sagittata</i>	speckled warbler	-	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Climacteris picumnus victoriae</i>	brown treecreeper (eastern subspecies)	-	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Daphoenositta chrysoptera</i>	varied sittella	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Dasyurus maculatus</i>	spotted-tailed quoll	-	High	V	E	<u>Excluded</u> Habitat features for this species are not present at this site. This species requires habitat features such as maternal den sites, an abundance of food (birds and small mammals) and large areas of relatively intact vegetation to forage.
<i>Ephippiorhynchus asiaticus</i>	black-necked stork	Swamps Shallow, open freshwater or saline wetlands or shallow edges of deeper wetlands within 300 m of these swamps. Shallow lakes, lake margins and estuaries within 300 m of these waterbodies.	Moderate	E	Not listed	<u>Excluded</u> Habitat features for this species are not present at this site. This species requires habitat features such as freshwater or saline wetlands or lakes.
<i>Grantiella picta</i>	painted honeyeater	Other Mistletoes present at a density of greater than five mistletoe per hectare.	Moderate	V	V	<u>Excluded</u> Habitat features associated with this species are not present in the subject land. This species is a specialist feeder requiring mistletoe which is absent from the subject land.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Glossopsitta pusilla</i>	little lorikeet	N/A	High	V	Not Listed	<u>Included</u> There are six BioNet records for this species within a 10 km radius of the subject land. This species may utilise the flowering species within the subject land for seasonal foraging. This species was included in this assessment
<i>Haliaeetus leucogaster</i>	white-bellied sea-eagle	Waterbodies within 1 km of a rivers, lakes, large dams or creeks, wetlands and coastlines	High	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the subject land. This species is a specialist feeder requiring large waterbodies which were not located within 1 km of the subject land.
<i>Hieraaetus morphnoides</i>	little eagle (foraging)	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Hirundapus caudacutus</i>	white-throated needletail	-	High	Not Listed	V	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Ixobrychus flavicollis</i>	black bittern	Waterbodies Land within 40 m of freshwater and estuarine wetlands in areas of permanent water and dense vegetation.	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the subject land. This species is a specialist feeder requiring waterbodies which were not located within 40 m of the subject land.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Lathamus discolor</i>	swift parrot (foraging)	-	Moderate	E	CE	<u>Included</u> There are 12 BioNet records for this species within a 10 km radius of the subject land. Foraging habitat features associated with this species were identified within the subject land
<i>Lophoictinia isura</i>	square-tailed kite (foraging)	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Melanodryas cucullata</i>	south-eastern hooded robin (south-eastern form)	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Melithreptus gularis gularis</i>	black-chinned honeyeater (eastern subspecies)	-	Moderate	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Micronomus norfolkensis</i>	eastern coastal free-tailed bat	-	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Miniopterus australis</i>	little bentwing-bat (foraging)	-	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.
<i>Miniopterus oceanensis</i>	large bent-winged bat	-	High	V	Not Listed	<u>Included</u> The subject land contains low quality habitat for this species.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Pandion cristatus</i>	eastern osprey	-	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the subject land. This species is a specialist feeder requiring waterbodies which were not located within the subject land.
<i>Petroica phoenicea</i>	flame robin	-	Moderate	V	Not Listed	<u>Excluded</u> Habitat features associated with this species are not present in the subject land. This species requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses which the subject land does not contain. No individuals have been recorded within 10 km of the subject land.
<i>Pteropus poliocephalus</i>	grey-headed flying-fox (foraging)	-	High	V	V	<u>Included</u> Seasonal foraging habitat was identified in this assessment.
<i>Pycnoptilus floccosus</i>	pilotbird	South of Picton Road	Moderate	V	V	<u>Excluded</u> The subject land is located north of Picton Road, outside of the geographic distribution for this species. Therefore, this species, in accordance with the BAM, can be excluded from further assessment.
<i>Saccolaimus flaviventris</i>	yellow-bellied sheath-tail-bat	-	High	V	Not Listed	<u>Included</u> Seasonal foraging habitat was identified in this assessment.
<i>Stagonopleura guttata</i>	diamond firetail	-	Moderate	V	V	<u>Included</u> Seasonal foraging habitat was identified in this assessment.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Varanus rosenbergi</i>	Rosenberg's goanna	-	High	V	Not Listed	<u>Excluded</u> Habitat features for this species are not present in the subject land. Critical habitat components such as termite mounds are not present in the subject land.

5.2. Species credit species

5.2.1. Identification of species credit species

Species credit species predicted to occur at the subject land (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 17.

Species credit species which have been excluded from the assessment and relevant justification are also included in Table 17. For Streamlined Assessment Module – Small Areas, a targeted survey is only required for species credit species which are Serious and Irreversible Impacts (SAII) entities.

It is noted that the BAM C currently does not provide an option to assess Major Projects using the Small Areas assessment. Correspondence with the BOS helpdesk for another Major Project confirmed that the species credit species list can be manually refined so only SAI entities are considered for Small Areas assessments (Appendix D).

No species credit species were incidentally identified during habitat assessments conducted on 8 April 2025, nor are these species expected to occur based on a lack of suitable habitat and lack of evidence of occupation.

The trees within the subject land may be used as potential seasonal foraging habitat for microbats, and the hollows may potentially be used as temporary roosting habitat, however it is highly unlikely that the subject land contains suitable breeding habitat for microbats. The subject land is located within a highly urbanised environment, exposed and open, and under constant use and disturbance from the local community. The vegetation within the subject land is a considerably fragmented and disturbed example of Sydney Turpentine Ironbark Forest mixed in with urban native and exotic plantings. The subject land is also located a considerable distance from core bushland, and no watercourses are present within the vicinity. It is more likely that suitable breeding habitat would be present outside the subject land in these core areas.

Species credit species that require further assessment on the subject land (i.e. candidate species), their associated habitat constraints, geographic limitations and sensitivity to gain class is included in Table 17.

Table 17: Candidate species credit species

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Anthochaera phrygia</i>	regent honeyeater (breeding habitat)	As per Important Habitat Map.	High	CE	CE	<u>Excluded</u> The subject land does not contain mapped important areas for this species and development does not present risk of SAIL. The mapped important area for Regent Honeyeater was accessed 28 April 2025.
<i>Chalinolobus dwyeri</i>	large-eared pied bat	Cliffs Within 2km of rocky areas containing caves, overhangs, escarpment, outcrops, or crevices, or within 2km of old mines or tunnels	Very High	V	V	<u>Excluded</u> SAIL assessment for this species applies to 100 m buffer around breeding habitat. No potential breeding habitat is present within 100 m of the development footprint; therefore, the development does not pose a risk of SAIL, and no further assessment is required. Furthermore, there was no potential breeding habitat (i.e., cliffs, caves, rocky areas with outcrops, overhangs, escarpments or crevices) present within a two kilometre radius of the subject land (as determined by aerial imagery).
<i>Haloragodendron lucasii</i>	-	Other Seepage zone or within 100 m	Very high	E	E	<u>Included</u> The subject land is located approximately 20 m from Gordon Creek. The subject land is substantially degraded and therefore, unlikely to provide suitable habit features for this species. This species survey season overlapped with the April surveys. Therefore, this species was included during field surveys.
<i>Hibbertia spanantha</i>	Julian's hibbertia	-	High	CE	CE	<u>Excluded</u> The subject land is highly degraded and located within a highly modified environment. No habitat is present for this species.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
<i>Lathamus discolor</i>	swift parrot (important foraging areas)	Other As per Important Habitat Map	Moderate	E	CE	<u>Excluded</u> The subject land does not contain mapped important areas for this species and development does not present risk of SAIL. The mapped important area for Regent Honeyeater was accessed 28 April 2025.
<i>Miniopterus australis</i>	little bentwing- bat (breeding)	Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave' Observation type code 'E nest-roost' With numbers of individuals > 500 Or from the scientific literature	Very High	V	Not Listed	<u>Excluded</u> Habitat features for this species are not present at this site.
<i>Miniopterus orianae oceanensis</i>	large bent-winged bat (breeding)	Caves Cave, tunnel, mine, culvert or other structure known or suspected to be used for breeding including species records in BioNet with microhabitat code 'IC – in cave'	Very High	V	Not Listed	<u>Excluded</u> Habitat features for this species are not present at this site. The subject land is highly degraded and located within a highly modified environment. No habitat is present for this species.

Species	Common name	Habitat constraints/ Geographic limitations	Sensitivity to gain class	NSW listing status	EPBC Listing status	Justification if species excluded
		Observation type code 'E nest-roost' With numbers of individuals > 500 Or from the scientific literature				
<i>Rhizanthella slateri</i>	eastern Australian underground orchid	-	High	V	E	<u>Excluded</u> The subject land is substantially degraded and does not contain suitable habit features for this species.
<i>Rhodamnia rubescens</i>	scrub turpentine	-	Very high	CE	CE	<u>Included</u> The subject land is substantially degraded and therefore, unlikely to provide suitable habit features for this species. This species can be surveyed any time of year. Therefore, this species was included during field surveys.

CE = Critically Endangered; E = Endangered; E2 = Endangered Population; V = Vulnerable

5.2.2. Assessment of habitat constraints and vagrant species

Habitat for any candidate species derived by the BAMC are not considered likely to occur within the subject land based on the lack of habitat and long-term habitat degradation throughout the subject land (justification provided in Table 17, above).

No other candidate species (in addition to those generated by the BAMC) are considered likely to occur within the subject land and no further assessment is required.

5.2.3. Candidate species requiring further assessment

As this BDAR is being assessed via the streamlined (small area) assessment (BAM 2020, Appendix C), only those candidate species at risk of a serious and irreversible impact (SAII) require targeted survey. All the candidate species generated by the BAMC (Table 17) are entities at risk of a SAII. However, as there is no breeding habitat present within the subject land for the fauna species (*Anthochaera phrygia*, *Lathamus discolor*, *Miniopterus australis* and *M. orianae oceanensis*) no targeted survey is required for these species. Two candidate species credit species, *Haloragodendron lucasii* and *Rhodamnia rubescens* were included in habitat assessments during 8 April 2025 surveys.

5.2.4. Targeted surveys

Two species credit species were included in targeted surveys on 8 April 2025 as a part of this assessment. Transects (5 m) were conducted in PCT 3262 vegetation for *Haloragodendron lucasii* and *Rhodamnia rubescens* over one person hour on 8 April 2025. The vegetation within the subject land is highly disturbed and subject to weed infestations and landscaping. It does not provide suitable habitat for species credit species. No species credits were recorded during targeted surveys (Table 18).

Table 18: Targeted flora survey effort and results

Target species	Survey method	Survey effort	Dates	BAM survey period	Species recorded	Species credit requirements / species polygon justification
<i>Haloragodendron lucasii</i>	Parallel transects in the development footprint in PCT 3262	1 person hour	8 April 2025	All year	No	Not required, the species was not identified during targeted surveys.
<i>Rhodamnia rubescens</i>	Parallel transects in the development footprint in PCT 3262	1 person hour	8 April 2025	All year	No	Not required, the species was not identified during targeted surveys.

5.2.5. Expert reports

No expert reports have been used in place of targeted survey for this assessment.

5.3. Identification of prescribed additional biodiversity impact entities

5.3.1. Karst, caves, crevices, cliffs, rocks and other geological features of significance

There are no karst, caves, crevices, cliffs, rocks or other geological features of significance within the subject land. However, the entire subject land has been mapped as Class 5 acid sulphate soils (Figure 8). Mitigation measures will be provided during future development applications.

5.3.2. Human-made structures and non-native vegetation

The subject land contains human-made structures and non-native vegetation.

The human-made structures include three existing residential dwellings, two swimming pools and remnants of an old tennis court. The buildings were inspected by binoculars during the 8 April 2025 field surveys for potential evidence of fauna entry or exit points into the roof cavities. The existing dwelling on the site is still occupied and is well used and almost completely sealed with no damage to the eaves and no access underneath as it is built on a slab. No evidence was recorded during the field surveys.

The non-native vegetation includes flowering canopy species which may provide occasional foraging opportunities for threatened fauna species.

Table 19: Assessment of prescribed impacts to human-made structures and non-native vegetation

Criteria in accordance with BAM 2020 Section 6.1.2	Response
2. If human-made structures (e.g. bridges, culverts, abandoned buildings) and non-native vegetation (e.g. camphor laurel trees) provides habitat for threatened species, the assessor must:	
a. provide a description of the type of human-made structure or non-native vegetation habitat	The subject land contains three occupied residential dwellings. Non-native vegetation present in the subject land includes environmental weeds such as <i>Liquidambar styraciflua</i>, <i>Jacaranda mimosifolia</i>, <i>Livistona chinensis</i>, <i>Cupressus</i> spp., <i>Murraya paniculata</i>, <i>Buddleia</i> sp., <i>Gordonia axillaris</i> and <i>Lagerstroemia indica</i>. The subject land also includes environmental weeds such as <i>Ligustrum lucidum</i>, <i>Tradescantia fluminensis</i> and <i>Asparagus aethiopicus</i>.
b. prepare a list of threatened species that use these features as habitat	The following species (microbats) are known to utilise human-made structures: • <i>Miniopterus australis</i> (little bent-winged bat) • <i>Miniopterus orianae oceanensis</i> (large bent-winged bat) The field surveys did not record evidence of microbat use in the residential dwellings. Exotic vegetation may be utilised for foraging by: <i>Pteropus poliocephalus</i> (grey-headed flying fox)
c. describe how each threatened species could, or does, use the human-made structure or non-native vegetation as habitat (based on published literature and other reliable sources).	Microbat species may utilise the buildings as non-breeding roosting habitat. Breeding for microbats is unlikely to occur within the residential dwelling as all the above listed microbat species require caves as maternity roosts which are not located within or near the subject land. The exception is <i>Myotis macropus</i> (southern myotis) which may occasionally

Criteria in accordance with BAM 2020 Section 6.1.2	Response
	utilise buildings to shelter, however, no evidence of microbat use was recorded at the residential dwelling. <i>Miniopterus orianae oceanensis</i> and <i>Miniopterus australis</i> are known to form large maternity colonies in specific caves (Mills 2021, Augusteyn et al 2021) and do not utilise human-made structure as part of breeding habitat. As mentioned above, the non-native vegetation may provide supplementary foraging habitat for grey-headed flying-fox.

5.3.3. Habitat connectivity

Although the subject land has been largely cleared of vegetation and located within a highly urbanised environment, the subject land has some connectivity features to intact native vegetation via street trees. As identified in Table 7 the subject land is located approximately 20 m from a riparian corridor which eventually flows into Garigal National Park in the north-east which provides connectivity between habitats for mobile threatened species (Figure 5).

An assessment of prescribed impacts to habitat connectivity is presented in Table 20.

Table 20: Assessment of prescribed impacts to habitat connectivity

Criteria in accordance with BAM 2020 Section 6.1.3	Response
2. Where corridors or other areas of connectivity link habitat for threatened entities, the assessor must:	
a. prepare a list of threatened entities that are likely to use or are a part of the connectivity or corridor	Highly mobile, threatened birds and bats that are likely to utilise the vegetation within the subject land (mostly for supplementary foraging) and were included in this assessment. Mega bats: <i>Pteropus poliocephalus</i> (grey-headed flying fox). Microbats: <i>Falsistrellus tasmaniensis</i> (eastern false pipistrelle) <i>Miniopterus australis</i> (little bent-winged bat) <i>Miniopterus orianae oceanensis</i> (large bent-winged bat) <i>Micronomus norfolkensis</i> (eastern coastal free-tailed bat) <i>Saccolaimus flaviventris</i> (yellow-bellied sheath-tail bat) <i>Scoteanax rueppellii</i> (greater broad-nosed bat) <i>Vespadelus troughtoni</i> (eastern cave bat). Birds, including: <i>Glossopsitta pusilla</i> (little lorikeet) <i>Ninox strenua</i> (powerful owl) <i>Lophoictinia isura</i> (square-tailed kite) <i>Hieraaetus morphnoides</i> (little eagle). Migratory species (birds): <i>Anthochaera phrygia</i> (regent honeyeater) <i>Lathamus discolor</i> (swift parrot) <i>Hirundapus caudacutus</i> (white-throated needletail).

Criteria in accordance with BAM 2020 Section 6.1.3	Response
b. describe the importance of the connectivity to threatened entities, particularly for maintaining movement that is crucial to the species' life cycle	The scattered native and exotic vegetation within the subject land provides a stepping-stone habitat between vegetation within the subject land and broader landscape. The removal of the vegetation will reduce the extent of native vegetation available across the landscape.

5.3.4. Water bodies, water quality and hydrological processes

There are no Strahler order streams mapped within the subject land. The field survey did not record the presence of a bed and bank or waterbodies within the subject land. It is noted that the Ku-ring-gai Council online mapping dataset indicates that the headwaters of Gordon Creek is located within the south-eastern corner of the subject land (Figure 7). The subject land has been mapped as flooding by Council's dataset. Given the absence of a Strahler order waterbody or evidence of waterbody within the subject land, there is potential that the council mapping represents underground piping of the headwaters to Gordon Creek. There are no threatened entities associated with the waterbodies which require assessment under prescribed impacts.

5.3.5. Wind farm developments

This is not a wind farm development.

5.3.6. Vehicle strikes

Given the locality is already highly urbanised, vehicle strike is an existing threat to fauna. The proposed development will involve construction of internal roads but no additional threat to fauna from vehicle strike, beyond the existing levels, is likely to result.

6. Avoiding and Minimising Impacts on Biodiversity Values

6.1. Locating a project to avoid and minimise impacts on biodiversity values

6.1.1. Direct and indirect impacts

The BC Act and BAM 2020 requires proponents to avoid and minimise impacts on biodiversity values. The area of highest biodiversity value within the development is the patch of vegetation zone PCT 3262 in low condition (PCT 3262_low), in the northern and eastern boundary of the subject land.

As discussed in Section 4.4, this vegetation zone corresponds with the TEC *Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion*. This vegetation community is listed as Critically Endangered under the BC Act.

The original design for the subject land involved the removal of three *Syncarpia glomulifera* and two *Pittosporum undulatum* along the eastern boundary of the subject land (Lee Handcock Consulting Arborist 2025). These trees represent part of the PCT 3262_low vegetation which is part of the TEC. Another patch of two *Pittosporum undulatum* (also part of PCT 3262_low) along the northern boundary was identified as possible retention in the Preliminary Arborist Assessment (Lee Handcock Consulting Arborist 2025). ELA conducted a review of the proposed plans (Figure 20), arborist assessment and a site visit. Initial ecological advice provided by ELA in April 2025 was to retain the vegetation patch mapped as PCT 3262_low along the northern and eastern boundary of the subject land. The proposed designs were reviewed and amended to retain the three *Syncarpia glomulifera* and the two *Pittosporum undulatum*. Specialist engineering designs including a retaining wall have been incorporated into the final designs to ensure that the critical root zones are not impacted by the proposed development. This has allowed the canopy species to remain within the subject land and avoid direct impacts to these trees. Landscaping will be conducted around the remaining vegetation, as such there will be removal of the groundcover species and disturbance to the soil seedbank during landscaping. These have been included as a separate impact management zone and discussed in Section 7.1 below.

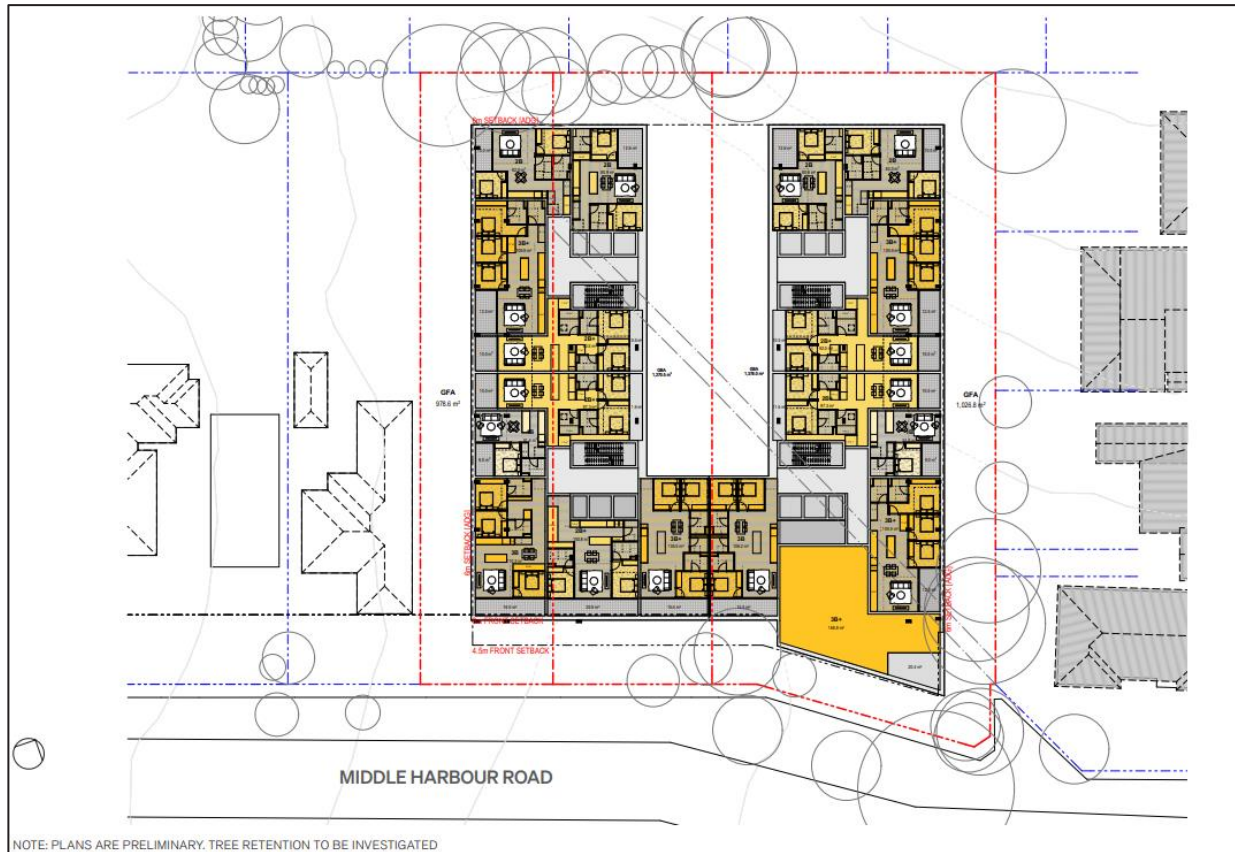


Figure 20: Previous proposed development footprint which would have removed all the Sydney Turpentine Ironbark Forest on the subject land

In addition to avoiding impacts to 0.03 ha of Sydney Turpentine Ironbark Forest TEC, the proposed development is avoiding and minimising impacts on biodiversity as follows:

- Most of the subject land has limited biodiversity values and does not require offsetting or assessment under the BAM as shown in Figure 25 and Figure 26.
- There are no impacts to breeding habitat for threatened species.
- Marginal foraging habitat for *Pteropus poliocephalus* (grey-headed flying-fox) will be affected. Other ecosystem species have been included in the assessment (see Table 16) but given the lack of habitat connectivity within the subject land, foraging habitat for these species is marginal.
- Indirect impacts to adjacent habitat are unlikely to result from the proposed development given the adjacent land is highly disturbed primarily consisting of residential houses, gardens and cleared lawn. Indirect impacts can be managed through sediment and erosion control.
- Measures to minimise impacts to biodiversity will include supervision of vegetation removal by an ecologist to ensure any fauna present are taken into care and relocated into similar nearby habitat.

6.1.2. Locating a project to avoid and minimise impacts on vegetation and habitat

The development footprint has been located so that the affected vegetation is located in an area where hardstand infrastructure such as residential houses, driveway and pools are present. The proposed development will avoid impacts to areas of PCT 3262 located within the subject land.

The development has been located in a way which avoids and minimises impacts as outlined in Table 21.

Table 21: Locating a project to avoid and minimise impacts on vegetation and habitat.

Approach	How addressed and justification
Locating the proposal (including ancillary facilities) in areas lacking biodiversity values	The proposed development includes three existing residential houses, two pools and an old tennis court which represents 0.15 ha and do not provide biodiversity values. The proposal has utilised areas of lower biodiversity value such as the removal of planted native vegetation. Some impacts to PCT 3262 (0.02 ha) will occur as part of this proposal, however, these areas represent two <i>Pittosporum undulatum</i> in a highly disturbed environment. The proposal has redesigned the structural plans to ensure that the mature <i>Syncarpia glomulifera</i> are retained along the eastern boundary and the two mature <i>Pittosporum undulatum</i> along the northern boundary are retained within the subject land. A large <i>Syncarpia glomulifera</i> is located along the road verge along Middle Harbour Road, adjacent to the south-east of the subject land, this tree will be retained. These patches of PCT 3262 represent biodiversity values and will be retained. As such, the project has avoided additional areas of impact to high biodiversity values through retaining three large <i>Syncarpia glomulifera</i>.
Locating the proposal (including ancillary facilities) in areas where the native vegetation or threatened species habitat is in the poorest condition	The proposal is in an urbanised landscape that is predominately landscaped gardens. The proposed development would impact a 0.02 ha patch of PCT 3262 that is surrounded by human-made infrastructure. The proposal is in areas where native vegetation is in poor condition with a low vegetation integrity score (28.5). The proposal will remove low quality PCT 3262 represented by two <i>Pittosporum undulatum</i> in a landscaped garden. Limited habitat is available for threatened fauna within the development footprint, with no key habitat identified during field surveys except the presence of hollow-bearing trees. Two hollow-bearing trees will be retained, and one tree hollow will be removed. The proposal has utilised areas which contain less tree hollows and smaller patch of PCT 3262 which is only represented by tall midstorey species.
Locating the proposal (including ancillary facilities) in areas that avoid habitat for species with a high biodiversity risk weighting or land mapped on the important habitat map, or native vegetation that is a TEC, a highly cleared PCT or an entity at risk of a serious and irreversible impact (SAII)	The proposal will result in the removal of 0.02 ha of exotic grass, 0.09 ha of exotic vegetation, 0.01 ha hardstand and 0.08 ha of planted native vegetation to avoid impacts to vegetation in high threat categories. The proposal will impact upon PCT 3262 which have a biodiversity risk weighting of 2.5 according to the BAM C. PCT 3262 is a part of the Sydney Turpentine Ironbark Forest TEC which is an SAII entity. The location of the proposed development avoids direct removal of PCT 3262, along the eastern boundary. Some disturbance in the form of landscaping will occur within this patch and has been included as a separate management zone for landscaping impacts to PCT 3262. However, the canopy and two hollow-bearing trees will be retained. Therefore, the proposal has demonstrated avoidance of impacts to a TEC/SAII and habitat for species.

Approach	How addressed and justification
Locating the proposal in areas outside of the buffer area around breeding habitat features such as nest trees or caves	The proposed development is in a patch of vegetation in which no key breeding habitat for SAI entities were identified during field surveys (i.e. caves, nest trees). Three hollow-bearing trees were identified in the subject land, of which one hollow in planted native vegetation will be removed and two hollow-bearing trees will be retained.

6.1.3. Designing a project to avoid and minimise impacts on native vegetation, threatened species, threatened ecological communities and their habitat

The development has been designed in a way which avoids and minimises impacts as outlined in Table 22.

Table 22: Designing a project to avoid and minimise impacts on vegetation and habitat.

Approach	How addressed and justification
Reducing the proposal's clearing footprint by minimising the number and type of facilities	The proposed development will affect a total area of 0.02 ha of PCT 3262. The original design included removal of the three mature <i>Syncarpia glomulifera</i> along the eastern boundary. Following the early ecological advice by ELA, these trees were retained as part of a patch of PCT 3262. An additional two <i>Pittosporum undulatum</i> along the northern boundary will also be retained as part of the amended plans. These tall shrubs also represent part of PCT 3262. The change to the final design footprint has allowed for retention of two small patches of PCT 3262 within the subject land. This has demonstrated a reduction in the amount of remnant vegetation to be impacted by the proposed development.
Locating ancillary facilities in areas that have no biodiversity values	The majority of the development footprint consists of 0.25 ha of exotic vegetation and 0.14 ha of cleared land which lack biodiversity values. The proposal also includes 0.08 ha of planted native vegetation with lower biodiversity values. Ancillary facilities for the purpose of construction (e.g. compound, machinery storage) will be located within the development footprint in previously cleared areas. No additional native vegetation will be removed as a result of ancillary facilities.
Locating ancillary facilities in areas where the native vegetation or threatened species habitat is in the poorest condition (i.e. areas with the lowest vegetation integrity scores)	The development footprint overlaps with 0.03 ha of PCT 3262. The vegetation integrity score for this vegetation zones was 28.5. Impacts to PCT 3262 is limited to the removal of scattered two <i>Pittosporum undulatum</i> . The proposal will retain the canopy species which represents PCT 3262 along the eastern boundary which also contains two tree hollows. These hollows and the canopy tree species serve as roosting or foraging habitat for fauna species.
Locating ancillary facilities in areas that avoid habitat for species and vegetation that has a high threat status (e.g. an endangered ecological community (EEC) or critically endangered ecological community (CEEC) or is an entity at risk of a serious and irreversible impact (SAII))	The proposed development originally required the removal of all the patches of PCT 3262 within the subject land. However, the plans have been amended to retain 0.03 ha of PCT 3262 within the subject land. The proposed development will impact 0.02 ha of PCT 3262, which conforms to the TEC <i>Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion</i>. This TEC is listed as a CEEC under the BC Act and is an SAI entity. This vegetation patch contains several mature canopy species in an informal garden along the eastern boundary of the subject land. The vegetation does not provide habitat for threatened flora or fauna species.

Approach	How addressed and justification
Actions and activities that provide for rehabilitation, ecological restoration and/or ongoing maintenance of retained areas of native vegetation, threatened species, threatened ecological communities and their habitat on the subject land.	There are no current plans to restore or rehabilitate the TEC present within the subject land.
making provision for the demarcation, ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on the development footprint.	There are no current plans to restore or rehabilitate the TEC present within the subject land.

6.1.4. Locating a project to avoid and minimise prescribed biodiversity impacts

Habitat connectivity was identified as a prescribed impact in Section 5.3. The development has been located to avoid and minimise prescribed biodiversity impacts as outlined in Table 23.

Table 23: Locating a project to avoid and minimise prescribed biodiversity impacts.

Approach	How addressed and justification
Locate surface works to avoid direct impacts on the habitat features	The proposal was originally located in an area which included PCT 3262 TEC which contained two hollow-bearing trees. The plans were revised, and engineering designs were considered to retain the two hollow-bearing trees within the subject land.
Locating the envelope of sub-surface works, both in the horizontal and vertical plane, to avoid and minimise operations beneath the habitat features, e.g. locating long wall panels away from geological features of significance or water dependent plant communities and their supporting aquifers	Two hollow bearing trees were previously identified for removal. However, due to the presence of the vegetation mapped as significant biodiversity values and the presence of hollow-bearing trees, these two hollows will be retained. One hollow will be removed for the proposal. No additional habitat features were identified within the development footprint during surveys. Indirect impacts will not affect any habitat features except the one hollow bearing tree within the subject land.

Approach	How addressed and justification
Locating the project to avoid severing or interfering with corridors connecting different areas of habitat and migratory flight paths to important habitat or preferred local movement pathways	The vegetation within the subject land is highly fragmented by urban landscape. The native and exotic vegetation within subject land is part of an urban landscape with provides a 'stepping-stone' or patchy habitat for mobile species traversing the. The presence of major arterial roads such as Pacific Highway is likely to sever any connectivity corridor for ground dwelling species. However, arboreal species will continue to traverse the landscape. The development may result in greater distance between stepping-stone habitats; however, this will not limit connectivity for highly mobile species. The vegetation within the proposed development has limited function for habitat connectivity. Canopy flora species may occasionally be used by highly mobile fauna, such as birds and bats, as temporary refuge. However, impacts to the vegetation within the development footprint is unlikely to impact migratory species or preferred local movement pathways. The development does not occur on land mapped as important habitat or contain preferred flight paths for migratory species. The subject land and adjacent lands do not currently provide important habitat or local movement pathways.
Locating the project to avoid direct impacts on water bodies	No water bodies are located within the development footprint.

6.1.5. Designing a project to avoid and minimise prescribed biodiversity impacts

Habitat connectivity was identified as a prescribed impact in Section 5.3. The development has been designed in a way which avoids and minimises prescribed biodiversity impacts as outlined in Table 24.

Table 24: Designing a project to avoid and minimise prescribed biodiversity impacts.

Approach	How addressed and justification
Design of project elements to minimise interactions with threatened entities	No threatened fauna or flora under the BC Act or EPBC Act were identified during field surveys or are predicted to occur within the development footprint (refer to Section 2.2 for more information). The proposed development will affect 0.11 ha of PCT 3262, which conforms to the BC Act CEEC listed TEC <i>Sydney Turpentine Ironbark Forest in the Sydney Basin Bioregion</i>, an SAIL entity. The original design for the proposal included the removal of three mature <i>Syncarpia glomulifera</i> along the eastern boundary of the subject land. The design was reviewed following the ecological validation of the vegetation and the presence of TEC/SAIL. Therefore, engineering designs were considered on how the three trees could be retained. The Arboricultural Impact Assessment (Lee Hancock 2025) has confirmed that the trees can be retained based on the final designs. Two <i>Pittosporum undulatum</i> which may represent part of PCT 3262 will be removed for the proposal.
Maintain environmental processes that are critical to the formation and persistence of habitat features not associated with native vegetation	The proposed development will not impact any environmental processes not associated with native vegetation. The surrounding area of the development footprint is comprised of man-made infrastructure which undergoes frequent high levels of disturbance.

Approach	How addressed and justification
Maintain hydrological processes that sustain threatened entities	The development footprint does not contain any water bodies or hydrological processes that may sustain threatened entities.
Controlling the quality of water released from the site, to avoid or minimise downstream impacts on threatened entities	The development footprint does not contain any water bodies or hydrological processes that may sustain threatened entities. Sediment controls should be implemented during the construction phase to prevent any possible impacts on waterbodies within the surrounding area.

7. Assessment of Impacts

7.1. Direct impacts

The direct impacts of the development on:

- native vegetation and threatened ecological communities are outlined in Table 25
- threatened ecological communities are outlined in Table 26
- prescribed biodiversity impacts is outlined in Section 6.4.

The proposed development has retained the canopy species which represents PCT 3262, however, there are landscaping works which will occur under the canopy which will result in the modification of the soils for future gardens and result in the removal of native ground cover species which are consistent with PCT 3262. The proposed development will involve impacts to 0.02 ha of PCT 3262. This includes 0.005 ha PCT 3262 which represents the removal of two *Pittosporum undulatum* in the south-eastern corner of the subject land. The remaining 0.015 ha will be impacted during landscaping works. These areas have been split when assessing the final vegetation integrity score below. Landscaping works assumes that groundcover species which represent part of PCT 3262 will be removed and the soil profile will be disturbed. The canopy species will be retained. The change in vegetation integrity scores and the allocation of two separate management zones for the impacts are described below.

No impacts to candidate threatened species are expected to result from the proposal. Ecosystem credit species listed in Table 25 as being included, may be affected through a loss of foraging habitat as all the vegetation within the subject land will be removed.

Table 25: Direct impacts to native vegetation

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Direct impact (ha)
3262	Sydney Turpentine Ironbark Forest	Northern Hinterland Wet Sclerophyll Forests	Wet Sclerophyll Forests (Grassy sub-formation)	0.02

Table 26: Direct impacts on threatened ecological communities

PCT ID	BC Act			EPBC Act		
	Listing status	Name	Direct impact (ha)	Listing status	Name	Direct impact (ha)
3262	CEEC	Sydney Turpentine-Ironbark Forest	0.02	NA	N/A	0

7.2. Change in vegetation integrity

The impacts have been split into two management zones to assess the change to vegetation integrity score resulting from different impacts. One category assumes full impact to all stratum of vegetation for works, related to the demolition works and construction. The second category assumes all midstorey and groundcover are removed, however the canopy will be retained.

A separate management zone has been established for the landscaping works. The management zone has retained one canopy species as part of the future integrity score, however, the composition and cover of native groundcover will be reduced to zero for the final integrity score. The management zone is provided in below. The change in the integrity score is provided in Appendix C. Justification of the management zone's structure, composition and function analysis is provided in Table 41 in Appendix C.

The change in vegetation integrity as a result of the development is outlined in Table 27.

Table 27: Change in vegetation integrity for the management zones

Management Zone	PCT ID	Condition	Area (ha)	Current vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity
Direct	3262	Low	0.01*	28.5	0	-26.4
Landscaping	3262	Low	0.01	28.5	4.2	

*THIS NUMBER IS ROUNDED-UP TO 0.01 IN THE BAMC. THEREFORE, 0.01 HA WAS ALLOCATED AS DIRECT AND 0.01 HA WAS ALLOCATED TO LANDSCAPING TO ACCOUNT FOR THE TOTAL OF 0.02 HA IMPACTS.

7.3. Indirect impacts

The indirect impacts of the development are outlined in Table 28. Indirect impact zones are shown on Figure 22.

Table 28: Indirect impacts

Indirect impact	Description (nature, extent and frequency)	Biodiversity value affected	Duration/Timing	Consequence
Inadvertent impacts on adjacent vegetation or habitat	Damage to vegetation outside the approved construction/development footprint during construction and operational phases.	Native vegetation, threatened ecological community	Short term impacts Construction and operational phase	Loss of vegetation, loss of potential foraging habitat for threatened species
Reduced viability of adjacent habitat due to edge effects	Removal of vegetation on the edge of the development footprint may cause edge effects. Reduced viability of specialist and/or threatened species. Most likely to occur during the construction phase.	Native vegetation, threatened ecological community and native fauna	Short term impacts Construction phase.	Increase in edge effects, weed species colonising areas of disturbed habitat on edge of the subject land, causing reduction in habitat for some flora and fauna species
Reduced viability of adjacent habitat due to noise, dust or light spill	Noise and dust created from machinery during daytime construction. Night work is not expected as part of the construction works therefore, no light spill associated with night works. However, it is expected that outdoor night lighting will be used as part of the operational phase.	Native fauna, native vegetation	Short term impacts (construction phase) Ongoing impacts (life of project)	Noise and dust deter native fauna from the subject land in the short term. Dust may inhibit plant growth in the short term. Night lighting may influence fauna behaviour in the long-term, e.g. attraction of invertebrates to lighting, therefore species such as microbats may be increasingly attracted to the area. Night lighting may also disrupt fauna movement and activity, including foraging.
Transport of weeds and pathogens from the site to adjacent vegetation	Weeds and pathogens introduced into subject land and adjacent retained	Native vegetation, threatened ecological community	Construction phase. May cause long-term impacts.	Potential for weed spread into adjacent habitat and affect quality of vegetation for native flora and

Indirect impact	Description (nature, extent and frequency)	Biodiversity affected	value	Duration/Timing	Consequence
	vegetation, resulting from transport of topsoil or machinery.				fauna. Potential for pathogens to be introduced into the subject land through use of machinery.
Increased risk of starvation or exposure and loss of shade or shelter	Permanent loss of shade/shelter due to loss of canopy. Permanent loss of suitable foraging habitat for grey-headed flying-fox	Native fauna		Short and long term impacts, during life of project	Permanent loss of shade or shelter for some fauna species such as reptiles, however, contiguous adjacent habitat will continue to provide shelter, so risk of starvation and exposure is low and short term.
Trampling of threatened flora species	Threatened flora species are unlikely to occur in the subject land due to the high exotic groundcover and low condition of native vegetation.	N/A		N/A	N/A
Inhibition of nitrogen fixation and increased soil salinity	The project is unlikely to inhibit nitrogen fixation or increase soil salinity outside the development footprint.	N/A		N/A	N/A
Fertiliser drift	Fertilisers may be used post-construction for landscaping purposes, however as this would be applied to specific areas and not applied aerially, this potential impact is unlikely to occur.	Native vegetation, threatened ecological community		Ongoing impacts Post-construction	Decreased plant diversity and increased exotic cover, as invasive species take advantage of additional nutrients.
Rubbish dumping	Within and adjacent to the subject land during construction and operational phases.	Native vegetation, threatened ecological community		Short-term and long-term impacts	Rubbish dumping may impact on quality and health of fauna or flora species and habitat retained adjacent to the development footprint. Dumped rubbish may have downwind effects where it is loose and makes its way into sensitive ecosystems or suffocates fauna.

Indirect impact	Description (nature, extent and frequency)	Biodiversity value affected	Duration/Timing	Consequence
Wood collection	Removal of wood from development footprint	Native vegetation, threatened ecological community	Short-term and long-term impacts Life of project, including construction phase	Permanent removal of microhabitats could impact native fauna populations in land surrounding the subject land.
Removal and disturbance of rocks including bush rock	Potential for disturbance during construction phase and for residents to collect bush rock during operational phase of future residential development.	Native fauna and native vegetation habitat	Construction phase Operational phase	Potential reduction in fauna habitat and decline in rock habitat available.
Increase in predators	Increased predation on native fauna, reduction in vegetation where predators graze on habitat. Resulting from urban development and opportunistic increase in predators.	Native fauna	Long term impacts	Decreased native fauna diversity and population sizes.
Increase in pest animal populations	Resulting from urban development and opportunistic increase in pest/invasive species that thrive in urban spaces. Increased native fauna competition in surrounding habitat. Likely limited effects considering limited existing habitat in surrounds and extensive urban development north of the subject land. Increased grazing or degradation of retained native vegetation. Trampling of vegetation.	Native vegetation, native fauna	Long term impacts	Decreased native fauna diversity and population sizes. Loss of habitat due to grazing, degradation or trampling.
Changed fire regimes	During construction, working machinery and/or chemicals have the potential to spark fire. Potential fire hazard associated with industrial activities post-construction.	Native vegetation, native fauna	Life of project including construction. Short-term and long-term impacts.	Disturbance to vegetation, loss or damage to vegetation adjacent to the subject land. Loss of habitat for fauna species. Death of fauna species.

Indirect impact	Description (nature, extent and frequency)	Biodiversity affected	value	Duration/Timing	Consequence
Disturbance to specialist breeding and foraging habitat, e.g. beach nesting for shorebirds	Disturbance/removal of foraging habitat for Eucalypt-dependent and highly mobile species (such as grey-headed flying-fox). Ongoing light and/or noise impacts to native fauna associated with the operational phase.	Native fauna		Short-term and long-term impacts. Life of project.	Reduced numbers of species in vicinity. Deter or alter breeding and foraging regimes for fauna in proximity to development.
Sedimentation and contaminated and/or nutrient rich run-off	Runoff containing high nutrients and/or contamination into adjacent vegetation during construction and operational phases.	Native vegetation, threatened ecological community		Short-term and long-term impacts. Life of project. Construction phase higher risk (due to machinery/refuelling)	Change in vegetation quality. Habitat loss downwind or downslope of subject land.
Vehicle strike	Potential for native fauna to be struck by working machinery and moving vehicles during construction and operational phases	Native fauna		Short-term (construction) Long-term (operational)	Loss of native fauna species. Potential reduction in fauna population numbers.

7.4. Prescribed biodiversity impacts

The subject land has the prescribed biodiversity impacts as outlined in Table 29.

Table 29: Direct impacts on prescribed biodiversity impacts

Prescribed biodiversity impact	Description (Nature, extent and frequency)	Consequences	Justification
Karst, caves, crevices, cliffs, rocks and other geological features of significance	There are no karsts, caves, crevices, cliffs, rocks or other geological features in the development footprint	N/A	N/A
Human made structures or non-native vegetation	There are two human made structures in the subject land. The field surveys did not record presence of microbat activity around the residential dwellings. There are some patches of non-native vegetation. The National Recovery Plan for the	Loss of supplementary / marginal foraging habitat for some highly mobile species	Impacts to human made structures and exotic vegetation will occur as part the planning proposal. The trees along Bent Street may be retained.

Prescribed biodiversity impact	Description (Nature, extent and frequency)	Consequences	Justification
	grey-headed flying-fox lists weeds as part of its diet including <i>Celtis</i> spp. The exotic vegetation is considered marginal supplementary foraging habitat and would most likely be used in the absence or in conjunction with native foraging resources.		
Habitat connectivity	The vegetation within the subject land has connectivity features with vegetation in the south-west. Pacific Highway in the east acts as a geographic barrier to dispersal of species. The planning proposal will result in the loss of vegetation within the subject land; however, this is unlikely to fragment the patchy habitat connectivity in the landscape.	The potential disruptions to habitat connectivity are limited, given that the vegetation to be removed is within urbanised landscape with scattered trees.	Connectivity of native vegetation will be retained as scattered street trees along the northern border and in the adjacent landscape.
Water bodies, water quality and hydrological processes	There are no Strahler order Stream mapped in the subject land. However, according to the Councils mapping the subject land is located adjacent to Gordon Creek and is mapped as flooding risk.	The field survey did not record the presence of a waterbody within the subject land, or the presence of a bed and bank as defined under the WM Act. There is potential that the mapping layer includes piped section of the creek. There is potential for surface water overflow across the subject land.	Flooding risk and changes to hydrological surface water flow following construction of proposed buildings.
Wind turbine strikes on protected animals	N/A	N/A	N/A
Vehicle strikes	N/A	N/A	N/A

7.5. Mitigating and managing direct and indirect impacts

Measures proposed to mitigate and manage impacts at the subject land before, during and after construction are outlined in Table 30.

Table 30: Measures proposed to mitigate and manage impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Timing works to avoid critical life cycle events such as breeding or nursing.	Low.	Negligible.	Where possible within construction timelines, avoid clearing works in later winter/spring during breeding/nesting season for animals (although unlikely vegetation within development footprint would be used as breeding habitat).	Impacts to fauna during breeding/nursing season avoided.	During clearing works.	Project Manager.
Instigating clearing protocols including pre-clearing surveys and staged clearing, the presence of a trained ecological or licensed wildlife handler during clearing events.	Low.	Negligible.	Pre-clearance survey of trees to be removed by suitably qualified ecologist. Supervision by a qualified ecologist/licensed wildlife handler during removal of vegetation in accordance with best practice measures. Any tree removal is to be undertaken by a suitably qualified and insured arborist.	Any fauna utilising habitat within the development footprint will be identified and managed to ensure clearing works minimise the likelihood of injuring resident fauna.	During clearing works.	Project Manager / Ecologist.
Installing artificial habitats for fauna in adjacent retained vegetation and habitat or human made structures to replace	N/A – no important habitat features are being removed as part of the proposal. As such, artificial habitats for	N/A	No critical habitat is proposed for removal. No artificial habitats are proposed.	N/A	N/A	N/A

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
the habitat resources lost and encourage animals to move from the impacted site, e.g. nest boxes.	replacement are not required.					
Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chain-saw, rather than heavy machinery, is preferable in situations where partial clearing is proposed.	N/A – Proposed development would involve the clearance work for the entire patch of vegetation, with the development footprint bordered by man-made infrastructure.	N/A	No adjacent vegetation present to be retained or at risk of inadvertent damage.	N/A	N/A	N/A
Noise barriers or daily/seasonal timing of construction and operational activities to reduce impacts of noise.	Moderate.	Low.	No noise barriers proposed as noise will be limited to the development footprint and would be temporary. Only conduct clearing and operation of machinery inside of typical work hours. Limited vegetation within the vicinity of the development footprint.	Minimise noise disturbance to fauna and neighbouring communities.	For the duration of construction works.	Project Manager.

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Light shields or daily/seasonal timing of construction and operational activities to reduce impacts of light spill.	Low.	Negligible.	Consideration of directional and fauna sensitive lighting in the design of the development (if applicable). Conduct works during daylight hours.	Avoid light disturbance to nocturnal animals.	During both construction and operational phases.	Project Manager.
Adaptive dust monitoring programs to control air quality	Moderate.	Low.	Implement industry practice controls of dust during construction phase.	Dust impacts on surrounding habitats is minimised.	For the duration of construction works.	Project Manager.
Programming construction activities to avoid impacts; for example, timing construction activities for when migratory species are absent from the site, or when particular species known to or likely to use the habitat on the site are not breeding or nesting	Low.	Negligible.	Important habitat for migratory species not identified within the development footprint. Where possible, avoid construction works during breeding/nesting season. Pre-clearance surveys to be undertaken by a suitably qualified ecologist.	Risks to migratory/breeding species reduced.	For the duration of construction works.	Project Manager.
Temporary fencing to protect significant environmental features such as riparian zones	N/A – Proposed development would involve the clearance work for the entire patch of vegetation, with the development footprint bordered by	N/A	No significant environmental features present adjacent to development footprint.	N/A	N/A	N/A

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
	man-made infrastructure.					
Hygiene protocols to prevent the spread of weeds or pathogens between infected areas and uninfected areas	Low.	Negligible.	Carry out site inductions to explain environmental significance of vegetation in surrounding area and protocols to follow while working onsite, including weed and seed requirements.	Accidental spread of weed or pathogens minimised.	Prior and for the duration of construction works.	Project Manager.
Staff training and site briefing to communicate environmental features to be protected and measures to be implemented	Low.	Negligible.	Carry out site inductions to explain environmental significance of vegetation in surrounding area and protocols to follow while working onsite.	Accidental incursions minimised.	Prior and for the duration of constructions works.	Project Manager.
Development control measures to regulate activity in vegetation and habitat adjacent to residential development including controls on pet ownership, rubbish disposal, wood collection, fire management and disturbance to nests and other niche habitats	Moderate.	Low.	Site to be well-maintained and adequate facilities to be provided during works (e.g. rubbish bins). Relevant DCP conditions and legislation apply to the site to limit vegetation clearing and habitat disturbance.	Reduce clearance and disturbance of nearby vegetation/habitat outside of construction footprint. Prevent litter or other waste from site occurring in surrounding vegetation.	During both construction and operational phases.	Project Manager, Council.

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Making provision for the ecological restoration, rehabilitation and/or ongoing maintenance of retained native vegetation habitat on or adjacent to the development footprint	Low.	Negligible.	Nearby patch of vegetation has previously been identified as to be retained to serve as part of offsetting of previously undertaken development at the site.	N/A	Ongoing.	Project Manager.

7.1. Mitigating prescribed impacts

Measures proposed to mitigate and manage prescribed biodiversity impacts of the development footprint before, during and after construction are outlined in Table 31.

Table 31: Mitigation measures for prescribed biodiversity impacts

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Scheduling timing of construction activities to avoid critical life cycle events.	Moderate.	Low.	Preclearance surveys should be undertaken prior to removal of vegetation to identify any trees containing nests or possum dreys. Where possible within construction timelines, avoid clearing works in later winter/spring during breeding/ nesting season for animals.	Ensuring animal welfare and protection.	Prior to vegetation removal.	Project Manager / Ecologist.
Instigating clearing protocols including pre-clearing surveys, daily surveys and staged clearing, and using a trained ecological or licensed wildlife handler during clearing, construction and maintenance activities for human made structures and non-native vegetation.	Moderate	Low	Should habitat features be identified within the development footprint during pre-clearance surveys, an ecologist should be present during the clearing of vegetation.	Ensuring animal welfare and protection.	During vegetation removal.	Project Manager / Ecologist.

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Retaining habitat features within the subject land or relocating them to adjacent retained remnant vegetation.	Low	Negligible	No HBTs or other habitat features were identified within the development footprint. Should they be identified during pre-clearance surveys, efforts should be made to relocate them into areas of retained vegetation.	Ensuring animal welfare and protection.	Prior to and during vegetation removal	Project Manager / Ecologist.
Installing artificial connectivity measures to re-establish connections between habitat and favoured transport corridors.	N/A	N/A	Limited habitat connectivity present between vegetation within the development footprint and the broader landscape. Installation of artificial connectivity not required.	N/A	N/A	N/A
Erecting temporary fencing to protect significant environmental features such as karst, caves, rock outcrops and water bodies.	N/A	N/A	No significant environmental features present within or directly adjacent to the development footprint.	N/A	N/A	N/A
Replacing habitat provided by human made structures and non-native vegetation with alternative habitat.	N/A	N/A	No human made structures or non-native vegetation are located within the development footprint.	N/A	N/A	N/A

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment.	Moderate.	Low.	Sediment barriers should be erected down slope of the site to prevent release of water from site into environment prior to commencement of construction work. Barriers should regularly be checked after rainfall and replaced if damaged or no longer functioning optimally.	Erosion and sedimentation controlled.	For the duration of construction works.	Project Manager.
Staff training and site briefing to communicate environmental features to be protected and measures implemented to protect them.	Moderate.	Low.	Train staff regarding the protection of vegetation within the indirect impact areas.	Staff aware of no-go zones and vegetation protection zones.	Prior to construction phase.	Project Manager / Contractor.
Ecological restoration, rehabilitation actions and/or maintenance of retained native vegetation on or adjacent to the subject land.	N/A	N/A	No native vegetation within the subject land is proposed to be retained.	N/A	N/A	N/A

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Development control measures that regulate the types of activities that can occur in native vegetation and habitat adjacent to residential development including prohibiting the collection of bush rocks.	Moderate	Low	Continued management of regeneration areas in the subject land.	Protection of biodiversity values in landscape surrounding the development.	Construction and operational phases.	Project Manager.

7.2. Adaptive management strategy

Adaptive management for uncertain biodiversity impacts (that are infrequent or difficult to measure) is not relevant or required for the proposed development.



Figure 21: Final project footprint including construction and operation



Figure 22: Indirect impact zones

8. Impact summary

Following implementation of the BAM and the BAMC, the following impacts have been determined.

8.1. Serious and Irreversible Impacts (SAIL)

The development has candidate Serious and Irreversible Impacts (SAIL) values as outlined Table 32 and shown on Figure 23. Detailed consideration of whether impacts on candidate species are serious and irreversible is included in Table 32 to Table 34 and on TECs is included below.

Table 32: Serious and Irreversible Impacts Summary

Species / Community	PCT Name	Principle	Direct impact individuals / area (ha)
Sydney Turpentine- Ironbark Forest (STIF)	PCT 3262	Principles 1, 3 & 4	0.02

Table 33: Determining which Principles apply to serious and irreversible candidate entities (Clause 6.7 of the BC Regulation) – Sydney Turpentine Ironbark Forest

Determining whether impacts are serious and irreversible	Assessment
Principle 1	
Does the proposal impact on a species, population or ecological community that is a candidate entity because it is in a rapid rate of decline?	Yes, the TBDC has identified that this TEC is a SAIL entity due to Principle 1 – the reduction of the population by >80% in the last 10 years or three generations.
If yes, is the impact in excess of any threshold identified and therefore likely to be serious and irreversible?	The TBDC does not list the SAIL threshold for this TEC. The proposed development will result in direct impacts to 0.02 ha to Sydney Turpentine-Ironbark Forest in a modified condition.
Principle 2	
Does the proposal impact on a species that is a candidate entity because it has been identified as having a very small population size?	Yes, the TBDC has identified that this TEC is a SAIL entity due to Principle 2 - <50% individuals or <250 individuals where threats are known
If yes, is the impact in excess of any threshold identified and therefore likely to be serious and irreversible?	The TBDC does not list the SAIL threshold for this TEC. The proposed development will result in direct impacts to 0.31 ha to Sydney Turpentine-Ironbark Forest in a degraded condition.
Principle 3	
Does the proposal impact on the habitat of a species or an area of an ecological community that is a candidate entity because it has a very limited geographic distribution?	No, the TBDC does not list this TEC under principle 3.
If yes, is the impact in excess of any threshold identified and therefore likely to be serious and irreversible?	N/A
Principle 4	

Determining whether impacts are serious and irreversible	Assessment
Does the proposal impact on a species, a component of species habitat or an ecological community that is a candidate entity because it is irreplaceable?	No, the TBDC does not list this TEC under principle 4.
b. If yes, is the impact in excess of any threshold identified and therefore likely to be serious and irreversible?	N/A

Table 34: Evaluation of an impact on a TEC – Sydney Turpentine-Ironbark Forest

Impact Assessment Provisions 10.2.2.1	Assessment
1. the action and measures taken to avoid the direct and indirect impact on the potential entity for an SAI	The project has demonstrated efforts to avoid direct impacts to PCT 3262 which corresponds to a SAI entity through retaining trees within the final development footprint. This has been discussed in detailed in Section 6.1 of this report. The subject land is situated within a section of land containing predominantly low biodiversity values. The majority of impacts will occur in areas of exotic grassland and exotic vegetation. 0.02 ha of Sydney Turpentine-Ironbark Forest (PCT 3262) that is being affected occurs in a modified form (i.e. lacks structural layers due to regular mowing regime). Mitigation measures to reduce impacts and indirect impacts are provided in Section 7.3 of this report.
2a. evidence of reduction in geographic distribution (Principle 1, clause 6.7(2)(a) BC Regulation) as the current total geographic extent of the TEC in NSW AND the estimated reduction in geographic extent of the TEC since 1970 (not including impacts to the proposal)	Sydney Turpentine-Ironbark Forest has undergone a substantial reduction in the geographic distribution. According to the Final Determination for this TEC, the pre-European extent is uncertain, however, authorities agree that the reduction exceeds 90%. Tozer (2003) estimates 30,339 ha pre-European settlement and 1,183 ha in 1997 (however, this estimate was limited to Cumberland Lowlands and the Hornsby and Woronora Plateaux). Today it is estimated that 2,940 ha of this TEC remains which is less than 10% of Tozer's (2003) estimated original distribution. There are no estimates of the TEC since 1970.
2b. extent of reduction in ecological function for the TEC using evidence that describes the degree of environmental degradation or disruption to biotic processes (Principle 2, clause 6.7(2)(b) BC Regulation) indicated by: - change in community structure - change in species composition - disruption of ecological processes - invasion and establishment of exotic species - degradation of habitat, and vi. fragmentation of habitat	The extent of reduction in ecological function for the TEC is also found in the Final Determination, as follows: • The community structure has changed such that almost all of the remaining Sydney Turpentine Ironbark Forest occurs in fragmented and small patches due to past logging and grazing of livestock and recent urban development. • The community structure resembles regrowth vegetation as the large remnant trees have been removed leaving high densities of smaller trees. • Species composition has changed such that remnants are largely degraded by weed invasion and altered by the increase in nutrients which favours naturalised plant species including weeds. • Ecological processes have been disrupted by the chemical and structural modification associated

Impact Assessment Provisions 10.2.2.1	Assessment
	with agricultural land uses and more recent expansion of urban land uses which the TEC has historically been subjected to. • The TEC has been identified as being severely fragmented.
2c. evidence of restricted geographic distribution (Principle 3, clause 6.7 (2)(i) BC Regulation), based on the TECs geographic range in NSW according to the: i. extent of occurrence ii. area of occupancy, and iii. number of threat-defined locations.	Sydney Turpentine-Ironbark Forest is highly restricted to the Sydney Basin Bioregion and occurs on Wianamatta Shale with 900-1100 mm annual rainfall. According to the Final Determination, it was estimated to occur within an extent of 4,479 km² and is found on Hornsby Plateau between Ryde-Arcadia – Castle Hill and Woronora Plateau at Menai and the Lower Blue Mountains. These locations are all subject to threats to the TEC, including weed invasion and clearing of native vegetation.
2d. evidence that the TEC is unlikely to respond to management (Principle 4, clause 6.7 (2) (d) BC Regulation).	The Final Determination states that invasion of exotic species are listed as Key Threatening Process (KTP), including invasion by exotic: • vines and scramblers • lantana • boneseed • perennial grasses • escaped garden plants. The subject land contains KTP and needs effective management such as the implementation of a Vegetation Management Plan to improve the condition of the vegetation. There is no recovery plan for this TEC and there are limited resources regarding the response to this TEC following active management.
3. Where the TBDC indicated that data is 'unknown' or 'data deficient' for a TEC for a criterion listed in subsection 9.1.1(2), the assessor must record this in the BDAR or BCAR.	N/A – all data is provided in the Final Determination as summarised above.
4a. the impact on the geographic extent of the TEC (Principles 1 and 3) by estimating the total area of the TEC to be impacted by the proposal: i. in hectares, and ii. as a percentage of the current geographic extent of the TEC in NSW.	The total area of the TEC to be affected by the proposal is 0.02 ha. Existing vegetation mapping estimates 2,940 ha of Sydney Turpentine Ironbark Forest (identified as PCT 3262 by previous STVM mapping) is present in NSW. Therefore, the area of TEC to be affected represents an estimate of 0.0006% of the current geographic extent of the TEC. It should be noted that the GIS analysis used existing vegetation mapping datasets and did not include ground truthing the extent of the mapped Sydney Turpentine-Ironbark Forest.
4b. the extent that the proposed impacts are likely to contribute to further environmental degradation or the disruption of biotic processes (Principle 2) of the TEC by: i. estimating the size of any remaining, but now isolated, areas of the TEC; including areas of the TEC within 500 m of the	The vegetation within the subject land is disconnected from other patches of PCT 3262, however, it is connected to urban vegetation which eventually links with different vegetation communities within Garigal National Park via intermittent connection.

Impact Assessment Provisions 10.2.2.1	Assessment
development footprint or equivalent area for other types of proposals ii. describing the impacts on connectivity and fragmentation of the remaining areas of TEC measured by: - distance between isolated areas of the TEC, presented as the average distance if the remnant is retained AND the average distance if the remnant is removed as proposed, and - estimated maximum dispersal distance for native flora species characteristic of the TEC, and - other information relevant to describing the impact on connectivity and fragmentation, such as the area to perimeter ratio for remaining areas of the TEC as a result of the development describing the condition of the TEC according to the vegetation integrity score for the relevant vegetation zone(s) (Section 4.3). The assessor must also include the relevant composition, structure and function condition scores for each vegetation zone.	Previous vegetation mapping SVTM has mapped 0.67 ha of Sydney Turpentine-Ironbark Forest within 500 m of the subject land. These areas are fragmented by the residential development and urban roads. Birds and bats may traverse this small fragmentation. From a review aerial photography, the remaining patches within 500 m of the subject land appear to be small clusters of vegetation scattered canopy species within the landscape. The proposed removal of a patch of PCT 3262 within the development and is likely to result in further fragmentation of vegetation. The closest patch of PCT 3262 mapped to the subject land (based on STVM) is located along the road verge of Middle Harbour Road directly south of the subject land. This patch is represented by one tree. Given the fragmentation throughout the locality, it is likely that seed is dispersed mostly by mobile fauna such as birds and bats. The estimated maximum dispersal distance for Grey-headed Flying-fox would be their average nightly foraging range of 20 km. The condition of the community throughout the subject land was low to moderate due to the absence of midstorey (i.e. due to regular mowing practices). The PCT 3262 CEEC sampled in the subject land considered low condition with a VI Score of 26.4.



Figure 23: Candidate for Serious and Irreversible Impacts - Sydney Turpentine Ironbark Forest.

8.2. Impacts requiring offsets

The impacts of the development requiring offset for native vegetation are outlined in Table 35 and shown on Figure 25. There are no species credit species requiring credits.

Table 35: Impacts to native vegetation that require offsets

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Direct impact (ha)
3262	Sydney Turpentine Ironbark-Forest	Northern Hinterland Wet Sclerophyll Forests	Wet Sclerophyll Forests (Grassy sub-formation)	0.02

8.3. Impacts not requiring offsets

The impacts of the development not requiring offset for native vegetation are outlined in Table 36



Figure 24: Impacts not requiring offset

Table 36: Impacts to native vegetation that do not require offsets

Vegetation Zone	PCT ID	PCT Name	Direct impact (ha)	Rationale
Planted Native Vegetation	N/A	N/A	0.08	The decision-making key for planted native vegetation outlined in Appendix D of BAM 2020 was reviewed and determined that the removal of planted native vegetation does not require offsets (see Section 2.2 of this BDAR)

8.4. Areas not requiring assessment

Areas not requiring assessment include existing buildings, exotic garden lawn and exotic vegetation. The subject land contains built/cleared areas (0.15 ha), exotic grassland (0.13 ha) and exotic vegetation (0.14 ha) as shown in Figure 27. These areas were not consistent with any listed PCT. An assessment of Prescribed Impacts has been undertaken, hence further assessment under the BAM was not required. Areas not requiring assessment as shown in Figure 27. .

8.5. Credit summary

The number of ecosystem credits required for the development are outlined in Table 37. A total of one (1) ecosystem credits are required for impacts to PCT 3262. No candidate species credit species or likely habitat was recorded within the subject land; hence no species credits are required to offset the development.

A biodiversity credit report is included in Appendix F.

Table 37: Ecosystem credits required

PCT ID	PCT Name	Vegetation Formation	Direct impact (ha)	Credits required
3262	Sydney Turpentine-Ironbark Forest	Wet Sclerophyll Forests (Grassy sub-formation)	0.02	1

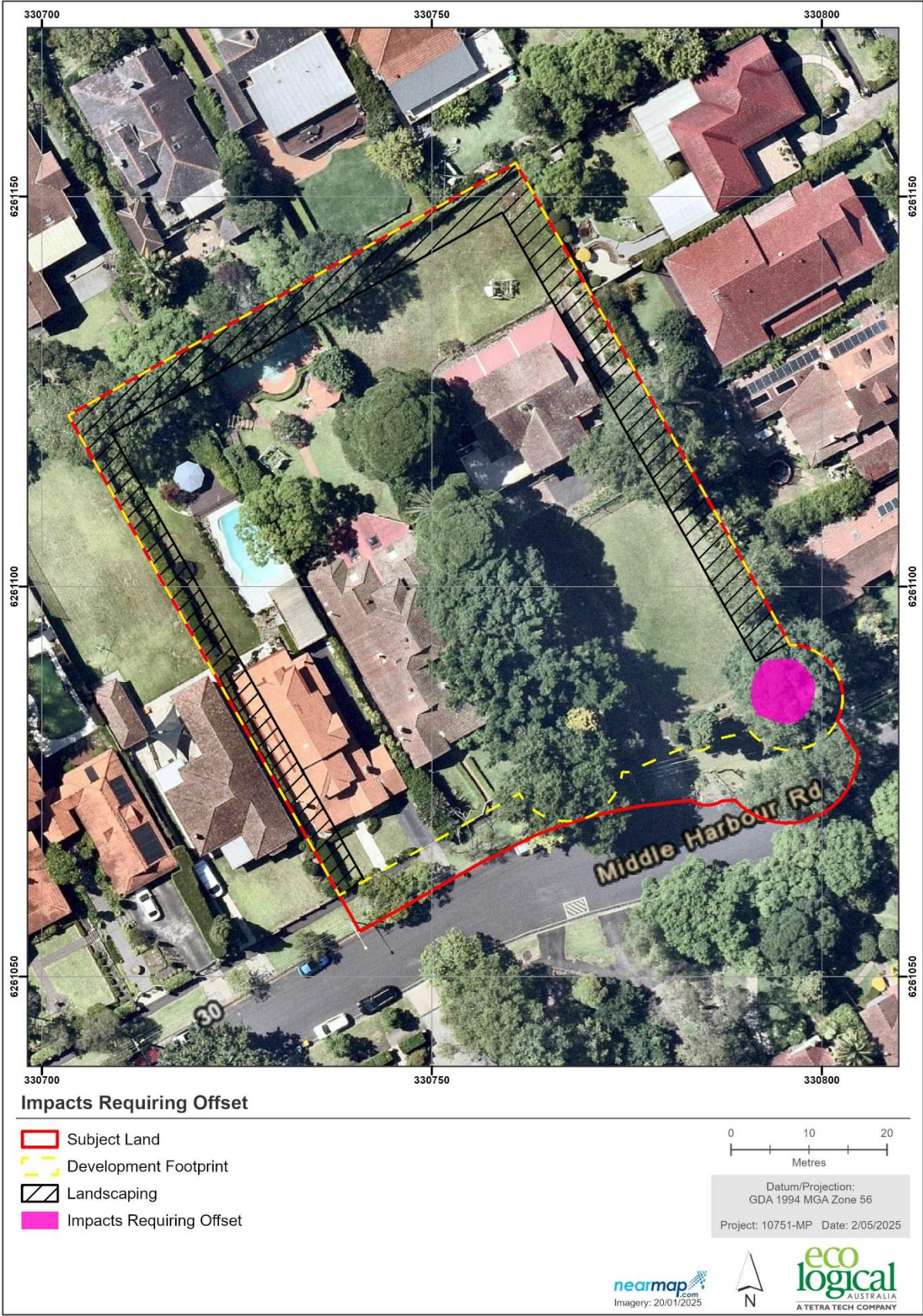


Figure 25: Impacts requiring offset



Figure 26: Impacts not requiring offset



Figure 27: Areas not requiring assessment

9. Consistency with legislation and policy

Additional matter relating to impacts on flora and fauna which are not covered by the BC Act must also be addressed for the proposed development. Potential Matters of National Environmental Significance (MNES) in accordance with the EPBC Act have been addressed in Section 9.1. The likelihood of occurrence table for the EPBC Act listed species is provided in Appendix D.

9.1. *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*

The EPBC Act establishes a process for assessing the environmental impact of activities and developments where Matters of National Environmental Significance (MNES) may be affected. Under the Act, any action which 'has, will have, or is likely to have a significant impact on a matter of MNES' is defined as a controlled action, and requires approval from the Commonwealth Department of Agriculture Water and Environment (DAWE), which is responsible for administering the EPBC Act.

The process includes undertaking an Assessment of Significance for listed threatened species and ecological communities that represent a matter of MNES that will be affected as a result of the proposed action. Significant impact guidelines that outline a number of criteria have been developed by the Commonwealth of Australia (2013), to provide assistance in conducting the Assessment of Significance and help decide whether or not a referral to the Commonwealth is required.

One MNES has been assessed as a part of this assessment:

- *Pteropus poliocephalus* (grey-headed flying-fox).

9.1.1. *Pteropus poliocephalus* (grey-headed flying-fox)

The grey-headed flying-fox is listed as a vulnerable species under the EPBC Act.

This species utilises a wide variety of habitats (including disturbed areas) for foraging and have been recorded travelling long distances on feeding forays. Fruits and flowering plants of a wide variety of species are the main food source. The species roosts in large 'camps' of up to 200,000 individuals. Camps are usually formed close to water and along gullies, however, the species has been known to form camps in urban areas.

The closes camp is the Gordon camp which is approximately 3 km to the north of the subject land. This is a nationally important camp.

The vegetation within the subject land provides marginal seasonal foraging habitat. There is potential that this species could use the site on occasion for foraging purposes. An EPBC act impact assessment has been undertaken for this species. The result of this assessment can be found in Table 38.

Table 38: EPBC Act impact assessment for *Pteropus poliocephalus* (Grey Headed Flying Fox)

Criterion	Assessment
Criterion a: lead to a long-term decrease in the size of an important population of a species	The Matters of National Environmental Significance Impact Guidelines 1.1 (Commonwealth of Australia, 2013) defines an important population as a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are: • key source populations either for breeding or dispersal • populations that are necessary for maintaining genetic diversity, and/or • populations that are near the limit of the species range The grey-headed flying-fox is considered one population due to the constant exchange of genetic material between individuals and its movement between camps throughout its entire geographic range (DCCEEW 2023c). Maternity or other roosting habitat is considered important habitat for this species. According to the National Flying-fox Monitoring Program, no grey-headed flying-fox camps currently occur or have ever been recorded within the subject land (DCCEEW 2023b). The nearest active grey-headed flying-fox camp occurs at Gordon approximately 3 km to the north of the subject land. The proposed action is likely to remove 0.02 ha of PCT 3262 and 0.08 ha of planted native vegetation and 0.09 ha of exotic vegetation, which comprises suitable foraging habitat for the grey-headed flying-fox. the grey-headed flying-fox is recorded as travelling long distances (up to 40 km) on feeding forays. Given the proximity of abundant habitat outside the subject land, the removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of grey-headed flying-fox.
Criterion b: reduce the area of occupancy of an important population	The proposed action is likely to reduce the extent of available foraging habitat for the grey-headed flying-fox. Approximately 0.02 ha of PCT 3262 and 0.08 ha of planted native vegetation and 0.09 ha of exotic vegetation which represents potential foraging habitat for this species will be removed from the action area. The vegetation within the subject land may provide supplementary foraging habitat for this species. The subject land does not contain breeding or sheltering habitat (i.e., bat camps). The grey-headed flying-fox is known to fly long distances (up to 40 km per night) and move between bat camps. As such this species is likely to utilise a large extent of habitat around the Gordon camp which may include some habitat within the subject land and a large amount of habitat in adjacent lands. Due to the extent of habitat within a 40 km radius of the known bat camps at Gordon, the removal of a small amount of native and non-native vegetation is unlikely to significantly reduce the extent of occupancy for this species.

Criterion	Assessment
Criterion c: fragment an existing important population into two or more populations	No important populations have been recorded within the subject land. The potential seasonal foraging habitat to be removed is considered marginal relative to nearby potential habitat within the locality. Whilst the potential foraging habitat may contribute as a 'stepping stone' for this highly mobile species to other more substantial foraging habitat sites, this function is unlikely to be significantly inhibited by the proposed works. Furthermore, this species has been recorded in urban environments and is likely to continue to forage adjacent to the site and across the broader locality.
Criterion d: adversely affect habitat critical to the survival of a species	The National Recovery Plan for the Grey-headed Flying-fox (DCCEEW 2021) identifies a number of myrtaceous plants, including Important winter and spring vegetation communities are those that contain <i>Eucalyptus paniculata</i> , <i>E. pilularis</i> , <i>Melaleuca quinquenervia</i> or <i>Syncarpia glomulifera</i> as important foraging resources for the grey-headed flying fox. the plan also identifies habitat which contain native species used for foraging and occur within 20 km of a nationally important camp and native or exotic species used for roosting at the site of a nationally important grey-headed flying-fox camp as critical habitat important to the survival of the species. No nationally important camps will be affected by the proposed action. The proposed action will remove 0.02 ha of PCT 3262 and 0.08 ha of planted native vegetation and 0.09 ha of exotic vegetation which represents suitable foraging habitat for the grey-headed flying-fox. however, given that this species is highly mobile (traveling up to 40 km to forage), and the abundant habitat resources within the locality it is considered unlikely that the works would adversely affect habitat critical to the survival of this species.
Criterion e: disrupt the breeding cycle of an important population	According to the National Flying-fox Monitoring Program, no camps currently occur or have ever been recorded within the subject land (DCCEEW 2023b). The nearest active grey-headed flying-fox camp occurs approximately 3 km to the north of the subject land, within Gordon. Thus, no important population of Grey-headed Flying-fox occurs within the subject land, and the proposed works is unlikely to disrupt the breeding cycle of an important population. The removal of the vegetation (potential foraging habitat) within the subject land will not result in fragmentation of the nearest camp from other foraging habitat within the locality.
Criterion f: Adversely affect habitat critical to the survival of a 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 potential foraging habitat to be removed is marginal and of low quality. Given the small amount of potential foraging habitat to be removed, that potential foraging habitat will persist adjacent to the subject land and across the locality, and that this species is highly mobile, it is unlikely that the habitat to be removed would cause the species to decline. Furthermore, according to the National Flying-fox Monitoring Program, no grey-headed flying-fox camps currently occur or have ever been recorded within the subject land. The nearest active grey-headed flying-fox camp occurs approximately 3 km to the north of the subject land at Gordon (DCCEEW 2023b). Therefore, no known grey-headed flying-fox roosting camps for this species will be impacted by the proposed works.
Criterion g: Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed works will not result in the establishment of an invasive species that is harmful to grey-headed flying-fox.
Criterion h: Introduce disease that may cause the species to decline	The proposed works will not result in the introduction of a disease that is harmful to the grey-headed flying-fox.
Criterion i: Interfere substantially with the recovery of the species	Considering the above factors, the proposed works will not interfere substantially with the recovery of the species.

Criterion	Assessment
Conclusion	In consideration of the above, the proposed works are considered unlikely to have a significant impact on the grey-headed flying-fox. Therefore, a referral to the Commonwealth is not recommended.

9.1.2. Biodiversity and Conservation SEPP – Water Catchments (BC Act)

The subject land has been mapped within the Sydney Harbour Catchment area under Chapter 6 Water Catchments of the Biodiversity and Conservation SEPP. Clause 6.7 Aquatic Ecology relates to considerations for aquatic ecology:

(1) In deciding whether to grant development consent to development on land in a regulated catchment, the consent authority must consider –

- i. whether the development will have a direct, indirect or cumulative adverse impact on terrestrial, aquatic or migratory animals or vegetation,*
- ii. whether the development involves the clearing of riparian vegetation and, if so, whether the development will require –*
 - A. a controlled activity approval under the Water Management Act 2000, or*
 - B. a permit under the Fisheries Management Act 1994,*
- iii. whether the development will minimise or avoid –*
 - A. the erosion of land abutting a natural waterbody, or*
 - B. the sedimentation of a natural waterbody,*
- iv. whether the development will have an adverse impact on wetlands that are not in the coastal wetlands and littoral rainforests area,*
- v. whether the development includes adequate safeguards and rehabilitation measures to protect aquatic ecology,*
- vi. if the subject land adjoins a natural water body – whether additional measures are required to ensure a neutral or beneficial effect on the water quality of the waterbody.*

The subject land is not located near a natural waterbody and no aquatic or migratory fauna, aquatic vegetation or riparian vegetation have been identified within the subject land. Therefore, there are unlikely to be any impacts to aquatic ecology as a result of the development.

9.1.3. Ku-ring-gai LEP 2015 – Terrestrial Biodiversity Map

Clause 6.3 of the LEP states that before granting development consent on land identified as having biodiversity value on the Ku-ring-gai Terrestrial Biodiversity Map, the consent authority must be satisfied that the development:

- (a) is consistent with the objectives of this clause, and*
- (b) is designed, and will be sited and managed, to avoid any potentially adverse environmental impact or, if a potentially adverse environmental impact cannot be avoided –*
 - (i) the development minimises disturbance and adverse impacts on remnant vegetation communities, habitat and threatened species and populations, and*

(ii) measures have been considered to maintain native vegetation and habitat in parcels of a size, condition and configuration that will facilitate biodiversity protection and native flora and fauna movement through biodiversity corridors, and

(iii) the development avoids clearing steep slopes and facilitates the stability of the land, and

(iv) measures have been considered to achieve no net loss of significant vegetation or habitat.

Consideration of the above factors should be given when developing measures to manage and mitigate impacts to vegetation during the design stage of the development. The proposal has been designed to limit impacts to avoid adverse environmental impacts, however, the proposal will result in impacts to one TEC. Measures have been considered including retaining vegetation within the subject land to retain connectivity for species movement. The proposal does not involve clearing on steep slopes. The proposal has applied measures to consider no net loss of significant vegetation. It is further noted that the proposed development is assessed as SSD and therefore, the consent authority is not the local council governing body.

9.1.4. Ku-ring-gai LEP 2015 – Riparian Lands and Watercourse Map

The south-eastern corner of the subject land is mapped on the Riparian Lands Watercourse Map (Figure 7). Clause 6.4 of the LEP states that before granting development consent on land identified as riparian land on the Ku-ring-gai Riparian Lands and Watercourse Map, the consent authority must be satisfied that the development:

(a) is consistent with the objectives of this clause, and

(b) integrates riparian, stormwater and flooding measures, and

(c) is designed, sited and will be managed to avoid any potential adverse environmental impacts, and

(d) if a potential adverse environmental impact cannot be avoided by adopting feasible alternatives—the development minimises or mitigates any such impact to a satisfactory extent.

There are no specified setbacks for land mapped as riparian Lands and Watercourses under Clause 6.4 of the LEP. Although there are Riparian Lands and Watercourses mapped within the subject land, there are no mapped streams (Stahler) within the subject land. Field survey validated that there are no watercourses present within the vicinity. The proposed development has included information in the Environmental Impact Statement which will address this, Clause.

9.1.5. Ku-ring-gai Development Control Plan 2022

The eastern portions of the subject land are mapped on the Greenweb Map (Ku-ring-gai Council 2010) as 'Landscape Remnant', 'Support for Core Biodiversity Lands' and 'Biodiversity corridors and buffer' under the Ku-ring-gai LEP 2015.

Section 18 of the Ku-ring-gai DCP 2022 guides the development activities or works in meeting the aims and objectives of the LEP (Clause 6.3 Biodiversity Protection). Controls for development on 'Landscape Remnant' land are as follows:

- 1. Avoid locating development on land identified—as - Landscape Remnant; on the Greenweb map. (Refer to maps in 18R.1 of this Part).*
- 2. Vegetation retention and rehabilitation on sites that include land identified as Landscape Remnant must be designed to improve connectivity with existing vegetation and habitat.*
- 3. Planting within land identified as Landscape Remnant on the Greenweb map is to consist of:*
 - i) not less than 50% locally native species;*
 - ii) species that reflect the relevant vegetation communities within the area; and*
 - iii) a mix of groundcover, shrubs and trees, and is to exclude monocultures.*
- 4. Where the site contains high species diversity or is dominated by weeds within any stratum, preparation of a Vegetation Management Plan by a suitably qualified person may be required. This plan must identify ongoing initiatives to preserve, protect and promote the environmental values of the land.*

Controls for development on 'Support for Core Biodiversity' land are as follows:

- 1. Avoid locating development on areas identified as Support for Core Biodiversity Lands on the Greenweb map. (Refer to maps in 18R.1 of this Part).*
- 2. Where work impacts on land within Support for Core Biodiversity Lands, stabilisation and or rehabilitation with indigenous vegetation will be required to mitigate impacts.*
- 3. Vegetation retention and rehabilitation must be designed to enhance and link existing vegetation and habitat within the site and within adjacent sites, Biodiversity Corridors and riparian lands.*
- 4. Where land within an allotment is identified as Support for Core Biodiversity Lands, works must be consistent with a management plan (e.g. vegetation management plan). Where no plan exists, Council may require preparation of a plan. This plan must be prepared by a suitably qualified person and must identify ongoing initiatives to preserve, protect and promote the environmental values of the land.*
- 5. Planting within land identified as Support for Core Biodiversity Lands is to consist of:*
 - i) 100% locally native tree and understorey species within Core Riparian Zones;*
 - ii) not less than 70% locally native tree species and 30% locally native understorey species for all other areas;*
 - iii) species that reflect the relevant vegetation communities within the area; and*
 - iv) a mix of groundcover, shrubs and trees and is to exclude monocultures.*

Controls for development on land identified as 'Biodiversity Corridors and Buffer Areas' are as follows:

1. *Within Biodiversity Corridors and Buffer Areas (refer to maps in 18R.1 of this Part):*

i) The siting and design of development must minimise edge effects on Greenweb.

ii) Plantings is to consist of:

- not less than 50% locally native species;*
- species that reflect the relevant vegetation communities within the area; and*
- a mix of groundcover, shrubs and trees.*

iii) Within Biodiversity Corridors (refer to maps in 18R.1 of this Part):

- landscaping and revegetation must be designed to consolidate fragmented and linear vegetation and habitat areas within the site and adjacent sites.*
- the width of Biodiversity Corridors should be enhanced and gaps and barriers reduced or minimised*

Consideration should be given the above controls during the design stage of development.

10. Conclusion

Eco Logical Australia (ELA) was engaged by MHR Lindfield Investments Pty Ltd c/o Deloitte to prepare a Streamlined (small area) Biodiversity Development Assessment Report (BDAR) for 24 – 26 Middle Harbour Road Lindfield (the subject land) within the Ku-ring-gai local government area. The proposal involves the removal of native vegetation and existing structures, and the construction of a nine storey residential flat building and ancillary land uses to support the functions intended for the subject land.

This report considers the development footprint; describes the biodiversity values within the development footprint; describes the indicative impacts; and outlines the measures to be taken to avoid, minimise and mitigate impacts to the vegetation and species habitat present within the subject land.

This report has followed the BAM 2020 established under Section 6.7 of the BC Act. The Small Area Streamlined Assessment Module, and the Planted Native Vegetation Streamlined Assessment Module were used in this report. The BDAR has calculated the number of biodiversity credits that would be required to be retired if the development proceeds as described and has provided the relevant Significance Assessments under the Commonwealth EPBC Act.

The subject land (24-28 Middle Harbour Road, Lindfield) contains three existing dwelling, two pools and an old tennis court. The site is extensively disturbed from previous land clearing, creation of landscaped gardens and weed invasion.

One Plant Community Type PCT 3262 Sydney Turpentine-Ironbark Forest was recorded within the subject land in low condition. PCT 3262 is associated with a threatened ecological community (TEC), listed as critically endangered under the BC Act and EPBC Act. This TEC is also a candidate SAIL entity. Due to the small patch size the vegetation did not satisfy listing under the EPBC Act. However, it is part of the CEEC under the BC Act. The proposed development will affect 0.02 ha of PCT 3262, this includes 0.005 ha of direct removal of vegetation and remaining 0.015 ha impact to PCT 3262 represents disturbance due to landscaping works. The proposal avoided demonstrated impacts to PCT 3262 through retaining the patches of PCT 3262 in the subject land. Sydney Turpentine-Ironbark Forest is also listed as a candidate for Serious and Irreversible Impact (SAIL) entity and assessed in this report.

Under the BAM small areas assessment module only those species credit species which are at risk of a SAIL require assessment. A list of candidate species credit species which may occur on the subject land and are at risk of an SAIL were determined. An assessment of these species' habitat constraints against the available habitat within the subject land was undertaken. It was determined that the subject land did not contain any habitat for those candidate species credit species and therefore no targeted surveys or further assessment was required. Subsequently, no species credit species polygons or credits were determined.

The remaining vegetation within the subject land was either gardens containing exotic and planted native species, or cleared land dominated by exotic grasses and weeds. Planted native vegetation was assessed as part of the Streamlined Assessment module – planted native vegetation.

Measures to avoid and minimise impacts have resulted in retention of 0.03 ha of PCT 3262 within the subject land.

Summary of ecosystem and species credits required to offset residual impacts of the proposed development

PCT ID	PCT Name	Condition	Vegetation Zone	Direct impact area (ha)	Credits
3262	<i>Sydney Turpentine Ironbark Forest</i>	low	1	0.02	1

Foraging habitat for the EPBC Act list species *Pteropus poliocephalus* (grey-headed flying-fox) will be affected. An assessment of significance for this species concluded that the proposed development is unlikely to cause a significant impact to grey-headed flying-fox. A referral to the Commonwealth is not recommended.

11. References

BAM Calculator. <https://www.lmbc.nsw.gov.au/bamcalc/home/AssessmentCal>

Chapman, G.A and Murphy, C.L. 1989. *Soil Landscapes of the Sydney 1:100 000 sheet*. Soil Conservation Service of NSW, Sydney.

Churchill, S. 2009. *Australian Bats*. Allen & Unwinth. 2nd Edition.

Commonwealth of Australia (CoA) 2013. Matters of National Environmental Significance Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2025a. Protected Matters Search Tool [online]. Available: <https://www.dcceew.gov.au/environment/epbc/protected-matters-search-tool>. (Accessed March 2025)

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2025b. Species Profile and Threats (SPRAT) Database. Available: <http://www.environment.gov.au/cgi-bin/sprat/public/sprat.pl>. (Accessed April 2025)

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2025c. National Flying-fox monitoring viewer. Available: <https://www.environment.gov.au/webgis-framework/apps/ffc-wide/ffc-wide.jsf> (Accessed April 2025)

Department of Climate Change, Energy, the Environment, and Water (NSW DCCEEW) 2025a. BioNet Vegetation Classification. Available: <https://www.environment.nsw.gov.au/NSWVCA20Prapp/default.aspx> (Accessed April 2025)

Department of Climate Change, Energy, the Environment, and Water (NSW DCCEEW) 2025b. NSW Threatened Species Profile Database. Available: [NSW BioNet | NSW Environment and Heritage](#) (Accessed April 2025)

Department of Climate Change, Energy, the Environment, and Water (NSW DCCEEW) 2025c. NSW State Vegetation Type Map. Available: <https://datasets.seed.nsw.gov.au/dataset/nsw-state-vegetation-type-map> (Accessed April 2025)

Department of Climate Change, Energy, the Environment, and Water (NSW DCCEEW) 2025d. eSpade Web App. Available: <https://www.environment.nsw.gov.au/eSpade2Webapp#> (Accessed April 2025)

Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) 2024e. Important Area Mapping. (Accessed April 2025)

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2023. Conservation advice for *Syzygium paniculatum* (Magenta Lilly Pilly). Commonwealth listing. Available: <https://environment.gov.au/biodiversity/threatened/species/pubs/20307-conservation-advice-31082023.pdf>

Department of Environment (DoE) 2014. *Approved Conservation Advice for Turpentine-Ironbark Forest in the Sydney Basin Bioregion*. Canberra: Department of the Environment. Available: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/38-conservation-advice.pdf>.

Department of Environment (DoE) 2013. Matters of National Environmental Significance: Significant impact guidelines 1.1 Environment Protection and Biodiversity Conservation Act 1999. Available: https://www.dcceew.gov.au/sites/default/files/documents/nes-guidelines_1.pdf

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2021. *National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*. Available: [National Recovery Plan for the Grey Headed Flying Fox \(dcceew.gov.au\)](#) (Accessed 28 April 2025)

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2005. *Turpentine-Ironbark Forest of the Sydney Basin Bioregion*. Australian Government. Available: <https://www.dcceew.gov.au/environment/biodiversity/threatened/conservation-advice/turpentine-ironbark-forest-sydney-basin-bioregion> (Accessed 28 April 2025).

Department of Planning and Environment (DPE) 2024. NSW Planning Portal Spatial Viewer. Available online: <https://www.planningportal.nsw.gov.au/spatialviewer/#/find-a-property/address>. (Accessed April 2025)

Department of Planning and Environment.(DPE) 20016 *'Descriptions for NSW (Mitchell) Landscapes Version 3.1'*. Available: [NSW \(Mitchell\) Landscapes - version 3.1 | Dataset | SEED](#) (Accessed 28 April 2025)

NSW Threatened Species Scientific Committee (NSW TSSC) 2024. Conservation Assessment *Syzygium paniculatum* Gaertn. (Myrtaceae). Available: [Conservation assessment Syzygium paniculatum](#)

Google 2024. *Street View*. (Accessed April 2025)

Lee Hancock Consulting Arborist 2025. Arboricultural Impact Assessment – 24, 26 & 28 Middle Harbour Road, Lindfield. Prepared for Ltd ATF MHR Lindfield Trust

Ku-ring-gai Council 2025. Greenweb mapping -<http://maps.kmc.nsw.gov.au/PRODWebmap/index.html> [online] (Accessed 28 April 2025).

Spatial Services 2025. Historical Imagery – Search and Discovery. NSW Government. Available: <https://portal.spatial.nsw.gov.au/portal/apps/webappviewer/index.html> (Accessed April 2025)

Appendix A Definitions

The following terminology has been used throughout this report for the purposes of describing the impacts of the proposal in the context of a biodiversity assessment in accordance with the NSW Biodiversity Assessment Method 2020. This terminology may or may not align with other technical documents associated with the proposed development.

Terminology	Definition
Biodiversity credit report	The report produced by the Credit Calculator that sets out the number and class of biodiversity credits required to offset the remaining adverse impacts on biodiversity values at a subject land, or on land to be biodiversity certified, or that sets out the number and class of biodiversity credits that are created at a biodiversity stewardship site.
BioNet Atlas	The BioNet Atlas (formerly known as the NSW Wildlife Atlas) is the OEH database of flora and fauna records. The Atlas contains records of plants, mammals, birds, reptiles, amphibians, some fungi, some invertebrates (such as insects and snails) and some fish
Broad condition state:	Areas of the same PCT that are in relatively homogenous condition. Broad condition is used for stratifying areas of the same PCT into a vegetation zone for the purpose of determining the vegetation integrity score.
Connectivity	The measure of the degree to which an area(s) of native vegetation is linked with other areas of vegetation.
Credit Calculator	The computer program that provides decision support to assessors and proponents by applying the BAM, and which calculates the number and class of biodiversity credits required to offset the impacts of a development or created at a biodiversity stewardship site.
Development	Has the same meaning as development at section 4 of the EP&A Act, or an activity in Part 5 of the EP&A Act. It also includes development as defined in section 115T of the EP&A Act.
Development footprint	The area of land that is directly impacted on by a proposed development, including access roads, and areas used to store construction materials.
Development site	An area of land that is subject to a proposed development that is under the EP&A Act.
Ecosystem credits	A measurement of the value of EECs, CEECs and threatened species habitat for species that can be reliably predicted to occur with a PCT. Ecosystem credits measure the loss in biodiversity values at a subject land and the gain in biodiversity values at a biodiversity stewardship site.
Extent of occurrence (EOO)	Measures the spatial spread of a taxon to determine the degree to which risks from threatening factors could impact an entire population, and is not intended to be an estimate of the amount of occupied or potential habitat.
High threat exotic plant cover	Plant cover composed of vascular plants not native to Australia that if not controlled will invade and outcompete native plant species.
Hollow bearing tree	A living or dead tree that has at least one hollow. A tree is considered to contain a hollow if: (a) the entrance can be seen; (b) the minimum entrance width is at least 5 cm; (c) the hollow appears to have depth (i.e. you cannot see solid wood beyond the entrance); (d) the hollow is at least 1 m above the ground. Trees must be examined from all angles.
Important wetland	A wetland that is listed in the Directory of Important Wetlands of Australia (DIWA) and SEPP 14 Coastal Wetlands
Linear shaped development	Development that is generally narrow in width and extends across the landscape for a distance greater than 3.5 kilometres in length
Local population	The population that occurs in the study area. In cases where multiple populations occur in the study area or a population occupies part of the study area, impacts on each subpopulation must be assessed separately.
Local wetland	Any wetland that is not identified as an important wetland (refer to definition of Important wetland).
NSW (Mitchell) landscape	Landscapes with relatively homogeneous geomorphology, soils and broad vegetation types, mapped at a scale of 1:250,000.

Terminology	Definition
Multiple fragmentation impact development	Developments such as wind farms and coal seam gas extraction that require multiple extraction points (wells) or turbines and a network of associated development including roads, tracks, gathering systems/flow lines, transmission lines
Operational Manual	The Operational Manual published from time to time by DPIE, which is a guide to assist assessors when using the BAM
Patch size	An area of intact native vegetation that: a) occurs on the subject land or biodiversity stewardship site, and b) includes native vegetation that has a gap of less than 100 m from the next area of native vegetation (or ≤30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the subject land or stewardship site.
Proponent	A person who intends to apply for consent to carry out development or for approval for an activity.
Reference sites	The relatively unmodified sites that are assessed to obtain local benchmark information when benchmarks in the Vegetation Benchmarks Database are too broad or otherwise incorrect for the PCT and/or local situation. Benchmarks can also be obtained from published sources.
Regeneration	The proportion of over-storey species characteristic of the PCT that are naturally regenerating and have a diameter at breast height <5 cm within a vegetation zone.
Residual impact	An impact on biodiversity values after all reasonable measures have been taken to avoid, minimise or mitigate the impacts of development. Under the BAM, an offset requirement is determined for the remaining impacts on biodiversity values.
Retirement of credits	The purchase and retirement of biodiversity credits from an already-established biobank site or a biodiversity stewardship site secured by a biodiversity stewardship agreement.
Riparian buffer	Riparian buffers applied to water bodies in accordance with the BAM
Sensitive biodiversity values land map	Development within an area identified on the map requires assessment using the BAM.
Site attributes	The matters assessed to determine vegetation integrity. They include: native plant species richness, native over-storey cover, native mid-storey cover, native ground cover (grasses), native ground cover (shrubs), native ground cover (other), exotic plant cover (as a percentage of total ground and mid-storey cover), number of trees with hollows, proportion of over-storey species occurring as regeneration, and total length of fallen logs.
Site-based development	a development other than a linear shaped development, or a multiple fragmentation impact development
Species credits	The 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. Species that require species credits are listed in the Threatened Biodiversity Data Collection.
Subject land	Is land to which the BAM is applied in Stage 1 to assess the biodiversity values of the land. It includes land that may be a subject land, clearing site, proposed for biodiversity certification or land that is proposed for a biodiversity stewardship agreement.
Threatened Biodiversity Data Collection	Part of the BioNet database, published by DPIE and accessible from the BioNet website.
Threatened species	Critically Endangered, Endangered or Vulnerable threatened species as defined by Schedule 1 of the BC Act, or any additional threatened species listed under Part 13 of the EPBC Act as Critically Endangered, Endangered or Vulnerable.

Terminology	Definition
Vegetation Benchmarks Database	A database of benchmarks for vegetation classes and some PCTs. The Vegetation Benchmarks Database is published by OEH and is part of the BioNet Vegetation Classification.
Vegetation zone	A relatively homogenous area of native vegetation on a subject land, land to be biodiversity certified or a biodiversity stewardship site that is the same PCT and broad condition state.
Wetland	An area of land that is wet by surface water or ground water, or both, for long enough periods that the plants and animals in it are adapted to, and depend on, moist conditions for at least part of their life cycle. Wetlands may exhibit wet and dry phases and may be wet permanently, cyclically or intermittently with fresh, brackish or saline water
Woody native vegetation	Native vegetation that contains an over-storey and/or mid-storey that predominantly consists of trees and/or shrubs

Appendix B Vegetation Floristic Plot Data

Table 39: Species matrix (species recorded by plot)

Species	Exotic	High Threat Weed	Growth Form Group	Plot 1 (PCT 3262)			Plot 2 (Exotic)		
				Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
<i>Acer</i> spp.	*						G	0.2	1
<i>Agapanthus</i> spp.	*						G	0.5	10
<i>Anredera cordifolia</i>	*	*		G	0.2	10			
<i>Ageratina adenophora</i>	*	*					M	0.1	5
<i>Aloe</i> spp.	*						G	0.5	3
<i>Aristea ecklonii</i>	*			G	0.3	10			
<i>Asparagus aethiopicus</i>	*	*		G	0.2	10			
<i>Asparagus plumosus</i>	*	*		G	0.2	10			
<i>Asphodelus fistulosus</i>	*						G	0.1	5
<i>Camellia</i> spp.	*						G	0.3	2
<i>Carex inversa</i>			Grass & grasslike (GG)	G	0.2	20	G	0.1	10
<i>Celtis sinensis</i>	*			M	0.2	1			
<i>Chlorophytum comosum</i>	*	*					G	0.1	3
<i>Cinnamomum camphora</i>	*	*		M	0.3	10			
<i>Clivia</i> spp.	*			G	5	20	G	0.1	3
<i>Cocus</i> spp.				U	0.2	1			
<i>Commelina</i> spp.			Forb (FG)				G	0.3	100

Species	Exotic	High Threat Weed	Growth Form Group	Plot 1 (PCT 3262)			Plot 2 (Exotic)		
				Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
<i>Conyza bonariensis</i>	*			G	0.1	2	G	0.1	1
<i>Cordyline</i> spp.	*		Other (OG)				G	0.3	4
<i>Cynodon dactylon</i>			Grass & grasslike (GG)	G	8	500	G	35	2000
<i>Cyperus brevifolius</i>	*						G	0.1	3
<i>Daucus</i> spp.			Forb (FG)				G	0.1	1
<i>Dichondra repens</i>							G	10	
<i>Digitaria ciliaris</i>	*		Forb (FG)	G	10	100	G	15	10
<i>Ehrharta erecta</i>	*	*		G	5	10	G	0.2	10
<i>Ficus watkinsiana</i>			Tree (TG)	G	0.2	100			
<i>Fragaria</i> spp.	*						G	0.1	10
<i>Gamochaeta calviceps</i>	*						G	0.1	2
<i>Geranium solanderi</i> var. <i>solanderi</i>			Forb (FG)	G	0.1	10	G	0.2	100
<i>Hedra helix</i>	*	*		G	0.3	10			
<i>Hedychium gardnerianum</i>	*			G	0.1	10			
<i>Homalanthus populifolius</i>			Shrub (SG)	M	0.2	1			
<i>Hydrangea</i> spp.	*						M	0.2	3
<i>Hypochaeris radicata</i>	*			G	0.1	3	G	0.1	10
<i>Ligustrum lucidum</i>	*	*		G	0.5	20	G	0.1	2
<i>Ligustrum sinense</i>	*	*		G	0.2	5	G	0.2	1
<i>Lycium</i> spp.			Shrub (SG)				G	0.1	10
<i>Mentha</i> spp.			Forb (FG)				G	0.1	1

Species	Exotic	High Threat Weed	Growth Form Group	Plot 1 (PCT 3262)			Plot 2 (Exotic)		
				Stratum & Layer	Cover	Abundance	Stratum & Layer	Cover	Abundance
<i>Microlaena stipoides</i> var. <i>stipoides</i>			Grass & grasslike (GG)	G	0.2	10	G	25	2000
<i>Nandina</i> spp.	*			M	0.2	10			
<i>Olea europaea</i> subsp. <i>cuspidata</i>	*			G	1.1	1			
<i>Oplismenus aemulus</i>			Grass & grasslike (GG)	G	15	500	G	5	100
<i>Oxalis perennans</i>				G	0.1	10	G	0.1	10
<i>Paspalum dilatatum</i>	*	*					G	0.2	1
<i>Petroselinum</i> spp.	*						G	0.1	1
<i>Phoenix</i> spp.	*			U	6	2			
<i>Pittosporum undulatum</i>			Shrub (SG)	U	10	6	U	5	2
<i>Richardia</i> spp.	*						G	0.1	2
<i>Senna pendula</i> var. <i>glabrata</i>	*	*		M	0.2	1			
<i>Stenotaphrum secundatum</i>	*	*		G	25	1000			
<i>Syncarpia glomulifera</i> subsp. <i>glomulifera</i>			Tree (TG)	U	35	7			
<i>Syzygium australe</i>			Shrub (SG)				M	10	1
<i>Syzygium</i> spp.			Shrub (SG)	U	6	1	M	0.3	4
<i>Tradescantia fluminensis</i>	*	*		G	10	100	G	5	100
<i>Washingtonia</i> spp.	*			U	2	1			
<i>Watsonia</i> spp.	*						G	0.2	10

G = Ground, M = Midstorey, U= Understorey TG = Tree, SG = Shrub, GG = Grass & Grasslike, FG = Forb, EG = Fern, OG = Other

Appendix C Vegetation Integrity Plot Data

Table 40: Vegetation integrity data (Composition, Structure and function)

Plot location data							
Plot no.	PCT	Vegetation Zone	Condition	Zone	Eastings	Northings	Bearing
1	3262	Degraded	Low	56	330773	6261128	144

Composition (number of species)							
Plot no.	Tree	Forb	Shrub	Grass	Other	Fern	High Threat Weeds
1	2	2	3	4	0	0	12

Structure (Total cover %)							
Plot no.	Tree	Forb	Shrub	Grass	Other	Fern	High Threat Weeds
1	35.2	0.2	16.2	23.4	0	0	42.4

Function												
Plot no.	Large Trees	Hollow trees	Litter Cover (%)	Length Fallen Logs (m)	Tree Stem 5-9 cm	Tree Stem 10-19 cm	Tree Stem 20-29 cm	Tree Stem 30-49 cm	Tree Stem 50-79 cm	Tree Stem 80+ cm	Tree Regen	High Threat Weed Cover (%)
1	1	1	56	0	0	0	0	0	1	0	1	42.4

For the landscaping management zone, the canopy number remained at two species and same coverage, and presence of >50cm DBH and hollows. The remaining values were reduced to zero.

Table 41: Justification of management zone composition, structure and function scores for future integrity score

Management zone	Vegetation Zones	Impact	Description	Future Composition Score Change	Future Structure Score Change	Future Function Score Change
Direct	1	Demolition and construction	This management zone assumes that ALL trees will be removed	Zero (0) for all growth form groups	Zero (0) for all growth form groups	Zero (0) for all function attributes

Management zone	Vegetation Zones	Impact	Description	Future Composition Score Change	Future Structure Score Change	Future Function Score Change
			during proposed works. Future integrity score is zero (0).			
Landscaping	1	Landscaping works	Removal of ground cover and change to soil profile due to landscaping works	Tree = 100% of current (2) Shrub = 0% of current Grass = 0% of current Forb = 0% of current Fern = 0% of current Other = 0% of current	Tree = 0% cover (currently 35.2%) Shrub = 0% (currently 0%) Grass and Grasslike = 0% Forb = 0% (current score 0% cover) Fern = 0% (current score <0% cover) Other = 0% (current score 0% cover)	Large Trees = no change Hollows = no change Litter = 0 Tree regeneration = 0 Tree stems = >50 cm High threat exotic = 0

Management Zone	PCT ID	Condition	Area (ha)	Current vegetation integrity score	Future vegetation integrity score	Change in vegetation integrity
Direct	3262	Low	0.01*	28.5	0	-26.4
Landscaping	3262	Low	0.01	28.5	4.2	

Appendix D BOS helpdesk correspondence

See next page.

Gabrielle Ryan commented:

Hi [Belinda Failes](#)

Thank you for your enquiry.

The BOS Subject Matter Officer has provided the following response to your enquiry:

Ultimately it is the consent authority that must be satisfied with the information provided to support the SSD application. Please engage early and seek approval to apply the small area streamlined assessment module.

If the original development was approved under former planning provisions, only the additional impacts on biodiversity values resulting from the development modification (not those associated with the development as approved) need to be assessed.

This project as described would meet above criteria as the original SSD application for this project was approved prior to the commencement of the *Biodiversity Conservation Act 2016*. This project may also meet the criteria for *Streamlined Assessment Module – Small Areas* (the module) in Appendix C of the Biodiversity Assessment Method (BAM).

There is currently no option for applying this module to an SSD application in the *Biodiversity Offsets and Agreement Management System* (BOAMS). The recommended systems approach is that you use the regular BAM-C option and exclude irrelevant data points (such as species credit species that are not at risk of Serious and Irreversible Impacts). This option will end up with the same calculation as if you had applied the small areas module.

The Biodiversity Development Assessment Report (BDAR) will have to:

- provide evidence of the survey results/photos and assessment undertaken to support eligibility of the streamlined assessment module for this modification,
- provide justification for the exclusion of species credits species.
- Include this communication as evidence for support of the approach to BAM-Calculator
- outline available information about the original impact of the development and consider any measures already taken to avoid, minimise or offset the impact on biodiversity values in connection with the approval before the proposed modification
- identify those offset requirements that have been discharged with documentary evidence
- assess any new impacts on biodiversity values resulting from the modification of the development in accordance with the Biodiversity Assessment Method streamlined assessment module
- identify offset requirements and any new measures to avoid and minimise impacts in accordance with the Biodiversity Assessment Method – streamlined assessment module.

Further information on the assessment requirements for a modification application can be found [here](#).

Appendix E Likelihood of Occurrence Assessment

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the database search. Five terms for the likelihood of occurrence of species are used in this report. This assessment was based on database or other records, presence or absence of suitable habitat, features of the proposal site, results of the site inspection and professional judgement. Some Migratory or Marine species identified from the Commonwealth database search have been excluded from the assessment, due to lack of habitat. The terms for likelihood of occurrence are defined below:

- 'known' = the species was or has been observed on the site
- 'likely' = a medium to high probability that a species uses the site
- 'potential' = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- 'unlikely' = a very low to low probability that a species uses the site
- 'no' = habitat within the subject land and in the vicinity is unsuitable for the species.

A significance assessment was conducted for threatened species or ecological communities that were recorded within the subject land or had a higher likelihood of occurring and were not recorded during the site visit. It is noted that some threatened fauna species that are highly mobile, wide ranging and vagrant may use portions of the subject land intermittently for foraging. For these fauna species, the habitat present and likely to be affected is not considered to be important to the threatened species, particularly in relation to the amount of similar habitat remaining in the surrounding landscape. As such, a test of significance in reference to Commonwealth legislation was not considered necessary.

Information provided in the habitat associations' column has primarily been extracted (and modified) from the Commonwealth Species Profile and Threats Database.

Table 42: Likelihood of occurrence of threatened ecological communities listed under the EPBC Act

Scientific Name	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
ECOLOGICAL COMMUNITIES				
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	E	Sydney Basin Bioregion, mostly in the Cumberland IBRA sub-region, with small occurrences in the Sydney Cataract, Wollemi and Burragorang sub-regions. It occurs primarily in the Castlereagh area in the north-west of the Cumberland Plain with other known occurrences near Holsworthy, Kemps Creek and Longneck Lagoon. Occurs primarily on Tertiary sands and gravels of the Hawkesbury-Nepean river system. At Agnes Banks it primarily occurs on aeolian (wind-blown) sands overlying Tertiary alluvium. Found on flat or gently undulating terrain in rain shadow areas typically receiving 700–900mm annual rainfall. The ecological community occurs primarily at low elevations up to 80m above sea level (ASL), including old ridges, dunes and terraces.	No - not identified within the subject land.	No
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	E	From Curtis Island (Gureng Gureng country) in Queensland to near Bermagui (Yuin Nation), in southern New South Wales.	No - not identified within the subject land.	No
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	CE	Occurs in western Sydney, with the most extensive stands occurring in the Castlereagh and Holsworthy areas. Smaller remnants occur in the Kemps Creek area and in the eastern section of the Cumberland Plain. Mainly occurs on clay soils derived from the deposits of ancient river systems (alluvium), or on shale soils of the Wianamatta Shales.	No - not identified within the subject land.	No
River-Flat Eucalypt Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions	CE	Given its habitat, the community has an important role in maintaining river ecosystems and riverbank stability. Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains. Generally, occurs below 50 m elevation, but may occur on localised river flats up to 250 m above sea level. The structure of the community may vary from tall open forests to woodlands, although partial clearing may have reduced the canopy to scattered trees. Typically form mosaics with other floodplain forest communities and treeless wetlands and often fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.	No - not identified within the subject land.	No

Scientific Name	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	CE	Occurs at the edges of the Cumberland Plain in western Sydney, most now occurs in the Hawkesbury, Baulkham Hills, Liverpool, Parramatta, Penrith, Campbelltown and Wollondilly local government areas. Intergrade between clay soils from the shale rock and earthy and sandy soils from sandstone, or where shale caps overlay sandstone.	No - not identified within the subject land.	No
Turpentine-Ironbark Forest in the Sydney Basin Bioregion	CE	Cumberland Lowlands, with remnants also occurring to the west on shale-capped ridges in the Blue Mountains. Restricted to areas with clay soil derived from Wianamatta Shale in an area that generally has an annual rainfall of more than 950 mm.	Yes – PCT 3262 which is associated to this TEC, was mapped within the subject land.	No, the vegetation patch did not satisfy the criteria for listing under the EBPC Act
Western Sydney Dry Rainforest and Moist Woodland on Shale	CE	Cumberland Plain Sub-region of the Sydney Basin Bioregion. It generally occurs in rugged terrain and other patches may occur on undulating terrain, with dry rainforest patches typically occupying steep lower slopes and gullies, and moist woodland patches typically occupying upper sections of the slope. Occurs almost exclusively on clay soils derived from Wianamatta Group shales.	No - not identified within the subject land.	No
Coastal Swamps in the Sydney Basin Bioregion	E	Occur primarily on impermeable sandstone plateaux with shallow groundwater aquifers in the headwaters and impeded drainage lines of streams, and on sandstone benches with abundant seepage moisture. Generally associated with acidic soils.	No - not identified within the subject land.	No
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	E	Typically occurs in low-lying coastal alluvial areas with minimal relief, such as swamps, floodplain pockets, depressions, alluvial flats, back-barrier flats, fans, terraces, and behind fore-dunes.	No - not identified within the subject land.	No
Blue Gum Forest of the Sydney Basin Bioregion	CE	Occurs mainly in areas with deep clay soil derived from shale, generally at altitudes greater than 100 m above sea level, and that have an annual rainfall of more than 1050 mm. Also known to occur in isolated valleys on soils associated with localised volcanic intrusions.	No - not identified within the subject land.	No

Scientific Name	EPBC Act Status	Distribution and Habitat	Likelihood of Occurrence	Impact Assessment Required
Subtropical and Temperate Coastal Saltmarsh	V	Typically restricted to the upper intertidal environment; mainly associated with the soft substrate shores of estuaries and embayments (sandy and/or muddy) and on some open, low wave energy coasts).	No - not identified within the subject land.	No
Posidonia australis seagrass meadows of the Manning-Hawkesbury ecoregion	E	The ecological community occurs mostly within the sheltered environments of permanently open estuaries along the warm temperate New South Wales coastline, from Wallis Lake (32°S) to Port Hacking (34°S). Posidonia australis dominated seagrass meadows occurring around islands within the geographic range are also included within the ecological community. The ecological community typically occurs in subtidal waters at depths ranging less than 1m to 10 m on sand and silty mud substrate. In these waters, salinity is close to marine levels, dropping only for short periods following rainfall. The ecological community is absent from brackish water (i.e. hyposaline) conditions such as intermittently open lagoons.	No - not identified within the subject land.	No
Eastern Suburbs Banksia Scrub of the Sydney Region	E	Eastern and south eastern suburbs of Sydney. Nutrient-poor sand deposits.	No - not identified within the subject land.	No

V = Vulnerable, E= Endangered, CE = Critically Endangered

Table 43: Likelihood of occurrence of threatened fauna listed under the EPBC Act.

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Actitis hypoleucos</i>	common sandpiper	M	Summer migrant. In NSW, widespread along coastline and also occurs in many areas inland.	Coastal wetlands and some inland wetlands, especially muddy margins or rocky shores. Also, estuaries and deltas, lakes, pools, billabongs, reservoirs, dams and claypans, mangroves.	-	No - records of species within 5 km and no suitable habitat within subject land	No	No
<i>Anous stolidus</i>	common noddy	M	Casual visitor to coastal NSW.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Anthochaera phrygia</i>	regent honeyeater	M	Inland slopes of south-east Australia, and less frequently in coastal areas. In NSW, most records are from the North-West Plains, North-West and South-West Slopes, Northern Tablelands, Central Tablelands and Southern Tablelands regions; also recorded in the Central Coast and Hunter Valley regions.	Eucalypt woodland and open forest, wooded farmland and urban areas with mature eucalypts, and riparian forests of <i>Casuarina cunninghamiana</i> (River Oak).	1	No – only one record of species within 5 km and no Important Habitat mapping within subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Apus pacificus</i>	fork-tailed swift	M	Recorded in all regions of NSW.	Riparian woodland., swamps, low scrub, heathland, saltmarsh, grassland, Spinifex sandplains, open farmland and inland and coastal sand-dunes.	2	No – only two records and no suitable habitat within the subject land.	No	No
<i>Ardena grisea</i>	sooty shearwater	M	Breeds on islands off NSW from Montague Island to Broughton Island. Present off eastern NSW mainly October-February.	Islands, offshore.	-	No – no records and the subject land does not occur on an island or offshore. No suitable habitat present.	No	No
<i>Arenaria interpres</i>	ruddy turnstone	M	Summer migrant to most coastal regions, with occasional records inland, including in NSW.	Tidal reefs and pools; pebbly, shelly and sandy shores; mudflats; inland shallow waters; sewage ponds, saltfields; ploughed ground.	-	No – no records and no suitable habitat is present within the subject land.	No	No
<i>Botaurus poiciloptilus</i>	Australasian bittern	E	Found over most of NSW except for the far north-west.	Permanent freshwater wetlands with tall, dense vegetation, particularly Typha spp. (bullrushes) and Eleocharis spp. (spikerushes).	2	No – only two records within a 5 km radius and no suitable freshwater wetlands occur within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Calidris acuminata</i>	sharp-tailed sandpiper	M	Summer migrant. Widespread in most regions of NSW, especially in coastal areas, but sparse in the south-central Western Plain and east Lower Western Regions.	Shallow fresh or brackish wetlands, with inundated or emergent sedges, grass, saltmarsh or other low vegetation.	-	No – no records within a 5 km radius and no suitable wetlands occur within the subject land	No	No
<i>Calidris canutus</i>	red knot	E, M	Summer migrant to Australia. In NSW, widespread in suitable habitat along the coast. Occasionally recorded inland in all regions.	Intertidal mudflats, sandflats sheltered sandy beaches, estuaries, bays, inlets, lagoons, harbours, sandy ocean beaches, rock platforms, coral reefs, terrestrial saline wetlands near the coast, sewage ponds and saltworks. Rarely inland lakes or swamps.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Calidris ferruginea</i>	curlew sandpiper	CE, M	Occurs along the entire coast of NSW, and sometimes in freshwater wetlands in the Murray-Darling Basin.	Littoral and estuarine habitats, including intertidal mudflats, non-tidal swamps, lakes and lagoons on the coast and sometimes inland.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Calidris melanotos</i>	pectoral sandpiper	M	Summer migrant to Australia. Widespread but scattered in NSW. East of the Great Divide, recorded from Casino and Ballina, south to Ulladulla. West of the Great Divide, widespread in the Riverina and Lower Western regions.	Shallow fresh to saline wetlands, including coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Calidris pugnax</i>	ruff	M	Has been recorded at Kurnell, Tomki, Casino, Ballina, Kooragang Island, Broadwater Lagoon and Little Cattai Creek. The species has also found around the Riverina, including Windouran Swamp, Wanganella, Fivebough Swamp and the Tullakool Saltworks. Most NSW records come from the Sydney region.	Fresh, brackish of saline wetlands with exposed mudflats at the edges. It is found in terrestrial wetlands including lakes, swamps, pools, lagoons, tidal rivers, swampy fields and flood lands.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Calidris ruficollis</i>	red-necked stint	M	Summer migrant to Australia, widespread coastal and inland NSW.	Tidal mudflats, saltmarshes, sandy and shelly beaches, saline and freshwater wetlands, salt fields, sewage ponds.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Calidris tenuirostris</i>	great knot	CE, M	In NSW, recorded at scattered sites along the coast down to about Narooma. It has also been observed inland at Tullakool, Armidale, Gilgandra and Griffith.	Intertidal mudflats or sandflats, including inlets, bays, harbours, estuaries and lagoons.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Calonectris leucomelas</i>	streaked shearwater	M	Regular summer visitor south to Wollongong, less common further south.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Callocephalon fimbriatum</i>	gang-gang cockatoo	E	In NSW, distributed from the south-east coast to the Hunter region, and inland to the Central Tablelands and south-west slopes. Isolated records known from as far north as Coffs Harbour and as far west as Mudgee.	Tall mountain forests and woodlands in summer; in winter, may occur at lower altitudes in open eucalypt forests and woodlands, and urban areas.	2	No – only two records within 5 km and no suitable eucalypt forests or woodlands present within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Calyptrorhynchus lathamii</i>	glossy black cockatoo	V	Uncommon although widespread throughout suitable forest and woodland habitats, from the central Queensland coast to East Gippsland in Victoria, and inland to the southern tablelands and central western plains of NSW	Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.	14	No – although there are a few records of this species within 5 km, there is no suitable habitat within the subject land. No <i>Allocasuarina</i> and <i>Casuarina</i> species present	No	No
<i>Chalinolobus dwyeri</i>	large-eared pied bat	V	Recorded from Rockhampton in Qld south to Ulladulla in NSW. Largest concentrations of populations occur in the sandstone escarpments of the Sydney basin and the NSW north-west slopes.	Wet and dry sclerophyll forests, Cyprus Pine dominated forest, woodland, sub-alpine woodland, edges of rainforests and sandstone outcrop country.	1	Unlikely – habitat is marginal (PCT 3262 and planted vegetation) and only one record within 5 km	No	No
<i>Charadrius bicinctus</i>	double-banded plover	M	Non breeding visitor that can be found in both coastal and inland areas.	Littoral, estuarine and fresh or saline terrestrial wetlands and also saltmarsh, grasslands and pasture. It occurs on muddy, sandy, shingled or sometimes rocky beaches, bays and inlets, harbours and margins of fresh or saline terrestrial wetlands such as lakes, lagoons and swamps, shallow estuaries and rivers.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Charadrius leschenaultii</i>	greater sand-plover	V, M	In NSW, recorded between the northern rivers and the Illawarra, with most records coming from the Clarence and Richmond estuaries.	Almost entirely restricted to coastal areas in NSW, mainly on sheltered sandy, shelly or muddy beaches or estuaries with large intertidal mudflats or sandbanks.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Charadrius mongolus</i>	lesser sand-plover	E, M	Summer migrant to Australia. Found around the entire coast but in NSW most common on north coast. Rarely recorded south of the Shoalhaven estuary, and there are few inland records.	Almost entirely coastal in NSW, using sheltered bays, harbours and estuaries with large intertidal sandflats or mudflats, sandy beaches, coral reefs and rock platforms.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Climacteris picumnus victoriae</i>	brown treecreeper (eastern subspecies)	V	From eastern through central NSW, west to Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell.	Eucalypt woodlands and dry open forest.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Cuculus optatus</i>	oriental cuckoo	M	Migrant to Australia from the Northern Hemisphere. Northern and eastern Australia, records mainly coastal in NSW south to Bega area.	Non breeding habitat: monsoonal rainforest, vine thickets, wet sclerophyll forest or open Casuarina, Acacia or Eucalyptus woodland.	4	Unlikely – habitat is marginal (PCT 3262 and planted vegetation) and only a few records within 5 km	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Dasyornis brachypterus</i>	eastern bristlebird	E	There are three main populations: Northern - southern Qld/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.	Central and southern populations inhabit heath and open woodland with a heathy understorey. In northern NSW, habitat comprises open forest with dense tussocky grass understorey.	-	No – subject land does not contain suitable heath habitat with a dense understorey and there are no nearby populations	No	No
<i>Dasyurus maculatus</i>	spotted-tailed quoll	E	Found on the east coast of NSW, Tasmania, eastern Victoria and north-eastern Qld.	Rainforest, open forest, woodland, coastal heath and inland riparian forest, from the sub-alpine zone to the coastline.	4	No – subject land does not contain suitable habitat for this species and the urban location has generally low connectivity with preferred habitat	No	No
<i>Diomedea antipodensis</i>	antipodean albatross	V	Regularly occurs off the NSW south coast from Green Cape to Newcastle during winter.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Diomedea antipodensis gibsoni</i>	antipodean albatross	V	Regularly occurs off the NSW south coast from Green Cape to Newcastle during winter.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Diomedea epomophora</i>	southern royal albatross	V, M	Has been recorded along the length of the NSW coast.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Diomedea exulans</i>	wandering albatross	V, M	Has been recorded along the length of the NSW coast.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Diomedea sanfordi</i>	northern royal albatross	E	A rare visitor to NSW waters, predominantly visiting southern waters in the winter and early spring period.	Marine.	-	No – no records of species within 5 km and no suitable marine habitat within subject land	No	No
<i>Erythrotriorchis radiatus</i>	red goshawk	V	Distributed sparsely through northern and eastern Australia, from the western Kimberley Division of northern Western Australia to north-eastern Queensland and south to far north-eastern NSW, and with scattered records in central Australia	Open woodland and forest, preferring a mosaic of vegetation types with a large permanent water body.	-	No - species is considered extinct in NSW	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Falco hypoleucos</i>	grey falcon	V	Arid and semi-arid zones. In NSW, found chiefly throughout the Murray-Darling Basin, with the occasional vagrant east of the Great Dividing Range.	Shrubland, grassland and wooded watercourses, occasionally in open woodlands near the coast, and near wetlands.	-	No - species is rarely recorded near the coast. Preferred habitat is arid and semi-arid zones.	No	No
<i>Fregata ariel</i>	lesser frigatebird	M	In NSW, irregularly observed after tropical cyclones south to central coast, sometimes observed south to Merimbula.	Marine.	-	No – subject land does not contain marine habitat that this species is dependent on	No	No
<i>Fregata minor</i>	great frigatebird	M	Occasionally observed coastal north-east NSW after cyclones, straggler to central coastal NSW.	Marine.	-	No – subject land does not contain marine habitat that this species is dependent on	No	No
<i>Gallinago hardwickii</i>	Latham's snipe	M	Migrant to east coast of Australia, extending inland west of the Great Dividing Range in NSW.	Freshwater, saline or brackish wetlands up to 2000 m above sea-level; usually freshwater swamps, flooded grasslands or heathlands.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Grantiella picta</i>	painted honeyeater	V	Widely distributed in NSW, predominantly on the inland side of the Great Dividing Range but avoiding arid areas.	Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests.	-	No – no suitable habitat (Eucalypt woodland) occurs within subject land, no record within 5 km	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Heleioporus australiacus</i>	giant burrowing frog	V	South eastern NSW and Victoria, in two distinct populations: a northern population in the sandstone geology of the Sydney Basin as far south as Ulladulla, and a southern population occurring from north of Narooma through to Walhalla, Victoria.	Heath, woodland and open dry sclerophyll forest on a variety of soil types except those that are clay based.	1	No – suitable freshwater wetlands does not occur within subject land and only one no record within 5 km	No	No
<i>Hirundapus caudacutus</i>	white-throated needletail	M	All coastal regions of NSW, inland to the western slopes and inland plains of the Great Divide.	Occur most often over open forest and rainforest, as well as heathland, and remnant vegetation in farmland.	43	Unlikely – this species has an extensive range and the habitat within the subject land is unlikely to contribute any significant resources for this species. There are many records within 5 km, although this species is almost exclusively aerial and thus conventional habitat descriptions are inapplicable	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or indirectly impacted	Impact Assessment Required
<i>Hoplocephalus bungaroides</i>	broad-headed snake	V	Largely confined to Triassic and Permian sandstones within the coast and ranges in an area within approximately 250 km of Sydney.	Dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths, grassy woodlands.	-	No – only marginal habitat present (PCT 3262), rocky outcrops absent in subject land and no records within 5 km	No	No
<i>Isoodon obesulus obesulus</i>	southern brown bandicoot (eastern)	E	Found in south-eastern NSW, east of the Great Dividing Range south from the Hawkesbury River.	Heath or open forest with a heathy understorey on sandy or friable soils.	1	No – suitable habitat (heath or forest with dense understorey) not occurring within subject land, only one no record within 5 km	No	No
<i>Lathamus discolor</i>	swift parrot	CE	Migrates from Tasmania to mainland in Autumn-Winter. In NSW, the species mostly occurs on the coast and south west slopes.	Box-ironbark forests and woodlands.	11	Unlikely – very marginal habitat present (PCT 3262) in a disturbed and altered state. The subject land is not on the Important Areas Map.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Limosa lapponica</i>	bar-tailed godwit	M	Summer migrant to Australia. Widespread along the coast of NSW, including the offshore islands. Also, numerous scattered inland records.	Intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons, bays, seagrass beds, saltmarsh, sewage farms and saltworks, salt lakes and brackish wetlands near coasts, sandy ocean beaches, rock platforms, and coral reef-flats. Rarely inland wetlands, paddocks and airstrips.	-	No	No suitable habitat.	No
<i>Limosa lapponica baueri</i>	bar-tailed godwit	V	Recorded along major coastal river estuaries and sheltered embayments, particularly the Tweed, Richmond, Clarence, Macleay, Hastings, Hunter and Shoalhaven river estuaries, Port Stephens and Botany Bay. It is a rare visitor to wetlands away from the coast with scattered records as far west as along the Darling River and the Riverina.	Coastal habitats such as large intertidal sandflats, banks, mudflats, estuaries, inlets, harbours, coastal lagoons and bays. Less frequently it occurs in salt lakes and brackish wetlands, sandy ocean beaches and rock platforms.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Limosa limosa</i>	black-tailed godwit	M	Arrives in August and leaves in March. In NSW, most frequently recorded at Kooragang Island, with occasional records elsewhere along the coast, and inland in the Murray-Darling Basin, on the western slopes of the Northern Tablelands and in the far north-western corner of the state.	Usually sheltered bays, estuaries and lagoons with large intertidal mudflats and/or sandflats. Further inland, it can also be found around muddy lakes and swamps.	-	No – no records within a 5 km radius and no suitable habitat occur within the subject land	No	No
<i>Litoria aurea</i>	green and golden bell frog	V	Since 1990, recorded from ~50 scattered sites within its former range in NSW, from the north coast near Brunswick Heads, south along the coast to Victoria. Records exist west to Bathurst, Tumut and the ACT region.	Marshes, dams and stream-sides, particularly those containing Typha spp. (bullrushes) or Eleocharis spp. (spikerushes). Some populations occur in highly disturbed areas.	-	No – no suitable freshwater wetlands or dams within subject land	No	No
<i>Macronectes giganteus</i>	southern giant petrel	E, M	Common visitor off the coast of NSW.	Marine.	-	No – no suitable marine habitat within subject land and no records within a 5 km radius	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Macronectes halli</i>	northern giant-petrel	V, M	Common visitor in NSW waters, predominantly along the south-east coast during winter and autumn.	Marine.	-	No – no suitable marine habitat within subject land and no records within a 5 km radius	No	No
<i>Mixophyes balbus</i>	stuttering frog	V	Along the east coast of Australia from southern Qld to north-eastern Victoria.	Rainforest and wet, tall open forest in the foothills and escarpment on the eastern side of the Great Dividing Range.	-	No - subject land does not contain suitable rainforest or tall forest habitat. No records within a 5 km radius	No	No
<i>Motacilla flava</i>	yellow wagtail	M	Regular summer migrant to mostly coastal Australia. In NSW recorded Sydney to Newcastle, the Hawkesbury and inland in the Bogan LGA.	Swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land, lawns.	-	Unlikely – although there are some records of species within 5 km, there are only small areas of suitable habitat (lawns) occurring within subject land in a disturbed state. No records within a 5 km radius	No	No
<i>Neophema chrysostoma</i>	blue-winged parrot	V	A non-breeding visitor to NSW in autumn to early spring. Mainly occurring in western NSW with some birds reaching the southeastern NSW.	A range of habitats, from coastal, sub-coastal and inland areas through to semi-arid zones. Tend to favour grasslands and grassy woodlands found near wetlands.	-	Unlikely – preferred habitat of grassland and grassy woodland absent from the subject land, other than highly modified lawn. Few records from Sydney region.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Notamacropus parma</i>	parma wallaby	V	Their range is now confined to the coast and ranges of central and northern NSW from the Gosford district to south of the Bruxner Highway between Tenterfield and Casino.	Moist eucalypt forest with thick, shrubby understorey, often with nearby grassy areas, rainforest margins and occasionally drier eucalypt forest.	-	No – preferred habitat of eucalypt forest with shrubby understorey absent from subject land	No	No
<i>Numenius madagascariensis</i>	eastern curlew	CE, M	Summer migrant to Australia. Primarily coastal distribution in NSW, with some scattered inland records.	Estuaries, bays, harbours, inlets and coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks and sewage farms.	-	No – no suitable marine habitat within subject land and no records within a 5 km radius	No	No
<i>Numenius phaeopus</i>	whimbrel	M	Summer migrant to Australia. Found along almost the entire coast of NSW; scattered inland records.	Estuaries, mangroves, tidal flats, coral cays, exposed reefs, flooded paddocks, sewage ponds, grasslands, sports fields, lawns.	-	Unlikely – there are no records of species within 5 km, small areas of marginal habitat (highly modified lawns) occurring within subject land	No	No
<i>Pachyptila turtur subantarctica</i>	fairy piron (southern)	V	Breeds on Macquarie Island and a number of subantarctic islands outside Australia.	Marine.	-	No – subject land does not contain marine habitat that this species is dependent on	No.	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Pandion haliaetus</i>	osprey	M	Breeding range extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW. Total range (breeding plus non-breeding) around the northern coast is more widespread, extending from Esperance in Western Australia to NSW, where records become scarcer towards the south, and into Victoria and Tasmania, where the species is a rare vagrant	Littoral and coastal habitats and terrestrial wetlands of tropical and temperate Australia and offshore islands	-	Unlikely – no records of species within 5 km and habitat is marginal (foraging habitat of PCT 3262 and planted native vegetation)	No	No
<i>Petauroides volans</i>	greater glider population in the Eurobodalla local government area	V	This population on the south coast of NSW is bounded by the Moruya River to the north, Coila Lake to the south and the Princes Highway and cleared land exceeding 700 m in width to the west.	Eucalypt forests and woodlands.	1	No - eucalypt forests and woodlands absent from the subject land. Single record within 5 km. Outside of population distribution.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Petaurus australis australis</i>	yellow-bellied glider	V	Along the eastern coast to the western slopes of the Great Dividing Range, from southern Queensland to Victoria.	Mixed coastal forests to dry escarpment forests in the north; moist coastal gullies and creek flats to tall montane forests in the south.	167	Unlikely – although there are many records of species within 5 km there are only small areas of marginal habitat (PCT 3262) occurring within the subject land in a fairly disturbed state in an urban and disturbed environment	No	No
<i>Petrogale penicillata</i>	brush-tailed rock-wallaby	V	In NSW they occur from the Qld border in the north to the Shoalhaven in the south, with the population in the Warrumbungle Ranges being the western limit.	Rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges.	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land.	No	No
<i>Phaethon lepturus</i>	white-tailed tropicbird	M	Uncommon south to Ballina January-April; casual visitor south to Batemans Bay, some well inland.	Marine.	-	No – subject land does not contain marine habitat that this species is dependent on.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Phascolarctos cinereus</i>	koala	V	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. There are sparse and possibly disjunct populations in the Bega District, and at several sites on the southern tablelands.	Eucalypt woodlands and forests.	-	No - eucalypt forests and woodlands absent from the subject land. No known records within 5 km.	No	No
<i>Pluvialis fulva</i>	pacific golden plover	M	Regular widespread summer migrant to Australia, including coastal NSW, Lord Howe and Norfolk Island.	Estuaries, mudflats, saltmarshes, mangroves, rocky reefs, inland swamps, ocean shores, paddocks, sewage ponds, ploughed land, airfields, playing fields.	-	Unlikely – there are no records of species within 5 km, small areas of marginal habitat (highly modified lawns) occurring within subject land.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Pommerhelix duralensis</i>	dural land snail	E	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. It is found in an area of north-western Sydney between Rouse Hill - Cattai and Wiseman's Ferry, west from Berowra Creek.	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.	-	No - eucalypt forests and woodlands absent from the subject land, and soil associations do not occur. No records of this species within a 5 km radius of the subject land.	No	No
<i>Pseudomys novaehollandiae</i>	new holland mouse	V	Fragmented distribution across eastern NSW.	Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.	-	No – woodlands and forest with heathland understorey do not occur within the subject land. No records within 5 km.	No	No
<i>Pteropus poliocephalus</i>	grey-headed flying-fox	V	Along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria.	Subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops.	1810	Yes – Seasonal foraging habitat identified within the subject land. Numerous local records.	Yes	Yes – removal of potential foraging habitat for this species

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Pycnoptilus floccosus</i>	pilot bird	V	From the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria.	Temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris. It is sedentary and common.	-	No - subject land does not contain suitable rainforest or tall forest habitat with heavy undergrowth	No	No
<i>Rostratula australis</i>	Australian painted snipe	E	In NSW most records are from the Murray-Darling Basin. Other recent records include wetlands on the Hawkesbury River and the Clarence and lower Hunter Valleys.	Swamps, dams and nearby marshy areas.	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land	No	No
<i>Stagonopleura guttata</i>	diamond firetail	V		Grassy eucalypt woodlands, open forest, mallee, Natural Temperate Grassland, secondary derived grassland, riparian areas and lightly wooded farmland. Critical habitat is areas that have not had historical clearing, and are neither fragmented or degraded.	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Sternula nereis</i>	fairy tern	M	In NSW, it arrives from September to November, occurring mainly north of Sydney, with smaller numbers found south to Victoria.	Sheltered coastal environments, harbours, inlets and rivers.	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land	No	No
<i>Thalassarche bulleri</i>	Buller's albatross	V, M	Frequently seen off the coast from Coffs Harbour, south to Tasmania and west to Eyre Peninsula, however, some of these birds may be the Pacific Albatross.	Marine and pelagic, inhabiting subtropical and subantarctic waters of the southern Pacific Ocean. Specific habitat requirements are poorly known, but they have been observed in association with fishing boats close inshore and over waters 180–360 m deep in New Zealand.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No
<i>Thalassarche bulleri platei</i>	northern Buller's albatross	V	A non-breeding visitor to Australian waters.	Marine, pelagic species.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Thalassarche cauta</i>	shy albatross	V	Occurs along the east coast south from Stradbroke Island and across the south coast to Carnarvon in WA. It is commonly recorded off southeast NSW, though rarely north of Sydney.	Marine.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No
<i>Thalassarche eremita</i>	chatham albatross	E, M	It occurs in subantarctic and subtropical waters reaching the tropics in the cool Humboldt Current off South America. Breeding for the Chatham Albatross is restricted to Pyramid Rock, Chatham Islands, off the coast of New Zealand. The principal foraging range for this species is in coastal waters off eastern and southern New Zealand, and Tasmania.	Marine.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No
<i>Thalassarche impavida</i>	Campbell albatross	V, M	A regular visitor occurring in most months of the year with peaks in winter during the non-breeding season.	Marine. Occurs in both inshore and offshore waters, including the continental shelf break and pelagic waters.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Thalassarche melanophris</i>	black-browed albatross	V	Regularly recorded off the NSW coast during May-November.	Marine.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No
<i>Thalassarche salvini</i>	Salvin's albatross		A non-breeding visitor to Australian waters. During the non-breeding season, the species occurs over continental shelves around continents.	Marine. It occurs both inshore and offshore and enters harbours and bays.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No
<i>Thalassarche steadi</i>	white-capped albatross		The White-capped Albatross is probably common off the coast of south-east Australia throughout the year. Juveniles are rare in New Zealand waters, being more common off south-east Australia and South Africa. Breeding colonies occur on islands south of New Zealand.	Marine.	-	No – subject land does not contain marine and pelagic habitat that this species is dependent on	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Tringa brevipes</i>	grey-tailed tattler	M	Summer migrant to Australia. In NSW, distributed along most of the coast from the Qld border, south to Tilba Lake. More heavily distributed along coastal regions north of Sydney.	Sheltered coasts with reefs and rock platforms or intertidal mudflats; intertidal rocky, coral or stony reefs; shores of rock, shingle, gravel or shells; embayments, estuaries and coastal lagoons; lagoons and lakes; and ponds in sewage farms and saltworks.	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land	No	No
<i>Tringa nebularia</i>	common greenshank	E, M	Summer migrant to Australia. Recorded in most coastal regions of NSW; also, widespread west of the Great Dividing Range, especially between the Lachlan and Murray Rivers and the Darling River drainage basin, including the Macquarie Marshes, and north-west regions.	Terrestrial wetlands (swamps, lakes, dams, rivers, creeks, billabongs, waterholes and inundated floodplains, claypans, salt flats, sewage farms and saltworks dams, inundated rice crops and bores) and sheltered coastal habitats (mudflats, saltmarsh, mangroves, embayment's, harbours, river estuaries, deltas, lagoons, tidal pools, rock-flats and rock platforms).	-	No – the subject land does not contain suitable habitat and there are no known records of this species within 5 km of the subject land	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Tringa stagnatilis</i>	marsh sandpiper	M	Summer migrant to Australia. Recorded in all regions of NSW but especially the central and south coasts and (inland) on the western slopes of Great Divide and western plains.	Swamps, lagoons, billabongs, salt pans, saltmarshes, estuaries, pools on inundated floodplains, intertidal mudflats, sewage farms and saltworks, reservoirs, waterholes, soaks, bore-drain swamps and flooded inland lakes.	1	No – the subject land does not contain suitable habitat and there is only one known record of this species within 5 km of the subject land	No	No

Table 44: Likelihood of occurrence of threatened flora listed under the BC Act and EPBC Act.

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site or directly impacted	Impact Assessment Required
<i>Acacia bynoeana</i>	Bynoe's wattle	V	Found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains.	Heath or dry sclerophyll forest on sandy soils.	-	Unlikely – unsuitable habitat. Not identified during surveys.	No	No
<i>Acacia pubescens</i>	downy wattle	V	Restricted to the Sydney region around the Bankstown-Fairfield-Rookwood and Pitt Town area, with outliers occurring	Open woodland and forest, including Cooks River/Castlereagh Ironbark Forest, Shale/Gravel Transition Forest and	-	No unsuitable habitat. Not identified	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
			at Barden Ridge, Oakdale and Mountain Lagoon.	Cumberland Plain Woodland. Occurs on alluviums, shales and at the intergrade between shales and sandstones.		during surveys.		
<i>Acacia terminalis</i> subsp. <i>terminalis</i>	sunshine wattle	E	Limited mainly to near-coastal areas from the northern shores of Sydney Harbour south to Botany Bay.	Coastal scrub and dry sclerophyll woodland on sandy soils.	-	Unlikely – unsuitable habitat. Not identified during surveys.	No	No
<i>Allocasuarina glareicola</i>		E	Primarily restricted to the Richmond (NW Cumberland Plain) district, but with an outlier population found at Voyager Point, Liverpool.	Castlereagh woodland on lateritic soil. Found in open woodland with <i>Eucalyptus parramattensis</i> , <i>Eucalyptus fibrosa</i> , <i>Angophora bakeri</i> , <i>Eucalyptus sclerophylla</i> and <i>Melaleuca decora</i> .	-	No – outside of range	No	No
<i>Asterolasia elegans</i>		E	Occurs north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby local government areas. Also likely to occur in the western part of Gosford local government area.	Hawkesbury sandstone.	-	No – unsuitable habitat. Not identified during surveys.	No	No
<i>Caladenia tessellata</i>	thick lip spider orchid	V	Currently known from two disjunct areas; one population near Braidwood on the Southern Tablelands	Grassy sclerophyll woodland on clay loam or sandy soils, or low woodland with stony soil.	-	No – unsuitable habitat.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
			and three populations in the Wyong area on the Central Coast.					
<i>Cryptostylis hunteriana</i>	leafless tongue orchid	V	In NSW, recorded mainly on coastal and near coastal ranges north from Victoria to near Forster, with two isolated occurrences inland north-west of Grafton.	Coastal heathlands, margins of coastal swamps and sedgeland, coastal forest, dry woodland, and lowland forest.	-	No unsuitable habitat.	– No	No
<i>Cynanchum elegans</i>	white-flowered plant	wax E	Restricted to eastern NSW, from Brunswick Heads on the north coast to Gerroa in the Illawarra region, and as far west as Merriwa in the upper Hunter River valley.	Dry rainforest; littoral rainforest; Leptospermum laevigatum-Banksia integrifolia subsp. integrifolia (Coastal Tea-tree– Coastal Banksia) coastal scrub; Eucalyptus tereticornis (Forest Red Gum) or Corymbia maculata (Spotted Gum) open forest and woodland; and Melaleuca armillaris (Bracelet Honey-myrtle) scrub.	-	No unsuitable habitat	– No	No
<i>Darwinia biflora</i>		V	Recorded in Ku-ring-gai, Hornsby, Baulkham Hills and Ryde local government areas, in an area bounded by Maroota, North Ryde, Cowan and Kellyville.	Woodland, open forest or scrub-heath on the edges of weathered shale-capped ridges, where these intergrade with Hawkesbury Sandstone.	195	Unlikely. Several local records, however not identified during surveys.	– No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
<i>Deyeuxia appressa</i>		E	NSW endemic known only from two pre-1942 records in the Sydney area: Herne Bay south of Bankstown and Killara, near Hornsby.	Moist conditions.	-	No unsuitable habitat.	No	No
<i>Eucalyptus camfieldii</i>	Camfield's stringybark	V	Narrow band from the Raymond Terrace area south to Waterfall.	Coastal heath on shallow sandy soils overlying Hawkesbury sandstone, mostly on exposed sandy ridges.	10	Unlikely unsuitable habitat. Not identified during the field survey.	No	No
<i>Genoplesium baueri</i>	Bauer's midge orchid	E	Has been recorded from locations between Nowra and Pittwater and may occur as far north as Port Stephens.	Dry sclerophyll forest and moss gardens over sandstone.	1	Unlikely unsuitable habitat. Not identified during the field survey.	No	No
<i>Grevillea caleyi</i>	Caley's grevillea	E	Restricted to an 8 km square area around Terrey Hills, approximately 20 km north of Sydney.	Open forest, generally dominated by <i>Eucalyptus sieberi</i> and <i>E. gummifera</i> on a ridgetop, in association with laterite soils.	-	No unsuitable habitat.	No	No
<i>Haloragodendron lucasii</i>		E	Confined to a very narrow distribution on the north shore of Sydney.	Dry sclerophyll forest and low open woodland on sheltered slopes near creeks, in moist sandy loam soils.	3	Unlikely small areas of marginal habitat (PCT 3262). Only	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
						three known records of species within 5 km. The species was not encountered during field survey.		
<i>Kunzea rupestris</i>		V	Mostly in the Maroota - Sackville - Glenorie area and one outlier in Ku-ring-gai Chase National Park.	Shrubland or heathland, in shallow depressions on large flat sandstone rock outcrops.	-	No – no suitable shrubland or heathland habitat within the subject land, no records of species within 5 km.	No	No
<i>Lasiopetalum joyceae</i>		V	Restricted to the Hornsby Plateau south of the Hawkesbury River, between Berrilee and Duffys Forest.	Heath on lateritic to shaley ridgetops over sandstone.	1	No – no suitable heathland habitat, only one known previous record within 5 km.	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
<i>Leptospermum deanei</i>		V	Hornsby, Warringah, Ku-ring-gai and Ryde LGAs in the Sydney region.	Woodland, riparian scrub and open forest on lower hill slopes or near creeks, on sand or sandy alluvial soil.	-	Unlikely – unsuitable habitat.	No	No
<i>Leucopogon exolasius</i>	Woronora beard-heath	V	Upper Georges River area and in Heathcote National Park.	Woodland on sandstone.	-	Unlikely – no records of species in region and not in range	No	No
<i>Melaleuca biconvexa</i>	biconvex paperbark	V	Only found in NSW, populations found in the Jervis Bay area in the south and the Gosford-Wyong area in the north.	Damp places, often near streams or low-lying areas on alluvial soils.	-	No – no suitable damp habitat within the subject land, no records of species within 5 km.	No	No
<i>Melaleuca deanei</i>	Deane's paperbark	V	Ku-ring-gai/Berowra area, Holsworthy/Wedderburn area, Springwood (in the Blue Mountains), Wollemi National Park, Yalwal (west of Nowra) and Central Coast (Hawkesbury River) areas.	Heath on sandstone.	5	No – no suitable heath habitat, few records within 5 km.	No	No
<i>Micromyrtus blakelyi</i>		V	Restricted to areas near the Hawkesbury River, north of Sydney. Distribution extends	Heathlands in shallow sandy soil, on sandstone rock platforms.	-	No – no suitable heathland	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
			from north of Maroota in the north, to Cowan in the south.			habitat, no records within 5 km.		
<i>Persicaria elatior</i>	tall knotweed	V	In south-eastern NSW recorded from Mt Dromedary, Moruya State Forest near Turlinjah, the Upper Avon River catchment north of Robertson, Bermagui, and Picton Lakes. In northern NSW known from Raymond Terrace (near Newcastle) and the Grafton area (Cherry Tree and Gibberagee State Forests).	Beside streams and lakes, swamp forest or disturbed areas.	-	No – unsuitable habitat.	No	No
<i>Persoonia hirsuta</i>	hairy geebung	E	Scattered distribution around Sydney, from Singleton in the north, along the east coast to Bargo in the south and the Blue Mountains to the west.	Sandy soils in dry sclerophyll open forest, woodland and heath on sandstone.	-	Unlikely – no, no suitable heath or dry sclerophyll forest habitat, no records of species within 5 km.	No	No
<i>Persoonia mollis</i> subsp. <i>maxima</i>		E	Restricted to the Hornsby Heights-Mt Colah area north of Sydney.	Dry to wet sclerophyll forest, in deep sheltered gullies or steep upper hillsides on Hawkesbury Sandstone.	-	Unlikely – unsuitable habitat and no records of	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
						species within 5 km.		
<i>Pimelea curviflora</i> var. <i>curviflora</i>		V	Confined to the coastal area of the Sydney and Illawarra regions between northern Sydney and Maroota in the north-west and Croom Reserve near Albion Park in the south.	Woodland, mostly on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes.	-	No unsuitable habitat and no records of species within 5 km.	No	No
<i>Pimelea spicata</i>	spiked rice-flower	E	Two disjunct areas; the Cumberland Plain (Marayong and Prospect Reservoir south to Narellan and Douglas Park) and the Illawarra (Landsdowne to Shellharbour to northern Kiama).	Well-structured clay soils. <i>Eucalyptus moluccana</i> (Grey Box) communities and in areas of ironbark on the Cumberland Plain.	-	Unlikely – unsuitable habitat. Not identified during the field survey.	No	No
<i>Prostanthera densa</i>	villous mint-bush	V	Currarong area in Jervis Bay, Royal National Park, Cronulla, Garie Beach and Port Stephens (Gan Gan Hill, Nelson Bay).	Sclerophyll forest and shrubland on coastal headlands and near-coastal ranges, chiefly on sandstone.	-	Unlikely – unsuitable habitat. Not identified during the field survey.	No	No
<i>Prostanthera junonis</i>	Somersby mintbush	E	Restricted to the Somersby Plateau in the Gosford and Wyong local government areas.	Open forest, low woodland and open scrub on gently undulating country over weathered Hawkesbury sandstone.	-	Unlikely – unsuitable habitat. Not identified	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
						during the field survey.		
<i>Prostanthera marifolia</i>	Seaforth mintbush	CE	Only known from the northern Sydney suburb of Seaforth.	In or in close proximity to the endangered Duffys Forest ecological community, on deeply weathered clay-loam soils associated with ironstone and scattered shale lenses.	-	No unsuitable habitat	No	No
<i>Rhizanthella slateri</i>	eastern Australian underground orchid	E	In NSW, currently known from fewer than 10 locations, including near Bulahdelah, the Watagan Mountains, the Blue Mountains, Wiseman's Ferry area, Agnes Banks and near Nowra.	Sclerophyll forest in shallow to deep loams.	-	Unlikely unsuitable habitat and not identified during the field survey.	No	No
<i>Rhodamnia rubescens</i>	scrub turpentine	CE	Known to occur from coastal districts of NSW north from Batemans Bay to Bundaberg in Queensland.	Subtropical Rainforests, Northern Warm Temperate Rainforests, Littoral Rainforest, North Coast Wet	2	Unlikely unsuitable habitat. Surveys did not record this species and very few records of species within 5 km.	No	No
<i>Rhodomyrtus psidioides</i>	native guava	CE	Occurs from Broken Bay, approximately 90 km north of Sydney, New South Wales, to	Littoral, warm temperate and subtropical rainforest and wet	-	No unsuitable habitat and	No	No

Scientific Name	Common name	EPBC Act Status	Distribution	Habitat	Number of records within 5 km	Likelihood of occurrence within the Subject land	Habitat on site directly or indirectly impacted	Impact Assessment Required
			Maryborough in Queensland. Populations are typically restricted to coastal and sub-coastal areas of low elevation however the species does occur up to c. 120 km inland in the Hunter and Clarence River catchments and along the Border Ranges in NSW.	sclerophyll forest often near creeks and drainage lines.		no records of species within 5 km.		
<i>Syzygium paniculatum</i>	magenta lilly pilly	V	Only in NSW, in a narrow, linear coastal strip from Upper Lansdowne to Conjola State Forest.	Subtropical and littoral rainforest on gravels, sands, silts and clays.	32	Unlikely – Unsuitable habitat. Surveys did not record this species.	No	No
<i>Thesium australe</i>	austral toadflax	V	In eastern NSW it is found in very small populations scattered along the coast, and from the Northern to Southern Tablelands.	Grassland on coastal headlands or grassland and grassy woodland away from the coast.	-	No unsuitable habitat	No	No

Appendix F Biodiversity credit report



BAM Credit Summary Report

Proposal Details

Assessment Id	Proposal Name	BAM data last updated *
00056692/BAAS18159/25/00056693	24-28 Middle Harbour Lindfield	28/10/2024
Assessor Name	Report Created	BAM Data version *
Belinda Jane Failes	08/05/2025	Current classification (live - default) (80)
Assessor Number	BAM Case Status	Date Finalised
BAAS18159	Finalised	08/05/2025
Assessment Revision		Assessment Type
0		Major Projects

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

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

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

Assessment Id	Proposal Name	Page 1 of 2
00056692/BAAS18159/25/00056693	24-28 Middle Harbour Lindfield	



BAM Credit Summary Report

Sydney Turpentine Ironbark Forest												
1	3262_low	Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	28.5	26.4	0.02	Population size	High Sensitivity to Gain	Critically Endangered Ecological Community	Not Listed	2.50	True	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 SAI	Species credits
----------------------	--	-----------------------------	-----------------------------------	-------------------------------------	-------------------------------------	-----------------------	-------------------------	---------------	-----------------

