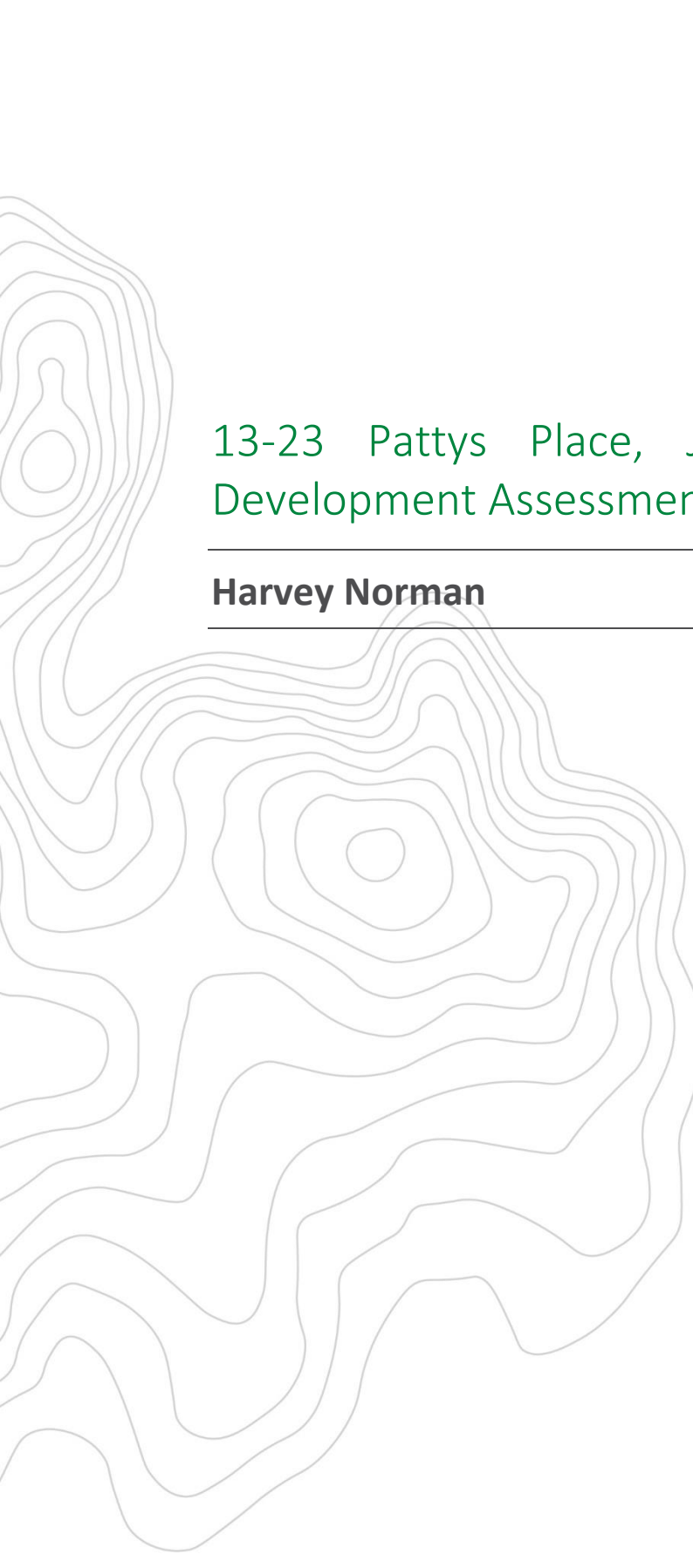


A stylized topographic map with green contour lines is positioned on the left side of the page, extending from the top to the bottom. The lines represent elevation changes, with some forming circular peaks and others following more irregular, wavy paths.

13-23 Pattys Place, Jamisontown – Biodiversity Development Assessment Report

Harvey Norman

DOCUMENT TRACKING

Project Name	13-23 Pattys Place, Jamisontown - Biodiversity Development Assessment Report
Project Number	24SYD-7838
Project Manager	Tim Finter
Accredited Assessor Certification	 Tom Kelly BAAS19029 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 Tom Kelly and Tim Finter 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	Tom Kelly and Tim Finter
Reviewed by	Tom Kelly
Approved by	Tom Kelly
Status	Final
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This document has been prepared by Eco Logical Australia Pty Ltd with support from Harvey Norman and Knight Frank Town Planning.

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Executive Summary

Eco Logical Australia Pty Ltd (ELA) was engaged by Harvey Norman to prepare a Biodiversity Development Assessment Report (BDAR) at 13-23 Pattys Place, Jamisontown 2750 (the subject land) within The City of Penrith Local Government Area (LGA). This BDAR has been prepared consistent with the requirements of the NSW *Biodiversity Conservation Act 2016* (BC Act), to support:

- a planning proposal to amend the height of building control for part of the subject land; and
- accompany a subsequent development application (DA).

Following an amendment to the original development footprint, no land identified on the Biodiversity Values Map or remnant native vegetation will be impacted and the proposed development is unlikely to significantly impact upon threatened species listed under the BC Act. As such, the Biodiversity Offsets Scheme (BOS) will not be triggered and this BDAR has been prepared in line with the amended development footprint.

This BDAR has been undertaken using the Streamlined Assessment Module – Small Area, as the total area of native vegetation proposed to be impacted (0 ha) is under the relevant area clearing limit threshold of 1 ha. The Streamlined Assessment Module – Planted Native Vegetation, has also been applied within this BDAR to assess proposed impacts to the planted native tree component of the development footprint.

The land that is subject of the planning proposal is wholly located within part of Lot 10 DP1046110 (Figure 1 and Figure 3).

The subject land for the purpose of the future DA (part of Lot 10 DP1046110 and the whole of Lot 11 DP1046110) is located to the west of Mulgoa Road and north of the Western Motorway in Jamisontown, New South Wales (NSW). This wider subject land incorporates Lot 11 DP1046110 which is not part of the development footprint. In its entirety, the subject land is located within an existing disturbed landscape, which includes a commercial and retail centre and cleared agricultural farmland.

The subsequent development is to consist of an extension to the existing Harvey Norman Penrith Homemaker Centre. The development footprint is wholly located within part of Lot 10 DP1046110.

The subsequent works would involve the following components:

- Construction of a new building that extends the existing Homemaker Centre to the west of its current footprint
- Construction of a new truck deck.

The subsequent works will result in the clearing of 0.07 ha of planted native trees and 0.16 ha of exotic vegetation. Outside of the development footprint, 0.46 ha of native vegetation, 0.08 ha of planted native trees and 0.35 ha of exotic vegetation will be retained within the wider subject land.

Field surveys were undertaken to validate vegetation and assign native vegetation to the best-fit Plant Community Type (PCT), stratify any PCTs into vegetation zones, assign Threatened Ecological

Communities (TECs) where applicable and undertake vegetation integrity (VI) plots within representative vegetation zones in the subject land.

The native vegetation within the subject land, conforms to a single PCT, 3975 *Southern Lower Floodplain Freshwater Wetland*. This PCT was mapped in the western corner of the subject land, occurring in good condition and in the dam in the northern area of the subject land, occurring in moderate condition. No areas of PCT 3975 occur within the development footprint. The remaining vegetation within the subject land, inclusive of the development footprint, was mapped as planted native vegetation (planted trees) and a mix of exotic vegetation zones, with exotic vegetation comprising the largest component of both the subject land and development footprint (Table 1).

Table 1: Vegetation zones on the subject land

Vegetation Zone	PCT ID	PCT Name	Condition	Area (ha) in subject land	Area (ha) in development footprint
1	3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	Good	0.09	0
2	3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	Moderate	0.37	0
	N/A	Planted native vegetation	N/A	0.15	0.07
	N/A	Exotic vegetation / (drainage)	N/A	0.51	0.16
Total				1.12	0.23

Targeted threatened fauna surveys for *Litoria aurea* (Green and Golden Bell Frog) and threatened microbat species were undertaken in the subject land. Green and Golden Bell Frog was not recorded during the targeted survey, while *Chalinobius dwyeri* (Large-eared Pied Bat) and *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat) were confirmed as present and *Falsistrellus tasmaniensis* (Eastern False Pipistrelle), *Miniopterus orianae oceanensis* (Large Bent-winged Bat), *Myotis macropus* (Southern Myotis) *Scoteanax rueppellii* (Greater Broad-nosed Bat) and *Vespadelus troughtoni* (Eastern Cave Bat) were recorded as 'potentially present'.

Measures to avoid and minimise impacts have been applied to the development footprint and the total area of PCT 3975 (0.46 ha) will be retained within the subject land. As the proposed development does not trigger entry into the BOS, the retirement of ecosystem and species credits is not required.

Removal of 0.07 ha of planted native vegetation was assessed against *Appendix D: Streamlined assessment module - planted native vegetation* of the BAM 2020 and does not require the offsetting of ecosystem or species credits under the BOS. Planted native vegetation to be impacted by the proposed development does provide potential foraging habitat for the following threatened fauna species:

Woodland birds

- *Lathamus discolor* (Swift Parrot)

Megabats

- *Pteropus poliocephalus* (Grey-headed Flying-fox)

Microbats

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Vespadelus troughtoni* (Eastern Cave Bat).

Tests of Significance consistent with the requirements of the BC Act and Significant Impact Criteria consistent with the requirements of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) were applied to the above threatened fauna species. The application of these assessments concluded that the proposed development is unlikely to result in a significant impact to any threatened species. Further, a referral to the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) is not recommended for the above EPBC Act listed species (Swift Parrot, Grey-headed Flying-fox and Large-eared Pied Bat).

Measures have also been proposed within this report to mitigate and manage potential impacts to biodiversity values before, during and after construction of the subsequent development.

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Abbreviations

Abbreviation	Description
BAM	Biodiversity Assessment Method
BAMC	Biodiversity Assessment Method Credit Calculator
BC Act	<i>NSW Biodiversity Conservation Act 2016</i>
BDAR	Biodiversity Development Assessment Report
BOM	Bureau of Meteorology
CAA	Controlled Activity Approval
DAWE	Commonwealth Department of Agriculture, Water and the Environment
DCCEEW	Commonwealth Department of Climate Change, Energy, the Environment and Water
NSW DCCEEW	NSW Department of Climate Change, Energy, the Environment and Water
DBH	Diameter at Breast Height
DCP	Development Control Plan
DPE	NSW Department of Planning and Environment
EEC	Endangered Ecological Community
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>
GIS	Geographic Information System
IBRA	Interim Biogeographic Regionalisation for Australia
KFH	Key Fish Habitat
LEP	Local Environment Plan
LGA	Local Government Area
MNES	Matters of National Environmental Significance
NSW	New South Wales
PCT	Plant Community Type
PMST	Protected Matters Search Tool
SEPP	State Environmental Planning Policy
SVTM	State Vegetation Type Mapping
TBDC	Threatened Biodiversity Database Collection
TEC	Threatened Ecological Community
VMP	Vegetation Management Plan

Abbreviation	Description
WM Act	<i>Water Management Act 2000</i>
WoNS	Weed of National Significance

1. Introduction

This Biodiversity Development Assessment Report (BDAR) has been prepared by Tom Kelly (BAAS19029), who is an Accredited Person to apply the Biodiversity Assessment Method (BAM) under the NSW *Biodiversity Conservation Act 2016* (BC Act), with support from Tim Finter.

This BDAR will be submitted to Penrith City Council under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) to support the planning proposal to amend the height of building control for part of the subject land and accompany a subsequent DA. This BDAR assesses impacts to biodiversity values associated with the proposed development at 13-23 Pattys Place, Jamisontown.

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

1.1. General description of the subject land

The subject land for the purpose of the subsequent DA is located at 13-23 Pattys Place, Jamisontown, comprising part of Lot 10 DP1046110 and the whole of Lot 11 DP1046110 (Figure 2). The subject land is located to the west of Mulgoa Road and north of the Western Motorway in Jamisontown. The existing Harvey Norman Homemaker Centre is located to the east of the subject land.

The subject land is located on land currently zoned RU4 Primary Production Small Lots (Lot 11) and E3 Productivity Support (Lot 10). The planning proposal seeks to minimally increase the permissible building height of part of Lot 10 from 12 metres to 15 metres and 19 metres. The centre of the subject land contains an artificial flooded drainage basin that contains regularly mown exotic grass. An artificial/constructed dam encompasses a large portion of the northern border of the subject land and an inundated watercourse traverses west, connecting with an additional artificial/constructed dam in the western corner of the subject land. This watercourse is a small tributary of School House Creek, located approximately 500 m from the western boundary of the subject land. Planted native trees for vegetative screening and landscaping purposes are present throughout the subject land.

This report includes two base maps, the Location Map (Figure 2) and the Site Map (Figure 3).

1.2. Brief description of the proposal

The planning proposal seeks to increase the permissible height of part of Lot 10, which is currently 12 metres under the current zoning (E3 Productivity Support), to 15 metres and 19 metres to enable an extension to the existing Harvey Norman Homemaker Centre. The extension of the Homemaker Centre is proposed to be located on Lot 10 only (Figure 1). Lot 11 is not part of the development footprint and is not subject to any change of planning controls (Figure 1 and Figure 3). The proposed development works will involve the following components:

- Earthworks and removal of vegetation
- Construction of a new building
- Construction of a new truck deck.



Figure 1: Planning Proposal Site (PP Site) in the context of the existing Homemaker Centre

1.3. Terms used in this report

The subject land assessed by the BDAR comprises part of Lot 10 DP1046110 and the whole of Lot 11 DP1046110 and has a total area of approximately 1.12 ha. The development footprint is wholly within part of Lot 10 and has a total area of 0.23 ha. The development footprint incorporates the area required for the construction of the truck deck and new building. The subject land and development footprint are presented in Figure 3. Native vegetation in the western corner and north/north-east area of the subject land is located outside of the development footprint and is proposed to be retained, along with some planted native vegetation in the western corner and along the north-east boundary of the subject land.

1.4. Sources of information used

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

- BioNet Vegetation Classification System Version 3.1 (NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW 2024a) (accessed December 2024)
- BioNet / Atlas of NSW Wildlife 5 km database search (NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW 2024b) (accessed December 2024)
- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters Search Tool 5 km radius database search (Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2024a) (accessed December 2024)
- NSW Government ePlanning Spatial Viewer (accessed December 2024)
- National Flying-fox Monitoring data (DCCEEW 2024b) (accessed December 2024)
- Biodiversity Assessment Method 2020 (DPIE 2020)

- Biodiversity Assessment Methodology Calculator (BAMC) version 67
- NSW Government Biodiversity Values Map (NSW DCCEEW 2024c) (accessed December 2024)
- NSW BAM Important Area Mapping (NSW DCCEEW 2024d) (accessed December 2024)
- Threatened species profiles and recovery plans
- State Vegetation Type Map (SVTM) (DPE 2022) (accessed December 2024)
- Additional Geographic Information System (GIS) datasets including soil, topography, geology and drainage
- Aerial photography (Historical Imagery) of the subject land was also used to investigate the extent of vegetation cover and landscape features.
- Penrith Development Control Plan 2014
- Penrith Local Environmental Plan 2010.
- Eco Logical Australia 2024. *13-23 Pattys Place, Jamisontown – Targeted Surveys*. Prepared for Harvey Norman.
- Eco Logical Australia 2022. *13-23 Pattys Place, Jamisontown Ecological Constraints Assessment*. Prepared for Knight Frank Town Planning.

Species searches from both the NSW BioNet database and the Commonwealth Protected Matters Search Tool (PMST) were performed around the co-ordinates, UTM Zone 56, 284128 E, 6261036 S on 2 December 2024. The results of these searches were combined to produce a list of threatened species, populations and communities either previously recorded or considered to have the potential to occur within the subject land. The likelihood of occurrences for threatened species, populations and communities in the subject land was then determined based on location of database records, the likely presence or absence of suitable habitat in the subject land, 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 subject land is presented in Appendix D.

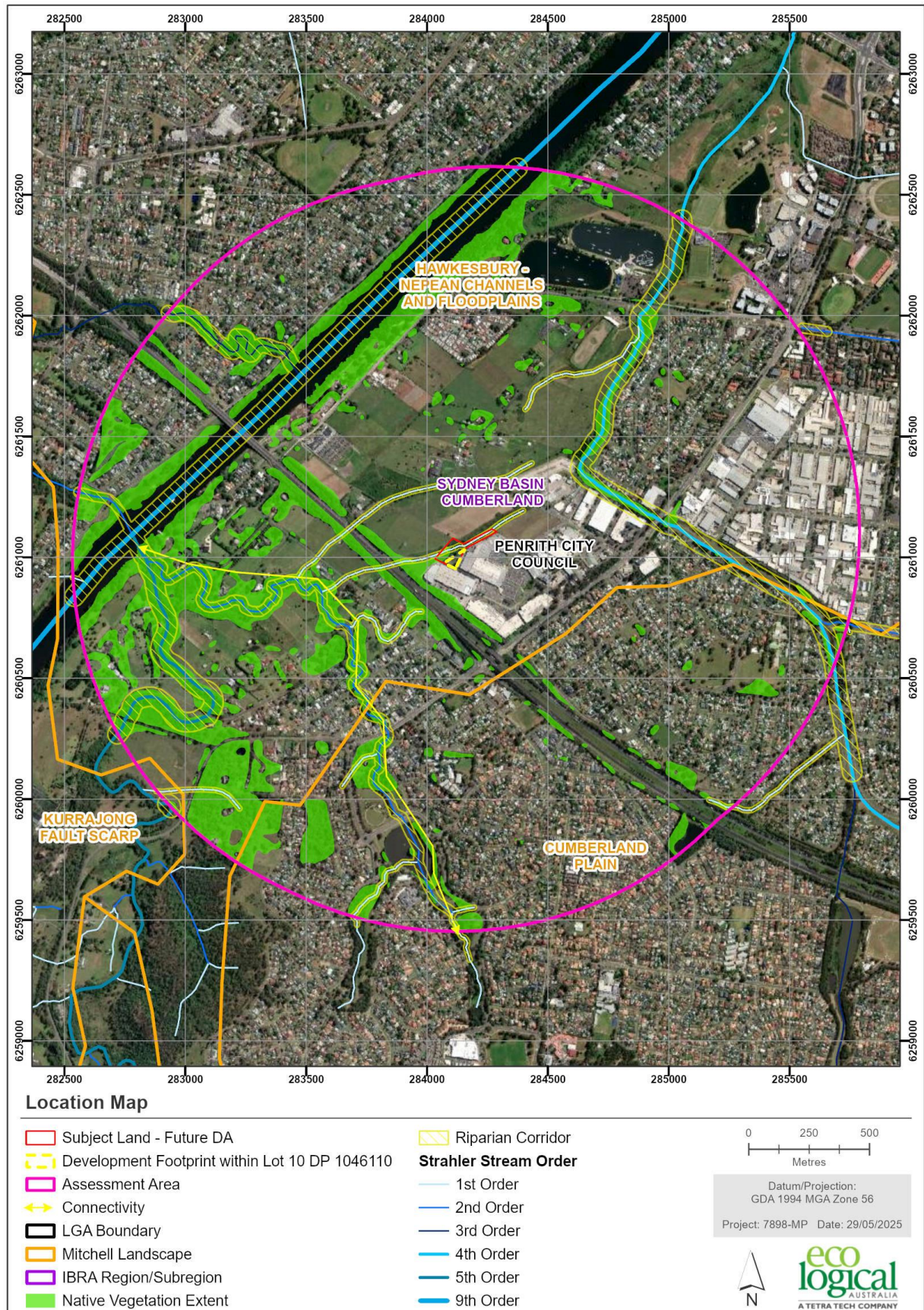


Figure 2: Location Map

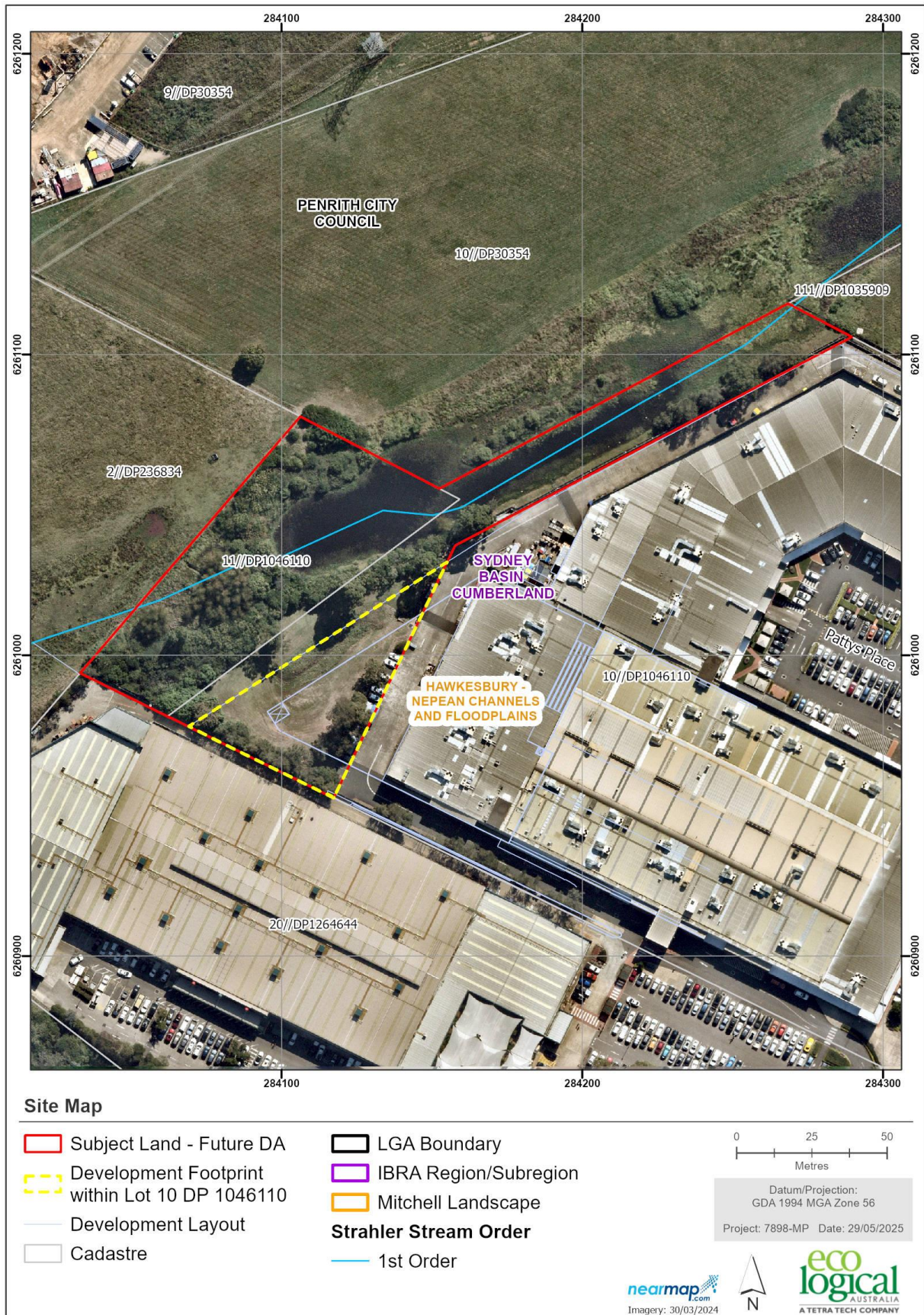


Figure 3: Site Map

1.5. Legislative context

Legislation relevant to the subject land is outlined in Table 2.

Table 2: Legislative context

Name	Relevance to the project
Commonwealth	
<i>Environment Protection and Biodiversity Conservation Act 1999</i>	Matters of National Environmental Significance (MNES) have been identified on or near the development footprint. This report assesses impacts to MNES and concludes that the development is not likely to have a significant impact on MNES.
State	
<i>Environmental Planning and Assessment Act 1979</i>	The <i>Environmental Planning and Assessment Act 1979</i> (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 assessed under Part 4 of the EP&A Act.
<i>Biodiversity Conservation Act 2016</i>	The proposed amended development footprint is not located on the NSW Department of Climate Change, Energy, the Environment and Water Biodiversity Values Map (BV map) (NSW DCCEEW 2024c). The minimum lot size for the property is 1,000 m² and the relevant native vegetation clearing threshold (0.25 ha) is not triggered due to the absence of remnant, native vegetation within the development footprint. Additionally, a five-part test of significance under the BC Act guidelines for potential impacts to foraging habitat for one threatened bird species, one threatened megabat species and seven threatened microbat species was undertaken (Appendix E). It concluded that a significant impact to these species was unlikely to occur. As a result of the above, the proposed development does not trigger the Biodiversity Offset Scheme (BOS) and this BDAR has been revised and prepared in line with the amended development footprint. As no native vegetation is proposed to be cleared for the development, the small area module has been applied to this BDAR, consistent with Appendix C of the BAM 2020. Additionally, the subject land also contains areas of planted native vegetation and therefore a streamlined planted native vegetation module has been applied, consistent with Appendix D of the BAM 2020.
<i>Fisheries Management Act 1994</i>	There is no Key Fish Habitat (KFH) mapped within the subject land, however Surveyors Creek occurs approximately 500 m to the northeast of the subject land and School House Creek occurs approximately 500 m to the west of the subject land. Both these creeks are mapped as KFH. No permits or consultation under the <i>Fisheries Management Act 1994</i> (FM Act) will be required, given the absence of marine habitat and natural fish habitat within the subject land.
<i>Water Management Act 2000</i>	There is a watercourse and constructed dam mapped within the subject land. This watercourse is a small tributary of School House Creek, approximately 500 m from the western boundary of subject land, and is mapped as Strahler Stream Order 1. The proposed development is located on 'waterfront land' (within 40 m of the top of bank) and therefore is considered a Controlled Activity and requires a Controlled Activity Approval (CAA) under the NSW <i>Water Management Act 2000</i>. As such, it is recommended that the riparian area is protected and rehabilitated under a Vegetation Management Plan (VMP).
Environmental Planning Instruments	
<i>State Environmental Planning Policy (Biodiversity and Conservation) 2021</i>	Chapter 2 of the Biodiversity and Conservation SEPP applies to vegetation in non-rural areas, with the aim to protect the biodiversity values of trees and other vegetation in non-rural areas of the State, and to preserve the amenity of non-rural areas of the State through the preservation of trees and other

Name	Relevance to the project
	vegetation. Chapter 2 applies to development that does not require consent. As this project requires consent under the EP&A Act, this section of the Biodiversity and Conservation SEPP is not relevant. Chapter 4 contains the land-use planning and assessment framework for Koala habitat within the Metropolitan Sydney and Central Coast. The City of Penrith LGA is not considered land to which the Koala Habitat Protection applies. Chapter 6 relates to Water Catchments, which applies to the proposed development as it is located in the Hawkesbury-Nepean Catchment as per Part 6.1 of the Biodiversity and Conservation SEPP. Therefore, development controls under Section 6.7 relating to aquatic ecology will apply to the proposed development.
<i>Penrith Development Control Plan 2014</i> (Penrith DCP)	Section C2(6)(k) of the Penrith DCP states that <i>Hard (or impervious) surfaces are not permitted under the drip line of any tree.</i> This clause should be considered within the development design for any proposed development within the subject land. Section 3.3 of the DCP - 'Watercourses, Wetlands and Riparian Corridors' outlines several controls that should be considered within the development design to protect watercourses, wetlands, and riparian corridors. The development footprint is located adjacent to a mapped watercourse (Strahler Stream Order 1) and therefore Section 3.3 of the DCP is applicable to this development.
<i>Penrith Local Environmental Plan 2010</i> (Penrith LEP)	The subject land is currently zoned RU4 Primary Production Small Lots (Lot 11 DP1046110) and E3 Productivity Support (part of Lot 10 DP1046110) under the Penrith LEP. The planning proposal seeks to increase the permissible height of Lot 10 only. Lot 11 is not part of the development footprint and is not subject to any change of planning controls. Clause 7.3 of the Penrith LEP provides controls for development on Natural Resource Sensitive Lands. The subject land does not contain mapped areas on the Natural Resources Sensitivity Land Map overlay under the Penrith LEP.

2. Streamlined assessment modules

Two streamlined assessment modules were utilised in this BDAR:

- Small area
- Planted native vegetation.

These include specific requirements that must be met to assess the impacts on biodiversity values. Appendix C and D of the BAM 2020 sets out the circumstances in which the streamlined assessment modules can be used as detailed in the sections below.

2.1. BAM Appendix C – Small area

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 3.

The minimum lot size for the property is 1,000 m² (0.1 ha) and the area of native vegetation to be cleared is less than 1 ha, given that the amended development footprint has avoided the native remnant vegetation present within the subject land. Therefore, as no native vegetation is proposed to be cleared, the small area module has been applied to this BDAR, consistent with Appendix C of the BAM 2020.

Table 3: 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).

Assessment under the small area streamlined module must still apply the hierarchy of avoiding and minimising impacts on biodiversity before considering offsetting residual impacts – this is addressed in Section 6 of this BDAR.

2.2. BAM Appendix D – Planted native vegetation

A total of 0.07 ha of planted native vegetation was identified within the development footprint and has been assessed consistent with Appendix D of the BAM 2020. The decision-making process for this module is outlined in Table 4 below.

2.2.1. Description of planted native vegetation within the subject land

Several scattered patches of native vegetation occur within the subject land, including alongside the vegetated boundaries, have been planted with native tree species. These include *Angophora costata* (Smooth-barked Apple), *Casuarina glauca* (Swamp Oak), *Corymbia maculata* (Spotted Gum), *Eucalyptus microcorys* (Tallowwood) and a single *Eucalyptus tereticornis* (Forest Red Gum). Underneath the planted

row of *Casuarina glauca* (Swamp Oak), alongside the south-western boundary, was a midstory of the exotic *Ailanthus altissima* (Tree of heaven). It is noted that a mature *Opuntia* sp. (Prickly pear) was also present in the ground layer. This exotic plant is a declared Weed of National Significance (WoNS) in Australia.

These patches were determined to be planted, and not remnant, native vegetation, for the following reasons:

- The location and somewhat regular spacing pattern of the trees suggested these had been planted in these locations for screening along the property boundaries, bank stabilization and shading.
- Trees were of a very similar height and diameter at breast height (DBH), indicating a similar age and time of planting.
- One of the dominant planted tree species, Tallowwood, is not native to the local Interim Biogeographic Regionalization for Australia (IBRA) subregion, as it naturally occurs on the north coast of NSW and into southern Queensland.
- Eucalypt species found in these patches are species which are all typical and popular for landscape and street plantings and readily available from commercial and retail suppliers in the Sydney region. Swamp Oak which is used as screening planting within the subject land is included in Appendix B – Widely cultivated native species list of the Planted native vegetation streamlined assessment module.

2.2.2. Historical aerial imagery

Further justification of the presence of planted native vegetation within the subject land is provided from analysis of historical aerial imagery.

The earliest available historic aerial imagery accessed via the NSW Historical Imagery viewer (Spatial Services 2024) shows that in 1943 the subject land had been extensively cleared and a planted orchard was present within the southern corner and along the south-east boundary (Figure 4). Figure 5 shows the change in vegetation on the subject land between 1943 and 1956, with the visible disappearance of the orchard and the presence of scattered planted trees along the south-east boundary up to the watercourse. Vegetation within the watercourse is not visible within the 1943 and 1956 imagery indicating currently present native vegetation has developed more recently. Figure 6 shows the subject land more recently in 2005, with a visible presence of regularly spaced planted vegetation along the south-west boundary, which remains today as screening vegetation adjacent to Bunnings Warehouse. The artificial dams within the south-western and northern boundary and associated vegetation are also present in this more recent imagery.

Table 4: Decision making tool for Planted Native Vegetation in accordance with Appendix D of the BAM 2020

Question	Response and justification
1) Does the planted native vegetation occur within an area that contains a mosaic of planted and remnant native vegetation and which can be reasonably assigned to a PCT known to occur in the same IBRA subregion as the proposal?	No - the planted vegetation does not occur in a mosaic of planted and remnant native vegetation, with the surrounding vegetation predominantly exotic.
i Yes – the planted native vegetation must be allocated to the best-fit PCT and the BAM must be applied.	The native trees are not consistent with PCT 3975 <i>Southern Lower Floodplain Freshwater Wetland</i> present in the subject

Question	Response and justification
ii No – Go to 2.	land or other locally occurring PCTs in the IBRA subregion. Eucalypt species found in the planted patches are species popular for garden and street plantings and Tallowood is not endemic to the IBRA subregion.
2. Is the planted native vegetation: a. Planted for the purpose of environmental rehabilitation or restoration under an existing conservation obligation listed in BAM Section 11.9(2.), and b. The primary objective was to replace or regenerate a plant community type of a threatened plant species or its habitat? i Yes – the planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM ii No – Go to 3.	No – the location and regular spacing of planted native vegetation indicates that trees have been planted in these locations for landscaping purposes, being screening along the property boundaries, bank stabilization and shading of adjacent commercial buildings, as evidenced in historical aerial imagery.
3. Is the planted / translocated native vegetation individuals of a threatened species or other native species planted/ translocated for the purpose of providing threatened species habitat under one of the following: a. A species recovery project b. <i>Saving our Species</i> project c. Other types of government funded restoration project d. Condition of consent for a development approval that required those species to be planted or translocated for the purpose of providing threatened species habitat e. Legal obligation as part of a condition of ruling of court. This includes regulatory directed or ordered remedial plantings (e.g. Remediation Order for clearing without consent issued under the BC Act or the Native Vegetation Act) f. Ecological rehabilitation to re-establish a PCT or Threatened Ecological Community (TEC) that was, or is carried out under a mine operations plan, or g. Approved vegetation management plan (e.g. as required as part of a Controlled Activity Approval for works on waterfront land under the <i>NSW Water Management Act 2000</i>)? i Yes – the planted native vegetation must be assessed in accordance with Chapters 4 and 5 of the BAM • No – Go to 4.	No – the tree species present are not threatened, and were not planted for rehabilitation, therefore, it is unlikely that they were planted or translocated for the purposes of criteria a. through g.
4. Was the planted native vegetation (including individuals of a threatened flora species) undertaken voluntarily for revegetation, environmental rehabilitation or restoration within a legal obligation to secure or provide for management of the native vegetation? i Yes – 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) • No – Go to 5.	No - the planted native vegetation was not undertaken as part of any conservation or rehabilitation projects or to satisfy a legal obligation. The planted native vegetation was likely planted for landscaping and screening purposes.
5. Is the planted 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	Yes - the planted native vegetation was likely established for landscaping purposes, being screening along the

Question	Response and justification
strips, roadside batters), landscaping in parks, gardens and sport fields/complexes, macadamia plantations or tea tree farms? - i Yes – 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) - ii No – Go to 6.	property boundaries, bank stabilization and shading.
6. Is the planted native vegetation a species listed as a widely cultivated native species on a list approved by the Secretary of the Department (or an officer authorised by the Secretary)? - i Yes – 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) - ii No – There may be other types of occurrences of planted native vegetation that do not easily fit into the decision-making key above.	N/A

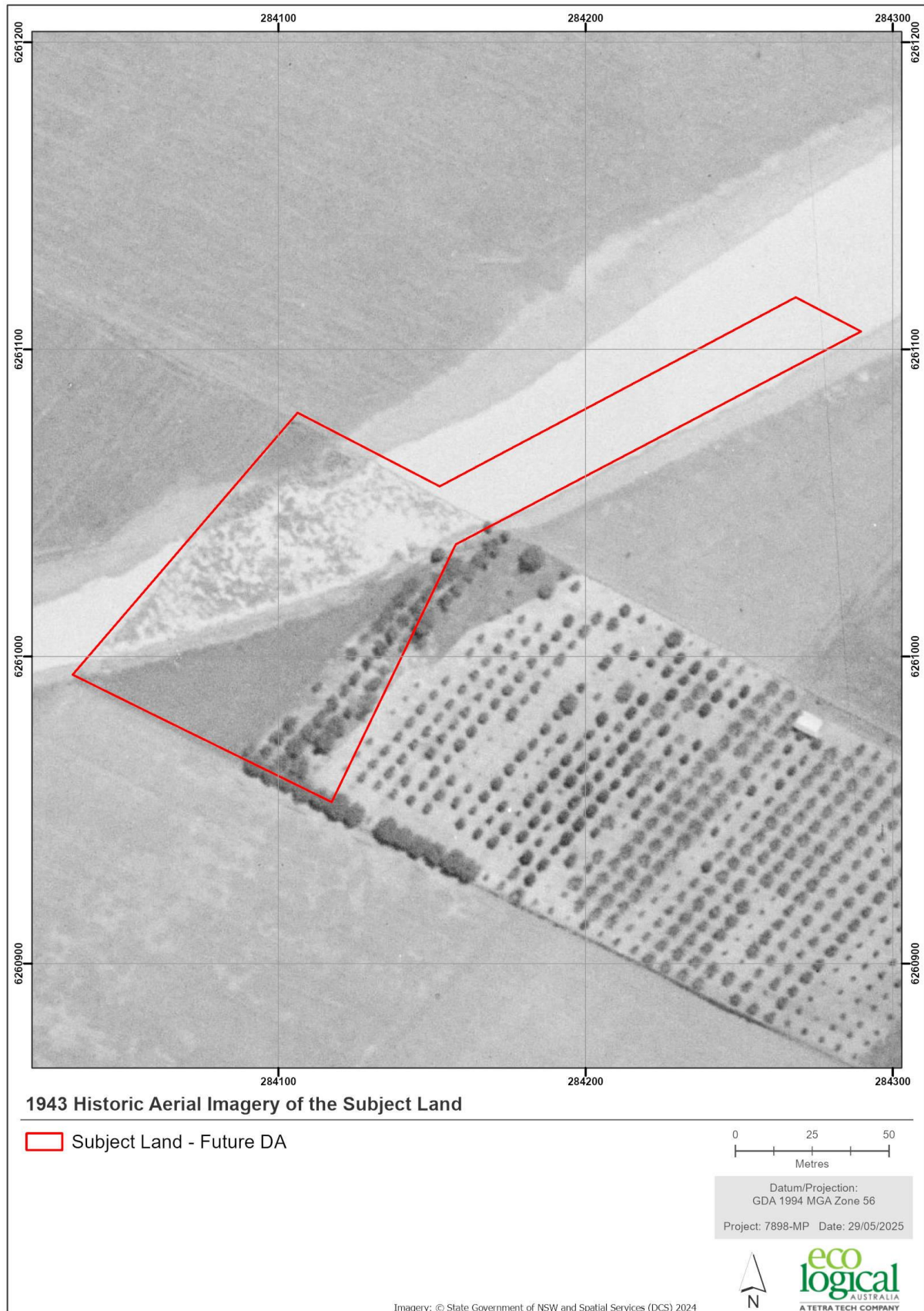


Figure 4: 1943 Aerial Imagery (Spatial Services 2024)

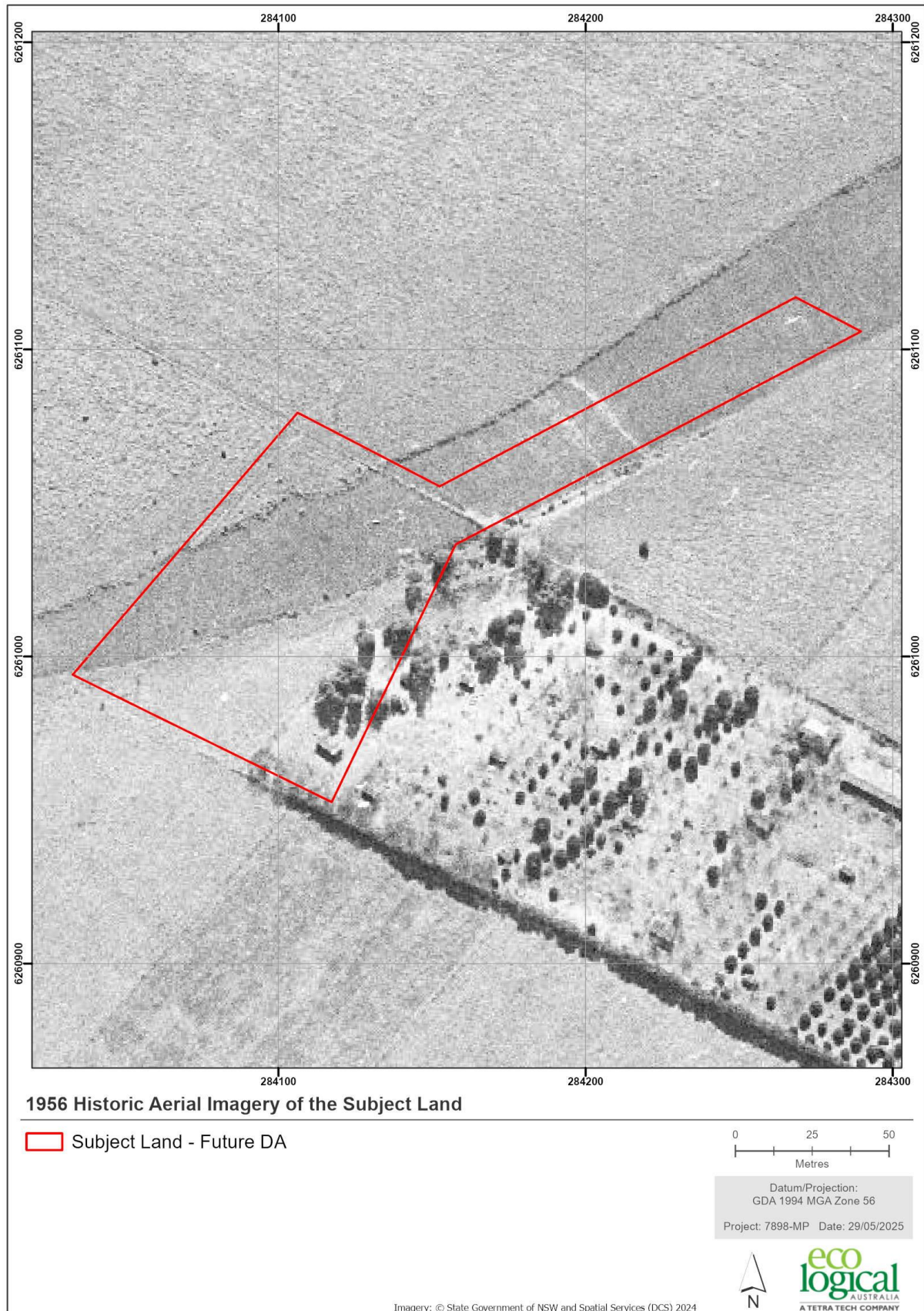


Figure 5: 1956 Aerial Imagery (Spatial Services 2024)



Figure 6: 2005 Aerial Imagery (Spatial Services 2024)

3. Landscape features

The subject land is located in the Cumberland IBRA subregion of the Sydney Basin IBRA region. Overall, the subject land is typical of the largely flat and predominantly cleared and developed Cumberland Plain IBRA subregion. The centre of the subject land contains an artificial flooded drainage basin that contains regularly mown exotic grass. An artificial/constructed dam encompasses a large portion of the northern border of the subject land and an inundated watercourse traverses west, connecting with an additional artificial/constructed dam in the western corner of the subject land (see Figure 7). Both the artificial drainage channel and constructed dam form the dominant landscape features within the subject land and are reflective of the history of anthropogenic disturbance and modification within the subject land and the surrounding assessment area.

The landscape features relevant to this BDAR as a site-based assessment includes an assessment area using a 1,500 m buffer surrounding the outside edge of the boundary of the subject land. The landscape features relevant to this assessment are presented in Table 5 and shown in Figure 2 and Figure 3.

Table 5: Landscape features relevant to the subject land

Landscape feature	Subject land / Development site	Data source
IBRA Region(s)	Sydney Basin	Interim Biogeographic Regionalisation for Australia (IBRA), Version 7 (NSW Government 2024).
IBRA subregion(s)	Cumberland	IBRA, Version 7.
Rivers and streams	A small tributary of School House Creek traverses through the subject land.	NSW LPI Waterway mapping (NSW Government 2024).
Estuaries and wetlands	The subject land does not contain any mapped important or local wetlands.	NSW directory of important wetlands (NSW Government 2024).
Connectivity of different areas of habitat	Limited connectivity exists due to commercial development, roads and cleared farmland surrounding the subject land. Some fragmented connectivity may remain for highly mobile species such as birds and bats.	Aerial imagery (Nearmap 2024).
Geological features of significance and soil hazard features	The subject land does not contain areas of geological significance (i.e. karst, caves, crevices, cliffs) and soil hazard features.	Aerial imagery. Field survey.
Areas of Outstanding Biodiversity Value	There are no AOBV within the subject land	Register of Declared Areas of Outstanding Biodiversity Value (DPIE 2022).
NSW (Mitchell) Landscapes	Hawkesbury – Nepean Channels and Floodplains	NSW (Mitchell) Landscapes - version 3.1 (DPE 2016).
Percent (%) native vegetation extent	The BAM assessment area is approximately 802.2 ha and contains approximately 128.3 ha of native vegetation (15.99%).	Calculated using aerial imagery and ArcGIS software.

4. Native Vegetation

Vegetation survey was undertaken within the subject land by Eco Logical Australia (ELA) ecologists Michael Gregor and Tim Finter on 1 July 2022. This survey was undertaken to validate vegetation as part of an initial Ecological Constraints Assessment (ELA 2022). Further vegetation survey was undertaken within the subject land by ELA ecologists Tim Finter and Elliot Poulter on 16 May 2024. Vegetation surveys included the identification and spatial extent mapping of Plant Community Types (PCTs) present within the subject land and associated Threatened Ecological Communities (TECs).

A total of four full floristic vegetation integrity plots (VI plots) were undertaken to assess the composition, structure, and function components of each vegetation zone, consistent with the BAM, and assist in identifying PCTs and potential TECs present (Table 6).

Table 6: Full floristic VI plots

PCT ID	PCT Name	Number of plots surveyed
3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	2
-	Planted native vegetation	1
-	Exotic vegetation/Exotic (drainage)	1

The majority of vegetation across the subject land is non-native, encompassing exotic tree and shrub vegetation and exotic grassland, including within an artificial drainage basin. An artificial/constructed dam encompasses a large portion of the northern border of the subject land, which contains components of native vegetation. Native vegetation was also present in a small patch in the western corner of the subject land, as were several scattered patches of planted native trees across the extent of the subject land (Figure 7).

Two native vegetation zones were validated on the subject land which includes a single native plant community type (PCT). These are outlined in the sections below and shown in Figure 7. The PCT within the subject land does not correspond with any TEC listed under the BC Act or EPBC Act. This is discussed further in Section 4.3.

4.1. Native vegetation extent on the subject land

The extent of native vegetation within the subject land and the development footprint is outlined in Table 7 and includes one PCT and planted native vegetation that does not conform to a PCT.

Table 7: Extent of native vegetation on the subject land

PCT ID	PCT name	Subject land (ha)	Development footprint (ha)
3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	0.46	0
-	Planted native vegetation	0.15	0.07

4.2. Plant Community Types present

One PCT, PCT 3975 *Southern Lower Floodplain Freshwater Wetland* was identified within the subject land (Table 8, Figure 7).

Table 8: Plant Community Types

PCT ID	PCT Name	Vegetation Class	Vegetation Formation	Area (ha) in subject land	Percent cleared (%)
3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	Coastal Freshwater Lagoons	Freshwater wetlands	0.46	93

4.2.1. 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. Attributes included dominant species in each stratum and relative abundance, community composition, soils and landscape position. Reference was made to the PCT descriptions in the BioNet Vegetation Classification (NSW DCCEEW 2024a) and any relevant final scientific determinations for TECs. Possible PCT options are provided in Table 9.

Table 9: Potential PCTs

Selected PCT ID	PCT Name	Other PCT options
3975	<i>Southern Lower Floodplain Freshwater Wetland</i>	3962 <i>Coastal Floodplain Phragmites Reedland</i> – Dominant characteristic species for this PCT were not present (i.e. <i>Phragmites australis</i>), which “almost always forms a mid-dense to dense upper layer” (NSW DCCEEW 2024a). Majority of characteristic ground stratum species of this PCT were not present within the subject land (e.g. <i>Bolboschoenus caldwellii</i> and <i>Eleocharis equisetina</i>). PCT 3962 occurs on alluvial backswamps on coastal floodplains. The subject land is not located on a coastal floodplain. 3976 <i>Southern Sands Freshwater Lagoon Wetland</i> – “The most reliable way to identify this community is by its environmental domain, as the assemblage composition is variable and at the time of description this PCT is not well sampled” (NSW DCCEEW 2024a). This PCT does not occur within the IBRA subregion of the subject land (Cumberland) and rather, occurs in “closed freshwater lagoons behind coastal barrier deposits on the South Coast botanical division” (NSW DCCEEW 2024a). Dominant characteristic species for this PCT, including <i>Baumea articulata</i>, <i>Machaerina articulata</i> & <i>Phragmites australis</i>, were not present and/or not evident as having a dominant presence. PCT 3976 occurs in coastal lagoons that are not permanently or intermittently open to the ocean. The subject land contains a freshwater wetland and is not located in a coastal area.

PCT 3975 SOUTHERN LOWER FLOODPLAIN FRESHWATER WETLAND

The occurrence of PCT 3975 *Southern Lower Floodplain Freshwater Wetland* within the subject land is located in the western corner and was present in good condition. PCT 3975 had a high abundance and cover of native species and exhibited a healthy understorey structure. A low abundance of exotic species was recorded within the ground stratum. This patch consisted of an open and sparse canopy of the exotic *Salix nigra* (Black Willow). It is noted that this exotic species is not listed in the PCT description, which details very few potentially occurring exotic species. The ground stratum was dominated by very dense stands of native aquatic species *Typha orientalis* (Bulrush) and *Carex appressa* (Tall Sedge). Other less dominant ground stratum species present included *Alternanthera denticulata* (Lesser Joyweed), *Centella asiatica* (Indian Pennywort), *Cynodon dactylon* (Couch grass), *Juncus usitatus* (Common Rush), *Ludwigia peploides* (Floating primrose-willow), *Persicaria decipiens* (Slender knotweed) and *Persicaria hydropiper* (Water pepper). These ground stratum species commonly occur within PCT 3975 and are indicative species for this PCT.

Native vegetation present within and alongside the constructed dam was also consistent with PCT 3975 and was defined as being in moderate condition. PCT 3975 in this patch had a lower abundance and cover of native species, was more exposed and subject to disturbance from adjacent exotic areas and ongoing maintenance/landscaping. This patch lacked the healthy understorey structure level of the patch recorded in 'good' condition, resulting in a lower conditional state (moderate condition). Despite being subject to increased disturbance, a low abundance of exotic species was recorded within the ground stratum. The BioNet Vegetation Classification (NSW DCCEEW 2024a) descriptive attributes further describe this PCT as occurring "*at the edges of more elevated lagoons that have prolonged inundation. Within these environmental and floristic parameters this PCT can encompass a range of sedgeland and aquatic forb assemblages*" (NSW DCCEEW 2024a).

PCT 3975 in this area encompassed a slightly different native species assemblages to that occurring in the western portion of the subject land, however, still contained several indicative ground stratum species for the PCT. The ground stratum was dominated by a dense cover of *Paspalum distichum* (Water Couch), *Ludwigia peploides subsp. montevidensis* (Floating Primrose-willow) and *Persicaria decipiens* (Slender Knotweed). Other indicative species present included *Azolla pinnata* (Mosquito fern), *Centella asiatica* (Indian Pennywort), *Cynodon dactylon* (Couch grass), *Juncus usitatus* (Common Rush) and *Machaerina articulata* (Jointed rush).

Both patches of PCT 3975 within the subject land also conformed with the landscape and soil descriptions provided in the BioNet Vegetation Classification; "*occurs in depressions on Quaternary alluvial deposits (primarily backswamps with organic-rich mud, silt or clay soils)*" (NSW DCCEEW 2024a). The subject land is located in a landscape position where this PCT typically occurs, i.e. the soil landscape within the subject land is mapped as 'Richmond – Alluvial' – with a geology defined as "Quaternary alluvium consisting of sand, silt and gravels derived from sandstone and shale" (NSW DCCEEW 2024a).

Vegetation which was validated as PCT 3975 was further supported by the BioNet Vegetation Classification (NSW DCCEEW 2024a) descriptive attributes and landscape position which describes the PCT as "often occurring in "disturbed environments and may potentially include derived states". This is consistent with the occurrence of the PCT in the subject land and based on the artificial nature of the drainage line and dam in which the PCT occurs, combined with the assessment of historical aerial imagery, it does not constitute a remnant freshwater wetland community.

4.3. Threatened Ecological Communities

4.3.1. Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions

PCT 3975 is listed in the BioNet Vegetation Classification (NSW DCCEEW 2024a) as ‘partially subset of’ the TEC *Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions*, listed as an Endangered Ecological Community (EEC) under the BC Act (Table 10). This means that the PCT and EEC do overlap in some locations but can also occur independently of each other. While there are species present in the subject land that are consistent with the EEC, the occurrence of PCT 3975 in the subject land is not consistent with the EEC, as it is located next to, within and alongside a constructed dam and a historically modified watercourse.

The NSW Scientific Determination for the EEC states that “*artificial wetlands created on previously dry land specifically for purposes such as sewerage treatment, stormwater management and farm production, are not regarded as part of this community, although they may provide habitat for threatened species.*” PCT 3975 in the subject land would fall into this category of artificial wetland, as the dam is expected to have been constructed for stormwater management and sediment capture. This is further evidenced in the assessment of historical aerial imagery in which native vegetation in areas now containing the PCT was absent prior to the establishment of the artificial dams. Given this, it is concluded that PCT 3975 within the subject land is not consistent with the *Freshwater Wetlands on Coastal Floodplains EEC*.

Table 10: Threatened Ecological Communities

PCT ID	Area (ha)	Listing Status under the BC Act	Listing Status under the EPBC Act
3975	-	Subset of the Endangered <i>Freshwater Wetlands on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions</i> EEC. PCT 3975 doesn't conform to the listed TEC as described in Section 4.3 above.	Not a listed TEC

4.4. Vegetation integrity assessment

4.4.1. Vegetation zones

A total of two native vegetation zones were identified on the subject land (Table 11, Figure 8). A total of four VI plots were collected within the subject land, two within the vegetation zones and a further two within the planted native vegetation and exotic vegetation (encompassing the amended development footprint) to assist in demonstrating their non-conformance to a PCT.

Profiles of PCT 3975 – Good condition and PCT 3975 – Moderate condition are provided in Table 12 and Table 13.

Table 11: Vegetation zones on the subject land

Vegetation Zone	PCT ID	PCT Name		Condition	Area (ha) in subject land	Area (ha) in development footprint	Vegetation Integrity Survey Plots required	Vegetation Integrity Survey Plots collected
1	3975	<i>Southern Floodplain</i>	<i>Lower</i>	Good	0.09	0	0	1
		<i>Freshwater Wetland</i>						
2	3975	<i>Southern Floodplain</i>	<i>Lower</i>	Moderate	0.37	0	0	1
		<i>Freshwater Wetland</i>						
-	N/A	Planted vegetation	native	N/A	0.15	0.07	0	1
-	N/A	Exotic vegetation / Exotic (drainage)		N/A	0.51	0.16	0	1
Total					1.12	0.23		

Table 12: Zone 1 PCT 3975 Good Condition

3975 - Southern Lower Floodplain Freshwater Wetland			
Vegetation formation/class		Freshwater Wetlands/Coastal Freshwater Lagoons	
Conservation status		NSW BC Act Endangered: N/A – PCT does not conform to the listed TEC	
		EPBC Act: Not listed	
Characteristic trees	canopy	PCT 3975 does not commonly exhibit a characteristic canopy. The exotic tree <i>Salix nigra</i> (Black Willow) was present in the canopy.	
Characteristic mid-storey		PCT 3975 does not commonly exhibit a characteristic mid-storey.	
Characteristic groundcovers		<i>Alternanthera denticulata</i> , <i>Carex appressa</i> , <i>Cynodon dactylon</i> , <i>Juncus usitatus</i> , <i>Ludwigia peploides</i> subsp. <i>montevidensis</i> , <i>Persicaria decipiens</i> , <i>Persicaria hydropiper</i> and <i>Typha orientalis</i> .	
Exotic species / HTW cover		<i>Aster subulatus</i> , <i>Cirsium vulgare</i> , <i>Conyza bonariensis</i> , <i>Cyperus brevifolius</i> , <i>Malus spp.</i> , <i>Ranunculus sceleratus</i> , <i>Rubus anglocandicans</i> , <i>Salix nigra</i> , <i>Setaria parviflora</i> , <i>Sida rhombifolia</i> , <i>Solanum sisymbriifolium</i> , <i>Verbena bonariensis</i> and <i>Verbena quadrangularis</i> - 7.1%	
Condition		Good	
Variation and disturbance	and	There was a high level of disturbance within the wider subject land and this patch occurs as part of an artificial drainage line. The patch had a high abundance and cover of native species with minimal disturbance and exhibited a healthy understorey structure. The presence of several exotic species was recorded with low cover and abundance.	
No. sites sampled		1	
Threatened flora species		No threatened flora species were identified	
Fauna habitats		The presence of the artificial drainage line with established native vegetation provides potential habitat for amphibian, reptile, bird and microbat species. The disturbed nature of the wider subject land and the dominant presence of <i>Carex appressa</i> and <i>Typha orientalis</i> within a wetland is also preferred habitat for a range of native frog species as discussed further in Section 5.1.1 (Targeted surveys).	
Composition	Structure	Function	Vegetation Integrity Score
71.4	98.8	-	84



Table 13: Zone 2 PCT 3975 Moderate Condition

3975 - Southern Lower Floodplain Freshwater Wetland			
Vegetation formation/class		Freshwater Wetlands/Coastal Freshwater Lagoons	
Conservation status		NSW BC Act Endangered: N/A – does not conform to the listed TEC	
		EPBC Act: Not listed	
Characteristic trees	canopy	PCT 3975 does not commonly exhibit a characteristic and no characteristic native canopy trees were present.	
Characteristic mid-storey		PCT 3975 does not commonly exhibit a characteristic mid-storey.	
Characteristic groundcovers		<i>Cynodon dactylon</i> , <i>Juncus usitatus</i> , <i>Ludwigia peploides subsp. montevidensis</i> , <i>Machaerina articulata</i> , <i>Paspalum distichum</i> and <i>Persicaria decipiens</i> .	
Exotic species cover	/ HTW	<i>Aster subulatus</i> , <i>Axonopus fissifolius</i> , <i>Cyperus brevifolius</i> , <i>Cyperus eragrostis</i> , <i>Paspalum dilatatum</i> , <i>Paspalum urvillei</i> , <i>Rumex obtusifolius</i> , <i>Taraxacum officinale</i> , <i>Verbena bonariensis</i> – 5.5%	
Condition		Moderate	
Variation and disturbance	and	There was a high level of disturbance within the wider subject land and this patch occurs within an artificially constructed dam. The patch had a lower abundance and cover of native species compared to PCT 3975 – Good condition (see Table 12), was more exposed and subject to disturbance from adjacent exotic areas and ongoing maintenance/landscaping. This patch lacked the healthy understorey structure of the PCT 3975 – Good condition patch, resulting in a lower conditional state. Despite the presence of a number of exotic species, these species were recorded with low cover and abundance.	
No. sites sampled		1	
Threatened flora species		No threatened flora species were identified	
Fauna habitats		The presence of the artificial dam with established native vegetation provides potential habitat for amphibian, reptile, bird, fish and microbat species.	
Composition	Structure	Function	Vegetation Integrity Score
78.6	29	-	47.7



4.4.2. Assessing vegetation integrity

A vegetation integrity assessment using the BAM Calculator (BAMC) was undertaken and the results are outlined in Table 14.

As per Appendix H of the BAM, for PCTs classified under the freshwater wetland vegetation formation, such as PCT 3975, only composition, structure and the high threat weed cover functional attribute are required to be measured.

The locations of plots undertaken within the subject land is displayed in Figure 8. Due to the layout of the subject land, plot dimensions were modified to be undertaken to meet the requirements of the BAM (i.e. a standard 20 x 20 m plot or a 40 x 10 m plot = 400m²). All field data collected at VI plots is included in Appendix B and Appendix C.

Table 14: Vegetation integrity scores

Vegetation Zone	PCT ID	Condition	Area (ha) in subject land	Composition Condition Score	Structure Condition Score	Function Condition Score	Presence of Hollow bearing trees	Current vegetation integrity score
1	3975	Good	0.09	71.4	98.8	-	No	84
2	3975	Moderate	0.37	78.6	29	-	No	47.7
Total			0.46					

4.4.3. Patch size

Patch size was calculated using available vegetation mapping for all patches of intact native vegetation on and adjoining the subject land. Patch size was assigned to one of four classes (<5 ha, 5-24 ha, 25-100 ha or ≥100 ha). A patch size of <5 ha was determined for the subject land.

4.5. Use of local data

No local data from outside of the subject land was used in the preparation of this BDAR.

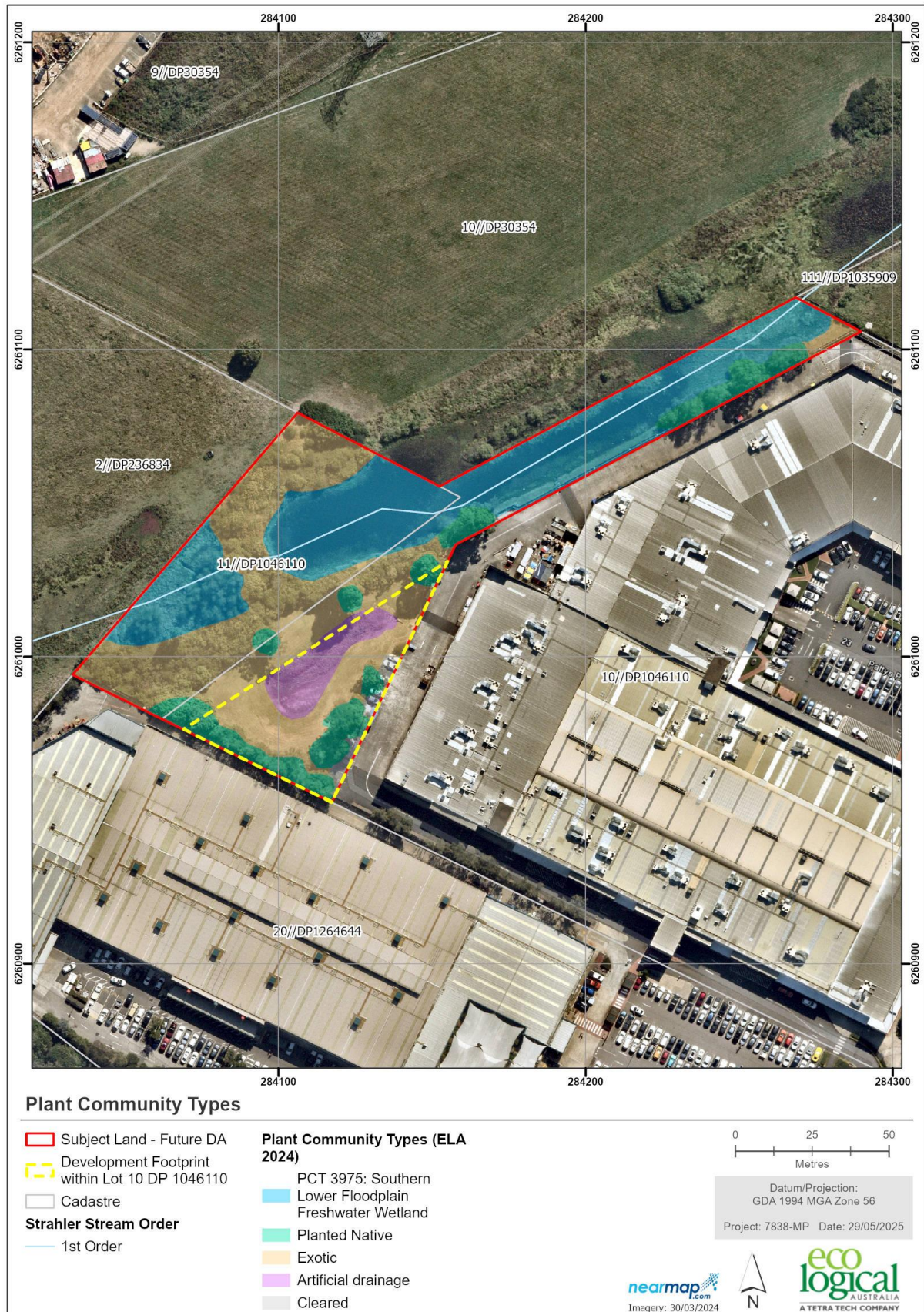


Figure 7: Plant Community Types (PCTs)



Figure 8: Vegetation Zones

5. Threatened Species

5.1.1. Targeted threatened species survey methodology

ELA completed targeted surveys in March 2024 to meet survey requirements under the BAM and consistent with relevant survey guidelines for the following threatened fauna species / species groups (ELA 2024):

- *Litoria aurea* (Green and Golden Bell Frog)
- threatened microbat species.

5.1.1.1. Targeted fauna survey and effort

Survey effort for the targeted threatened fauna surveys is outlined in Table 15 and displayed in Figure 9.

Table 15: Targeted fauna survey and effort

Date(s)	Survey method	Surveyors	Total effort
Threatened frogs – Green and Golden Bell Frog			
11.03.2024	Call Play-back	Tim Finter	8 person hours (480 minutes) over 4 nights
12.03.2024	Spotlighting	Jake Webb	
13.03.2024		Claire Plunkett	
14.03.2024			
Threatened microbats			
11.03.2024 (deployed)	4 x Anabat Swift	Tim Finter	16 survey nights (4 x Anabat Swift detectors over 4 nights)
15.03.2024 (collected)	deployment and collection and ultrasonic analysis	Jake Webb	

5.1.1.2. Weather conditions

Weather conditions during the targeted threatened fauna surveys are provided in Table 16. Weather and climate data was taken from Penrith Lakes AWS NSW 5.5 kms away (Station 067113) (BOM 2024). Weather conditions were suitable for the completion of targeted threatened amphibian and microbat surveys.

Table 16: Weather conditions during the targeted threatened fauna survey

Date	Method/survey employed	Rainfall (mm)	Minimum temperature °C	Maximum temperature °C	Wind direction and speed (km/h) at 9AM	Wind direction and speed (km/h) at 3PM
11.03.2024	Anabats and, Amphibian survey	0	17.6	31.3	Calm	NNE 9
12.03.2024	Anabats and, Amphibian survey	0	15.5	36.3	Calm	NNW 6
13.03.2024	Anabats and, Amphibian survey	0	17.7	31.6	ENE 4	WNW 6

Date	Method/survey employed	Rainfall (mm)	Minimum temperature °C	Maximum temperature °C	Wind direction and speed (km/h) at 9AM	Wind direction and speed (km/h) at 3PM
14.03.2024	Anabats and, Amphibian survey	0	17.0	36.6	Calm	E 9

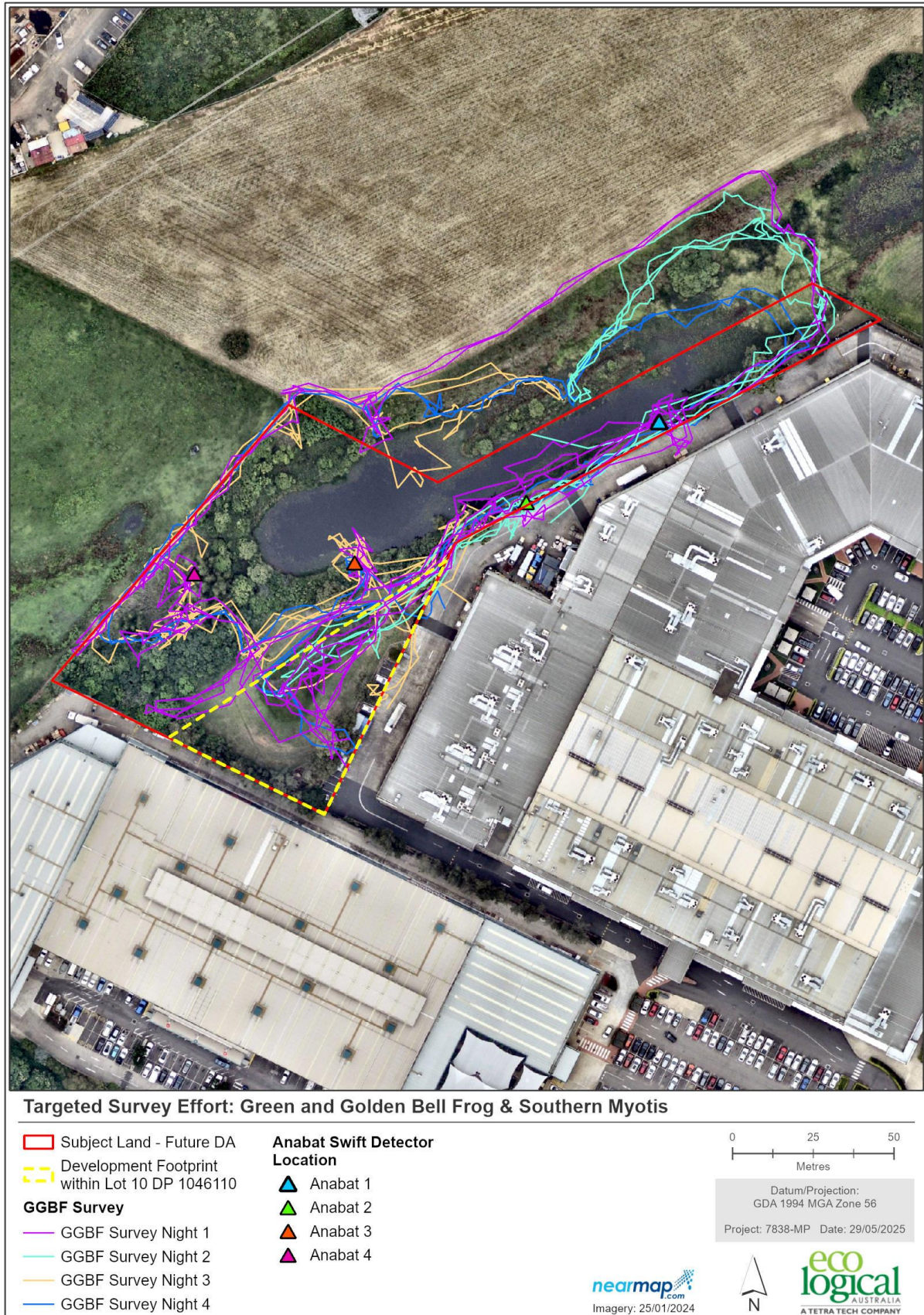


Figure 9: Targeted fauna survey effort

5.1.1.3. Green and Golden Bell Frog targeted survey

Field survey for Green and Golden Bell Frog adhered to the methodology outlined in the 'NSW Survey Guide for Threatened Frogs: A guide for the survey of threatened frogs and their habitats for the Biodiversity Assessment Method (DPIE 2020).' The survey guidelines state that the survey period for Green and Golden Bell Frog can be completed between November and March.

Survey for Green and Golden Bell Frog included a combination of aural-visual methodology, involving a listening and frog call-playback component, as well as searches (meandering transects and spotlighting) for tadpole/adults in areas of potential habitat for the species. These potential habitat areas included damp/inundated grassland areas and areas of vegetation mapped as PCT 3975: *Southern Lower Floodplain Freshwater Wetland*. Surveys were completed by two ELA ecologists for 1 hour per survey night over four nights (11-14 March 2024) in accordance with the requirements under the BAM.

5.1.1.4. Threatened microbat species targeted survey

To determine the presence of threatened microbat species within the subject land, targeted survey was undertaken in accordance with 2021 Department of Planning, Industry and Environment (DPIE) 'Species credit' *threatened bats and their habitats NSW survey guide for the Biodiversity Assessment Method*.

Under the guidelines passive detection of Southern Myotis must be undertaken between October and March for a minimum of four nights and four detectors, for a total effort of 16 nights. The targeted surveys fell outside of the survey guideline period of November to January for the remaining threatened microbat species.

Four ultrasonic microbat call detectors (Anabat Swift – Titley Scientific) were deployed around the study area (Plate 3). Detectors were deployed in areas of potential habitat, i.e. waterbodies with fringing vegetation that provide foraging habitat. Each detector was placed approximately 50m apart. The four detectors were set to record over four nights, from 11-15 March 2024, resulting in a total of 16 trap-nights. The locations of Anabat Swift detectors are shown in Figure 9.

Each detector was set to record ultrasonic call data across the entire night (e.g., recording commenced at dusk and concluded at dawn). Table 17 provides a summary of the detectors used to conduct the survey, the dates surveyed, overall survey effort and the number of .WAV sound files that were submitted for analysis.

The data collected on the ultrasonic microbat call detectors was analysed by ELA Microbat Call Analyst Tara Dowling and reviewed by Microbat Specialist- subconsultant Dr Rodney Armistead. The results of the ultrasonic call surveys were used to determine the presence or potential presence of threatened microbat species and other microbat species present within the subject land, and also provide an indication of activity levels of each present microbat species.

Table 17: Anabat Swift detector locations, dates surveyed, survey effort and the number of files submitted for analysis

Detector Type	Detector reference number	GPS co-ordinates	Nights surveyed	Survey nights	Files submitted for analysis
Anabat Swift	SUT03	-33.768480, 150.669961	11, 12, 13 and 14 March 2024	4	8483
Anabat Swift	SUT04	-33.768875, 150.668395	11, 12, 13 and 14 March 2024	4	95
Anabat Swift	SUT05	-33.768853, 150.668934	11, 12, 13 and 14 March 2024	4	4640
Anabat Swift	BRI13	-33.768699, 150.669511	11, 12, 13 and 14 March 2024	4	4239
Total				16	17,457

5.1.2. Targeted threatened species survey results

5.1.2.1. Green and Golden Bell Frog

Green and Golden Bell Frog was not recorded during the targeted survey. The presence of *Gambusia holbrooki* (Plague Minnow) was noted in the dam during the survey. Suitable breeding and non-breeding shelter habitat may be limited by the presence of this introduced pest fish (DPIE 2020).

Common frog species recorded during the survey included *Crinia signifera* (Common Eastern Froglet), *Limnodynastes peronii* (Striped Marsh Frog), *Litoria fallax* (Eastern Dwarf Tree Frog) and *Litoria peronii* (Peron's Tree Frog). These species were recorded within the patch of PCT 3975 *Southern Lower Floodplain Freshwater Wetland* in the western corner of the subject land (PCT 3975 – Good condition).

5.1.2.2. Threatened microbat species

Southern Myotis was recorded as 'potentially present' during the targeted survey, based on the recording of calls which correspond to the characteristic call shape and frequency of the species.

One threatened microbat species was recorded definitively (a total of two calls) and confirmed as present during the targeted survey:

- *Chalinolobus dwyeri* (Large-eared Pied Bat) (Endangered, BC Act and EPBC Act).

An additional three threatened microbat species were evaluated as being 'potentially present' but could not be reliably differentiated from other locally occurring microbat species based on similar call characteristics:

- *Miniopterus orianae oceanensis* (Large Bent-winged Bat) (Vulnerable, BC Act)
- Southern Myotis (Vulnerable, BC Act)
- *Vespadelus troughtoni* (Eastern Cave Bat) (Vulnerable, BC Act).

A single potential Southern Myotis call was recorded from just the one (Anabat Swift, SUT04) call device. The potential Southern Myotis call was unable to be reliably separated from the calls of the non-

threatened *Nyctophilus geoffroyi* (Lesser Long-eared Bat) and *Nyctophilus gouldii* (Gould's Long-eared Bat) which are also known to occur in the Cumberland Plain and share common call characteristics with the Southern Myotis. Potential Large Bent-winged Bat calls were placed into a species complex with *Vespadelus darlingtoni* (Large Forest Bat) and *V. regulus* (Southern Forest Bat). Large Bent-winged Bat calls can only be distinguished from the two Forest Bats when there is a down-sweeping tail, long characteristic section and / or uneven consecutive pulses present (Pennay et al. 2004). Similarly, Eastern Cave Bat calls in the Penrith LGA cannot be distinguished from non-threatened *V. pumilus* (Eastern Forest Bat) and *V. vulturnus* (Little Forest Bat) and as such, the four potential Eastern Cave Bat calls were placed in a species complex with Eastern Forest Bat and Little Forest Bat.

The following threatened microbat species listed as Vulnerable under the NSW BC Act were also confirmed as present or potentially present including:

- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat) (Vulnerable, BC Act)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle) (Vulnerable, BC Act)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat) (Vulnerable, BC Act).

A summary of the threatened microbat species identified from the ultrasonic analysis report (Attachment 1), their listings under the BC Act and EPBC Act and whether they are listed SAIL entities is provided in Table 18.

Further assessment of present/potentially present threatened microbat species under the BC Act and EPBC Act has been completed in Appendix E and Appendix F respectively.

Table 18: Bat detector analysis results

Species name	Common name	BC Act	EPBC Act	SAIL entity	Present/potentially present	Ecosystem/Species credit
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Endangered	Endangered	Yes – breeding habitat	Present	Species
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	Vulnerable	Not listed	No	Potentially Present	Ecosystem
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	Vulnerable	Not listed	No	Present	Ecosystem
<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat	Vulnerable	Not listed	Yes – breeding habitat	Potentially Present	Species
<i>Myotis macropus</i>	Southern Myotis	Vulnerable	Not listed	No	Potentially Present	Species
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	Vulnerable	Not listed	No	Potentially Present	Ecosystem
<i>Vespadelus troungtoni</i>	Eastern Cave Bat	Vulnerable	Not listed	Yes – breeding habitat	Potentially Present	Species

5.1.3. Species Polygons

As the amended development footprint does not trigger the BOS, the retirement of ecosystem and species credits is not required. As such, the creation of species polygons which informs credit calculation for threatened species is not required.

5.1.4. Expert reports

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

5.2. Identification of prescribed additional biodiversity impact entities

Any additional prescribed impact entities relevant to the subject land are outlined below.

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

The subject land does not contain karst, caves, crevices, cliffs, rocks and other geological significance.

5.2.2. Human-made structures and non-native vegetation

The subject land does not contain any human-made structures or non-native vegetation that is considered as potential habitat for threatened entities.

The non-native vegetation is present as cleared areas of regularly mown exotic grassland, a flooded artificial drainage basin dominated by an understory of exotic species, along with large infestations of well-established exotic shrub and tree vegetation, with little prospect of threatened species utilising this habitat for foraging or breeding. Further, the subject land is located in a highly modified and fragmented landscape, with limited connectivity surrounding the subject land for threatened species to utilise.

5.2.3. Habitat connectivity

An assessment of prescribed impacts to habitat connectivity is presented in Table 19.

Table 19: 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	Megabats: <i>Pteropus poliocephalus</i> (Grey-headed Flying-fox) Microbats: <i>Chalinolobus dwyeri</i> (Large-eared Pied Bat) <i>Falsistrellus tasmaniensis</i> (Eastern False Pipistrelle) <i>Micronomus norfolcensis</i> (Eastern Coastal Free-tailed Bat) <i>Miniopterus australis</i> (Little Bent-winged Bat) <i>Miniopterus orianae oceanensis</i> (Large Bent-winged Bat) <i>Myotis macropus</i> (Southern Myotis) <i>Scoteanax rueppellii</i> (Greater Broad-nosed Bat) <i>Vespadelus troughtoni</i> (Eastern Cave Bat) Birds: <i>Lathamus discolor</i> (Swift Parrot)
b. describe the importance of the connectivity to threatened entities, particularly for	The subject land is located within a highly disturbed and modified landscape. As such, there is limited available threatened species habitat within and outside of the subject land and connectivity to suitable habitat is limited.

Criteria in accordance with BAM 2020 Section 6.1.3	Response
maintaining movement that is crucial to the species' life cycle	It is highly unlikely that the vegetation present at the subject land would serve any other purpose other than temporary foraging habitat and refuge for highly mobile species (e.g. birds and bats). Confirmed and potential calls from threatened microbat species were recorded during targeted surveys. A single potential Southern Myotis call was recorded and nearby a roost for his species is located nearby along within Schoolhouse Creek. The low level of activity (one potential call) recorded, combined with the occurrence of similar and better-quality habitat outside of the development footprint, suggests that it is unlikely that the habitat within the development footprint is of critical importance for maintaining the species life cycle. The planted native vegetation within the subject land may provide foraging habitat for the Grey-headed Flying-fox when in flower. The closest Nationally Important Camp is located approximately 3.2 km north of the subject land, in Emu Plains. Other Flying-fox Camps nearby are located at Ropes Creek (approximately 12.7 km east) and Yarramundi (approximately 16.5 km north) (DCCEEW 2024b). Grey-headed Flying-foxes may travel as far as 40 km from their camp to feed, therefore, whilst the vegetation within the development footprint would likely provide a marginal foraging resource for the species, they would not solely rely on the vegetation within the development footprint as their only foraging resource.

5.2.4. Water bodies, water quality and hydrological processes

There is a modified watercourse and constructed dam present within the subject land. This watercourse is a small tributary of School House Creek that traverses through the subject land and is mapped as Strahler Stream Order 1. If a local development is proposed on 'waterfront land' (within 40 m of the top of bank), it is considered a Controlled Activity and requires a Controlled Activity Approval (CAA).

The proposed amended development footprint encompassing the truck deck and new building will not cover the watercourse or constructed dam, therefore not directly impacting the banks of the watercourse or dam and vegetation present within. This will therefore not impact habitat for peri-urban fauna, including reptiles and amphibians that inhabit the vegetation alongside the dam and watercourse. Further, the presence of Plague Minnow was noted in the dam during the survey. Suitable breeding and non-breeding shelter habitat for reptiles and amphibians is limited by the presence of this introduced pest fish (DPIE 2020). As such, the likely presence of reptiles and amphibians inhabiting these riparian areas is already considered low.

The construction of the truck deck and new building will also not reduce the availability of foraging habitat above the waterbodies for threatened microbat species.

5.2.5. Wind farm developments

The proposed development on the subject land is not a wind farm development.

5.2.6. Vehicle strikes

Given the locality is already highly developed and modified, vehicle strike is an existing threat to fauna. No additional threat to fauna from vehicle strike, beyond the existing levels, is likely to result from the proposed development.

6. Avoiding and Minimising Impacts on Biodiversity Values

The BAM requires locating and designing a project to avoid and minimise direct and indirect impacts on biodiversity values and prescribed biodiversity impacts.

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 requires proponents to avoid and minimise impacts on biodiversity values. As detailed previously, the subject land occurs in a highly developed and modified landscape. The areas of highest biodiversity value within the subject land are the patches of native vegetation comprising PCT 3975, in the western corner of the subject land and within and alongside the constructed dam, and the potential threatened fauna habitat these areas provide (Figure 7). The project has been located so that the total area of PCT 3975 within the subject land (0.46 ha) has been avoided and will not be impacted by the amended development footprint.

Further details relevant to how the proposed development has been located to avoid and minimise impacts is outlined in Table 20 below.

Table 20: Locating a project to avoid and minimise impacts on vegetation and habitat

Approach	How addressed and justification
Locating the project in areas lacking biodiversity values	Approximately 74% of the amended development footprint has been located in areas of exotic vegetation and existing cleared land with minimal biodiversity values (compared to 59% based on the original development footprint). The approximate 26% of the remaining development footprint is located in areas of planted native vegetation. Native remnant vegetation (PCT 3975) will not be impacted.
Locating the project in areas where vegetation or threatened species habitat is in the poorest condition	The amended development footprint has been located predominantly in areas of exotic vegetation where vegetation and potential threatened species habitat is in the poorest condition. The development footprint has been reduced in the north to avoid impacts to PCT 3975 and some planted native vegetation which may provide foraging habitat for threatened species (Figure 10).
Locating the project (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 project has been located to avoid any impacts to TECs which are not present in the development footprint. Through locating the amended development footprint in predominantly exotic land, the project has avoided impacts to potential foraging habitat (PCT 3975) associated with Southern Myotis (biodiversity risk weighting 2.0) and Eastern Cave Bat (biodiversity risk weighting 3.0). The amended development footprint has also been located to avoid potential impacts to land mapped as important habitat (NSW DCCEEW 2024d) for the Swift Parrot (biodiversity risk weighting 3.0). The project is not located in an area which constitutes breeding habitat for threatened microbat species at risk of SAII (Large-eared Pied Bat, Large Bent-winged Bat or Eastern Cave Bat) such as caves and clifflines, nor in areas of breeding habitat (hollows in Tasmania) for the Swift Parrot, which is also at risk of SAII.
Locating the project outside of the buffer area around breeding habitat features such as nest trees or caves.	The development footprint does not contain caves or similar human-made structures which could be breeding habitat for threatened microbat species within the development footprint and is also not located within a 100 m buffer of potential breeding habitat features. Additionally, there are no hollow-bearing trees or large stick nests within the development footprint.

Approach	How addressed and justification
Locating the project such that connectivity enabling movement of species and genetic material between areas of adjacent or nearby habitat is maintained	Habitat connectivity between the subject land and adjacent areas is limited due to the highly disturbed and modified nature of the surrounding landscape. The development footprint has been located directly adjacent to existing buildings in predominantly cleared land and exotic vegetation, to avoid any potential impacts to habitat connectivity through the east-west drainage line and areas of PCT 3975 located within the drainage line.

6.1.2. Prescribed biodiversity impacts

The project has been located to avoid and minimise prescribed biodiversity impacts as follows:

- The development footprint has been located outside of a 100 m buffer of caves, cliffs and rocky outcrops
- The development footprint is located directly adjacent to existing buildings, including areas of existing cleared land, in order to minimise potential impacts to flyways and movement corridors
- The development footprint is located so that 0.08 ha of planted native vegetation within the subject land is retained which may provide foraging habitat or shelter sites (e.g. birds nest and possum dreys) for common peri-urban fauna.

6.2. Designing a project to avoid and minimise impacts on biodiversity values

6.2.1. Direct and indirect impacts

The proposed development has been designed as an extension to the existing Harvey Norman Homemaker Centre so as to minimise impacts associated with an otherwise separate new development footprint. Given the development footprint is located immediately adjacent to an existing development and is predominantly located in exotic vegetation and existing cleared land, the project has been designed to create a commercial area consistent with the surrounding land use.

Table 21 details the design of the proposed development to avoid and minimise direct and indirect impacts on biodiversity values.

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

Approach	How addressed and justification
Designing and locating ancillary facilities in areas that have limited biodiversity values	Where possible, ancillary features will be located in existing cleared areas, including the exiting Homemaker Centre which have limited biodiversity values.
Project design features to avoid and minimise direct and indirect impacts	The design of the amended development has reduced the clearing footprint by increasing the proposed building height. The result of this amended building design has avoided impacts to native remnant vegetation and associated flora and fauna habitat.
Actions and activities that provide for rehabilitation, ecological restoration and/or ongoing maintenance of retained areas of native vegetation, threatened species, threatened	The proposed development will retain all areas of PCT 3975 within the subject land. Additionally, a Vegetation Management Plan (VMP) would be developed to accompany a future DA that details rehabilitation, ecological restoration and/or ongoing maintenance of retained areas of native vegetation to be undertaken.

Approach	How addressed and justification
ecological communities and their habitat on the subject land.	The VMP would consider the inclusion of native species as part of their riparian rehabilitation works that align with PCT 3975.

6.2.2. Prescribed biodiversity impacts

The project has been designed to minimise prescribed biodiversity impacts where possible. The design of the proposed project will seek to minimally increase the maximum building height from 12 m to 15 m building, which will minimise any potential flyway impacts. The amended design avoids any impacts to the modified watercourse and constructed dam and therefore maintains hydrological processes. Measures outlined in Section 6.1.2 will ensure any potential residual prescribed impacts are mitigated.

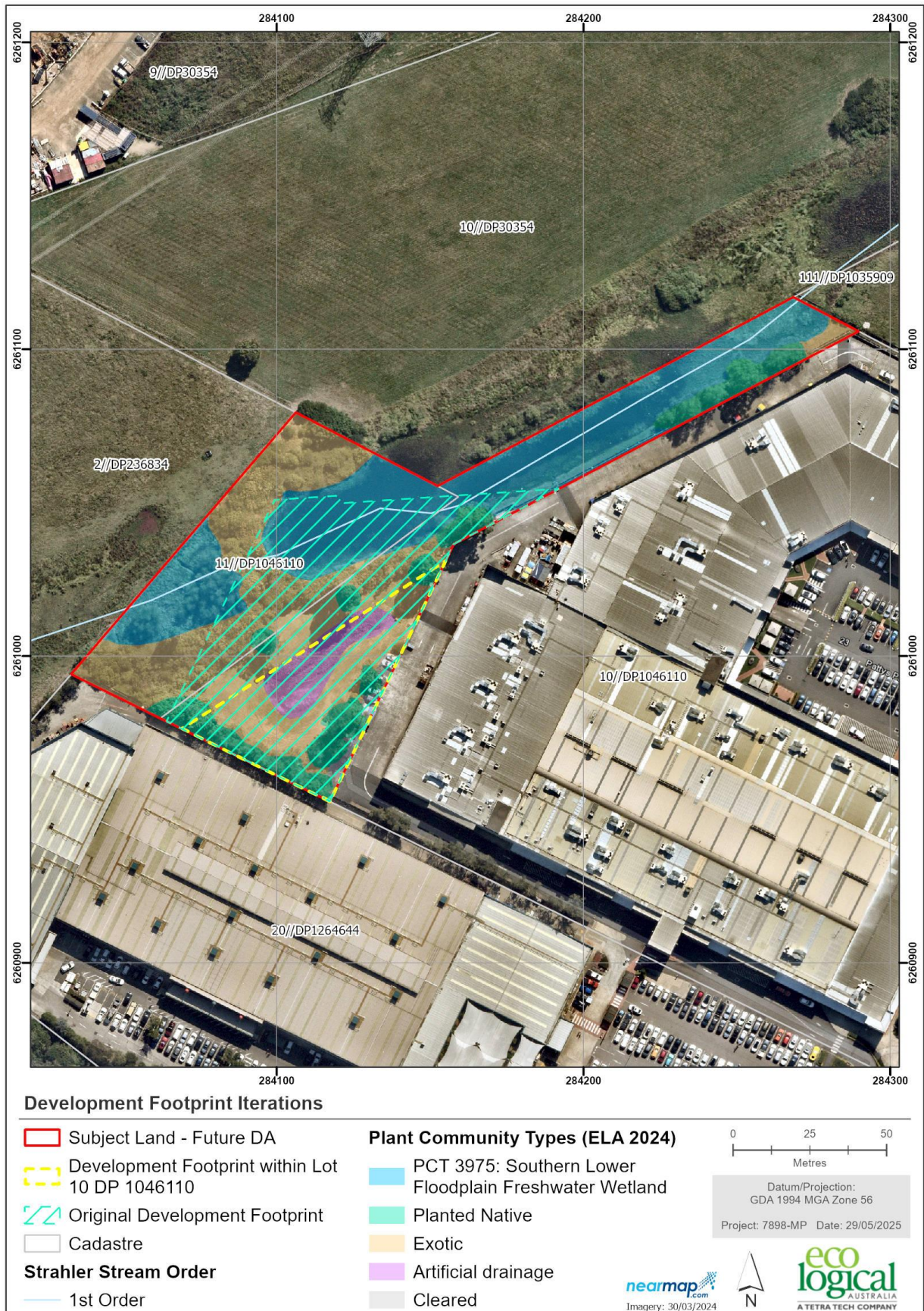


Figure 10: Development Footprint Iterations

Impact Assessment

6.3. Direct impacts

The direct impacts of the proposed development include impacts to planted native vegetation and exotic vegetation / exotic (drainage) vegetation (Table 22).

Table 22: Direct impacts to planted native vegetation

Vegetation Zone	PCT ID	PCT Name	Direct impact (ha)
Planted native vegetation	-	-	0.07
Exotic vegetation / Exotic (drainage)	-	-	0.16

No native remnant vegetation will be removed as part of the proposed development. There are no hollows suitable for use as habitat features within the planted native trees to be removed and the overall biodiversity value of the planted native vegetation is considered low. The planted native vegetation does provide potential foraging habitat for a range of threatened fauna species including Grey-headed Flying-fox, Swift Parrot and a number of different threatened microbat species and as such, further assessment under the BC Act and EPBC Act has been completed for these species and are documented in Appendix E and Appendix F, respectively.

6.4. Indirect impacts

The indirect impacts of the development are outlined in Table 23.

Table 23: Indirect impacts

Indirect impact	Description (nature, extent and frequency)	Biodiversity affected	Duration/Timing	Consequence
Inadvertent impacts on adjacent habitat or vegetation	Damage during construction to existing native vegetation to be retained including planted native trees.	Planted native vegetation and associated flora and fauna habitat.	Short term and during bulk earthworks.	Minor consequence due to existing disturbed nature and overall low-quality habitat.
Reduced viability of adjacent habitat due to edge effects	Fragmentation of adjacent existing vegetation.	Planted native vegetation and associated flora and fauna habitat.	Short term and during bulk earthworks.	Minor consequence due to existing disturbed nature and overall low-quality habitat and connectivity values.
Reduced viability of adjacent habitat due to noise, dust or light spill	Noise and dust from machinery movement during construction. No night works proposed - light spill unlikely.	Planted native vegetation and associated flora and fauna habitat.	Daily during bulk earthworks. Intermittently after vegetation removal and during dry periods or heavy winds.	Temporary loss of habitat quality / availability.

Indirect impact	Description (nature, extent and frequency)	Biodiversity affected	Duration/Timing	Consequence
Transport of weeds and pathogens from the site to adjacent vegetation	Spread of weeds from adjacent areas. Minor impacts as exotic ground cover species are already present in adjacent vegetation.	Planted native vegetation	During bulk earthworks/construction daily due to vehicle movement and dust and water movement.	Minor increases in weed cover.
Trampling of threatened species	Negligible chance of trampling since no threatened flora was observed in the development footprint or subject land.	N/A	N/A	N/A
Rubbish dumping	Rubbish dumping from construction workers, public during bulk earthworks and during operational phase.	Planted native vegetation	Intermittently when contractors are on site and the public during the operational phase	Shading of plants, potential impact to fauna including death of fauna from consuming rubbish left on site from contractors, public
Sedimentation and contaminated and/or nutrient rich run-off	Runoff during construction resulting in changes to water chemistry and habitat.	Adjacent soils and waterways and groundcover vegetation.	During construction	Contaminated waterways Nutrient enrichment in retained vegetation.

6.5. Prescribed biodiversity impacts

Prescribed biodiversity impacts as per Section 8.3 of the BAM and associated with the development footprint are outlined in Table 24.

Table 24: Direct impacts on prescribed biodiversity impacts

Prescribed biodiversity impact	Description (Nature, extent and frequency)	Consequences	Justification	Additional information
Karst, caves, crevices, cliffs, rocks and other geological features of significance	N/A – no geological features are present.	N/A	N/A	N/A
Human made structures or non-native vegetation	As discussed in Section 5.2.2, the subject land does not contain any human-made structures or non-native vegetation that is considered as potential habitat for threatened entities.	Unlikely based on lack of habitat	The non-native vegetation is present as cleared areas of regularly mown exotic grassland, a flooded artificial drainage basin dominated by an understory of exotic species, along with large infestations of well-	Stop work measures should be in place in the event that threatened fauna or flora are unexpectedly observed and an ecologist contacted for

Prescribed biodiversity impact	Description (Nature, extent and frequency)	Consequences	Justification	Additional information
			established exotic shrub and tree vegetation, with little prospect of threatened species utilising this for foraging or breeding.	advice / further investigation. An ecologist should supervise removal of vegetation to ensure animal welfare should any fauna be present.
Habitat connectivity	There is a lack of connectivity to large patches of habitat, so only highly mobile threatened species are likely to utilise habitats within the development footprint (e.g. bats and birds).	Unlikely due to low connectivity within and surrounding the development footprint.	Habitat for threatened species within the development footprint is marginal and is not well connected with areas of large intact habitat outside of the development footprint.	N/A
Water bodies, water quality and hydrological processes	There is a modified watercourse and constructed dam within the subject land. The proposed amended development will not impact the watercourse or dam, nor directly affect the banks of the dam and native vegetation present.	N/A – no impacts to water flow and associated hydrological processes.	The location of the development footprint will not obstruct the modified watercourse or dam.	As part of the requirements of the CAA, it is recommended that the riparian area is protected and rehabilitated under a VMP.
Wind turbine strikes on protected animals	N/A	N/A	N/A	N/A
Vehicle strikes	The locality is already highly urbanised, habitat connectivity is low within the development footprint and vehicle strike is an existing threat to fauna.	Low consequence as no additional vehicle strike is expected.	The landscape is highly developed and landscape connectivity is low. Additional vehicle strike as a result of the proposed development is unlikely within this context.	Vehicle strike impacts are unlikely to increase above the existing levels.

6.6. Mitigating and managing direct and indirect impacts

Measures proposed to mitigate and manage impacts as a result of the development footprint before, during and after construction are outlined in Table 25.

Table 25: 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	Pre-clearance surveys should be undertaken prior to vegetation removal to identify any fauna. 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 and during vegetation removal and construction.	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. However, pre-clearance surveys will confirm fauna presence/absence.	Negligible	Clearing protocols to manage wildlife risk form any resident fauna. A trained ecologist or licensed wildlife handler should be on-site during the removal of vegetation. Trees identified for retention should be clearly delineated as a 'No Go' zone with high visibility bunting.	Risk to wildlife reduced.	During construction.	Project Manager/ Ecologist

Measure	Risk before mitigation	Risk mitigation	after	Action	Outcome	Timing	Responsibility
Installing artificial habitats for fauna in adjacent retained vegetation and habitat or human made structures to replace the habitat resources lost and encourage animals to move from the impacted site, e.g. nest boxes.	N/A – no important habitat features are being removed as part of the proposal. As such, artificial roost structures are not required.	N/A		N/A	N/A	N/A	N/A
Clearing protocols that identify vegetation to be retained, prevent inadvertent damage and reduce soil disturbance; for example, removal of native vegetation by chainsaw, rather than heavy machinery, is preferable in situations where partial clearing is proposed.	Moderate	Low		Instigate clearing protocols including installation of fencing around vegetation to be retained, no-go signage to limit inadvertent clearing. Ensure all contractors are inducted and understand where no-go areas are. Complete regular inspections of fencing to ensure they are functional and fit for purpose.	Clearing limited to only the areas approved for clearing. Foraging habitat retained in situ.	Prior to construction and during operation.	Project Manager/ Contractor
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment.	Moderate	Low		Erect and maintain erosion and sediment controls.	Accidental incursions minimised.	Before construction and maintained during construction.	Project Manager/ Contractor

Measure	Risk before mitigation	Risk mitigation	after	Action	Outcome	Timing	Responsibility
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 current operational areas of the site and would be temporary (during construction). Only conduct clearing and operation of machinery inside of typical work hours.	Minimise noise disturbance to fauna and neighbouring communities.	During construction.	Project Manager/ Contractor
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 building for use during operation. Conduct works during daylight hours.	Avoid light disturbance to nocturnal fauna.	At design and during construction and operation.	Architect/ Contractor
Adaptive dust monitoring programs to control air quality.	Low	Negligible		Implement industry practice controls of dust at bulk earth works sites.	Dust impacts on adjacent habitats and neighbouring communities is minimised.	During construction.	Project Manager/ Contractor
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	Low	Negligible		Pre-clearance surveys should be undertaken prior to vegetation removal to identify any fauna.	Ensuring animal welfare and protection.	Prior to and during construction.	Project Manager/ Contractor

Measure	Risk before mitigation	Risk mitigation	after	Action	Outcome	Timing	Responsibility
to or likely to use the habitat on the site are not breeding or nesting.							
Temporary fencing to protect significant environmental features such as riparian zones.	Moderate	Low		Erect and maintain construction fence.	Accidental incursions minimised.	Before and during construction.	Project Manager/ Contractor
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 the subject land.	Accidental incursions minimised.	Before and during construction.	Project Manager/ Contractor
Staff training and site briefing to communicate environmental features to be protected and measures to be implemented.	Moderate	Low		Carry out site inductions to explain environmental significance of the subject land.	Accidental incursions minimised.	Before and during construction.	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.	N/A	N/A		N/A	N/A	N/A	N/A

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 subject land.	Moderate. Native vegetation is proposed for retention within the subject land.	Low	Delineate area of retained PCT and planted native vegetation to ensure protection. As part of the requirements of the CAA, it is recommended that the riparian area is protected and rehabilitated under a VMP.	Remnant and planted native vegetation to be retained is protected.	Ongoing.	Developer, Project Manager

6.7. 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 26.

Table 26: 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

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
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	An ecologist be present to supervise removal of non-native vegetation and ensure care and relocation of fauna (if present).	Ensuring animal welfare and protection.	During vegetation removal.	Project Manager/ Ecologist
Retaining habitat features within the subject land or relocating them to adjacent retained remnant vegetation.	Low	Negligible	No key habitat features are present; however, an ecologist will be present to supervise removal of vegetation and care and relocation of fauna and associated habitat (where relevant).	Ensuring animal welfare and protection.	Prior to and during vegetation removal	Project Manager
Installing artificial connectivity measures to re-establish connections between habitat and favoured transport corridors.	N/A	N/A	N/A	N/A	N/A	N/A
Erecting temporary fencing to protect significant environmental features such as karst, caves, rock outcrops and water bodies.	Moderate	Low	Erect and maintain construction fence.	Native vegetation to be retained is protected.	Prior to and during vegetation removal and construction.	Project Manager
Replacing habitat provided by human made structures and non-native vegetation with alternative habitat.	Low	Low	Follow clearance protocols for any fauna / fauna habitat found in vegetation to be removed.	Ensuring animal welfare and protection.	Prior to and during vegetation removal.	Project Manager
Sediment barriers or sedimentation ponds to control the quality of water released from the site into the receiving environment.	Moderate	Low	Standard sediment and erosion control (SEC) measures and dust control measures should be implemented.	Contain sediments within the site to avoid entering watercourse.	Establish SEC measures prior to works commencing.	Project Manager

Measure	Risk before mitigation	Risk after mitigation	Action	Outcome	Timing	Responsibility
Staff training and site briefing to communicate environmental features to be protected and measures implemented to protect them.	High	Low	Train staff regarding the protection of retained vegetation within the subject land and within the indirect impact areas.	Staff aware of no-go zones and vegetation protection zones.	Prior to works commencing onsite.	Project Manager/ Contractor
Ecological restoration, rehabilitation actions and/or maintenance of retained native vegetation on or adjacent to the subject land.	Moderate. Native vegetation is proposed for retention within the subject land.	Low	Delineate area of retained PCT and planted native vegetation to ensure protection. As part of the requirements of the CAA, it is recommended that the riparian area is protected and rehabilitated under a VMP.	Native vegetation to be retained is protected.	Ongoing	Project Manager
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.	N/A	N/A	N/A	N/A	N/A	N/A

6.8. 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.

6.9. Impacts not requiring offsets

The impacts of the development on planted native vegetation do not require offsets in accordance with Appendix D of the BAM and as summarised in Table 27 below.

Table 27: Impacts to native vegetation that do not require offsets

Vegetation Zone	PCT ID	PCT Name	Direct impact (ha)	Rationale
Planted native vegetation	-	-	0.07	The decision-making key for planted native vegetation outlined in Appendix D of BAM 2020 was reviewed and confirmed that the areas of planted native trees are suitable for streamlined assessment. In accordance with Appendix D of the BAM the removal of planted native vegetation does not require offsets under the BOS.

6.10. Areas not requiring assessment

Areas of the subject land not requiring assessment are comprised of:

- exotic vegetation in the development footprint
- cleared/developed areas containing no vegetation in the development footprint.

7. Consistency with legislation and policy

Matters relating to impacts on flora and fauna covered by the BC and EPBC Acts must be addressed for the proposed development. Potential significant impacts to species, populations or ecological communities in accordance with the BC Act have been addressed in Section 7.1. Potential Matters of National Environmental Significance (MNES) listed under the EPBC Act have been addressed in Section 7.2. The likelihood of occurrence table for both BC and EPBC Act listed species is provided in Appendix D.

7.1. Biodiversity Conservation Act 2016 (BC Act)

If a species, population or ecological community listed under Schedules 1 or 2 of the BC Act is likely to be impacted by a proposed development, the factors set out to establish if there is likely to be a significant impact on that species, population, ecological community or habitat, must be assessed. Section 7.3 of the BC Act sets out five factors that must be addressed as part of a Test of Significance. This enables a decision to be made as to whether there is likely to be a significant impact on the species and if a BDAR is required.

The BC Act Test of Significance was undertaken for the following entities:

Woodland birds

- *Lathamus discolor* (Swift Parrot)

Megabats

- *Pteropus poliocephalus* (Grey-headed Flying-fox)

Microbats

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Vespadelus troughtoni* (Eastern Cave Bat)

These assessments are presented in Appendix E and concluded that the development is not likely to have a significant impact on any of the above entities.

7.2. 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 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 Climate Change, Energy, the Environment and Water (DCCEEW), 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 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 former Commonwealth Department of Agriculture, Water and Environment (DAWE) (2013) (now DCCEEW), to provide assistance in conducting the Assessment of Significance and deciding whether or not a referral to the Commonwealth is required.

Three MNES have been assessed as a part of this assessment:

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Lathamus discolor* (Swift Parrot)
- *Pteropus poliocephalus* (Grey-headed Flying-fox).

These assessments are presented in Appendix F and concluded that the development is not likely to have a significant impact on MNES and therefore no EPBC Act referral to the Commonwealth DCCEEW is recommended.

8. Conclusion

ELA was engaged by Harvey Norman to prepare a BDAR at 13-23 Pattys Place, Jamisontown 2750 (the subject land) within The City of Penrith Local Government Area (LGA). This BDAR was prepared using the Streamlined Assessment Module – Small Area and Streamlined Assessment Module – Planted Native Vegetation, to support a planning proposal to amend the height control for part of the subject land for development purposes and accompany the subsequent DA.

Following an amendment to the original development footprint, the BOS will not be triggered and this BDAR has been prepared accordingly, in line with the amended development footprint.

The subject land (part of Lot 10 DP1046110 and the whole of Lot 11 DP1046110) is located within an existing disturbed and modified landscape. The surrounding land use includes a commercial and retail centre and cleared agricultural farmland.

The proposed development consists of an extension to the existing Harvey Norman Homemaker Centre. The development footprint is wholly located within part of Lot 10 DP1046110. Lot 11 is not part of the development footprint and is not subject to any change of planning controls.

Native remnant vegetation within the subject land, conforms to a single PCT, 3975 *Southern Lower Floodplain Freshwater Wetland*. This PCT was mapped in the western corner of the subject land, occurring in good condition and in the dam in the northern area of the subject land, occurring in moderate condition. PCT 3975 is not present within the development footprint, with the remaining vegetation in the development footprint and wider subject land comprising planted native vegetation and a mix of exotic vegetation zones.

Targeted threatened fauna surveys for Green and Golden Bell Frog and threatened microbat species were undertaken in the subject land. Green and Golden Bell Frog was not recorded during the targeted survey, while Large-eared Pied Bat and Eastern Coastal Free-tailed Bat were confirmed as present and Eastern False Pipistrelle, Large Bent-winged Bat, Southern Myotis, Greater Broad-nosed Bat and Eastern Cave Bat were recorded as 'potentially present'.

Measures to avoid and minimise impacts to biodiversity values have been considered and applied with regards to locating and designing the development footprint. The amended footprint does not impact on native remnant vegetation with the total area of PCT 3975 (0.46 ha) within the subject land to be retained.

Removal of 0.07 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. Impacts to planted native vegetation which may form potential foraging habitat for the following threatened entities has been assessed:

Woodland birds

- *Lathamus discolor* (Swift Parrot)

Megabats

- *Pteropus poliocephalus* (Grey-headed Flying-fox)

Microbats

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Vespadelus troughtoni* (Eastern Cave Bat)

The application of the BC Act Tests of Significance and EPBC Act Significant Impact Criteria for these species concluded that the proposed development is unlikely to result in a significant impact. Accordingly, a referral to the Commonwealth DCCEEW is not recommended for the above EPBC Act listed species (Swift Parrot, Grey-headed Flying-fox and Large-eared Pied Bat).

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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 BAM 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 development site, 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 NSW DCCEEW 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
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 development site 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
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.
Patch size	An area of intact native vegetation that: a) occurs on the development site or biodiversity stewardship site, and b) includes native vegetation that has a gap of less than 100 m from the next

Terminology	Definition
	area of native vegetation (or ≤ 30 m for non-woody ecosystems). Patch size may extend onto adjoining land that is not part of the development site or stewardship site.
Proponent	A person who intends to apply for consent to carry out development or for approval for an activity.
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 development site, 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.
Vegetation zone	A relatively homogenous area of native vegetation on a development site, 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

Appendix B Vegetation Integrity Plot Floristic Data

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Ageratina adenophora</i>	Crofton Weed	*	1			G	0.1	3									
<i>Ailanthus altissima</i>	Tree of Heaven	*	1			G	0.5	3	G	5	4						
<i>Alternanthera denticulata</i>	Lesser Joyweed			Forb (FG)		G	0.1	10							G	0.2	20
<i>Alternanthera pungens</i>	Khaki Weed	*	1			G	0.2	20	G	0.1	10						
<i>Amaranthus viridis</i>	Green Amaranth	*				G	0.5	20									
<i>Araujia sericifera</i>	Moth Vine	*	1			G	0.1	10	G	0.1	5						
<i>Aster subulatus</i>	Wild Aster	*										G	0.1	5	G	0.1	5
<i>Axonopus fissifolius</i>	Narrow-leafed Carpet Grass	*	1			G	1	50	G	5	100	G	3	100			
<i>Azolla pinnata</i>				Fern (EG)								G	0.5	500			
<i>Bidens pilosa var. pilosa</i>		*							G	0.1	20						
<i>Bidens subalternans</i>	Greater Beggar's Ticks	*	1						G	0.2	100						
<i>Bromus catharticus</i>	Prairie Grass	*				G	0.1	10									
<i>Calochlaena dubia</i>	Rainbow Fern			Other (OG)											G	5	20

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Capsella bursa-pastoris</i>	Shepherd's Purse	*				G	0.2	20									
<i>Cardamine spp.</i>				Forb (FG)		G	2	100				G	0.2	10			
<i>Carex appressa</i>	Tall Sedge			Grass & grasslike (GG)											G	45	100
<i>Carex inversa</i>	Knob Sedge			Grass & grasslike (GG)		G	0.2	10	G	0.2	10						
<i>Casuarina glauca</i>	Swamp Oak			Tree (TG)		U	0.1	1	U	15	6						
<i>Cenchrus clandestinus</i>	Kikuyu Grass	*	1			G	5	20	G	0.5	20						
<i>Centella asiatica</i>	Indian Pennywort			Forb (FG)								G	0.5	100	G	0.2	50
<i>Cestrum parqui</i>	Green Cestrum	*	1						G	0.2	1						
<i>Chloris gayana</i>	Rhodes Grass	*	1			G	3	100									
<i>Cirsium vulgare</i>	Spear Thistle	*				G	0.1	1							G	0.1	5
<i>Commelina cyanea</i>	Native Wandering Jew			Forb (FG)		G	1	20									
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	*				G	0.1	10	G	0.1	5				G	0.1	10
<i>Corymbia maculata</i>	Spotted Gum			Tree (TG)					U	5	2						

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Cotula australis</i>	Common Cotula			Forb (FG)		G	0.1	50	G	0.1	50	G	0.2	100			
<i>Crassocephalum crepidioides</i>	Thickhead	*				G	0.2	20									
<i>Cynodon dactylon</i>	Common Couch			Grass & grasslike (GG)		G	20	20	G	35	50	G	2	50	G	1	20
<i>Cyperus brevifolius</i>		*				G	0.5	100	G	0.2	50	G	0.2	50	G	0.2	20
<i>Cyperus eragrostis</i>	Umbrella Sedge	*	1			G	1	50				G	0.5	20			
<i>Cyperus gracilis</i>	Slender sedge	Flat		Grass & grasslike (GG)		G	0.2	50	G	0.1	10						
<i>Cyperus odoratus</i>				Grass & grasslike (GG)		G	0.5	20									
<i>Cyperus rotundus</i>	Nutgrass	*				G	0.2	50									
<i>Digitaria ciliaris</i>	Summer Grass	*				G	0.5	20	G	0.1	5						
<i>Digitaria sanguinalis</i>	Crab Grass	*							G	0.2	20						
<i>Einadia trigonos subsp. trigonos</i>				Forb (FG)		G	0.1	1	G	0.1	5						
<i>Eleusine indica</i>	Crowsfoot Grass	*				G	0.2	20									
<i>Epilobium ciliatum</i>		*				G	0.1	5									

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Eragrostis curvula</i>	African Lovegrass	*	1			G	2	500	G	50	1000						
<i>Eucalyptus microcorys</i>	Tallowwood			Tree (TG)		U	15	1									
<i>Eucalyptus tereticornis</i>	Forest Gum	Red		Tree (TG)					U	10	1						
<i>Euphorbia spp.</i>				Forb (FG)		G	3	20	G	0.1	10						
<i>Gamochaeta coarctata</i>		*				G	0.1	5	G	0.1	10						
<i>Gamochaeta pensylvanica</i>	Cudweed	*							G	0.1	5						
<i>Glycine tabacina</i>	Variable Glycine			Other (OG)		G	0.5	50	G	0.4	100						
<i>Hypochaeris albiflora</i>		*				G	0.1	20	G	0.1	20						
<i>Hypochaeris radicata</i>	Catsear	*				G	0.5	50	G	0.2	100						
<i>Juncus cognatus</i>		*				G	0.1	10									
<i>Juncus spp.</i>	A Rush			Grass & grasslike (GG)		G	0.1	10				G	0.5	50			
<i>Juncus subsecundus</i>	Finger Rush			Grass & grasslike (GG)		G	0.5	20									
<i>Juncus usitatus</i>				Grass & grasslike (GG)		G	0.2	10				G	0.5	20	G	2	50
<i>Leontodon saxatilis</i>		*				G	0.1	2									
<i>Ligustrum sinense</i>	Small-leaved Privet	*	1			G	0.1	2	G	0.1	5						

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Lotus corniculatus</i>	Birds-foot Trefoil	*				G	0.1	2									
<i>Ludwigia peploides subsp. montevidensis</i>	Water Primrose			Forb (FG)		G	6	50				G	20	100	G	0.5	5
<i>Ludwigia peruviana</i>		*	1			G	2	20									
<i>Lysimachia arvensis</i>	Scarlet Pimpernel	*				G	0.1	5									
<i>Machaerina spp.</i>				Grass & grasslike (GG)								G	1	3			
<i>Malus spp.</i>		*													M	2	1
<i>Malva parviflora</i>	Small-flowered Mallow	*				G	2	100									
<i>Medicago polymorpha</i>	Burr Medic	*				G	0.1	20	G	0.3	50						
<i>Microlaena stipoides var. stipoides</i>	Weeping Grass			Grass & grasslike (GG)		G	2	10									
<i>Modiola caroliniana</i>	Red-flowered Mallow	*				G	0.2	50	G	0.1	10						
<i>Opuntia stricta var. stricta</i>	Common Prickly Pear	*	1						G	0.2	1						
<i>Oxalis perennans</i>				Forb (FG)		G	0.1	10	G	0.1	5						
<i>Oxalis spp.</i>				Forb (FG)		G	0.1	10	G	0.1	20	G	0.1	20			

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Paronychia brasiliensis</i>	Chilean Whitlow Wort, Brazilian Whitlow	*				G	0.5	20	G	0.2	100						
<i>Paspalum dilatatum</i>	Paspalum	*	1			G	4	500	G	0.2	20	G	2	100			
<i>Paspalum distichum</i>	Water Couch			Grass & grasslike (GG)		G	0.2	10				G	30	100			
<i>Paspalum urvillei</i>	Vasey Grass	*				G	15	100				G	2	10			
<i>Passiflora caerulea</i>	Blue Passionflower	*				G	0.1	5									
<i>Pavonia hastata</i>		*				G	0.1	5									
<i>Persicaria decipiens</i>	Slender Knotweed			Forb (FG)		G	3	20				G	5	50	G	0.5	10
<i>Persicaria hydropiper</i>	Water Pepper			Forb (FG)											G	2	20
<i>Plantago lanceolata</i>	Lamb's Tongues	*				G	5	500	G	0.2	100						
<i>Poa annua</i>	Winter Grass	*				G	1	20									
<i>Polycarpon tetraphyllum</i>	Four-leaved Allseed	*							G	0.1	20						
<i>Portulaca oleracea</i>	Pigweed			Forb (FG)		G	0.1	20	G	0.1	5						
<i>Ranunculus sceleratus</i>	Celery Buttercup	*													G	0.1	10

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Richardia brasiliensis</i>	Mexican Clover	*				G	0.5	20	G	0.2	50						
<i>Richardia stellaris</i>		*				G	0.1	5	G	0.1	5						
<i>Rubus anglocandicans</i>	Blackberry	*	1												G	0.1	1
<i>Rumex brownii</i>	Swamp Dock			Forb (FG)		G	0.1	5									
<i>Rumex obtusifolius</i>	Broadleaf Dock	*				G	0.2	50				G	0.2	50			
<i>Salix nigra</i>	Black Willow	*	1			U	2	6							U	7	2
<i>Schoenoplectus validus</i>				Grass & grasslike (GG)											G	15	100
<i>Senecio madagascariensis</i>	Fireweed	*	1			G	0.1	10	G	0.2	50						
<i>Setaria parviflora</i>		*				G	0.5	10							G	0.1	20
<i>Sida rhombifolia</i>	Paddy's Lucerne	*				G	0.5	100	G	0.2	100				G	0.1	20
<i>Solanum nigrum</i>	Black-berry Nightshade	*				G	0.5	20									
<i>Solanum sisymbriifolium</i>		*				G	0.1	5	G	0.1	2				G	0.1	2
<i>Sonchus oleraceus</i>	Common Sowthistle	*				G	0.5	100	G	0.2	50						
<i>Sonchus spp.</i>	Sowthistle			Forb (FG)		G	0.1	5									
<i>Sorghum halepense</i>	Johnson Grass	*	1			G	3	100									

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Sporobolus africanus</i>	Parramatta Grass	*				G	0.1	20									
<i>Stellaria media</i>	Common Chickweed	*				G	0.2	100									
<i>Taraxacum officinale</i>	Dandelion	*				G	0.1	5				G	0.1	5			
<i>Trifolium repens</i>	White Clover	*				G	0.2	10									
<i>Triglochin spp.</i>				Forb (FG)		G	0.2	10				G	0.5	20			
<i>Typha orientalis</i>	Broad-leaved Cumbungi			Grass & grasslike (GG)		G	0.2	10							G	30	100
<i>Urochloa panicoides</i>	Urochloa Grass	*				G	0.1	20	G	0.1	10						
<i>Verbena bonariensis</i>	Purpletop	*				G	0.2	10				G	0.1	5	G	0.1	10
<i>Verbena quadrangularis</i>		*				G	0.1	20	G	0.1	5				G	0.1	10
<i>Verbena rigida var. rigida</i>	Veined Verbena	*				G	0.1	3	G	0.1	50						
<i>Veronica anagallis-aquatica</i>	Blue Water-speedwell	*				G	0.1	3									
<i>Veronica persica</i>	Creeping Speedwell	*				G	0.1	20									
<i>Vicia sativa subsp. sativa</i>	Common Vetch	*				G	0.1	1									

Species	Common Name	Exotic	High Threat Weed	Growth Group	Form	Plot 1 (Exotic)			Plot 2 (Planted native)			Plot 3 (PCT 3975)			Plot 4 (PCT 3975)		
						Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance	Stratum	Cover	Abundance
<i>Wahlenbergia communis</i>	Tufted Bluebell			Forb (FG)	G		0.1	2	G	0.1	5						

Appendix C Vegetation Integrity Plot Data

PLOT 1

Eco Logical Australia – BAM Plot Data Sheet

Plot number / name	Plot 1 Exotic
Project number	24SYD7838
Date (DD/MM/YY)	16/05/2024
Recorder(s)	Elliot Poulter and Tim Finter
Zone (In Collector, 56, 55)	56
Easting (Unless recorded in Collector)	284133
Northing (Unless recorded in Collector)	3738988
Plot orientation	222
Slope (degrees and direction)	Southwest

Growth form groups	Total number of species	Total Cover (%)
Tree (TG)	2	15.1
Forb (FG)	15	16.1
Shrub (SG)	0	0.0
Grass & grasslike (GG)	11	24.3
Other (OG)	1	0.5
Fern (EG)	0	0.0
High Threat Weeds	15	24.1

Litter sub plots	Average (%)	5m	15m	25m	35m	45m
Litter cover %	9.4	25	10	1	1	10

Stem size classes (DBH)

5-9 cm	0
10-19 cm	0
20-29 cm	0
30-49 cm	0

Stem size classes (DBH)

50-79 cm	0
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80 cm +	0
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Number of large trees	0
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Other Integrity Attributes

Number of trees with hollows	0
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Regeneration (stems <5 cm)	0
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Total length fallen logs >10 cm width (m)	0
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PLOT 2

Eco Logical Australia – BAM Plot Data Sheet

Plot number / name	Plot 2 Planted native
Project number	24SYD7838
Date (DD/MM/YY)	16/05/2024
Recorder(s)	Elliot Poulter and Tim Finter
Zone (In Collector, 56, 55)	56
Easting (Unless recorded in Collector)	284122
Northing (Unless recorded in Collector)	3739020
Plot orientation	240
Slope (degrees and direction)	Southwest

Growth form groups	Total number of species	Total Cover (%)
Tree (TG)	3	30.0
Forb (FG)	7	0.7
Shrub (SG)	0	0.0
Grass & grasslike (GG)	3	35.3
Other (OG)	1	0.4
Fern (EG)	0	0.0
High Threat Weeds	12	61.8

Litter sub plots	Average (%)	5m	15m	25m	35m	45m
Litter cover %	25.4	60	5	40	2	20

Stem size classes (DBH)

5-9 cm	1
10-19 cm	1
20-29 cm	0
30-49 cm	1
50-79 cm	1
80 cm +	0

Stem size classes (DBH)

Number of large trees	1
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Other Integrity Attributes

Number of trees with hollows	0
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Regeneration (stems <5 cm)	1
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Total length fallen logs >10 cm width (m)	0
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PLOT 3

Eco Logical Australia – BAM Plot Data Sheet

Plot number / name	Plot 3 PCT 3975 (Moderate Condition)
Project number	24SYD7838
Date (DD/MM/YY)	16/05/2024
Recorder(s)	Elliot Poulier and Tim Finter
Zone (In Collector, 56, 55)	56
Easting (Unless recorded in Collector)	284218
Northing (Unless recorded in Collector)	3738926
Plot orientation	232
Slope (degrees and direction)	Southwest

Growth form groups	Total number of species	Total Cover (%)
Tree (TG)	0	0.0
Forb (FG)	7	26.5
Shrub (SG)	0	0.0
Grass & grasslike (GG)	5	34.0
Other (OG)	0	0.0
Fern (EG)	1	0.5
High Threat Weeds	3	5.5

Stem size classes (DBH)

5-9 cm	0
10-19 cm	0
20-29 cm	0
30-49 cm	0
50-79 cm	0
80 cm +	0
Number of large trees	0

Other Integrity Attributes

Number of trees with hollows	0
Regeneration (stems <5 cm)	0
Total length fallen logs >10 cm width (m)	0

PLOT 4

Eco Logical Australia – BAM Plot Data Sheet

Plot number / name	Plot 4 PCT 3975 (Good Condition)
Project number	24SYD7838
Date (DD/MM/YY)	16/05/2024
Recorder(s)	Elliot Poulter and Tim Finter
Zone (In Collector, 56, 55)	56
Easting (Unless recorded in Collector)	284074
Northing (Unless recorded in Collector)	3738966
Plot orientation	214
Slope (degrees and direction)	Southwest

Growth form groups	Total number of species	Total Cover (%)
Tree (TG)	0	0.0
Forb (FG)	5	3.4
Shrub (SG)	0	0.0
Grass & grasslike (GG)	5	93.0
Other (OG)	1	5.0
Fern (EG)	0	0.0
High Threat Weeds	2	7.1

Stem size classes (DBH)

5-9 cm	0
10-19 cm	0
20-29 cm	0

Stem size classes (DBH)	
30-49 cm	0
50-79 cm	0
80 cm +	0
Number of large trees	0

Other Integrity Attributes	
Number of trees with hollows	0
Regeneration (stems <5 cm)	0
Total length fallen logs >10 cm width (m)	0

Appendix D Likelihood of Occurrence Assessment

An assessment of likelihood of occurrence was made for threatened and migratory species identified from the BC and EPBC 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 subject land, results of the site inspection and professional judgement. Some migratory, marine and aquatic 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.

The records column refers to the number of records occurring within 5 km of the subject land, as provided by the Atlas of NSW Wildlife (BioNet) and Protected Matters Search Tool database search. The following abbreviations are used:

- CE = Critically Endangered
- E = Endangered
- V = Vulnerable
- M = Migratory.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
THREATENED ECOLOGICAL COMMUNITIES						
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion		Dominated by <i>Eucalyptus parramattensis</i> subsp. <i>parramattensis</i> , <i>Angophora bakeri</i> and <i>E. sclerophylla</i> . A small tree stratum of <i>Melaleuca decora</i> is sometimes present, generally in areas with poorer drainage. It has a well-developed shrub stratum consisting of sclerophyllous species such as <i>Banksia spinulosa</i> var. <i>spinulosa</i> , <i>Melaleuca nodosa</i> , <i>Hakea sericea</i> and <i>H. dactyloides</i> (multi-stemmed form). The ground stratum consists of a diverse range of forbs including <i>Themeda australis</i> , <i>Entolasia stricta</i> , <i>Cyathochaeta diandra</i> , <i>Dianella revoluta</i> subsp. <i>revoluta</i> , <i>Stylidium graminifolium</i> , <i>Platysace ericoides</i> , <i>Laxmannia gracilis</i> and <i>Aristida warburgii</i> . Occurs within the local government areas of Bankstown, Blacktown, Campbelltown, Hawkesbury, Liverpool and Penrith. Mainly found in the Castlereagh area of the Cumberland Plain, with small patches occurring at Kemps Creek and Longneck Lagoon; also present around Holsworthy.	V	E	-	No – Dominant sclerophyllous species associated with this community are not present within the subject land. The subject land is not consistent with a woodland community.
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community		This ecological community is associated with grey-black clay-loams and sandy loams, where the groundwater is saline or sub-saline, on waterlogged or periodically inundated flats, drainage lines, lake margins and estuarine fringes associated with coastal floodplains. Floodplains are level landform patterns on which there may be active erosion and aggradation by channelled and overbank stream flow with an average recurrence interval of 100 years or less. Swamp Oak Floodplain Forest generally occurs below 20 m (rarely above 10 m) elevation in the NSW North Coast, Sydney Basin and South East Corner bioregions. The structure of the community may vary from open forests to	E	E	-	No – Subject land is not located in a coastal region. Field survey did not identify this community within the subject land. No open forests, low woodlands, scrubs or reedlands with scattered trees are present on the subject land.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		low woodlands, scrubs or reedlands with scattered trees. Typically, these forests, woodlands, scrubs and reedlands form mosaics with other floodplain forest communities and treeless wetlands, and often they fringe treeless floodplain lagoons or wetlands with semi-permanent standing water.				
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland		The ecological community includes the plants, animals and other organisms typically associated with forested palustrine wetlands, or swamp forests, found in the temperate to subtropical coastal valleys of Australia's east coast. The Coastal Sclerophyll Swamp Forest often has a layered canopy, dominated by melaleucas and/or <i>Eucalyptus robusta</i> . The ecological community occurs between the Great Dividing Range and the coastline from near Gladstone in Queensland, through to the south coast of New South Wales.		E	-	No - subject land is outside known occurrence, species associated with forested palustrine wetlands, or swamp forests are not present within the subject land.
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion		Ranges from open forest to low woodland, with a canopy dominated by <i>Eucalyptus fibrosa</i> (Broad-leaved Ironbark) and <i>Melaleuca decora</i> (Paperbark). The canopy may also include other eucalypts such as <i>E. longifolia</i> (Woollybutt). The dense shrubby understorey consists of <i>Melaleuca nodosa</i> (Prickly-leaved Paperbark) and <i>Lissanthe strigosa</i> (Peach Heath), with a range of 'pea' flower shrubs, such as <i>Dillwynia tenuifolia</i> , <i>Pultenaea villosa</i> (Hairy Bush-pea) and <i>Daviesia ulicifolia</i> (Gorse Bitter Pea). The sparse ground layer contains a range of grasses and herbs. 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.	E	CE	-	No – subject land is not consistent with an open forest to low woodland community. Forest/woodland canopy and shrub species associated with this community are not present within the subject land.
Cumberland Plain Shale Woodlands		The Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest typically occurs on flat to undulating or hilly terrain, at elevations up to approximately 350 metres above sea	CE	CE	-	No – subject land is not consistent with a woodland or forest community.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
and Shale-Gravel Transition Forest		level. Some occurrences may extend onto locally steep sites at slightly higher elevations. Predominantly associated with clay soils, that are derived from Wianamatta Shale geology.				
River-flat eucalypt forest on coastal floodplains of southern New South Wales and eastern Victoria		Found on the river flats of the coastal floodplains. Known from parts of the Local Government Areas of Port Stephens, Maitland, Singleton, Cessnock, Lake Macquarie, Wyong, Gosford, Hawkesbury, Baulkham Hills, Blacktown, Parramatta, Penrith, Blue Mountains, Fairfield, Holroyd, Liverpool, Bankstown, Wollondilly, Camden, Campbelltown, Sutherland, Wollongong, Shellharbour, Kiama, Shoalhaven, Palerang, Eurobodalla and Bega Valley. Associated with silts, clay-loams and sandy loams, on periodically inundated alluvial flats, drainage lines and river terraces associated with coastal floodplains.		CE	-	No – field survey and vegetation validation did not identify this community within the subject land.
Shale Sandstone Transition Forest of the Sydney Basin Bioregion		Occurs on areas transitional between the clay soils derived from Wianamatta Shale and the sandy soils derived from Hawkesbury Sandstone on the margins of the Cumberland Plain. Occurs or has occurred in the Bankstown, Baulkham Hills, Blue Mountains, Campbelltown, Hawkesbury, Liverpool, Parramatta, Penrith, and Wollondilly Local Government Areas (LGAs). The floristic composition of the community includes species otherwise characteristic of, or occurring in, either sandstone or shale habitats. The structure of the community is forest or woodland.	E	CE	-	No – subject land is not consistent with a forest or woodland community.
Temperate Highland Peat Swamps on Sandstone		Components of the Temperate Highland Peat Swamps on Sandstone ecological community are either temporary or permanent swamps with a substrate of peat over sandstone, and vegetation characterised by the presence of sedges, graminoids (grass-like plants) and forbs (herbaceous non-grass or grass-like plants) with or without shrubs. These swamps are found in a range of locations in the landscape, from hanging		E	-	No - field survey did not identify this community within the subject land. Subject land not consistent with characteristics of a peat swamp.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		swamps in the Blue Mountains to the valley and watercourse swamps of Wingecarribee Swamp and the Paddy's River Swamps.				
Turpentine-Ironbark Forest of the Sydney Basin Bioregion		Open forest, with dominant canopy trees including <i>Syncarpia glomulifera</i> (Turpentine), <i>Eucalyptus punctata</i> (Grey Gum), <i>E. paniculata</i> (Grey Ironbark) and <i>Eucalyptus eugenoides</i> (Thin-leaved Stringybark). In areas of high rainfall (over 1050 mm per annum) <i>Eucalyptus saligna</i> (Sydney Blue Gum) is more dominant. The shrub stratum is usually sparse and may contain mesic species such as <i>Pittosporum undulatum</i> (Sweet Pittosporum) and <i>Polyscias sambucifolia</i> (Elderberry Panax). Occurs close to the shale/sandstone boundary on the more fertile shale influenced soils, in higher rainfall areas on the higher altitude margins of the Cumberland Plain, and on the shale ridge caps of sandstone plateaus. A transitional community, between Cumberland Plain Woodland in drier areas and Blue Gum High Forest on adjacent higher rainfall ridges.	CE	CE	-	No - Dominant canopy species associated with this community are not present within the subject land. The subject land is not consistent with a forest community.
Upland Basalt Eucalypt Forests of the Sydney Basin Bioregion		Typically occurs as an open to tall open forest with a sparse to dense layer of shrubs and vines, and a diverse understorey of native grasses, forbs, twiners and ferns. Dominant canopy species are most often <i>Eucalyptus fastigata</i> (brown barrel), <i>Eucalyptus viminalis</i> (ribbon gum) and <i>Eucalyptus radiata subsp. radiata</i> (narrow-leaved peppermint). <i>Eucalyptus obliqua</i> (messmate stringybark), <i>Eucalyptus elata</i> (river peppermint), <i>Eucalyptus quadrangulata</i> (white-topped box) and <i>Eucalyptus smithii</i> (ironbark peppermint) are also common. <i>Eucalyptus oreades</i> (Blue Mountains ash) and <i>Eucalyptus blaxlandii</i> (Blaxland's stringybark) are prevalent in the Blue Mountains forms. <i>Eucalyptus cypellocarpa</i> (mountain grey gum) is widespread in drier sites, while <i>Eucalyptus piperita</i> (Sydney		E	-	No - Dominant sclerophyllous species associated with this community are not present within the subject land. The subject land is not consistent with a forest community.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		peppermint) and <i>Eucalyptus ovata</i> (swamp gum) may also be present. <i>Acacia melanoxylon</i> (blackwood) is a common subcanopy tree. Occasional rainforest trees such as <i>Doryphora sassafras</i> (sassafras) and <i>Hedycarya angustifolia</i> (native mulberry) may also occur. Generally confined to the Sydney Basin bioregion, including the Moss Vale, Ettrema, Burragorang, Sydney Cataract, and Wollemi IBRA sub-regions. However, some patches may extend into in the Kanangra and Oberon IBRA sub-regions of the South Eastern Highlands bioregion.				
Western Sydney Dry Rainforest and Moist Woodland on Shale		Typically, a low closed forest, slightly more open in the moist woodland form, with emergent trees up to 25 m high and a lower tree layer. In sheltered gullies and on lower slopes the canopy layer is typically dominated by <i>Melaleuca styphelioides</i> (prickly-leaved paperbark). Other diagnostic tree species include <i>Acacia implexa</i> (hickory wattle), <i>Alectryon subcinereus</i> (native quince), <i>Brachychiton populneus</i> (kurrajong), <i>Corymbia maculata</i> (spotted gum), <i>Melicope micrococca</i> (white euodia) and <i>Streblus pendulinus</i> (whalebone tree). Generally, on upper slopes to undulating terrain, or at more disturbed sites, the ecological community exhibits its moist woodland form with the canopy dominated by <i>Eucalyptus moluccana</i>, <i>Eucalyptus tereticornis</i>, <i>Eucalyptus crebra</i> and/or <i>Corymbia maculata</i>. Characteristic shrub species include <i>Breynia oblongifolia</i> (false coffee bush), <i>Clerodendrum tomentosum</i> (hairy clerodendrum) and <i>Notelaea longifolia</i> f. <i>longifolia</i> (large mock-olive). Vines and other climber species are typically common. The ground layer is variable and generally sparse with a diverse mix of forbs, ferns and shade-tolerant grasses. Cumberland Plain Sub-region of the Sydney Basin Bioregion.	E	CE	-	No – subject land is not consistent with a dry rainforest or moist woodland community. Subject land is not dominated by indicator species of this community.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
THREATENED FLORA						
<i>Acacia bynoeana</i>	Bynoe's Wattle	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. Seems to prefer open, sometimes slightly disturbed sites such as trail margins, edges of roadside spoil mounds and in recently burnt patches. Associated overstorey species include Red Bloodwood, Scribbly Gum, Parramatta Red Gum, Saw Banksia and Narrow-leaved Apple.	E	V	-	No – Site inspection did not identify this species within the subject land. Habitat within the subject land does not include associated overstorey species and vegetation is not a heath or dry sclerophyll forest. Soils are not sandy within the subject land.
<i>Allocasuarina glareicola</i>		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> .	E	E	-	No – Site inspection did not identify this species within the subject land. Subject land not consistent with an open woodland, no associated species present.
<i>Cynanchum elegans</i>	White-flowered Wax Plant	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; <i>Leptospermum laevigatum</i> - <i>Banksia integrifolia</i> subsp. <i>integrifolia</i> (Coastal Tea-tree– Coastal Banksia) coastal scrub; <i>Eucalyptus tereticornis</i> (Forest Red Gum) or <i>Corymbia maculata</i> (Spotted Gum) open forest and woodland; and <i>Melaleuca armillaris</i> (Bracelet Honey myrtle) scrub.	E	E	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not consistent with a rainforest. Subject land not located within known occurrence.
<i>Dillwynia tenuifolia</i>		Occurs in the area bounded by Western Road, Elizabeth Drive, Devonshire Road and Cross Street, Kemps Creek in the Liverpool Local Government Area. Transition from Castlereagh Ironbark Forest to Castlereagh Scribbly Gum Woodland.	V		5	Unlikely – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with Castlereagh Ironbark Forest or Castlereagh Scribbly Gum Woodland.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Eucalyptus aggregata</i>	Black Gum	Black Gum is found in the NSW Central and Southern Tablelands, with small, isolated populations in Victoria and the ACT. In NSW it occurs in the South Eastern Highlands Bioregion and on the western fringe of the Sydney Basin Bioregion. Black Gum has a moderately narrow distribution, occurring mainly in the wetter, cooler and higher parts of the tablelands, for example in the Blayney, Crookwell, Goulburn, Braidwood and Bungendore districts. Locally frequent, in grassy woodland on alluvial soils along creeks on broad, cold flats.	V	V	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with a grassy woodland.
<i>Eucalyptus benthamii</i>	Camden White Gum	Alluvial flats of the Nepean River and its tributaries. Mainly Kedumba Valley of the Blue Mountains National Park and Bents Basin State Recreation Area. Also, along the Nepean River around Camden and Cobbitty, at Werriberri (Monkey) Creek in The Oaks, and on the Nattai River in Nattai National Park. Occurs in open forest. Requires a combination of deep alluvial sands and a flooding regime.	CE	CE	1	Unlikely - Site inspection did not identify this species within the subject land. Subject land not consistent with an open forest.
<i>Genoplesium baueri</i>	Bauer's Orchid	Midge 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.	E	E	-	No – Site inspection did not identify this species within the subject land. Subject land not consistent with dry sclerophyll forest.
<i>Hakea dohertyi</i>	Kowmung Hakea	Kowmung Hakea is confined to a small area (18 sq. km) in the Kowmung Valley in Kanangra Boyd National Park. Population varies, but up to 7000 plants have been counted. Additional small populations occur in Bindook area and at Tonalli Cove on Lake Burragarang. Kowmung Hakea grows in dry sclerophyll forest, usually dominated by grey gum or silvertop ash, with a sparse groundcover and midstorey.	E	CE	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with dry sclerophyll forest.
<i>Haloragis exalata</i> subsp. <i>exalata</i>	Wingless Raspwort	Disjunct distribution in the Central Coast, South Coast and North Western Slopes botanical subdivisions of NSW. Protected and shaded damp situations in riparian habitats.	V	V	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Macadamia integrifolia</i>	Macadamia Nut	In drier types of subtropical rainforest north from Currumbin in Qld. It is not known to occur naturally in the wild in NSW; however, it has been recorded from Camden Haven but it is not known if the tree was cultivated or growing naturally.		V	1	No - Site inspection did not identify this species within the subject land. Subject land not located within known occurrence or habitat.
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	Marsdenia viridiflora R. Br. subsp. <i>viridiflora</i> population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith local government areas	Recent records are from Prospect, Bankstown, Smithfield, Cabramatta Creek and St Marys. Previously known north from Razorback Range. Grows in vine thickets and open shale woodland.	E		812	Unlikely - Site inspection did not identify this species within the subject land. This species is conspicuous and does not need to be in flower to be identified. Subject land not consistent with vine thickets or open shale woodland.
<i>Melaleuca deanei</i>	Deane's Paperbark	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.	V	V	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence.
<i>Micromyrtus minutiflora</i>		Restricted to the general area between Richmond and Penrith, western Sydney. Grows in Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition Forest, open forest on tertiary alluvium and consolidated river sediments.	E	V	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not consistent with Castlereagh Scribbly Gum Woodland, Ironbark Forest, Shale/Gravel Transition Forest or an open forest.
<i>Persicaria elatior</i>	Tall Knotweed	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	V	V	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		Grafton area (Cherry Tree and Gibberagee State Forests). Beside streams and lakes, swamp forest or disturbed areas.				
<i>Persoonia acerosa</i>	Needle Geebung	Recorded only on the central coast and in the Blue Mountains, from Mt Tomah in the north to as far south as Hill Top where it is now believed to be extinct. Dry sclerophyll forest, scrubby low-woodland and heath on low fertility soils.	V	V	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with dry sclerophyll forest, scrubby low-woodland or heath.
<i>Persoonia hirsuta</i>	Hairy Geebung	<i>Persoonia hirsuta</i> has a scattered distribution around Sydney. The species is distributed from Singleton in the north, along the east coast to Hilltop in the south west, Dombarton in the south east and the Blue Mountains to the west. <i>Persoonia hirsuta</i> has a large area of occurrence, but occurs in small populations or isolated individuals, increasing the species' fragmentation in the landscape. Found in clayey and sandy soils in dry sclerophyll open forest, woodland and heath, primarily on the Mittagong Formation and on the upper Hawkesbury Sandstone. It is usually present as isolated individuals or very small populations.	E	E	4	No – Site inspection did not identify this species within the subject land. No sandy soils present. Subject land not consistent with dry sclerophyll forest, scrubby low-woodland or heath.
<i>Personnia nutans</i>	Nodding Geebung	Restricted to the Cumberland Plain in western Sydney, between Richmond in the north and Macquarie Fields in the south. Northern populations: sclerophyll forest and woodland (Agnes Banks Woodland, Castlereagh Scribbly Gum Woodland and Cooks River / Castlereagh Ironbark Forest) on aeolian and alluvial sediments. Southern populations: tertiary alluvium, shale sandstone transition communities and Cooks River / Castlereagh Ironbark Forest.	E	E	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not consistent with a forest or woodland.
<i>Pimelea spicata</i>	Spiked flower	Rice- 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.	E	E	2	Unlikely – Site inspection did not identify this species within the subject land. Subject land not consistent with a Grey Box community.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		Coast Banksia open woodland or coastal grassland in the Illawarra.				
<i>Pomaderris brunnea</i>	Brown Pomaderris	In NSW, found around the Colo, Nepean and Hawkesbury Rivers, including the Bargo area and near Camden. It also occurs near Walcha on the New England tablelands. Moist woodland or forest on clay and alluvial soils of flood plains and creek lines.	E	V	-	Unlikely – Site inspection did not identify this species within the subject land. Subject land not consistent with moist woodland or forest.
<i>Pterostylis saxicola</i>	Sydney Greenhood	Plains Restricted to western Sydney between Freemans Reach in the north and Picton in the south. There are very few known populations and they are all very small and isolated. Two populations occur within a conservation reserve (Georges River National Park; Scheyville NP). Most commonly found growing in small pockets of shallow soil in depressions on sandstone rock shelves above cliff lines. The vegetation communities above the shelves where <i>Pterostylis saxicola</i> occurs are sclerophyll forest or woodland on shale/sandstone transition soils or shale soils. Typically occurs as scattered individuals or in small groups.	E	E	1	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with shallow soil in depressions on sandstone rock shelves.
<i>Pultenaea parviflora</i>	-	Endemic to the Cumberland Plain. Core distribution is from Windsor to Penrith and east to Dean Park. Outlier populations are recorded from Kemps Creek and Wilberforce. May be locally abundant, particularly within scrubby/dry heath areas within Castlereagh Ironbark Forest and Shale Gravel Transition Forest on tertiary alluvium or laterised clays. May also be common in transitional areas where these communities adjoin Castlereagh Scribbly Gum Woodland.	E	V	10	No – Site inspection did not identify this species within the subject land. Subject land not consistent with dry sclerophyll forest.
<i>Rhizanthella slateri</i>	Eastern Australian Underground Orchid	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.	V	E	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with sclerophyll forest.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Rhodamnia rubescens</i>	Scrub Turpentine	Occurs in coastal districts north from Batemans Bay in New South Wales, approximately 280 km south of Sydney, to areas inland of Bundaberg in Queensland. Populations of <i>R. rubescens</i> typically occur in coastal regions and occasionally extend inland onto escarpments up to 600 m a.s.l. in areas with rainfall of 1,000-1,600 mm. Found in littoral, warm temperate and subtropical rainforest and wet sclerophyll forest usually on volcanic and sedimentary soils.	CE	CE	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with a rainforest or forest community.
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	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.	E	V	1	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with a rainforest community.
<i>Thelymitra kangaloonica</i>	Kangaloon Sun Orchid	Only known to occur on the southern tablelands of NSW in the Moss Vale / Kangaloon / Fitzroy Falls area at 550-700 m above sea level. Swamps in sedgeland over grey silty grey loam soils.	CE	CE	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence.
<i>Thesium australe</i>	Austral Toadflax	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.	V	V	-	No – Site inspection did not identify this species within the subject land. Subject land not located within known occurrence. Subject land not consistent with grassland or grassy woodland communities.
THREATENED FAUNA						
<i>Actitis hypoleucos</i>	Common Sandpiper	Summer migrant. In NSW, widespread along coastline and 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.		M	1	Unlikely – subject land not located along the coastline, not consistent with muddy margins or rocky shores.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Anthochaera phrygia</i>	Regent Honeyeater	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).	CE	CE	2	Unlikely – subject land not consistent with Eucalypt woodland or open forest communities, wooded farmland or urban areas with mature Eucalypts, or riparian forests of <i>Casuarina cunninghamiana</i> (River Oak).
<i>Aphelocephala leucopsis</i>	Southern Whiteface	Inhabits drier open woodlands and shrublands in southern Australia, where often forages on the ground in small flocks.		V	-	Unlikely – subject land not consistent with drier open woodlands or shrublands. Subject land not located within known occurrence.
<i>Aprasia parapulchella</i>	Pink-tailed Worm-lizard, Pink-tailed Legless Lizard	Rocky outcrops or scattered partly buried rocks. It occurs under rocks in grassland and woodland in south-east Australia.	V	V	-	No – subject land not consistent with rocky outcrops or a rocky grassland or woodland.
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory, spending the northern hemisphere's winter in Southeast Asia and Australia. Breeds in the northern hemisphere in sheltered locations such as caves, natural rock crevices or under the roofs of houses.		M	1	Unlikely – the species does not breed in Australia and the subject land is not consistent with the species preferred woodland/forest foraging habitat.
<i>Artamus cyanopterus cyanopterus</i>	Dusky Woodswallow	This species occurs throughout most of NSW. It primarily inhabits dry, open Eucalypt forests and woodlands, including mallee associations, with an open or sparse understorey of Eucalypt saplings, acacias and other shrubs, and groundcover of grasses or sedges and fallen woody debris. Nest sites vary greatly, but generally occur in shrubs or low trees (living or dead) in horizontal or upright forks in branches, spouts, hollow stumps or logs, behind loose bark or in a hollow in the top of a wooden fence post.	V		45	Unlikely – subject land not consistent with open Eucalypt Forest or woodland and lacks the understorey the species prefers. Preferred nesting habitat is absent within the subject land (i.e. no fallen woody debris, spouts, hollow stumps, logs, loose bark or wooden fencing). Subject land is isolated/fragmented from suitable habitat.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Found over most of NSW except for the far north-west. Permanent freshwater wetlands with tall, dense vegetation, particularly <i>Typha</i> spp. (bullrushes) and <i>Eleocharis</i> spp. (spikerushes).	E	E	1	Unlikely – extent of potential habitat in subject land (<i>Typha orientalis</i>) is minimal and isolated/fragmented.
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	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.		V, M	-	Unlikely – subject land not located in a coastal area. Subject land not located within known occurrence.
<i>Calidris ferruginea</i>	Curlew Sandpiper	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.		CE, M	-	Unlikely – subject land not located in a coastal area. Subject land not located within known occurrence. Subject land not consistent with littoral or estuarine habitats.
<i>Calidris melanotos</i>	Pectoral Sandpiper	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.		M	-	Unlikely – subject land not located within known occurrence.
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	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.	E	E	29	Unlikely – subject land not consistent with tall mountain forest and woodland communities.
<i>Calyptorhynchus lathami lathami</i>	South-eastern Glossy Black-Cockatoo	In NSW, widespread along coast and inland to the southern tablelands and central western plains, with a small population	V	V	20	Unlikely – subject land not consistent with open forest and woodland communities. Subject land not located in a coastal area.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		in the Riverina. Open forest and woodlands of the coast and the Great Dividing Range where stands of sheoak occur.				
<i>Cercartetus nanus</i>	Eastern Pygmy-possum	In NSW it extends from the coast inland as far as the Pilliga, Dubbo, Parkes and Wagga Wagga on the western slopes. Rainforest, sclerophyll forest (including Box-Ironbark), woodland and heath.	V		3	Unlikely – subject land not consistent with rainforest, sclerophyll forest (including Box-Ironbark), woodland or heath. Subject land is isolated/fragmented from suitable habitat.
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	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. Roosts in caves, rock overhanging's and disused mine shafts, and is associated with rock outcrops and cliff faces.	E	E	5	Known – targeted survey and ultrasonic analysis recorded presence of the species.
<i>Climacteris picumnus victoriae</i>	Brown Treecreeper (south-eastern)	From eastern through central NSW, west to Corowa, Wagga Wagga, Temora, Forbes, Dubbo and Inverell. Eucalypt woodlands and dry open forest.	V	V	1	Unlikely – subject land not consistent with Eucalypt woodlands or dry open forest communities. Subject land not located within known occurrence.
<i>Cuculus optatus</i>	Oriental Cuckoo, Horsfield's Cuckoo	Winter visitors to Australia, do not breed here. Mainly seen in northern Australia, occasionally they are sighted as far south as Sydney. They are more widespread in the Top End and coastal Queensland with the odd vagrant records south to the Pilbara. Oriental Cuckoos are found in more humid habitats such as monsoon forest, wet eucalypt forest, river margins and near mangroves.		M	-	No – subject land not within known occurrence. Subject land not consistent with monsoon forest, wet Eucalypt Forest, river margins or near mangroves.
<i>Daphoenositta chrysoptera</i>	Varied Sittella	The distribution of the Varied Sittella in NSW is nearly continuous from the coast to the far west. It inhabits Eucalypt forests and woodlands, mallee and Acacia woodland.	V		43	Unlikely – subject land not consistent with Eucalypt forests and woodlands, mallee or Acacia woodland.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Dasyurus maculatus</i>	Spotted-tailed Quoll	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.	V	E	9	Unlikely – subject land not within known occurrence. Subject land not consistent with rainforest, open forest, woodland, coastal heath, or inland riparian forest communities.
<i>Delma impar</i>	Striped Lizard	Legless The Striped Legless Lizard occurs in the Southern Tablelands, the South West Slopes, the Upper Hunter and possibly on the Riverina. Populations are known in the Goulburn, Yass, Queanbeyan, Cooma, Muswellbrook and Tumut areas. Also occurs in the ACT, Victoria and south-eastern South Australia. Found mainly in Natural Temperate Grassland but has also been captured in grasslands that have a high exotic component. Also found in secondary grassland near Natural Temperate Grassland and occasionally in open Box-Gum Woodland. Habitat is where grassland is dominated by perennial, tussock-forming grasses such as <i>Themeda australis</i> (Kangaroo Grass), spear-grasses <i>Austrostipa</i> spp. and Poa tussocks (<i>Poa</i> spp.), and occasionally wallaby grasses <i>Austrodanthonia</i> spp.		V	-	No – subject land not within known occurrence. Subject land not consistent with natural temperate grassland.
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	Restricted mainly to coastal and near-coastal areas of northern and eastern Australia. Inhabits wetlands, such as floodplains of rivers with large shallow swamps and pools, and deeper permanent bodies of water. Occasionally individuals will stray into open grass, woodland areas or flooded paddocks in search of food.	E		1	Unlikely – subject land not located in a coastal area or preferred habitat.
<i>Erythroriorchis radiatus</i>	Red Goshawk	Coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia		E	-	Unlikely – subject land not within known occurrence. Subject land not consistent with wooded or forest communities.
<i>Falco hypoleucos</i>	Grey Falcon	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		V	-	Unlikely – subject land not within known occurrence. Subject land not consistent with shrubland, grassland or wooded watercourses.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		watercourses, occasionally in open woodlands near the coast, and near wetlands.				
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	South-east coast and ranges of Australia, from southern Qld to Victoria and Tasmania. In NSW, records extend to the western slopes of the Great Dividing Range. Inhabits tall (greater than 20m) moist habitats. The species predominately roosts in Eucalypt tree hollows but has also been found to roost under loose bark on trees and in man-made structures. It hunts beetles, moths, weevils and other flying insects above or just below the tree canopy, in open forests.	V		1	Potential – subject land not consistent with tall (greater than 20m) habitat. Site inspection did not identify the presence of tree hollows or loose bark within the subject land. However, targeted survey and ultrasonic analysis recorded potential presence of the species.
<i>Gallinago hardwickii</i>	Latham's Snipe	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.	V	V, M	4	Unlikely – subject land not within known occurrence. Subject land not consistent with a freshwater swamp, flooded grassland or heathland.
<i>Glossopsitta pusilla</i>	Little Lorikeet	In NSW, found from the coast westward as far as Dubbo and Albury. Dry, open eucalypt forests and woodlands, including remnant woodland patches and roadside vegetation.	V		4	Unlikely – subject land not consistent with dry, open eucalypt forests or woodlands, including remnant woodland patches.
<i>Grantiella picta</i>	Painted Honeyeater	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.		V	-	Unlikely – subject land not consistent with Box-Gum Woodlands or Box-Ironbark Forests.
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	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.		V	-	Unlikely – subject land not within known occurrence. Subject land not consistent with sandstone, heath, woodland or open dry sclerophyll forest communities.
<i>Haliaeetus leucogaster</i>	White-bellied Sea-Eagle	Distributed along the coastline of mainland Australia and Tasmania, extending inland along some of the larger waterways, especially in eastern Australia. Freshwater swamps, rivers,	V		7	Unlikely – subject land not located in a coastal area. Subject land does not contain waterbodies large enough to support foraging habitat.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		lakes, reservoirs, billabongs, saltmarsh and sewage ponds and coastal waters. Terrestrial habitats include coastal dunes, tidal flats, grassland, heathland, woodland, forest and urban areas.				Preferred terrestrial habitat (coastal dunes, tidal flats, grassland, heathland, woodland, forest) not located within subject land.
<i>Hieraaetus morphnoides</i>	Little Eagle	The Little Eagle is found throughout the Australian mainland excepting the most densely forested parts of the Dividing Range escarpment. It occurs as a single population throughout NSW. Occupies open eucalypt forest, woodland or open woodland. Sheoak or Acacia woodlands and riparian woodlands of interior NSW are also used.	V		8	Unlikely – subject land not consistent with open eucalypt forest, woodland, open woodland or riparian woodland.
<i>Hirundapus caudacutus</i>	White-throated Needletail	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.	V	V, M	7	Unlikely – subject land not located in a coastal area. Subject land not consistent with open forest or rainforest communities, heathland or remnant vegetation in farmland.
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	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.	E	E	2	Unlikely – subject land not consistent with sandstone. Subject land not consistent with dry and wet sclerophyll forests, riverine forests, coastal heath swamps, rocky outcrops, heaths or grassy woodlands.
<i>Lathamus discolor</i>	Swift Parrot	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.	E	CE	30	Potential – site inspection identified only minimal presence of preferred foraging habitat (potential feed trees including three Spotted Gum trees and one Forest Red Gum tree.
<i>Litoria aurea</i>	Green and Golden Bell Frog	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 <i>Typha spp.</i> (bullrushes) or <i>Eleocharis spp.</i> (spikerushes). Some populations occur in highly disturbed areas.	E	V	1	Unlikely – site inspection identified the presence of potential habitat (damp/inundated grassland areas and wetlands, presence of <i>Typha orientalis</i>), however, not recorded during targeted surveys and presence of Plague Minnow within wetlands/waterbodies.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Lophoictinia isura</i>	Square-tailed Kite	The Square-tailed Kite ranges along coastal and subcoastal areas from south-western to northern Australia, Queensland, NSW and Victoria. In NSW, scattered records of the species throughout the state indicate that the species is a regular resident in the north, north-east and along the major west-flowing river systems. Found in a variety of timbered habitats including dry woodlands and open forests. Shows a particular preference for timbered watercourses.	V		9	Unlikely – subject land not located in a coastal or subcoastal area. Subject land not consistent with timbered habitats including dry woodlands, open forests or timbered watercourses.
<i>Melanodryas cucullata cucullata</i>	South-eastern Hooded Robin, Hooded Robin (south-eastern)	Inhabits dry eucalypt and acacia woodlands and shrublands, with an open understorey, some grassy areas, and a complex ground layer.		E	-	Unlikely – subject land not consistent with dry Eucalypt/Acacia woodlands or shrublands.
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	Lives in small areas on the Cumberland Plain west of Sydney, from Richmond and Windsor south to Picton and from Liverpool west to the Hawkesbury and Nepean Rivers at the base of the Blue Mountains. Known from over 100 different locations, but not all are currently occupied, and they are usually isolated from each other as a result of land use patterns. Primarily inhabits Cumberland Plain Woodland (a critically endangered ecological community). This community is a grassy, open woodland with occasional dense patches of shrubs. It is also known from Shale Gravel Transition Forests, Castlereagh Swamp Woodlands and the margins of River-flat Eucalypt Forest, which are also listed communities.	E		41	Unlikely – subject land not consistent with Cumberland Plain Woodland, Shale Gravel Transition Forest, Castlereagh Swamp Woodland or the margins of River-flat Eucalypt Forest.
<i>Micronomus norfolkensis</i>	Eastern Coastal Free-tailed Bat	The Eastern Coastal Free-tailed Bat is found along the east coast from south Qld to southern NSW, dry sclerophyll forest, woodland, swamp forests and mangrove forests east of the Great Dividing Range. It roosts in tree hollows but will also roost under bark or in man-made structures. Individuals are usually	V		5	Known – targeted survey and ultrasonic analysis recorded presence of the species.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		solitary but have also been recorded roosting communally. The species is probably insectivorous.				
<i>Miniopterus australis</i>	Little Bent-winged Bat	Little Bentwing-bats roost in caves, tunnels, tree hollows, abandoned mines, stormwater drains, culverts, bridges and sometimes buildings during the day, and at night forage for small insects beneath the canopy of densely vegetated habitats. Found along the East coast and ranges of Australia from Cape York in Queensland to Wollongong in NSW in moist eucalypt forest, rainforest, vine thicket, wet and dry sclerophyll forest, Melaleuca swamps, dense coastal forests and banksia scrub. Generally found in well-timbered areas. They often share roosting sites with the Common Bentwing-bat and, in winter, the two species may form mixed clusters.	V		1	Unlikely - targeted survey and ultrasonic analysis did not record presence or potential presence of the species. Subject land does not contain suitable roosting habitat (i.e. caves, tunnels, tree hollows, abandoned mines or bridges). Subject land not consistent with moist eucalypt forest, rainforest, vine thicket, wet or dry sclerophyll forest, Melaleuca swamp, dense coastal forests or banksia scrub.
<i>Miniopterus australis</i>	Large Bent-winged Bat	Large Bentwing-bats occur along the east and north-west coasts of Australia. Caves are the primary roosting habitat, but they also use derelict mines, storm-water tunnels, buildings and other man-made structures. Large Bent-winged Bats form discrete populations centred on a maternity cave that is used annually in spring and summer for the birth and rearing of young. At other times of the year, populations disperse within about 300 km range of maternity caves. The species hunts in forested areas.	V		12	Potential – subject land not located along the coast. Site inspection did not identify the presence of roosting habitat (caves, derelict mines) within the subject land. However, targeted survey and ultrasonic analysis recorded potential presence of the species.
<i>Mixophyes balbus</i>	Stuttering Frog	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.		V	-	Unlikely – subject land not located in a coastal area. Subject land not consistent with a rainforest or wet, tall open forest.
<i>Monarcha melanopsis</i>	Black-faced Monarch	In NSW, occurs around the eastern slopes and tablelands of the Great Divide, inland to Coutts Crossing, Armidale, Widden Valley, Wollemi National Park and Wombeyan Caves. It is rarely recorded farther inland. Rainforest, open eucalypt forests, dry		M	-	Unlikely – subject land not within known occurrence. Subject land not consistent with rainforest, open eucalypt forests, dry sclerophyll forests or woodlands, gullies in mountain areas or

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		sclerophyll forests and woodlands, gullies in mountain areas or coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks and gardens.				coastal foothills, Brigalow scrub, coastal scrub, mangroves, parks or gardens.
<i>Motacilla flava</i>	Yellow Wagtail	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.		M	-	Unlikely – subject land not located in a coastal area. Subject land not consistent with swamp margins, sewage ponds, saltmarshes, playing fields, airfields, ploughed land or lawns.
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	In NSW, widespread on and east of the Great Divide and sparsely scattered on the western slopes, with very occasional records on the western plains. Eucalypt-dominated forests, especially near wetlands, watercourses, and heavily vegetated gullies.		M	-	Unlikely – subject land not within known occurrence. Subject land not consistent with Eucalypt-dominated forests.
<i>Myotis macropus</i>	Southern Myotis	In NSW, the Southern Myotis is found in the coastal band. It is rarely found more than 100 km inland, except along major rivers. It forages over streams and pools, and generally roosts in groups of 10 – 15, close to water in caves, mine shafts, hollow-bearing trees, storm water channels, buildings, under bridges and in dense foliage.	V		12	Potential – site inspection did not identify the presence of roosting habitat (caves, mine shafts, hollow bearing trees) within the subject land. However, subject land does contain potential foraging habitat (modified watercourse and dam) and targeted survey and ultrasonic analysis recorded potential presence of the species.
<i>Neophema chrysostoma</i>	Blue-winged Parrot	Inhabits a range of habitats from coastal, sub-coastal and inland areas, right through to semi-arid zones. Favours grasslands and grassy woodlands. Often found near wetlands both near the coast and in semi-arid zones. Blue-winged Parrots can also be seen in altered environments such as airfields, golf courses and paddocks.		V	-	Unlikely – subject land not consistent with grassland or grassy woodland communities. Subject land not located near the coast.
<i>Neophema pulchella</i>	Turquoise Parrot	The Turquoise Parrot's range extends from southern Queensland through to northern Victoria, from the coastal plains to the western slopes of the Great Dividing Range. Lives	V		1	Unlikely - subject land not consistent with Eucalypt woodland or timbered ridges.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		on the edges of eucalypt woodland adjoining clearings, timbered ridges and creeks in farmland.				
<i>Ninox connivens</i>	Barking Owl	Wide but sparse distribution in NSW, avoiding the most central arid regions. Core populations exist on the western slopes and plains and in some northeast coastal and escarpment forests. Woodland and open forest, including fragmented remnants and partly cleared farmland, wetland and riverine forest.	V		1	Unlikely – subject land not consistent with woodland or open forest.
<i>Ninox strenua</i>	Powerful Owl	In NSW, the Powerful Owl is widely distributed throughout the eastern forests from the coast inland to tablelands, with scattered records on the western slopes and plains. It inhabits woodland, open sclerophyll forest, tall open wet forest and rainforest. Powerful Owls nest in living or dead trees with hollow greater than 20cm diameter.	V		33	Unlikely – subject land not consistent with woodland, open sclerophyll forest, tall open wet forest or rainforest. Site inspection did not identify the presence of suitable nesting habitat (hollow-bearing trees) within the subject land.
<i>Notamacropus parma</i>	Parma Wallaby	Wet sclerophyll forest with dense understory, occasionally also in rainforest and dry sclerophyll forest.		V	-	No – subject land not consistent with wet sclerophyll forest.
<i>Numenius madagascariensis</i>	Eastern Curlew	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.		CE, M	-	Unlikely – subject land not located in a coastal area. Subject land not consistent with estuaries, bays, harbours, inlets or coastal lagoons, intertidal mudflats or sandflats, ocean beaches, coral reefs, rock platforms, saltmarsh, mangroves, freshwater/brackish lakes, saltworks or sewage farms.
<i>Pandion haliaetus cristatus</i>	Eastern Osprey	The breeding range of the Eastern Osprey extends around the northern coast of Australia (including many offshore islands) from Albany in Western Australia to Lake Macquarie in NSW; with a second isolated breeding population on the coast of South Australia, extending from Head of Bight east to Cape Spencer and Kangaroo Island. The total range (breeding plus non-breeding) around the northern coast is more widespread,	V	M	2	Unlikely – subject land not located within known occurrence.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		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. The distribution of the species around the northern coast (south-western Western Australia to south-eastern NSW) appears continuous except for a possible gap at Eighty Mile Beach.				
<i>Petauroides volans</i>	Greater Glider	The Greater Glider occurs in Eucalypt forests along the ranges and coastal plains of eastern Australia, feeding almost exclusively on the young leaves and flower buds of select Eucalypt species. It shelters in tree hollows, with a particular preference for large hollows in large, old trees. Individuals occupy relatively small home ranges (1-3 ha).	E	E	3	Unlikely – subject land not consistent with Eucalypt forests or woodlands.
<i>Petaurus australis</i>	Yellow-bellied Glider	The Yellow-bellied Glider is found along the eastern coast to the western slopes of the Great Dividing Range, from southern Qld to Victoria. It is restricted to tall mature forests, preferring productive tall open sclerophyll forests with a mosaic of tree species including some that flower in winter. Large hollows (>25 cm) within mature trees are required for shelter, nesting and breeding. The species feeds primarily on plant and insect exudates. Individuals are very mobile, occupying large home ranges between 20 to 85 ha to encompass dispersed and seasonally variable food.	V	V	3	Unlikely – subject land not consistent with a tall mature Eucalypt Forest.
<i>Petaurus norfolcensis</i>	Squirrel Glider	Widely though sparsely distributed on both sides of the Great Dividing Range in eastern Australia, from northern Qld to western Victoria. Mature or old growth Box, Box-Ironbark woodlands and River Red Gum Forest west of the Great Dividing Range and Blackbutt-Bloodwood Forest with heath understorey in coastal areas.	V		2	Unlikely – subject land not consistent with mature or old growth Box, Box-Ironbark woodlands, River Red Gum Forest or Blackbutt-Bloodwood Forest.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	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.		V	-	No – subject land not located within known occurrence. Subject land does not contain rocky escarpments, outcrops or cliffs.
<i>Petroica boodang</i>	Scarlet Robin	In NSW, it occurs from the coast to the inland slopes. Dry eucalypt forests and woodlands, and occasionally in mallee, wet forest, wetlands and tea-tree swamps.	V		5	Unlikely – subject land not consistent with dry eucalypt forest or woodland, mallee, wet forest or tea-tree swamp.
<i>Petroica phoenicea</i>	Flame Robin	In NSW, the Flame Robin breeds in upland areas, and in winter many birds move to the inland slopes and plains, or occasionally to coastal areas. It breeds in upland tall moist Eucalypt forests and woodlands. In winter it uses dry forests, open woodlands, heathlands, pastures and native grasslands. It can occasionally be found in temperate rainforest, herbfields, heathlands, shrublands and sedgeland.	V		3	Unlikely – subject land not consistent with upland tall moist Eucalypt Forest or woodland, dry forest, open woodland, heathland, pastures, native grassland, temperate rainforest, herbfields, heathland, shrubland or sedgeland.
<i>Phascolarctos cinereus</i>	Koala	In NSW, the koala mainly occurs on the central and north coasts, with some populations in the west of the Great Dividing Range. It is associated with both wet and dry Eucalypt forest and woodland, feeding on the foliage of more than 70 Eucalypt species and 30 non-Eucalypt species, but in any one area will select preferred browse species.	E	E	41	Unlikely – subject land is not consistent with Eucalypt woodland or forest communities.
<i>Pluvialis squatarola</i>	Grey Plover	Mudflats, saltmarsh, tidal reefs and estuaries.		M	2	Unlikely – subject land not located in a coastal area. Subject land not consistent with mudflats, saltmarsh, tidal reefs or estuaries.
<i>Pommerhelix duralensis</i>	Dural Land Snail	Shale-influenced-habitat specialist, which occurs in low densities along the western and northwest fringes of the Cumberland IBRA subregion on shale-sandstone transitional landscapes. The species is definitely found within the Local Government Areas of The Hills Shire, Hawkesbury Shire and		E	-	Unlikely – subject land not consistent with shale-sandstone transitional landscapes or forested habitats.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		Hornsby Shire. Records from the Blue Mountains City, Penrith City and Parramatta City may represent this species. Occurrence in Wollondilly Shire is considered unlikely in light of current knowledge. The species has a strong affinity for communities in the interface region between shale-derived and sandstone-derived soils, with forested habitats that have good native cover and woody debris.				
<i>Pseudophryne australis</i>	Red-crowned Toadlet	Confined to the Sydney Basin, from Pokolbin in the north, the Nowra area to the south, and west to Mt Victoria in the Blue Mountains. Open forests, mostly on Hawkesbury and Narrabeen Sandstones. Inhabits periodically wet drainage lines below sandstone ridges that often have shale lenses or cappings.	V		28	Unlikely – subject land not consistent with an open forest or periodically wet drainage lines below sandstone ridges.
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	Fragmented distribution across eastern NSW. Open heathlands, woodlands and forests with a heathland understorey, vegetated sand dunes.		V	-	Unlikely – subject land not consistent with open heathlands, woodlands or forests with a heathland understorey, or vegetated sand dunes.
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	This species is found along the eastern coast of Australia, from Bundaberg in Qld to Melbourne in Victoria. It inhabits subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy.	V	V	309	Potential – site inspection identified only minimal presence of preferred foraging habitat (one Smooth-barked Apple, three Spotted Gum, one Tallowwood and one Forest Red Gum Tree).
<i>Pyncnoptilus floccosus</i>	Pilotbird	The pilotbird is found from the Wollemi National Park and Blue Mountains National Park in New South Wales through to the Dandenong Ranges, near Melbourne in Victoria. Its natural habitat is temperate wet sclerophyll forests and occasionally temperate rainforest, where there is dense undergrowth with abundant debris. It is sedentary and common.		V	-	Unlikely – subject land not consistent with temperate wet sclerophyll forests or temperate rainforests.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Rhipidura rufifrons</i>	Rufous Fantail	Coastal and near coastal districts of northern and eastern Australia, including on and east of the Great Divide in NSW. Wet sclerophyll forests, subtropical and temperate rainforests. Sometimes drier sclerophyll forests and woodlands.		M	-	Unlikely – subject land not located in a coastal area. Subject land not consistent with wet sclerophyll forests or rainforests.
<i>Rostratula australis</i>	Australian Painted Snipe	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.		E	-	Unlikely – subject land not located within known occurrence. Subject land not consistent with swamps or marshy areas.
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	The Greater Broad-nosed Bat is found mainly in the gullies and river systems that drain the Great Dividing Range, from north-eastern Victoria to the Atherton Tableland. The species utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. The species usually roosts in tree hollows but has also been found in buildings.	V		4	Potential – site inspection did not identify the presence of roosting habitat (hollow bearing trees) within the subject land. Subject land not consistent with woodland, moist or dry eucalypt forest or rainforest, or tall wet forest. However, targeted survey and ultrasonic analysis recorded potential presence of the species.
<i>Stagonopleura guttata</i>	Diamond Firetail	Grassy eucalypt woodlands, open forest, mallee, Natural Temperate Grassland, secondary derived grassland, riparian areas and lightly wooded farmland.		V	-	Unlikely – subject land not consistent with grassy eucalypt woodlands, open forest, mallee, Natural Temperate Grassland, secondary derived grassland or lightly wooded farmland.
<i>Stictonetta naevosa</i>	Freckled Duck	Prefer permanent freshwater swamps and creeks with heavy growth of Cumbungi, Lignum or Tea-tree. Inland river systems, occurring as far as coastal NSW in times of drought. Freshwater swamps and creeks, lakes, reservoirs, farm dams and sewage ponds.	V		2	Unlikely - extent of potential habitat in subject land is minimal and isolated/fragmented.
<i>Symposiachrus trivirgatus</i>	Spectacled Monarch	Coastal eastern Australia south to Port Stephens in NSW. Mountain/lowland rainforest, wooded gullies, riparian vegetation including mangroves.		M	-	Unlikely – subject land not located in a coastal area. Subject land not consistent with mountain/lowland rainforest, wooded gullies or mangroves.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
<i>Tringa glareola</i>	Wood Sandpiper	Seen in small flocks or singly on inland shallow freshwater wetlands, often with other waders. They prefer ponds and pools with emergent reeds and grass, surrounded by tall plants or dead trees and fallen timber.		M	2	Unlikely - extent of potential habitat in subject land is minimal and isolated/fragmented. Site inspection did not identify presence of dead trees or fallen timber within the subject land.
<i>Tringa nebularia</i>	Common Greenshank	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, saltflats, 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).		E, M	-	Unlikely – subject land not located within a coastal area or within known occurrence.
<i>Tyto novaehollandiae</i>	Masked Owl	The Masked Owl extends from the coast, where it is most abundant, to the western plains. It lives in dry Eucalypt forests and woodlands from sea level to 1100 m. Although it is a forest owl, it often hunts along the edges of forests, including roadsides. Pairs have a large home-range of 500 to 1000 hectares. The species roosts and breeds in moist Eucalypt forested gullies, using large tree hollows or sometimes caves for nesting.	V		11	Unlikely – subject land not consistent with dry Eucalypt Forest or woodland. Site inspection did not identify the presence of suitable roosting habitat (large tree hollows or caves) within the subject land.
<i>Tyto tenebricosa</i>	Sooty Owl	The Sooty Owl occupies the coast, coastal escarpment and eastern tablelands of NSW. It occurs in rainforest, including dry rainforest, subtropical and warm temperate rainforest, as well as moist eucalypt forests. The species roosts by day in the hollow of a tall forest tree or in heavy vegetation; it hunts by night for small ground mammals or tree-dwelling mammals such as the Common Ringtail Possum (<i>Pseudocheirus</i>	V		2	Unlikely – subject land not located in a coastal area. Subject land not consistent with rainforest, dry rainforest, subtropical and warm temperate rainforest or moist eucalypt forest. Site inspection did not identify the presence of suitable roosting habitat (large tree hollows) within the subject land.

Scientific name	Common name	Habitat associations	BC Act Status	EPBC Act status	BioNet records within 5 km	Likelihood of occurrence
		<i>peregrinus</i>) or Sugar Glider (<i>Petaurus breviceps</i>). Nests in very large tree-hollows.				

Appendix E Test of Significance (BC Act)

The 'Test of Significance' (five-part test) is applied to species, populations and ecological communities listed on Schedules 1, 1A and 2 of the *Biodiversity Conservation Act 2016* and Schedules 4, 4A and 5 of the *Fisheries Management Act 1994*. The test sets out five factors that allow proponents to undertake a qualitative analysis of the likely impact of an action to determine whether further assessment is required via a Species Impact Statement (SIS) under Division 5.1 of the *Environmental Planning and Assessment Act 1979* activities, where the proponent does not opt into the Biodiversity Offsets Scheme. All factors must be considered, and an overall conclusion made based on all factors in combination. An SIS is required if, through application of the five-part test, an action is considered likely to have a significant impact on threatened species, populations or ecological communities.

The 'Test of significance' (5-part test) has been applied to the following entities:

Woodland birds:

- *Lathamus discolor* (Swift Parrot)

Megabats

- *Pteropus poliocephalus* (Grey-headed Flying-fox)

Microbats

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Vespadelus troungtoni* (Eastern Cave Bat)

E1 *Lathamus discolor* (Swift Parrot)

Swift Parrot is listed as Endangered under the BC Act. The description and habitat associations of this species are presented in Appendix D. The development footprint does not coincide with land mapped as important habitat for the Swift Parrot (NSW DCCEEW 2024d). The species was not observed during the field survey; however, potential Swift Parrot foraging habitat within the development footprint includes planted native vegetation. As such, the following assessment focuses on impacts to planted native vegetation within the development footprint which may provide marginal potential foraging habitat (this encompasses the removal of favoured feed trees including three Spotted Gum trees and one Forest Red Gum tree – approximately 0.02 ha).

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed activity or activity is likely to have an adverse effect on the life cycle of the	The proposed activity would remove 0.02 ha of potential foraging habitat for Swift Parrot. It is considered unlikely that the proposed activity would

BC Act	Question	Response
	species such that a viable local population of the species is likely to be placed at risk of extinction	place a viable population of the species at risk of extinction given that the area of potential habitat is small in extent and would only be used occasionally, as part of a mosaic of foraging habitat.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed activity or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	Not applicable.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed activity or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	Not applicable.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed activity or activity	Direct impacts would occur to foraging habitat only and would include the removal of 0.02 ha of planted native vegetation. Native planted trees are to be retained on the subject land, with potential foraging habitat in close proximity to the subject land.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed activity or activity	The proposed activity would remove 0.02 ha of potential foraging habitat for Swift Parrot. Given the Swift Parrot is highly mobile, and the potential habitat to be impacted within the development footprint is isolated in an existing developed environment, the proposed activity would be unlikely to increase fragmentation of an area of habitat.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	No breeding habitat would be removed by the proposed activity. The proposed activity would remove 0.02 ha of foraging habitat. This small area of habitat to be affected is not considered vital to the long-term survival of this species within the locality because the species is highly mobile and would be able to continue foraging in vegetation within the broader landscape. For these reasons, the habitat to be removed is unlikely to be important to the long-term survival of the species.
7.3.1 d)	Whether the proposed activity or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	The proposed activity would not affect any declared area of outstanding biodiversity value.
7.3.1 e)	Whether the proposed activity or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	One key threatening processes are relevant to the proposed activity: • Clearing of native vegetation.

BC Act	Question	Response
		However, with respect to the Swift Parrot, the proposed activity involves a minimal impact to potential foraging habitat. The proposed activity is unlikely to contribute significantly to these processes given that 0.02 ha of potential foraging habitat is proposed to be removed. The species is highly mobile and would be able to continue foraging in similar vegetation adjacent and outside of the subject land.
Conclusion	Is there likely to be a significant impact?	With consideration to the above there is unlikely to be a significant impact to the Swift Parrot.

E2 *Pteropus poliocephalus* (Grey-headed Flying-fox)

The Grey-headed Flying-fox is listed as Vulnerable under the BC Act. The description and habitat associations of this species are presented in Appendix D. This species was not observed during field survey. The proposed works would impact approximately 0.03 ha of potential foraging habitat for the Grey-headed Flying-fox (encompassing the removal of one Smooth-barked Apple, three Spotted Gum, two Tallowwood and one Forest Red Gum). No camps will be affected by the proposed development. The closest Nationally Important Camp is located approximately 3.2 km north of the subject land, in Emu Plains. Other Flying-fox Camps nearby are located at Ropes Creek (approximately 12.7 km east) and Yarramundi (approximately 16.5 km north) (DCCEEW 2024b).

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	The proposed activity would remove 0.03 ha of foraging habitat for the Grey-headed Flying-fox. No roosting habitat (camps) would be affected as part of the proposed activity. The Grey-headed Flying-fox is recorded as travelling long distances (>20 km) on nightly feeding forays. The nearest Nationally Important camp is located 3.2 km away to the north. Impacts to a camp, removal of over wintering foraging resources or removal or fragmentation of foraging habitat adjacent to a nationally important camp would adversely affect the lifecycle of the Grey-headed Flying-fox. The development footprint, although providing foraging habitat, is not located immediately adjacent to a camp, and its removal would not fragment a camp from foraging resource. Therefore, it is considered unlikely that the proposed activity would place a viable population of the species at risk of extinction given that the area of potential habitat is small in extent and would only be used occasionally, as part of a mosaic of foraging resources.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity:	Not applicable.

BC Act	Question	Response
	Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed development or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	Not applicable.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	Potential foraging habitat vegetation impacts would be minimal (0.03 ha). No roosting habitat (camps) would be affected, given the closest camp is the Emu Plains camp, which is approximately 3.2km north of the development footprint. The area to be affected, although providing foraging resources, would form part of a mosaic of resources used throughout the locality and would not be relied upon by this species.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity	The proposed activity would remove 0.03 ha of marginal foraging habitat for this species. The Grey-headed Flying-fox is recorded as travelling long distances on feeding forays and could utilise higher quality foraging habitat outside of the subject land. Given the species is highly mobile, and the potential habitat to be impacted within the development footprint is isolated in an existing developed environment, the proposed activity would be unlikely to increase fragmentation of an area of habitat.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	No roosting habitat (camps) would be removed by the proposed activity. The proposed activity would remove 0.03 ha of foraging habitat. This small area of habitat to be affected is not considered vital to the long-term survival of this species within the locality given the minimal extent of potential foraging habitat in poor condition to be impacted, the availability of higher quality foraging habitat remaining in the landscape and the species high mobility and large range (>20km).
7.3.1 d)	Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	The proposed activity would not impact any declared area of outstanding biodiversity value.
7.3.1 e)	Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	One key threatening processes are relevant to the proposed activity: • Clearing of native vegetation. However, with respect to the Grey Headed Flying Fox, the proposed activity involves a minimal impact to potential foraging habitat.

BC Act	Question	Response
		The proposed activity is unlikely to contribute significantly to these processes given that only 0.03 ha of foraging habitat is proposed to be removed. The species is highly mobile and would be able to continue foraging in similar or higher quality vegetation adjacent to the development footprint.
Conclusion	Is there likely to be a significant impact?	With consideration to the above there is unlikely to be a significant impact to the Grey-headed Flying-fox.

E3 Microbats

The subject land did not contain any features such as hollow bearing trees, caves, cliffs or tunnels that could provide breeding or roosting habitat for threatened microbat species. Due to similar habitat and foraging requirements and associated potential impacts, a single test of significance has been undertaken for the following microchiropteran bats:

- *Chalinolobus dwyeri* (Large-eared Pied Bat)
- *Falsistrellus tasmaniensis* (Eastern False Pipistrelle)
- *Micronomus norfolkensis* (Eastern Coastal Free-tailed Bat)
- *Miniopterus orianae oceanensis* (Large Bent-winged Bat)
- *Myotis macropus* (Southern Myotis)
- *Scoteanax rueppellii* (Greater Broad-nosed Bat)
- *Vespadelus troughtoni* (Eastern Cave Bat)

The description and habitat associations of the above species are presented in Appendix D. Potential microbat foraging habitat within the development footprint includes planted native vegetation. As such, the following assessment focuses on impacts to planted native vegetation within the development footprint which may provide marginal potential foraging habitat for the above threatened microbat species.

BC Act	Question	Response
7.3.1 a)	In the case of a threatened species: whether the proposed activity or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction	The subject land did not contain any features such as hollow bearing trees, caves, cliffs, tunnels, old mine workings or derelict buildings that could provide breeding or roosting habitat. Potential foraging habitat in the form of planted native vegetation was available within the development footprint for these species. The extent of the local population is assessed as those individuals which may reside within the local extent of native vegetation communities. The proposed activity will result in impacts to 0.07 ha of potential foraging habitat for these microbats. The above listed threatened microbats are highly mobile and may utilise habitat within the development footprint on an occasional basis for foraging and

BC Act	Question	Response
		dispersal. Considering the area of potential foraging habitat to be retained within the subject land (0.08 ha of planted native vegetation and 0.46 ha of PCT 3975) and adjacent lands, the proposed activity is unlikely to have an adverse effect on the lifecycle of the above listed microbats such that a viable local population would be placed at risk of extinction.
7.3.1 b) i	In the case of an endangered ecological community or critically endangered ecological community, whether the proposed activity or activity: Is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or	Not applicable.
7.3.1 b) ii	In the case of an endangered ecological community or critically endangered ecological community: Whether the proposed activity or activity is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction.	Not applicable.
7.3.1 c) i	In relation to the habitat of a threatened species or ecological community: The extent to which habitat is likely to be removed or modified as a result of the proposed development or activity	The proposal will result in the removal of 0.07 ha of potential foraging habitat for the above listed microbats. This habitat would likely only be used intermittently, is considered sub-optimal and not likely to be an important resource for these species.
7.3.1 c) ii	In relation to the habitat of a threatened species or ecological community: Whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity	Considering the high mobility of microbats, the small area (0.07) of potential foraging habitat to be impacted will not substantially fragment or isolate areas of habitat for these species. 0.08 ha of planted native vegetation and 0.46 ha of PCT 3975 which could be used as potential foraging habitat will be retained within the subject land. These species are known to have a low fidelity with roosting and breeding sites, which suggests that they would utilise a range of foraging resources corresponding to changes in roosting and breeding behaviours.
7.3.1 c) iii	In relation to the habitat of a threatened species or ecological community: The importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.	No roosting or breeding habitat (caves, cliff crevices, old mine workings, derelict concrete buildings) would be affected as part of the proposed works. The habitat to be removed is likely to only be used as an occasional foraging resource across a larger foraging and home range, given the absence of suitable roosting or breeding habitat in the subject land. These species are more likely to frequently utilise foraging habitat when roosting or breeding habitat is present. Considering the small proportion of potential habitat (0.07 ha) to be affected within the locality the habitat to be removed is not considered critical to the long-term survival of these species within the locality.

BC Act	Question	Response
7.3.1 d)	Whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly).	The study area does not contain any declared areas of outstanding biodiversity value.
7.3.1 e)	Whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.	One key threatening processes are relevant to the proposed activity: • Clearing of native vegetation. However, with respect to these species, the proposed activity involves a minimal impact to potential foraging habitat. The proposed activity is unlikely to contribute significantly to these processes given that only 0.07 ha of foraging habitat is proposed to be removed. The species are highly mobile and would be able to continue foraging in similar or higher quality vegetation adjacent to the development footprint.
Conclusion	Is there likely to be a significant impact?	With consideration to the above there is unlikely to be a significant impact to the listed microchiropteran bat species.

Appendix F Assessment of Significance (EPBC Act)

This assessment has been prepared in accordance with the EPBC Act Matters of National Environmental Significance: Significant Impact Guidelines 1.1 (DAWE 2013). These guidelines have been established to assist proponents to determine whether a proposed action is likely to result in a significant impact on a MNES.

F1 *Lathamus discolor* (Swift Parrot)

Swift Parrot is listed as Critically Endangered under the EPBC Act. The description and habitat associations of this species are presented in Appendix D. This species was not observed during the field survey; however, potential Swift Parrot foraging habitat is present within the development footprint in the form of limited planted native vegetation. As such, the following assessment focuses on impacts to planted native vegetation within the development footprint which may provide marginal potential foraging habitat (this encompasses the removal of favoured feed trees including three Spotted Gum trees and one Forest Red Gum tree – approximately 0.02 ha).

Criterion	Question	Response
An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:		
1)	lead to a long-term decrease in the size of a population	A 'population of a species' refers to a population, or collection of local populations, that occurs within a particular bioregion. The Swift Parrot visits the Cumberland IBRA bioregion sporadically during autumn and winter to feed on blossom and lerp across a range of woodland habitats and sites. The planted native vegetation is an isolated patch within an existing highly developed and modified environment. The proposed development would affect 0.02 ha of potential foraging habitat within the development footprint. Native planted trees are to be retained on the subject land, with potential foraging habitat of higher quality in the form of remnant woodland/forest located in proximity outside of the subject land. Although the species can adapt to utilise a variety of habitats, the prolonged use of planted native vegetation and co-existence with aggressive species that tend to inhabit disturbed areas may be energetically expensive and reduce overall fitness and survival of the species (Saunders and Tzaros, 2011). Given the proximity of native vegetation of higher foraging habitat quality and the fact that the Swift Parrot is a highly mobile species, the proposed development would not lead to the long-term decrease in the size of an important population of the Swift Parrot.
2)	reduce the area of occupancy of the species	The proposed action would affect 0.02 ha of potential foraging habitat. The development footprint does not contain breeding habitat as the species only breeds in Tasmania. Given that the vegetation in the development footprint is isolated within an existing

Criterion	Question	Response
		developed environment, the small extent of habitat to be removed and the species wide range, the proposed development would not reduce the area of occupancy for the Swift Parrot.
3)	fragment an existing population into two or more populations	Given the Swift Parrot is highly mobile, and the potential habitat to be impacted within the development footprint is isolated in an existing developed environment, the proposed development will not fragment an existing population into two or more populations.
4)	adversely affect habitat critical to the survival of a species	The National Recovery Plan (DCCEEW 2024) list foraging habitat on the Australian mainland critical to the survival of the Swift Parrot, which includes preferred feed trees including Forest Red Gum and Spotted Gum). The proposed development will affect 0.02 ha of native vegetation which contains this potential foraging habitat.
5)	disrupt the breeding cycle of a population	The Swift Parrot breeds in Tasmania during summer and migrates to the mainland during autumn and winter. No breeding habitat would be affected by the proposed development.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed development will remove 0.02 ha of native vegetation that may represent foraging habitat for the Swift Parrot. Given that the development footprint is isolated in an urban environment and potential foraging habitat is in close proximity to the development footprint, it is unlikely that the proposed development would cause a decline in the Swift Parrot.
7)	result in invasive species that are harmful to a critically endangered or endangered species becoming established in the endangered or critically endangered species' habitat	Given the development footprint is already in an existing developed environment, the proposed development is unlikely to result in the establishment of invasive species that are harmful to the Swift Parrot.
8)	introduce disease that may cause the species to decline, or	It is unlikely the proposed action would introduce disease that could cause decline to the Swift Parrot.
9)	interfere substantially with the recovery of the species.	The proposed development would remove potential foraging habitat for the Swift Parrot. No breeding habitat would be affected by the proposed development. Given that only 0.02 ha of native vegetation that may represent marginal foraging habitat is to be removed, and that the development footprint is isolated in an existing developed environment, it is unlikely that the proposed development would interfere with the recovery of the Swift Parrot.
Conclusion	Is there likely to be a significant impact?	No. The proposed development is unlikely to have a significant impact on the Swift Parrot for the following reasons: The small extent (0.02 ha) of potential foraging habitat to be impacted.

Criterion	Question	Response
		- No breeding habitat would be removed by the proposed development. - The development footprint's planted native vegetation is isolated in an existing developed environment, with foraging habitat consisting of planted natives which are generally avoided by the species due to co-existence with aggressive species (Saunders and Tzaros, 2011). - The species is highly mobile, and available potential foraging habitat will be retained in the subject land as well as outside, including better quality habitat known to be utilised by Swift Parrot (e.g. Mulgoa Nature Reserve).

F2 *Pteropus poliocephalus* (Grey-headed Flying-fox)

The Grey-headed Flying-fox is listed as Vulnerable under the EPBC Act. The description and habitat associations of this species are presented in Appendix D. This species was not observed during field survey. The proposed works would impact approximately 0.03 ha of potential foraging habitat for the Grey-headed Flying-fox (encompassing the removal of one Smooth-barked Apple, three Spotted Gum, one Tallowwood and one Forest Red Gum). No camps will be affected by the proposed development. The closest Nationally Important Camp is located approximately 3.2 km north of the subject land, in Emu Plains. Other Flying-fox Camps nearby are located at Ropes Creek (approximately 12.7 km east) and Yarramundi (approximately 16.5 km north) (DCCEEW 2024b).

Criterion	Question	Response
	An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:	
1)	lead to a long-term decrease in the size of an important population of a species	No roosting habitat (camps) will be affected by the proposed action, with the closest Nationally Important Grey-headed Flying-fox camp is located approximately 3.2 km away to the north. The proposed development would affect 0.03 ha of potential foraging habitat for the Grey-headed Flying-fox. The Grey-headed Flying-fox is recorded as travelling long distances (>20 km) on nightly feeding forays. Given the availability of habitat within the species range and the small areas of potential habitat to be impacted within the development footprint, 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.
2)	reduce the area of occupancy of an important population	The proposed action would affect 0.03 ha of potential foraging habitat for this species. The Grey-headed Flying-fox is not known to occupy the subject land in the form of a camp but may occasionally forage within the subject land, the nearest Nationally Important camp is located 3.2 km away to the north. The Grey-headed Flying-fox is recorded as travelling long distances on

Criterion	Question	Response
		feeding forays and could utilise similar foraging habitat outside of the subject land. Due to these reasons, the proposed works would not reduce the area of occupancy of an important population of this species.
3)	fragment an existing important population into two or more populations	According to the National Recovery Plan for the Grey-headed Flying-fox 2021, "the Grey-headed Flying-fox is considered to be a single, mobile population with individuals distributed across Queensland, New South Wales, Victoria, South Australia, Tasmania and the ACT." Given the small area of potential foraging habitat to be impacted, the proposed action would not fragment an existing important population into two or more populations.
4)	adversely affect habitat critical to the survival of a species	The National Recovery Plan for the Grey-headed Flying-fox 2021 identifies 'a continuous temporal sequence of productive foraging habitats, linked by migration corridors or stopover habitats, and suitable roosting habitat within nightly commuting distance of foraging areas' as habitat critical to the survival of the species. The proposed action would affect 0.03 ha of native vegetation, which may represent habitat critical survival to this species. However, this impact is considered unlikely to have an adverse effect given the minimal extent of potential foraging habitat in poor condition to be impacted, the availability of higher quality foraging habitat remaining in the landscape and the species high mobility and large range.
5)	disrupt the breeding cycle of an important population	The proposed action would not disrupt the breeding cycle of the Grey-headed Flying-fox given that no camps would be affected by the development.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action would remove 0.03 ha of potential foraging habitat for the Grey-headed Flying-fox. It is unlikely that the extent of this vegetation removal would cause the species to decline due to the small area of habitat to be removed and that larger expanses of higher quality foraging habitat are available outside of the development footprint.
7)	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The proposed action is unlikely to result in the establishment of an invasive species that is harmful to the Grey-headed Flying-fox.
8)	introduce disease that may cause the species to decline, or	Grey-headed Flying-fox are reservoirs for the Australian bat Lyssavirus, Hendra Virus and Menangle virus which can cause clinical disease and mortality in Grey-headed Flying-fox. The risk of disease transmission is extremely low and rare; therefore, the proposed action would not likely increase the incidence of this disease.
9)	interfere substantially with the recovery of the species.	The proposed action would remove 0.03 ha of potential foraging habitat for this species. However, this would not interfere substantially with recovery objectives listed in the National Recovery Plan given the proposed

Criterion	Question	Response
		action would not affect any camps and suitable foraging habitat is available outside of the development footprint.
Conclusion	Is there likely to be a significant impact?	No. The proposed action is unlikely to have a significant impact on the Grey-headed Flying-fox for the following reasons: • No camps would be removed by the proposed action. • Potential foraging habitat within the development footprint is small in extent (0.03 ha) and marginal given it is isolated planted native vegetation in an existing developed environment. • Potential foraging habitat would still be available within 20 km of the nearest Nationally Important camp.

F3 *Chalinolobus dwyeri* (Large-eared Pied Bat)

Large-eared Pied Bat is listed as Endangered under the EPBC Act. Targeted survey and ultrasonic analysis confirmed presence of this species. The description and habitat associations of this species are presented in Appendix D. The subject land did not contain any features such as caves, rock overhangs or disused mine shafts that could provide breeding or roosting habitat. Potential foraging habitat for Large-eared Pied Bat within the development footprint includes planted native vegetation. As such, the following assessment focuses on impacts to planted native vegetation within the development footprint which may provide marginal potential foraging habitat for the species.

Criterion	Question	Response
	An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it will:	
1)	lead to a long-term decrease in the size of an important population of a species	The national recovery plan does not explicitly list important populations but does note that in NSW “the largest concentration of populations appears to be in the sandstone escarpments of the Sydney basin and northwest slopes of NSW” (DERM 2011). No breeding or roosting habitat will be affected by the proposed action. The proposed development would affect 0.07 ha of potential foraging habitat for the Large-eared Pied Bat. This planted native vegetation is not unique within the landscape and forms part of a much larger mosaic of potential foraging resources in the surrounding area. Large-eared Pied Bat is a mobile species capable of dispersing to locate resources outside of the development footprint. Given the availability of habitat within the species range and the small areas of potential habitat to be impacted within the development footprint, the removal of this potential foraging habitat would not lead to the long-term decrease in the size of an important population of Large-eared Pied Bat.

Criterion	Question	Response
2)	reduce the area of occupancy of an important population	The proposed action would affect 0.07 ha of potential foraging habitat for this species. The development footprint does not contain breeding habitat for the species. Given that the vegetation in the development footprint is isolated within an existing developed environment, combined with the small extent of habitat to be removed and the species mobility, the proposed development would not substantially reduce the area of occupancy of an important population of this species.
3)	fragment an existing important population into two or more populations	Given the species is mobile, and the small area of potential foraging habitat to be impacted within the development footprint is isolated in an existing developed environment, the proposed development will not fragment an existing population into two or more populations.
4)	adversely affect habitat critical to the survival of a species	No breeding or roosting habitat (caves, rock overhangs or disused mine shafts) which may provide potential maternity roosts for the species considered critical to the survival of the species (DERM 2011) will be affected by the proposed action. The national recovery plan also notes sandstone cliffs and fertile wooded valley habitat within close proximity as habitat critical to the survival of the large-eared pied bat and whilst the nearest sandstone cliffs are located >1.5 km away, the 0.07 ha of potential foraging habitat within the development footprint may represent habitat critical survival to this species. However, given the minor scale (0.07 ha) of this potential foraging habitat, the proposed action is considered unlikely to have an adverse effect given the availability of higher quality foraging habitat remaining in the landscape and the species mobility.
5)	disrupt the breeding cycle of an important population	The proposed action would not disrupt the breeding cycle of the Large-eared Pied Bat given that no breeding or roosting habitat would be affected by the proposed development.
6)	modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The proposed action would remove 0.07 ha of potential foraging habitat (planted native vegetation) for the Large-eared Pied Bat. Given that the development footprint is isolated in an urban environment and larger expanses of higher quality foraging habitat are available outside of the development footprint, it is unlikely that the proposed development would cause a decline in the Large-eared Pied Bat.
7)	result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	Given the development footprint is already in an existing developed environment, the proposed development is unlikely to result in the establishment of invasive species that are harmful to the Large-eared Pied Bat.

Criterion	Question	Response
8)	introduce disease that may cause the species to decline, or	It is unlikely the proposed action would introduce disease that could cause decline to the Large-eared Pied Bat.
9)	interfere substantially with the recovery of the species.	The proposed action would remove potential foraging habitat for the Large-eared Pied Bat. No breeding or roosting habitat would be affected by the proposed action. Given that only 0.07 ha of planted native vegetation that may represent marginal foraging habitat is to be removed, and that the development footprint is isolated in an existing developed environment, it is unlikely that the proposed development would interfere with the recovery of the Large-eared Pied Bat.
Conclusion	Is there likely to be a significant impact?	No. The proposed action is unlikely to have a significant impact on the Large-eared Pied Bat for the following reasons: • No breeding or roosting habitat would be removed by the proposed action. • Potential foraging habitat within the development footprint is small in extent (0.07 ha) and marginal given it is isolated planted native vegetation in an existing developed environment. • The species is mobile, and available potential foraging habitat will be retained in the subject land as well as outside, including better quality habitat closer to potential roosting and breeding habitat for the species.

Attachment 1 Microbat ultrasonic call analysis report

